



Waste Management of Georgia, Inc.  
Live Oak Landfill

# **Second 2024 Groundwater & Surface Water Monitoring Report**

DEKALB COUNTY, GEORGIA, 30027

PERMIT #: 044-047D(MSWL) & 044-035D(SL)



Prepared By:

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## Certification

I, Chris A. Klamke, certify that I am a qualified groundwater scientist demonstrated by a Georgia state registered professional geologist certification. I have sufficient training and experience in groundwater hydrology and related fields to make sound professional judgments regarding groundwater monitoring and contaminant fate and transport. I further certify that the data in this report have been prepared by me or a subordinate working under my direction. I also certify the metal constituent vanadium exceeds the alternative protection standard in assessment monitoring well GWC-3A. However, the vanadium concentration is not a statistically significant increase, indicating that the current detection is below background.

This compliance statement is provided in accordance with the Solid Waste Management Rules of Georgia Chapter 391-3-4-07(3)(v). All applicable verified constituents are in compliance with established standards and Georgia Solid Waste Rules.



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Chris A. Klamke, P.G.

Georgia P.G. Registration Number 1635

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Owens Fuquea

Project Manager

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## SECTION 1: INTRODUCTION

On behalf of Waste Management of Georgia, Inc. (WM), Atlantic Coast Consulting, Inc. (ACC) is providing this second 2024 Groundwater Monitoring Report for the Live Oak Landfill and Recycling Center (Live Oak Landfill), Permit Numbers 044-047D(MSWL) and 044-035D(SL). The purpose of this report is to provide a summary and evaluation of the results of the recent groundwater and surface water monitoring event, which is required by the Georgia Environmental Protection Division (EPD) Rules for Solid Waste Management 391-3-4-14. This report includes a professional geologist certification and compliance statement, summary of site conditions, description of sampling and analysis, potentiometric map based on groundwater level measurements recorded for this event, determination of groundwater flow rate and direction, summary of analytical results, and statistical analysis of the analytical data.

## SECTION 2: BACKGROUND

### 2.1 Site Description

The Live Oak Landfill is located at 1189 Henrico Lane, Conley, Georgia in Dekalb County and comprises approximately 205 acres, with approximately 122 acres of permitted waste footprint. The facility accepted municipal solid waste (MSW) under Solid Waste Permit Numbers 044-047D(MSWL) and 044-035D(SL). Live Oak Landfill received its solid waste operating permit in 1985 and accepted its final load of waste on December 1, 2004. The final cover system installation was completed on March 23, 2007. The facility's Closure Certificate was issued by EPD on January 29, 2008.

### 2.2 Site History

The groundwater monitoring program at Live Oak Landfill incorporates monitoring wells and protocols designed to provide early information regarding potential environmental protection issues during the post-closure period. Field work, sampling methodologies, data evaluation, data quality assurance/quality control (QA/QC), chemical analysis, and statistical analysis were performed in accordance with the EPD-approved *Groundwater Monitoring Plan* (GWMP) and the Georgia Rules for Solid Waste Management, Chapter 391-3-4-14.

Atlantic Coast Consulting, Inc. (ACC) completed a revised Assessment of Corrective Measures (ACM) report in 2006. Following ACM approval by EPD, a Corrective Action Plan (CAP) was submitted to EPD in June 2008 and approved in a letter dated May 4, 2009. A recommended corrective action was to install out-of-refuse gas control wells; 10 wells were installed and put into service on September 9, 2008. The initial annual *Corrective Action Plan Effectiveness Evaluation Report* (CAPEER), submitted to EPD in May 2010, recommended continuing the approved corrective actions (optimizing the gas collection and control system and monitored natural attenuation [MNA]). In December 2010, additional out-of-refuse capacity (4 out-of-refuse gas control wells) was installed in the vicinity of GWC-4A. Additional out-of-refuse wells were installed near GWC-2A in March 2019. In a letter dated October 18, 2022, Promus Engineering notified EPD (via email) of the facility's achieved GWPS compliance and completion of the CAP and the discontinuation of annual CAPEERs and collection of MNA parameters. Corrective measures put in place during the CAP (i.e., gas collection and control) will continue.

A site map for Live Oak Landfill depicting major site features, groundwater monitoring well locations, surface water monitoring locations, and potentiometric contours is presented as Figure 1, Potentiometric Surface Map – August 2024.

## 2.3 Hydrogeology

Site-specific hydrogeologic reports for the facility were prepared including the Supplemental Hydrogeologic Study and Site Acceptability Report and the Site Acceptability Report City of Atlanta Expansion to meet site acceptability requirements as outlined in the Georgia EPD Criteria for Performing Site Acceptability Studies for Solid Waste Landfills in Georgia (Circular 14). These reports describe the site conceptual hydrogeologic model. The unconfined uppermost groundwater is present in the residual soils (e.g., saprolite) and the partially weathered rock immediately overlying the parent rock. According to the Supplemental Hydrogeologic Study and Site Acceptability Report, the potentiometric surface at the landfill is generally between 30 to 40 feet below base grades. The uppermost groundwater generally flows northwest from the site and discharges into Federal Prison Creek to the northwest and/or the South River. MONITORING PROGRAM

### 2.1 Overview

Groundwater conditions at the facility are monitored by twenty network monitoring wells completed in the uppermost aquifer, including:

- three upgradient monitoring wells (GWA-1A, GWA-2A, & GWA-3A),
- two sidegradient monitoring wells (GWB-1 and GWB-2), and
- fifteen downgradient monitoring wells (GWC-1A, GWC-1B, GWC-2A, GWC-3A, GWC-4A, GWC-5A, GWC-6, GWC-7, GWC-8, GWC-9, GWC-10, GWC-11, GWC-12, GWC-13A, and GWC-14).

The monitoring network wells are classified as Detection Monitoring (Section 2.2), Supplemental Detection Monitoring (Section 2.4) or Assessment Monitoring (Section 2.5). Well status is updated as needed following each groundwater event.

For this monitoring event, detection monitoring wells were analyzed for the list of Appendix I volatile organic compounds (VOCs) in addition to the routine list of metals and indicator parameters listed in Section 2.2. Wells in the supplemental monitoring and assessment programs were sampled for the full Appendix I parameters list and indicator parameters. Assessment wells were sampled for Appendix II VOCs. Additionally, select wells were voluntarily sampled at WM's discretion for ammonia, total alkalinity, ferrous iron, nitrate, sulfate, and/or dissolved methane.

### 2.2 Detection Monitoring

Wells currently in the program:

GWA-2A, GWB-1, GWB-2, GWC-1A, GWC-1B, GWC-4A, GWC-5A, GWC-6, GWC-8, GWC-9, GWC-11, GWC-12, and GWC-13A.

Monitoring Parameters:

Appendix I VOCs, total lead, and approved site-specific indicator parameters (chloride, sodium, and potassium).

Monitoring Frequency:

Detection monitoring wells are sampled semi-annually per the *Groundwater Monitoring Plan*.

## 2.3 Verification Sampling

If a parameter concentration initially exceeds statistical control limits, then a verification sample for that specific parameter will be collected and analyzed within 90 days.

If the verification sample results indicate that the parameter is detected at a concentration level greater than the statistical control limit, then the result has been verified as a statistical exceedance. The verification sampling will result in one of the following actions:

- if an indicator is a verified exceedance, then the well enters supplemental detection monitoring
- if an indicator is a verified exceedance and there is a verified statistically significant increase (SSI) for an Appendix I metal, then the well enters assessment monitoring
- if a VOC is a verified SSI, then the well enters into assessment monitoring
- if an indicator or VOC is unverified, then the well remains in detection monitoring
- if an alternate source for an SSI or VOC detection is identified and a successful demonstration is prepared, the well may remain in detection monitoring

## 2.4 Supplemental Detection Monitoring

Wells currently in the program:

GWC-10 and GWC-14.

Monitoring Parameters:

Appendix I VOCs, Appendix I metals (including lead), and the approved site-specific indicator parameters (chloride, sodium, and potassium).

Monitoring Frequency:

Supplemental detection monitoring wells are sampled semi-annually in accordance with the *Groundwater Monitoring Plan*.

## 2.5 Assessment Monitoring

Wells currently in the program:

GWA-1A, GWA-3A, GWC-2A, GWC-3A, and GWC-7.

The assessment monitoring phase commences if:

- the verification sample indicates that the indicator is verified and there is an SSI of an Appendix I metal, or
- the verification sample indicates that the VOC is verified.

Monitoring Parameters:

- Appendix I VOCs, Appendix I metals, and the approved site-specific indicator parameters (chloride, sodium, and potassium), plus any verified Appendix II specific parameters.
- Appendix II parameters and additional indicators selected at the site's discretion.

Monitoring Frequency:

- Semi-annual
- Initially when entering assessment; biennially, the monitoring list is expanded to include Appendix II VOCs; and triennially, the monitoring list is expanded to include full list of Appendix II analytes. This current event is a triennial event. The next biennial event will occur concurrently with the second 2025 event, and the next triennial event will occur concurrently with the second 2027 event.

## 2.6 Sentinel Wells

Four sentinel wells are present at the facility but are not included in the routine monitoring network. Three sentinel wells (AMP-1, AMP-3, and AMP-4) were installed to evaluate the downgradient extent of VOCs detected in GWC-13A. One sentinel well (AMP-2) was installed during the 2002 ACM to evaluate the extent of VOC concentrations downgradient of GWC-3A. Both GWC-3A and GWC-13A have achieved compliance with appropriate standards; therefore, it is no longer necessary to sample AMP-1, AMP-2, AMP-3, and AMP-4 as part of corrective action activities at the site. AMP-3 and AMP-4 were properly abandoned per Georgia's Water Well Standards Act in October 2021.

Two sentinel wells (AMP-5 and AMP-6) were installed in 2017 along the western boundary of the permitted facility. These locations are designed for use for future non-compliance issues in monitoring wells in this area. Location AMP-5 was voluntarily sampled during this event.

All existing sentinel wells are recorded for depth to water measurements.

## 2.7 Surface Water

Surface water monitoring is performed at monitoring locations SWA-1, SWA-2, SWC-5, SWC-7, and SWC-8. Collected samples are analyzed for: pH, specific conductance, temperature, turbidity, chloride, total organic carbon (TOC), chemical oxygen demand (COD), dissolved oxygen (DO), total arsenic, total barium, total cadmium, total chromium, total cyanide, total lead, total mercury, total nickel, total selenium, total silver, and total zinc.

## 2.8 Leachate

The GWMP requires that a leachate sample be collected at the facility once per year and submitted with the semi-annual ground and surface water report. The sample location may either be from the leachate storage tank or from the discharge manhole/connection to the DeKalb County sewer system. The leachate sample is analyzed for 40 Code of Federal Regulations, Part 258, Appendix I parameters.

## 2.9 Sampling Procedures

On August 26-28, 2024, samples were collected by ACC personnel from the groundwater monitoring wells and submitted for analytical testing. Surface water location SWC-5 was also sampled during this event.

Prior to sampling on August 26, 2024, depths to water were measured to the nearest hundredth of a foot from a surveyed datum (top of PVC casing) at each location. Depth to water measurements were used to calculate groundwater elevations for a potentiometric contour map and estimate the hydraulic gradient at the site. Prior to purging, depth to water was again measured and used to assess drawdown during purging.

Dedicated bladder pumps are installed in the network groundwater monitoring wells at the site. The bladder pumps are used to evacuate groundwater from within each well, using micro-purging techniques. A non-dedicated submersible pump was used to sample AMP-5 following using the same low-flow rate methodology used for bladder pump sampling. Sample collection begins after field parameters have stabilized. The low-flow purge sample data summaries for each well at the site are presented in Appendix A.

Samples were collected from the network wells after purging using the dedicated bladder pumps. Field parameters, including pH, specific conductance, temperature, turbidity, DO, and oxygen-reduction potential (ORP) were measured and recorded on a field information form during purging and sampling.

The groundwater samples were transferred directly from the pump discharge line into laboratory-provided containers and placed into laboratory-provided ice chests.

The collected samples were then shipped to Geochemical Testing under proper chain-of-custody documentation. Three trip blanks and one field blank were collected for quality control purposes. The chains of custody are presented in Appendix B.

Surface water samples are collected from locations with adequate flow to allow for sampling. Samples are collected facing upstream minimizing sediment disruption. Collected samples are immediately placed on ice after collection and submitted to Geochemical Testing for analysis.

Sample collection at surface water monitoring locations is accomplished by partially submerging the sample container or a dedicated grab jar into the flow with the container opening facing downstream.

## **2.10 Laboratory Methodology & Certification**

The analytical data contained within this report were provided by an approved commercial laboratory (per Chapter 391-3-26-05) and in accordance with Georgia state law (O.C.G.A. 12-2-9). The accreditation information is as follows:

Laboratory: Geochemical Testing, Somerset, Pennsylvania  
Accreditation Agency: National Environmental Laboratory Accreditation Program (NELAP)  
Accreditation ID: 56-00306 (PA Lab ID)  
Scope: Potable, Non-Potable, Solid and Chemical Materials.

## **SECTION 3: DISCUSSION OF SAMPLING RESULTS**

### **3.1 Groundwater**

Groundwater conditions at Live Oak Landfill were evaluated based on physical and analytical data obtained as a part of the second 2024 semi-annual monitoring event. Groundwater elevations (physical data) were used to determine the groundwater flow rate and direction within the monitored unit. Analytical data includes groundwater samples collected and submitted to the laboratory for analysis.

Detected VOC and metal concentrations are compared to groundwater protection standards (GWPS). These comparison standards are maximum contaminant levels (MCLs). For analytes that have no established MCL, the facility will reference the alternate GWPSs that were established during the development of the approved Corrective Action Plan.

### **3.2 Organic Compounds in Groundwater**

The organic compounds detected in samples collected from monitoring wells during this sampling event are presented in Table 1.

Organic compounds detected during this sampling event are summarized below:

- 1,1-dichloroethane (1,1-DCA) in samples from GWA-3A, GWC-3A, and GWC-7.
- cis-1,2-dichloroethene (cis-1,2-DCE) in the sample from GWA-3A.

The monitoring network wells with organic compound detections (GWA-3A, GWC-3A, and GWC-7) are currently in assessment monitoring. No detected VOC concentration currently exceeds a relevant GWPS. No VOC was detected in the sample from assessment well GWC-2A.

### 3.3 Indicator Parameters in Groundwater

Indicator parameter concentrations in most collected samples remain relatively low. Potassium concentrations have remained comparatively stable, while sodium and chloride have shown slightly increasing trends in several wells. The increases are related to natural variation in background and not indicative of landfill influence.

### 3.4 Metals in Groundwater

The inorganic compounds detected in samples collected from monitoring wells during this sampling event are presented in Table 2. Generally low naturally occurring Appendix I metals (barium, chromium, nickel, and vanadium) concentrations were detected in samples collected from one or more monitoring wells during this sampling event. A previously unverified detection of zinc in the sample collected from GWC-10 was not detected this event. Vanadium [0.052 milligrams per liter (mg/L)] was detected at a concentration above the AGWPS (0.037 mg/L) in the sample from assessment monitoring well GWC-3A. This well is in assessment monitoring, and the AGWPS exceedance will continue to be closely evaluated in future events. Laboratory analytical reports are included in Appendix B.

### 3.5 Leachate

The GWMP requires that a leachate sample be collected at the facility once per year and submitted with the semi-annual groundwater and surface water report. An annual sample was collected during the February 2024 event, and results were submitted in the Live Oak First 2024 Groundwater Monitoring Report (GEOS Submittal ID: 846787).

### 3.6 Surface Water

Surface water samples were collected from permitted location SWC-5 during this event. Data was unable to be collected from locations SWA-1, SWA-2, SWC-7, and SWC-8, because they were dry. Surface water analytical results are summarized in Table 3.

### 3.7 Hydraulic Gradient and Groundwater Flow Velocity

Water level measurements recorded during the second 2024 semi-annual sampling event were used to calculate groundwater elevations relative to mean sea level (National Geodetic Vertical Datum of 1929) and develop a potentiometric surface map, which is presented in Figure 1.

Potentiometric elevations measured during this event were similar to previous events indicating that flow directions and gradients are consistent with historical data. Groundwater flows toward the north/northwest with an average hydraulic gradient of approximately 2.5 percent. The calculated average groundwater flow velocity through the saprolite aquifer is approximately 37.7 feet per year. Groundwater flow rate and direction calculations for Live Oak Landfill are provided in Table 4.

## SECTION 4: STATISTICAL ANALYSIS

According to EPD's Rules for Solid Waste Management, a determination must be made as to if there is a statistically significant increase (SSI) over background values for each constituent that is part of the groundwater monitoring program.

### 4.1 Statistical Analysis Procedure

Otter Creek Environmental Services, LLC completed a statistical evaluation for the groundwater analytical data collected from Live Oak Landfill.

A statistical analysis plan was developed for the site describing a statistical methodology using practical quantification limits (PQLs) as the concentration limits for VOCs and Shewart-CUSUM control charts for inorganic intra-well comparisons in the downgradient wells. If less than eight samples are available for the inorganic statistical analyses, then inter-well site prediction limits are calculated.

The following documents provide information regarding the approved site statistical plan:

- Groundwater Optimization Report for Waste Management of Georgia Live Oak Landfill (Rust, 1997)
- Statistical Methods for Groundwater Monitoring at the Live Oak Landfill, prepared by Dr. Robert Gibbons in 1998
- June 28, 1999 letter from WM to EPD, with supplemental information
- August 16, 1999 letter from EPD approving the statistical plan
- Assessment Monitoring Plan (September 2001)
- Groundwater Monitoring Plan (March 2003)

Intra-well comparisons are conducted for lead and approved indicator parameters (sodium, chloride, and potassium) in downgradient detection monitoring wells with a minimum of eight background samples. Appendix I metals are evaluated for wells in supplemental or assessment monitoring. If fewer than eight background data points have been collected, then the sample data will be compared to background using a combination of inter-well and intra-well statistics. Parameters with fewer than four sets of data will be compared to site prediction limits. Assessment monitoring results are evaluated in accordance with the EPD-approved Assessment Monitoring Plan, dated September 2001 and the Groundwater Monitoring Plan, dated March 2003.

Assessment statistics are completed for analytical laboratory results on samples from assessment wells where a sufficient number of background samples have been collected. Four samples are required for both organic compounds and metals to calculate confidence limits. When the lower confidence limit (LCL) rises above the GWPS, a groundwater well will enter into corrective measures.

#### **4.2 Statistical Evaluation**

The analytical laboratory data were statistically evaluated using DUMPStat statistical software in accordance with the statistical plan.

The statistical analyses completed for the current monitoring event include the following:

##### Organic Compounds:

- Concentrations of organic compounds cis-1,2-DCE and/or 1,1-DCA, detected in assessment wells GWA-3A, GWC-3A, and GWC-7, have been verified and are above background. These are considered SSIs for this event.
- No VOC concentration exceeds a relevant GWPS.

##### Metals:

- The CUSUM value of barium in the GWC-7 sample (440 micrograms per liter [ $\mu\text{g}/\text{L}$ ]) exceeds the normal control limit of 392  $\mu\text{g}/\text{L}$ ; however, the actual concentration (340  $\mu\text{g}/\text{L}$ ) does not exceed the control limit.
- No metals are considered SSIs for this event.

Site-Specific Indicators (Chloride, Potassium, and Sodium) and Lead:

- Lead was not detected at a statistically significant level in collected samples from this event.
- Verified control limit exceedances for concentrations of chloride were indicated in the sample data collected from GWA-1A and GWC-10.
- Increasing trends for chloride were identified for GWA-1A, GWC-2A, GWC-4A, GWC-7, GWC-8, GWC-10, GWC-11, GWC-13A, and GWC-14.
- Potassium was not detected at a statistically significant level in collected samples from this event.
- There was a verified control limit exceedance for the concentration of sodium in the sample collected from well GWC-14. Exceedances identified for sodium in GWA-1A and GWC-7 were for CUSUM values only and not the actual concentrations; therefore, they are not considered SSIs.
- Increasing trends for sodium at low level concentrations were identified GWC-1B, GWC-4A, GWC-7, GWC-10, and GWC-13A.

Due to previous indicator statistical control exceedances, GWC-10 and GWC-14 have been classified as supplemental detection monitoring wells. Wells GWA-1A, GWA-3A, GWC-2A, GWC-3A, and GWC-7 are currently in assessment monitoring. Assessment wells GWA-3A, GWC-2A, GWC-3A, and GWC-7 had no verified indicator exceedances during this event but will remain in assessment monitoring due to recent organic compound detections.

#### **4.3 Assessment Statistical Results**

The data range used for the confidence limits includes historical data where evidence of impacts is present (e.g., VOC detection or an increase in indicator parameters). In accordance with EPD Regulations and the approved Assessment Monitoring Plan, groundwater protection standards were set at the MCL for constituents with established MCLs. For constituents without MCLs, the AGWPS is referenced.

A 95% lower confidence limit (LCL) is calculated for confirmed detections of organic compounds detected above statistical background, using the historical detected concentrations. Confirmed organic compound detections have been identified in samples from wells GWA-3A, GWC-3A, and GWC-7. LCLs were calculated for the verified VOCs detected in assessment monitoring wells.

The current calculated LCLs and the applicable GWPS for verified constituents detected in assessment wells are summarized in Table 5.

Monitoring wells GWA-3A, GWC-2A, GWC-3A, and GWC-7 will remain in the assessment monitoring program due to recent verified organic compound detections. Location GWA-1A will remain in assessment monitoring for background comparison purposes. Currently, there are no exceedances of the 95% LCL in well samples. The facility has implemented additional out-of-refuse extraction capacity to address historical VOC detections in samples from GWC-4A. Consistent vacuum was established to the out-of-refuse probes near GWC-4A in January 2012 and has been effective in lowering VOC concentrations; the effectiveness of these probes will continue to be evaluated in subsequent monitoring reports. More recently, in early 2019, out-of-refuse probes were installed to address recent VOC detections at GWC-2A.

The Otter Environmental Statistical Analysis Report is provided as Appendix C.

#### 4.4 Well Reclassification Summary

Based on the analytical results and statistical analysis for this event, no wells are recommended for reclassification at this time.

### SECTION 5: SUMMARY AND RECOMMENDATIONS

In accordance with the Assessment Monitoring Plan (approved by EPD in September 2001) and the site D&O Plan, WM completed an ACM study to address GWPS exceedances. A Corrective Action Plan was approved in May 2009 and was implemented continuously until 2022. Out-of-refuse extraction wells have been installed near GWC-2A, GWC-3A, and GWC-4A. VOC and geochemical indicator trends indicate that groundwater quality has improved over time in these areas. Historical and recent data indicate improvement for these three wells. In an October 2022 letter, EPD was notified the facility had achieved completion of the CAP and would discontinue CAPEERs moving forward.

All verified VOC detections are in samples from designated assessment monitoring wells. The only GWPS exceedance identified during this event was for the detected concentration of the Appendix I metal vanadium in the sample from assessment monitoring well GWC-3A. The concentration of vanadium is not considered an SSI, but this exceedance will continue to be reevaluated closely in future events.

No verified SSIs were identified for concentrations of Appendix I metals this event.

Wells with verified statistical exceedances are either in supplemental or assessment monitoring. Therefore, no changes are recommended for the monitoring program at this time. The next triennial, full Appendix II analysis is scheduled for the second 2027 monitoring event. The next biennial, Appendix II VOC analysis is scheduled for the second 2025 monitoring event.

Surface water samples were collected from permitted location SWC-5 during this event. Surface water locations SWA-1, SWA-2, SWC-7, and SWC-8 were not sampled during this event because each was dry.

The next monitoring event for Live Oak Landfill is tentatively scheduled for February 2025.

## **SECTION 6: REFERENCES**

Golder Associates, 1990. Live Oak Landfill – Northern Expansion Supplementary Hydrogeologic Study. 1990.

Jordan, Jones, & Goulding (JJG), 2003. *Groundwater Monitoring Plan.*, revised by Atlantic Coast Consulting, February 2018.

Promus Engineering, 2022. Groundwater Monitoring Corrective Action Plan Update. October 18, 2022.

## **TABLES**

**Table A**  
**Monitoring Status Sampling Schedule for Network Wells**  
**Live Oak Landfill**



Well ID	Type	Monitoring Status	First Semi-Annual List	Second Semi-Annual List
GWA-1A	Upgradient	Assessment	App. I, verified App. II, Indicators	App. I, verified App. II, Indicators
GWA-2A	Upgradient	Detection	App. I VOCs, Total Lead, Indicators	App. I VOCs, Total Lead, Indicators
GWA-3A	Upgradient	Assessment	App. I, verified App. II, Indicators	App. I, verified App. II, Indicators
GWB-1	Sidegradient	Detection	App. I VOCs, Total Lead, Indicators	App. I VOCs, Total Lead, Indicators
GWB-2	Sidegradient	Detection	App. I VOCs, Total Lead, Indicators	App. I VOCs, Total Lead, Indicators
GWC-1A	Downgradient	Detection	App. I VOCs, Total Lead, Indicators	App. I VOCs, Total Lead, Indicators
GWC-1B	Downgradient	Detection	App. I VOCs, Total Lead, Indicators	App. I VOCs, Total Lead, Indicators
GWC-2A	Downgradient	Assessment	App. I, verified App. II, Indicators	App. I, verified App. II, Indicators
GWC-3A	Downgradient	Assessment	App. I, verified App. II, Indicators	App. I, verified App. II, Indicators
GWC-4A	Downgradient	Detection	App. I VOCs, Total Lead, Indicators	App. I VOCs, Total Lead, Indicators
GWC-5A	Downgradient	Detection	App. I VOCs, Total Lead, Indicators	App. I VOCs, Total Lead, Indicators
GWC-6	Downgradient	Detection	App. I VOCs, Total Lead, Indicators	App. I VOCs, Total Lead, Indicators
GWC-7	Downgradient	Assessment	App. I, verified App. II, Indicators	App. I, verified App. II, Indicators
GWC-8	Downgradient	Detection	App. I VOCs, Total Lead, Indicators	App. I VOCs, Total Lead, Indicators
GWC-9	Downgradient	Detection	App. I VOCs, Total Lead, Indicators	App. I VOCs, Total Lead, Indicators
GWC-10	Downgradient	Supplemental	App. I, Indicators	App. I, Indicators
GWC-11	Downgradient	Detection	App. I VOCs, Total Lead, Indicators	App. I VOCs, Total Lead, Indicators
GWC-12	Downgradient	Detection	App. I VOCs, Total Lead, Indicators	App. I VOCs, Total Lead, Indicators
GWC-13A	Downgradient	Detection	App. I VOCs, Total Lead, Indicators	App. I VOCs, Total Lead, Indicators
GWC-14	Downgradient	Supplemental	App. I Indicators	App. I Indicators

**Notes:** App. I – Appendix I refers to parameters listed in 40 CFR Part 258, Subpart E, 56 Fed. Reg. 51032-51039 (October 9, 1991).

App. II - Appendix II refers to parameters listed in 40 CFR Part 258, Subpart E, 56 Fed. Reg. 51032-51039 (October 9, 1991).

The next biennial App. II VOC monitoring is scheduled for the 2nd 2025 event.

The next triennial full App. II monitoring is scheduled for the 2nd 2024 event.

Indicators = approved site-specific indicators and include chloride, sodium, and potassium.

VOC = volatile organic compounds.

The facility may collect additional indicators at their discretion (e.g. TOC, COD, anions, cations, alkalinity, ammonia, etc.).

**Table 1**  
**Summary of Appendix I VOCs**  
**Live Oak Landfill**



Well ID	Monitoring Program	1,1-Dichloroethane	cis-1,2-Dichloroethene
GWA-1A	Assessment	--	--
GWA-2A	Detection	--	--
GWA-3A	Assessment	14	18.9
GWB-1	Detection	--	--
GWB-2	Detection	--	--
GWC-1A	Detection	--	--
GWC-1B	Detection	--	--
GWC-2A	Assessment	--	--
GWC-3A	Assessment	2.9	--
GWC-4A	Detection	--	--
GWC-5A	Detection	--	--
GWC-6	Detection	--	--
GWC-7	Assessment	3.2	--
GWC-8	Detection	--	--
GWC-9	Detection	--	--
GWC-10	Supplemental	--	--
GWC-11	Detection	--	--
GWC-12	Detection	--	--
GWC-13A	Detection	--	--
GWC-14	Supplemental	--	--
AMP-5	Sentinel	--	--
<b>GWPS</b>		<b>800*</b>	<b>70</b>

**Notes:** Groundwater samples collected August 26-28, 2024.

Concentrations and GWPS reported in micrograms per liter ( $\mu\text{g}/\text{L}$ ).

\* No MCL exists; Alternate GWPS referenced

Underlined values are considered unverified.

A dash (--) = below laboratory reporting limit

**Acronyms:** GWPS = Groundwater protection standard.

MCL = Maximum contaminant level

**Table 2**  
**Summary of Inorganic Results**  
**Live Oak Landfill**



Well ID	Sodium (mg/L)	Potassium (mg/L)	Chloride (mg/L)	Barium (mg/L)	Chromium (mg/L)	Nickel (mg/L)	Vanadium (mg/L)	Monitoring Program
	Indicator Parameters			Appendix I Metals				
GWA-1A	6.2	--	13.7	0.11	--	0.03	--	Assessment
GWA-2A	5.9	--	2.8	NR	NR	NR	NR	Detection
GWA-3A	3.1	0.7	8.3	--	--	--	--	Assessment
GWB-1	5.6	--	6.4	NR	NR	NR	NR	Detection
GWB-2	5.0	1.0	2.2	NR	NR	NR	NR	Detection
GWC-1A	6.4	1.0	--	NR	NR	NR	NR	Detection
GWC-1B	13.2	0.7	4.1	NR	NR	NR	NR	Detection
GWC-2A	4.5	0.5	2.5	0.03	--	--	0.016	Assessment
GWC-3A	9.2	0.7	4.9	0.08	<u>0.0027</u>	--	<b>0.052</b>	Assessment
GWC-4A	3.9	0.7	2.8	NR	NR	NR	NR	Detection
GWC-5A	4.7	--	--	NR	NR	NR	NR	Detection
GWC-6	10.7	1.8	--	NR	NR	NR	NR	Detection
GWC-7	15.2	3.8	9.5	0.34	--	0.03	0.005	Assessment
GWC-8	4.1	--	2.1	NR	NR	NR	NR	Detection
GWC-9	4.8	0.7	1.6	NR	NR	NR	NR	Detection
GWC-10	9.6	--	11.7	0.03	--	0.03	0.016	Supplemental
GWC-11	7.0	0.9	4.3	NR	NR	NR	NR	Detection
GWC-12	8.7	--	--	NR	NR	NR	NR	Detection
GWC-13A	13.6	8.9	4.1	NR	NR	NR	NR	Detection
GWC-14	33.7	--	14.2	0.11	0.0327	--	--	Supplemental
<b>GWPS</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>2</b>	<b>0.1</b>	<b>0.1</b>	<b>0.037*</b>	

**Notes:** Groundwater samples collected August 26-28, 2024.

GWPS set at MCL except for cobalt, vanadium, and zinc where no MCL exists.

\*No MCL exists; Alternate GWPS referenced.

Shaded and bold value indicates a concentration above the GWPS.

A dash (--) = below laboratory reporting limit

**Acronyms:** GWPS = Groundwater protection standard.

NR = Analysis not required.

N/A = Not Applicable.

**Table 3**  
**Summary of Surface Water Sample Analysis Results**  
**Live Oak Landfill**



Monitoring Point	pH (S.U.)	Specific Conductance (umhos/c)	Dissolved Oxygen (mg/L)	Temperature (°C)	Turbidity (NTU)	Barium (mg/L)	Chloride (mg/L)
SWC-5	6.89	223	4.8	26.2	0.8	0.0471	3.4

**Notes:** Surface water samples collected August 28, 2024.

– indicates concentration below laboratory reporting limit.

**Acronyms:** S.U. = standard units

Specific cond. = specific conductance

umhos/cm = micromhos per centimeter

mg/L = milligrams per liter

NTU = nephelometric turbidity units

TOC = Total Organic Carbon.

COD = Chemical Oxygen Demand.

**Table 4**  
**Groundwater Flow Rate Calculation**  
**Live Oak Landfill**



Equation

$$v = \frac{k (dh/dL)}{P_e}$$

where:  $v$  = groundwater velocity  
 $k$  = hydraulic conductivity  
 $dh/dL$  = hydraulic gradient  
 $P_e$  = effective porosity

Values Used in Calculation

	Value	Source
$k =$	0.8107 ft/day	see note 1
$dh/dL =$	0.025 unitless	GWA-1A to GWC-9
$P_e =$	0.20 unitless	see note 1

Calculation

$$v = \begin{aligned} & 0.103 \text{ ft/day} \\ & 37.7 \text{ ft/yr} \end{aligned}$$

Notes

- (1) Groundwater Optimization Report for Waste Management of Georgia Live Oak Landfill (Rust E&I, 1997).
- (2) Statement in Earthtech October 2000 Semi-Annual Detection Monitoring Report, based on guidance data found in the Final Groundwater Monitoring Program for Live Oak Landfill and Recycling Center, October 1995.

**Table 5**  
**Summary of Verified VOCs in Assessment Wells**  
**Live Oak Landfill**



Well ID	1,1-Dichloroethane	95% LCL ( $\mu\text{g/L}$ )	MCL or AGWPS ( $\mu\text{g/L}$ )
GWA-3A	1,1-Dichloroethane	11.9	800*
GWA-3A	cis-1,2-Dichloroethene	15.8	70
GWC-3A	1,1-Dichloroethane	2.46	800*
GWC-7	1,1-Dichloroethane	3.02	800*

**Notes:** Bold = 95% LCL exceeds standard.

\*No MCL established; AGWPS is referenced

Groundwater samples collected August 26-28, 2024.

**Acronyms:** LCL = Lower confidence limit

MCL = Maximum contaminant level

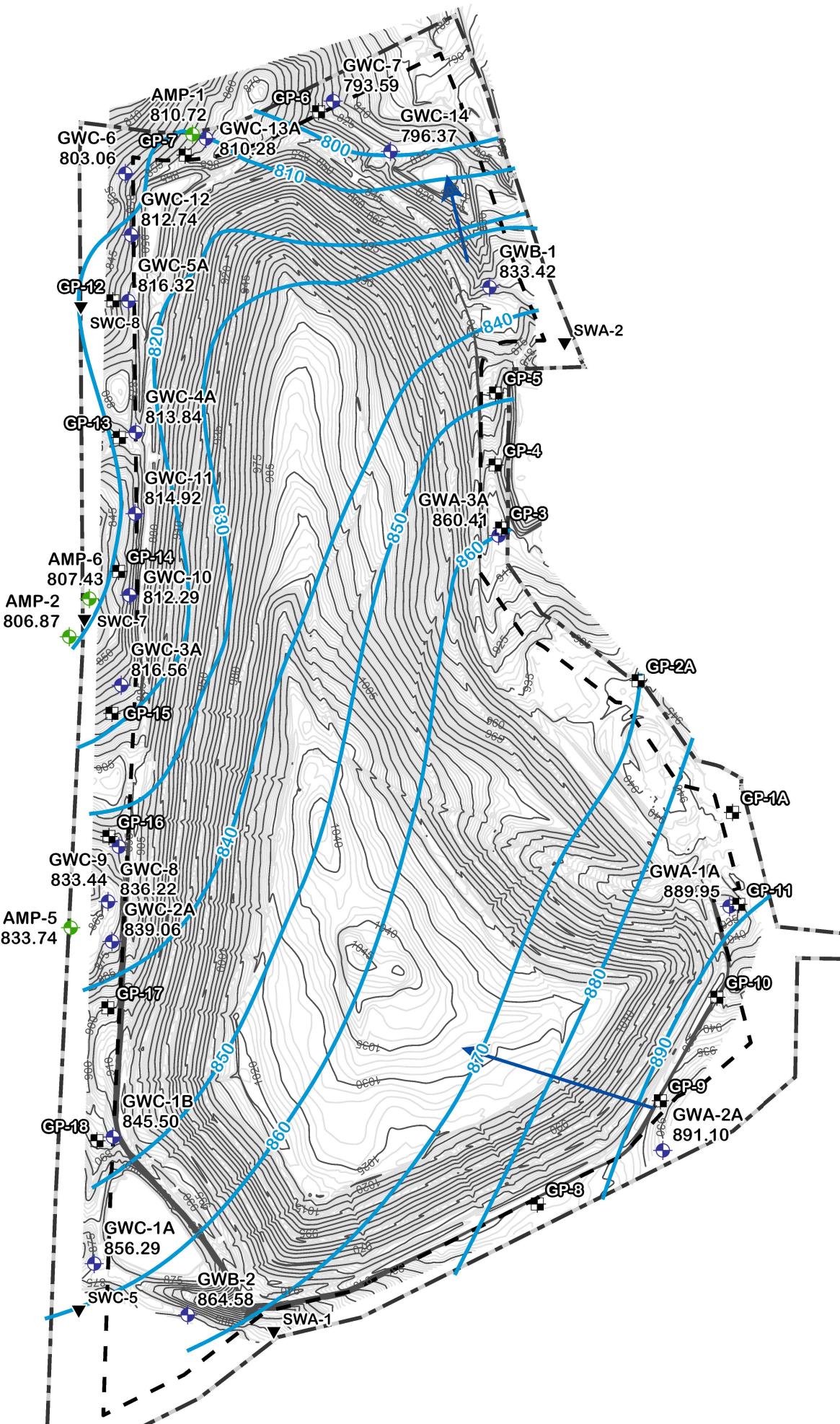
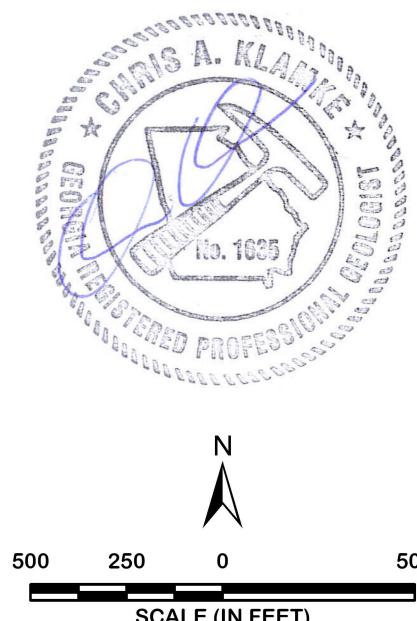
AGWPS = Alternate groundwater protection standard.

## **FIGURES**

LEGEND	
—	PROPERTY BOUNDARY
- - -	BUFFER
—	INTERMEDIATE CONTOUR
—	PROMINENT CONTOUR
→	GROUNDWATER FLOW DIRECTION
●	GROUNDWATER MONITORING WELL
●	SENTINEL GROUNDWATER WELL
■	METHANE GAS PROBE
▼	SURFACE WATER MONITORING POINT

## NOTES

1. PERMIT BOUNDARY SURVEYED ON DECEMBER 21, 2017, BY MARTIN SURVEY ASSOCIATES, INC.
2. TOPOGRAPHY PROVIDED BY SOUTHERN RESOURCES MAPPING CORPORATION, DATED JANUARY 20, 2013.



Methane Monitoring Well Schedule					
Well ID	Easting (State Plane)	Northing (State Plane)	Top of Casing (ft msl)	Depth of Well (ft bgs)	Well Elevation (ft msl)
GP-1A	446568.41	1335215.55	946.61	60	887
GP-2A	446227.83	1335691.37	944.01	70	874
GP-3	445734.00	1336242.30	911.00	52	859
GP-4	445711.20	1336469.60	904.00	50	854
GP-5	445712.30	1336729.70	888.00	38	850
GP-6	445073.10	1337744.10	836.00	30	806
GP-7	444591.70	1337588.20	862.00	36	826
GP-8	445863.40	1333799.90	943.00	45	898
GP-9	446307.40	1334173.10	933.00	38	895
GP-10	446511.70	1334546.00	944.00	48	896
GP-11	446591.00	1334881.00	935.00	41	894
GP-12	444330.60	1337061.70	857.00	35	822
GP-13	444354.50	1336568.60	873.00	54	819
GP-14	444351.30	1336085.60	852.00	32	820
GP-15	444327.40	1335572.70	886.00	49	838
GP-16	444316.60	1335128.80	890.00	46	844
GP-17	444312.50	1334507.60	901.00	39	862
GP-18	444273.50	1334028.50	899.00	49	850

Acronyms: ft msl = feet mean sea level  
ft bgs = feet below ground surface

Summary of Groundwater Elevation Data Live Oak Landfill August 2024 Sampling Event					
Well ID	Easting	Northing	Top of Casing Elevation (ft msl)	Depth to Water (ft btoc)	Groundwater Elevation (ft msl)
GWA-1A	446557.93	1334873.55	934.75	44.80	889.95
GWA-2A	446316.99	1333994.07	934.13	43.03	891.10
GWA-3A	445723.17	1336214.91	914.97	54.56	860.41
GWB-1	445691.11	1337111.61	856.83	23.41	833.42
GWB-2	444600.88	1333400.70	877.13	12.55	864.58
GWC-1A	444263.68	1333585.17	878.84	22.55	856.29
GWC-1B	444330.66	1334042.51	901.38	55.88	845.50
GWC-2A	444327.76	1334746.78	873.30	34.24	839.06
GWC-3A	444361.00	1335674.49	873.68	57.12	816.56
GWC-4A	444413.14	1336586.84	875.59	61.75	813.84
GWC-5A	444386.43	1337061.35	866.97	50.65	816.32
GWC-6	444376.36	1337521.11	844.90	41.84	803.06
GWC-7	445125.99	1337782.88	826.64	33.05	793.59
GWC-8	444313.71	1334891.50	866.42	30.20	836.22
GWC-9	444352.87	1335092.40	888.44	55.00	833.44
GWC-10	444390.92	1335999.77	863.40	51.11	812.29
GWC-11	444410.75	1336293.97	863.72	48.80	814.92
GWC-12	444396.87	1337299.41	858.59	45.85	812.74
GWC-13A	444666.41	1337648.24	865.98	55.70	810.28
GWC-14	445333.36	1337601.23	823.51	27.14	796.37
AMP-1	444618.46	1337663.23	858.40	47.68	810.72
AMP-2	444173.20	1335849.89	830.17	23.30	806.87
AMP-5	444178.51	1334796.93	863.84	30.10	833.74
AMP-6	444246.21	1335987.48	837.78	30.35	807.43

Notes: Depths to water measured August 26, 2024.

Acronyms: ft msl = feet mean sea level  
ft btoc = feet below top of casing

SECOND 2024 SEMIANNUAL GROUNDWATER  
MONITORING REPORTPOTENCIOMETRIC SURFACE MAP  
AUGUST 2024FIGURE  
1

## **APPENDICES**

**APPENDIX A**

**LOW FLOW PURGE DATA SUMMARIES**

# FIELD INFORMATION FORM

Site Name: Live Oak  
 Site No.:         Sample Point: A M P - S  
 Sample ID:   

**This Waste Management Field Information Form is Required**

This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).



Laboratory Use Only/Lab ID:   

PURGE INFO	082824	1140	22	40	07	02			
	PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hrs:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED			
Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.									
PURGE/SAMPLE EQUIPMENT	Purging and Sampling Equipment ... Dedicated:		<input checked="" type="checkbox"/> Y or <input type="checkbox"/> N	Filter Device:	<input checked="" type="checkbox"/> Y or <input type="checkbox"/> N	0.45 $\mu$ or <input type="checkbox"/> $\mu$ (circle or fill in)			
	Purging Device <u>B</u>	A- Submersible Pump B-Peristaltic Pump C-QED Bladder Pump Sampling Device <u>B</u>	D-Bailer E-Piston Pump F-Dipper/Bottle	Filter Type: <u>  </u>	A-In-line Disposable B-Pressure	C-Vacuum X-Other: <u>  </u>			
	X-Other: <u>  </u>	—	Sample Tube Type: <u>A</u>	A-Teflon B-Stainless Steel	C-PVC D-Polypropylene	X-Other: <u>  </u>			
WELL DATA	Well Elevation (at TOC) <u>NA</u>	Depth to Water (DTW) (from TOC) <u>30 13</u> (ft)	Groundwater Elevation (site datum, from TOC) <u>  </u> (ft/msl)						
	Total Well Depth (from TOC) <u>4540</u> (ft)	Stick Up (from ground elevation) <u>  </u> (ft)	Casing ID <u>2</u> (in)	Casing Material <u>PVC</u>					
Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.									
STABILIZATION DATA (Optional)	Sample Time (2400 Hr Clock) <u>11:50</u>	Rate/Unit <u>ml/min</u>	pH (std) <u>6.09</u>	Conductance (SC/EC) (umhos/cm @ 25 °C) <u>352</u>	Temp. (°C) <u>23.3</u>	Turbidity (ntu) <u>38</u>	D.O. (mg/L - ppm) <u>12.5</u>	eH/ORP (mV) <u>-1141</u>	DTW (ft) <u>305</u>
	<u>11:53</u>	<u>1</u>	<u>6.05</u>	<u>352</u>	<u>23.1</u>	<u>36</u>	<u>11.6</u>	<u>-116</u>	<u>305</u>
	<u>11:56</u>	<u>1</u>	<u>6.00</u>	<u>351</u>	<u>23.0</u>	<u>22</u>	<u>11.0</u>	<u>-116</u>	<u>305</u>
	<u>11:59</u>	<u>1</u>	<u>6.00</u>	<u>350</u>	<u>23.0</u>	<u>25</u>	<u>10.9</u>	<u>-1171</u>	<u>305</u>
	<u>12:02</u>	<u>1</u>	<u>6.00</u>	<u>353</u>	<u>23.0</u>	<u>20</u>	<u>11.0</u>	<u>-118</u>	<u>305</u>
Suggested range for 3 consec. readings or note Permit/State requirements: +/- 0.2		+/- 3%		—	—	+/- 10%	+/- 25 mV	Stabilize	
Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.									
FIELD DATA	SAMPLE DATE (MM DD YY) <u>082824</u>	pH (std) <u>6.00</u>	CONDUCTANCE (umhos/cm @ 25°C) <u>353</u>	TEMP. (°C) <u>23.0</u>	TURBIDITY (ntu) <u>20</u>	DO (mg/L-ppm) <u>10</u>	eH/ORP (mV) <u>-118</u>	Other: <u>fin</u>	
								Units <u>mg/L</u>	
Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site).									
FIELD COMMENTS	Sample Appearance: <u>clear</u>		Odor: <u>none</u>		Color: <u>none</u>		Other: <u>  </u>		
	Weather Conditions (required daily, or as conditions change):		Direction/Speed: <u>0-5 mph</u>		Outlook: <u>sunny, 90°F</u>		Precipitation: <u>Y</u> or <u>N</u>		
	Specific Comments (including purge/well volume calculations if required): 								
I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign): <u>8/28/24</u> <u>A. Flach</u> <u>  </u> <u>ACo</u>									
Date: <u>  </u> / <u>  </u> / <u>  </u>	Name: <u>  </u>	Signature: <u>  </u>		Company: <u>  </u>					
DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy									

# FIELD INFORMATION FORM



Site Name: LIVE OAK  
 Site No.:   Sample Point: GWA-1A  
 Sample ID:

This Waste Management Field Information Form is Required  
 This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID: \_\_\_\_\_

PURGE INFO	<u>08/26/24</u>	<u>11:40</u>	<u>00:20</u>	<u>00:22</u>	<u>0.8</u>	<u>04</u>			
	PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hrs:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLS PURGED			
<i>Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.</i>									
PURGE/SAMPLE EQUIPMENT	Purging and Sampling Equipment ... Dedicated: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N			Filter Device: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N 0.45 $\mu$ or <input type="checkbox"/> $\mu$ (circle or fill in)					
	Purging Device <u>C</u>	A- Submersible Pump B-Peristaltic Pump C-QED Bladder Pump	D-Bailer E-Piston Pump F-Dipper/Bottle	Filter Type: <input checked="" type="checkbox"/> A	A-In-line Disposable B-Pressure	C-Vacuum X-Other: _____			
	Sampling Device <u>C</u>				Sample Tube Type: <input checked="" type="checkbox"/> A	A-Teflon B-Stainless Steel	C-PVC D-Polypropylene X-Other: _____		
	X-Other: _____								
WELL DATA	Well Elevation (at TOC)	<u>93475</u> (ft/msl)	Depth to Water (DTW) (from TOC)	<u>4480</u> (ft)	Groundwater Elevation (site datum, from TOC)	<u>88795</u> (ft/msl)			
	Total Well Depth (from TOC)	<u>5800</u> (ft)	Stick Up (from ground elevation)	<u>0</u> (ft)	Casing ID <u>Z</u> (in)	Casing Material <u>PVC</u>			
	<i>Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.</i>								
STABILIZATION DATA (Optional)	Sample Time (2400 Hr Clock)	Rate/Unit <u>ml/min</u>	pH (std)	Conductance (SC/EC) ( $\mu$ mhos/cm @ 25 °C)	Temp. (°C)	Turbidity (ntu)	DO (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
	<u>11:50</u>	<u>150</u>	<u>1<sup>st</sup></u> <u>5.70</u>	<u>1<sup>st</sup></u> <u>2310</u>	<u>23.6</u>	<u>22</u>	<u>48</u>	<u>1117</u>	<u>474</u>
	<u>11:53</u>	<u>150</u>	<u>2<sup>nd</sup></u> <u>5.69</u>	<u>2<sup>nd</sup></u> <u>224</u>	<u>22.1</u>	<u>10</u>	<u>48</u>	<u>114</u>	<u>474</u>
	<u>11:56</u>	<u>150</u>	<u>3<sup>rd</sup></u> <u>5.69</u>	<u>3<sup>rd</sup></u> <u>223</u>	<u>21.7</u>	<u>09</u>	<u>47</u>	<u>115</u>	<u>474</u>
	<u>11:59</u>	<u>150</u>	<u>4<sup>th</sup></u> <u>5.68</u>	<u>4<sup>th</sup></u> <u>224</u>	<u>21.7</u>	<u>08</u>	<u>46</u>	<u>116</u>	<u>474</u>
Suggested range for 3 consec. readings or note Permit/State requirements: +/- 0.2      +/- 3%      --      --      +/- 10%      +/- 25 mV      Stabilize									
<i>Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.</i>									
FIELD DATA	SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE ( $\mu$ mhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other:	
	<u>08/26/24</u>	<u>5.68</u>	<u>224</u>	<u>21.7</u>	<u>0.8</u>	<u>46</u>	<u>116</u>	Units _____	
<i>Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site).</i>									
FIELD COMMENTS	Sample Appearance: <u>CLEAR</u>	Odor: _____			Color: <u>None</u>		Other: _____		
	Weather Conditions (required daily, or as conditions change):	Direction/Speed: <u>CLEAR</u> , <u>00</u>			Outlook: <u>Cloudy, 80°F</u>		Precipitation: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N		
	Specific Comments (including purge/well volume calculations if required):  <u>SAMPLE TIME: 1200</u>								
<i>I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):</i>									
<u>08/26/24</u>			<u>BEN RANGAWEAN</u>			<u>Bon Rangawau</u>			<u>Acc</u>
Date: <u>/ /</u>	Name: _____	Signature: _____			Company: _____				
<i>DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy</i>									

## **FIELD INFORMATION FORM**



Site Name:	LIVE OAK			
Site No.:				Samp Point

**This Waste Management Field Information Form is Required**

This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

# FIELD INFORMATION FORM



Site Name: Live Oak  
 Site No.:  Sample Point: GWE-3A  
 Sample ID: A

This Waste Management Field Information Form is Required  
 This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO	082624	0955	40	65	196	02			
	PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hrs:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED			
Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.									
PURGE/SAMPLE EQUIPMENT	Purging and Sampling Equipment ... Dedicated: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N			Filter Device: <input type="checkbox"/> Y or <input checked="" type="checkbox"/> N 0.45 $\mu$ or <input type="checkbox"/> — $\mu$ (circle or fill in)	A-In-line Disposable C-Vacuum				
	Purging Device <input checked="" type="checkbox"/> C	A-Submersible Pump	D-Bailer	B-Pressure	X-Other	—			
	Sampling Device <input checked="" type="checkbox"/> C	B-Peristaltic Pump	E-Piston Pump	A-Teflon	C-PVC	X-Other: <input type="checkbox"/>			
	X-Other: <input type="checkbox"/>	C-QED Bladder Pump	F-Dipper/Bottle	B-Stainless Steel	D-Polypropylene	—			
WELL DATA	Well Elevation (at TOC) <u>914 / 97</u> (ft/msl)	Depth to Water (DTW) (from TOC) <u>5456</u> (ft)	Groundwater Elevation (site datum, from TOC) <u>86 041</u> (ft/msl)						
	Total Well Depth (from TOC) <u>950</u> (ft)	Stick Up (from ground elevation) <u>02</u> (ft)	Casing ID <u>02</u> (in)	Casing Material <u>PVC</u>					
	Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.								
STABILIZATION DATA (Optional)	Sample Time (2400 Hr Clock) <u>10:05</u>	Rate/Unit ml/min <u>150</u>	pH (std) <u>5.73</u>	Conductance (SC/EC) (umhos/cm @ 25 °C) <u>3116</u>	Temp. (°C) <u>18.2</u>	Turbidity (ntu) <u>19</u>	DO (mg/L - ppm) <u>2.3</u>	eH/ORP (mV) <u>73</u>	DTW (ft) <u>6118</u>
	<u>10:08</u>	<u>1</u>	<u>5.77</u>	<u>304</u>	<u>18.1</u>	<u>12</u>	<u>1.7</u>	<u>1418</u>	<u>624</u>
	<u>10:11</u>		<u>5.79</u>	<u>301</u>	<u>18.2</u>	<u>13</u>	<u>1.9</u>	<u>1419</u>	<u>631</u>
	<u>10:14</u>		<u>5.60</u>	<u>305</u>	<u>18.1</u>	<u>11</u>	<u>1.3</u>	<u>144</u>	<u>6316</u>
	<u>10:17</u>		<u>5.75</u>	<u>304</u>	<u>18.1</u>	<u>10</u>	<u>1.0</u>	<u>1610</u>	<u>32</u>
	<u>10:20</u>		<u>5.66</u>	<u>304</u>	<u>18.0</u>	<u>22</u>	<u>2.6</u>	<u>133</u>	<u>6417</u>
	<u>10:25</u>		<u>5.56</u>	<u>302</u>	<u>18.1</u>	<u>28</u>	<u>1.7</u>	<u>142</u>	<u>50</u>
	<u>10:30</u>		<u>5.64</u>	<u>309</u>	<u>18.1</u>	<u>17</u>	<u>1.8</u>	<u>1311</u>	<u>652</u>
	<u>10:35</u>		<u>5.70</u>	<u>308</u>	<u>18.1</u>	<u>32</u>	<u>1.7</u>	<u>127</u>	<u>652</u>
								<u>+/- 10%</u>	<u>+/- 25 mV</u>
<u>Suggested range for 3 consec. readings or note Permit/State requirements:</u>									
<u>Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.</u>									
FIELD DATA	SAMPLE DATE (MM DD YY) <u>082624</u>	pH (std) <u>5.70</u>	CONDUCTANCE (umhos/cm @ 25°C) <u>308</u>	TEMP. (°C) <u>18.1</u>	TURBIDITY (ntu) <u>32</u>	DO (mg/L-ppm) <u>1.7</u>	eH/ORP (mV) <u>270</u>	Other: <u>time</u>	
								Units <u>2400</u>	
<u>Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site).</u>									
FIELD COMMENTS	Sample Appearance: <u>clear</u>	Odor: <u>none</u>	Color: <u>none</u>	Other: <u>—</u>					
	Weather Conditions (required daily, or as conditions change):	Direction/Speed: <u>0-5 mph</u>	Outlook: <u>sunny, 80s</u>	Precipitation: <u>Y</u> or <u>N</u>					
	Specific Comments (including purge/well volume calculations if required):  <u>P   55</u> <u>R   25</u> <u>D   5</u>								
	I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):								
	Date <u>8.26.24</u>	Name <u>A. Flach</u>	Signature <u>arf</u>	Company <u>ACC</u>					

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

## **FIELD INFORMATION FORM**



Site Name: Live Oak  
Site No.: 

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 Sample Point:

**This Waste Management Field Information Form is Required**  
This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

# FIELD INFORMATION FORM



Site Name: **LIVE OAK**

Site No.:  Sample Point: **GWB-Z**  
Sample ID:

This Waste Management Field Information Form is Required

This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO	<b>082824</b>	<b>1027</b>	<b>0020</b>	<b>40</b>	<b>10</b>	<b>03</b>			
	PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hrs:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLS PURGED			
Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.									
PURGE/SAMPLE EQUIPMENT	Purging and Sampling Equipment ... Dedicated: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N		Filter Device: <input type="checkbox"/> Y or <input checked="" type="checkbox"/> N 0.45 μ or <input type="checkbox"/> μ (circle or fill in)						
	Purging Device <b>C</b>	A- Submersible Pump B-Peristaltic Pump C-QED Bladder Pump	D-Bailer E-Piston Pump F-Dipper/Bottle	Filter Type: <b>-</b>	A-In-line Disposable B-Pressure X-Other	C-Vacuum			
	Sampling Device <b>C</b>			Sample Tube Type: <b>A</b>	A-Teflon B-Stainless Steel	C-PVC X-Other: D-Polypropylene			
	X-Other:								
WELL DATA	Well Elevation (at TOC)	<b>87713</b> (ft/msl)	Depth to Water (DTW) (from TOC)	<b>1260</b> (ft)	Groundwater Elevation (site datum, from TOC)				
	Total Well Depth (from TOC)	<b>3700</b> (ft)	Stick Up (from ground elevation)		Casing ID <b>2</b> (in)	Casing Material <b>PVC</b>			
	Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.								
STABILIZATION DATA (Optional)	Sample Time (2400 Hr Clock)	Rate/Unit <b>mg/min</b>	pH (std)	Conductance (SC/EC) (μmhos/cm @ 25 °C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
	<b>101317</b>	<b>200</b>	<b>1<sup>st</sup></b> <b>6.76</b>	<b>1<sup>st</sup></b> <b>175</b>	<b>183</b>	<b>06</b>	<b>49</b>	<b>96</b>	<b>127</b>
	<b>10410</b>	<b>200</b>	<b>2<sup>nd</sup></b> <b>6.75</b>	<b>2<sup>nd</sup></b> <b>175</b>	<b>183</b>	<b>05</b>	<b>49</b>	<b>104</b>	<b>127</b>
	<b>10143</b>	<b>200</b>	<b>3<sup>rd</sup></b> <b>6.74</b>	<b>3<sup>rd</sup></b> <b>175</b>	<b>182</b>	<b>04</b>	<b>48</b>	<b>109</b>	<b>127</b>
	<b>10146</b>	<b>200</b>	<b>4<sup>th</sup></b> <b>6.74</b>	<b>4<sup>th</sup></b> <b>175</b>	<b>183</b>	<b>04</b>	<b>48</b>	<b>107</b>	<b>127</b>
Suggested range for 3 consec. readings or note Permit/State requirements:		+/- 0.2	+/- 3%	--	--	+/- 10%	+/- 25 mV	Stabilize	
Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.									
FIELD DATA	SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other: Units	
	<b>082824</b>	<b>674</b>	<b>175</b>	<b>183</b>	<b>04</b>	<b>48</b>	<b>107</b>		
Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site).									
FIELD COMMENTS	Sample Appearance:	<b>CLEAR</b>		Odor:	<b>NONE</b>		Color:	Other:	
	Weather Conditions (required daily, or as conditions change):			Direction/Speed:	<b>0km</b>		Outlook:	<b>clear, 78°F</b>	
	Precipitation: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N								
	Specific Comments (including purge/well volume calculations if required):								
	<b>SAMPLE TIME: 1047</b>								
I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):									
<b>08/28/24</b>	<b>BEN RAYEAWA</b>			<b>Ben Rayeawa</b>			<b>ACC</b>		
/ / Date	Name	Signature			Company				
DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy									

# **FIELD INFORMATION FORM**



Site Name: Live Oak

Site No.: 

				Sample Point:	(6)
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**This Waste Management Field Information Form is Required**

This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

# FIELD INFORMATION FORM



Site Name: **LIVE OAK**  
 Site No.:  Sample Point: **GWC-1B**  
 Sample ID:

**This Waste Management Field Information Form is Required**

This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO	<b>082824</b>	<b>0948</b>	<b>0020</b>	<b>      23</b>	<b>      17</b>	<b>      07</b>				
	PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hrs:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLS PURGED				
<i>Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.</i>										
PURGE/SAMPLE EQUIPMENT	Purging and Sampling Equipment ... Dedicated: <input checked="" type="checkbox"/> or <input type="checkbox"/> N			Filter Device: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> 0.45 μ or <input type="checkbox"/> μ (circle or fill in)						
	Purging Device <input checked="" type="checkbox"/>	A-Submersible Pump	D-Bailer	A-In-line Disposable	C-Vacuum					
	B-Peristaltic Pump	E-Piston Pump	B-Pressure	X-Other						
	C-QED Bladder Pump	F-Dipper/Bottle	A-Teflon	C-PVC	X-Other: _____					
X-Other: _____		Sample Tube Type: <input checked="" type="checkbox"/> A	B-Stainless Steel	D-Polypropylene						
WELL DATA	Well Elevation (at TOC)	<b>90170</b> (ft/msl)	Depth to Water (DTW) (from TOC)	<b>5600</b> (ft)	Groundwater Elevation (site datum, from TOC)	<b>84570</b> (ft/msl)				
	Total Well Depth (from TOC)	<b>7000</b> (ft)	Stick Up (from ground elevation)	<b>      </b> (ft)	Casing ID <input checked="" type="checkbox"/> 2 (in)	Casing Material <input checked="" type="checkbox"/> PVC				
	<i>Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.</i>									
STABILIZATION DATA (Optional)	Sample Time (2400 Hr Clock)	Rate/Unit <i>Mufow</i>	pH (std)	Conductance (SC/EC) (μmhos/cm @ 25°C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)	
	<b>091518</b>	<b>320</b>	<b>1<sup>st</sup></b> <b>619</b>	<b>1<sup>st</sup></b> <b>367</b>	<b>2011</b>	<b>      06</b>	<b>25</b>	<b>89</b>	<b>562</b>	
	<b>10011</b>	<b>320</b>	<b>2<sup>nd</sup></b> <b>620</b>	<b>2<sup>nd</sup></b> <b>381</b>	<b>198</b>	<b>      06</b>	<b>25</b>	<b>93</b>	<b>562</b>	
	<b>10104</b>	<b>320</b>	<b>3<sup>rd</sup></b> <b>619</b>	<b>3<sup>rd</sup></b> <b>376</b>	<b>196</b>	<b>      06</b>	<b>24</b>	<b>99</b>	<b>562</b>	
	<b>10107</b>	<b>320</b>	<b>4<sup>th</sup></b> <b>620</b>	<b>4<sup>th</sup></b> <b>378</b>	<b>197</b>	<b>      06</b>	<b>25</b>	<b>101</b>	<b>562</b>	
	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	
	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	
	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	
	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	
	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	
Suggested range for 3 consec. readings or note Permit/State requirements:				+/- 0.2	+/- 3%	—	+/- 10%	+/- 25 mV	Stabilize	
<i>Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.</i>										
FIELD DATA	SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other:	Units	
	<b>082824</b>	<b>620</b>	<b>378</b>	<b>197</b>	<b>      06</b>	<b>25</b>	<b>101</b>	<b>      </b>	<b>      </b>	
<i>Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site).</i>										
FIELD COMMENTS	Sample Appearance: <b>CLEAR</b>	Odor: _____	Color: <b>None</b>	Other: _____						
	Weather Conditions (required daily, or as conditions change):	Direction/Speed: <b>Calm</b>	Outlook: <b>CLEAR TSF</b>	Precipitation: <b>Y</b> or <b>N</b>						
	Specific Comments (including purge/well volume calculations if required): <b>SAMPLE TAKEN 1008</b>									
	I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):									
	<b>08/28/24</b>	<b>Ben Rayeawa</b>	<b>Ben Rayeawa</b>	<b>ACC</b>						
	/ / Date	Name	Signature	Company						
DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy										

## **FIELD INFORMATION FORM**



Site Name:	Live Oak			
Site No.:				Sample Point:

**This Waste Management Field Information Form is Required**

This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e., with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

# FIELD INFORMATION FORM



Site Name:  
Site No.:

**LIVE OAK**

Sample Point: **G10C-3A**  
Sample ID

This Waste Management Field Information Form is Required

This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO	082624	1425	0020	126	16	06			
	PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hrs:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED			
Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.									
PURGE/SAMPLE EQUIPMENT	Purging and Sampling Equipment ... Dedicated: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N		Filter Device: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N 0.45 $\mu$ or <input type="checkbox"/> $\mu$ (circle or fill in)						
	Purging Device <input checked="" type="checkbox"/> C	A-Submersible Pump B-Peristaltic Pump C-QED Bladder Pump	D-Bailer E-Piston Pump F-Dipper/Bottle	Filter Type: <input checked="" type="checkbox"/> -	A-In-line Disposable B-Pressure	C-Vacuum X-Other			
	Sampling Device <input checked="" type="checkbox"/> C			Sample Tube Type: <input checked="" type="checkbox"/> A	A-Teflon B-Stainless Steel	C-PVC D-Polypropylene X-Other:			
	X-Other:								
WELL DATA	Well Elevation (at TOC)	87368 (ft/msl)	Depth to Water (DTW) (from TOC)	5712 (ft)	Groundwater Elevation (site datum, from TOC)	81656 (ft/msl)			
	Total Well Depth (from TOC)	7300 (ft)	Stick Up (from ground elevation)	(ft)	Casing ID	Z (in)			
	Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.					Casing Material PVC			
STABILIZATION DATA (Optional)	Sample Time (2400 Hr Clock)	Rate/Unit M/MIN	pH (std)	Conductance (SC/EC) ( $\mu$ mhos/cm @ 25 °C)	Temp. (°C)	Turbidity (ntu)	DO (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
	1435	300	1 <sup>st</sup> 6.42	1 <sup>st</sup> 389	20.4	1 21	112	102	583
	1438	300	2 <sup>nd</sup> 6.41	2 <sup>nd</sup> 389	20.6	1 20	112	100	583
	1441	300	3 <sup>rd</sup> 6.40	3 <sup>rd</sup> 389	20.7	1 17	111	95	583
	1444	300	4 <sup>th</sup> 6.39	4 <sup>th</sup> 389	20.6	1 11	111	96	583
Suggested range for 3 consec. readings or note Permit/State requirements:		+/- 0.2	+/- 3%	--	--	+/- 10%	+/- 25 mV	Stabilize	
Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.									
FIELD DATA	SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE ( $\mu$ mhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other:	
	082624	6.39	389	20.6	11	11	96	Units	
Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site).									
FIELD COMMENTS	Sample Appearance:	<b>CLEAR</b>		Odor:	<b>NONE</b>		Other:		
	Weather Conditions (required daily, or as conditions change):			Direction/Speed:	<b>CALM</b>		Outlook: <b>CLEAR, 90°F</b>		
	Specific Comments (including purge/well volume calculations if required):								
	<b>SAMPLE TIME: 1445</b>								
I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):									
08.26.24	BEN RAYEAWAN	ben Rayewan				Acc			
/ / Date	Name	Signature		Company					
DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy									

# FIELD INFORMATION FORM



Site Name: LIVE OAK  
 Site No.:  Sample Point: GWC-TA  
 Sample ID:

This Waste Management Field Information Form is Required

This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID: \_\_\_\_\_

PURGE INFO	<u>082724</u>	<u>1040</u>	<u>0020</u>	<u>118</u>	<u>08</u>	<u>04</u>			
	PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hrs:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLS PURGED			
Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.									
PURGE/SAMPLE EQUIPMENT	Purging and Sampling Equipment ... Dedicated: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N		Filter Device: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N 0.45 $\mu$ or <input type="checkbox"/> $\mu$ (circle or fill in)						
	Purging Device <input checked="" type="checkbox"/> C	A-Submersible Pump B-Peristaltic Pump C-QED Bladder Pump	D-Bailer E-Piston Pump F-Dipper/Bottle	Filter Type: <input checked="" type="checkbox"/> -	A-In-line Disposable B-Pressure C-Vacuum X-Other				
	Sampling Device <input checked="" type="checkbox"/> C			Sample Tube Type: <input checked="" type="checkbox"/> A	A-Teflon B-Stainless Steel C-PVC D-Polypropylene X-Other:				
	X-Other:								
WELL DATA	Well Elevation (at TOC)	<u>81559</u> (ft/msl)	Depth to Water (DTW) (from TOC)	<u>6175</u> (ft)	Groundwater Elevation (site datum, from TOC)	<u>81384</u> (ft/msl)			
	Total Well Depth (from TOC)	<u>7300</u> (ft)	Stick Up (from ground elevation)	<u></u> (ft)	Casing ID: <u>Z</u> (in)	Casing Material <input checked="" type="checkbox"/> PVC			
Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.									
STABILIZATION DATA (Optional)	Sample Time (2400 Hr Clock)	Rate/Unit <u>150</u>	pH (std)	Conductance (SC/EC) ( $\mu$ mhos/cm @ 25 °C)	Temp. (°C)	Turbidity (ntu)	DO (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
	<u>10:50</u>	<u>150</u>	<u>6.04</u>	<u>1st</u> <u>6.04</u>	<u>1st</u> <u>157</u>	<u>223</u>	<u>1179</u>	<u>5.4</u>	<u>160</u>
	<u>10:53</u>	<u>150</u>	<u>6.04</u>	<u>2nd</u> <u>6.04</u>	<u>2nd</u> <u>154</u>	<u>223</u>	<u>13.3</u>	<u>5.4</u>	<u>156</u>
	<u>10:56</u>	<u>150</u>	<u>6.06</u>	<u>3rd</u> <u>6.06</u>	<u>3rd</u> <u>156</u>	<u>223</u>	<u>2.7</u>	<u>5.3</u>	<u>154</u>
	<u>10:59</u>	<u>150</u>	<u>6.04</u>	<u>4th</u> <u>6.04</u>	<u>4th</u> <u>153</u>	<u>225</u>	<u>1.9</u>	<u>5.3</u>	<u>155</u>
Suggested range for 3 consec. readings or note Permit/State requirements:		+/- 0.2	+/- 3%	--	--	+/- 10%	+/- 25 mV	Stabilize	
Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.									
FIELD DATA	SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other:	
	<u>082724</u>	<u>6.04</u>	<u>153</u>	<u>225</u>	<u>1.9</u>	<u>5.3</u>	<u>155</u>	<u></u>	
Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site).									
FIELD COMMENTS	Sample Appearance:	<u>CLEAR</u>		Odor:	<u>None</u>		Color:	<u>None</u>	Other:
	Weather Conditions (required daily, or as conditions change):			Direction/Speed:	<u>calm</u>		Outlook:	<u>CLEAR</u>	<u>90°F</u>
Specific Comments (including purge/well volume calculations if required):  <u>sample time: 1100</u>									
I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):									
<u>08.27.24</u>	<u>BEN RAMSEYAWAN</u>	<u>Ben Ramseyan</u>				<u>ACC</u>			
/ / Date	Name	Signature				Company			
DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy									

# FIELD INFORMATION FORM



Site Name: **LIVE OAK**

Site No.:  Sample Point: **GWC-SA**  
Sample ID:

**This Waste Management Field Information Form is Required**

This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO	<b>082724</b>	<b>09:55</b>	<b>00:20</b>	<b>      80</b>	<b>      17</b>	<b>      02</b>			
	PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hrs:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED			
<i>Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.</i>									
PURGE/SAMPLE EQUIPMENT	Purging and Sampling Equipment ... Dedicated: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N			Filter Device: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N 0.45 $\mu$ or <input type="checkbox"/> $\mu$ (circle or fill in)					
	Purging Device <input checked="" type="checkbox"/> C	A-Submersible Pump	D-Bailer	A-In-line Disposable	C-Vacuum				
		B-Peristaltic Pump	E-Piston Pump	B-Pressure	X-Other				
	Sampling Device <input checked="" type="checkbox"/> C	C-QED Bladder Pump	F-Dipper/Bottle	A-Teflon	C-PVC	X-Other: _____			
	X-Other: _____		Sample Tube Type: <input checked="" type="checkbox"/> A	B-Stainless Steel	D-Polypropylene				
WELL DATA	Well Elevation (at TOC)	<b>86697</b> (ft/msl)	Depth to Water (DTW) (from TOC)	<b>5078</b> (ft)	Groundwater Elevation (site datum, from TOC)	<b>81619</b> (ft/msl)			
	Total Well Depth (from TOC)	<b>10000</b> (ft)	Stick Up (from ground elevation)	<b>      </b> (ft)	Casing ID <input checked="" type="checkbox"/> Z (in)	Casing Material <input checked="" type="checkbox"/> PVC			
	<i>Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.</i>								
STABILIZATION DATA (Optional)	Sample Time (2400 Hr Clock)	Rate/Unit <b>ml/min</b>	pH (std)	Conductance (SC/EC) (umhos/cm @ 25 °C)	Temp. (°C)	Turbidity (ntu)	DO (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
	<b>10:05</b>	<b>320</b>	<b>1<sup>st</sup> 6.23</b>	<b>1<sup>st</sup> 1139</b>	<b>18.7</b>	<b>1 10.11</b>	<b>29</b>	<b>93</b>	<b>510</b>
	<b>10:08</b>	<b>320</b>	<b>2<sup>nd</sup> 6.31</b>	<b>2<sup>nd</sup> 1138</b>	<b>18.7</b>	<b>1 15.8</b>	<b>25</b>	<b>97</b>	<b>510</b>
	<b>10:11</b>	<b>320</b>	<b>3<sup>rd</sup> 6.30</b>	<b>3<sup>rd</sup> 1137</b>	<b>18.9</b>	<b>1 5.0</b>	<b>25</b>	<b>95</b>	<b>510</b>
	<b>10:14</b>	<b>320</b>	<b>4<sup>th</sup> 6.29</b>	<b>4<sup>th</sup> 1136</b>	<b>18.8</b>	<b>1 13.1</b>	<b>24</b>	<b>102</b>	<b>510</b>
	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>
	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>
	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>
	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>
	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>	<b>      </b>
Suggested range for 3 consec. readings or note Permit/State requirements:		<b>+/- 0.2</b>	<b>+/- 3%</b>	--	--	<b>+/- 10%</b>	<b>+/- 25 mV</b>	Stabilize	
<i>Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.</i>									
FIELD DATA	SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L - ppm)	eH/ORP (mV)	Other: _____	
	<b>082724</b>	<b>6.29</b>	<b>136</b>	<b>18.8</b>	<b>31</b>	<b>24</b>	<b>102</b>	Units _____	
<i>Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site).</i>									
FIELD COMMENTS	Sample Appearance: <b>CLEAR</b>	Odor: _____	Color: <b>NONE</b>	Other: _____					
	Weather Conditions (required daily, or as conditions change):	Direction/Speed: <b>CALM</b>	Outlook: <b>CLEAR, 72°F</b>	Precipitation: <b>Y</b> or <b>N</b>					
	Specific Comments (including purge/well volume calculations if required): _____								
	<b>SAMPLE TIME: 10:15</b>								
	I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):								
	<b>08/27/24</b>	<b>Ben Raycawas</b>	<b>Ben Raycawas</b>	<b>ACC</b>					
	/ / Date	Name	Signature	Company					
	DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy								

# FIELD INFORMATION FORM



Site Name: VIVE OAK  
 Site No.:  Sample Point: GWC-6  
 Sample ID:

This Waste Management Field Information Form is Required.  
 This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID: \_\_\_\_\_

PURGE INFO	<u>082724</u>	<u>10:00</u>	<u>120</u>	<u>127</u>	<u>111</u>	<u>04</u>			
	PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hrs:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLS PURGED			
Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.									
PURGE/SAMPLE EQUIPMENT	Purging and Sampling Equipment ... Dedicated: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N			Filter Device: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N 0.45 $\mu$ or <input type="checkbox"/> — $\mu$ (circle or fill in)					
	Purging Device <u>C</u>	A-Submersible Pump B-Peristaltic Pump Sampling Device <u>C</u> X-Other: <u>—</u>	D-Bailer E-Piston Pump C-QED Bladder Pump F-Dipper/Bottle	Filter Type: <u>—</u>	A-In-line Disposable B-Pressure	C-Vacuum X-Other: <u>—</u>			
	Well Elevation (at TOC) <u>844</u>   <u>90</u> (ft/msl)	Depth to Water (DTW) (from TOC) <u>1194</u> (ft)	Groundwater Elevation (site datum, from TOC) <u>80296</u> (ft/msl)						
	Total Well Depth (from TOC) <u>590</u> (ft)	Stick Up (from ground elevation) <u>—</u> (ft)	Casing ID <u>2</u> (in)	Casing Material <u>PVC</u>					
Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.									
STABILIZATION DATA (Optional)	Sample Time (2400 Hr Clock)	Rate/Unit <u>mV/min</u>	pH (std)	Conductance (SC/EC) (umhos/cm @ 25°C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
	<u>10:10</u>	<u>200</u>	<u>1st</u> <u>728</u>	<u>1st</u> <u>1175</u>	<u>193</u>	<u>113</u>	<u>39</u>	<u>168</u>	<u>430</u>
	<u>10:13</u>	<u>—</u>	<u>2nd</u> <u>724</u>	<u>2nd</u> <u>1174</u>	<u>190</u>	<u>110</u>	<u>30</u>	<u>169</u>	<u>430</u>
	<u>10:16</u>	<u>—</u>	<u>3rd</u> <u>734</u>	<u>3rd</u> <u>1172</u>	<u>193</u>	<u>105</u>	<u>28</u>	<u>166</u>	<u>430</u>
	<u>10:19</u>	<u>—</u>	<u>4th</u> <u>729</u>	<u>4th</u> <u>1171</u>	<u>193</u>	<u>106</u>	<u>27</u>	<u>174</u>	<u>430</u>
	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
Suggested range for 3 consec. readings or note Permit/State requirements: <u>+/- 0.2</u> <u>+/- 3%</u> <u>--</u> <u>--</u> <u>+/- 10%</u> <u>+/- 25 mV</u>							Stabilize		
Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.									
FIELD DATA	SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other: <input checked="" type="checkbox"/> Units <u>2 ugs</u>	
	<u>082724</u>	<u>729</u>	<u>171</u>	<u>193</u>	<u>06</u>	<u>27</u>	<u>174</u>	<u>1019</u>	
Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site).									
FIELD COMMENTS	Sample Appearance: <u>clear</u>		Odor: <u>none</u>		Color: <u>clear</u>		Other: <u>—</u>		
	Weather Conditions (required daily, or as conditions change):		Direction/Speed: <u>0-5 mph</u>		Outlook: <u>clear, 80°</u>		Precipitation: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N		
	Specific Comments (including purge/well volume calculations if required): <u>P46</u> <u>R25</u> <u>D05</u>								
	I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):								
	<u>8.27.24</u>	<u>A.Flaach</u>	<u>mf</u>	<u>ACC</u>					
Date: <u>/ /</u>	Name: <u></u>	Signature: <u></u>	Company: <u></u>						
DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy									

# FIELD INFORMATION FORM



Site Name: LIVE OAK  
 Site No.:        Sample Point: GWC-D  
 Sample ID:       

**This Waste Management Field Information Form is Required**

This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID: \_\_\_\_\_

PURGE INFO	<u>082624</u>	<u>1240</u>	<u>35</u>	<u>50</u>	<u>18</u>	<u>64</u>					
	PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hrs:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLS PURGED					
Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.											
PURGE/SAMPLE EQUIPMENT	Purging and Sampling Equipment ... Dedicated: <input checked="" type="checkbox"/> or <input type="checkbox"/>		Filter Device: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N <u>0.45 μ</u> or <u>— μ</u> (circle or fill in)								
	Purging Device <u>C</u>	A-Submersible Pump B-Peristaltic Pump C-QED Bladder Pump	D-Bailer E-Piston Pump F-Dipper/Bottle	A-In-line Disposable B-Pressure	C-Vacuum X-Other: <u>      </u>						
	Sampling Device <u>C</u>			Filter Type: <u>—</u>	A-Teflon B-Stainless Steel	C-PVC D-Polypropylene X-Other: <u>      </u>					
	X-Other: <u>      </u>			Sample Tube Type: <u>A</u>							
WELL DATA	Well Elevation (at TOC)	<u>82664</u>	(ft/msl)	Depth to Water (DTW) (from TOC)	<u>3304</u>	(ft)	Groundwater Elevation (site datum, from TOC)	<u>79360</u>	(ft/msl)		
	Total Well Depth (from TOC)	<u>6400</u>	(ft)	Stick Up (from ground elevation)	<u>      </u>	(ft)	Casing ID	<u>62</u>	(in)	Casing Material	<u>PVC</u>
	Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.										
STABILIZATION DATA (Optional)	Sample Time (2400 Hr Clock)	Rate/Unit <u>ml/min</u>	pH (std)	Conductance (SC/EC) (μmhos/cm @ 25 °C)	Temp. (°C)	Turbidity (ntu)	DO (mg/L - ppm)	eH/ORP (mV)	DTW (ft)		
	<u>1250</u>	<u>200</u>	<u>1<sup>st</sup></u>	<u>531</u>	<u>546</u>	<u>276</u>	<u>1116</u>	<u>66</u>	<u>130</u>	<u>735</u>	
	<u>1255</u>	<u>      </u>	<u>2<sup>nd</sup></u>	<u>531</u>	<u>514</u>	<u>255</u>	<u>1183</u>	<u>40</u>	<u>111</u>	<u>736</u>	
	<u>1300</u>	<u>      </u>	<u>3<sup>rd</sup></u>	<u>535</u>	<u>536</u>	<u>250</u>	<u>1189</u>	<u>27</u>	<u>111</u>	<u>736</u>	
	<u>1305</u>	<u>      </u>	<u>4<sup>th</sup></u>	<u>531</u>	<u>524</u>	<u>253</u>	<u>1163</u>	<u>20</u>	<u>109</u>	<u>736</u>	
	<u>1310</u>	<u>      </u>		<u>536</u>	<u>533</u>	<u>250</u>	<u>117</u>	<u>18</u>	<u>103</u>	<u>736</u>	
	<u>1315</u>	<u>      </u>		<u>530</u>	<u>533</u>	<u>250</u>	<u>115</u>	<u>18</u>	<u>103</u>	<u>736</u>	
	<u>      </u>	<u>      </u>		<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
	<u>      </u>	<u>      </u>		<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
	<u>      </u>	<u>      </u>		<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Suggested range for 3 consec. readings or note Permit/State requirements: <u>+/- 0.2</u> <u>+/- 3%</u> <u>—</u> <u>+/- 10%</u> <u>+/- 25 mV</u> Stabilize											
Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.											
FIELD DATA	SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other: <u>fire</u>			
	<u>082624</u>	<u>539</u>	<u>533</u>	<u>250</u>	<u>145</u>	<u>18</u>	<u>1030</u>	Units <u>2460</u>			
Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site).											
FIELD COMMENTS	Sample Appearance:	<u>clear</u>		Odor:	<u>none</u>		Color:	<u>none</u>	Other: <u>—</u>		
	Weather Conditions (required daily, or as conditions change):			Direction/Speed:	<u>0-5 mph</u>		Outlook:	<u>sunny, 70s</u>	Precipitation: <u>Y</u> or <u>N</u>		
	Specific Comments (including purge/well volume calculations if required):  <u>P 35</u> <u>R 25</u> <u>P 5</u>										
	I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):  <u>8/26/24</u> <u>A. Flach</u> <u>mf</u> <u>A.C.C.</u>										
Date	Name	Signature			Company						

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

# FIELD INFORMATION FORM

Site Name: LIVE OAK  
 Site No.:  Sample Point: 9WC-3  
 Sample ID:

**This Waste Management Field Information Form is Required**

This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).



Laboratory Use Only/Lab ID: \_\_\_\_\_

PURGE INFO	<u>082824</u>	<u>0900</u>	<u>0020</u>	<u>36</u>	<u>10</u>	<u>03</u>				
	PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hrs:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOL PURGED				
<i>Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.</i>										
PURGE/SAMPLE EQUIPMENT	Purging and Sampling Equipment ... Dedicated: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N			Filter Device: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N 0.45 $\mu$ or _____ $\mu$ (circle or fill in)						
	Purging Device <u>C</u>	A- Submersible Pump B-Peristaltic Pump C-QED Bladder Pump	D-Bailer E-Piston Pump F-Dipper/Bottle	Filter Type: <u>-</u>	A-In-line Disposable B-Pressure X-Other	C-Vacuum				
	Sampling Device <u>C</u>	X-Other:		Sample Tube Type: <u>A</u>	A-Teflon B-Stainless Steel	C-PVC D-Polypropylene X-Other:				
WELL DATA	Well Elevation (at TOC)	<u>86652</u> (ft/msl)	Depth to Water (DTW) (from TOC)	<u>3021</u> (ft)	Groundwater Elevation (site datum, from TOC)	<u>83631</u> (ft/msl)				
	Total Well Depth (from TOC)	<u>5200</u> (ft)	Stick Up (from ground elevation)	<u></u> (ft)	Casing ID <u>Z</u> (in)	Casing Material <u>PVC</u>				
<i>Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.</i>										
STABILIZATION DATA (Optional)	Sample Time (2400 Hr Clock)	Rate/Unit <u>ml/min</u>	pH (std)	Conductance (SC/EC) ( $\mu$ mhos/cm @ 25 °C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)	
	<u>09110</u>	<u>200</u>	<u>1st</u>	<u>5.98</u>	<u>18.8</u>	<u>20.4</u>	<u>14</u>	<u>0.7</u>	<u>12</u>	<u>307</u>
	<u>09113</u>	<u>200</u>	<u>2nd</u>	<u>5.97</u>	<u>18.5</u>	<u>19.9</u>	<u>10</u>	<u>0.6</u>	<u>7</u>	<u>307</u>
	<u>09116</u>	<u>200</u>	<u>3rd</u>	<u>6.01</u>	<u>18.4</u>	<u>19.5</u>	<u>08</u>	<u>0.6</u>	<u>-1</u>	<u>307</u>
	<u>09119</u>	<u>200</u>	<u>4th</u>	<u>6.02</u>	<u>18.7</u>	<u>19.5</u>	<u>07</u>	<u>0.6</u>	<u>-3</u>	<u>307</u>
Suggested range for 3 consec. readings or note Permit/State requirements:		+/- 0.2	+/- 3%	--	--	+/- 10%	+/- 25 mV	Stabilize		
<i>Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.</i>										
FIELD DATA	SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE ( $\mu$ mhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other:	Units	
	<u>082824</u>	<u>6.02</u>	<u>18.7</u>	<u>19.5</u>	<u>0.7</u>	<u>0.6</u>	<u>-3</u>			
<i>Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site).</i>										
FIELD COMMENTS	Sample Appearance:	<u>CLEAR</u>		Odor:	<u>None</u>		Color:			
	Weather Conditions (required daily, or as conditions change):			Direction/Speed:	<u>Calm</u>		Outlook:	<u>CLEAR TSF</u>		
	Specific Comments (including purge/well volume calculations if required):	<u>SAMPLE TIME: 0920</u>								
I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):										
<u>082824</u>	<u>BEN RAYCAWAN</u>		<u>BEN RAYCAWAN</u>		<u>ACC</u>					
/ / Date	Name	Signature		Company						
<i>DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy</i>										

## ***FIELD INFORMATION FORM***



Site Name: Live Oak

**This Waste Management Field Information Form is Required**

This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

# FIELD INFORMATION FORM



Site Name: LIVE OAK  
Site No.:  Sample Point: GWC-10  
Sample ID:

This Waste Management Field Information Form is Required

This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID: \_\_\_\_\_

PURGE INFO	b	12724	1230	0020	126	21	08			
	PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hrs:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOL PURGED				
Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.										
PURGE/SAMPLE EQUIPMENT	Purging and Sampling Equipment ... Dedicated: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N		Filter Device: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N 0.45 $\mu$ or <input type="checkbox"/> $\mu$ (circle or fill in)							
	Purging Device <input checked="" type="checkbox"/> C	A-Submersible Pump B-Peristaltic Pump C-QED Bladder Pump	D-Bailer E-Piston Pump F-Dipper/Bottle	Filter Type: <input checked="" type="checkbox"/> -	A-In-line Disposable B-Pressure X-Other	C-Vacuum				
	Sampling Device <input checked="" type="checkbox"/> C			Sample Tube Type: <input checked="" type="checkbox"/> A	A-Teflon B-Stainless Steel	C-PVC D-Polypropylene X-Other:				
	X-Other: _____									
WELL DATA	Well Elevation (at TOC)	88340 (ft/msl)	Depth to Water (DTW) (from TOC)	5111 (ft)	Groundwater Elevation (site datum, from TOC)	83229 (ft/msl)				
	Total Well Depth (from TOC)	6700 (ft)	Stick Up (from ground elevation)	(ft)	Casing ID	2 (in)	Casing Material	PVC		
Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.										
STABILIZATION DATA (Optional)	Sample Time (2400 Hr Clock)	Rate/Unit <u>400 ml/min</u>	pH (std)	Conductance (SC/EC) ( $\mu$ mhos/cm @ 25 °C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)	
	12410	400	1 <sup>st</sup> 669	1 <sup>st</sup>	377	298	22	18	111	529
	12413	400	2 <sup>nd</sup> 668	2 <sup>nd</sup>	375	296	20	18	112	529
	12416	400	3 <sup>rd</sup> 669	3 <sup>rd</sup>	378	295	15	18	114	529
	12419	400	4 <sup>th</sup> 667	4 <sup>th</sup>	380	295	13	18	115	529
Suggested range for 3 consec. readings or note Permit/State requirements:		+/- 0.2	+/- 3%	-	-	+/- 10%	+/- 25 mV	Stabilize		
Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.										
FIELD DATA	SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other:	Units	
	082724	667	380	295	13	18	115			
Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site).										
FIELD COMMENTS	Sample Appearance:	<u>CLEAR</u>		Odor:	<u>NONE</u>		Color:	<u>NONE</u>		
	Weather Conditions (required daily, or as conditions change):			Direction/Speed:	<u>CALM</u>		Outlook:	<u>CLEAR 90°F</u>		
	Specific Comments (including purge/well volume calculations if required):	<u>SAMPLING TIME: 1250</u>								
I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):										
08.27.24	<u>BEN RAYEAWAN</u>		<u>Ben Rayeawen</u>		<u>Acc</u>					
/ / Date	Name	Signature		Company						
DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy										

## ***FIELD INFORMATION FORM***



Site Name: Live Oak  
Site No.: 

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 Sample Point:

**This Waste Management Field Information Form is Required**

This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

## **FIELD INFORMATION FORM**



Site Name: Live Oak

Site No.: 

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 Sample Point:

This Waste Management Field Information Form is Required

This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

# FIELD INFORMATION FORM

Site Name: LIVE OAK  
 Site No.:        Sample Point: GWC-13A  
 Sample ID:       

**This Waste Management Field Information Form is Required**

This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).



Laboratory Use Only/Lab ID: \_\_\_\_\_

PURGE INFO	082724	09:00	00:20	13	16	05			
	PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hrs:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLS PURGED			
<i>Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.</i>									
PURGE/SAMPLE EQUIPMENT	Purging and Sampling Equipment ... Dedicated: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N			Filter Device: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N 0.45 $\mu$ or <input type="checkbox"/> $\mu$ (circle or fill in)					
	Purging Device <input checked="" type="checkbox"/> C	A-Submersible Pump	D-Bailer	A-In-line Disposable	C-Vacuum				
		B-Peristaltic Pump	E-Piston Pump	B-Pressure	X-Other				
	Sampling Device <input checked="" type="checkbox"/> C	C-QED Bladder Pump	F-Dipper/Bottle	A-Teflon	C-PVC	X-Other: _____			
X-Other: _____				Sample Tube Type: <input checked="" type="checkbox"/> A	B-Stainless Steel	D-Polypropylene			
WELL DATA	Well Elevation (at TOC)	86598 (ft/msl)	Depth to Water (DTW) (from TOC)	5572 (ft)	Groundwater Elevation (site datum, from TOC)	81086 (ft/msl)			
	Total Well Depth (from TOC)	7600 (ft)	Stick Up (from ground elevation)	(ft)	Casing ID	Z (in)	Casing Material	PVC	
<i>Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.</i>									
STABILIZATION DATA (Optional)	Sample Time (2400 Hr Clock)	Rate/Unit <u>ML/MIN</u>	pH (std)	Conductance (SC/EC) ( $\mu$ mhos/cm @ 25 °C)	Temp. (°C)	Turbidity (ntu)	DO (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
	09:11:10	300	1 <sup>st</sup> 6.21	1 <sup>st</sup> 596	18.0	1113	1.5	113	572
	09:11:13	300	2 <sup>nd</sup> 6.19	2 <sup>nd</sup> 596	17.7	711	1.2	10	572
	09:11:16	300	3 <sup>rd</sup> 6.19	3 <sup>rd</sup> 594	17.5	8.9	1.1	5	572
	09:11:19	300	4 <sup>th</sup> 6.18	4 <sup>th</sup> 588	17.3	7.5	1.0	4	572
Suggested range for 3 consec. readings or note Permit/State requirements:		+/- 0.2	+/- 3%	-	--	+/- 10%	+/- 25 mV	Stabilize	
<i>Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.</i>									
FIELD DATA	SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE ( $\mu$ mhos/cm @ 25 °C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other: _____	
	082724	6.18	588	17.3	7.5	1.0	2	Units	
<i>Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site).</i>									
FIELD COMMENTS	Sample Appearance: <u>CLEAR</u>			Odor: _____	Color: <u>None</u>	Other: _____			
	Weather Conditions (required daily, or as conditions change):			Direction/Speed: <u>GWN</u>	Outlook: <u>CLEAR, 70°F</u>	Precipitation: <u>Y</u> or <u>N</u>			
Specific Comments (including purge/well volume calculations if required): _____ _____ _____ _____									
<u>SAMPLE TIME: 0920</u>									
I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):									
08.27.24	BEN RAYEAWAN	Ben Rayeawan	Acc						
/ / Date	Name	Signature	Company						
DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy									

# FIELD INFORMATION FORM



Site Name: Live Oak  
 Site No.:  Sample Point: GMC-1c  
 Sample ID:

This Waste Management Field Information Form is Required

This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID: \_\_\_\_\_

PURGE INFO	082624	11175	128	128	09	03			
	PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hrs:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOL PURGED			
Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.									
PURGE/SAMPLE EQUIPMENT	Purging and Sampling Equipment ... Dedicated: <input checked="" type="checkbox"/> or <input type="checkbox"/>			Filter Device: <input type="checkbox"/> Y or <input checked="" type="checkbox"/> N	0.45 $\mu$ or <input type="checkbox"/> $\mu$ (circle or fill in)				
	Purging Device <u>C</u>	A-Submersible Pump B-Peristaltic Pump Sampling Device <u>C</u>	D-Bailer E-Piston Pump F-Dipper/Bottle	Filter Type: <input type="checkbox"/> -	A-In-line Disposable B-Pressure	C-Vacuum X-Other: <u></u>			
	X-Other: <u>-</u>			Sample Tube Type: <input type="checkbox"/> A	A-Teflon B-Stainless Steel	C-PVC D-Polypropylene X-Other: <u></u>			
WELL DATA	Well Elevation (at TOC)	182351 (ft/msl)	Depth to Water (DTW) (from TOC)	12470 (ft)	Groundwater Elevation (site datum, from TOC)	79881 (ft/msl)			
	Total Well Depth (from TOC)	4200 (ft)	Stick Up (from ground elevation)	(ft)	Casing ID <u>b2</u> (in)	Casing Material <u>PVC</u>			
Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.									
STABILIZATION DATA (Optional)	Sample Time (2400 Hr Clock)	Rate/Unit <u>ml/min</u>	pH (std)	Conductance (SC/EC) ( $\mu$ mhos/cm @ 25 °C)	Temp. (°C)	Turbidity (ntu)	DO (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
	11:55	<u>120</u>	<u>1st</u> 5.92	<u>1st</u> 3510	<u>23</u> 18	<u>1</u> 1119	<u>11</u> 9	<u>85</u>	<u>251</u>
	11:58	<u>1</u>	<u>2nd</u> 5.83	<u>2nd</u> 3417	<u>23</u> 8	<u>1</u> 1118	<u>11</u> 8	<u>90</u>	<u>251</u>
	12:01	<u>1</u>	<u>3rd</u> 5.82	<u>3rd</u> 3410	<u>23</u> 9	<u>1</u> 1110	<u>11</u> 05	<u>98</u>	<u>251</u>
	12:04	<u>1</u>	<u>4th</u> 5.78	<u>4th</u> 338	<u>24</u> 10	<u>1</u> 1117	<u>11</u> 0	<u>99</u>	<u>251</u>
	12:07	<u>1</u>	5.78	339	2413	<u>1</u> 1116	<u>11</u> 2	<u>102</u>	<u>251</u>
	12:10	<u>1</u>	5.79	334	2413	<u>1</u> 1111	<u>11</u> 2	<u>106</u>	<u>251</u>
	12:13	<u>1</u>	5.81	336	2415	<u>1</u> 1112	<u>11</u> 2	<u>109</u>	<u>251</u>
Suggested range for 3 consec. readings or note Permit/State requirements:		+/- 0.2	+/- 3%	-	-	+/- 10%	+/- 25 mV	Stabilize	
Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.									
FIELD DATA	SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other: <u>time</u> Units <u>2400</u>	
	082624	5.81	336	2415	12	12	1019	1213	
Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site).									
FIELD COMMENTS	Sample Appearance: <u>clear</u>		Odor: <u>none</u>		Color: <u>none</u>		Other: <u>-</u>		
	Weather Conditions (required daily, or as conditions change):		Direction/Speed: <u>0-5 mph</u>		Outlook: <u>sunny, 90s</u>		Precipitation: <input type="checkbox"/> Y or <input checked="" type="checkbox"/> N		
	Specific Comments (including purge/well volume calculations if required): <u>P25</u> <u>R25</u> <u>D65</u>								
	I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign): <u>8.26.24</u> <u>A. Flach</u> <u>mf</u> <u>ACC</u>								
	Date: <u>/ /</u>	Name: <u></u>	Signature: <u></u>	Company: <u></u>					

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

# FIELD INFORMATION FORM



Site Name: Live Oak  
 Site No.:        Sample Point: 01 FB  
 Sample ID:       

This Waste Management Field Information Form is Required

This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID: \_\_\_\_\_

PURGE INFO	082824	1050							
PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hrs:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOL PURGED				
<i>Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.</i>									
PURGE SAMPLE EQUIPMENT	Purging and Sampling Equipment ... Dedicated: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N		Filter Device: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N <input type="checkbox"/> 0.45 $\mu$ or <input type="checkbox"/> $\mu$ (circle or fill in)						
	Purging Device <input type="checkbox"/>	A-Submersible Pump <input type="checkbox"/>	D-Bailer <input type="checkbox"/>	A-In-line Disposable <input type="checkbox"/>	C-Vacuum <input type="checkbox"/>				
	Sampling Device <input type="checkbox"/>	B-Peristaltic Pump <input type="checkbox"/>	E-Piston Pump <input type="checkbox"/>	B-Pressure <input type="checkbox"/>	X-Other <input type="checkbox"/>				
	X-Other: <input type="checkbox"/>	C-QED Bladder Pump <input type="checkbox"/>	F-Dipper/Bottle <input type="checkbox"/>	A-Teflon <input type="checkbox"/>	C-PVC <input type="checkbox"/>	X-Other: <input type="checkbox"/>			
WELL DATA	Well Elevation (at TOC) <input type="checkbox"/>	Depth to Water (DTW) (from TOC) <input type="checkbox"/>	Groundwater Elevation (site datum, from TOC) <input type="checkbox"/>						
	Total Well Depth (from TOC) <input type="checkbox"/>	Stick Up (from ground elevation) <input type="checkbox"/>	Casing ID <input type="checkbox"/> (in) <input type="checkbox"/>	Casing Material <input type="checkbox"/>					
	<i>Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.</i>								
STABILIZATION DATA (Optional)	Sample Time (2400 Hr Clock) <input type="checkbox"/>	Rate/Unit <input type="checkbox"/>	pH (std) <input type="checkbox"/> 1 <sup>st</sup> <input type="checkbox"/> 2 <sup>nd</sup> <input type="checkbox"/> 3 <sup>rd</sup> <input type="checkbox"/> 4 <sup>th</sup>	Conductance (SC/EC) ( $\mu$ mhos/cm @ 25 °C) <input type="checkbox"/> 1 <sup>st</sup> <input type="checkbox"/> 2 <sup>nd</sup> <input type="checkbox"/> 3 <sup>rd</sup> <input type="checkbox"/> 4 <sup>th</sup>	Temp. (°C) <input type="checkbox"/>	Turbidity (ntu) <input type="checkbox"/>	D.O. (mg/L - ppm) <input type="checkbox"/>	eH/ORP (mV) <input type="checkbox"/>	DTW (ft) <input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Suggested range for 3 consec. readings or note Permit/State requirements: +/- 0.2      +/- 3%      -      +/- 10%      +/- 25 mV      Stabilize</i>									
<i>Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.</i>									
FIELD DATA	SAMPLE DATE (MM DD YY) <input type="checkbox"/>	pH (std) <input type="checkbox"/>	CONDUCTANCE (umhos/cm @ 25°C) <input type="checkbox"/>	TEMP. (°C) <input type="checkbox"/>	TURBIDITY (ntu) <input type="checkbox"/>	DO (mg/L-ppm) <input type="checkbox"/>	eH/ORP (mV) <input type="checkbox"/>	Other: _____ Units <input type="checkbox"/>	
	<i>Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site).</i>								
FIELD COMMENTS	Sample Appearance: _____ Odor: _____ Color: _____ Other: _____								
	Weather Conditions (required daily, or as conditions change): Direction/Speed: _____ Outlook: _____ Precipitation: <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N								
Specific Comments (including purge/well volume calculations if required):  <i>collected @ GW B-2 @ 1050</i>									
<p>I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):</p> <p><u>8/28/20</u> <u>A. Flach</u> <u>mf</u> <u>ACC</u></p> <p>Date: _____ Name: _____ Signature: _____ Company: _____</p>									
DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy									

# FIELD INFORMATION FORM

## Surface Water, Stormwater and Leachate



Site Name: Live Oak

Laboratory Use Only / Lab I.D.:

Sample I.D. SWA-1

### Sampling Method & Equipment

Purge and Sample Equipment:

Sampling Method:

D - Direct

Sampling Equipment:

D - Dipper

S - Sample Bottle

I - Indirect

T - Transfer Vessel

O - Other

V - Visual

Sample Type:

Grab / Composite (circle one)

### Field Measurements

Sample Date  
MM/DD/YYYY

Sample  
Time  
24 Hr. Clock

pH  
(std. Units)

CONDUCTIVITY  
(umhos/cm @  
25°C)

Temp  
°C

TURBIDITY  
(NTUs)

DO  
mg/L -  
ppm

eH/ORP  
(std. Units)

08/28/2024

Record final stabilized field readings.

### Field Observations

Sample Appearance:

Odor: \_\_\_\_\_

Color: \_\_\_\_\_

Other: \_\_\_\_\_

Sheen Present:  Y or  N

Foam Present:  Y or  N

Floating Solids:  Y or  N

Weather Conditions: (required daily, or as conditions change):

Direction/Speed: 0-T mph, sunny 85°F Precipitation:  Y or  N

Specific Comments:

point dry, no sample taken

Date

Name

Signature

ACC  
Company

# FIELD INFORMATION FORM

## Surface Water, Stormwater and Leachate



Site Name: Live Oak

Laboratory Use Only / Lab I.D.:

Sample I.D. SWC-1

### Sampling Method & Equipment

Purge and Sample Equipment:

Sampling Method: <input type="checkbox"/>	D - Direct	Sampling Equipment: <input type="checkbox"/>	D - Dipper	S - Sample Bottle
	I - Indirect		T - Transfer Vessel	O - Other <input type="checkbox"/>
	V - Visual			

Sample Type:  Grab / Composite (circle one)

### Field Measurements

Sample Date MM/DD/YYYY	Sample Time 24 Hr. Clock	pH (std. Units)	CONDUCTIVITY (umhos/cm @ 25°C)	Temp 'C	TURBIDITY (NTUs)	DO mg/L - ppm	eH/ORP (std. Units)
---------------------------	--------------------------------	--------------------	--------------------------------------	------------	---------------------	---------------------	------------------------

08/28/2024

Record final stabilized field readings.

### Field Observations

Sample Appearance: Odor: \_\_\_\_\_ Color: \_\_\_\_\_ Other: \_\_\_\_\_  
Sheen Present  Y or  N Foam Present:  Y or  N Floating Solids:  Y or  N

Weather Conditions: (required daily, or as conditions change):

Direction/Speed: 0-5 mph / sunny, 90% Precipitation:  Y or  N

Specific Comments:

Point dry, no sample taken

8/28/24

A. Flack

mf

Acc

/  
Date

Name

Signature

Company

# FIELD INFORMATION FORM

## Surface Water, Stormwater and Leachate



Site Name: Live Oak

Laboratory Use Only / Lab I.D.:

Sample I.D. SWC-2

### Sampling Method & Equipment

Purge and Sample Equipment:

Sampling Method:

D - Direct

Sampling Equipment:

D - Dipper

S - Sample Bottle

I - Indirect

T - Transfer Vessel

O - Other

V - Visual

Sample Type:

Grab / Composite (circle one)

### Field Measurements

Sample Date  
MM/DD/YYYY

Sample  
Time  
24 Hr. Clock

pH  
(std. Units)

CONDUCTIVITY  
(umhos/cm @  
25°C)

Temp  
°C

TURBIDITY  
(NTUs)

DO  
mg/L -  
ppm

eH/ORP  
(std. Units)

03/28/2024

Record final stabilized field readings.

### Field Observations

Sample Appearance:

Odor: \_\_\_\_\_

Color: \_\_\_\_\_

Other: \_\_\_\_\_

Sheen Present  or

Foam Present:  or

Floating Solids:  or

Weather Conditions: (required daily, or as conditions change):

Direction/Speed: 0-5 mph / sunny 20's

Precipitation:  or

Specific Comments:

no sample taken ; point dry

8/28/24

A. F/ach

af

Acc  
Company

# FIELD INFORMATION FORM

## Surface Water, Stormwater and Leachate



Site Name: Live Oak

Laboratory Use Only / Lab I.D.:

Sample I.D. SWC-5

### Sampling Method & Equipment

Purge and Sample Equipment:

Sampling Method:  D - Direct

Sampling Equipment:  S - Dipper

D - Dipper

S - Sample Bottle

I - Indirect

T - Transfer Vessel

O - Other

V - Visual

Sample Type:

Grab

/ Composite (circle one)

### Field Measurements

Sample Date  
MM/DD/YYYY

Sample  
Time  
24 Hr. Clock

pH  
(std. Units)

CONDUCTIVITY  
(umhos/cm @  
25°C)

Temp  
°C

TURBIDITY  
(NTUs)

DO  
mg/L -  
ppm

eH/ORP  
(std. Units)

08/28/2024

1310

6.89

223

26.2

0.80

4.8

64

Record final stabilized field readings.

### Field Observations

Sample Appearance:

none  
Odor: clear

Color: clear

Other: -

Sheen Present  Y or  N

Foam Present:  Y or  N

Floating Solids:  Y or  N

Weather Conditions: (required daily, or as conditions change):

Direction/Speed: 0-5 mph / sunny 90%

Precipitation:  Y or  N

Specific Comments: NEW COMBO LOCK ON GATE IN FENCE TO SAMPLE POINT.

CONTACT WM PROG. MGR. FOR SITE FOR LOCK COMBO BEFORE NEXT

SAMPLE EVENT DUE IN QTR. 1, 2025. DON'T JUMP THE FENCE

LIKE I DID. IT'S NOT SAFE,

8/28/24  
Date

A. Flack  
Name

af  
Signature

ACC  
Company

# FIELD INFORMATION FORM

## Surface Water, Stormwater and Leachate



Site Name:

Live Oak

Laboratory Use Only / Lab I.D.:

Sample I.D.:

SWL-7

### Sampling Method & Equipment

Purge and Sample Equipment:

Sampling Method:

D - Direct

Sampling Equipment:

D - Dipper

S - Sample Bottle

I - Indirect

T - Transfer Vessel

O - Other

V - Visual

Sample Type:

Grab / Composite (circle one)

### Field Measurements

Sample Date  
MM/DD/YYYY

Sample  
Time  
24 Hr. Clock

pH  
(std. Units)

CONDUCTIVITY  
(umhos/cm @  
25°C)

Temp  
°C

TURBIDITY  
(NTUs)

DO  
mg/L -  
ppm

eH/ORP  
(std. Units)

8/28/24

Record final stabilized field readings.

### Field Observations

Sample Appearance:

Odor: \_\_\_\_\_

Color: \_\_\_\_\_

Other: \_\_\_\_\_

Sheen Present:  Y or  N

Foam Present:  Y or  N

Floating Solids:  Y or  N

Weather Conditions: (required daily, or as conditions change):

Direction/Speed: W-S mph, sunny 70°

Precipitation:  Y or  N

Specific Comments:

point dry, no sample taken

8/28/24

A. Flack

att

ACC

/

Name

Signature

Company

# FIELD INFORMATION FORM

## Surface Water, Stormwater and Leachate



Site Name: Ute Gap

Laboratory Use Only / Lab I.D.:

Sample I.D. SWC-8

### Sampling Method & Equipment

Purge and Sample Equipment:

Sampling Method:

D - Direct

Sampling Equipment:

D - Dipper

S - Sample Bottle

I - Indirect

T - Transfer Vessel

O - Other

V - Visual

Sample Type:

Grab / Composite (circle one)

### Field Measurements

Sample Date  
MM/DD/YYYY

Sample Time  
24 Hr. Clock

pH  
(std. Units)

CONDUCTIVITY  
(umhos/cm @  
25°C)

Temp  
°C

TURBIDITY  
(NTUs)

DO  
mg/L -  
ppm

eH/ORP  
(std. Units)

08/28/2024

Record final stabilized field readings.

### Field Observations

Sample Appearance:

Odor: \_\_\_\_\_

Color: \_\_\_\_\_

Other: \_\_\_\_\_

Sheen Present  Y or  N

Foam Present:  Y or  N

Floating Solids:  Y or  N

Weather Conditions: (required daily, or as conditions change):

Direction/Speed: 0-5 mph / sunny, 90%

Precipitation:  Y or  N

Specific Comments:

Point dry, no sample taken

8/28/2024

A. Flack

wst

ACC

/

Name

Signature

Company

**APPENDIX B**

**LABORATORY ANALYTICAL RESULTS**



2005 N. Center Ave.  
Somerset, PA 15501

814/443-1671  
814/445-6666  
FAX: 814/445-6729

Wednesday, September 25, 2024

JUDY ARMOUR  
LIVE OAK LANDFILL  
2901 MECHANICSVILLE ROAD  
NORCROSS, GA 30071

RE: Live Oak 321A3

Order No.: G2408E91

Dear JUDY ARMOUR:

Geochemical Testing received 6 sample(s) on 8/28/2024 for the analyses presented in the following report.

There were no problems with sample receipt protocols and analyses met the TNI/NELAC, EPA, and laboratory specifications except where noted in the Case Narrative or Laboratory Results.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Joelle Streczywilk  
Environmental Laboratory Manager

Leslie A. Nemeth  
Project Manager



## Geochemical Testing

Date: 25-Sep-24

**CLIENT:** LIVE OAK LANDFILL  
**Project:** Live Oak 321A3  
**Lab Order:** G2408E91

## CASE NARRATIVE

No problems were encountered during analysis of this workorder, except if noted in this report.

The analytical data submitted within this report was submitted by an approved analytical laboratory (per Chapter 391-3-26-.05) and in accordance with Georgia state law (O.C.G.A. 12-2-9). The accreditation information follows below:

**LABORATORY:** Geochemical Testing, Somerset, Pennsylvania  
**ACCREDITATION AGENCY:** Pennsylvania National Environmental Laboratory Accreditation Program (NELAP)  
**ACCREDITATION ID:** PA ID# 56-00306  
**SCOPE:** Potable, Non-Potable, Solid and Chemical Materials  
**EXPIRATION DATE:** January 31, 2025

**Glossary:**  
H - Method Hold Time exceeded and is not compliant with 40CFR136 Table II.  
U - The analyte was not detected at or above the listed concentration, which is below the laboratory quantitation limit.  
B - Analyte detected in the associated Method Blank  
Q1 - See case narrative      ND - Not Detected  
MCL - Contaminant Limit      J - Indicates an estimated value.  
Q - Qualifier      QL - Quantitation Limit      DF - Dilution Factor

S - Surrogate Recovery outside accepted recovery limits  
T - Sample received above required temperature and is not compliant with 40CFR136 Table II.  
T1 - Sample received above required temperature  
MDA - Minimum Detectable Activity.  
\*\* - Value exceeds Action Limit  
TICs - Tentatively Identified Compounds.  
E - Value above quantitation range



## Glossary (continued)

1	Spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or greater.	M7	Recovery for matrix spike could not be quantified due to matrix interference.
B1	Dilution water blank exceeded method criterion.	M8	Analyte was spiked into the MS, but was not recovered.
C1	CCV recovery above the acceptance limits. Results may be biased high.	M9	Analyte concentration was determined by the method of standard addition (MSA).
C2	CCV recovery below the acceptance limits. Results may be biased low.	N1	The lab does not hold accreditation from PA-DEP for this parameter by this method
C3	ICV recovery above the acceptance limits. Results may be biased high.	N2	PADEP does not accredit labs for this analyte by this method.
C4	ICV recovery below the acceptance limits. Results may be biased low.	N3	The lab is accredited for this method in West Virginia, but not in PA (its primary accrediting body).
C5	Positive values verified by second column confirmation.	N4	PADEP does not accredit labs for this analyte by this method in drinking water.
C6	Confirmation analysis by another detector or chromatographic column was not performed.	O1	The flashpoint tester cannot detect below 50 degrees F.
D1	The analysis did not meet the minimum DO depletion of at least 2 mg/L.	O2	Result is temperature of the sample when flame observed. No flash observed. Result qualified.
D2	The analysis did not meet the minimum residual DO of at least 1 mg/L.	O3	The reporting limits were raised due to the high concentration of non-target compounds.
D3	Sample required dilution due to a matrix interference.	O4	Sample was received with headspace.
D4	Sample was diluted in the extraction steps due to marked matrix interferences.	O5	Sample was received in incorrect container and is not compliant with 40CFR136 Table II.
D5	Sample required dilution due to a chloride interference.	O6	Insufficient sample volume was received to comply with the method.
D6	Sample was diluted and the reporting limits were raised to achieve method compliant internal standard recovery.	P1	The pH of the sample was >2 and is not compliant with 40CFR136 Table II.
D7	Sample was digested at a dilution due to the formation of a post-digestion precipitate.	P2	Sample contained residual chlorine and is not compliant with 40CFR136 Table II
D8	Sample was digested at a dilution to achieve method compliant matrix spike recovery.	P3	The pH of the sample was <10 and is not compliant with 40CFR136 Table II.
D9	Sample was digested at a dilution to meet method compliant digestion criteria.	P4	Field preservation does not meet EPA or method recommendations for this analysis.
E2	Unable to obtain a stable weight within specified limits due to sample matrix. Value is estimated.	P5	Acid preservation may not be appropriate for the analysis of 2-Chloroethylvinyl ether.
F1	Fecal sample tested positive for residual chlorine.	P6	Sample required additional preservative upon receipt.
H1	Due to under-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.	P7	The sample was received unpreserved.
H2	Due to over-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.	P8	The pH of the sample was < 9 and is not compliant with 40 CFR136 Table II.
H3	Sample was re-analyzed outside of hold time due to error during original analysis.	R	Relative Percent Difference (RPD) was above the control limit.
H4	The Nitrite result used to report Nitrate was analyzed past the 48-hour holding time.	R1	RPD above control limits between matrix spike and MS duplicates.
I1	Internal standard recovery above method acceptance limits. Results are estimated.	R2	RPD above the control limit between duplicates.
I2	Internal standard recovery was below method acceptance limits. Results are estimated.	R3	RSD above the control limit between replicates.
IP	One of the instrument performance checks ( ) did not meet the acceptance criteria.	R4	RPD above control limits between Inorganic Carbon check and spike.
L1	LCS above the acceptance limits. Result may be biased high.	R5	RPD above control limits between control sample and control sample duplicates.
L2	LCS below the acceptance limits. Result may be biased low.	S2	Surrogate recovery in the blank was below the control limit.
L3	Analyte was spiked into the LCS, but was not recovered.	S3	Surrogate recovery in the blank was above the control limit.
M1	Matrix Spike recovery above the acceptance limits.	S4	Surrogate recovery in the LCS is above the control limit.
M2	Matrix Spike recovery below the acceptance limits.	S5	Surrogate recovery in the LCS is below the control limit.
M4	The matrix spike failed high for the surrogate.	SR	Analyte recovery was outside the accepted recovery limits and above the control limit for RPD.
M5	The matrix spike failed low for the surrogate.	T3	Target analyte found in trip/field blank.
M6	The reporting limits were raised due to sample matrix interference.	TC	The MS tune check (tailing factor) did not meet the acceptance criteria.

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWA-1A
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 12:00:00 PM
<b>Lab ID:</b>	G2408E91-001	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>FIELD PARAMETERS</b>							
pH (Field)	5.68			S.U.		08/26/24 12:00 PM	
Specific Conductance (Field)	224			µmhos/cm		08/26/24 12:00 PM	
Temperature (Field)	21.7			deg C		08/26/24 12:00 PM	
Turbidity (Field)	0.8			NTU		08/26/24 12:00 PM	
<b>INORGANIC NON-METALS</b>							
Alkalinity to pH 4.5	88	10		mg/L CaCO <sub>3</sub>	1		08/28/24 10:14 PM
<b>INORGANIC NON-METALS</b>							
Chloride	13.7	1.0		mg/L	1	08/28/24 1:55 PM	08/28/24 1:58 PM
<b>INORGANIC NON-METALS</b>							
Cyanide, total	< 0.020	0.020		mg/L	1		09/02/24 11:47 AM
<b>INORGANIC NON-METALS</b>							
Ammonia Nitrogen	< 0.10	0.10		mg/L as N	1		08/29/24 9:40 AM
<b>INORGANIC NON METALS</b>							
Sulfide	< 0.1	0.1	M2	mg/L	1	09/01/24 4:45 PM	09/01/24 4:57 PM
<b>INORGANIC METALS</b>							
Mercury	< 0.0004	0.0004		mg/L	1	08/30/24 6:00 AM	09/03/24 2:19 PM
<b>INORGANIC METALS</b>							
Barium	0.11	0.01		mg/L	1	08/29/24 8:20 AM	08/29/24 2:21 PM
Beryllium	< 0.001	0.001		mg/L	1	08/29/24 8:20 AM	08/29/24 2:21 PM
Cobalt	< 0.005	0.005		mg/L	1	08/29/24 8:20 AM	08/29/24 2:21 PM
Nickel	0.03	0.01		mg/L	1	08/29/24 8:20 AM	08/29/24 2:21 PM
Potassium	< 0.5	0.5		mg/L	1	08/29/24 8:20 AM	08/29/24 2:21 PM
Sodium	6.2	1.0		mg/L	1	08/29/24 8:20 AM	08/29/24 2:21 PM
Tin	< 0.10	0.10		mg/L	1	08/29/24 8:20 AM	08/29/24 2:21 PM
Vanadium	< 0.005	0.005		mg/L	1	08/29/24 8:20 AM	08/29/24 2:21 PM
Zinc	< 0.02	0.02		mg/L	1	08/29/24 8:20 AM	08/29/24 2:21 PM
<b>INORGANIC METALS</b>							
Antimony	< 2.0	2.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:00 AM
Arsenic	< 7.0	7.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:00 AM
Cadmium	< 1.0	1.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:00 AM
Chromium	< 2.0	2.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:00 AM
Copper	< 5.0	5.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:00 AM
Lead	< 5.0	5.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:00 AM
Selenium	< 10	10		µg/L	1	08/29/24 8:20 AM	08/30/24 8:00 AM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWA-1A
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 12:00:00 PM
<b>Lab ID:</b>	G2408E91-001	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>INORGANIC METALS</b>							
Silver	< 3.0	3.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:00 AM
Thallium	< 1.0	1.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:00 AM
<b>HERBICIDE ANALYSIS</b>							
2,4,5-T	< 0.500	0.500		µg/L	1	08/29/24 7:45 AM	08/29/24 5:04 PM
2,4-D	< 0.500	0.500		µg/L	1	08/29/24 7:45 AM	08/29/24 5:04 PM
Dinoseb	< 0.500	0.500		µg/L	1	08/29/24 7:45 AM	08/29/24 5:04 PM
Pentachlorophenol	< 0.500	0.500		µg/L	1	08/29/24 7:45 AM	08/29/24 5:04 PM
Silvex	< 0.500	0.500		µg/L	1	08/29/24 7:45 AM	08/29/24 5:04 PM
Surr: 2,4-Dichlorophenyl acetic acid	85.4	70-130		%REC	1	08/29/24 7:45 AM	08/29/24 5:04 PM
<b>PCB ANALYSIS</b>							
PCB 1016	< 0.41	0.41		µg/L	1.02	08/29/24 9:00 AM	08/30/24 7:48 PM
PCB 1221	< 0.41	0.41		µg/L	1.02	08/29/24 9:00 AM	08/30/24 7:48 PM
PCB 1232	< 0.41	0.41		µg/L	1.02	08/29/24 9:00 AM	08/30/24 7:48 PM
PCB 1242	< 0.41	0.41		µg/L	1.02	08/29/24 9:00 AM	08/30/24 7:48 PM
PCB 1248	< 0.41	0.41		µg/L	1.02	08/29/24 9:00 AM	08/30/24 7:48 PM
PCB 1254	< 0.41	0.41		µg/L	1.02	08/29/24 9:00 AM	08/30/24 7:48 PM
PCB 1260	< 0.41	0.41		µg/L	1.02	08/29/24 9:00 AM	08/30/24 7:48 PM
Surr: Decachlorobiphenyl	48.8	10-110		%REC	1.02	08/29/24 9:00 AM	08/30/24 7:48 PM
Surr: Tetrachloro-m-xylene	77.6	12-120		%REC	1.02	08/29/24 9:00 AM	08/30/24 7:48 PM
<b>PESTICIDE ANALYSIS</b>							
4,4-DDD	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 11:32 AM
4,4-DDE	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 11:32 AM
4,4-DDT	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 11:32 AM
Aldrin	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 11:32 AM
Alpha BHC	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 11:32 AM
Alpha Endosulfan	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 11:32 AM
Beta BHC	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 11:32 AM
Beta Endosulfan	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 11:32 AM
Chlordane	< 1.0	1.0		µg/L	1.02	08/29/24 9:00 AM	08/30/24 11:32 AM
Delta BHC	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 11:32 AM
Dieldrin	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 11:32 AM
Endosulfan Sulfate	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 11:32 AM
Endrin	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 11:32 AM
Endrin Aldehyde	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 11:32 AM
Gamma BHC (Lindane)	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 11:32 AM
Heptachlor	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 11:32 AM
Heptachlor epoxide	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 11:32 AM
Hexachlorobenzene	< 0.10	0.10		µg/L	1.02	08/29/24 9:00 AM	08/30/24 11:32 AM



# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWA-1A
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 12:00:00 PM
<b>Lab ID:</b>	G2408E91-001	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>PESTICIDE ANALYSIS</b>							
Methoxychlor	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 11:32 AM
Toxaphene	< 2.0	2.0		µg/L	1.02	08/29/24 9:00 AM	08/30/24 11:32 AM
Surr: Decachlorobiphenyl	59.5	10-133		%REC	1.02	08/29/24 9:00 AM	08/30/24 11:32 AM
Surr: Tetrachloro-m-xylene	69.4	31-110		%REC	1.02	08/29/24 9:00 AM	08/30/24 11:32 AM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
1,2-Dibromo-3-chloropropane	< 0.04	0.04		µg/L	1	08/30/24 7:00 AM	09/03/24 11:59 AM
1,2-Dibromoethane	< 0.04	0.04		µg/L	1	08/30/24 7:00 AM	09/03/24 11:59 AM
Surr: 1,1,2,2-Tetrachloroethane	83.5	60-140		%REC	1	08/30/24 7:00 AM	09/03/24 11:59 AM
<b>SEMI-VOLATILE COMPOUNDS</b>							
1,2,4,5-Tetrachlorobenzene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
1,2,4-Trichlorobenzene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
1,3-Dinitrobenzene	< 20	20		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
1,4-Naphthoquinone	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
1-Naphthylamine	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
1-Nitrosopiperidine	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
2,3,4,6-Tetrachlorophenol	< 20	20		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
2,4,5-Trichlorophenol	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
2,4,6-Trichlorophenol	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
2,4-Dichlorophenol	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
2,4-Dimethylphenol	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
2,4-Dinitrophenol	< 20	20		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
2,4-Dinitrotoluene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
2,6-Dichlorophenol	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
2,6-Dinitrotoluene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
2-Acetylaminofluorene	< 20	20		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
2-Chloro-Naphthalene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
2-Chlorophenol	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
2-Methyl-4,6-dinitrophenol	< 20	20		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
2-Methylnaphthalene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
2-Methylphenol	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
2-Naphthylamine	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
2-Nitroaniline	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
2-Nitrophenol	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
3,3-Dichlorobenzidine	< 20	20		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
3,3-Dimethylbenzidine	< 20	20		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
3-Methylcholanthrene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
3-Nitroaniline	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
4-Aminobiphenyl	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

**CLIENT:** LIVE OAK LANDFILL  
**Lab Order:** G2408E91  
**Project:** Live Oak 321A3  
**Lab ID:** G2408E91-001  
**Matrix:** GROUNDWATER

**Client Sample ID:** GWA-1A  
**Sampled By:** ACC  
**Collection Date:** 8/26/2024 12:00:00 PM  
**Received Date:** 8/28/2024 12:22:12 PM

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>SEMI-VOLATILE COMPOUNDS</b>							
				Analyst: ADL		EPA 3520 C	EPA 8270 E
4-Bromophenylphenylether	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
4-Chloro-3-methylphenol	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
4-Chloroaniline	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
4-Chlorophenylphenylether	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
4-Nitroaniline	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
4-Nitrophenol	< 20	20		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
5-Nitro-o-toluidine	< 20	20		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
7,12-Dimethylbenz(a)-anthracene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
a,a-Dimethylphenethylamine	< 10	10	Q1	µg/L	1.01	08/28/24 2:30 PM	09/12/24 12:17 AM
Acenaphthene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Acenaphthylene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Acetophenone	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Anthracene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Benzo(a)anthracene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Benzo(a)pyrene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Benzo(b)fluoranthene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Benzo(g,h,i)perylene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Benzo(k)fluoranthene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Benzyl Alcohol	< 20	20		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
bis(2-Chloroethoxy)methane	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
bis(2-Chloroethyl)ether	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
bis(2-Chloroisopropyl)ether	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
bis(2-Ethylhexyl)phthalate	< 5.1	5.1		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Butyl benzylphthalate	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Chlorobenzilate	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Chrysene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Dibenzo(a,h)anthracene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Dibenzofuran	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Diethyl Phthalate	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Dimethoate	< 20	20		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Dimethyl Phthalate	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Di-N-Butyl Phthalate	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Di-N-Octylphthalate	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Diphenylamine	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Disulfoton	< 20	20		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Ethyl Methanesulfonate	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Famphur	< 20	20		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Fluoranthene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Fluorene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Hexachlorobutadiene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM



# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWA-1A
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 12:00:00 PM
<b>Lab ID:</b>	G2408E91-001	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>SEMI-VOLATILE COMPOUNDS</b>							
				Analyst: ADL		EPA 3520 C	EPA 8270 E
Hexachlorocyclopentadiene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Hexachloroethane	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Hexachloropropene	< 10	10	L2	µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Indeno(1,2,3-cd)pyrene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Isodrin	< 20	20		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Isophorone	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Isosafrole	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Kepone	< 40	40		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
m,p-Cresol	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Methapyriline	< 20	20		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Methyl Methanesulfonate	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Methyl Parathion	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Naphthalene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Nitrobenzene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
N-Nitrosodibutylamine	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
N-Nitrosodiethylamine	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
n-Nitrosodimethylamine	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
n-Nitrosodiphenylamine	< 20	20		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
N-nitrosodipropylamine	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
N-Nitrosomethylalkylamine	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
N-Nitrosopyrrolidine	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
o,o,o-Triethylphosphorothioate	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
o-Toluidine	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Parathion	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
p-Dimethylaminoazobenzene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Pentachlorobenzene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Pentachloronitrobenzene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Pentachlorophenol	< 20	20		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Phenacetin	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Phenanthrene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Phenol	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Phorate	< 20	20		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
p-Phenylenediamine	< 20	20		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Pronamide	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Pyrene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Safrole	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
sym-Trinitrobenzene	< 10	10		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Thionazin	< 20	20		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Diallate	< 20	20		µg/L	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Surr: 2,4,6-Tribromophenol	71.6	34-131		%REC	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM



# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWA-1A
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 12:00:00 PM
<b>Lab ID:</b>	G2408E91-001	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>SEMI-VOLATILE COMPOUNDS</b>							
Surr: 2-Fluorobiphenyl	57.4	34-118		%REC	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Surr: 2-Fluorophenol	41.2	10-115		%REC	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Surr: Nitrobenzene-d5	55.3	32-119		%REC	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Surr: Phenol-d6	48.9	11-119		%REC	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
Surr: p-Terphenyl-d14	89.5	32-136		%REC	1.01	08/28/24 2:30 PM	08/30/24 6:55 PM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			<b>EPA 8260 D</b>
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
1,1-Dichloroethane	< 2.0	2.0		µg/L	1		08/29/24 11:35 AM
1,1-Dichloroethene	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
1,1-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
1,2,3-Trichloropropane	< 10	10		µg/L	1		08/29/24 11:35 AM
1,2-Dichlorobenzene	< 10	10		µg/L	1		08/29/24 11:35 AM
1,2-Dichloroethane	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
1,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
1,3-Dichlorobenzene	< 10	10		µg/L	1		08/29/24 11:35 AM
1,3-Dichloropropane	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
1,4-Dichlorobenzene	< 10	10		µg/L	1		08/29/24 11:35 AM
2,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
2-chloro-1,3-butadiene	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
2-Hexanone	< 10	10		µg/L	1		08/29/24 11:35 AM
2-Methyl-1-propanol	< 50.0	50.0		µg/L	1		08/29/24 11:35 AM
3-Chloro-1-Propene	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
4-Methyl-2-Pentanone	< 10	10		µg/L	1		08/29/24 11:35 AM
Acetone	< 34.0	34.0		µg/L	1		08/29/24 11:35 AM
Acetonitrile	< 40.0	40.0		µg/L	1		08/29/24 11:35 AM
Acrolein	< 20.0	20.0	P4	µg/L	1		08/30/24 5:52 PM
Acrylonitrile	< 100	100	P4	µg/L	1		08/29/24 11:35 AM
Benzene	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
Bromochloromethane	< 10	10		µg/L	1		08/29/24 11:35 AM
Bromodichloromethane	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
Bromomethane	< 10	10		µg/L	1		08/29/24 11:35 AM
Carbon Disulfide	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
Carbon Tetrachloride	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
Chlorobenzene	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
Chlorodibromomethane	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
Chloroethane	< 10	10		µg/L	1		08/29/24 11:35 AM



# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWA-1A
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 12:00:00 PM
<b>Lab ID:</b>	G2408E91-001	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			<b>EPA 8260 D</b>
Chloromethane	< 10	10		µg/L	1		08/29/24 11:35 AM
cis-1,2-Dichloroethene	< 10	10		µg/L	1		08/29/24 11:35 AM
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
Dibromomethane	< 10	10		µg/L	1		08/29/24 11:35 AM
Dichlorodifluoromethane	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
Ethyl Methacrylate	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
Ethylbenzene	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
Iodomethane	< 10	10		µg/L	1		08/29/24 11:35 AM
Methacrylonitrile	< 10	10		µg/L	1		08/29/24 11:35 AM
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1		08/29/24 11:35 AM
Methyl methacrylate	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
Methylene Chloride	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
Propionitrile	< 10	10		µg/L	1		08/29/24 11:35 AM
Styrene	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
Tetrachloroethene	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
Toluene	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
trans-1,2-Dichloroethene	< 10	10		µg/L	1		08/29/24 11:35 AM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
trans-1,4-Dichloro-2-butene	< 10	10		µg/L	1		08/29/24 11:35 AM
Tribromomethane	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
Trichloroethene	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
Trichlorofluoromethane	< 10	10		µg/L	1		08/29/24 11:35 AM
Trichloromethane	< 5.0	5.0		µg/L	1		08/29/24 11:35 AM
Vinyl Acetate	< 10	10		µg/L	1		08/29/24 11:35 AM
Vinyl Chloride	< 2.0	2.0		µg/L	1		08/29/24 11:35 AM
Total Xylene	< 10	10		µg/L	1		08/29/24 11:35 AM
Surr: 1,2-Dichloroethane-d4	99.2	70-130		%REC	1		08/29/24 11:35 AM
Surr: 4-Bromofluorobenzene	93.5	70-130		%REC	1		08/29/24 11:35 AM
Surr: Dibromofluoromethane	94.8	70-130		%REC	1		08/29/24 11:35 AM
Surr: Toluene-d8	102	70-130		%REC	1		08/29/24 11:35 AM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWA-3A
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 10:35:00 AM
<b>Lab ID:</b>	G2408E91-002	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>FIELD PARAMETERS</b>							
pH (Field)	5.70			S.U.		08/26/24 10:35 AM	
Specific Conductance (Field)	308			µmhos/cm		08/26/24 10:35 AM	
Temperature (Field)	18.1			deg C		08/26/24 10:35 AM	
Turbidity (Field)	3.2			NTU		08/26/24 10:35 AM	
<b>INORGANIC NON-METALS</b>							
Alkalinity to pH 4.5	134	10		mg/L CaCO <sub>3</sub>	1		08/28/24 10:19 PM
<b>INORGANIC NON-METALS</b>							
Chloride	8.3	1.0		mg/L	1	08/28/24 1:55 PM	08/28/24 2:34 PM
<b>INORGANIC NON-METALS</b>							
Cyanide, total	< 0.020	0.020		mg/L	1		09/02/24 11:49 AM
<b>INORGANIC NON-METALS</b>							
Ammonia Nitrogen	< 0.10	0.10		mg/L as N	1		08/29/24 9:41 AM
<b>INORGANIC NON METALS</b>							
Sulfide	< 0.1	0.1		mg/L	1	09/01/24 4:45 PM	09/01/24 4:57 PM
<b>INORGANIC METALS</b>							
Mercury	< 0.0004	0.0004		mg/L	1	08/30/24 6:00 AM	09/03/24 2:20 PM
<b>INORGANIC METALS</b>							
Barium	< 0.01	0.01		mg/L	1	08/29/24 8:20 AM	08/29/24 2:29 PM
Beryllium	< 0.001	0.001		mg/L	1	08/29/24 8:20 AM	08/29/24 2:29 PM
Cobalt	< 0.005	0.005		mg/L	1	08/29/24 8:20 AM	08/29/24 2:29 PM
Nickel	< 0.01	0.01		mg/L	1	08/29/24 8:20 AM	08/29/24 2:29 PM
Potassium	0.7	0.5		mg/L	1	08/29/24 8:20 AM	08/29/24 2:29 PM
Sodium	3.1	1.0		mg/L	1	08/29/24 8:20 AM	08/29/24 2:29 PM
Tin	< 0.10	0.10		mg/L	1	08/29/24 8:20 AM	08/29/24 2:29 PM
Vanadium	< 0.005	0.005		mg/L	1	08/29/24 8:20 AM	08/29/24 2:29 PM
Zinc	< 0.02	0.02		mg/L	1	08/29/24 8:20 AM	08/29/24 2:29 PM
<b>INORGANIC METALS</b>							
Antimony	< 2.0	2.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:12 AM
Arsenic	< 7.0	7.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:12 AM
Cadmium	< 1.0	1.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:12 AM
Chromium	< 2.0	2.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:12 AM
Copper	< 5.0	5.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:12 AM
Lead	< 5.0	5.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:12 AM
Selenium	< 10	10		µg/L	1	08/29/24 8:20 AM	08/30/24 8:12 AM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWA-3A
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 10:35:00 AM
<b>Lab ID:</b>	G2408E91-002	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>INORGANIC METALS</b>							
Silver	< 3.0	3.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:12 AM
Thallium	< 1.0	1.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:12 AM
<b>HERBICIDE ANALYSIS</b>							
2,4,5-T	< 0.500	0.500		µg/L	1	08/29/24 7:45 AM	08/29/24 6:36 PM
2,4-D	< 0.500	0.500		µg/L	1	08/29/24 7:45 AM	08/29/24 6:36 PM
Dinoseb	< 0.500	0.500		µg/L	1	08/29/24 7:45 AM	08/29/24 6:36 PM
Pentachlorophenol	< 0.500	0.500		µg/L	1	08/29/24 7:45 AM	08/29/24 6:36 PM
Silvex	< 0.500	0.500		µg/L	1	08/29/24 7:45 AM	08/29/24 6:36 PM
Surr: 2,4-Dichlorophenyl acetic acid	90.0	70-130		%REC	1	08/29/24 7:45 AM	08/29/24 6:36 PM
<b>PCB ANALYSIS</b>							
PCB 1016	< 0.40	0.40		µg/L	1.01	08/29/24 9:00 AM	08/30/24 8:18 PM
PCB 1221	< 0.40	0.40		µg/L	1.01	08/29/24 9:00 AM	08/30/24 8:18 PM
PCB 1232	< 0.40	0.40		µg/L	1.01	08/29/24 9:00 AM	08/30/24 8:18 PM
PCB 1242	< 0.40	0.40		µg/L	1.01	08/29/24 9:00 AM	08/30/24 8:18 PM
PCB 1248	< 0.40	0.40		µg/L	1.01	08/29/24 9:00 AM	08/30/24 8:18 PM
PCB 1254	< 0.40	0.40		µg/L	1.01	08/29/24 9:00 AM	08/30/24 8:18 PM
PCB 1260	< 0.40	0.40		µg/L	1.01	08/29/24 9:00 AM	08/30/24 8:18 PM
Surr: Decachlorobiphenyl	62.5	10-110		%REC	1.01	08/29/24 9:00 AM	08/30/24 8:18 PM
Surr: Tetrachloro-m-xylene	78.6	12-120		%REC	1.01	08/29/24 9:00 AM	08/30/24 8:18 PM
<b>PESTICIDE ANALYSIS</b>							
4,4-DDD	< 0.051	0.051		µg/L	1.01	08/29/24 9:00 AM	08/30/24 11:59 AM
4,4-DDE	< 0.051	0.051		µg/L	1.01	08/29/24 9:00 AM	08/30/24 11:59 AM
4,4-DDT	< 0.051	0.051		µg/L	1.01	08/29/24 9:00 AM	08/30/24 11:59 AM
Aldrin	< 0.051	0.051		µg/L	1.01	08/29/24 9:00 AM	08/30/24 11:59 AM
Alpha BHC	< 0.051	0.051		µg/L	1.01	08/29/24 9:00 AM	08/30/24 11:59 AM
Alpha Endosulfan	< 0.051	0.051		µg/L	1.01	08/29/24 9:00 AM	08/30/24 11:59 AM
Beta BHC	< 0.051	0.051		µg/L	1.01	08/29/24 9:00 AM	08/30/24 11:59 AM
Beta Endosulfan	< 0.051	0.051		µg/L	1.01	08/29/24 9:00 AM	08/30/24 11:59 AM
Chlordane	< 1.0	1.0		µg/L	1.01	08/29/24 9:00 AM	08/30/24 11:59 AM
Delta BHC	< 0.051	0.051		µg/L	1.01	08/29/24 9:00 AM	08/30/24 11:59 AM
Dieldrin	< 0.051	0.051		µg/L	1.01	08/29/24 9:00 AM	08/30/24 11:59 AM
Endosulfan Sulfate	< 0.051	0.051		µg/L	1.01	08/29/24 9:00 AM	08/30/24 11:59 AM
Endrin	< 0.051	0.051		µg/L	1.01	08/29/24 9:00 AM	08/30/24 11:59 AM
Endrin Aldehyde	< 0.051	0.051		µg/L	1.01	08/29/24 9:00 AM	08/30/24 11:59 AM
Gamma BHC (Lindane)	< 0.051	0.051		µg/L	1.01	08/29/24 9:00 AM	08/30/24 11:59 AM
Heptachlor	< 0.051	0.051		µg/L	1.01	08/29/24 9:00 AM	08/30/24 11:59 AM
Heptachlor epoxide	< 0.051	0.051		µg/L	1.01	08/29/24 9:00 AM	08/30/24 11:59 AM
Hexachlorobenzene	< 0.10	0.10		µg/L	1.01	08/29/24 9:00 AM	08/30/24 11:59 AM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWA-3A
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 10:35:00 AM
<b>Lab ID:</b>	G2408E91-002	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>PESTICIDE ANALYSIS</b>							
Methoxychlor	< 0.051	0.051		µg/L	1.01	08/29/24 9:00 AM	08/30/24 11:59 AM
Toxaphene	< 2.0	2.0		µg/L	1.01	08/29/24 9:00 AM	08/30/24 11:59 AM
Surr: Decachlorobiphenyl	72.4	10-133		%REC	1.01	08/29/24 9:00 AM	08/30/24 11:59 AM
Surr: Tetrachloro-m-xylene	69.8	31-110		%REC	1.01	08/29/24 9:00 AM	08/30/24 11:59 AM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
1,2-Dibromo-3-chloropropane	< 0.04	0.04		µg/L	1	08/30/24 7:00 AM	09/03/24 12:24 PM
1,2-Dibromoethane	< 0.04	0.04		µg/L	1	08/30/24 7:00 AM	09/03/24 12:24 PM
Surr: 1,1,2,2-Tetrachloroethane	87.0	60-140		%REC	1	08/30/24 7:00 AM	09/03/24 12:24 PM
<b>SEMI-VOLATILE COMPOUNDS</b>							
1,2,4,5-Tetrachlorobenzene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
1,2,4-Trichlorobenzene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
1,3-Dinitrobenzene	< 20	20		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
1,4-Naphthoquinone	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
1-Naphthylamine	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
1-Nitrosopiperidine	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
2,3,4,6-Tetrachlorophenol	< 20	20		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
2,4,5-Trichlorophenol	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
2,4,6-Trichlorophenol	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
2,4-Dichlorophenol	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
2,4-Dimethylphenol	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
2,4-Dinitrophenol	< 20	20		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
2,4-Dinitrotoluene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
2,6-Dichlorophenol	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
2,6-Dinitrotoluene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
2-Acetylaminofluorene	< 20	20		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
2-Chloro-Naphthalene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
2-Chlorophenol	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
2-Methyl-4,6-dinitrophenol	< 20	20		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
2-Methylnaphthalene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
2-Methylphenol	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
2-Naphthylamine	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
2-Nitroaniline	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
2-Nitrophenol	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
3,3-Dichlorobenzidine	< 20	20		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
3,3-Dimethylbenzidine	< 20	20		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
3-Methylcholanthrene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
3-Nitroaniline	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
4-Aminobiphenyl	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWA-3A
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 10:35:00 AM
<b>Lab ID:</b>	G2408E91-002	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>SEMI-VOLATILE COMPOUNDS</b>							
				Analyst: ADL		EPA 3520 C	EPA 8270 E
4-Bromophenylphenylether	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
4-Chloro-3-methylphenol	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
4-Chloroaniline	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
4-Chlorophenylphenylether	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
4-Nitroaniline	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
4-Nitrophenol	< 20	20		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
5-Nitro-o-toluidine	< 20	20		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
7,12-Dimethylbenz(a)-anthracene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
a,a-Dimethylphenethylamine	< 10	10	Q1	µg/L	1.02	08/28/24 2:30 PM	09/12/24 1:21 AM
Acenaphthene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Acenaphthylene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Acetophenone	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Anthracene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Benzo(a)anthracene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Benzo(a)pyrene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Benzo(b)fluoranthene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Benzo(g,h,i)perylene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Benzo(k)fluoranthene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Benzyl Alcohol	< 20	20		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
bis(2-Chloroethoxy)methane	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
bis(2-Chloroethyl)ether	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
bis(2-Chloroisopropyl)ether	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
bis(2-Ethylhexyl)phthalate	< 5.1	5.1		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Butyl benzylphthalate	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Chlorobenzilate	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Chrysene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Dibenzo(a,h)anthracene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Dibenzofuran	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Diethyl Phthalate	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Dimethoate	< 20	20		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Dimethyl Phthalate	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Di-N-Butyl Phthalate	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Di-N-Octylphthalate	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Diphenylamine	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Disulfoton	< 20	20		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Ethyl Methanesulfonate	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Famphur	< 20	20		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Fluoranthene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Fluorene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Hexachlorobutadiene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM



# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWA-3A
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 10:35:00 AM
<b>Lab ID:</b>	G2408E91-002	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>SEMI-VOLATILE COMPOUNDS</b>							
				Analyst: ADL		EPA 3520 C	EPA 8270 E
Hexachlorocyclopentadiene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Hexachloroethane	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Hexachloropropene	< 10	10	L2	µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Indeno(1,2,3-cd)pyrene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Isodrin	< 20	20		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Isophorone	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Isosafrole	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Kepone	< 41	41		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
m,p-Cresol	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Methapyriline	< 20	20		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Methyl Methanesulfonate	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Methyl Parathion	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Naphthalene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Nitrobenzene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
N-Nitrosodibutylamine	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
N-Nitrosodiethylamine	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
n-Nitrosodimethylamine	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
n-Nitrosodiphenylamine	< 20	20		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
N-nitrosodipropylamine	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
N-Nitrosomethylalkylamine	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
N-Nitrosopyrrolidine	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
o,o,o-Triethylphosphorothioate	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
o-Toluidine	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Parathion	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
p-Dimethylaminoazobenzene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Pentachlorobenzene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Pentachloronitrobenzene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Pentachlorophenol	< 20	20		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Phenacetin	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Phenanthrene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Phenol	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Phorate	< 20	20		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
p-Phenylenediamine	< 20	20		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Pronamide	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Pyrene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Safrole	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
sym-Trinitrobenzene	< 10	10		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Thionazin	< 20	20		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Diallate	< 20	20		µg/L	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Surr: 2,4,6-Tribromophenol	85.2	34-131		%REC	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWA-3A
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 10:35:00 AM
<b>Lab ID:</b>	G2408E91-002	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>SEMI-VOLATILE COMPOUNDS</b>							
Surr: 2-Fluorobiphenyl	80.9	34-118		%REC	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Surr: 2-Fluorophenol	52.4	10-115		%REC	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Surr: Nitrobenzene-d5	78.5	32-119		%REC	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Surr: Phenol-d6	66.4	11-119		%REC	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
Surr: p-Terphenyl-d14	90.5	32-136		%REC	1.02	08/28/24 2:30 PM	08/30/24 8:31 PM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			<b>EPA 8260 D</b>
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
1,1-Dichloroethane	14.0	2.0		µg/L	1		08/29/24 11:59 AM
1,1-Dichloroethene	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
1,1-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
1,2,3-Trichloropropane	< 10	10		µg/L	1		08/29/24 11:59 AM
1,2-Dichlorobenzene	< 10	10		µg/L	1		08/29/24 11:59 AM
1,2-Dichloroethane	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
1,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
1,3-Dichlorobenzene	< 10	10		µg/L	1		08/29/24 11:59 AM
1,3-Dichloropropane	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
1,4-Dichlorobenzene	< 10	10		µg/L	1		08/29/24 11:59 AM
2,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
2-chloro-1,3-butadiene	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
2-Hexanone	< 10	10		µg/L	1		08/29/24 11:59 AM
2-Methyl-1-propanol	< 50.0	50.0		µg/L	1		08/29/24 11:59 AM
3-Chloro-1-Propene	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
4-Methyl-2-Pentanone	< 10	10		µg/L	1		08/29/24 11:59 AM
Acetone	< 34.0	34.0		µg/L	1		08/29/24 11:59 AM
Acetonitrile	< 40.0	40.0		µg/L	1		08/29/24 11:59 AM
Acrolein	< 20.0	20.0	P4	µg/L	1		08/30/24 6:16 PM
Acrylonitrile	< 100	100	P4	µg/L	1		08/29/24 11:59 AM
Benzene	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
Bromochloromethane	< 10	10		µg/L	1		08/29/24 11:59 AM
Bromodichloromethane	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
Bromomethane	< 10	10		µg/L	1		08/29/24 11:59 AM
Carbon Disulfide	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
Carbon Tetrachloride	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
Chlorobenzene	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
Chlorodibromomethane	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
Chloroethane	< 10	10		µg/L	1		08/29/24 11:59 AM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

**CLIENT:** LIVE OAK LANDFILL  
**Lab Order:** G2408E91  
**Project:** Live Oak 321A3  
**Lab ID:** G2408E91-002  
**Matrix:** GROUNDWATER

**Client Sample ID:** GWA-3A  
**Sampled By:** ACC  
**Collection Date:** 8/26/2024 10:35:00 AM  
**Received Date:** 8/28/2024 12:22:12 PM

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			<b>EPA 8260 D</b>
Chloromethane	< 10	10		µg/L	1		08/29/24 11:59 AM
cis-1,2-Dichloroethene	18.9	10		µg/L	1		08/29/24 11:59 AM
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
Dibromomethane	< 10	10		µg/L	1		08/29/24 11:59 AM
Dichlorodifluoromethane	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
Ethyl Methacrylate	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
Ethylbenzene	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
Iodomethane	< 10	10		µg/L	1		08/29/24 11:59 AM
Methacrylonitrile	< 10	10		µg/L	1		08/29/24 11:59 AM
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1		08/29/24 11:59 AM
Methyl methacrylate	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
Methylene Chloride	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
Propionitrile	< 10	10		µg/L	1		08/29/24 11:59 AM
Styrene	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
Tetrachloroethene	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
Toluene	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
trans-1,2-Dichloroethene	< 10	10		µg/L	1		08/29/24 11:59 AM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
trans-1,4-Dichloro-2-butene	< 10	10		µg/L	1		08/29/24 11:59 AM
Tribromomethane	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
Trichloroethene	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
Trichlorofluoromethane	< 10	10		µg/L	1		08/29/24 11:59 AM
Trichloromethane	< 5.0	5.0		µg/L	1		08/29/24 11:59 AM
Vinyl Acetate	< 10	10		µg/L	1		08/29/24 11:59 AM
Vinyl Chloride	< 2.0	2.0		µg/L	1		08/29/24 11:59 AM
Total Xylene	< 10	10		µg/L	1		08/29/24 11:59 AM
Surr: 1,2-Dichloroethane-d4	98.6	70-130		%REC	1		08/29/24 11:59 AM
Surr: 4-Bromofluorobenzene	95.4	70-130		%REC	1		08/29/24 11:59 AM
Surr: Dibromofluoromethane	93.2	70-130		%REC	1		08/29/24 11:59 AM
Surr: Toluene-d8	101	70-130		%REC	1		08/29/24 11:59 AM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-2A
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 3:47:00 PM
<b>Lab ID:</b>	G2408E91-003	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>FIELD PARAMETERS</b>							
pH (Field)	6.37			S.U.		08/26/24 3:47 PM	
Specific Conductance (Field)	182			µmhos/cm		08/26/24 3:47 PM	
Temperature (Field)	23.0			deg C		08/26/24 3:47 PM	
Turbidity (Field)	1.3			NTU		08/26/24 3:47 PM	
<b>INORGANIC NON-METALS</b>							
Alkalinity to pH 4.5	87	10		mg/L CaCO <sub>3</sub>	1		08/28/24 10:27 PM
<b>INORGANIC NON-METALS</b>							
Chloride	2.5	1.0		mg/L	1	08/28/24 1:55 PM	08/28/24 2:46 PM
<b>INORGANIC NON-METALS</b>							
Cyanide, total	< 0.020	0.020		mg/L	1		09/02/24 11:56 AM
<b>INORGANIC NON-METALS</b>							
Ammonia Nitrogen	< 0.10	0.10		mg/L as N	1		08/29/24 9:43 AM
<b>INORGANIC NON METALS</b>							
Sulfide	< 0.1	0.1		mg/L	1	09/01/24 4:45 PM	09/01/24 4:57 PM
<b>INORGANIC METALS</b>							
Mercury	< 0.0004	0.0004		mg/L	1	08/30/24 6:00 AM	09/03/24 2:22 PM
<b>INORGANIC METALS</b>							
Barium	0.03	0.01		mg/L	1	08/29/24 8:20 AM	08/29/24 2:31 PM
Beryllium	< 0.001	0.001		mg/L	1	08/29/24 8:20 AM	08/29/24 2:31 PM
Cobalt	< 0.005	0.005		mg/L	1	08/29/24 8:20 AM	08/29/24 2:31 PM
Nickel	< 0.01	0.01		mg/L	1	08/29/24 8:20 AM	08/29/24 2:31 PM
Potassium	0.5	0.5		mg/L	1	08/29/24 8:20 AM	08/29/24 2:31 PM
Sodium	4.5	1.0		mg/L	1	08/29/24 8:20 AM	08/29/24 2:31 PM
Tin	< 0.10	0.10		mg/L	1	08/29/24 8:20 AM	08/29/24 2:31 PM
Vanadium	0.016	0.005		mg/L	1	08/29/24 8:20 AM	08/29/24 2:31 PM
Zinc	< 0.02	0.02		mg/L	1	08/29/24 8:20 AM	08/29/24 2:31 PM
<b>INORGANIC METALS</b>							
Antimony	< 2.0	2.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:14 AM
Arsenic	< 7.0	7.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:14 AM
Cadmium	< 1.0	1.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:14 AM
Chromium	< 2.0	2.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:14 AM
Copper	< 5.0	5.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:14 AM
Lead	< 5.0	5.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:14 AM
Selenium	< 10	10		µg/L	1	08/29/24 8:20 AM	08/30/24 8:14 AM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-2A
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 3:47:00 PM
<b>Lab ID:</b>	G2408E91-003	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>INORGANIC METALS</b>							
Silver	< 3.0	3.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:14 AM
Thallium	< 1.0	1.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:14 AM
<b>HERBICIDE ANALYSIS</b>							
2,4,5-T	< 0.500	0.500		µg/L	1	08/29/24 7:45 AM	08/29/24 6:59 PM
2,4-D	< 0.500	0.500		µg/L	1	08/29/24 7:45 AM	08/29/24 6:59 PM
Dinoseb	< 0.500	0.500		µg/L	1	08/29/24 7:45 AM	08/29/24 6:59 PM
Pentachlorophenol	< 0.500	0.500		µg/L	1	08/29/24 7:45 AM	08/29/24 6:59 PM
Silvex	< 0.500	0.500		µg/L	1	08/29/24 7:45 AM	08/29/24 6:59 PM
Surr: 2,4-Dichlorophenyl acetic acid	95.8	70-130		%REC	1	08/29/24 7:45 AM	08/29/24 6:59 PM
<b>PCB ANALYSIS</b>							
PCB 1016	< 0.43	0.43		µg/L	1.08	08/29/24 9:00 AM	08/30/24 8:49 PM
PCB 1221	< 0.43	0.43		µg/L	1.08	08/29/24 9:00 AM	08/30/24 8:49 PM
PCB 1232	< 0.43	0.43		µg/L	1.08	08/29/24 9:00 AM	08/30/24 8:49 PM
PCB 1242	< 0.43	0.43		µg/L	1.08	08/29/24 9:00 AM	08/30/24 8:49 PM
PCB 1248	< 0.43	0.43		µg/L	1.08	08/29/24 9:00 AM	08/30/24 8:49 PM
PCB 1254	< 0.43	0.43		µg/L	1.08	08/29/24 9:00 AM	08/30/24 8:49 PM
PCB 1260	< 0.43	0.43		µg/L	1.08	08/29/24 9:00 AM	08/30/24 8:49 PM
Surr: Decachlorobiphenyl	51.3	10-110		%REC	1.08	08/29/24 9:00 AM	08/30/24 8:49 PM
Surr: Tetrachloro-m-xylene	81.6	12-120		%REC	1.08	08/29/24 9:00 AM	08/30/24 8:49 PM
<b>PESTICIDE ANALYSIS</b>							
4,4-DDD	< 0.054	0.054		µg/L	1.08	08/29/24 9:00 AM	08/30/24 12:27 PM
4,4-DDE	< 0.054	0.054		µg/L	1.08	08/29/24 9:00 AM	08/30/24 12:27 PM
4,4-DDT	< 0.054	0.054		µg/L	1.08	08/29/24 9:00 AM	08/30/24 12:27 PM
Aldrin	< 0.054	0.054		µg/L	1.08	08/29/24 9:00 AM	08/30/24 12:27 PM
Alpha BHC	< 0.054	0.054		µg/L	1.08	08/29/24 9:00 AM	08/30/24 12:27 PM
Alpha Endosulfan	< 0.054	0.054		µg/L	1.08	08/29/24 9:00 AM	08/30/24 12:27 PM
Beta BHC	< 0.054	0.054		µg/L	1.08	08/29/24 9:00 AM	08/30/24 12:27 PM
Beta Endosulfan	< 0.054	0.054		µg/L	1.08	08/29/24 9:00 AM	08/30/24 12:27 PM
Chlordane	< 1.1	1.1		µg/L	1.08	08/29/24 9:00 AM	08/30/24 12:27 PM
Delta BHC	< 0.054	0.054		µg/L	1.08	08/29/24 9:00 AM	08/30/24 12:27 PM
Dieldrin	< 0.054	0.054		µg/L	1.08	08/29/24 9:00 AM	08/30/24 12:27 PM
Endosulfan Sulfate	< 0.054	0.054		µg/L	1.08	08/29/24 9:00 AM	08/30/24 12:27 PM
Endrin	< 0.054	0.054		µg/L	1.08	08/29/24 9:00 AM	08/30/24 12:27 PM
Endrin Aldehyde	< 0.054	0.054		µg/L	1.08	08/29/24 9:00 AM	08/30/24 12:27 PM
Gamma BHC (Lindane)	< 0.054	0.054		µg/L	1.08	08/29/24 9:00 AM	08/30/24 12:27 PM
Heptachlor	< 0.054	0.054		µg/L	1.08	08/29/24 9:00 AM	08/30/24 12:27 PM
Heptachlor epoxide	< 0.054	0.054		µg/L	1.08	08/29/24 9:00 AM	08/30/24 12:27 PM
Hexachlorobenzene	< 0.11	0.11		µg/L	1.08	08/29/24 9:00 AM	08/30/24 12:27 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-2A
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 3:47:00 PM
<b>Lab ID:</b>	G2408E91-003	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>PESTICIDE ANALYSIS</b>							
			Analyst: NEP			EPA 3535A	EPA 8081 B
Methoxychlor	< 0.054	0.054		µg/L	1.08	08/29/24 9:00 AM	08/30/24 12:27 PM
Toxaphene	< 2.2	2.2		µg/L	1.08	08/29/24 9:00 AM	08/30/24 12:27 PM
Surr: Decachlorobiphenyl	58.1	10-133		%REC	1.08	08/29/24 9:00 AM	08/30/24 12:27 PM
Surr: Tetrachloro-m-xylene	77.4	31-110		%REC	1.08	08/29/24 9:00 AM	08/30/24 12:27 PM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
			Analyst: NPT			EPA 8011	EPA 8011
1,2-Dibromo-3-chloropropane	< 0.04	0.04		µg/L	1	08/30/24 7:00 AM	09/03/24 12:50 PM
1,2-Dibromoethane	< 0.04	0.04		µg/L	1	08/30/24 7:00 AM	09/03/24 12:50 PM
Surr: 1,1,2,2-Tetrachloroethane	86.9	60-140		%REC	1	08/30/24 7:00 AM	09/03/24 12:50 PM
<b>SEMI-VOLATILE COMPOUNDS</b>							
			Analyst: ADL			EPA 3520 C	EPA 8270 E
1,2,4,5-Tetrachlorobenzene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
1,2,4-Trichlorobenzene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
1,3-Dinitrobenzene	< 22	22		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
1,4-Naphthoquinone	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
1-Naphthylamine	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
1-Nitrosopiperidine	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
2,3,4,6-Tetrachlorophenol	< 22	22		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
2,4,5-Trichlorophenol	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
2,4,6-Trichlorophenol	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
2,4-Dichlorophenol	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
2,4-Dimethylphenol	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
2,4-Dinitrophenol	< 22	22		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
2,4-Dinitrotoluene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
2,6-Dichlorophenol	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
2,6-Dinitrotoluene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
2-Acetylaminofluorene	< 22	22		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
2-Chloro-Naphthalene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
2-Chlorophenol	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
2-Methyl-4,6-dinitrophenol	< 22	22		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
2-Methylnaphthalene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
2-Methylphenol	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
2-Naphthylamine	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
2-Nitroaniline	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
2-Nitrophenol	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
3,3-Dichlorobenzidine	< 22	22		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
3,3-Dimethylbenzidine	< 22	22		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
3-Methylcholanthrene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
3-Nitroaniline	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
4-Aminobiphenyl	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

**CLIENT:** LIVE OAK LANDFILL  
**Lab Order:** G2408E91  
**Project:** Live Oak 321A3  
**Lab ID:** G2408E91-003  
**Matrix:** GROUNDWATER

**Client Sample ID:** GWC-2A  
**Sampled By:** ACC  
**Collection Date:** 8/26/2024 3:47:00 PM  
**Received Date:** 8/28/2024 12:22:12 PM

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>SEMI-VOLATILE COMPOUNDS</b>							
				Analyst: ADL		EPA 3520 C	EPA 8270 E
4-Bromophenylphenylether	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
4-Chloro-3-methylphenol	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
4-Chloroaniline	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
4-Chlorophenylphenylether	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
4-Nitroaniline	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
4-Nitrophenol	< 22	22		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
5-Nitro-o-toluidine	< 22	22		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
7,12-Dimethylbenz(a)-anthracene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
a,a-Dimethylphenethylamine	< 11	11	Q1	µg/L	1.08	08/28/24 2:30 PM	09/12/24 1:53 AM
Acenaphthene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Acenaphthylene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Acetophenone	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Anthracene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Benzo(a)anthracene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Benzo(a)pyrene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Benzo(b)fluoranthene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Benzo(g,h,i)perylene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Benzo(k)fluoranthene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Benzyl Alcohol	< 22	22		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
bis(2-Chloroethoxy)methane	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
bis(2-Chloroethyl)ether	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
bis(2-Chloroisopropyl)ether	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
bis(2-Ethylhexyl)phthalate	< 5.4	5.4		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Butyl benzylphthalate	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Chlorobenzilate	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Chrysene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Dibenzo(a,h)anthracene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Dibenzofuran	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Diethyl Phthalate	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Dimethoate	< 22	22		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Dimethyl Phthalate	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Di-N-Butyl Phthalate	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Di-N-Octylphthalate	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Diphenylamine	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Disulfoton	< 22	22		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Ethyl Methanesulfonate	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Famphur	< 22	22		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Fluoranthene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Fluorene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Hexachlorobutadiene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM



# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-2A
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 3:47:00 PM
<b>Lab ID:</b>	G2408E91-003	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>SEMI-VOLATILE COMPOUNDS</b>							
				Analyst: ADL		EPA 3520 C	EPA 8270 E
Hexachlorocyclopentadiene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Hexachloroethane	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Hexachloropropene	< 11	11	L2	µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Indeno(1,2,3-cd)pyrene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Isodrin	< 22	22		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Isophorone	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Isosafrole	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Kepone	< 43	43		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
m,p-Cresol	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Methapyriline	< 22	22		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Methyl Methanesulfonate	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Methyl Parathion	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Naphthalene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Nitrobenzene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
N-Nitrosodibutylamine	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
N-Nitrosodiethylamine	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
n-Nitrosodimethylamine	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
n-Nitrosodiphenylamine	< 22	22		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
N-nitrosodipropylamine	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
N-Nitrosomethylalkylamine	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
N-Nitrosopyrrolidine	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
o,o,o-Triethylphosphorothioate	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
o-Toluidine	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Parathion	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
p-Dimethylaminoazobenzene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Pentachlorobenzene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Pentachloronitrobenzene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Pentachlorophenol	< 22	22		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Phenacetin	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Phenanthrene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Phenol	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Phorate	< 22	22		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
p-Phenylenediamine	< 22	22		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Pronamide	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Pyrene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Safrole	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
sym-Trinitrobenzene	< 11	11		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Thionazin	< 22	22		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Diallate	< 22	22		µg/L	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Surr: 2,4,6-Tribromophenol	44.2	34-131		%REC	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-2A
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 3:47:00 PM
<b>Lab ID:</b>	G2408E91-003	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>SEMI-VOLATILE COMPOUNDS</b>							
Surr: 2-Fluorobiphenyl	56.7	34-118		%REC	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Surr: 2-Fluorophenol	20.2	10-115		%REC	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Surr: Nitrobenzene-d5	56.5	32-119		%REC	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Surr: Phenol-d6	28.9	11-119		%REC	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
Surr: p-Terphenyl-d14	79.7	32-136		%REC	1.08	08/28/24 2:30 PM	08/30/24 9:03 PM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			<b>EPA 8260 D</b>
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
1,1-Dichloroethane	< 2.0	2.0		µg/L	1		08/29/24 12:23 PM
1,1-Dichloroethene	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
1,1-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
1,2,3-Trichloropropane	< 10	10		µg/L	1		08/29/24 12:23 PM
1,2-Dichlorobenzene	< 10	10		µg/L	1		08/29/24 12:23 PM
1,2-Dichloroethane	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
1,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
1,3-Dichlorobenzene	< 10	10		µg/L	1		08/29/24 12:23 PM
1,3-Dichloropropane	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
1,4-Dichlorobenzene	< 10	10		µg/L	1		08/29/24 12:23 PM
2,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
2-chloro-1,3-butadiene	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
2-Hexanone	< 10	10		µg/L	1		08/29/24 12:23 PM
2-Methyl-1-propanol	< 50.0	50.0		µg/L	1		08/29/24 12:23 PM
3-Chloro-1-Propene	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
4-Methyl-2-Pentanone	< 10	10		µg/L	1		08/29/24 12:23 PM
Acetone	< 34.0	34.0		µg/L	1		08/29/24 12:23 PM
Acetonitrile	< 40.0	40.0		µg/L	1		08/29/24 12:23 PM
Acrolein	< 20.0	20.0	P4	µg/L	1		08/30/24 6:40 PM
Acrylonitrile	< 100	100	P4	µg/L	1		08/29/24 12:23 PM
Benzene	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
Bromochloromethane	< 10	10		µg/L	1		08/29/24 12:23 PM
Bromodichloromethane	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
Bromomethane	< 10	10		µg/L	1		08/29/24 12:23 PM
Carbon Disulfide	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
Carbon Tetrachloride	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
Chlorobenzene	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
Chlorodibromomethane	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
Chloroethane	< 10	10		µg/L	1		08/29/24 12:23 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

**CLIENT:** LIVE OAK LANDFILL  
**Lab Order:** G2408E91  
**Project:** Live Oak 321A3  
**Lab ID:** G2408E91-003  
**Matrix:** GROUNDWATER

**Client Sample ID:** GWC-2A  
**Sampled By:** ACC  
**Collection Date:** 8/26/2024 3:47:00 PM  
**Received Date:** 8/28/2024 12:22:12 PM

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			<b>EPA 8260 D</b>
Chloromethane	< 10	10		µg/L	1		08/29/24 12:23 PM
cis-1,2-Dichloroethene	< 10	10		µg/L	1		08/29/24 12:23 PM
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
Dibromomethane	< 10	10		µg/L	1		08/29/24 12:23 PM
Dichlorodifluoromethane	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
Ethyl Methacrylate	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
Ethylbenzene	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
Iodomethane	< 10	10		µg/L	1		08/29/24 12:23 PM
Methacrylonitrile	< 10	10		µg/L	1		08/29/24 12:23 PM
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1		08/29/24 12:23 PM
Methyl methacrylate	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
Methylene Chloride	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
Propionitrile	< 10	10		µg/L	1		08/29/24 12:23 PM
Styrene	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
Tetrachloroethene	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
Toluene	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
trans-1,2-Dichloroethene	< 10	10		µg/L	1		08/29/24 12:23 PM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
trans-1,4-Dichloro-2-butene	< 10	10		µg/L	1		08/29/24 12:23 PM
Tribromomethane	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
Trichloroethene	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
Trichlorofluoromethane	< 10	10		µg/L	1		08/29/24 12:23 PM
Trichloromethane	< 5.0	5.0		µg/L	1		08/29/24 12:23 PM
Vinyl Acetate	< 10	10		µg/L	1		08/29/24 12:23 PM
Vinyl Chloride	< 2.0	2.0		µg/L	1		08/29/24 12:23 PM
Total Xylene	< 10	10		µg/L	1		08/29/24 12:23 PM
Surr: 1,2-Dichloroethane-d4	98.5	70-130		%REC	1		08/29/24 12:23 PM
Surr: 4-Bromofluorobenzene	94.8	70-130		%REC	1		08/29/24 12:23 PM
Surr: Dibromofluoromethane	93.8	70-130		%REC	1		08/29/24 12:23 PM
Surr: Toluene-d8	102	70-130		%REC	1		08/29/24 12:23 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-3A
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 2:45:00 PM
<b>Lab ID:</b>	G2408E91-004	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>FIELD PARAMETERS</b>							
pH (Field)	6.39			S.U.		08/26/24 2:45 PM	
Specific Conductance (Field)	389			µmhos/cm		08/26/24 2:45 PM	
Temperature (Field)	20.6			deg C		08/26/24 2:45 PM	
Turbidity (Field)	1.1			NTU		08/26/24 2:45 PM	
<b>INORGANIC NON-METALS</b>							
Alkalinity to pH 4.5	181	10		mg/L CaCO <sub>3</sub>	1		08/28/24 10:32 PM
<b>INORGANIC NON-METALS</b>							
Chloride	4.9	1.0		mg/L	1	08/28/24 1:55 PM	08/28/24 2:58 PM
<b>INORGANIC NON-METALS</b>							
Cyanide, total	< 0.020	0.020		mg/L	1		09/02/24 11:58 AM
<b>INORGANIC NON-METALS</b>							
Ammonia Nitrogen	< 0.10	0.10		mg/L as N	1		08/29/24 9:50 AM
<b>INORGANIC NON METALS</b>							
Sulfide	< 0.1	0.1		mg/L	1	09/01/24 4:45 PM	09/01/24 4:57 PM
<b>INORGANIC METALS</b>							
Mercury	< 0.0004	0.0004		mg/L	1	08/30/24 6:00 AM	09/03/24 2:24 PM
<b>INORGANIC METALS</b>							
Barium	0.08	0.01		mg/L	1	08/29/24 8:20 AM	08/29/24 2:34 PM
Beryllium	< 0.001	0.001		mg/L	1	08/29/24 8:20 AM	08/29/24 2:34 PM
Cobalt	< 0.005	0.005		mg/L	1	08/29/24 8:20 AM	08/29/24 2:34 PM
Nickel	< 0.01	0.01		mg/L	1	08/29/24 8:20 AM	08/29/24 2:34 PM
Potassium	0.7	0.5		mg/L	1	08/29/24 8:20 AM	08/29/24 2:34 PM
Sodium	9.2	1.0		mg/L	1	08/29/24 8:20 AM	08/29/24 2:34 PM
Tin	< 0.10	0.10		mg/L	1	08/29/24 8:20 AM	08/29/24 2:34 PM
Vanadium	0.052	0.005		mg/L	1	08/29/24 8:20 AM	08/29/24 2:34 PM
Zinc	< 0.02	0.02		mg/L	1	08/29/24 8:20 AM	08/29/24 2:34 PM
<b>INORGANIC METALS</b>							
Antimony	< 2.0	2.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:16 AM
Arsenic	< 7.0	7.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:16 AM
Cadmium	< 1.0	1.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:16 AM
Chromium	2.7	2.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:16 AM
Copper	< 5.0	5.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:16 AM
Lead	< 5.0	5.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:16 AM
Selenium	< 10	10		µg/L	1	08/29/24 8:20 AM	08/30/24 8:16 AM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-3A
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 2:45:00 PM
<b>Lab ID:</b>	G2408E91-004	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>INORGANIC METALS</b>							
Silver	< 3.0	3.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:16 AM
Thallium	< 1.0	1.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:16 AM
<b>HERBICIDE ANALYSIS</b>							
2,4,5-T	< 0.500	0.500		µg/L	1	08/29/24 7:45 AM	08/29/24 7:22 PM
2,4-D	< 0.500	0.500		µg/L	1	08/29/24 7:45 AM	08/29/24 7:22 PM
Dinoseb	< 0.500	0.500		µg/L	1	08/29/24 7:45 AM	08/29/24 7:22 PM
Pentachlorophenol	< 0.500	0.500		µg/L	1	08/29/24 7:45 AM	08/29/24 7:22 PM
Silvex	< 0.500	0.500		µg/L	1	08/29/24 7:45 AM	08/29/24 7:22 PM
Surr: 2,4-Dichlorophenyl acetic acid	97.8	70-130		%REC	1	08/29/24 7:45 AM	08/29/24 7:22 PM
<b>PCB ANALYSIS</b>							
PCB 1016	< 0.41	0.41		µg/L	1.02	08/29/24 9:00 AM	08/30/24 9:19 PM
PCB 1221	< 0.41	0.41		µg/L	1.02	08/29/24 9:00 AM	08/30/24 9:19 PM
PCB 1232	< 0.41	0.41		µg/L	1.02	08/29/24 9:00 AM	08/30/24 9:19 PM
PCB 1242	< 0.41	0.41		µg/L	1.02	08/29/24 9:00 AM	08/30/24 9:19 PM
PCB 1248	< 0.41	0.41		µg/L	1.02	08/29/24 9:00 AM	08/30/24 9:19 PM
PCB 1254	< 0.41	0.41		µg/L	1.02	08/29/24 9:00 AM	08/30/24 9:19 PM
PCB 1260	< 0.41	0.41		µg/L	1.02	08/29/24 9:00 AM	08/30/24 9:19 PM
Surr: Decachlorobiphenyl	58.7	10-110		%REC	1.02	08/29/24 9:00 AM	08/30/24 9:19 PM
Surr: Tetrachloro-m-xylene	80.7	12-120		%REC	1.02	08/29/24 9:00 AM	08/30/24 9:19 PM
<b>PESTICIDE ANALYSIS</b>							
4,4-DDD	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 12:54 PM
4,4-DDE	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 12:54 PM
4,4-DDT	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 12:54 PM
Aldrin	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 12:54 PM
Alpha BHC	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 12:54 PM
Alpha Endosulfan	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 12:54 PM
Beta BHC	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 12:54 PM
Beta Endosulfan	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 12:54 PM
Chlordane	< 1.0	1.0		µg/L	1.02	08/29/24 9:00 AM	08/30/24 12:54 PM
Delta BHC	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 12:54 PM
Dieldrin	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 12:54 PM
Endosulfan Sulfate	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 12:54 PM
Endrin	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 12:54 PM
Endrin Aldehyde	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 12:54 PM
Gamma BHC (Lindane)	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 12:54 PM
Heptachlor	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 12:54 PM
Heptachlor epoxide	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 12:54 PM
Hexachlorobenzene	< 0.10	0.10		µg/L	1.02	08/29/24 9:00 AM	08/30/24 12:54 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-3A
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 2:45:00 PM
<b>Lab ID:</b>	G2408E91-004	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>PESTICIDE ANALYSIS</b>							
Methoxychlor	< 0.051	0.051		µg/L	1.02	08/29/24 9:00 AM	08/30/24 12:54 PM
Toxaphene	< 2.0	2.0		µg/L	1.02	08/29/24 9:00 AM	08/30/24 12:54 PM
Surr: Decachlorobiphenyl	62.5	10-133		%REC	1.02	08/29/24 9:00 AM	08/30/24 12:54 PM
Surr: Tetrachloro-m-xylene	69.6	31-110		%REC	1.02	08/29/24 9:00 AM	08/30/24 12:54 PM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
1,2-Dibromo-3-chloropropane	< 0.04	0.04		µg/L	1	08/30/24 7:00 AM	09/03/24 1:14 PM
1,2-Dibromoethane	< 0.04	0.04		µg/L	1	08/30/24 7:00 AM	09/03/24 1:14 PM
Surr: 1,1,2,2-Tetrachloroethane	92.3	60-140		%REC	1	08/30/24 7:00 AM	09/03/24 1:14 PM
<b>SEMI-VOLATILE COMPOUNDS</b>							
1,2,4,5-Tetrachlorobenzene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
1,2,4-Trichlorobenzene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
1,3-Dinitrobenzene	< 21	21		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
1,4-Naphthoquinone	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
1-Naphthylamine	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
1-Nitrosopiperidine	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
2,3,4,6-Tetrachlorophenol	< 21	21		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
2,4,5-Trichlorophenol	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
2,4,6-Trichlorophenol	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
2,4-Dichlorophenol	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
2,4-Dimethylphenol	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
2,4-Dinitrophenol	< 21	21		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
2,4-Dinitrotoluene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
2,6-Dichlorophenol	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
2,6-Dinitrotoluene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
2-Acetylaminofluorene	< 21	21		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
2-Chloro-Naphthalene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
2-Chlorophenol	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
2-Methyl-4,6-dinitrophenol	< 21	21		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
2-Methylnaphthalene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
2-Methylphenol	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
2-Naphthylamine	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
2-Nitroaniline	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
2-Nitrophenol	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
3,3-Dichlorobenzidine	< 21	21		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
3,3-Dimethylbenzidine	< 21	21		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
3-Methylcholanthrene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
3-Nitroaniline	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
4-Aminobiphenyl	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

**CLIENT:** LIVE OAK LANDFILL  
**Lab Order:** G2408E91  
**Project:** Live Oak 321A3  
**Lab ID:** G2408E91-004  
**Matrix:** GROUNDWATER

**Client Sample ID:** GWC-3A  
**Sampled By:** ACC  
**Collection Date:** 8/26/2024 2:45:00 PM  
**Received Date:** 8/28/2024 12:22:12 PM

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>SEMI-VOLATILE COMPOUNDS</b>							
				Analyst: ADL		EPA 3520 C	EPA 8270 E
4-Bromophenylphenylether	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
4-Chloro-3-methylphenol	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
4-Chloroaniline	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
4-Chlorophenylphenylether	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
4-Nitroaniline	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
4-Nitrophenol	< 21	21		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
5-Nitro-o-toluidine	< 21	21		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
7,12-Dimethylbenz(a)-anthracene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
a,a-Dimethylphenethylamine	< 11	11	Q1	µg/L	1.05	08/28/24 2:30 PM	09/12/24 2:25 AM
Acenaphthene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Acenaphthylene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Acetophenone	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Anthracene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Benzo(a)anthracene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Benzo(a)pyrene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Benzo(b)fluoranthene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Benzo(g,h,i)perylene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Benzo(k)fluoranthene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Benzyl Alcohol	< 21	21		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
bis(2-Chloroethoxy)methane	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
bis(2-Chloroethyl)ether	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
bis(2-Chloroisopropyl)ether	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
bis(2-Ethylhexyl)phthalate	< 5.3	5.3		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Butyl benzylphthalate	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Chlorobenzilate	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Chrysene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Dibenzo(a,h)anthracene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Dibenzofuran	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Diethyl Phthalate	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Dimethoate	< 21	21		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Dimethyl Phthalate	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Di-N-Butyl Phthalate	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Di-N-Octylphthalate	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Diphenylamine	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Disulfoton	< 21	21		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Ethyl Methanesulfonate	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Famphur	< 21	21		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Fluoranthene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Fluorene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Hexachlorobutadiene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM



# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-3A
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 2:45:00 PM
<b>Lab ID:</b>	G2408E91-004	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>SEMI-VOLATILE COMPOUNDS</b>							
				Analyst: ADL		EPA 3520 C	EPA 8270 E
Hexachlorocyclopentadiene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Hexachloroethane	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Hexachloropropene	< 11	11	L2	µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Indeno(1,2,3-cd)pyrene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Isodrin	< 21	21		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Isophorone	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Isosafrole	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Kepone	< 42	42		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
m,p-Cresol	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Methapyriline	< 21	21		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Methyl Methanesulfonate	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Methyl Parathion	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Naphthalene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Nitrobenzene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
N-Nitrosodibutylamine	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
N-Nitrosodiethylamine	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
n-Nitrosodimethylamine	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
n-Nitrosodiphenylamine	< 21	21		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
N-nitrosodipropylamine	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
N-Nitrosomethylalkylamine	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
N-Nitrosopyrrolidine	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
o,o,o-Triethylphosphorothioate	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
o-Toluidine	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Parathion	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
p-Dimethylaminoazobenzene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Pentachlorobenzene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Pentachloronitrobenzene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Pentachlorophenol	< 21	21		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Phenacetin	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Phenanthrene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Phenol	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Phorate	< 21	21		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
p-Phenylenediamine	< 21	21		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Pronamide	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Pyrene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Safrole	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
sym-Trinitrobenzene	< 11	11		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Thionazin	< 21	21		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Diallate	< 21	21		µg/L	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Surr: 2,4,6-Tribromophenol	83.5	34-131		%REC	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM



# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-3A
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 2:45:00 PM
<b>Lab ID:</b>	G2408E91-004	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>SEMI-VOLATILE COMPOUNDS</b>							
Surr: 2-Fluorobiphenyl	69.6	34-118		%REC	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Surr: 2-Fluorophenol	63.0	10-115		%REC	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Surr: Nitrobenzene-d5	68.1	32-119		%REC	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Surr: Phenol-d6	68.4	11-119		%REC	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
Surr: p-Terphenyl-d14	91.1	32-136		%REC	1.05	08/28/24 2:30 PM	08/30/24 9:35 PM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			<b>EPA 8260 D</b>
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
1,1-Dichloroethane	2.9	2.0		µg/L	1		08/29/24 12:47 PM
1,1-Dichloroethene	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
1,1-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
1,2,3-Trichloropropane	< 10	10		µg/L	1		08/29/24 12:47 PM
1,2-Dichlorobenzene	< 10	10		µg/L	1		08/29/24 12:47 PM
1,2-Dichloroethane	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
1,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
1,3-Dichlorobenzene	< 10	10		µg/L	1		08/29/24 12:47 PM
1,3-Dichloropropane	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
1,4-Dichlorobenzene	< 10	10		µg/L	1		08/29/24 12:47 PM
2,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
2-chloro-1,3-butadiene	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
2-Hexanone	< 10	10		µg/L	1		08/29/24 12:47 PM
2-Methyl-1-propanol	< 50.0	50.0		µg/L	1		08/29/24 12:47 PM
3-Chloro-1-Propene	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
4-Methyl-2-Pentanone	< 10	10		µg/L	1		08/29/24 12:47 PM
Acetone	< 34.0	34.0		µg/L	1		08/29/24 12:47 PM
Acetonitrile	< 40.0	40.0		µg/L	1		08/29/24 12:47 PM
Acrolein	< 20.0	20.0	P4	µg/L	1		08/30/24 7:04 PM
Acrylonitrile	< 100	100	P4	µg/L	1		08/29/24 12:47 PM
Benzene	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
Bromochloromethane	< 10	10		µg/L	1		08/29/24 12:47 PM
Bromodichloromethane	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
Bromomethane	< 10	10		µg/L	1		08/29/24 12:47 PM
Carbon Disulfide	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
Carbon Tetrachloride	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
Chlorobenzene	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
Chlorodibromomethane	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
Chloroethane	< 10	10		µg/L	1		08/29/24 12:47 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

**CLIENT:** LIVE OAK LANDFILL  
**Lab Order:** G2408E91  
**Project:** Live Oak 321A3  
**Lab ID:** G2408E91-004  
**Matrix:** GROUNDWATER

**Client Sample ID:** GWC-3A  
**Sampled By:** ACC  
**Collection Date:** 8/26/2024 2:45:00 PM  
**Received Date:** 8/28/2024 12:22:12 PM

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			<b>EPA 8260 D</b>
Chloromethane	< 10	10		µg/L	1		08/29/24 12:47 PM
cis-1,2-Dichloroethene	< 10	10		µg/L	1		08/29/24 12:47 PM
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
Dibromomethane	< 10	10		µg/L	1		08/29/24 12:47 PM
Dichlorodifluoromethane	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
Ethyl Methacrylate	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
Ethylbenzene	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
Iodomethane	< 10	10		µg/L	1		08/29/24 12:47 PM
Methacrylonitrile	< 10	10		µg/L	1		08/29/24 12:47 PM
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1		08/29/24 12:47 PM
Methyl methacrylate	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
Methylene Chloride	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
Propionitrile	< 10	10		µg/L	1		08/29/24 12:47 PM
Styrene	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
Tetrachloroethene	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
Toluene	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
trans-1,2-Dichloroethene	< 10	10		µg/L	1		08/29/24 12:47 PM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
trans-1,4-Dichloro-2-butene	< 10	10		µg/L	1		08/29/24 12:47 PM
Tribromomethane	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
Trichloroethene	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
Trichlorofluoromethane	< 10	10		µg/L	1		08/29/24 12:47 PM
Trichloromethane	< 5.0	5.0		µg/L	1		08/29/24 12:47 PM
Vinyl Acetate	< 10	10		µg/L	1		08/29/24 12:47 PM
Vinyl Chloride	< 2.0	2.0		µg/L	1		08/29/24 12:47 PM
Total Xylene	< 10	10		µg/L	1		08/29/24 12:47 PM
Surr: 1,2-Dichloroethane-d4	98.6	70-130		%REC	1		08/29/24 12:47 PM
Surr: 4-Bromofluorobenzene	93.8	70-130		%REC	1		08/29/24 12:47 PM
Surr: Dibromofluoromethane	92.4	70-130		%REC	1		08/29/24 12:47 PM
Surr: Toluene-d8	102	70-130		%REC	1		08/29/24 12:47 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-7
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 1:15:00 PM
<b>Lab ID:</b>	G2408E91-005	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>FIELD PARAMETERS</b>							
pH (Field)	5.39			S.U.		08/26/24 1:15 PM	
Specific Conductance (Field)	533			µmhos/cm		08/26/24 1:15 PM	
Temperature (Field)	25.0			deg C		08/26/24 1:15 PM	
Turbidity (Field)	4.5			NTU		08/26/24 1:15 PM	
<b>INORGANIC NON-METALS</b>							
Alkalinity to pH 4.5	264	10		mg/L CaCO <sub>3</sub>	1		08/28/24 10:40 PM
<b>INORGANIC NON-METALS</b>							
Chloride	9.5	1.0		mg/L	1	08/28/24 1:55 PM	08/28/24 3:10 PM
<b>INORGANIC NON-METALS</b>							
Cyanide, total	< 0.020	0.020		mg/L	1		09/02/24 12:00 PM
<b>INORGANIC NON-METALS</b>							
Ammonia Nitrogen	< 0.10	0.10		mg/L as N	1		08/29/24 9:55 AM
<b>INORGANIC NON METALS</b>							
Sulfide	< 0.1	0.1		mg/L	1	09/01/24 4:45 PM	09/01/24 4:57 PM
<b>INORGANIC METALS</b>							
Mercury	< 0.0004	0.0004		mg/L	1	08/30/24 6:00 AM	09/03/24 2:28 PM
<b>INORGANIC METALS</b>							
Barium	0.34	0.01		mg/L	1	08/29/24 8:20 AM	08/29/24 2:36 PM
Beryllium	< 0.001	0.001		mg/L	1	08/29/24 8:20 AM	08/29/24 2:36 PM
Cobalt	< 0.005	0.005		mg/L	1	08/29/24 8:20 AM	08/29/24 2:36 PM
Nickel	0.03	0.01		mg/L	1	08/29/24 8:20 AM	08/29/24 2:36 PM
Potassium	3.8	0.5		mg/L	1	08/29/24 8:20 AM	08/29/24 2:36 PM
Sodium	15.2	1.0		mg/L	1	08/29/24 8:20 AM	08/29/24 2:36 PM
Tin	< 0.10	0.10		mg/L	1	08/29/24 8:20 AM	08/29/24 2:36 PM
Vanadium	0.005	0.005		mg/L	1	08/29/24 8:20 AM	08/29/24 2:36 PM
Zinc	< 0.02	0.02		mg/L	1	08/29/24 8:20 AM	08/29/24 2:36 PM
<b>INORGANIC METALS</b>							
Antimony	< 2.0	2.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:18 AM
Arsenic	< 7.0	7.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:18 AM
Cadmium	< 1.0	1.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:18 AM
Chromium	< 2.0	2.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:18 AM
Copper	< 5.0	5.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:18 AM
Lead	< 5.0	5.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:18 AM
Selenium	< 10	10		µg/L	1	08/29/24 8:20 AM	08/30/24 8:18 AM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-7
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 1:15:00 PM
<b>Lab ID:</b>	G2408E91-005	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>INORGANIC METALS</b>							
Silver	< 3.0	3.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:18 AM
Thallium	< 1.0	1.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:18 AM
<b>HERBICIDE ANALYSIS</b>							
2,4,5-T	< 0.500	0.500		µg/L	1	08/29/24 7:45 AM	08/29/24 8:08 PM
2,4-D	< 0.500	0.500		µg/L	1	08/29/24 7:45 AM	08/29/24 8:08 PM
Dinoseb	< 0.500	0.500		µg/L	1	08/29/24 7:45 AM	08/29/24 8:08 PM
Pentachlorophenol	< 0.500	0.500		µg/L	1	08/29/24 7:45 AM	08/29/24 8:08 PM
Silvex	< 0.500	0.500		µg/L	1	08/29/24 7:45 AM	08/29/24 8:08 PM
Surr: 2,4-Dichlorophenyl acetic acid	94.0	70-130		%REC	1	08/29/24 7:45 AM	08/29/24 8:08 PM
<b>PCB ANALYSIS</b>							
PCB 1016	< 0.40	0.40		µg/L	1	08/29/24 9:00 AM	08/30/24 10:47 PM
PCB 1221	< 0.40	0.40		µg/L	1	08/29/24 9:00 AM	08/30/24 10:47 PM
PCB 1232	< 0.40	0.40		µg/L	1	08/29/24 9:00 AM	08/30/24 10:47 PM
PCB 1242	< 0.40	0.40		µg/L	1	08/29/24 9:00 AM	08/30/24 10:47 PM
PCB 1248	< 0.40	0.40		µg/L	1	08/29/24 9:00 AM	08/30/24 10:47 PM
PCB 1254	< 0.40	0.40		µg/L	1	08/29/24 9:00 AM	08/30/24 10:47 PM
PCB 1260	< 0.40	0.40		µg/L	1	08/29/24 9:00 AM	08/30/24 10:47 PM
Surr: Decachlorobiphenyl	60.2	10-110		%REC	1	08/29/24 9:00 AM	08/30/24 10:47 PM
Surr: Tetrachloro-m-xylene	73.5	12-120		%REC	1	08/29/24 9:00 AM	08/30/24 10:47 PM
<b>PESTICIDE ANALYSIS</b>							
4,4-DDD	< 0.050	0.050		µg/L	1	08/29/24 9:00 AM	08/30/24 1:21 PM
4,4-DDE	< 0.050	0.050		µg/L	1	08/29/24 9:00 AM	08/30/24 1:21 PM
4,4-DDT	< 0.050	0.050		µg/L	1	08/29/24 9:00 AM	08/30/24 1:21 PM
Aldrin	< 0.050	0.050		µg/L	1	08/29/24 9:00 AM	08/30/24 1:21 PM
Alpha BHC	< 0.050	0.050		µg/L	1	08/29/24 9:00 AM	08/30/24 1:21 PM
Alpha Endosulfan	< 0.050	0.050		µg/L	1	08/29/24 9:00 AM	08/30/24 1:21 PM
Beta BHC	< 0.050	0.050		µg/L	1	08/29/24 9:00 AM	08/30/24 1:21 PM
Beta Endosulfan	< 0.050	0.050		µg/L	1	08/29/24 9:00 AM	08/30/24 1:21 PM
Chlordane	< 1.0	1.0		µg/L	1	08/29/24 9:00 AM	08/30/24 1:21 PM
Delta BHC	< 0.050	0.050		µg/L	1	08/29/24 9:00 AM	08/30/24 1:21 PM
Dieldrin	< 0.050	0.050		µg/L	1	08/29/24 9:00 AM	08/30/24 1:21 PM
Endosulfan Sulfate	< 0.050	0.050		µg/L	1	08/29/24 9:00 AM	08/30/24 1:21 PM
Endrin	< 0.050	0.050		µg/L	1	08/29/24 9:00 AM	08/30/24 1:21 PM
Endrin Aldehyde	< 0.050	0.050		µg/L	1	08/29/24 9:00 AM	08/30/24 1:21 PM
Gamma BHC (Lindane)	< 0.050	0.050		µg/L	1	08/29/24 9:00 AM	08/30/24 1:21 PM
Heptachlor	< 0.050	0.050		µg/L	1	08/29/24 9:00 AM	08/30/24 1:21 PM
Heptachlor epoxide	< 0.050	0.050		µg/L	1	08/29/24 9:00 AM	08/30/24 1:21 PM
Hexachlorobenzene	< 0.10	0.10		µg/L	1	08/29/24 9:00 AM	08/30/24 1:21 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-7
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 1:15:00 PM
<b>Lab ID:</b>	G2408E91-005	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>PESTICIDE ANALYSIS</b>							
			Analyst: NEP			EPA 3535A	EPA 8081 B
Methoxychlor	< 0.050	0.050		µg/L	1	08/29/24 9:00 AM	08/30/24 1:21 PM
Toxaphene	< 2.0	2.0		µg/L	1	08/29/24 9:00 AM	08/30/24 1:21 PM
Surr: Decachlorobiphenyl	67.2	10-133		%REC	1	08/29/24 9:00 AM	08/30/24 1:21 PM
Surr: Tetrachloro-m-xylene	72.0	31-110		%REC	1	08/29/24 9:00 AM	08/30/24 1:21 PM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
			Analyst: NPT			EPA 8011	EPA 8011
1,2-Dibromo-3-chloropropane	< 0.04	0.04		µg/L	1	08/30/24 7:00 AM	09/03/24 2:29 PM
1,2-Dibromoethane	< 0.04	0.04		µg/L	1	08/30/24 7:00 AM	09/03/24 2:29 PM
Surr: 1,1,2,2-Tetrachloroethane	84.2	60-140		%REC	1	08/30/24 7:00 AM	09/03/24 2:29 PM
<b>SEMI-VOLATILE COMPOUNDS</b>							
			Analyst: ADL			EPA 3520 C	EPA 8270 E
1,2,4,5-Tetrachlorobenzene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
1,2,4-Trichlorobenzene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
1,3-Dinitrobenzene	< 21	21		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
1,4-Naphthoquinone	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
1-Naphthylamine	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
1-Nitrosopiperidine	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
2,3,4,6-Tetrachlorophenol	< 21	21		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
2,4,5-Trichlorophenol	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
2,4,6-Trichlorophenol	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
2,4-Dichlorophenol	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
2,4-Dimethylphenol	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
2,4-Dinitrophenol	< 21	21		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
2,4-Dinitrotoluene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
2,6-Dichlorophenol	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
2,6-Dinitrotoluene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
2-Acetylaminofluorene	< 21	21		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
2-Chloro-Naphthalene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
2-Chlorophenol	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
2-Methyl-4,6-dinitrophenol	< 21	21		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
2-Methylnaphthalene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
2-Methylphenol	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
2-Naphthylamine	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
2-Nitroaniline	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
2-Nitrophenol	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
3,3-Dichlorobenzidine	< 21	21		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
3,3-Dimethylbenzidine	< 21	21		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
3-Methylcholanthrene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
3-Nitroaniline	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
4-Aminobiphenyl	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

**CLIENT:** LIVE OAK LANDFILL  
**Lab Order:** G2408E91  
**Project:** Live Oak 321A3  
**Lab ID:** G2408E91-005  
**Matrix:** GROUNDWATER

**Client Sample ID:** GWC-7  
**Sampled By:** ACC  
**Collection Date:** 8/26/2024 1:15:00 PM  
**Received Date:** 8/28/2024 12:22:12 PM

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>SEMI-VOLATILE COMPOUNDS</b>							
				Analyst: ADL		EPA 3520 C	EPA 8270 E
4-Bromophenylphenylether	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
4-Chloro-3-methylphenol	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
4-Chloroaniline	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
4-Chlorophenylphenylether	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
4-Nitroaniline	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
4-Nitrophenol	< 21	21		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
5-Nitro-o-toluidine	< 21	21		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
7,12-Dimethylbenz(a)-anthracene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
a,a-Dimethylphenethylamine	< 10	10	Q1	µg/L	1.04	08/28/24 2:30 PM	09/12/24 2:57 AM
Acenaphthene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Acenaphthylene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Acetophenone	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Anthracene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Benzo(a)anthracene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Benzo(a)pyrene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Benzo(b)fluoranthene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Benzo(g,h,i)perylene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Benzo(k)fluoranthene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Benzyl Alcohol	< 21	21		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
bis(2-Chloroethoxy)methane	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
bis(2-Chloroethyl)ether	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
bis(2-Chloroisopropyl)ether	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
bis(2-Ethylhexyl)phthalate	< 5.2	5.2		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Butyl benzylphthalate	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Chlorobenzilate	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Chrysene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Dibenzo(a,h)anthracene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Dibenzofuran	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Diethyl Phthalate	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Dimethoate	< 21	21		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Dimethyl Phthalate	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Di-N-Butyl Phthalate	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Di-N-Octylphthalate	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Diphenylamine	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Disulfoton	< 21	21		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Ethyl Methanesulfonate	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Famphur	< 21	21		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Fluoranthene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Fluorene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Hexachlorobutadiene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM



# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-7
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 1:15:00 PM
<b>Lab ID:</b>	G2408E91-005	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>SEMI-VOLATILE COMPOUNDS</b>							
				Analyst: ADL		EPA 3520 C	EPA 8270 E
Hexachlorocyclopentadiene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Hexachloroethane	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Hexachloropropene	< 10	10	L2	µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Indeno(1,2,3-cd)pyrene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Isodrin	< 21	21		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Isophorone	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Isosafrole	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Kepone	< 42	42		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
m,p-Cresol	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Methapyriline	< 21	21		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Methyl Methanesulfonate	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Methyl Parathion	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Naphthalene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Nitrobenzene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
N-Nitrosodibutylamine	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
N-Nitrosodiethylamine	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
n-Nitrosodimethylamine	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
n-Nitrosodiphenylamine	< 21	21		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
N-nitrosodipropylamine	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
N-Nitrosomethylalkylamine	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
N-Nitrosopyrrolidine	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
o,o,o-Triethylphosphorothioate	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
o-Toluidine	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Parathion	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
p-Dimethylaminoazobenzene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Pentachlorobenzene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Pentachloronitrobenzene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Pentachlorophenol	< 21	21		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Phenacetin	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Phenanthrene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Phenol	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Phorate	< 21	21		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
p-Phenylenediamine	< 21	21		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Pronamide	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Pyrene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Safrole	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
sym-Trinitrobenzene	< 10	10		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Thionazin	< 21	21		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Diallate	< 21	21		µg/L	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Surr: 2,4,6-Tribromophenol	80.1	34-131		%REC	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-7
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 1:15:00 PM
<b>Lab ID:</b>	G2408E91-005	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>SEMI-VOLATILE COMPOUNDS</b>							
Surr: 2-Fluorobiphenyl	66.2	34-118		%REC	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Surr: 2-Fluorophenol	52.8	10-115		%REC	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Surr: Nitrobenzene-d5	65.1	32-119		%REC	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Surr: Phenol-d6	63.8	11-119		%REC	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
Surr: p-Terphenyl-d14	86.2	32-136		%REC	1.04	08/28/24 2:30 PM	08/30/24 10:07 PM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			<b>EPA 8260 D</b>
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
1,1-Dichloroethane	3.2	2.0		µg/L	1		08/29/24 1:11 PM
1,1-Dichloroethene	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
1,1-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
1,2,3-Trichloropropane	< 10	10		µg/L	1		08/29/24 1:11 PM
1,2-Dichlorobenzene	< 10	10		µg/L	1		08/29/24 1:11 PM
1,2-Dichloroethane	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
1,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
1,3-Dichlorobenzene	< 10	10		µg/L	1		08/29/24 1:11 PM
1,3-Dichloropropane	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
1,4-Dichlorobenzene	< 10	10		µg/L	1		08/29/24 1:11 PM
2,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
2-chloro-1,3-butadiene	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
2-Hexanone	< 10	10		µg/L	1		08/29/24 1:11 PM
2-Methyl-1-propanol	< 50.0	50.0		µg/L	1		08/29/24 1:11 PM
3-Chloro-1-Propene	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
4-Methyl-2-Pentanone	< 10	10		µg/L	1		08/29/24 1:11 PM
Acetone	< 34.0	34.0		µg/L	1		08/29/24 1:11 PM
Acetonitrile	< 40.0	40.0		µg/L	1		08/29/24 1:11 PM
Acrolein	< 20.0	20.0	P4	µg/L	1		08/30/24 7:28 PM
Acrylonitrile	< 100	100	P4	µg/L	1		08/29/24 1:11 PM
Benzene	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
Bromochloromethane	< 10	10		µg/L	1		08/29/24 1:11 PM
Bromodichloromethane	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
Bromomethane	< 10	10		µg/L	1		08/29/24 1:11 PM
Carbon Disulfide	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
Carbon Tetrachloride	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
Chlorobenzene	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
Chlorodibromomethane	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
Chloroethane	< 10	10		µg/L	1		08/29/24 1:11 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

**CLIENT:** LIVE OAK LANDFILL  
**Lab Order:** G2408E91  
**Project:** Live Oak 321A3  
**Lab ID:** G2408E91-005  
**Matrix:** GROUNDWATER

**Client Sample ID:** GWC-7  
**Sampled By:** ACC  
**Collection Date:** 8/26/2024 1:15:00 PM  
**Received Date:** 8/28/2024 12:22:12 PM

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			<b>EPA 8260 D</b>
Chloromethane	< 10	10		µg/L	1		08/29/24 1:11 PM
cis-1,2-Dichloroethene	< 10	10		µg/L	1		08/29/24 1:11 PM
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
Dibromomethane	< 10	10		µg/L	1		08/29/24 1:11 PM
Dichlorodifluoromethane	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
Ethyl Methacrylate	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
Ethylbenzene	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
Iodomethane	< 10	10		µg/L	1		08/29/24 1:11 PM
Methacrylonitrile	< 10	10		µg/L	1		08/29/24 1:11 PM
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1		08/29/24 1:11 PM
Methyl methacrylate	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
Methylene Chloride	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
Propionitrile	< 10	10		µg/L	1		08/29/24 1:11 PM
Styrene	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
Tetrachloroethene	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
Toluene	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
trans-1,2-Dichloroethene	< 10	10		µg/L	1		08/29/24 1:11 PM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
trans-1,4-Dichloro-2-butene	< 10	10		µg/L	1		08/29/24 1:11 PM
Tribromomethane	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
Trichloroethene	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
Trichlorofluoromethane	< 10	10		µg/L	1		08/29/24 1:11 PM
Trichloromethane	< 5.0	5.0		µg/L	1		08/29/24 1:11 PM
Vinyl Acetate	< 10	10		µg/L	1		08/29/24 1:11 PM
Vinyl Chloride	< 2.0	2.0		µg/L	1		08/29/24 1:11 PM
Total Xylene	< 10	10		µg/L	1		08/29/24 1:11 PM
Surr: 1,2-Dichloroethane-d4	100	70-130		%REC	1		08/29/24 1:11 PM
Surr: 4-Bromofluorobenzene	94.2	70-130		%REC	1		08/29/24 1:11 PM
Surr: Dibromofluoromethane	94.5	70-130		%REC	1		08/29/24 1:11 PM
Surr: Toluene-d8	101	70-130		%REC	1		08/29/24 1:11 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	TB-04
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 12:00:01 AM
<b>Lab ID:</b>	G2408E91-006	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	AQUEOUS		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: NPT		EPA 8011	EPA 8011
1,2-Dibromo-3-chloropropane	< 0.04	0.04		µg/L	1	08/30/24 7:00 AM	09/03/24 2:54 PM
1,2-Dibromoethane	< 0.04	0.04		µg/L	1	08/30/24 7:00 AM	09/03/24 2:54 PM
Surr: 1,1,2,2-Tetrachloroethane	92.1	60-140		%REC	1	08/30/24 7:00 AM	09/03/24 2:54 PM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG		EPA 8260 D	
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1	08/29/24 1:35 PM	
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1	08/29/24 1:35 PM	
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1	08/29/24 1:35 PM	
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1	08/29/24 1:35 PM	
1,1-Dichloroethane	< 2.0	2.0		µg/L	1	08/29/24 1:35 PM	
1,1-Dichloroethene	< 5.0	5.0		µg/L	1	08/29/24 1:35 PM	
1,1-Dichloropropene	< 5.0	5.0		µg/L	1	08/29/24 1:35 PM	
1,2,3-Trichloropropane	< 10	10		µg/L	1	08/29/24 1:35 PM	
1,2-Dichlorobenzene	< 10	10		µg/L	1	08/29/24 1:35 PM	
1,2-Dichloroethane	< 5.0	5.0		µg/L	1	08/29/24 1:35 PM	
1,2-Dichloropropane	< 5.0	5.0		µg/L	1	08/29/24 1:35 PM	
1,3-Dichlorobenzene	< 10	10		µg/L	1	08/29/24 1:35 PM	
1,3-Dichloropropane	< 5.0	5.0		µg/L	1	08/29/24 1:35 PM	
1,4-Dichlorobenzene	< 10	10		µg/L	1	08/29/24 1:35 PM	
2,2-Dichloropropane	< 5.0	5.0		µg/L	1	08/29/24 1:35 PM	
2-chloro-1,3-butadiene	< 5.0	5.0		µg/L	1	08/29/24 1:35 PM	
2-Hexanone	< 10	10		µg/L	1	08/29/24 1:35 PM	
2-Methyl-1-propanol	< 50.0	50.0		µg/L	1	08/29/24 1:35 PM	
3-Chloro-1-Propene	< 5.0	5.0		µg/L	1	08/29/24 1:35 PM	
4-Methyl-2-Pentanone	< 10	10		µg/L	1	08/29/24 1:35 PM	
Acetone	< 34.0	34.0		µg/L	1	08/29/24 1:35 PM	
Acetonitrile	< 40.0	40.0		µg/L	1	08/29/24 1:35 PM	
Acrolein	< 20.0	20.0	P4	µg/L	1	08/30/24 7:52 PM	
Acrylonitrile	< 100	100	P4	µg/L	1	08/29/24 1:35 PM	
Benzene	< 5.0	5.0		µg/L	1	08/29/24 1:35 PM	
Bromochloromethane	< 10	10		µg/L	1	08/29/24 1:35 PM	
Bromodichloromethane	< 5.0	5.0		µg/L	1	08/29/24 1:35 PM	
Bromomethane	< 10	10		µg/L	1	08/29/24 1:35 PM	
Carbon Disulfide	< 5.0	5.0		µg/L	1	08/29/24 1:35 PM	
Carbon Tetrachloride	< 5.0	5.0		µg/L	1	08/29/24 1:35 PM	
Chlorobenzene	< 5.0	5.0		µg/L	1	08/29/24 1:35 PM	
Chlorodibromomethane	< 5.0	5.0		µg/L	1	08/29/24 1:35 PM	
Chloroethane	< 10	10		µg/L	1	08/29/24 1:35 PM	
Chloromethane	< 10	10		µg/L	1	08/29/24 1:35 PM	
cis-1,2-Dichloroethene	< 10	10		µg/L	1	08/29/24 1:35 PM	



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	TB-04
<b>Lab Order:</b>	G2408E91	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 321A3	<b>Collection Date:</b>	8/26/2024 12:00:01 AM
<b>Lab ID:</b>	G2408E91-006	<b>Received Date:</b>	8/28/2024 12:22:12 PM
<b>Matrix:</b>	AQUEOUS		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			<b>EPA 8260 D</b>
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 1:35 PM
Dibromomethane	< 10	10		µg/L	1		08/29/24 1:35 PM
Dichlorodifluoromethane	< 5.0	5.0		µg/L	1		08/29/24 1:35 PM
Ethyl Methacrylate	< 5.0	5.0		µg/L	1		08/29/24 1:35 PM
Ethylbenzene	< 5.0	5.0		µg/L	1		08/29/24 1:35 PM
Iodomethane	< 10	10		µg/L	1		08/29/24 1:35 PM
Methacrylonitrile	< 10	10		µg/L	1		08/29/24 1:35 PM
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1		08/29/24 1:35 PM
Methyl methacrylate	< 5.0	5.0		µg/L	1		08/29/24 1:35 PM
Methylene Chloride	< 5.0	5.0		µg/L	1		08/29/24 1:35 PM
Propionitrile	< 10	10		µg/L	1		08/29/24 1:35 PM
Styrene	< 5.0	5.0		µg/L	1		08/29/24 1:35 PM
Tetrachloroethene	< 5.0	5.0		µg/L	1		08/29/24 1:35 PM
Toluene	< 5.0	5.0		µg/L	1		08/29/24 1:35 PM
trans-1,2-Dichloroethene	< 10	10		µg/L	1		08/29/24 1:35 PM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 1:35 PM
trans-1,4-Dichloro-2-butene	< 10	10		µg/L	1		08/29/24 1:35 PM
Tribromomethane	< 5.0	5.0		µg/L	1		08/29/24 1:35 PM
Trichloroethene	< 5.0	5.0		µg/L	1		08/29/24 1:35 PM
Trichlorofluoromethane	< 10	10		µg/L	1		08/29/24 1:35 PM
Trichloromethane	< 5.0	5.0		µg/L	1		08/29/24 1:35 PM
Vinyl Acetate	< 10	10		µg/L	1		08/29/24 1:35 PM
Vinyl Chloride	< 2.0	2.0		µg/L	1		08/29/24 1:35 PM
Total Xylene	< 10	10		µg/L	1		08/29/24 1:35 PM
Surr: 1,2-Dichloroethane-d4	96.8	70-130		%REC	1		08/29/24 1:35 PM
Surr: 4-Bromofluorobenzene	91.6	70-130		%REC	1		08/29/24 1:35 PM
Surr: Dibromofluoromethane	93.6	70-130		%REC	1		08/29/24 1:35 PM
Surr: Toluene-d8	101	70-130		%REC	1		08/29/24 1:35 PM



2005 N. Center Ave.  
Somerset, PA 15501

814/443-1671  
814/445-6666  
FAX: 814/445-6729

Monday, September 30, 2024

JUDY ARMOUR  
LIVE OAK LANDFILL  
2901 MECHANICSVILLE ROAD  
NORCROSS, GA 30071

RE: Live Oak 221A3

Order No.: G2408E93

Dear JUDY ARMOUR:

Geochemical Testing received 8 sample(s) on 8/28/2024 for the analyses presented in the following report.

There were no problems with sample receipt protocols and analyses met the TNI/NELAC, EPA, and laboratory specifications except where noted in the Case Narrative or Laboratory Results.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Joelle Streczywilk  
Environmental Laboratory Manager



## Geochemical Testing

Date: 30-Sep-24

CLIENT: LIVE OAK LANDFILL  
Project: Live Oak 221A3  
Lab Order: G2408E93

## CASE NARRATIVE

No problems were encountered during analysis of this workorder, except if noted in this report.

The analytical data submitted within this report was submitted by an approved analytical laboratory (per Chapter 391-3-26-.05) and in accordance with Georgia state law (O.C.G.A. 12-2-9). The accreditation information follows below:

LABORATORY: Geochemical Testing, Somerset, Pennsylvania  
ACCREDITATION AGENCY: Pennsylvania National Environmental Laboratory Accreditation Program (NELAP)  
ACCREDITATION ID: PA ID# 56-00306  
SCOPE: Potable, Non-Potable, Solid and Chemical Materials  
EXPIRATION DATE: January 31, 2025

The dissolved methane analysis by RSK 175 was subcontracted to Eurofins Lancaster (VA NELAP 460182). A copy of the subcontractor's laboratory report is enclosed with this Analytical Report.

REVISED REPORT: (9/30/24): As per client request, and to appear on the EDD, the subcontracted dissolved methane results have been added to this report.

Note: This is a reissue of a previously generated report. Information herein supersedes that of previously issued report(s).

Glossary:  
H - Method Hold Time exceeded and is not compliant with 40CFR136 Table II.  
U - The analyte was not detected at or above the listed concentration, which is below the laboratory quantitation limit.  
B - Analyte detected in the associated Method Blank  
Q1 - See case narrative      ND - Not Detected  
MCL - Contaminant Limit      J - Indicates an estimated value.  
Q - Qualifier      QL - Quantitation Limit      DF - Dilution Factor

S - Surrogate Recovery outside accepted recovery limits  
T - Sample received above required temperature and is not compliant with 40CFR136 Table II.  
T1 - Sample received above required temperature  
MDA - Minimum Detectable Activity.  
\*\* - Value exceeds Action Limit  
TICs - Tentatively Identified Compounds.  
E - Value above quantitation range



## Glossary (continued)

1	Spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or greater.	M7	Recovery for matrix spike could not be quantified due to matrix interference.
B1	Dilution water blank exceeded method criterion.	M8	Analyte was spiked into the MS, but was not recovered.
C1	CCV recovery above the acceptance limits. Results may be biased high.	M9	Analyte concentration was determined by the method of standard addition (MSA).
C2	CCV recovery below the acceptance limits. Results may be biased low.	N1	The lab does not hold accreditation from PA-DEP for this parameter by this method
C3	ICV recovery above the acceptance limits. Results may be biased high.	N2	PADEP does not accredit labs for this analyte by this method.
C4	ICV recovery below the acceptance limits. Results may be biased low.	N3	The lab is accredited for this method in West Virginia, but not in PA (its primary accrediting body).
C5	Positive values verified by second column confirmation.	N4	PADEP does not accredit labs for this analyte by this method in drinking water.
C6	Confirmation analysis by another detector or chromatographic column was not performed.	O1	The flashpoint tester cannot detect below 50 degrees F.
D1	The analysis did not meet the minimum DO depletion of at least 2 mg/L.	O2	Result is temperature of the sample when flame observed. No flash observed. Result qualified.
D2	The analysis did not meet the minimum residual DO of at least 1 mg/L.	O3	The reporting limits were raised due to the high concentration of non-target compounds.
D3	Sample required dilution due to a matrix interference.	O4	Sample was received with headspace.
D4	Sample was diluted in the extraction steps due to marked matrix interferences.	O5	Sample was received in incorrect container and is not compliant with 40CFR136 Table II.
D5	Sample required dilution due to a chloride interference.	O6	Insufficient sample volume was received to comply with the method.
D6	Sample was diluted and the reporting limits were raised to achieve method compliant internal standard recovery.	P1	The pH of the sample was >2 and is not compliant with 40CFR136 Table II.
D7	Sample was digested at a dilution due to the formation of a post digestion precipitate.	P2	Sample contained residual chlorine and is not compliant with 40CFR136 Table II
D8	Sample was digested at a dilution to achieve method compliant matrix spike recovery.	P3	The pH of the sample was <10 and is not compliant with 40CFR136 Table II.
D9	Sample was digested at a dilution to meet method compliant digestion criteria.	P4	Field preservation does not meet EPA or method recommendations for this analysis.
E2	Unable to obtain a stable weight within specified limits due to sample matrix. Value is estimated.	P5	Acid preservation may not be appropriate for the analysis of 2-Chloroethylvinyl ether.
F1	Fecal sample tested positive for residual chlorine.	P6	Sample required additional preservative upon receipt.
H1	Due to under-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.	P7	The sample was received unpreserved.
H2	Due to over-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.	P8	The pH of the sample was < 9 and is not compliant with 40 CFR136 Table II.
H3	Sample was re-analyzed outside of hold time due to error during original analysis.	R	Relative Percent Difference (RPD) was above the control limit.
H4	The Nitrite result used to report Nitrate was analyzed past the 48-hour holding time.	R1	RPD above control limits between matrix spike and MS duplicates.
I1	Internal standard recovery above method acceptance limits. Results are estimated.	R2	RPD above the control limit between duplicates.
I2	Internal standard recovery was below method acceptance limits. Results are estimated.	R3	RSD above the control limit between replicates.
IP	One of the instrument performance checks ( ) did not meet the acceptance criteria.	R4	RPD above control limits between Inorganic Carbon check and spike.
L1	LCS above the acceptance limits. Result may be biased high.	R5	RPD above control limits between control sample and control sample duplicates.
L2	LCS below the acceptance limits. Result may be biased low.	S2	Surrogate recovery in the blank was below the control limit.
L3	Analyte was spiked into the LCS, but was not recovered.	S3	Surrogate recovery in the blank was above the control limit.
M1	Matrix Spike recovery above the acceptance limits.	S4	Surrogate recovery in the LCS is above the control limit.
M2	Matrix Spike recovery below the acceptance limits.	S5	Surrogate recovery in the LCS is below the control limit.
M4	The matrix spike failed high for the surrogate.	SR	Analyte recovery was outside the accepted recovery limits and above the control limit for RPD.
M5	The matrix spike failed low for the surrogate.	T3	Target analyte found in trip/field blank.
M6	The reporting limits were raised due to sample matrix interference.	TC	The MS tune check (tailing factor) did not meet the acceptance criteria.

# Laboratory Results

## Geochemical Testing

Date: 30-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWB-1
<b>Lab Order:</b>	G2408E93	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/27/2024 9:28:00 AM
<b>Lab ID:</b>	G2408E93-001	<b>Received Date:</b>	8/28/2024 12:41:55 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>FIELD PARAMETERS</b>							
pH (Field)	6.92			S.U.		08/27/24 9:28 AM	
Specific Conductance (Field)	320			µmhos/cm		08/27/24 9:28 AM	
Temperature (Field)	18.9			deg C		08/27/24 9:28 AM	
Turbidity (Field)	1.3			NTU		08/27/24 9:28 AM	
<b>INORGANIC NON-METALS</b>							
Alkalinity to pH 4.5	149	10		mg/L CaCO <sub>3</sub>	1	08/28/24 10:52 PM	
<b>INORGANIC NON-METALS</b>							
Chloride	6.4	1.0		mg/L	1	08/28/24 1:55 PM	08/28/24 3:22 PM
<b>INORGANIC NON-METALS</b>							
Ammonia Nitrogen	< 0.10	0.10		mg/L as N	1		08/29/24 9:56 AM
<b>INORGANIC METALS</b>							
Potassium	< 0.5	0.5		mg/L	1	08/29/24 8:20 AM	08/29/24 2:39 PM
Sodium	5.6	1.0		mg/L	1	08/29/24 8:20 AM	08/29/24 2:39 PM
<b>INORGANIC METALS</b>							
Lead	< 5.0	5.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:21 AM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 11:58 AM
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 11:58 AM
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 11:58 AM
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 11:58 AM
1,1-Dichloroethane	< 2.4	2.4		µg/L	1		08/29/24 11:58 AM
1,1-Dichloroethene	< 5.0	5.0		µg/L	1		08/29/24 11:58 AM
1,2,3-Trichloropropane	< 10.0	10.0		µg/L	1		08/29/24 11:58 AM
1,2-Dibromo-3-chloropropane	< 5.0	5.0		µg/L	1		08/29/24 11:58 AM
1,2-Dibromoethane	< 1.0	1.0		µg/L	1		08/29/24 11:58 AM
1,2-Dichlorobenzene	< 10.0	10.0	L2	µg/L	1		08/29/24 11:58 AM
1,2-Dichloroethane	< 5.0	5.0		µg/L	1		08/29/24 11:58 AM
1,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/29/24 11:58 AM
1,4-Dichlorobenzene	< 10.0	10.0		µg/L	1		08/29/24 11:58 AM
2-Hexanone	< 10.0	10.0		µg/L	1		08/29/24 11:58 AM
4-Methyl-2-Pentanone	< 10.0	10.0		µg/L	1		08/29/24 11:58 AM
Acetone	< 34.0	34.0	C1	µg/L	1		08/29/24 11:58 AM
Acrylonitrile	< 100	100	P4	µg/L	1		08/29/24 11:58 AM
Benzene	< 5.0	5.0		µg/L	1		08/29/24 11:58 AM
Bromochloromethane	< 10.0	10.0		µg/L	1		08/29/24 11:58 AM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 30-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWB-1
<b>Lab Order:</b>	G2408E93	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/27/2024 9:28:00 AM
<b>Lab ID:</b>	G2408E93-001	<b>Received Date:</b>	8/28/2024 12:41:55 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	< 5.0	5.0		µg/L	1		08/29/24 11:58 AM
Bromomethane	< 10.0	10.0		µg/L	1		08/29/24 11:58 AM
Carbon Disulfide	< 5.0	5.0		µg/L	1		08/29/24 11:58 AM
Carbon Tetrachloride	< 5.0	5.0		µg/L	1		08/29/24 11:58 AM
Chlorobenzene	< 5.0	5.0		µg/L	1		08/29/24 11:58 AM
Chlorodibromomethane	< 5.0	5.0		µg/L	1		08/29/24 11:58 AM
Chloroethane	< 10.0	10.0	C1L1	µg/L	1		08/29/24 11:58 AM
Chloromethane	< 10.0	10.0		µg/L	1		08/29/24 11:58 AM
cis-1,2-Dichloroethene	< 10.0	10.0		µg/L	1		08/29/24 11:58 AM
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 11:58 AM
Dibromomethane	< 10.0	10.0		µg/L	1		08/29/24 11:58 AM
Ethylbenzene	< 5.0	5.0		µg/L	1		08/29/24 11:58 AM
Iodomethane	< 10.0	10.0		µg/L	1		08/29/24 11:58 AM
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1		08/29/24 11:58 AM
Methylene Chloride	< 5.0	5.0		µg/L	1		08/29/24 11:58 AM
Styrene	< 5.0	5.0		µg/L	1		08/29/24 11:58 AM
Tetrachloroethene	< 5.0	5.0		µg/L	1		08/29/24 11:58 AM
Toluene	< 5.0	5.0		µg/L	1		08/29/24 11:58 AM
trans-1,2-Dichloroethene	< 10.0	10.0		µg/L	1		08/29/24 11:58 AM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 11:58 AM
trans-1,4-Dichloro-2-butene	< 10.0	10.0		µg/L	1		08/29/24 11:58 AM
Tribromomethane	< 5.0	5.0		µg/L	1		08/29/24 11:58 AM
Trichloroethene	< 5.0	5.0		µg/L	1		08/29/24 11:58 AM
Trichlorofluoromethane	< 10.0	10.0	C1	µg/L	1		08/29/24 11:58 AM
Trichloromethane	< 5.0	5.0		µg/L	1		08/29/24 11:58 AM
Vinyl Acetate	< 10.0	10.0		µg/L	1		08/29/24 11:58 AM
Vinyl Chloride	< 2.0	2.0		µg/L	1		08/29/24 11:58 AM
Total Xylene	< 10.0	10.0		µg/L	1		08/29/24 11:58 AM
Surr: 1,2-Dichloroethane-d4	107	70-130		%REC	1		08/29/24 11:58 AM
Surr: 4-Bromofluorobenzene	98.0	70-130		%REC	1		08/29/24 11:58 AM
Surr: Dibromofluoromethane	101	70-130		%REC	1		08/29/24 11:58 AM
Surr: Toluene-d8	90.1	70-130		%REC	1		08/29/24 11:58 AM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 30-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-11
<b>Lab Order:</b>	G2408E93	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/27/2024 12:34:00 PM
<b>Lab ID:</b>	G2408E93-002	<b>Received Date:</b>	8/28/2024 12:41:55 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>FIELD PARAMETERS</b>							
pH (Field)	6.82			S.U.		08/27/24 12:34 PM	
Specific Conductance (Field)	357			µmhos/cm		08/27/24 12:34 PM	
Temperature (Field)	19.9			deg C		08/27/24 12:34 PM	
Turbidity (Field)	0.5			NTU		08/27/24 12:34 PM	
<b>INORGANIC NON-METALS</b>							
Alkalinity to pH 4.5	94	10		mg/L CaCO <sub>3</sub>	1		08/28/24 10:59 PM
<b>INORGANIC NON-METALS</b>							
Chloride	4.3	1.0		mg/L	1	08/28/24 1:55 PM	08/28/24 3:33 PM
<b>INORGANIC NON-METALS</b>							
Ammonia Nitrogen	< 0.10	0.10		mg/L as N	1		08/29/24 9:58 AM
<b>INORGANIC METALS</b>							
Potassium	0.9	0.5		mg/L	1	08/29/24 8:20 AM	08/29/24 2:49 PM
Sodium	7.0	1.0		mg/L	1	08/29/24 8:20 AM	08/29/24 2:49 PM
<b>INORGANIC METALS</b>							
Lead	< 5.0	5.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:23 AM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 12:22 PM
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 12:22 PM
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 12:22 PM
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 12:22 PM
1,1-Dichloroethane	< 2.4	2.4		µg/L	1		08/29/24 12:22 PM
1,1-Dichloroethene	< 5.0	5.0		µg/L	1		08/29/24 12:22 PM
1,2,3-Trichloropropane	< 10.0	10.0		µg/L	1		08/29/24 12:22 PM
1,2-Dibromo-3-chloropropane	< 5.0	5.0		µg/L	1		08/29/24 12:22 PM
1,2-Dibromoethane	< 1.0	1.0		µg/L	1		08/29/24 12:22 PM
1,2-Dichlorobenzene	< 10.0	10.0	L2	µg/L	1		08/29/24 12:22 PM
1,2-Dichloroethane	< 5.0	5.0		µg/L	1		08/29/24 12:22 PM
1,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/29/24 12:22 PM
1,4-Dichlorobenzene	< 10.0	10.0		µg/L	1		08/29/24 12:22 PM
2-Hexanone	< 10.0	10.0		µg/L	1		08/29/24 12:22 PM
4-Methyl-2-Pentanone	< 10.0	10.0		µg/L	1		08/29/24 12:22 PM
Acetone	< 34.0	34.0	C1	µg/L	1		08/29/24 12:22 PM
Acrylonitrile	< 100	100	P4	µg/L	1		08/29/24 12:22 PM
Benzene	< 5.0	5.0		µg/L	1		08/29/24 12:22 PM
Bromochloromethane	< 10.0	10.0		µg/L	1		08/29/24 12:22 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 30-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-11
<b>Lab Order:</b>	G2408E93	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/27/2024 12:34:00 PM
<b>Lab ID:</b>	G2408E93-002	<b>Received Date:</b>	8/28/2024 12:41:55 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	< 5.0	5.0		µg/L	1		08/29/24 12:22 PM
Bromomethane	< 10.0	10.0		µg/L	1		08/29/24 12:22 PM
Carbon Disulfide	< 5.0	5.0		µg/L	1		08/29/24 12:22 PM
Carbon Tetrachloride	< 5.0	5.0		µg/L	1		08/29/24 12:22 PM
Chlorobenzene	< 5.0	5.0		µg/L	1		08/29/24 12:22 PM
Chlorodibromomethane	< 5.0	5.0		µg/L	1		08/29/24 12:22 PM
Chloroethane	< 10.0	10.0	C1L1	µg/L	1		08/29/24 12:22 PM
Chloromethane	< 10.0	10.0		µg/L	1		08/29/24 12:22 PM
cis-1,2-Dichloroethene	< 10.0	10.0		µg/L	1		08/29/24 12:22 PM
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 12:22 PM
Dibromomethane	< 10.0	10.0		µg/L	1		08/29/24 12:22 PM
Ethylbenzene	< 5.0	5.0		µg/L	1		08/29/24 12:22 PM
Iodomethane	< 10.0	10.0		µg/L	1		08/29/24 12:22 PM
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1		08/29/24 12:22 PM
Methylene Chloride	< 5.0	5.0		µg/L	1		08/29/24 12:22 PM
Styrene	< 5.0	5.0		µg/L	1		08/29/24 12:22 PM
Tetrachloroethene	< 5.0	5.0		µg/L	1		08/29/24 12:22 PM
Toluene	< 5.0	5.0		µg/L	1		08/29/24 12:22 PM
trans-1,2-Dichloroethene	< 10.0	10.0		µg/L	1		08/29/24 12:22 PM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 12:22 PM
trans-1,4-Dichloro-2-butene	< 10.0	10.0		µg/L	1		08/29/24 12:22 PM
Tribromomethane	< 5.0	5.0		µg/L	1		08/29/24 12:22 PM
Trichloroethene	< 5.0	5.0		µg/L	1		08/29/24 12:22 PM
Trichlorofluoromethane	< 10.0	10.0	C1	µg/L	1		08/29/24 12:22 PM
Trichloromethane	< 5.0	5.0		µg/L	1		08/29/24 12:22 PM
Vinyl Acetate	< 10.0	10.0		µg/L	1		08/29/24 12:22 PM
Vinyl Chloride	< 2.0	2.0		µg/L	1		08/29/24 12:22 PM
Total Xylene	< 10.0	10.0		µg/L	1		08/29/24 12:22 PM
Surr: 1,2-Dichloroethane-d4	108	70-130		%REC	1		08/29/24 12:22 PM
Surr: 4-Bromofluorobenzene	97.8	70-130		%REC	1		08/29/24 12:22 PM
Surr: Dibromofluoromethane	102	70-130		%REC	1		08/29/24 12:22 PM
Surr: Toluene-d8	90.3	70-130		%REC	1		08/29/24 12:22 PM
<b>DISSOLVED GASSES</b>							
Methane, dissolved	3.0	5.0	U	ug/l	1	09/04/24 10:31 AM	09/04/24 11:55 AM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 30-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-4A
<b>Lab Order:</b>	G2408E93	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/27/2024 11:00:00 AM
<b>Lab ID:</b>	G2408E93-003	<b>Received Date:</b>	8/28/2024 12:41:55 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>FIELD PARAMETERS</b>							
pH (Field)	6.04			S.U.		08/27/24 11:00 AM	
Specific Conductance (Field)	153			µmhos/cm		08/27/24 11:00 AM	
Temperature (Field)	22.5			deg C		08/27/24 11:00 AM	
Turbidity (Field)	1.9			NTU		08/27/24 11:00 AM	
<b>INORGANIC NON-METALS</b>							
Alkalinity to pH 4.5	66	10		mg/L CaCO <sub>3</sub>	1		08/28/24 11:05 PM
<b>INORGANIC NON-METALS</b>							
Chloride	2.8	1.0		mg/L	1	08/28/24 1:55 PM	08/28/24 3:45 PM
<b>INORGANIC NON-METALS</b>							
Ammonia Nitrogen	< 0.10	0.10		mg/L as N	1		08/29/24 9:59 AM
<b>INORGANIC METALS</b>							
Potassium	0.7	0.5		mg/L	1	08/29/24 8:20 AM	08/29/24 2:52 PM
Sodium	3.9	1.0		mg/L	1	08/29/24 8:20 AM	08/29/24 2:52 PM
<b>INORGANIC METALS</b>							
Lead	< 5.0	5.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:25 AM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 12:46 PM
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 12:46 PM
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 12:46 PM
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 12:46 PM
1,1-Dichloroethane	< 2.4	2.4		µg/L	1		08/29/24 12:46 PM
1,1-Dichloroethene	< 5.0	5.0		µg/L	1		08/29/24 12:46 PM
1,2,3-Trichloropropane	< 10.0	10.0		µg/L	1		08/29/24 12:46 PM
1,2-Dibromo-3-chloropropane	< 5.0	5.0		µg/L	1		08/29/24 12:46 PM
1,2-Dibromoethane	< 1.0	1.0		µg/L	1		08/29/24 12:46 PM
1,2-Dichlorobenzene	< 10.0	10.0	L2	µg/L	1		08/29/24 12:46 PM
1,2-Dichloroethane	< 5.0	5.0		µg/L	1		08/29/24 12:46 PM
1,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/29/24 12:46 PM
1,4-Dichlorobenzene	< 10.0	10.0		µg/L	1		08/29/24 12:46 PM
2-Hexanone	< 10.0	10.0		µg/L	1		08/29/24 12:46 PM
4-Methyl-2-Pentanone	< 10.0	10.0		µg/L	1		08/29/24 12:46 PM
Acetone	< 34.0	34.0	C1	µg/L	1		08/29/24 12:46 PM
Acrylonitrile	< 100	100	P4	µg/L	1		08/29/24 12:46 PM
Benzene	< 5.0	5.0		µg/L	1		08/29/24 12:46 PM
Bromochloromethane	< 10.0	10.0		µg/L	1		08/29/24 12:46 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 30-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-4A
<b>Lab Order:</b>	G2408E93	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/27/2024 11:00:00 AM
<b>Lab ID:</b>	G2408E93-003	<b>Received Date:</b>	8/28/2024 12:41:55 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	< 5.0	5.0		µg/L	1	08/29/24	12:46 PM
Bromomethane	< 10.0	10.0		µg/L	1	08/29/24	12:46 PM
Carbon Disulfide	< 5.0	5.0		µg/L	1	08/29/24	12:46 PM
Carbon Tetrachloride	< 5.0	5.0		µg/L	1	08/29/24	12:46 PM
Chlorobenzene	< 5.0	5.0		µg/L	1	08/29/24	12:46 PM
Chlorodibromomethane	< 5.0	5.0		µg/L	1	08/29/24	12:46 PM
Chloroethane	< 10.0	10.0	C1L1	µg/L	1	08/29/24	12:46 PM
Chloromethane	< 10.0	10.0		µg/L	1	08/29/24	12:46 PM
cis-1,2-Dichloroethene	< 10.0	10.0		µg/L	1	08/29/24	12:46 PM
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1	08/29/24	12:46 PM
Dibromomethane	< 10.0	10.0		µg/L	1	08/29/24	12:46 PM
Ethylbenzene	< 5.0	5.0		µg/L	1	08/29/24	12:46 PM
Iodomethane	< 10.0	10.0		µg/L	1	08/29/24	12:46 PM
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1	08/29/24	12:46 PM
Methylene Chloride	< 5.0	5.0		µg/L	1	08/29/24	12:46 PM
Styrene	< 5.0	5.0		µg/L	1	08/29/24	12:46 PM
Tetrachloroethene	< 5.0	5.0		µg/L	1	08/29/24	12:46 PM
Toluene	< 5.0	5.0		µg/L	1	08/29/24	12:46 PM
trans-1,2-Dichloroethene	< 10.0	10.0		µg/L	1	08/29/24	12:46 PM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1	08/29/24	12:46 PM
trans-1,4-Dichloro-2-butene	< 10.0	10.0		µg/L	1	08/29/24	12:46 PM
Tribromomethane	< 5.0	5.0		µg/L	1	08/29/24	12:46 PM
Trichloroethene	< 5.0	5.0		µg/L	1	08/29/24	12:46 PM
Trichlorofluoromethane	< 10.0	10.0	C1	µg/L	1	08/29/24	12:46 PM
Trichloromethane	< 5.0	5.0		µg/L	1	08/29/24	12:46 PM
Vinyl Acetate	< 10.0	10.0		µg/L	1	08/29/24	12:46 PM
Vinyl Chloride	< 2.0	2.0		µg/L	1	08/29/24	12:46 PM
Total Xylene	< 10.0	10.0		µg/L	1	08/29/24	12:46 PM
Surr: 1,2-Dichloroethane-d4	108	70-130		%REC	1	08/29/24	12:46 PM
Surr: 4-Bromofluorobenzene	97.6	70-130		%REC	1	08/29/24	12:46 PM
Surr: Dibromofluoromethane	102	70-130		%REC	1	08/29/24	12:46 PM
Surr: Toluene-d8	89.8	70-130		%REC	1	08/29/24	12:46 PM
<b>DISSOLVED GASSES</b>							
Methane, dissolved	3.0	5.0	U	ug/l	1	09/04/24	10:31 AM
						09/04/24	12:14 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 30-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-5A
<b>Lab Order:</b>	G2408E93	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/27/2024 10:15:00 AM
<b>Lab ID:</b>	G2408E93-004	<b>Received Date:</b>	8/28/2024 12:41:55 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>FIELD PARAMETERS</b>							
pH (Field)	6.29			S.U.		08/27/24 10:15 AM	
Specific Conductance (Field)	136			µmhos/cm		08/27/24 10:15 AM	
Temperature (Field)	18.8			deg C		08/27/24 10:15 AM	
Turbidity (Field)	3.1			NTU		08/27/24 10:15 AM	
<b>INORGANIC NON-METALS</b>							
Alkalinity to pH 4.5	61	10		mg/L CaCO <sub>3</sub>	1		08/29/24 4:58 PM
<b>INORGANIC NON-METALS</b>							
Chloride	< 1.0	1.0		mg/L	1	08/28/24 1:55 PM	08/28/24 3:57 PM
<b>INORGANIC NON-METALS</b>							
Ammonia Nitrogen	< 0.10	0.10		mg/L as N	1		08/29/24 10:01 AM
<b>INORGANIC METALS</b>							
Potassium	< 0.5	0.5		mg/L	1	08/29/24 8:20 AM	08/29/24 2:54 PM
Sodium	4.7	1.0		mg/L	1	08/29/24 8:20 AM	08/29/24 2:54 PM
<b>INORGANIC METALS</b>							
Lead	< 5.0	5.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:28 AM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 1:10 PM
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 1:10 PM
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 1:10 PM
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 1:10 PM
1,1-Dichloroethane	< 2.4	2.4		µg/L	1		08/29/24 1:10 PM
1,1-Dichloroethene	< 5.0	5.0		µg/L	1		08/29/24 1:10 PM
1,2,3-Trichloropropane	< 10.0	10.0		µg/L	1		08/29/24 1:10 PM
1,2-Dibromo-3-chloropropane	< 5.0	5.0		µg/L	1		08/29/24 1:10 PM
1,2-Dibromoethane	< 1.0	1.0		µg/L	1		08/29/24 1:10 PM
1,2-Dichlorobenzene	< 10.0	10.0	L2	µg/L	1		08/29/24 1:10 PM
1,2-Dichloroethane	< 5.0	5.0		µg/L	1		08/29/24 1:10 PM
1,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/29/24 1:10 PM
1,4-Dichlorobenzene	< 10.0	10.0		µg/L	1		08/29/24 1:10 PM
2-Hexanone	< 10.0	10.0		µg/L	1		08/29/24 1:10 PM
4-Methyl-2-Pentanone	< 10.0	10.0		µg/L	1		08/29/24 1:10 PM
Acetone	< 34.0	34.0	C1	µg/L	1		08/29/24 1:10 PM
Acrylonitrile	< 100	100	P4	µg/L	1		08/29/24 1:10 PM
Benzene	< 5.0	5.0		µg/L	1		08/29/24 1:10 PM
Bromochloromethane	< 10.0	10.0		µg/L	1		08/29/24 1:10 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 30-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-5A
<b>Lab Order:</b>	G2408E93	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/27/2024 10:15:00 AM
<b>Lab ID:</b>	G2408E93-004	<b>Received Date:</b>	8/28/2024 12:41:55 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MTM			<b>EPA 8260 D</b>
Bromodichloromethane	< 5.0	5.0		µg/L	1		08/29/24 1:10 PM
Bromomethane	< 10.0	10.0		µg/L	1		08/29/24 1:10 PM
Carbon Disulfide	< 5.0	5.0		µg/L	1		08/29/24 1:10 PM
Carbon Tetrachloride	< 5.0	5.0		µg/L	1		08/29/24 1:10 PM
Chlorobenzene	< 5.0	5.0		µg/L	1		08/29/24 1:10 PM
Chlorodibromomethane	< 5.0	5.0		µg/L	1		08/29/24 1:10 PM
Chloroethane	< 10.0	10.0	C1L1	µg/L	1		08/29/24 1:10 PM
Chloromethane	< 10.0	10.0		µg/L	1		08/29/24 1:10 PM
cis-1,2-Dichloroethene	< 10.0	10.0		µg/L	1		08/29/24 1:10 PM
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 1:10 PM
Dibromomethane	< 10.0	10.0		µg/L	1		08/29/24 1:10 PM
Ethylbenzene	< 5.0	5.0		µg/L	1		08/29/24 1:10 PM
Iodomethane	< 10.0	10.0		µg/L	1		08/29/24 1:10 PM
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1		08/29/24 1:10 PM
Methylene Chloride	< 5.0	5.0		µg/L	1		08/29/24 1:10 PM
Styrene	< 5.0	5.0		µg/L	1		08/29/24 1:10 PM
Tetrachloroethene	< 5.0	5.0		µg/L	1		08/29/24 1:10 PM
Toluene	< 5.0	5.0		µg/L	1		08/29/24 1:10 PM
trans-1,2-Dichloroethene	< 10.0	10.0		µg/L	1		08/29/24 1:10 PM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 1:10 PM
trans-1,4-Dichloro-2-butene	< 10.0	10.0		µg/L	1		08/29/24 1:10 PM
Tribromomethane	< 5.0	5.0		µg/L	1		08/29/24 1:10 PM
Trichloroethene	< 5.0	5.0		µg/L	1		08/29/24 1:10 PM
Trichlorofluoromethane	< 10.0	10.0	C1	µg/L	1		08/29/24 1:10 PM
Trichloromethane	< 5.0	5.0		µg/L	1		08/29/24 1:10 PM
Vinyl Acetate	< 10.0	10.0		µg/L	1		08/29/24 1:10 PM
Vinyl Chloride	< 2.0	2.0		µg/L	1		08/29/24 1:10 PM
Total Xylene	< 10.0	10.0		µg/L	1		08/29/24 1:10 PM
Surr: 1,2-Dichloroethane-d4	108	70-130		%REC	1		08/29/24 1:10 PM
Surr: 4-Bromofluorobenzene	97.1	70-130		%REC	1		08/29/24 1:10 PM
Surr: Dibromofluoromethane	101	70-130		%REC	1		08/29/24 1:10 PM
Surr: Toluene-d8	89.9	70-130		%REC	1		08/29/24 1:10 PM

# Laboratory Results

## Geochemical Testing

Date: 30-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-12
<b>Lab Order:</b>	G2408E93	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/27/2024 11:28:00 AM
<b>Lab ID:</b>	G2408E93-005	<b>Received Date:</b>	8/28/2024 12:41:55 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>FIELD PARAMETERS</b>							
pH (Field)	6.14			S.U.		08/27/24 11:28 AM	
Specific Conductance (Field)	128			µmhos/cm		08/27/24 11:28 AM	
Temperature (Field)	21.3			deg C		08/27/24 11:28 AM	
Turbidity (Field)	4.4			NTU		08/27/24 11:28 AM	
<b>INORGANIC NON-METALS</b>							
Alkalinity to pH 4.5	62	10		mg/L CaCO <sub>3</sub>	1	08/29/24 5:03 PM	
<b>INORGANIC NON-METALS</b>							
Chloride	< 1.0	1.0		mg/L	1	08/28/24 1:55 PM	08/28/24 4:09 PM
<b>INORGANIC NON-METALS</b>							
Ammonia Nitrogen	< 0.10	0.10		mg/L as N	1		08/29/24 10:02 AM
<b>INORGANIC METALS</b>							
Potassium	< 0.5	0.5		mg/L	1	08/29/24 8:20 AM	08/29/24 2:57 PM
Sodium	8.7	1.0		mg/L	1	08/29/24 8:20 AM	08/29/24 2:57 PM
<b>INORGANIC METALS</b>							
Lead	< 5.0	5.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:39 AM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 1:58 PM
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 1:58 PM
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 1:58 PM
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 1:58 PM
1,1-Dichloroethane	< 2.4	2.4		µg/L	1		08/29/24 1:58 PM
1,1-Dichloroethene	< 5.0	5.0		µg/L	1		08/29/24 1:58 PM
1,2,3-Trichloropropane	< 10.0	10.0		µg/L	1		08/29/24 1:58 PM
1,2-Dibromo-3-chloropropane	< 5.0	5.0		µg/L	1		08/29/24 1:58 PM
1,2-Dibromoethane	< 1.0	1.0		µg/L	1		08/29/24 1:58 PM
1,2-Dichlorobenzene	< 10.0	10.0	L2	µg/L	1		08/29/24 1:58 PM
1,2-Dichloroethane	< 5.0	5.0		µg/L	1		08/29/24 1:58 PM
1,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/29/24 1:58 PM
1,4-Dichlorobenzene	< 10.0	10.0		µg/L	1		08/29/24 1:58 PM
2-Hexanone	< 10.0	10.0		µg/L	1		08/29/24 1:58 PM
4-Methyl-2-Pentanone	< 10.0	10.0		µg/L	1		08/29/24 1:58 PM
Acetone	< 34.0	34.0	C1	µg/L	1		08/29/24 1:58 PM
Acrylonitrile	< 100	100	P4	µg/L	1		08/29/24 1:58 PM
Benzene	< 5.0	5.0		µg/L	1		08/29/24 1:58 PM
Bromochloromethane	< 10.0	10.0		µg/L	1		08/29/24 1:58 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 30-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-12
<b>Lab Order:</b>	G2408E93	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/27/2024 11:28:00 AM
<b>Lab ID:</b>	G2408E93-005	<b>Received Date:</b>	8/28/2024 12:41:55 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	< 5.0	5.0		µg/L	1		08/29/24 1:58 PM
Bromomethane	< 10.0	10.0		µg/L	1		08/29/24 1:58 PM
Carbon Disulfide	< 5.0	5.0		µg/L	1		08/29/24 1:58 PM
Carbon Tetrachloride	< 5.0	5.0		µg/L	1		08/29/24 1:58 PM
Chlorobenzene	< 5.0	5.0		µg/L	1		08/29/24 1:58 PM
Chlorodibromomethane	< 5.0	5.0		µg/L	1		08/29/24 1:58 PM
Chloroethane	< 10.0	10.0	C1L1	µg/L	1		08/29/24 1:58 PM
Chloromethane	< 10.0	10.0		µg/L	1		08/29/24 1:58 PM
cis-1,2-Dichloroethene	< 10.0	10.0		µg/L	1		08/29/24 1:58 PM
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 1:58 PM
Dibromomethane	< 10.0	10.0		µg/L	1		08/29/24 1:58 PM
Ethylbenzene	< 5.0	5.0		µg/L	1		08/29/24 1:58 PM
Iodomethane	< 10.0	10.0		µg/L	1		08/29/24 1:58 PM
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1		08/29/24 1:58 PM
Methylene Chloride	< 5.0	5.0		µg/L	1		08/29/24 1:58 PM
Styrene	< 5.0	5.0		µg/L	1		08/29/24 1:58 PM
Tetrachloroethene	< 5.0	5.0		µg/L	1		08/29/24 1:58 PM
Toluene	< 5.0	5.0		µg/L	1		08/29/24 1:58 PM
trans-1,2-Dichloroethene	< 10.0	10.0		µg/L	1		08/29/24 1:58 PM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 1:58 PM
trans-1,4-Dichloro-2-butene	< 10.0	10.0		µg/L	1		08/29/24 1:58 PM
Tribromomethane	< 5.0	5.0		µg/L	1		08/29/24 1:58 PM
Trichloroethene	< 5.0	5.0		µg/L	1		08/29/24 1:58 PM
Trichlorofluoromethane	< 10.0	10.0	C1	µg/L	1		08/29/24 1:58 PM
Trichloromethane	< 5.0	5.0		µg/L	1		08/29/24 1:58 PM
Vinyl Acetate	< 10.0	10.0		µg/L	1		08/29/24 1:58 PM
Vinyl Chloride	< 2.0	2.0		µg/L	1		08/29/24 1:58 PM
Total Xylene	< 10.0	10.0		µg/L	1		08/29/24 1:58 PM
Surr: 1,2-Dichloroethane-d4	107	70-130		%REC	1		08/29/24 1:58 PM
Surr: 4-Bromofluorobenzene	95.9	70-130		%REC	1		08/29/24 1:58 PM
Surr: Dibromofluoromethane	100	70-130		%REC	1		08/29/24 1:58 PM
Surr: Toluene-d8	88.9	70-130		%REC	1		08/29/24 1:58 PM

# Laboratory Results

## Geochemical Testing

Date: 30-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-13A
<b>Lab Order:</b>	G2408E93	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/27/2024 9:20:00 AM
<b>Lab ID:</b>	G2408E93-006	<b>Received Date:</b>	8/28/2024 12:41:55 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>FIELD PARAMETERS</b>							
pH (Field)	6.18			S.U.		08/27/24 9:20 AM	
Specific Conductance (Field)	5.88			µmhos/cm		08/27/24 9:20 AM	
Temperature (Field)	17.3			deg C		08/27/24 9:20 AM	
Turbidity (Field)	7.5			NTU		08/27/24 9:20 AM	
<b>INORGANIC NON-METALS</b>							
Alkalinity to pH 4.5	289	10		mg/L CaCO <sub>3</sub>	1		08/28/24 11:33 PM
<b>INORGANIC NON-METALS</b>							
Chloride	4.1	1.0		mg/L	1	08/28/24 2:01 PM	08/28/24 3:17 PM
<b>INORGANIC NON-METALS</b>							
Ammonia Nitrogen	< 0.10	0.10		mg/L as N	1		08/29/24 10:04 AM
<b>INORGANIC METALS</b>							
Potassium	8.9	0.5		mg/L	1	08/29/24 8:20 AM	08/29/24 3:02 PM
Sodium	13.6	1.0		mg/L	1	08/29/24 8:20 AM	08/29/24 3:02 PM
<b>INORGANIC METALS</b>							
Lead	< 5.0	5.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:41 AM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 2:23 PM
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 2:23 PM
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 2:23 PM
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 2:23 PM
1,1-Dichloroethane	< 2.4	2.4		µg/L	1		08/29/24 2:23 PM
1,1-Dichloroethene	< 5.0	5.0		µg/L	1		08/29/24 2:23 PM
1,2,3-Trichloropropane	< 10.0	10.0		µg/L	1		08/29/24 2:23 PM
1,2-Dibromo-3-chloropropane	< 5.0	5.0		µg/L	1		08/29/24 2:23 PM
1,2-Dibromoethane	< 1.0	1.0		µg/L	1		08/29/24 2:23 PM
1,2-Dichlorobenzene	< 10.0	10.0	L2	µg/L	1		08/29/24 2:23 PM
1,2-Dichloroethane	< 5.0	5.0		µg/L	1		08/29/24 2:23 PM
1,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/29/24 2:23 PM
1,4-Dichlorobenzene	< 10.0	10.0		µg/L	1		08/29/24 2:23 PM
2-Hexanone	< 10.0	10.0		µg/L	1		08/29/24 2:23 PM
4-Methyl-2-Pentanone	< 10.0	10.0		µg/L	1		08/29/24 2:23 PM
Acetone	< 34.0	34.0	C1	µg/L	1		08/29/24 2:23 PM
Acrylonitrile	< 100	100	P4	µg/L	1		08/29/24 2:23 PM
Benzene	< 5.0	5.0		µg/L	1		08/29/24 2:23 PM
Bromochloromethane	< 10.0	10.0		µg/L	1		08/29/24 2:23 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 30-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-13A
<b>Lab Order:</b>	G2408E93	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/27/2024 9:20:00 AM
<b>Lab ID:</b>	G2408E93-006	<b>Received Date:</b>	8/28/2024 12:41:55 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	< 5.0	5.0		µg/L	1		08/29/24 2:23 PM
Bromomethane	< 10.0	10.0		µg/L	1		08/29/24 2:23 PM
Carbon Disulfide	< 5.0	5.0		µg/L	1		08/29/24 2:23 PM
Carbon Tetrachloride	< 5.0	5.0		µg/L	1		08/29/24 2:23 PM
Chlorobenzene	< 5.0	5.0		µg/L	1		08/29/24 2:23 PM
Chlorodibromomethane	< 5.0	5.0		µg/L	1		08/29/24 2:23 PM
Chloroethane	< 10.0	10.0	C1L1	µg/L	1		08/29/24 2:23 PM
Chloromethane	< 10.0	10.0		µg/L	1		08/29/24 2:23 PM
cis-1,2-Dichloroethene	< 10.0	10.0		µg/L	1		08/29/24 2:23 PM
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 2:23 PM
Dibromomethane	< 10.0	10.0		µg/L	1		08/29/24 2:23 PM
Ethylbenzene	< 5.0	5.0		µg/L	1		08/29/24 2:23 PM
Iodomethane	< 10.0	10.0		µg/L	1		08/29/24 2:23 PM
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1		08/29/24 2:23 PM
Methylene Chloride	< 5.0	5.0		µg/L	1		08/29/24 2:23 PM
Styrene	< 5.0	5.0		µg/L	1		08/29/24 2:23 PM
Tetrachloroethene	< 5.0	5.0		µg/L	1		08/29/24 2:23 PM
Toluene	< 5.0	5.0		µg/L	1		08/29/24 2:23 PM
trans-1,2-Dichloroethene	< 10.0	10.0		µg/L	1		08/29/24 2:23 PM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 2:23 PM
trans-1,4-Dichloro-2-butene	< 10.0	10.0		µg/L	1		08/29/24 2:23 PM
Tribromomethane	< 5.0	5.0		µg/L	1		08/29/24 2:23 PM
Trichloroethene	< 5.0	5.0		µg/L	1		08/29/24 2:23 PM
Trichlorofluoromethane	< 10.0	10.0	C1	µg/L	1		08/29/24 2:23 PM
Trichloromethane	< 5.0	5.0		µg/L	1		08/29/24 2:23 PM
Vinyl Acetate	< 10.0	10.0		µg/L	1		08/29/24 2:23 PM
Vinyl Chloride	< 2.0	2.0		µg/L	1		08/29/24 2:23 PM
Total Xylene	< 10.0	10.0		µg/L	1		08/29/24 2:23 PM
Surr: 1,2-Dichloroethane-d4	105	70-130		%REC	1		08/29/24 2:23 PM
Surr: 4-Bromofluorobenzene	96.0	70-130		%REC	1		08/29/24 2:23 PM
Surr: Dibromofluoromethane	100	70-130		%REC	1		08/29/24 2:23 PM
Surr: Toluene-d8	88.5	70-130		%REC	1		08/29/24 2:23 PM
<b>DISSOLVED GASSES</b>							
Methane, dissolved	3.0	5.0	U	ug/l	1	09/04/24 10:31 AM	09/04/24 12:33 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 30-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-6
<b>Lab Order:</b>	G2408E93	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/27/2024 10:19:00 AM
<b>Lab ID:</b>	G2408E93-007	<b>Received Date:</b>	8/28/2024 12:41:55 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>FIELD PARAMETERS</b>							
pH (Field)	7.29			S.U.		08/27/24 10:19 AM	
Specific Conductance (Field)	171			µmhos/cm		08/27/24 10:19 AM	
Temperature (Field)	19.3			deg C		08/27/24 10:19 AM	
Turbidity (Field)	0.6			NTU		08/27/24 10:19 AM	
<b>INORGANIC NON-METALS</b>							
Alkalinity to pH 4.5	82	10		mg/L CaCO <sub>3</sub>	1		08/28/24 11:45 PM
<b>INORGANIC NON-METALS</b>							
Chloride	< 1.0	1.0		mg/L	1	08/28/24 2:01 PM	08/28/24 3:31 PM
<b>INORGANIC NON-METALS</b>							
Ammonia Nitrogen	< 0.10	0.10		mg/L as N	1		08/29/24 10:05 AM
<b>INORGANIC METALS</b>							
Potassium	1.8	0.5		mg/L	1	08/29/24 8:20 AM	08/29/24 3:34 PM
Sodium	10.7	1.0		mg/L	1	08/29/24 8:20 AM	08/29/24 3:34 PM
<b>INORGANIC METALS</b>							
Lead	< 5.0	5.0		µg/L	1	08/29/24 8:20 AM	08/30/24 8:44 AM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 2:47 PM
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 2:47 PM
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 2:47 PM
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 2:47 PM
1,1-Dichloroethane	< 2.4	2.4		µg/L	1		08/29/24 2:47 PM
1,1-Dichloroethene	< 5.0	5.0		µg/L	1		08/29/24 2:47 PM
1,2,3-Trichloropropane	< 10.0	10.0		µg/L	1		08/29/24 2:47 PM
1,2-Dibromo-3-chloropropane	< 5.0	5.0		µg/L	1		08/29/24 2:47 PM
1,2-Dibromoethane	< 1.0	1.0		µg/L	1		08/29/24 2:47 PM
1,2-Dichlorobenzene	< 10.0	10.0	L2	µg/L	1		08/29/24 2:47 PM
1,2-Dichloroethane	< 5.0	5.0		µg/L	1		08/29/24 2:47 PM
1,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/29/24 2:47 PM
1,4-Dichlorobenzene	< 10.0	10.0		µg/L	1		08/29/24 2:47 PM
2-Hexanone	< 10.0	10.0		µg/L	1		08/29/24 2:47 PM
4-Methyl-2-Pentanone	< 10.0	10.0		µg/L	1		08/29/24 2:47 PM
Acetone	< 34.0	34.0	C1	µg/L	1		08/29/24 2:47 PM
Acrylonitrile	< 100	100	P4	µg/L	1		08/29/24 2:47 PM
Benzene	< 5.0	5.0		µg/L	1		08/29/24 2:47 PM
Bromochloromethane	< 10.0	10.0		µg/L	1		08/29/24 2:47 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 30-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-6
<b>Lab Order:</b>	G2408E93	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/27/2024 10:19:00 AM
<b>Lab ID:</b>	G2408E93-007	<b>Received Date:</b>	8/28/2024 12:41:55 PM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MTM			EPA 8260 D
Bromodichloromethane	< 5.0	5.0		µg/L	1		08/29/24 2:47 PM
Bromomethane	< 10.0	10.0		µg/L	1		08/29/24 2:47 PM
Carbon Disulfide	< 5.0	5.0		µg/L	1		08/29/24 2:47 PM
Carbon Tetrachloride	< 5.0	5.0		µg/L	1		08/29/24 2:47 PM
Chlorobenzene	< 5.0	5.0		µg/L	1		08/29/24 2:47 PM
Chlorodibromomethane	< 5.0	5.0		µg/L	1		08/29/24 2:47 PM
Chloroethane	< 10.0	10.0	C1L1	µg/L	1		08/29/24 2:47 PM
Chloromethane	< 10.0	10.0		µg/L	1		08/29/24 2:47 PM
cis-1,2-Dichloroethene	< 10.0	10.0		µg/L	1		08/29/24 2:47 PM
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 2:47 PM
Dibromomethane	< 10.0	10.0		µg/L	1		08/29/24 2:47 PM
Ethylbenzene	< 5.0	5.0		µg/L	1		08/29/24 2:47 PM
Iodomethane	< 10.0	10.0		µg/L	1		08/29/24 2:47 PM
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1		08/29/24 2:47 PM
Methylene Chloride	< 5.0	5.0		µg/L	1		08/29/24 2:47 PM
Styrene	< 5.0	5.0		µg/L	1		08/29/24 2:47 PM
Tetrachloroethene	< 5.0	5.0		µg/L	1		08/29/24 2:47 PM
Toluene	< 5.0	5.0		µg/L	1		08/29/24 2:47 PM
trans-1,2-Dichloroethene	< 10.0	10.0		µg/L	1		08/29/24 2:47 PM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 2:47 PM
trans-1,4-Dichloro-2-butene	< 10.0	10.0		µg/L	1		08/29/24 2:47 PM
Tribromomethane	< 5.0	5.0		µg/L	1		08/29/24 2:47 PM
Trichloroethene	< 5.0	5.0		µg/L	1		08/29/24 2:47 PM
Trichlorofluoromethane	< 10.0	10.0	C1	µg/L	1		08/29/24 2:47 PM
Trichloromethane	< 5.0	5.0		µg/L	1		08/29/24 2:47 PM
Vinyl Acetate	< 10.0	10.0		µg/L	1		08/29/24 2:47 PM
Vinyl Chloride	< 2.0	2.0		µg/L	1		08/29/24 2:47 PM
Total Xylene	< 10.0	10.0		µg/L	1		08/29/24 2:47 PM
Surr: 1,2-Dichloroethane-d4	106	70-130		%REC	1		08/29/24 2:47 PM
Surr: 4-Bromofluorobenzene	95.8	70-130		%REC	1		08/29/24 2:47 PM
Surr: Dibromofluoromethane	101	70-130		%REC	1		08/29/24 2:47 PM
Surr: Toluene-d8	88.9	70-130		%REC	1		08/29/24 2:47 PM

# Laboratory Results

## Geochemical Testing

Date: 30-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	TB-02
<b>Lab Order:</b>	G2408E93	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/27/2024 12:00:01 AM
<b>Lab ID:</b>	G2408E93-008	<b>Received Date:</b>	8/28/2024 12:41:55 PM
<b>Matrix:</b>	AQUEOUS		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MTM			<b>EPA 8260 D</b>
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1	08/29/24 3:12 PM	
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1	08/29/24 3:12 PM	
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1	08/29/24 3:12 PM	
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1	08/29/24 3:12 PM	
1,1-Dichloroethane	< 2.4	2.4		µg/L	1	08/29/24 3:12 PM	
1,1-Dichloroethene	< 5.0	5.0		µg/L	1	08/29/24 3:12 PM	
1,2,3-Trichloropropane	< 10.0	10.0		µg/L	1	08/29/24 3:12 PM	
1,2-Dibromo-3-chloropropane	< 5.0	5.0		µg/L	1	08/29/24 3:12 PM	
1,2-Dibromoethane	< 1.0	1.0		µg/L	1	08/29/24 3:12 PM	
1,2-Dichlorobenzene	< 10.0	10.0	L2	µg/L	1	08/29/24 3:12 PM	
1,2-Dichloroethane	< 5.0	5.0		µg/L	1	08/29/24 3:12 PM	
1,2-Dichloropropane	< 5.0	5.0		µg/L	1	08/29/24 3:12 PM	
1,4-Dichlorobenzene	< 10.0	10.0		µg/L	1	08/29/24 3:12 PM	
2-Hexanone	< 10.0	10.0		µg/L	1	08/29/24 3:12 PM	
4-Methyl-2-Pentanone	< 10.0	10.0		µg/L	1	08/29/24 3:12 PM	
Acetone	< 34.0	34.0	C1	µg/L	1	08/29/24 3:12 PM	
Acrylonitrile	< 100	100	P4	µg/L	1	08/29/24 3:12 PM	
Benzene	< 5.0	5.0		µg/L	1	08/29/24 3:12 PM	
Bromochloromethane	< 10.0	10.0		µg/L	1	08/29/24 3:12 PM	
Bromodichloromethane	< 5.0	5.0		µg/L	1	08/29/24 3:12 PM	
Bromomethane	< 10.0	10.0		µg/L	1	08/29/24 3:12 PM	
Carbon Disulfide	< 5.0	5.0		µg/L	1	08/29/24 3:12 PM	
Carbon Tetrachloride	< 5.0	5.0		µg/L	1	08/29/24 3:12 PM	
Chlorobenzene	< 5.0	5.0		µg/L	1	08/29/24 3:12 PM	
Chlorodibromomethane	< 5.0	5.0		µg/L	1	08/29/24 3:12 PM	
Chloroethane	< 10.0	10.0	C1L1	µg/L	1	08/29/24 3:12 PM	
Chloromethane	< 10.0	10.0		µg/L	1	08/29/24 3:12 PM	
cis-1,2-Dichloroethene	< 10.0	10.0		µg/L	1	08/29/24 3:12 PM	
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1	08/29/24 3:12 PM	
Dibromomethane	< 10.0	10.0		µg/L	1	08/29/24 3:12 PM	
Ethylbenzene	< 5.0	5.0		µg/L	1	08/29/24 3:12 PM	
Iodomethane	< 10.0	10.0		µg/L	1	08/29/24 3:12 PM	
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1	08/29/24 3:12 PM	
Methylene Chloride	< 5.0	5.0		µg/L	1	08/29/24 3:12 PM	
Styrene	< 5.0	5.0		µg/L	1	08/29/24 3:12 PM	
Tetrachloroethene	< 5.0	5.0		µg/L	1	08/29/24 3:12 PM	
Toluene	< 5.0	5.0		µg/L	1	08/29/24 3:12 PM	
trans-1,2-Dichloroethene	< 10.0	10.0		µg/L	1	08/29/24 3:12 PM	
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1	08/29/24 3:12 PM	
trans-1,4-Dichloro-2-butene	< 10.0	10.0		µg/L	1	08/29/24 3:12 PM	



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 30-Sep-24

CLIENT:	LIVE OAK LANDFILL	Client Sample ID:	TB-02
Lab Order:	G2408E93	Sampled By:	ACC
Project:	Live Oak 221A3	Collection Date:	8/27/2024 12:00:01 AM
Lab ID:	G2408E93-008	Received Date:	8/28/2024 12:41:55 PM
Matrix:	AQUEOUS		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MTM			EPA 8260 D
Tribromomethane	< 5.0	5.0		µg/L	1		08/29/24 3:12 PM
Trichloroethene	< 5.0	5.0		µg/L	1		08/29/24 3:12 PM
Trichlorofluoromethane	< 10.0	10.0	C1	µg/L	1		08/29/24 3:12 PM
Trichloromethane	< 5.0	5.0		µg/L	1		08/29/24 3:12 PM
Vinyl Acetate	< 10.0	10.0		µg/L	1		08/29/24 3:12 PM
Vinyl Chloride	< 2.0	2.0		µg/L	1		08/29/24 3:12 PM
Total Xylene	< 10.0	10.0		µg/L	1		08/29/24 3:12 PM
Surr: 1,2-Dichloroethane-d4	105	70-130		%REC	1		08/29/24 3:12 PM
Surr: 4-Bromofluorobenzene	96.5	70-130		%REC	1		08/29/24 3:12 PM
Surr: Dibromofluoromethane	101	70-130		%REC	1		08/29/24 3:12 PM
Surr: Toluene-d8	88.8	70-130		%REC	1		08/29/24 3:12 PM



I.D. 56-00306 PA DEP



2005 N. Center Ave.  
Somerset, PA 15501

814/443-1671  
814/445-6666  
FAX: 814/445-6729

Wednesday, September 25, 2024

JUDY ARMOUR  
LIVE OAK LANDFILL  
2901 MECHANICSVILLE ROAD  
NORCROSS, GA 30071

RE: Live Oak 221A3

Order No.: G2408F33

Dear JUDY ARMOUR:

Geochemical Testing received 1 sample(s) on 8/29/2024 for the analyses presented in the following report.

There were no problems with sample receipt protocols and analyses met the TNI/NELAC, EPA, and laboratory specifications except where noted in the Case Narrative or Laboratory Results.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Joelle Streczywilk  
Environmental Laboratory Manager

Leslie A. Nemeth  
Project Manager



## Geochemical Testing

Date: 25-Sep-24

**CLIENT:** LIVE OAK LANDFILL  
**Project:** Live Oak 221A3  
**Lab Order:** G2408F33

## CASE NARRATIVE

No problems were encountered during analysis of this workorder, except if noted in this report.

The analytical data submitted within this report was submitted by an approved analytical laboratory (per Chapter 391-3-26-.05) and in accordance with Georgia state law (O.C.G.A. 12-2-9). The accreditation information follows below:

**LABORATORY:** Geochemical Testing, Somerset, Pennsylvania  
**ACCREDITATION AGENCY:** Pennsylvania National Environmental Laboratory Accreditation Program (NELAP)  
**ACCREDITATION ID:** PA ID# 56-00306  
**SCOPE:** Potable, Non-Potable, Solid and Chemical Materials  
**EXPIRATION DATE:** January 31, 2025

**Glossary:**  
H - Method Hold Time exceeded and is not compliant with 40CFR136 Table II.  
U - The analyte was not detected at or above the listed concentration, which is below the laboratory quantitation limit.  
B - Analyte detected in the associated Method Blank  
Q1 - See case narrative      ND - Not Detected  
MCL - Contaminant Limit      J - Indicates an estimated value.  
Q - Qualifier      QL - Quantitation Limit      DF - Dilution Factor

S - Surrogate Recovery outside accepted recovery limits  
T - Sample received above required temperature and is not compliant with 40CFR136 Table II.  
T1 - Sample received above required temperature  
MDA - Minimum Detectable Activity.  
\*\* - Value exceeds Action Limit  
TICs - Tentatively Identified Compounds.  
E - Value above quantitation range



## Glossary (continued)

1	Spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or greater.	M7	Recovery for matrix spike could not be quantified due to matrix interference.
B1	Dilution water blank exceeded method criterion.	M8	Analyte was spiked into the MS, but was not recovered.
C1	CCV recovery above the acceptance limits. Results may be biased high.	M9	Analyte concentration was determined by the method of standard addition (MSA).
C2	CCV recovery below the acceptance limits. Results may be biased low.	N1	The lab does not hold accreditation from PA-DEP for this parameter by this method
C3	ICV recovery above the acceptance limits. Results may be biased high.	N2	PADEP does not accredit labs for this analyte by this method.
C4	ICV recovery below the acceptance limits. Results may be biased low.	N3	The lab is accredited for this method in West Virginia, but not in PA (its primary accrediting body).
C5	Positive values verified by second column confirmation.	N4	PADEP does not accredit labs for this analyte by this method in drinking water.
C6	Confirmation analysis by another detector or chromatographic column was not performed.	O1	The flashpoint tester cannot detect below 50 degrees F.
D1	The analysis did not meet the minimum DO depletion of at least 2 mg/L.	O2	Result is temperature of the sample when flame observed. No flash observed. Result qualified.
D2	The analysis did not meet the minimum residual DO of at least 1 mg/L.	O3	The reporting limits were raised due to the high concentration of non-target compounds.
D3	Sample required dilution due to a matrix interference.	O4	Sample was received with headspace.
D4	Sample was diluted in the extraction steps due to marked matrix interferences.	O5	Sample was received in incorrect container and is not compliant with 40CFR136 Table II.
D5	Sample required dilution due to a chloride interference.	O6	Insufficient sample volume was received to comply with the method.
D6	Sample was diluted and the reporting limits were raised to achieve method compliant internal standard recovery.	P1	The pH of the sample was >2 and is not compliant with 40CFR136 Table II.
D7	Sample was digested at a dilution due to the formation of a post-digestion precipitate.	P2	Sample contained residual chlorine and is not compliant with 40CFR136 Table II
D8	Sample was digested at a dilution to achieve method compliant matrix spike recovery.	P3	The pH of the sample was <10 and is not compliant with 40CFR136 Table II.
D9	Sample was digested at a dilution to meet method compliant digestion criteria.	P4	Field preservation does not meet EPA or method recommendations for this analysis.
E2	Unable to obtain a stable weight within specified limits due to sample matrix. Value is estimated.	P5	Acid preservation may not be appropriate for the analysis of 2-Chloroethylvinyl ether.
F1	Fecal sample tested positive for residual chlorine.	P6	Sample required additional preservative upon receipt.
H1	Due to under-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.	P7	The sample was received unpreserved.
H2	Due to over-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.	P8	The pH of the sample was < 9 and is not compliant with 40 CFR136 Table II.
H3	Sample was re-analyzed outside of hold time due to error during original analysis.	R	Relative Percent Difference (RPD) was above the control limit.
H4	The Nitrite result used to report Nitrate was analyzed past the 48-hour holding time.	R1	RPD above control limits between matrix spike and MS duplicates.
I1	Internal standard recovery above method acceptance limits. Results are estimated.	R2	RPD above the control limit between duplicates.
I2	Internal standard recovery was below method acceptance limits. Results are estimated.	R3	RSD above the control limit between replicates.
IP	One of the instrument performance checks ( ) did not meet the acceptance criteria.	R4	RPD above control limits between Inorganic Carbon check and spike.
L1	LCS above the acceptance limits. Result may be biased high.	R5	RPD above control limits between control sample and control sample duplicates.
L2	LCS below the acceptance limits. Result may be biased low.	S2	Surrogate recovery in the blank was below the control limit.
L3	Analyte was spiked into the LCS, but was not recovered.	S3	Surrogate recovery in the blank was above the control limit.
M1	Matrix Spike recovery above the acceptance limits.	S4	Surrogate recovery in the LCS is above the control limit.
M2	Matrix Spike recovery below the acceptance limits.	S5	Surrogate recovery in the LCS is below the control limit.
M4	The matrix spike failed high for the surrogate.	SR	Analyte recovery was outside the accepted recovery limits and above the control limit for RPD.
M5	The matrix spike failed low for the surrogate.	T3	Target analyte found in trip/field blank.
M6	The reporting limits were raised due to sample matrix interference.	TC	The MS tune check (tailing factor) did not meet the acceptance criteria.

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWA-2A
<b>Lab Order:</b>	G2408F33	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/26/2024 1:48:00 PM
<b>Lab ID:</b>	G2408F33-001	<b>Received Date:</b>	8/29/2024 9:51:16 AM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>FIELD PARAMETERS</b>							
pH (Field)	6.39			S.U.		08/26/24 1:48 PM	
Specific Conductance (Field)	195			µmhos/cm		08/26/24 1:48 PM	
Temperature (Field)	22.0			deg C		08/26/24 1:48 PM	
Turbidity (Field)	0.7			NTU		08/26/24 1:48 PM	
<b>INORGANIC NON-METALS</b>							
Alkalinity to pH 4.5	90	10		mg/L CaCO <sub>3</sub>	1	08/29/24 8:02 PM	
<b>INORGANIC NON-METALS</b>							
Chloride	2.8	1.0		mg/L	1	08/29/24 11:54 AM	08/29/24 11:57 AM
<b>INORGANIC NON-METALS</b>							
Ammonia Nitrogen	< 0.10	0.10		mg/L as N	1		09/03/24 8:33 AM
<b>INORGANIC METALS</b>							
Potassium	< 0.5	0.5		mg/L	1	09/03/24 8:00 AM	09/04/24 9:22 AM
Sodium	5.9	1.0		mg/L	1	09/03/24 8:00 AM	09/04/24 9:22 AM
<b>INORGANIC METALS</b>							
Lead	< 5.0	5.0		µg/L	1	09/03/24 8:00 AM	09/05/24 7:50 AM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1	08/29/24 6:25 PM	
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1	08/29/24 6:25 PM	
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1	08/29/24 6:25 PM	
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1	08/29/24 6:25 PM	
1,1-Dichloroethane	< 2.4	2.4		µg/L	1	08/29/24 6:25 PM	
1,1-Dichloroethene	< 5.0	5.0		µg/L	1	08/29/24 6:25 PM	
1,2,3-Trichloropropane	< 10	10		µg/L	1	08/29/24 6:25 PM	
1,2-Dibromo-3-chloropropane	< 5.0	5.0		µg/L	1	08/29/24 6:25 PM	
1,2-Dibromoethane	< 1.0	1.0		µg/L	1	08/29/24 6:25 PM	
1,2-Dichlorobenzene	< 10	10		µg/L	1	08/29/24 6:25 PM	
1,2-Dichloroethane	< 5.0	5.0		µg/L	1	08/29/24 6:25 PM	
1,2-Dichloropropane	< 5.0	5.0		µg/L	1	08/29/24 6:25 PM	
1,4-Dichlorobenzene	< 10	10		µg/L	1	08/29/24 6:25 PM	
2-Hexanone	< 10	10		µg/L	1	08/29/24 6:25 PM	
4-Methyl-2-Pentanone	< 10	10		µg/L	1	08/29/24 6:25 PM	
Acetone	< 34.0	34.0		µg/L	1	08/29/24 6:25 PM	
Acrylonitrile	< 100	100	P4	µg/L	1	08/29/24 6:25 PM	
Benzene	< 5.0	5.0		µg/L	1	08/29/24 6:25 PM	
Bromochloromethane	< 10	10		µg/L	1	08/29/24 6:25 PM	



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWA-2A
<b>Lab Order:</b>	G2408F33	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/26/2024 1:48:00 PM
<b>Lab ID:</b>	G2408F33-001	<b>Received Date:</b>	8/29/2024 9:51:16 AM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			<b>EPA 8260 D</b>
Bromodichloromethane	< 5.0	5.0		µg/L	1		08/29/24 6:25 PM
Bromomethane	< 10	10		µg/L	1		08/29/24 6:25 PM
Carbon Disulfide	< 5.0	5.0		µg/L	1		08/29/24 6:25 PM
Carbon Tetrachloride	< 5.0	5.0		µg/L	1		08/29/24 6:25 PM
Chlorobenzene	< 5.0	5.0		µg/L	1		08/29/24 6:25 PM
Chlorodibromomethane	< 5.0	5.0		µg/L	1		08/29/24 6:25 PM
Chloroethane	< 10	10		µg/L	1		08/29/24 6:25 PM
Chloromethane	< 10	10		µg/L	1		08/29/24 6:25 PM
cis-1,2-Dichloroethene	< 10	10		µg/L	1		08/29/24 6:25 PM
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 6:25 PM
Dibromomethane	< 10	10		µg/L	1		08/29/24 6:25 PM
Ethylbenzene	< 5.0	5.0		µg/L	1		08/29/24 6:25 PM
Iodomethane	< 10	10		µg/L	1		08/29/24 6:25 PM
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1		08/29/24 6:25 PM
Methylene Chloride	< 5.0	5.0		µg/L	1		08/29/24 6:25 PM
Styrene	< 5.0	5.0		µg/L	1		08/29/24 6:25 PM
Tetrachloroethene	< 5.0	5.0		µg/L	1		08/29/24 6:25 PM
Toluene	< 5.0	5.0		µg/L	1		08/29/24 6:25 PM
trans-1,2-Dichloroethene	< 10	10		µg/L	1		08/29/24 6:25 PM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 6:25 PM
trans-1,4-Dichloro-2-butene	< 10	10		µg/L	1		08/29/24 6:25 PM
Tribromomethane	< 5.0	5.0		µg/L	1		08/29/24 6:25 PM
Trichloroethene	< 5.0	5.0		µg/L	1		08/29/24 6:25 PM
Trichlorofluoromethane	< 10	10		µg/L	1		08/29/24 6:25 PM
Trichloromethane	< 5.0	5.0		µg/L	1		08/29/24 6:25 PM
Vinyl Acetate	< 10	10		µg/L	1		08/29/24 6:25 PM
Vinyl Chloride	< 2.0	2.0		µg/L	1		08/29/24 6:25 PM
Total Xylene	< 10	10		µg/L	1		08/29/24 6:25 PM
Surr: 1,2-Dichloroethane-d4	101	70-130		%REC	1		08/29/24 6:25 PM
Surr: 4-Bromofluorobenzene	92.5	70-130		%REC	1		08/29/24 6:25 PM
Surr: Dibromofluoromethane	94.6	70-130		%REC	1		08/29/24 6:25 PM
Surr: Toluene-d8	100	70-130		%REC	1		08/29/24 6:25 PM



2005 N. Center Ave.  
Somerset, PA 15501

814/443-1671  
814/445-6666  
FAX: 814/445-6729

Wednesday, September 25, 2024

JUDY ARMOUR  
LIVE OAK LANDFILL  
2901 MECHANICSVILLE ROAD  
NORCROSS, GA 30071

RE: Live Oak 221A3(a) Order No.: G2408F35

Dear JUDY ARMOUR:

Geochemical Testing received 3 sample(s) on 8/29/2024 for the analyses presented in the following report.

There were no problems with sample receipt protocols and analyses met the TNI/NELAC, EPA, and laboratory specifications except where noted in the Case Narrative or Laboratory Results.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Joelle Streczywilk  
Environmental Laboratory Manager

Leslie A. Nemeth  
Project Manager



## Geochemical Testing

Date: 25-Sep-24

**CLIENT:** LIVE OAK LANDFILL  
**Project:** Live Oak 221A3(a)  
**Lab Order:** G2408F35

## CASE NARRATIVE

No problems were encountered during analysis of this workorder, except if noted in this report.

The analytical data submitted within this report was submitted by an approved analytical laboratory (per Chapter 391-3-26-.05) and in accordance with Georgia state law (O.C.G.A. 12-2-9). The accreditation information follows below:

**LABORATORY:** Geochemical Testing, Somerset, Pennsylvania  
**ACCREDITATION AGENCY:** Pennsylvania National Environmental Laboratory Accreditation Program (NELAP)  
**ACCREDITATION ID:** PA ID# 56-00306  
**SCOPE:** Potable, Non-Potable, Solid and Chemical Materials  
**EXPIRATION DATE:** January 31, 2025

**Glossary:**  
H - Method Hold Time exceeded and is not compliant with 40CFR136 Table II.  
U - The analyte was not detected at or above the listed concentration, which is below the laboratory quantitation limit.  
B - Analyte detected in the associated Method Blank  
Q1 - See case narrative      ND - Not Detected  
MCL - Contaminant Limit      J - Indicates an estimated value.  
Q - Qualifier      QL - Quantitation Limit      DF - Dilution Factor

S - Surrogate Recovery outside accepted recovery limits  
T - Sample received above required temperature and is not compliant with 40CFR136 Table II.  
T1 - Sample received above required temperature  
MDA - Minimum Detectable Activity.  
\*\* - Value exceeds Action Limit  
TICs - Tentatively Identified Compounds.  
E - Value above quantitation range



## Glossary (continued)

1	Spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or greater.	M7	Recovery for matrix spike could not be quantified due to matrix interference.
B1	Dilution water blank exceeded method criterion.	M8	Analyte was spiked into the MS, but was not recovered.
C1	CCV recovery above the acceptance limits. Results may be biased high.	M9	Analyte concentration was determined by the method of standard addition (MSA).
C2	CCV recovery below the acceptance limits. Results may be biased low.	N1	The lab does not hold accreditation from PA-DEP for this parameter by this method
C3	ICV recovery above the acceptance limits. Results may be biased high.	N2	PADEP does not accredit labs for this analyte by this method.
C4	ICV recovery below the acceptance limits. Results may be biased low.	N3	The lab is accredited for this method in West Virginia, but not in PA (its primary accrediting body).
C5	Positive values verified by second column confirmation.	N4	PADEP does not accredit labs for this analyte by this method in drinking water.
C6	Confirmation analysis by another detector or chromatographic column was not performed.	O1	The flashpoint tester cannot detect below 50 degrees F.
D1	The analysis did not meet the minimum DO depletion of at least 2 mg/L.	O2	Result is temperature of the sample when flame observed. No flash observed. Result qualified.
D2	The analysis did not meet the minimum residual DO of at least 1 mg/L.	O3	The reporting limits were raised due to the high concentration of non-target compounds.
D3	Sample required dilution due to a matrix interference.	O4	Sample was received with headspace.
D4	Sample was diluted in the extraction steps due to marked matrix interferences.	O5	Sample was received in incorrect container and is not compliant with 40CFR136 Table II.
D5	Sample required dilution due to a chloride interference.	O6	Insufficient sample volume was received to comply with the method.
D6	Sample was diluted and the reporting limits were raised to achieve method compliant internal standard recovery.	P1	The pH of the sample was >2 and is not compliant with 40CFR136 Table II.
D7	Sample was digested at a dilution due to the formation of a post-digestion precipitate.	P2	Sample contained residual chlorine and is not compliant with 40CFR136 Table II
D8	Sample was digested at a dilution to achieve method compliant matrix spike recovery.	P3	The pH of the sample was <10 and is not compliant with 40CFR136 Table II.
D9	Sample was digested at a dilution to meet method compliant digestion criteria.	P4	Field preservation does not meet EPA or method recommendations for this analysis.
E2	Unable to obtain a stable weight within specified limits due to sample matrix. Value is estimated.	P5	Acid preservation may not be appropriate for the analysis of 2-Chloroethylvinyl ether.
F1	Fecal sample tested positive for residual chlorine.	P6	Sample required additional preservative upon receipt.
H1	Due to under-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.	P7	The sample was received unpreserved.
H2	Due to over-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.	P8	The pH of the sample was < 9 and is not compliant with 40 CFR136 Table II.
H3	Sample was re-analyzed outside of hold time due to error during original analysis.	R	Relative Percent Difference (RPD) was above the control limit.
H4	The Nitrite result used to report Nitrate was analyzed past the 48-hour holding time.	R1	RPD above control limits between matrix spike and MS duplicates.
I1	Internal standard recovery above method acceptance limits. Results are estimated.	R2	RPD above the control limit between duplicates.
I2	Internal standard recovery was below method acceptance limits. Results are estimated.	R3	RSD above the control limit between replicates.
IP	One of the instrument performance checks ( ) did not meet the acceptance criteria.	R4	RPD above control limits between Inorganic Carbon check and spike.
L1	LCS above the acceptance limits. Result may be biased high.	R5	RPD above control limits between control sample and control sample duplicates.
L2	LCS below the acceptance limits. Result may be biased low.	S2	Surrogate recovery in the blank was below the control limit.
L3	Analyte was spiked into the LCS, but was not recovered.	S3	Surrogate recovery in the blank was above the control limit.
M1	Matrix Spike recovery above the acceptance limits.	S4	Surrogate recovery in the LCS is above the control limit.
M2	Matrix Spike recovery below the acceptance limits.	S5	Surrogate recovery in the LCS is below the control limit.
M4	The matrix spike failed high for the surrogate.	SR	Analyte recovery was outside the accepted recovery limits and above the control limit for RPD.
M5	The matrix spike failed low for the surrogate.	T3	Target analyte found in trip/field blank.
M6	The reporting limits were raised due to sample matrix interference.	TC	The MS tune check (tailing factor) did not meet the acceptance criteria.

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-10
<b>Lab Order:</b>	G2408F35	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3(a)	<b>Collection Date:</b>	8/27/2024 12:50:00 PM
<b>Lab ID:</b>	G2408F35-001	<b>Received Date:</b>	8/29/2024 9:56:00 AM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>FIELD PARAMETERS</b>							
pH (Field)	6.67			S.U.		08/27/24 12:50 PM	
Specific Conductance (Field)	380			µmhos/cm		08/27/24 12:50 PM	
Temperature (Field)	29.5			deg C		08/27/24 12:50 PM	
Turbidity (Field)	1.3			NTU		08/27/24 12:50 PM	
<b>INORGANIC NON-METALS</b>							
Alkalinity to pH 4.5	161	10		mg/L CaCO <sub>3</sub>	1	08/29/24 8:13 PM	
<b>INORGANIC NON-METALS</b>							
Chloride	11.7	1.0		mg/L	1	08/29/24 11:54 AM	08/29/24 1:12 PM
<b>INORGANIC NON-METALS</b>							
Ammonia Nitrogen	< 0.10	0.10		mg/L as N	1		09/03/24 8:42 AM
<b>INORGANIC METALS</b>							
Barium	0.03	0.01		mg/L	1	09/03/24 8:00 AM	09/04/24 9:30 AM
Beryllium	< 0.001	0.001		mg/L	1	09/03/24 8:00 AM	09/04/24 9:30 AM
Cobalt	< 0.005	0.005		mg/L	1	09/03/24 8:00 AM	09/04/24 9:30 AM
Nickel	0.03	0.01		mg/L	1	09/03/24 8:00 AM	09/04/24 9:30 AM
Potassium	< 0.5	0.5		mg/L	1	09/03/24 8:00 AM	09/04/24 9:30 AM
Sodium	9.6	1.0		mg/L	1	09/03/24 8:00 AM	09/04/24 9:30 AM
Vanadium	0.016	0.005		mg/L	1	09/03/24 8:00 AM	09/04/24 9:30 AM
Zinc	< 0.02	0.02		mg/L	1	09/03/24 8:00 AM	09/04/24 9:30 AM
<b>INORGANIC METALS</b>							
Antimony	< 2.0	2.0		µg/L	1	09/03/24 8:00 AM	09/05/24 7:55 AM
Arsenic	< 7.0	7.0		µg/L	1	09/03/24 8:00 AM	09/05/24 7:55 AM
Cadmium	< 1.0	1.0		µg/L	1	09/03/24 8:00 AM	09/05/24 7:55 AM
Chromium	< 2.0	2.0		µg/L	1	09/03/24 8:00 AM	09/05/24 7:55 AM
Copper	< 5.0	5.0		µg/L	1	09/03/24 8:00 AM	09/05/24 7:55 AM
Lead	< 5.0	5.0		µg/L	1	09/03/24 8:00 AM	09/05/24 7:55 AM
Selenium	< 10	10		µg/L	1	09/03/24 8:00 AM	09/05/24 7:55 AM
Silver	< 3.0	3.0		µg/L	1	09/03/24 8:00 AM	09/05/24 7:55 AM
Thallium	< 1.0	1.0		µg/L	1	09/03/24 8:00 AM	09/05/24 7:55 AM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 6:49 PM
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 6:49 PM
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 6:49 PM
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 6:49 PM
1,1-Dichloroethane	< 2.4	2.4		µg/L	1		08/29/24 6:49 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-10
<b>Lab Order:</b>	G2408F35	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3(a)	<b>Collection Date:</b>	8/27/2024 12:50:00 PM
<b>Lab ID:</b>	G2408F35-001	<b>Received Date:</b>	8/29/2024 9:56:00 AM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			<b>EPA 8260 D</b>
1,1-Dichloroethene	< 5.0	5.0		µg/L	1		08/29/24 6:49 PM
1,2,3-Trichloropropane	< 10	10		µg/L	1		08/29/24 6:49 PM
1,2-Dibromo-3-chloropropane	< 5.0	5.0		µg/L	1		08/29/24 6:49 PM
1,2-Dibromoethane	< 1.0	1.0		µg/L	1		08/29/24 6:49 PM
1,2-Dichlorobenzene	< 10	10		µg/L	1		08/29/24 6:49 PM
1,2-Dichloroethane	< 5.0	5.0		µg/L	1		08/29/24 6:49 PM
1,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/29/24 6:49 PM
1,4-Dichlorobenzene	< 10	10		µg/L	1		08/29/24 6:49 PM
2-Hexanone	< 10	10		µg/L	1		08/29/24 6:49 PM
4-Methyl-2-Pentanone	< 10	10		µg/L	1		08/29/24 6:49 PM
Acetone	< 34.0	34.0		µg/L	1		08/29/24 6:49 PM
Acrylonitrile	< 100	100	P4	µg/L	1		08/29/24 6:49 PM
Benzene	< 5.0	5.0		µg/L	1		08/29/24 6:49 PM
Bromochloromethane	< 10	10		µg/L	1		08/29/24 6:49 PM
Bromodichloromethane	< 5.0	5.0		µg/L	1		08/29/24 6:49 PM
Bromomethane	< 10	10		µg/L	1		08/29/24 6:49 PM
Carbon Disulfide	< 5.0	5.0		µg/L	1		08/29/24 6:49 PM
Carbon Tetrachloride	< 5.0	5.0		µg/L	1		08/29/24 6:49 PM
Chlorobenzene	< 5.0	5.0		µg/L	1		08/29/24 6:49 PM
Chlorodibromomethane	< 5.0	5.0		µg/L	1		08/29/24 6:49 PM
Chloroethane	< 10	10		µg/L	1		08/29/24 6:49 PM
Chloromethane	< 10	10		µg/L	1		08/29/24 6:49 PM
cis-1,2-Dichloroethene	< 10	10		µg/L	1		08/29/24 6:49 PM
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 6:49 PM
Dibromomethane	< 10	10		µg/L	1		08/29/24 6:49 PM
Ethylbenzene	< 5.0	5.0		µg/L	1		08/29/24 6:49 PM
Iodomethane	< 10	10		µg/L	1		08/29/24 6:49 PM
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1		08/29/24 6:49 PM
Methylene Chloride	< 5.0	5.0		µg/L	1		08/29/24 6:49 PM
Styrene	< 5.0	5.0		µg/L	1		08/29/24 6:49 PM
Tetrachloroethene	< 5.0	5.0		µg/L	1		08/29/24 6:49 PM
Toluene	< 5.0	5.0		µg/L	1		08/29/24 6:49 PM
trans-1,2-Dichloroethene	< 10	10		µg/L	1		08/29/24 6:49 PM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 6:49 PM
trans-1,4-Dichloro-2-butene	< 10	10		µg/L	1		08/29/24 6:49 PM
Tribromomethane	< 5.0	5.0		µg/L	1		08/29/24 6:49 PM
Trichloroethene	< 5.0	5.0		µg/L	1		08/29/24 6:49 PM
Trichlorofluoromethane	< 10	10		µg/L	1		08/29/24 6:49 PM
Trichloromethane	< 5.0	5.0		µg/L	1		08/29/24 6:49 PM
Vinyl Acetate	< 10	10		µg/L	1		08/29/24 6:49 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

CLIENT:	LIVE OAK LANDFILL	Client Sample ID:	GWC-10
Lab Order:	G2408F35	Sampled By:	ACC
Project:	Live Oak 221A3(a)	Collection Date:	8/27/2024 12:50:00 PM
Lab ID:	G2408F35-001	Received Date:	8/29/2024 9:56:00 AM
Matrix:	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			EPA 8260 D
Vinyl Chloride	< 2.0	2.0		µg/L	1		08/29/24 6:49 PM
Total Xylene	< 10	10		µg/L	1		08/29/24 6:49 PM
Surr: 1,2-Dichloroethane-d4	98.0	70-130		%REC	1		08/29/24 6:49 PM
Surr: 4-Bromofluorobenzene	96.1	70-130		%REC	1		08/29/24 6:49 PM
Surr: Dibromofluoromethane	91.5	70-130		%REC	1		08/29/24 6:49 PM
Surr: Toluene-d8	101	70-130		%REC	1		08/29/24 6:49 PM

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-14
<b>Lab Order:</b>	G2408F35	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3(a)	<b>Collection Date:</b>	8/26/2024 12:13:00 PM
<b>Lab ID:</b>	G2408F35-002	<b>Received Date:</b>	8/29/2024 9:56:00 AM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>FIELD PARAMETERS</b>							
pH (Field)	5.81			S.U.		08/26/24 12:13 PM	
Specific Conductance (Field)	336			µmhos/cm		08/26/24 12:13 PM	
Temperature (Field)	24.5			deg C		08/26/24 12:13 PM	
Turbidity (Field)	1.2			NTU		08/26/24 12:13 PM	
<b>INORGANIC NON-METALS</b>							
Alkalinity to pH 4.5	123	10		mg/L CaCO <sub>3</sub>	1	08/29/24 8:21 PM	
<b>INORGANIC NON-METALS</b>							
Chloride	14.2	1.0		mg/L	1	08/29/24 11:54 AM	08/29/24 1:31 PM
<b>INORGANIC NON-METALS</b>							
Ammonia Nitrogen	< 0.10	0.10		mg/L as N	1		09/03/24 8:47 AM
<b>INORGANIC METALS</b>							
Barium	0.11	0.01		mg/L	1	09/03/24 8:00 AM	09/04/24 9:32 AM
Beryllium	< 0.001	0.001		mg/L	1	09/03/24 8:00 AM	09/04/24 9:32 AM
Cobalt	< 0.005	0.005		mg/L	1	09/03/24 8:00 AM	09/04/24 9:32 AM
Nickel	< 0.01	0.01		mg/L	1	09/03/24 8:00 AM	09/04/24 9:32 AM
Potassium	< 0.5	0.5		mg/L	1	09/03/24 8:00 AM	09/04/24 9:32 AM
Sodium	33.7	1.0		mg/L	1	09/03/24 8:00 AM	09/04/24 9:32 AM
Vanadium	< 0.005	0.005		mg/L	1	09/03/24 8:00 AM	09/04/24 9:32 AM
Zinc	< 0.02	0.02		mg/L	1	09/03/24 8:00 AM	09/04/24 9:32 AM
<b>INORGANIC METALS</b>							
Antimony	< 2.0	2.0		µg/L	1	09/03/24 8:00 AM	09/05/24 7:57 AM
Arsenic	< 7.0	7.0		µg/L	1	09/03/24 8:00 AM	09/05/24 7:57 AM
Cadmium	< 1.0	1.0		µg/L	1	09/03/24 8:00 AM	09/05/24 7:57 AM
Chromium	32.7	2.0		µg/L	1	09/03/24 8:00 AM	09/05/24 7:57 AM
Copper	< 5.0	5.0		µg/L	1	09/03/24 8:00 AM	09/05/24 7:57 AM
Lead	< 5.0	5.0		µg/L	1	09/03/24 8:00 AM	09/05/24 7:57 AM
Selenium	< 10	10		µg/L	1	09/03/24 8:00 AM	09/05/24 7:57 AM
Silver	< 3.0	3.0		µg/L	1	09/03/24 8:00 AM	09/05/24 7:57 AM
Thallium	< 1.0	1.0		µg/L	1	09/03/24 8:00 AM	09/05/24 7:57 AM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 11:36 PM
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 11:36 PM
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/29/24 11:36 PM
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1		08/29/24 11:36 PM
1,1-Dichloroethane	< 2.4	2.4		µg/L	1		08/29/24 11:36 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

**CLIENT:** LIVE OAK LANDFILL  
**Lab Order:** G2408F35  
**Project:** Live Oak 221A3(a)  
**Lab ID:** G2408F35-002  
**Matrix:** GROUNDWATER

**Client Sample ID:** GWC-14  
**Sampled By:** ACC  
**Collection Date:** 8/26/2024 12:13:00 PM  
**Received Date:** 8/29/2024 9:56:00 AM

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			<b>EPA 8260 D</b>
1,1-Dichloroethene	< 5.0	5.0		µg/L	1		08/29/24 11:36 PM
1,2,3-Trichloropropane	< 10	10		µg/L	1		08/29/24 11:36 PM
1,2-Dibromo-3-chloropropane	< 5.0	5.0		µg/L	1		08/29/24 11:36 PM
1,2-Dibromoethane	< 1.0	1.0		µg/L	1		08/29/24 11:36 PM
1,2-Dichlorobenzene	< 10	10		µg/L	1		08/29/24 11:36 PM
1,2-Dichloroethane	< 5.0	5.0		µg/L	1		08/29/24 11:36 PM
1,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/29/24 11:36 PM
1,4-Dichlorobenzene	< 10	10		µg/L	1		08/29/24 11:36 PM
2-Hexanone	< 10	10		µg/L	1		08/29/24 11:36 PM
4-Methyl-2-Pentanone	< 10	10		µg/L	1		08/29/24 11:36 PM
Acetone	< 34.0	34.0		µg/L	1		08/29/24 11:36 PM
Acrylonitrile	< 100	100	P4	µg/L	1		08/29/24 11:36 PM
Benzene	< 5.0	5.0		µg/L	1		08/29/24 11:36 PM
Bromochloromethane	< 10	10		µg/L	1		08/29/24 11:36 PM
Bromodichloromethane	< 5.0	5.0		µg/L	1		08/29/24 11:36 PM
Bromomethane	< 10	10		µg/L	1		08/29/24 11:36 PM
Carbon Disulfide	< 5.0	5.0		µg/L	1		08/29/24 11:36 PM
Carbon Tetrachloride	< 5.0	5.0		µg/L	1		08/29/24 11:36 PM
Chlorobenzene	< 5.0	5.0		µg/L	1		08/29/24 11:36 PM
Chlorodibromomethane	< 5.0	5.0		µg/L	1		08/29/24 11:36 PM
Chloroethane	< 10	10		µg/L	1		08/29/24 11:36 PM
Chloromethane	< 10	10		µg/L	1		08/29/24 11:36 PM
cis-1,2-Dichloroethene	< 10	10		µg/L	1		08/29/24 11:36 PM
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 11:36 PM
Dibromomethane	< 10	10		µg/L	1		08/29/24 11:36 PM
Ethylbenzene	< 5.0	5.0		µg/L	1		08/29/24 11:36 PM
Iodomethane	< 10	10		µg/L	1		08/29/24 11:36 PM
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1		08/29/24 11:36 PM
Methylene Chloride	< 5.0	5.0		µg/L	1		08/29/24 11:36 PM
Styrene	< 5.0	5.0		µg/L	1		08/29/24 11:36 PM
Tetrachloroethene	< 5.0	5.0		µg/L	1		08/29/24 11:36 PM
Toluene	< 5.0	5.0		µg/L	1		08/29/24 11:36 PM
trans-1,2-Dichloroethene	< 10	10		µg/L	1		08/29/24 11:36 PM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/29/24 11:36 PM
trans-1,4-Dichloro-2-butene	< 10	10		µg/L	1		08/29/24 11:36 PM
Tribromomethane	< 5.0	5.0		µg/L	1		08/29/24 11:36 PM
Trichloroethene	< 5.0	5.0		µg/L	1		08/29/24 11:36 PM
Trichlorofluoromethane	< 10	10		µg/L	1		08/29/24 11:36 PM
Trichloromethane	< 5.0	5.0		µg/L	1		08/29/24 11:36 PM
Vinyl Acetate	< 10	10		µg/L	1		08/29/24 11:36 PM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

CLIENT:	LIVE OAK LANDFILL	Client Sample ID:	GWC-14
Lab Order:	G2408F35	Sampled By:	ACC
Project:	Live Oak 221A3(a)	Collection Date:	8/26/2024 12:13:00 PM
Lab ID:	G2408F35-002	Received Date:	8/29/2024 9:56:00 AM
Matrix:	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			EPA 8260 D
Vinyl Chloride	< 2.0	2.0		µg/L	1		08/29/24 11:36 PM
Total Xylene	< 10	10		µg/L	1		08/29/24 11:36 PM
Surr: 1,2-Dichloroethane-d4	97.3	70-130		%REC	1		08/29/24 11:36 PM
Surr: 4-Bromofluorobenzene	94.4	70-130		%REC	1		08/29/24 11:36 PM
Surr: Dibromofluoromethane	92.5	70-130		%REC	1		08/29/24 11:36 PM
Surr: Toluene-d8	100	70-130		%REC	1		08/29/24 11:36 PM

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	TB-03
<b>Lab Order:</b>	G2408F35	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3(a)	<b>Collection Date:</b>	8/27/2024 12:00:01 AM
<b>Lab ID:</b>	G2408F35-003	<b>Received Date:</b>	8/29/2024 9:56:00 AM
<b>Matrix:</b>	AQUEOUS		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			<b>EPA 8260 D</b>
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/30/24 12:00 AM
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1		08/30/24 12:00 AM
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/30/24 12:00 AM
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1		08/30/24 12:00 AM
1,1-Dichloroethane	< 2.4	2.4		µg/L	1		08/30/24 12:00 AM
1,1-Dichloroethene	< 5.0	5.0		µg/L	1		08/30/24 12:00 AM
1,2,3-Trichloropropane	< 10	10		µg/L	1		08/30/24 12:00 AM
1,2-Dibromo-3-chloropropane	< 5.0	5.0		µg/L	1		08/30/24 12:00 AM
1,2-Dibromoethane	< 1.0	1.0		µg/L	1		08/30/24 12:00 AM
1,2-Dichlorobenzene	< 10	10		µg/L	1		08/30/24 12:00 AM
1,2-Dichloroethane	< 5.0	5.0		µg/L	1		08/30/24 12:00 AM
1,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/30/24 12:00 AM
1,4-Dichlorobenzene	< 10	10		µg/L	1		08/30/24 12:00 AM
2-Hexanone	< 10	10		µg/L	1		08/30/24 12:00 AM
4-Methyl-2-Pentanone	< 10	10		µg/L	1		08/30/24 12:00 AM
Acetone	< 34.0	34.0		µg/L	1		08/30/24 12:00 AM
Acrylonitrile	< 100	100	P4	µg/L	1		08/30/24 12:00 AM
Benzene	< 5.0	5.0		µg/L	1		08/30/24 12:00 AM
Bromochloromethane	< 10	10		µg/L	1		08/30/24 12:00 AM
Bromodichloromethane	< 5.0	5.0		µg/L	1		08/30/24 12:00 AM
Bromomethane	< 10	10		µg/L	1		08/30/24 12:00 AM
Carbon Disulfide	< 5.0	5.0		µg/L	1		08/30/24 12:00 AM
Carbon Tetrachloride	< 5.0	5.0		µg/L	1		08/30/24 12:00 AM
Chlorobenzene	< 5.0	5.0		µg/L	1		08/30/24 12:00 AM
Chlorodibromomethane	< 5.0	5.0		µg/L	1		08/30/24 12:00 AM
Chloroethane	< 10	10		µg/L	1		08/30/24 12:00 AM
Chloromethane	< 10	10		µg/L	1		08/30/24 12:00 AM
cis-1,2-Dichloroethene	< 10	10		µg/L	1		08/30/24 12:00 AM
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/30/24 12:00 AM
Dibromomethane	< 10	10		µg/L	1		08/30/24 12:00 AM
Ethylbenzene	< 5.0	5.0		µg/L	1		08/30/24 12:00 AM
Iodomethane	< 10	10		µg/L	1		08/30/24 12:00 AM
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1		08/30/24 12:00 AM
Methylene Chloride	< 5.0	5.0		µg/L	1		08/30/24 12:00 AM
Styrene	< 5.0	5.0		µg/L	1		08/30/24 12:00 AM
Tetrachloroethene	< 5.0	5.0		µg/L	1		08/30/24 12:00 AM
Toluene	< 5.0	5.0		µg/L	1		08/30/24 12:00 AM
trans-1,2-Dichloroethene	< 10	10		µg/L	1		08/30/24 12:00 AM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/30/24 12:00 AM
trans-1,4-Dichloro-2-butene	< 10	10		µg/L	1		08/30/24 12:00 AM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

CLIENT:	LIVE OAK LANDFILL	Client Sample ID:	TB-03
Lab Order:	G2408F35	Sampled By:	ACC
Project:	Live Oak 221A3(a)	Collection Date:	8/27/2024 12:00:01 AM
Lab ID:	G2408F35-003	Received Date:	8/29/2024 9:56:00 AM
Matrix:	AQUEOUS		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			EPA 8260 D
Tribromomethane	< 5.0	5.0		µg/L	1		08/30/24 12:00 AM
Trichloroethene	< 5.0	5.0		µg/L	1		08/30/24 12:00 AM
Trichlorofluoromethane	< 10	10		µg/L	1		08/30/24 12:00 AM
Trichloromethane	< 5.0	5.0		µg/L	1		08/30/24 12:00 AM
Vinyl Acetate	< 10	10		µg/L	1		08/30/24 12:00 AM
Vinyl Chloride	< 2.0	2.0		µg/L	1		08/30/24 12:00 AM
Total Xylene	< 10	10		µg/L	1		08/30/24 12:00 AM
Surr: 1,2-Dichloroethane-d4	96.0	70-130		%REC	1		08/30/24 12:00 AM
Surr: 4-Bromofluorobenzene	95.6	70-130		%REC	1		08/30/24 12:00 AM
Surr: Dibromofluoromethane	93.0	70-130		%REC	1		08/30/24 12:00 AM
Surr: Toluene-d8	101	70-130		%REC	1		08/30/24 12:00 AM



I.D. 56-00306 PA DEP



2005 N. Center Ave.  
Somerset, PA 15501

814/443-1671  
814/445-6666  
FAX: 814/445-6729

Monday, September 30, 2024

JUDY ARMOUR  
LIVE OAK LANDFILL  
2901 MECHANICSVILLE ROAD  
NORCROSS, GA 30071

RE: Live Oak 221A3

Order No.: G2408F37

Dear JUDY ARMOUR:

Geochemical Testing received 5 sample(s) on 8/29/2024 for the analyses presented in the following report.

There were no problems with sample receipt protocols and analyses met the TNI/NELAC, EPA, and laboratory specifications except where noted in the Case Narrative or Laboratory Results.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Joelle Streczywilk  
Environmental Laboratory Manager

Leslie A. Nemeth  
Project Manager



## Geochemical Testing

Date: 30-Sep-24

**CLIENT:** LIVE OAK LANDFILL  
**Project:** Live Oak 221A3  
**Lab Order:** G2408F37

## CASE NARRATIVE

No problems were encountered during analysis of this workorder, except if noted in this report.

The analytical data submitted within this report was submitted by an approved analytical laboratory (per Chapter 391-3-26-.05) and in accordance with Georgia state law (O.C.G.A. 12-2-9). The accreditation information follows below:

**LABORATORY:** Geochemical Testing, Somerset, Pennsylvania  
**ACCREDITATION AGENCY:** Pennsylvania National Environmental Laboratory Accreditation Program (NELAP)  
**ACCREDITATION ID:** PA ID# 56-00306  
**SCOPE:** Potable, Non-Potable, Solid and Chemical Materials  
**EXPIRATION DATE:** January 31, 2025

The dissolved methane analysis by RSK-175 was subcontracted to Eurofins Lancaster (PADEP 36-00037). A copy of the subcontractor's laboratory report is enclosed with this Analytical Report.

**REVISED REPORT:** (9/30/24): As per client request, and to appear on the EDD, the subcontracted dissolved methane results have been added to this report. The following sample analysis was added after expiration of holding time. As such, the laboratory had insufficient time remaining to perform the analysis within holding time: AMP-5 (410-186148-1).

Note: This is a reissue of a previously generated report. Information herein supersedes that of previously issued report(s).

**Glossary:**  
H - Method Hold Time exceeded and is not compliant with 40CFR136 Table II.  
U - The analyte was not detected at or above the listed concentration, which is below the laboratory quantitation limit.  
B - Analyte detected in the associated Method Blank  
Q1 - See case narrative      ND - Not Detected  
MCL - Contaminant Limit      J - Indicates an estimated value.  
Q - Qualifier      QL - Quantitation Limit      DF - Dilution Factor

S - Surrogate Recovery outside accepted recovery limits  
T - Sample received above required temperature and is not compliant with 40CFR136 Table II.  
T1 - Sample received above required temperature  
MDA - Minimum Detectable Activity.  
\*\* - Value exceeds Action Limit  
TICs - Tentatively Identified Compounds.  
E - Value above quantitation range



## Glossary (continued)

1	Spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or greater.	M7	Recovery for matrix spike could not be quantified due to matrix interference.
B1	Dilution water blank exceeded method criterion.	M8	Analyte was spiked into the MS, but was not recovered.
C1	CCV recovery above the acceptance limits. Results may be biased high.	M9	Analyte concentration was determined by the method of standard addition (MSA).
C2	CCV recovery below the acceptance limits. Results may be biased low.	N1	The lab does not hold accreditation from PA-DEP for this parameter by this method
C3	ICV recovery above the acceptance limits. Results may be biased high.	N2	PADEP does not accredit labs for this analyte by this method.
C4	ICV recovery below the acceptance limits. Results may be biased low.	N3	The lab is accredited for this method in West Virginia, but not in PA (its primary accrediting body).
C5	Positive values verified by second column confirmation.	N4	PADEP does not accredit labs for this analyte by this method in drinking water.
C6	Confirmation analysis by another detector or chromatographic column was not performed.	O1	The flashpoint tester cannot detect below 50 degrees F.
D1	The analysis did not meet the minimum DO depletion of at least 2 mg/L.	O2	Result is temperature of the sample when flame observed. No flash observed. Result qualified.
D2	The analysis did not meet the minimum residual DO of at least 1 mg/L.	O3	The reporting limits were raised due to the high concentration of non-target compounds.
D3	Sample required dilution due to a matrix interference.	O4	Sample was received with headspace.
D4	Sample was diluted in the extraction steps due to marked matrix interferences.	O5	Sample was received in incorrect container and is not compliant with 40CFR136 Table II.
D5	Sample required dilution due to a chloride interference.	O6	Insufficient sample volume was received to comply with the method.
D6	Sample was diluted and the reporting limits were raised to achieve method compliant internal standard recovery.	P1	The pH of the sample was >2 and is not compliant with 40CFR136 Table II.
D7	Sample was digested at a dilution due to the formation of a post-digestion precipitate.	P2	Sample contained residual chlorine and is not compliant with 40CFR136 Table II
D8	Sample was digested at a dilution to achieve method compliant matrix spike recovery.	P3	The pH of the sample was <10 and is not compliant with 40CFR136 Table II.
D9	Sample was digested at a dilution to meet method compliant digestion criteria.	P4	Field preservation does not meet EPA or method recommendations for this analysis.
E2	Unable to obtain a stable weight within specified limits due to sample matrix. Value is estimated.	P5	Acid preservation may not be appropriate for the analysis of 2-Chloroethylvinyl ether.
F1	Fecal sample tested positive for residual chlorine.	P6	Sample required additional preservative upon receipt.
H1	Due to under-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.	P7	The sample was received unpreserved.
H2	Due to over-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.	P8	The pH of the sample was < 9 and is not compliant with 40 CFR136 Table II.
H3	Sample was re-analyzed outside of hold time due to error during original analysis.	R	Relative Percent Difference (RPD) was above the control limit.
H4	The Nitrite result used to report Nitrate was analyzed past the 48-hour holding time.	R1	RPD above control limits between matrix spike and MS duplicates.
I1	Internal standard recovery above method acceptance limits. Results are estimated.	R2	RPD above the control limit between duplicates.
I2	Internal standard recovery was below method acceptance limits. Results are estimated.	R3	RSD above the control limit between replicates.
IP	One of the instrument performance checks ( ) did not meet the acceptance criteria.	R4	RPD above control limits between Inorganic Carbon check and spike.
L1	LCS above the acceptance limits. Result may be biased high.	R5	RPD above control limits between control sample and control sample duplicates.
L2	LCS below the acceptance limits. Result may be biased low.	S2	Surrogate recovery in the blank was below the control limit.
L3	Analyte was spiked into the LCS, but was not recovered.	S3	Surrogate recovery in the blank was above the control limit.
M1	Matrix Spike recovery above the acceptance limits.	S4	Surrogate recovery in the LCS is above the control limit.
M2	Matrix Spike recovery below the acceptance limits.	S5	Surrogate recovery in the LCS is below the control limit.
M4	The matrix spike failed high for the surrogate.	SR	Analyte recovery was outside the accepted recovery limits and above the control limit for RPD.
M5	The matrix spike failed low for the surrogate.	T3	Target analyte found in trip/field blank.
M6	The reporting limits were raised due to sample matrix interference.	TC	The MS tune check (tailing factor) did not meet the acceptance criteria.

# Laboratory Results

## Geochemical Testing

Date: 30-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	01FB
<b>Lab Order:</b>	G2408F37	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/28/2024 10:50:00 AM
<b>Lab ID:</b>	G2408F37-001	<b>Received Date:</b>	8/29/2024 10:00:16 AM
<b>Matrix:</b>	AQUEOUS		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>INORGANIC METALS</b>							
Lead	< 5.0	5.0		µg/L	1	09/03/24 8:00 AM	09/05/24 7:59 AM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: RLR		EPA 3010 A	EPA 6020 B
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/30/24 12:23 AM
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1		08/30/24 12:23 AM
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/30/24 12:23 AM
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1		08/30/24 12:23 AM
1,1-Dichloroethane	< 2.4	2.4		µg/L	1		08/30/24 12:23 AM
1,1-Dichloroethene	< 5.0	5.0		µg/L	1		08/30/24 12:23 AM
1,2,3-Trichloropropane	< 10.0	10.0		µg/L	1		08/30/24 12:23 AM
1,2-Dibromo-3-chloropropane	< 5.0	5.0		µg/L	1		08/30/24 12:23 AM
1,2-Dibromoethane	< 1.0	1.0		µg/L	1		08/30/24 12:23 AM
1,2-Dichlorobenzene	< 10.0	10.0		µg/L	1		08/30/24 12:23 AM
1,2-Dichloroethane	< 5.0	5.0		µg/L	1		08/30/24 12:23 AM
1,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/30/24 12:23 AM
1,4-Dichlorobenzene	< 10.0	10.0		µg/L	1		08/30/24 12:23 AM
2-Hexanone	< 10.0	10.0		µg/L	1		08/30/24 12:23 AM
4-Methyl-2-Pentanone	< 10.0	10.0		µg/L	1		08/30/24 12:23 AM
Acetone	< 34.0	34.0		µg/L	1		08/30/24 12:23 AM
Acrylonitrile	< 100	100	P4	µg/L	1		08/30/24 12:23 AM
Benzene	< 5.0	5.0		µg/L	1		08/30/24 12:23 AM
Bromochloromethane	< 10.0	10.0		µg/L	1		08/30/24 12:23 AM
Bromodichloromethane	< 5.0	5.0		µg/L	1		08/30/24 12:23 AM
Bromomethane	< 10.0	10.0		µg/L	1		08/30/24 12:23 AM
Carbon Disulfide	< 5.0	5.0		µg/L	1		08/30/24 12:23 AM
Carbon Tetrachloride	< 5.0	5.0		µg/L	1		08/30/24 12:23 AM
Chlorobenzene	< 5.0	5.0		µg/L	1		08/30/24 12:23 AM
Chlorodibromomethane	< 5.0	5.0		µg/L	1		08/30/24 12:23 AM
Chloroethane	< 10.0	10.0		µg/L	1		08/30/24 12:23 AM
Chloromethane	< 10.0	10.0		µg/L	1		08/30/24 12:23 AM
cis-1,2-Dichloroethene	< 10.0	10.0		µg/L	1		08/30/24 12:23 AM
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/30/24 12:23 AM
Dibromomethane	< 10.0	10.0		µg/L	1		08/30/24 12:23 AM
Ethylbenzene	< 5.0	5.0		µg/L	1		08/30/24 12:23 AM
Iodomethane	< 10.0	10.0		µg/L	1		08/30/24 12:23 AM
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1		08/30/24 12:23 AM
Methylene Chloride	< 5.0	5.0		µg/L	1		08/30/24 12:23 AM
Styrene	< 5.0	5.0		µg/L	1		08/30/24 12:23 AM
Tetrachloroethene	< 5.0	5.0		µg/L	1		08/30/24 12:23 AM
Toluene	< 5.0	5.0		µg/L	1		08/30/24 12:23 AM



# Laboratory Results

## Geochemical Testing

Date: 30-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	01FB
<b>Lab Order:</b>	G2408F37	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/28/2024 10:50:00 AM
<b>Lab ID:</b>	G2408F37-001	<b>Received Date:</b>	8/29/2024 10:00:16 AM
<b>Matrix:</b>	AQUEOUS		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			<b>EPA 8260 D</b>
trans-1,2-Dichloroethene	< 10.0	10.0		µg/L	1		08/30/24 12:23 AM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/30/24 12:23 AM
trans-1,4-Dichloro-2-butene	< 10.0	10.0		µg/L	1		08/30/24 12:23 AM
Tribromomethane	< 5.0	5.0		µg/L	1		08/30/24 12:23 AM
Trichloroethene	< 5.0	5.0		µg/L	1		08/30/24 12:23 AM
Trichlorofluoromethane	< 10.0	10.0		µg/L	1		08/30/24 12:23 AM
Trichloromethane	< 5.0	5.0		µg/L	1		08/30/24 12:23 AM
Vinyl Acetate	< 10.0	10.0		µg/L	1		08/30/24 12:23 AM
Vinyl Chloride	< 2.0	2.0		µg/L	1		08/30/24 12:23 AM
Total Xylene	< 10.0	10.0		µg/L	1		08/30/24 12:23 AM
Surr: 1,2-Dichloroethane-d4	99.2	70-130		%REC	1		08/30/24 12:23 AM
Surr: 4-Bromofluorobenzene	96.1	70-130		%REC	1		08/30/24 12:23 AM
Surr: Dibromofluoromethane	93.4	70-130		%REC	1		08/30/24 12:23 AM
Surr: Toluene-d8	102	70-130		%REC	1		08/30/24 12:23 AM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 30-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	AMP-5
<b>Lab Order:</b>	G2408F37	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/28/2024 12:02:00 PM
<b>Lab ID:</b>	G2408F37-002	<b>Received Date:</b>	8/29/2024 10:00:16 AM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>FIELD PARAMETERS</b>							
pH (Field)	6.00			S.U.		08/28/24 12:02 PM	
Specific Conductance (Field)	353			µmhos/cm		08/28/24 12:02 PM	
Temperature (Field)	23.0			deg C		08/28/24 12:02 PM	
Turbidity (Field)	2.0			NTU		08/28/24 12:02 PM	
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			<b>EPA 8260 D</b>
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1	08/30/24 12:47 AM	
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1	08/30/24 12:47 AM	
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1	08/30/24 12:47 AM	
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1	08/30/24 12:47 AM	
1,1-Dichloroethane	< 2.4	2.4		µg/L	1	08/30/24 12:47 AM	
1,1-Dichloroethene	< 5.0	5.0		µg/L	1	08/30/24 12:47 AM	
1,2,3-Trichloropropane	< 10.0	10.0		µg/L	1	08/30/24 12:47 AM	
1,2-Dibromo-3-chloropropane	< 5.0	5.0		µg/L	1	08/30/24 12:47 AM	
1,2-Dibromoethane	< 1.0	1.0		µg/L	1	08/30/24 12:47 AM	
1,2-Dichlorobenzene	< 10.0	10.0		µg/L	1	08/30/24 12:47 AM	
1,2-Dichloroethane	< 5.0	5.0		µg/L	1	08/30/24 12:47 AM	
1,2-Dichloropropane	< 5.0	5.0		µg/L	1	08/30/24 12:47 AM	
1,4-Dichlorobenzene	< 10.0	10.0		µg/L	1	08/30/24 12:47 AM	
2-Hexanone	< 10.0	10.0		µg/L	1	08/30/24 12:47 AM	
4-Methyl-2-Pentanone	< 10.0	10.0		µg/L	1	08/30/24 12:47 AM	
Acetone	< 34.0	34.0		µg/L	1	08/30/24 12:47 AM	
Acrylonitrile	< 100	100	P4	µg/L	1	08/30/24 12:47 AM	
Benzene	< 5.0	5.0		µg/L	1	08/30/24 12:47 AM	
Bromochloromethane	< 10.0	10.0		µg/L	1	08/30/24 12:47 AM	
Bromodichloromethane	< 5.0	5.0		µg/L	1	08/30/24 12:47 AM	
Bromomethane	< 10.0	10.0		µg/L	1	08/30/24 12:47 AM	
Carbon Disulfide	< 5.0	5.0		µg/L	1	08/30/24 12:47 AM	
Carbon Tetrachloride	< 5.0	5.0		µg/L	1	08/30/24 12:47 AM	
Chlorobenzene	< 5.0	5.0		µg/L	1	08/30/24 12:47 AM	
Chlorodibromomethane	< 5.0	5.0		µg/L	1	08/30/24 12:47 AM	
Chloroethane	< 10.0	10.0		µg/L	1	08/30/24 12:47 AM	
Chloromethane	< 10.0	10.0		µg/L	1	08/30/24 12:47 AM	
cis-1,2-Dichloroethene	< 10.0	10.0		µg/L	1	08/30/24 12:47 AM	
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1	08/30/24 12:47 AM	
Dibromomethane	< 10.0	10.0		µg/L	1	08/30/24 12:47 AM	
Ethylbenzene	< 5.0	5.0		µg/L	1	08/30/24 12:47 AM	
Iodomethane	< 10.0	10.0		µg/L	1	08/30/24 12:47 AM	
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1	08/30/24 12:47 AM	
Methylene Chloride	< 5.0	5.0		µg/L	1	08/30/24 12:47 AM	



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 30-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	AMP-5
<b>Lab Order:</b>	G2408F37	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/28/2024 12:02:00 PM
<b>Lab ID:</b>	G2408F37-002	<b>Received Date:</b>	8/29/2024 10:00:16 AM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Styrene	< 5.0	5.0		µg/L	1		08/30/24 12:47 AM
Tetrachloroethene	< 5.0	5.0		µg/L	1		08/30/24 12:47 AM
Toluene	< 5.0	5.0		µg/L	1		08/30/24 12:47 AM
trans-1,2-Dichloroethene	< 10.0	10.0		µg/L	1		08/30/24 12:47 AM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/30/24 12:47 AM
trans-1,4-Dichloro-2-butene	< 10.0	10.0		µg/L	1		08/30/24 12:47 AM
Tribromomethane	< 5.0	5.0		µg/L	1		08/30/24 12:47 AM
Trichloroethene	< 5.0	5.0		µg/L	1		08/30/24 12:47 AM
Trichlorofluoromethane	< 10.0	10.0		µg/L	1		08/30/24 12:47 AM
Trichloromethane	< 5.0	5.0		µg/L	1		08/30/24 12:47 AM
Vinyl Acetate	< 10.0	10.0		µg/L	1		08/30/24 12:47 AM
Vinyl Chloride	< 2.0	2.0		µg/L	1		08/30/24 12:47 AM
Total Xylene	< 10.0	10.0		µg/L	1		08/30/24 12:47 AM
Surr: 1,2-Dichloroethane-d4	95.9	70-130		%REC	1		08/30/24 12:47 AM
Surr: 4-Bromofluorobenzene	96.0	70-130		%REC	1		08/30/24 12:47 AM
Surr: Dibromofluoromethane	93.9	70-130		%REC	1		08/30/24 12:47 AM
Surr: Toluene-d8	100	70-130		%REC	1		08/30/24 12:47 AM
<b>DISSOLVED GASSES</b>							
Methane, dissolved	930	25	H	ug/l	5	09/18/24 10:50 AM	09/18/24 8:51 PM
						<b>RSK 175</b>	<b>RSK 175</b>



# Laboratory Results

## Geochemical Testing

Date: 30-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-8
<b>Lab Order:</b>	G2408F37	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/28/2024 9:20:00 AM
<b>Lab ID:</b>	G2408F37-003	<b>Received Date:</b>	8/29/2024 10:00:16 AM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>FIELD PARAMETERS</b>							
pH (Field)	6.02			S.U.		08/28/24 9:20 AM	
Specific Conductance (Field)	187			µmhos/cm		08/28/24 9:20 AM	
Temperature (Field)	19.5			deg C		08/28/24 9:20 AM	
Turbidity (Field)	0.7			NTU		08/28/24 9:20 AM	
<b>INORGANIC NON-METALS</b>							
Alkalinity to pH 4.5	90	10		mg/L CaCO <sub>3</sub>	1		08/29/24 8:28 PM
<b>INORGANIC NON-METALS</b>							
Chloride	2.1	1.0		mg/L	1	08/29/24 11:54 AM	08/29/24 1:49 PM
<b>INORGANIC NON-METALS</b>							
Ammonia Nitrogen	< 0.10	0.10		mg/L as N	1		09/24/24 7:59 AM
<b>INORGANIC METALS</b>							
Potassium	< 0.5	0.5		mg/L	1	09/03/24 8:00 AM	09/04/24 9:35 AM
Sodium	4.1	1.0		mg/L	1	09/03/24 8:00 AM	09/04/24 9:35 AM
<b>INORGANIC METALS</b>							
Lead	< 5.0	5.0		µg/L	1	09/03/24 8:00 AM	09/05/24 8:01 AM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/30/24 1:11 AM
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1		08/30/24 1:11 AM
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/30/24 1:11 AM
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1		08/30/24 1:11 AM
1,1-Dichloroethane	< 2.4	2.4		µg/L	1		08/30/24 1:11 AM
1,1-Dichloroethene	< 5.0	5.0		µg/L	1		08/30/24 1:11 AM
1,2,3-Trichloropropane	< 10.0	10.0		µg/L	1		08/30/24 1:11 AM
1,2-Dibromo-3-chloropropane	< 5.0	5.0		µg/L	1		08/30/24 1:11 AM
1,2-Dibromoethane	< 1.0	1.0		µg/L	1		08/30/24 1:11 AM
1,2-Dichlorobenzene	< 10.0	10.0		µg/L	1		08/30/24 1:11 AM
1,2-Dichloroethane	< 5.0	5.0		µg/L	1		08/30/24 1:11 AM
1,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/30/24 1:11 AM
1,4-Dichlorobenzene	< 10.0	10.0		µg/L	1		08/30/24 1:11 AM
2-Hexanone	< 10.0	10.0		µg/L	1		08/30/24 1:11 AM
4-Methyl-2-Pentanone	< 10.0	10.0		µg/L	1		08/30/24 1:11 AM
Acetone	< 34.0	34.0		µg/L	1		08/30/24 1:11 AM
Acrylonitrile	< 100	100	P4	µg/L	1		08/30/24 1:11 AM
Benzene	< 5.0	5.0		µg/L	1		08/30/24 1:11 AM
Bromochloromethane	< 10.0	10.0		µg/L	1		08/30/24 1:11 AM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 30-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-8
<b>Lab Order:</b>	G2408F37	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/28/2024 9:20:00 AM
<b>Lab ID:</b>	G2408F37-003	<b>Received Date:</b>	8/29/2024 10:00:16 AM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			<b>EPA 8260 D</b>
Bromodichloromethane	< 5.0	5.0		µg/L	1		08/30/24 1:11 AM
Bromomethane	< 10.0	10.0		µg/L	1		08/30/24 1:11 AM
Carbon Disulfide	< 5.0	5.0		µg/L	1		08/30/24 1:11 AM
Carbon Tetrachloride	< 5.0	5.0		µg/L	1		08/30/24 1:11 AM
Chlorobenzene	< 5.0	5.0		µg/L	1		08/30/24 1:11 AM
Chlorodibromomethane	< 5.0	5.0		µg/L	1		08/30/24 1:11 AM
Chloroethane	< 10.0	10.0		µg/L	1		08/30/24 1:11 AM
Chloromethane	< 10.0	10.0		µg/L	1		08/30/24 1:11 AM
cis-1,2-Dichloroethene	< 10.0	10.0		µg/L	1		08/30/24 1:11 AM
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/30/24 1:11 AM
Dibromomethane	< 10.0	10.0		µg/L	1		08/30/24 1:11 AM
Ethylbenzene	< 5.0	5.0		µg/L	1		08/30/24 1:11 AM
Iodomethane	< 10.0	10.0		µg/L	1		08/30/24 1:11 AM
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1		08/30/24 1:11 AM
Methylene Chloride	< 5.0	5.0		µg/L	1		08/30/24 1:11 AM
Styrene	< 5.0	5.0		µg/L	1		08/30/24 1:11 AM
Tetrachloroethene	< 5.0	5.0		µg/L	1		08/30/24 1:11 AM
Toluene	< 5.0	5.0		µg/L	1		08/30/24 1:11 AM
trans-1,2-Dichloroethene	< 10.0	10.0		µg/L	1		08/30/24 1:11 AM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/30/24 1:11 AM
trans-1,4-Dichloro-2-butene	< 10.0	10.0		µg/L	1		08/30/24 1:11 AM
Tribromomethane	< 5.0	5.0		µg/L	1		08/30/24 1:11 AM
Trichloroethene	< 5.0	5.0		µg/L	1		08/30/24 1:11 AM
Trichlorofluoromethane	< 10.0	10.0		µg/L	1		08/30/24 1:11 AM
Trichloromethane	< 5.0	5.0		µg/L	1		08/30/24 1:11 AM
Vinyl Acetate	< 10.0	10.0		µg/L	1		08/30/24 1:11 AM
Vinyl Chloride	< 2.0	2.0		µg/L	1		08/30/24 1:11 AM
Total Xylene	< 10.0	10.0		µg/L	1		08/30/24 1:11 AM
Surr: 1,2-Dichloroethane-d4	97.1	70-130		%REC	1		08/30/24 1:11 AM
Surr: 4-Bromofluorobenzene	96.1	70-130		%REC	1		08/30/24 1:11 AM
Surr: Dibromofluoromethane	91.9	70-130		%REC	1		08/30/24 1:11 AM
Surr: Toluene-d8	102	70-130		%REC	1		08/30/24 1:11 AM

# Laboratory Results

## Geochemical Testing

Date: 30-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-9
<b>Lab Order:</b>	G2408F37	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/28/2024 9:20:00 AM
<b>Lab ID:</b>	G2408F37-004	<b>Received Date:</b>	8/29/2024 10:00:16 AM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>FIELD PARAMETERS</b>							
pH (Field)	6.30			S.U.		08/28/24 9:20 AM	
Specific Conductance (Field)	184			µmhos/cm		08/28/24 9:20 AM	
Temperature (Field)	19.5			deg C		08/28/24 9:20 AM	
Turbidity (Field)	0.9			NTU		08/28/24 9:20 AM	
<b>INORGANIC NON-METALS</b>							
Alkalinity to pH 4.5	87	10		mg/L CaCO <sub>3</sub>	1		08/29/24 8:34 PM
<b>INORGANIC NON-METALS</b>							
Chloride	1.6	1.0		mg/L	1	08/29/24 11:54 AM	08/29/24 2:08 PM
<b>INORGANIC NON-METALS</b>							
Ammonia Nitrogen	0.10	0.10		mg/L as N	1		09/03/24 8:51 AM
<b>INORGANIC METALS</b>							
Potassium	0.7	0.5		mg/L	1	09/03/24 8:00 AM	09/04/24 9:37 AM
Sodium	4.8	1.0		mg/L	1	09/03/24 8:00 AM	09/04/24 9:37 AM
<b>INORGANIC METALS</b>							
Lead	< 5.0	5.0		µg/L	1	09/03/24 8:00 AM	09/05/24 8:04 AM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/30/24 1:35 AM
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1		08/30/24 1:35 AM
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/30/24 1:35 AM
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1		08/30/24 1:35 AM
1,1-Dichloroethane	< 2.4	2.4		µg/L	1		08/30/24 1:35 AM
1,1-Dichloroethene	< 5.0	5.0		µg/L	1		08/30/24 1:35 AM
1,2,3-Trichloropropane	< 10.0	10.0		µg/L	1		08/30/24 1:35 AM
1,2-Dibromo-3-chloropropane	< 5.0	5.0		µg/L	1		08/30/24 1:35 AM
1,2-Dibromoethane	< 1.0	1.0		µg/L	1		08/30/24 1:35 AM
1,2-Dichlorobenzene	< 10.0	10.0		µg/L	1		08/30/24 1:35 AM
1,2-Dichloroethane	< 5.0	5.0		µg/L	1		08/30/24 1:35 AM
1,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/30/24 1:35 AM
1,4-Dichlorobenzene	< 10.0	10.0		µg/L	1		08/30/24 1:35 AM
2-Hexanone	< 10.0	10.0		µg/L	1		08/30/24 1:35 AM
4-Methyl-2-Pentanone	< 10.0	10.0		µg/L	1		08/30/24 1:35 AM
Acetone	< 34.0	34.0		µg/L	1		08/30/24 1:35 AM
Acrylonitrile	< 100	100	P4	µg/L	1		08/30/24 1:35 AM
Benzene	< 5.0	5.0		µg/L	1		08/30/24 1:35 AM
Bromochloromethane	< 10.0	10.0		µg/L	1		08/30/24 1:35 AM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 30-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-9
<b>Lab Order:</b>	G2408F37	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/28/2024 9:20:00 AM
<b>Lab ID:</b>	G2408F37-004	<b>Received Date:</b>	8/29/2024 10:00:16 AM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			<b>EPA 8260 D</b>
Bromodichloromethane	< 5.0	5.0		µg/L	1		08/30/24 1:35 AM
Bromomethane	< 10.0	10.0		µg/L	1		08/30/24 1:35 AM
Carbon Disulfide	< 5.0	5.0		µg/L	1		08/30/24 1:35 AM
Carbon Tetrachloride	< 5.0	5.0		µg/L	1		08/30/24 1:35 AM
Chlorobenzene	< 5.0	5.0		µg/L	1		08/30/24 1:35 AM
Chlorodibromomethane	< 5.0	5.0		µg/L	1		08/30/24 1:35 AM
Chloroethane	< 10.0	10.0		µg/L	1		08/30/24 1:35 AM
Chloromethane	< 10.0	10.0		µg/L	1		08/30/24 1:35 AM
cis-1,2-Dichloroethene	< 10.0	10.0		µg/L	1		08/30/24 1:35 AM
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/30/24 1:35 AM
Dibromomethane	< 10.0	10.0		µg/L	1		08/30/24 1:35 AM
Ethylbenzene	< 5.0	5.0		µg/L	1		08/30/24 1:35 AM
Iodomethane	< 10.0	10.0		µg/L	1		08/30/24 1:35 AM
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1		08/30/24 1:35 AM
Methylene Chloride	< 5.0	5.0		µg/L	1		08/30/24 1:35 AM
Styrene	< 5.0	5.0		µg/L	1		08/30/24 1:35 AM
Tetrachloroethene	< 5.0	5.0		µg/L	1		08/30/24 1:35 AM
Toluene	< 5.0	5.0		µg/L	1		08/30/24 1:35 AM
trans-1,2-Dichloroethene	< 10.0	10.0		µg/L	1		08/30/24 1:35 AM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/30/24 1:35 AM
trans-1,4-Dichloro-2-butene	< 10.0	10.0		µg/L	1		08/30/24 1:35 AM
Tribromomethane	< 5.0	5.0		µg/L	1		08/30/24 1:35 AM
Trichloroethene	< 5.0	5.0		µg/L	1		08/30/24 1:35 AM
Trichlorofluoromethane	< 10.0	10.0		µg/L	1		08/30/24 1:35 AM
Trichloromethane	< 5.0	5.0		µg/L	1		08/30/24 1:35 AM
Vinyl Acetate	< 10.0	10.0		µg/L	1		08/30/24 1:35 AM
Vinyl Chloride	< 2.0	2.0		µg/L	1		08/30/24 1:35 AM
Total Xylene	< 10.0	10.0		µg/L	1		08/30/24 1:35 AM
Surr: 1,2-Dichloroethane-d4	98.8	70-130		%REC	1		08/30/24 1:35 AM
Surr: 4-Bromofluorobenzene	95.0	70-130		%REC	1		08/30/24 1:35 AM
Surr: Dibromofluoromethane	92.9	70-130		%REC	1		08/30/24 1:35 AM
Surr: Toluene-d8	102	70-130		%REC	1		08/30/24 1:35 AM



# Laboratory Results

## Geochemical Testing

Date: 30-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	TB
<b>Lab Order:</b>	G2408F37	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/28/2024 12:00:01 AM
<b>Lab ID:</b>	G2408F37-005	<b>Received Date:</b>	8/29/2024 10:00:16 AM
<b>Matrix:</b>	AQUEOUS		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			<b>EPA 8260 D</b>
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/30/24 1:59 AM
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1		08/30/24 1:59 AM
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/30/24 1:59 AM
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1		08/30/24 1:59 AM
1,1-Dichloroethane	< 2.4	2.4		µg/L	1		08/30/24 1:59 AM
1,1-Dichloroethene	< 5.0	5.0		µg/L	1		08/30/24 1:59 AM
1,2,3-Trichloropropane	< 10.0	10.0		µg/L	1		08/30/24 1:59 AM
1,2-Dibromo-3-chloropropane	< 5.0	5.0		µg/L	1		08/30/24 1:59 AM
1,2-Dibromoethane	< 1.0	1.0		µg/L	1		08/30/24 1:59 AM
1,2-Dichlorobenzene	< 10.0	10.0		µg/L	1		08/30/24 1:59 AM
1,2-Dichloroethane	< 5.0	5.0		µg/L	1		08/30/24 1:59 AM
1,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/30/24 1:59 AM
1,4-Dichlorobenzene	< 10.0	10.0		µg/L	1		08/30/24 1:59 AM
2-Hexanone	< 10.0	10.0		µg/L	1		08/30/24 1:59 AM
4-Methyl-2-Pentanone	< 10.0	10.0		µg/L	1		08/30/24 1:59 AM
Acetone	< 34.0	34.0		µg/L	1		08/30/24 1:59 AM
Acrylonitrile	< 100	100	P4	µg/L	1		08/30/24 1:59 AM
Benzene	< 5.0	5.0		µg/L	1		08/30/24 1:59 AM
Bromochloromethane	< 10.0	10.0		µg/L	1		08/30/24 1:59 AM
Bromodichloromethane	< 5.0	5.0		µg/L	1		08/30/24 1:59 AM
Bromomethane	< 10.0	10.0		µg/L	1		08/30/24 1:59 AM
Carbon Disulfide	< 5.0	5.0		µg/L	1		08/30/24 1:59 AM
Carbon Tetrachloride	< 5.0	5.0		µg/L	1		08/30/24 1:59 AM
Chlorobenzene	< 5.0	5.0		µg/L	1		08/30/24 1:59 AM
Chlorodibromomethane	< 5.0	5.0		µg/L	1		08/30/24 1:59 AM
Chloroethane	< 10.0	10.0		µg/L	1		08/30/24 1:59 AM
Chloromethane	< 10.0	10.0		µg/L	1		08/30/24 1:59 AM
cis-1,2-Dichloroethene	< 10.0	10.0		µg/L	1		08/30/24 1:59 AM
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/30/24 1:59 AM
Dibromomethane	< 10.0	10.0		µg/L	1		08/30/24 1:59 AM
Ethylbenzene	< 5.0	5.0		µg/L	1		08/30/24 1:59 AM
Iodomethane	< 10.0	10.0		µg/L	1		08/30/24 1:59 AM
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1		08/30/24 1:59 AM
Methylene Chloride	< 5.0	5.0		µg/L	1		08/30/24 1:59 AM
Styrene	< 5.0	5.0		µg/L	1		08/30/24 1:59 AM
Tetrachloroethene	< 5.0	5.0		µg/L	1		08/30/24 1:59 AM
Toluene	< 5.0	5.0		µg/L	1		08/30/24 1:59 AM
trans-1,2-Dichloroethene	< 10.0	10.0		µg/L	1		08/30/24 1:59 AM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/30/24 1:59 AM
trans-1,4-Dichloro-2-butene	< 10.0	10.0		µg/L	1		08/30/24 1:59 AM



I.D. 56-00306 PA DEP

## Laboratory Results

### Geochemical Testing

Date: 30-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	TB
<b>Lab Order:</b>	G2408F37	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/28/2024 12:00:01 AM
<b>Lab ID:</b>	G2408F37-005	<b>Received Date:</b>	8/29/2024 10:00:16 AM
<b>Matrix:</b>	AQUEOUS		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			<b>EPA 8260 D</b>
Tribromomethane	< 5.0	5.0		µg/L	1		08/30/24 1:59 AM
Trichloroethene	< 5.0	5.0		µg/L	1		08/30/24 1:59 AM
Trichlorofluoromethane	< 10.0	10.0		µg/L	1		08/30/24 1:59 AM
Trichloromethane	< 5.0	5.0		µg/L	1		08/30/24 1:59 AM
Vinyl Acetate	< 10.0	10.0		µg/L	1		08/30/24 1:59 AM
Vinyl Chloride	< 2.0	2.0		µg/L	1		08/30/24 1:59 AM
Total Xylene	< 10.0	10.0		µg/L	1		08/30/24 1:59 AM
Surr: 1,2-Dichloroethane-d4	98.8	70-130		%REC	1		08/30/24 1:59 AM
Surr: 4-Bromofluorobenzene	95.9	70-130		%REC	1		08/30/24 1:59 AM
Surr: Dibromofluoromethane	93.8	70-130		%REC	1		08/30/24 1:59 AM
Surr: Toluene-d8	101	70-130		%REC	1		08/30/24 1:59 AM





2005 N. Center Ave.  
Somerset, PA 15501

814/443-1671  
814/445-6666  
FAX: 814/445-6729

Wednesday, September 25, 2024

JUDY ARMOUR  
LIVE OAK LANDFILL  
2901 MECHANICSVILLE ROAD  
NORCROSS, GA 30071

RE: Live Oak 721S

Order No.: G2408F42

Dear JUDY ARMOUR:

Geochemical Testing received 1 sample(s) on 8/29/2024 for the analyses presented in the following report.

There were no problems with sample receipt protocols and analyses met the TNI/NELAC, EPA, and laboratory specifications except where noted in the Case Narrative or Laboratory Results.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Joelle Streczywilk  
Environmental Laboratory Manager

Leslie A. Nemeth  
Project Manager



## Geochemical Testing

Date: 25-Sep-24

**CLIENT:** LIVE OAK LANDFILL  
**Project:** Live Oak 721S  
**Lab Order:** G2408F42

## CASE NARRATIVE

No problems were encountered during analysis of this workorder, except if noted in this report.

The analytical data submitted within this report was submitted by an approved analytical laboratory (per Chapter 391-3-26-.05) and in accordance with Georgia state law (O.C.G.A. 12-2-9). The accreditation information follows below:

**LABORATORY:** Geochemical Testing, Somerset, Pennsylvania  
**ACCREDITATION AGENCY:** Pennsylvania National Environmental Laboratory Accreditation Program (NELAP)  
**ACCREDITATION ID:** PA ID# 56-00306  
**SCOPE:** Potable, Non-Potable, Solid and Chemical Materials  
**EXPIRATION DATE:** January 31, 2025

**Glossary:**  
H - Method Hold Time exceeded and is not compliant with 40CFR136 Table II.  
U - The analyte was not detected at or above the listed concentration, which is below the laboratory quantitation limit.  
B - Analyte detected in the associated Method Blank  
Q1 - See case narrative      ND - Not Detected  
MCL - Contaminant Limit      J - Indicates an estimated value.  
Q - Qualifier      QL - Quantitation Limit      DF - Dilution Factor

S - Surrogate Recovery outside accepted recovery limits  
T - Sample received above required temperature and is not compliant with 40CFR136 Table II.  
T1 - Sample received above required temperature  
MDA - Minimum Detectable Activity.  
\*\* - Value exceeds Action Limit  
TICs - Tentatively Identified Compounds.  
E - Value above quantitation range



## Glossary (continued)

1	Spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or greater.	M7	Recovery for matrix spike could not be quantified due to matrix interference.
B1	Dilution water blank exceeded method criterion.	M8	Analyte was spiked into the MS, but was not recovered.
C1	CCV recovery above the acceptance limits. Results may be biased high.	M9	Analyte concentration was determined by the method of standard addition (MSA).
C2	CCV recovery below the acceptance limits. Results may be biased low.	N1	The lab does not hold accreditation from PA-DEP for this parameter by this method
C3	ICV recovery above the acceptance limits. Results may be biased high.	N2	PADEP does not accredit labs for this analyte by this method.
C4	ICV recovery below the acceptance limits. Results may be biased low.	N3	The lab is accredited for this method in West Virginia, but not in PA (its primary accrediting body).
C5	Positive values verified by second column confirmation.	N4	PADEP does not accredit labs for this analyte by this method in drinking water.
C6	Confirmation analysis by another detector or chromatographic column was not performed.	O1	The flashpoint tester cannot detect below 50 degrees F.
D1	The analysis did not meet the minimum DO depletion of at least 2 mg/L.	O2	Result is temperature of the sample when flame observed. No flash observed. Result qualified.
D2	The analysis did not meet the minimum residual DO of at least 1 mg/L.	O3	The reporting limits were raised due to the high concentration of non-target compounds.
D3	Sample required dilution due to a matrix interference.	O4	Sample was received with headspace.
D4	Sample was diluted in the extraction steps due to marked matrix interferences.	O5	Sample was received in incorrect container and is not compliant with 40CFR136 Table II.
D5	Sample required dilution due to a chloride interference.	O6	Insufficient sample volume was received to comply with the method.
D6	Sample was diluted and the reporting limits were raised to achieve method compliant internal standard recovery.	P1	The pH of the sample was >2 and is not compliant with 40CFR136 Table II.
D7	Sample was digested at a dilution due to the formation of a post-digestion precipitate.	P2	Sample contained residual chlorine and is not compliant with 40CFR136 Table II
D8	Sample was digested at a dilution to achieve method compliant matrix spike recovery.	P3	The pH of the sample was <10 and is not compliant with 40CFR136 Table II.
D9	Sample was digested at a dilution to meet method compliant digestion criteria.	P4	Field preservation does not meet EPA or method recommendations for this analysis.
E2	Unable to obtain a stable weight within specified limits due to sample matrix. Value is estimated.	P5	Acid preservation may not be appropriate for the analysis of 2-Chloroethylvinyl ether.
F1	Fecal sample tested positive for residual chlorine.	P6	Sample required additional preservative upon receipt.
H1	Due to under-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.	P7	The sample was received unpreserved.
H2	Due to over-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.	P8	The pH of the sample was < 9 and is not compliant with 40 CFR136 Table II.
H3	Sample was re-analyzed outside of hold time due to error during original analysis.	R	Relative Percent Difference (RPD) was above the control limit.
H4	The Nitrite result used to report Nitrate was analyzed past the 48-hour holding time.	R1	RPD above control limits between matrix spike and MS duplicates.
I1	Internal standard recovery above method acceptance limits. Results are estimated.	R2	RPD above the control limit between duplicates.
I2	Internal standard recovery was below method acceptance limits. Results are estimated.	R3	RSD above the control limit between replicates.
IP	One of the instrument performance checks ( ) did not meet the acceptance criteria.	R4	RPD above control limits between Inorganic Carbon check and spike.
L1	LCS above the acceptance limits. Result may be biased high.	R5	RPD above control limits between control sample and control sample duplicates.
L2	LCS below the acceptance limits. Result may be biased low.	S2	Surrogate recovery in the blank was below the control limit.
L3	Analyte was spiked into the LCS, but was not recovered.	S3	Surrogate recovery in the blank was above the control limit.
M1	Matrix Spike recovery above the acceptance limits.	S4	Surrogate recovery in the LCS is above the control limit.
M2	Matrix Spike recovery below the acceptance limits.	S5	Surrogate recovery in the LCS is below the control limit.
M4	The matrix spike failed high for the surrogate.	SR	Analyte recovery was outside the accepted recovery limits and above the control limit for RPD.
M5	The matrix spike failed low for the surrogate.	T3	Target analyte found in trip/field blank.
M6	The reporting limits were raised due to sample matrix interference.	TC	The MS tune check (tailing factor) did not meet the acceptance criteria.

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	SWC-5
<b>Lab Order:</b>	G2408F42	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 721S	<b>Collection Date:</b>	8/28/2024 1:10:00 PM
<b>Lab ID:</b>	G2408F42-001	<b>Received Date:</b>	8/29/2024 10:16:23 AM
<b>Matrix:</b>	SURFACE WATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>FIELD PARAMETERS</b>							
pH (Field)	6.89			S.U.		08/28/24 1:10 PM	
Specific Conductance (Field)	223			µmhos/cm		08/28/24 1:10 PM	
Temperature (Field)	26.2			deg C		08/28/24 1:10 PM	
Turbidity (Field)	0.80			NTU		08/28/24 1:10 PM	
<b>INDICATOR ORGANIC PARAMETERS</b>							
Chemical Oxygen Demand	< 10	10		mg/L	1	09/04/24 12:28 PM	09/05/24 11:00 AM
<b>INORGANIC NON-METALS</b>							
Chloride	3.4	1.0		mg/L	1	08/29/24 12:44 PM	08/29/24 1:26 PM
<b>INORGANIC NON-METALS</b>							
Cyanide, total	< 0.020	0.020		mg/L	1		09/02/24 12:02 PM
<b>INORGANIC METALS</b>							
Mercury	< 0.0004	0.0004		mg/L	1	09/04/24 12:30 PM	09/05/24 9:34 AM
<b>INORGANIC METALS</b>							
Arsenic	< 0.02	0.02		mg/L	1	09/03/24 8:00 AM	09/04/24 9:40 AM
Silver	< 0.050	0.050		mg/L	1	09/03/24 8:00 AM	09/04/24 9:40 AM
<b>INORGANIC METALS</b>							
Barium	47.1	5.0		µg/L	1	09/03/24 8:00 AM	09/09/24 9:29 AM
Cadmium	< 1.0	1.0		µg/L	1	09/03/24 8:00 AM	09/05/24 8:13 AM
Chromium	< 2.0	2.0		µg/L	1	09/03/24 8:00 AM	09/05/24 8:13 AM
Lead	< 5.0	5.0		µg/L	1	09/03/24 8:00 AM	09/05/24 8:13 AM
Nickel	< 4.0	4.0		µg/L	1	09/03/24 8:00 AM	09/05/24 8:13 AM
Selenium	< 10	10		µg/L	1	09/03/24 8:00 AM	09/05/24 8:13 AM
Zinc	< 5.00	5.00		µg/L	1	09/03/24 8:00 AM	09/05/24 8:13 AM
<b>INDICATOR ORGANIC PARAMETERS</b>							
Total Organic Carbon	1.5	1.0		mg/L	1		08/29/24 8:32 PM



I.D. 56-00306 PA DEP



2005 N. Center Ave.  
Somerset, PA 15501

814/443-1671  
814/445-6666  
FAX: 814/445-6729

Wednesday, September 25, 2024

JUDY ARMOUR  
LIVE OAK LANDFILL  
2901 MECHANICSVILLE ROAD  
NORCROSS, GA 30071

RE: Live Oak 221A3

Order No.: G2408F44

Dear JUDY ARMOUR:

Geochemical Testing received 3 sample(s) on 8/29/2024 for the analyses presented in the following report.

There were no problems with sample receipt protocols and analyses met the TNI/NELAC, EPA, and laboratory specifications except where noted in the Case Narrative or Laboratory Results.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Joelle Streczywilk  
Environmental Laboratory Manager

Leslie A. Nemeth  
Project Manager



## Geochemical Testing

Date: 25-Sep-24

**CLIENT:** LIVE OAK LANDFILL  
**Project:** Live Oak 221A3  
**Lab Order:** G2408F44

## CASE NARRATIVE

No problems were encountered during analysis of this workorder, except if noted in this report.

The analytical data submitted within this report was submitted by an approved analytical laboratory (per Chapter 391-3-26-.05) and in accordance with Georgia state law (O.C.G.A. 12-2-9). The accreditation information follows below:

**LABORATORY:** Geochemical Testing, Somerset, Pennsylvania  
**ACCREDITATION AGENCY:** Pennsylvania National Environmental Laboratory Accreditation Program (NELAP)  
**ACCREDITATION ID:** PA ID# 56-00306  
**SCOPE:** Potable, Non-Potable, Solid and Chemical Materials  
**EXPIRATION DATE:** January 31, 2025

**Glossary:**  
H - Method Hold Time exceeded and is not compliant with 40CFR136 Table II.  
U - The analyte was not detected at or above the listed concentration, which is below the laboratory quantitation limit.  
B - Analyte detected in the associated Method Blank  
Q1 - See case narrative      ND - Not Detected  
MCL - Contaminant Limit      J - Indicates an estimated value.  
Q - Qualifier      QL - Quantitation Limit      DF - Dilution Factor

S - Surrogate Recovery outside accepted recovery limits  
T - Sample received above required temperature and is not compliant with 40CFR136 Table II.  
T1 - Sample received above required temperature  
MDA - Minimum Detectable Activity.  
\*\* - Value exceeds Action Limit  
TICs - Tentatively Identified Compounds.  
E - Value above quantitation range



## Glossary (continued)

1	Spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or greater.	M7	Recovery for matrix spike could not be quantified due to matrix interference.
B1	Dilution water blank exceeded method criterion.	M8	Analyte was spiked into the MS, but was not recovered.
C1	CCV recovery above the acceptance limits. Results may be biased high.	M9	Analyte concentration was determined by the method of standard addition (MSA).
C2	CCV recovery below the acceptance limits. Results may be biased low.	N1	The lab does not hold accreditation from PA-DEP for this parameter by this method
C3	ICV recovery above the acceptance limits. Results may be biased high.	N2	PADEP does not accredit labs for this analyte by this method.
C4	ICV recovery below the acceptance limits. Results may be biased low.	N3	The lab is accredited for this method in West Virginia, but not in PA (its primary accrediting body).
C5	Positive values verified by second column confirmation.	N4	PADEP does not accredit labs for this analyte by this method in drinking water.
C6	Confirmation analysis by another detector or chromatographic column was not performed.	O1	The flashpoint tester cannot detect below 50 degrees F.
D1	The analysis did not meet the minimum DO depletion of at least 2 mg/L.	O2	Result is temperature of the sample when flame observed. No flash observed. Result qualified.
D2	The analysis did not meet the minimum residual DO of at least 1 mg/L.	O3	The reporting limits were raised due to the high concentration of non-target compounds.
D3	Sample required dilution due to a matrix interference.	O4	Sample was received with headspace.
D4	Sample was diluted in the extraction steps due to marked matrix interferences.	O5	Sample was received in incorrect container and is not compliant with 40CFR136 Table II.
D5	Sample required dilution due to a chloride interference.	O6	Insufficient sample volume was received to comply with the method.
D6	Sample was diluted and the reporting limits were raised to achieve method compliant internal standard recovery.	P1	The pH of the sample was >2 and is not compliant with 40CFR136 Table II.
D7	Sample was digested at a dilution due to the formation of a post-digestion precipitate.	P2	Sample contained residual chlorine and is not compliant with 40CFR136 Table II
D8	Sample was digested at a dilution to achieve method compliant matrix spike recovery.	P3	The pH of the sample was <10 and is not compliant with 40CFR136 Table II.
D9	Sample was digested at a dilution to meet method compliant digestion criteria.	P4	Field preservation does not meet EPA or method recommendations for this analysis.
E2	Unable to obtain a stable weight within specified limits due to sample matrix. Value is estimated.	P5	Acid preservation may not be appropriate for the analysis of 2-Chloroethylvinyl ether.
F1	Fecal sample tested positive for residual chlorine.	P6	Sample required additional preservative upon receipt.
H1	Due to under-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.	P7	The sample was received unpreserved.
H2	Due to over-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.	P8	The pH of the sample was < 9 and is not compliant with 40 CFR136 Table II.
H3	Sample was re-analyzed outside of hold time due to error during original analysis.	R	Relative Percent Difference (RPD) was above the control limit.
H4	The Nitrite result used to report Nitrate was analyzed past the 48-hour holding time.	R1	RPD above control limits between matrix spike and MS duplicates.
I1	Internal standard recovery above method acceptance limits. Results are estimated.	R2	RPD above the control limit between duplicates.
I2	Internal standard recovery was below method acceptance limits. Results are estimated.	R3	RSD above the control limit between replicates.
IP	One of the instrument performance checks ( ) did not meet the acceptance criteria.	R4	RPD above control limits between Inorganic Carbon check and spike.
L1	LCS above the acceptance limits. Result may be biased high.	R5	RPD above control limits between control sample and control sample duplicates.
L2	LCS below the acceptance limits. Result may be biased low.	S2	Surrogate recovery in the blank was below the control limit.
L3	Analyte was spiked into the LCS, but was not recovered.	S3	Surrogate recovery in the blank was above the control limit.
M1	Matrix Spike recovery above the acceptance limits.	S4	Surrogate recovery in the LCS is above the control limit.
M2	Matrix Spike recovery below the acceptance limits.	S5	Surrogate recovery in the LCS is below the control limit.
M4	The matrix spike failed high for the surrogate.	SR	Analyte recovery was outside the accepted recovery limits and above the control limit for RPD.
M5	The matrix spike failed low for the surrogate.	T3	Target analyte found in trip/field blank.
M6	The reporting limits were raised due to sample matrix interference.	TC	The MS tune check (tailing factor) did not meet the acceptance criteria.

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWB-2
<b>Lab Order:</b>	G2408F44	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/28/2024 10:47:00 AM
<b>Lab ID:</b>	G2408F44-001	<b>Received Date:</b>	8/29/2024 10:23:01 AM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>FIELD PARAMETERS</b>							
pH (Field)	6.74			S.U.		08/28/24 10:47 AM	
Specific Conductance (Field)	175			µmhos/cm		08/28/24 10:47 AM	
Temperature (Field)	18.3			deg C		08/28/24 10:47 AM	
Turbidity (Field)	0.4			NTU		08/28/24 10:47 AM	
<b>INORGANIC NON-METALS</b>							
Alkalinity to pH 4.5	82	10		mg/L CaCO <sub>3</sub>	1		08/29/24 8:47 PM
<b>INORGANIC NON-METALS</b>							
Chloride	2.2	1.0		mg/L	1	08/29/24 12:46 PM	08/29/24 2:39 PM
<b>INORGANIC NON-METALS</b>							
Ammonia Nitrogen	< 0.10	0.10		mg/L as N	1		09/03/24 9:09 AM
<b>INORGANIC METALS</b>							
Potassium	1.0	0.5		mg/L	1	09/03/24 8:00 AM	09/04/24 10:37 AM
Sodium	5.0	1.0		mg/L	1	09/03/24 8:00 AM	09/04/24 10:37 AM
<b>INORGANIC METALS</b>							
Lead	< 5.0	5.0		µg/L	1	09/03/24 8:00 AM	09/05/24 8:15 AM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/30/24 2:24 AM
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1		08/30/24 2:24 AM
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/30/24 2:24 AM
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1		08/30/24 2:24 AM
1,1-Dichloroethane	< 2.4	2.4		µg/L	1		08/30/24 2:24 AM
1,1-Dichloroethene	< 5.0	5.0		µg/L	1		08/30/24 2:24 AM
1,2,3-Trichloropropane	< 10	10		µg/L	1		08/30/24 2:24 AM
1,2-Dibromo-3-chloropropane	< 5.0	5.0		µg/L	1		08/30/24 2:24 AM
1,2-Dibromoethane	< 1.0	1.0		µg/L	1		08/30/24 2:24 AM
1,2-Dichlorobenzene	< 10	10		µg/L	1		08/30/24 2:24 AM
1,2-Dichloroethane	< 5.0	5.0		µg/L	1		08/30/24 2:24 AM
1,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/30/24 2:24 AM
1,4-Dichlorobenzene	< 10	10		µg/L	1		08/30/24 2:24 AM
2-Hexanone	< 10	10		µg/L	1		08/30/24 2:24 AM
4-Methyl-2-Pentanone	< 10	10		µg/L	1		08/30/24 2:24 AM
Acetone	< 34.0	34.0		µg/L	1		08/30/24 2:24 AM
Acrylonitrile	< 100	100	P4	µg/L	1		08/30/24 2:24 AM
Benzene	< 5.0	5.0		µg/L	1		08/30/24 2:24 AM
Bromochloromethane	< 10	10		µg/L	1		08/30/24 2:24 AM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWB-2
<b>Lab Order:</b>	G2408F44	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/28/2024 10:47:00 AM
<b>Lab ID:</b>	G2408F44-001	<b>Received Date:</b>	8/29/2024 10:23:01 AM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			<b>EPA 8260 D</b>
Bromodichloromethane	< 5.0	5.0		µg/L	1		08/30/24 2:24 AM
Bromomethane	< 10	10		µg/L	1		08/30/24 2:24 AM
Carbon Disulfide	< 5.0	5.0		µg/L	1		08/30/24 2:24 AM
Carbon Tetrachloride	< 5.0	5.0		µg/L	1		08/30/24 2:24 AM
Chlorobenzene	< 5.0	5.0		µg/L	1		08/30/24 2:24 AM
Chlorodibromomethane	< 5.0	5.0		µg/L	1		08/30/24 2:24 AM
Chloroethane	< 10	10		µg/L	1		08/30/24 2:24 AM
Chloromethane	< 10	10		µg/L	1		08/30/24 2:24 AM
cis-1,2-Dichloroethene	< 10	10		µg/L	1		08/30/24 2:24 AM
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/30/24 2:24 AM
Dibromomethane	< 10	10		µg/L	1		08/30/24 2:24 AM
Ethylbenzene	< 5.0	5.0		µg/L	1		08/30/24 2:24 AM
Iodomethane	< 10	10		µg/L	1		08/30/24 2:24 AM
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1		08/30/24 2:24 AM
Methylene Chloride	< 5.0	5.0		µg/L	1		08/30/24 2:24 AM
Styrene	< 5.0	5.0		µg/L	1		08/30/24 2:24 AM
Tetrachloroethene	< 5.0	5.0		µg/L	1		08/30/24 2:24 AM
Toluene	< 5.0	5.0		µg/L	1		08/30/24 2:24 AM
trans-1,2-Dichloroethene	< 10	10		µg/L	1		08/30/24 2:24 AM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/30/24 2:24 AM
trans-1,4-Dichloro-2-butene	< 10	10		µg/L	1		08/30/24 2:24 AM
Tribromomethane	< 5.0	5.0		µg/L	1		08/30/24 2:24 AM
Trichloroethene	< 5.0	5.0		µg/L	1		08/30/24 2:24 AM
Trichlorofluoromethane	< 10	10		µg/L	1		08/30/24 2:24 AM
Trichloromethane	< 5.0	5.0		µg/L	1		08/30/24 2:24 AM
Vinyl Acetate	< 10	10		µg/L	1		08/30/24 2:24 AM
Vinyl Chloride	< 2.0	2.0		µg/L	1		08/30/24 2:24 AM
Total Xylene	< 10	10		µg/L	1		08/30/24 2:24 AM
Surr: 1,2-Dichloroethane-d4	96.2	70-130		%REC	1		08/30/24 2:24 AM
Surr: 4-Bromofluorobenzene	95.2	70-130		%REC	1		08/30/24 2:24 AM
Surr: Dibromofluoromethane	90.6	70-130		%REC	1		08/30/24 2:24 AM
Surr: Toluene-d8	102	70-130		%REC	1		08/30/24 2:24 AM

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-1A
<b>Lab Order:</b>	G2408F44	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/28/2024 10:22:00 AM
<b>Lab ID:</b>	G2408F44-002	<b>Received Date:</b>	8/29/2024 10:23:01 AM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>FIELD PARAMETERS</b>							
pH (Field)	7.14			S.U.		08/28/24 10:22 AM	
Specific Conductance (Field)	247			µmhos/cm		08/28/24 10:22 AM	
Temperature (Field)	19.5			deg C		08/28/24 10:22 AM	
Turbidity (Field)	1.2			NTU		08/28/24 10:22 AM	
<b>INORGANIC NON-METALS</b>							
Alkalinity to pH 4.5	113	10		mg/L CaCO <sub>3</sub>	1	08/29/24 8:53 PM	
<b>INORGANIC NON-METALS</b>							
Chloride	< 1.0	1.0		mg/L	1	08/29/24 12:46 PM	08/29/24 2:57 PM
<b>INORGANIC NON-METALS</b>							
Ammonia Nitrogen	< 0.10	0.10		mg/L as N	1		09/03/24 9:14 AM
<b>INORGANIC METALS</b>							
Potassium	1.0	0.5		mg/L	1	09/03/24 8:00 AM	09/04/24 10:39 AM
Sodium	6.4	1.0		mg/L	1	09/03/24 8:00 AM	09/04/24 10:39 AM
<b>INORGANIC METALS</b>							
Lead	< 5.0	5.0		µg/L	1	09/03/24 8:00 AM	09/05/24 8:17 AM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/30/24 2:48 AM
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1		08/30/24 2:48 AM
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/30/24 2:48 AM
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1		08/30/24 2:48 AM
1,1-Dichloroethane	< 2.4	2.4		µg/L	1		08/30/24 2:48 AM
1,1-Dichloroethene	< 5.0	5.0		µg/L	1		08/30/24 2:48 AM
1,2,3-Trichloropropane	< 10	10		µg/L	1		08/30/24 2:48 AM
1,2-Dibromo-3-chloropropane	< 5.0	5.0		µg/L	1		08/30/24 2:48 AM
1,2-Dibromoethane	< 1.0	1.0		µg/L	1		08/30/24 2:48 AM
1,2-Dichlorobenzene	< 10	10		µg/L	1		08/30/24 2:48 AM
1,2-Dichloroethane	< 5.0	5.0		µg/L	1		08/30/24 2:48 AM
1,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/30/24 2:48 AM
1,4-Dichlorobenzene	< 10	10		µg/L	1		08/30/24 2:48 AM
2-Hexanone	< 10	10		µg/L	1		08/30/24 2:48 AM
4-Methyl-2-Pentanone	< 10	10		µg/L	1		08/30/24 2:48 AM
Acetone	< 34.0	34.0		µg/L	1		08/30/24 2:48 AM
Acrylonitrile	< 100	100	P4	µg/L	1		08/30/24 2:48 AM
Benzene	< 5.0	5.0		µg/L	1		08/30/24 2:48 AM
Bromochloromethane	< 10	10		µg/L	1		08/30/24 2:48 AM



# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-1A
<b>Lab Order:</b>	G2408F44	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/28/2024 10:22:00 AM
<b>Lab ID:</b>	G2408F44-002	<b>Received Date:</b>	8/29/2024 10:23:01 AM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			<b>EPA 8260 D</b>
Bromodichloromethane	< 5.0	5.0		µg/L	1		08/30/24 2:48 AM
Bromomethane	< 10	10		µg/L	1		08/30/24 2:48 AM
Carbon Disulfide	< 5.0	5.0		µg/L	1		08/30/24 2:48 AM
Carbon Tetrachloride	< 5.0	5.0		µg/L	1		08/30/24 2:48 AM
Chlorobenzene	< 5.0	5.0		µg/L	1		08/30/24 2:48 AM
Chlorodibromomethane	< 5.0	5.0		µg/L	1		08/30/24 2:48 AM
Chloroethane	< 10	10		µg/L	1		08/30/24 2:48 AM
Chloromethane	< 10	10		µg/L	1		08/30/24 2:48 AM
cis-1,2-Dichloroethene	< 10	10		µg/L	1		08/30/24 2:48 AM
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/30/24 2:48 AM
Dibromomethane	< 10	10		µg/L	1		08/30/24 2:48 AM
Ethylbenzene	< 5.0	5.0		µg/L	1		08/30/24 2:48 AM
Iodomethane	< 10	10		µg/L	1		08/30/24 2:48 AM
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1		08/30/24 2:48 AM
Methylene Chloride	< 5.0	5.0		µg/L	1		08/30/24 2:48 AM
Styrene	< 5.0	5.0		µg/L	1		08/30/24 2:48 AM
Tetrachloroethene	< 5.0	5.0		µg/L	1		08/30/24 2:48 AM
Toluene	< 5.0	5.0		µg/L	1		08/30/24 2:48 AM
trans-1,2-Dichloroethene	< 10	10		µg/L	1		08/30/24 2:48 AM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/30/24 2:48 AM
trans-1,4-Dichloro-2-butene	< 10	10		µg/L	1		08/30/24 2:48 AM
Tribromomethane	< 5.0	5.0		µg/L	1		08/30/24 2:48 AM
Trichloroethene	< 5.0	5.0		µg/L	1		08/30/24 2:48 AM
Trichlorofluoromethane	< 10	10		µg/L	1		08/30/24 2:48 AM
Trichloromethane	< 5.0	5.0		µg/L	1		08/30/24 2:48 AM
Vinyl Acetate	< 10	10		µg/L	1		08/30/24 2:48 AM
Vinyl Chloride	< 2.0	2.0		µg/L	1		08/30/24 2:48 AM
Total Xylene	< 10	10		µg/L	1		08/30/24 2:48 AM
Surr: 1,2-Dichloroethane-d4	97.3	70-130		%REC	1		08/30/24 2:48 AM
Surr: 4-Bromofluorobenzene	95.6	70-130		%REC	1		08/30/24 2:48 AM
Surr: Dibromofluoromethane	93.1	70-130		%REC	1		08/30/24 2:48 AM
Surr: Toluene-d8	101	70-130		%REC	1		08/30/24 2:48 AM

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

<b>CLIENT:</b>	LIVE OAK LANDFILL	<b>Client Sample ID:</b>	GWC-1B
<b>Lab Order:</b>	G2408F44	<b>Sampled By:</b>	ACC
<b>Project:</b>	Live Oak 221A3	<b>Collection Date:</b>	8/28/2024 10:08:00 AM
<b>Lab ID:</b>	G2408F44-003	<b>Received Date:</b>	8/29/2024 10:23:01 AM
<b>Matrix:</b>	GROUNDWATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>FIELD PARAMETERS</b>							
pH (Field)	6.20			S.U.		08/28/24 10:08 AM	
Specific Conductance (Field)	378			µmhos/cm		08/28/24 10:08 AM	
Temperature (Field)	19.7			deg C		08/28/24 10:08 AM	
Turbidity (Field)	0.6			NTU		08/28/24 10:08 AM	
<b>INORGANIC NON-METALS</b>							
Alkalinity to pH 4.5	155	10		mg/L CaCO <sub>3</sub>	1	08/29/24 8:59 PM	
<b>INORGANIC NON-METALS</b>							
Chloride	4.1	1.0		mg/L	1	08/29/24 12:46 PM	08/29/24 3:15 PM
<b>INORGANIC NON-METALS</b>							
Ammonia Nitrogen	< 0.10	0.10		mg/L as N	1		09/03/24 9:15 AM
<b>INORGANIC METALS</b>							
Potassium	0.7	0.5		mg/L	1	09/03/24 8:00 AM	09/04/24 10:42 AM
Sodium	13.2	1.0		mg/L	1	09/03/24 8:00 AM	09/04/24 10:42 AM
<b>INORGANIC METALS</b>							
Lead	< 5.0	5.0		µg/L	1	09/03/24 8:00 AM	09/05/24 8:22 AM
<b>VOLATILE ORGANIC COMPOUNDS</b>							
1,1,1,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/30/24 3:12 AM
1,1,1-Trichloroethane	< 5.0	5.0		µg/L	1		08/30/24 3:12 AM
1,1,2,2-Tetrachloroethane	< 5.0	5.0		µg/L	1		08/30/24 3:12 AM
1,1,2-Trichloroethane	< 5.0	5.0		µg/L	1		08/30/24 3:12 AM
1,1-Dichloroethane	< 2.4	2.4		µg/L	1		08/30/24 3:12 AM
1,1-Dichloroethene	< 5.0	5.0		µg/L	1		08/30/24 3:12 AM
1,2,3-Trichloropropane	< 10	10		µg/L	1		08/30/24 3:12 AM
1,2-Dibromo-3-chloropropane	< 5.0	5.0		µg/L	1		08/30/24 3:12 AM
1,2-Dibromoethane	< 1.0	1.0		µg/L	1		08/30/24 3:12 AM
1,2-Dichlorobenzene	< 10	10		µg/L	1		08/30/24 3:12 AM
1,2-Dichloroethane	< 5.0	5.0		µg/L	1		08/30/24 3:12 AM
1,2-Dichloropropane	< 5.0	5.0		µg/L	1		08/30/24 3:12 AM
1,4-Dichlorobenzene	< 10	10		µg/L	1		08/30/24 3:12 AM
2-Hexanone	< 10	10		µg/L	1		08/30/24 3:12 AM
4-Methyl-2-Pentanone	< 10	10		µg/L	1		08/30/24 3:12 AM
Acetone	< 34.0	34.0		µg/L	1		08/30/24 3:12 AM
Acrylonitrile	< 100	100	P4	µg/L	1		08/30/24 3:12 AM
Benzene	< 5.0	5.0		µg/L	1		08/30/24 3:12 AM
Bromochloromethane	< 10	10		µg/L	1		08/30/24 3:12 AM



I.D. 56-00306 PA DEP

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

**CLIENT:** LIVE OAK LANDFILL  
**Lab Order:** G2408F44  
**Project:** Live Oak 221A3  
**Lab ID:** G2408F44-003  
**Matrix:** GROUNDWATER

**Client Sample ID:** GWC-1B  
**Sampled By:** ACC  
**Collection Date:** 8/28/2024 10:08:00 AM  
**Received Date:** 8/29/2024 10:23:01 AM

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
				Analyst: MEG			<b>EPA 8260 D</b>
Bromodichloromethane	< 5.0	5.0		µg/L	1		08/30/24 3:12 AM
Bromomethane	< 10	10		µg/L	1		08/30/24 3:12 AM
Carbon Disulfide	< 5.0	5.0		µg/L	1		08/30/24 3:12 AM
Carbon Tetrachloride	< 5.0	5.0		µg/L	1		08/30/24 3:12 AM
Chlorobenzene	< 5.0	5.0		µg/L	1		08/30/24 3:12 AM
Chlorodibromomethane	< 5.0	5.0		µg/L	1		08/30/24 3:12 AM
Chloroethane	< 10	10		µg/L	1		08/30/24 3:12 AM
Chloromethane	< 10	10		µg/L	1		08/30/24 3:12 AM
cis-1,2-Dichloroethene	< 10	10		µg/L	1		08/30/24 3:12 AM
cis-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/30/24 3:12 AM
Dibromomethane	< 10	10		µg/L	1		08/30/24 3:12 AM
Ethylbenzene	< 5.0	5.0		µg/L	1		08/30/24 3:12 AM
Iodomethane	< 10	10		µg/L	1		08/30/24 3:12 AM
Methyl Ethyl Ketone	< 50.0	50.0		µg/L	1		08/30/24 3:12 AM
Methylene Chloride	< 5.0	5.0		µg/L	1		08/30/24 3:12 AM
Styrene	< 5.0	5.0		µg/L	1		08/30/24 3:12 AM
Tetrachloroethene	< 5.0	5.0		µg/L	1		08/30/24 3:12 AM
Toluene	< 5.0	5.0		µg/L	1		08/30/24 3:12 AM
trans-1,2-Dichloroethene	< 10	10		µg/L	1		08/30/24 3:12 AM
trans-1,3-Dichloropropene	< 5.0	5.0		µg/L	1		08/30/24 3:12 AM
trans-1,4-Dichloro-2-butene	< 10	10		µg/L	1		08/30/24 3:12 AM
Tribromomethane	< 5.0	5.0		µg/L	1		08/30/24 3:12 AM
Trichloroethene	< 5.0	5.0		µg/L	1		08/30/24 3:12 AM
Trichlorofluoromethane	< 10	10		µg/L	1		08/30/24 3:12 AM
Trichloromethane	< 5.0	5.0		µg/L	1		08/30/24 3:12 AM
Vinyl Acetate	< 10	10		µg/L	1		08/30/24 3:12 AM
Vinyl Chloride	< 2.0	2.0		µg/L	1		08/30/24 3:12 AM
Total Xylene	< 10	10		µg/L	1		08/30/24 3:12 AM
Surr: 1,2-Dichloroethane-d4	99.8	70-130		%REC	1		08/30/24 3:12 AM
Surr: 4-Bromofluorobenzene	94.0	70-130		%REC	1		08/30/24 3:12 AM
Surr: Dibromofluoromethane	94.2	70-130		%REC	1		08/30/24 3:12 AM
Surr: Toluene-d8	101	70-130		%REC	1		08/30/24 3:12 AM



I.D. 56-00306 PA DEP



2005 N. Center Ave.  
Somerset, PA 15501

814/443-1671  
814/445-6666  
FAX: 814/445-6729

Wednesday, September 25, 2024

JUDY ARMOUR  
LIVE OAK LANDFILL  
2901 MECHANICSVILLE ROAD  
NORCROSS, GA 30071

RE: Live Oak 721S

Order No.: G2409168

Dear JUDY ARMOUR:

Geochemical Testing received 5 sample(s) on 9/5/2024 for the analyses presented in the following report.

There were no problems with sample receipt protocols and analyses met the TNI/NELAC, EPA, and laboratory specifications except where noted in the Case Narrative or Laboratory Results.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Joelle Streczywilk  
Environmental Laboratory Manager

Leslie A. Nemeth  
Project Manager



## Geochemical Testing

Date: 25-Sep-24

**CLIENT:** LIVE OAK LANDFILL  
**Project:** Live Oak 721S  
**Lab Order:** G2409168

## CASE NARRATIVE

No problems were encountered during analysis of this workorder, except if noted in this report.

<b>Glossary:</b>	H - Method Hold Time exceeded and is not compliant with 40CFR136 Table II. U - The analyte was not detected at or above the listed concentration, which is below the laboratory quantitation limit. B - Analyte detected in the associated Method Blank Q1 - See case narrative      ND - Not Detected MCL - Contaminant Limit      J - Indicates an estimated value. Q - Qualifier      QL - Quantitation Limit      DF - Dilution Factor
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S - Surrogate Recovery outside accepted recovery limits T - Sample received above required temperature and is not compliant with 40CFR136 Table II. T1 - Sample received above required temperature MDA - Minimum Detectable Activity. ** - Value exceeds Action Limit TICs - Tentatively Identified Compounds. E - Value above quantitation range
--



## Glossary (continued)

1	Spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or greater.	M7	Recovery for matrix spike could not be quantified due to matrix interference.
B1	Dilution water blank exceeded method criterion.	M8	Analyte was spiked into the MS, but was not recovered.
C1	CCV recovery above the acceptance limits. Results may be biased high.	M9	Analyte concentration was determined by the method of standard addition (MSA).
C2	CCV recovery below the acceptance limits. Results may be biased low.	N1	The lab does not hold accreditation from PA-DEP for this parameter by this method
C3	ICV recovery above the acceptance limits. Results may be biased high.	N2	PADEP does not accredit labs for this analyte by this method.
C4	ICV recovery below the acceptance limits. Results may be biased low.	N3	The lab is accredited for this method in West Virginia, but not in PA (its primary accrediting body).
C5	Positive values verified by second column confirmation.	N4	PADEP does not accredit labs for this analyte by this method in drinking water.
C6	Confirmation analysis by another detector or chromatographic column was not performed.	O1	The flashpoint tester cannot detect below 50 degrees F.
D1	The analysis did not meet the minimum DO depletion of at least 2 mg/L.	O2	Result is temperature of the sample when flame observed. No flash observed. Result qualified.
D2	The analysis did not meet the minimum residual DO of at least 1 mg/L.	O3	The reporting limits were raised due to the high concentration of non-target compounds.
D3	Sample required dilution due to a matrix interference.	O4	Sample was received with headspace.
D4	Sample was diluted in the extraction steps due to marked matrix interferences.	O5	Sample was received in incorrect container and is not compliant with 40CFR136 Table II.
D5	Sample required dilution due to a chloride interference.	O6	Insufficient sample volume was received to comply with the method.
D6	Sample was diluted and the reporting limits were raised to achieve method compliant internal standard recovery.	P1	The pH of the sample was >2 and is not compliant with 40CFR136 Table II.
D7	Sample was digested at a dilution due to the formation of a post-digestion precipitate.	P2	Sample contained residual chlorine and is not compliant with 40CFR136 Table II
D8	Sample was digested at a dilution to achieve method compliant matrix spike recovery.	P3	The pH of the sample was <10 and is not compliant with 40CFR136 Table II.
D9	Sample was digested at a dilution to meet method compliant digestion criteria.	P4	Field preservation does not meet EPA or method recommendations for this analysis.
E2	Unable to obtain a stable weight within specified limits due to sample matrix. Value is estimated.	P5	Acid preservation may not be appropriate for the analysis of 2-Chloroethylvinyl ether.
F1	Fecal sample tested positive for residual chlorine.	P6	Sample required additional preservative upon receipt.
H1	Due to under-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.	P7	The sample was received unpreserved.
H2	Due to over-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.	P8	The pH of the sample was < 9 and is not compliant with 40 CFR136 Table II.
H3	Sample was re-analyzed outside of hold time due to error during original analysis.	R	Relative Percent Difference (RPD) was above the control limit.
H4	The Nitrite result used to report Nitrate was analyzed past the 48-hour holding time.	R1	RPD above control limits between matrix spike and MS duplicates.
I1	Internal standard recovery above method acceptance limits. Results are estimated.	R2	RPD above the control limit between duplicates.
I2	Internal standard recovery was below method acceptance limits. Results are estimated.	R3	RSD above the control limit between replicates.
IP	One of the instrument performance checks ( ) did not meet the acceptance criteria.	R4	RPD above control limits between Inorganic Carbon check and spike.
L1	LCS above the acceptance limits. Result may be biased high.	R5	RPD above control limits between control sample and control sample duplicates.
L2	LCS below the acceptance limits. Result may be biased low.	S2	Surrogate recovery in the blank was below the control limit.
L3	Analyte was spiked into the LCS, but was not recovered.	S3	Surrogate recovery in the blank was above the control limit.
M1	Matrix Spike recovery above the acceptance limits.	S4	Surrogate recovery in the LCS is above the control limit.
M2	Matrix Spike recovery below the acceptance limits.	S5	Surrogate recovery in the LCS is below the control limit.
M4	The matrix spike failed high for the surrogate.	SR	Analyte recovery was outside the accepted recovery limits and above the control limit for RPD.
M5	The matrix spike failed low for the surrogate.	T3	Target analyte found in trip/field blank.
M6	The reporting limits were raised due to sample matrix interference.	TC	The MS tune check (tailing factor) did not meet the acceptance criteria.

## Laboratory Results

### Geochemical Testing

Date: 25-Sep-24

CLIENT:	LIVE OAK LANDFILL	Client Sample ID:	SWC-8
Lab Order:	G2409168	Sampled By:	ACC
Project:	Live Oak 721S	Collection Date:	8/28/2024
Lab ID:	G2409168-001	Received Date:	9/5/2024 5:28:08 AM
Matrix:	SURFACE WATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
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<b>SAMPLE NOT TAKEN</b>				Analyst: LAN			
Sampling Point	Dry				1		08/28/24 12:00 AM

## Laboratory Results

### Geochemical Testing

Date: 25-Sep-24

CLIENT:	LIVE OAK LANDFILL	Client Sample ID:	SWC-7
Lab Order:	G2409168	Sampled By:	ACC
Project:	Live Oak 721S	Collection Date:	8/28/2024
Lab ID:	G2409168-002	Received Date:	9/5/2024 5:28:08 AM
Matrix:	SURFACE WATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
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<b>SAMPLE NOT TAKEN</b>				Analyst: LAN			
Sampling Point	Dry				1		08/28/24 12:00 AM

## Laboratory Results

### Geochemical Testing

Date: 25-Sep-24

CLIENT:	LIVE OAK LANDFILL	Client Sample ID:	SWA-1
Lab Order:	G2409168	Sampled By:	ACC
Project:	Live Oak 721S	Collection Date:	8/28/2024
Lab ID:	G2409168-003	Received Date:	9/5/2024 5:28:08 AM
Matrix:	SURFACE WATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
----------	--------	----	---	-------	----	---------------	---------------

<b>SAMPLE NOT TAKEN</b>				Analyst: LAN			
Sampling Point	Dry				1		08/28/24 12:00 AM

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

CLIENT:	LIVE OAK LANDFILL	Client Sample ID:	SWC-2
Lab Order:	G2409168	Sampled By:	ACC
Project:	Live Oak 721S	Collection Date:	8/28/2024
Lab ID:	G2409168-004	Received Date:	9/5/2024 5:28:08 AM
Matrix:	SURFACE WATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
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<b>SAMPLE NOT TAKEN</b>				Analyst: LAN			
Sampling Point	Dry				1		08/28/24 12:00 AM

# Laboratory Results

## Geochemical Testing

Date: 25-Sep-24

CLIENT:	LIVE OAK LANDFILL	Client Sample ID:	SWC-1
Lab Order:	G2409168	Sampled By:	ACC
Project:	Live Oak 721S	Collection Date:	8/28/2024
Lab ID:	G2409168-005	Received Date:	9/5/2024 5:28:08 AM
Matrix:	SURFACE WATER		

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
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<b>SAMPLE NOT TAKEN</b>				Analyst: LAN			
Sampling Point	Dry				1		08/28/24 12:00 AM

# ANALYTICAL REPORT

## PREPARED FOR

Attn: Erica Bergstresser  
Geochemical Testing  
2005 North Center Avenue  
Somerset, Pennsylvania 15501

Generated 9/5/2024 5:13:29 AM

## JOB DESCRIPTION

G2408E93

## JOB NUMBER

410-186091-1

# Eurofins Lancaster Laboratories Environment Testing, LLC

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

## Authorization



Generated  
9/5/2024 5:13:29 AM

Authorized for release by  
Dana Kauffman, Project Manager  
[Dana.Kauffman@et.eurofinsus.com](mailto:Dana.Kauffman@et.eurofinsus.com)  
(717)556-7219

# Eurofins Lancaster Laboratories Environment Testing, LLC

## Compliance Statement

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- QC results that exceed the upper limits and are associated with non-detect samples are qualified but further narration is not required since the bias is high and does not change a non-detect result. Further narration is also not required with QC blank detection when the associated sample concentration is non-detect or more than ten times the level in the blank.
- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD is performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.

This report shall not be reproduced except in full, without the written approval of the laboratory.

**WARRANTY AND LIMITS OF LIABILITY** - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. The foregoing express warranty is exclusive and is given in lieu of all other warranties, expressed or implied, except as otherwise agreed. We disclaim any other warranties, expressed or implied, including a warranty of fitness for particular purpose and warranty of merchantability. In no event shall Eurofins Lancaster Laboratories Environmental, LLC be liable for indirect, special, consequential, or incidental damages including, but not limited to, damages for loss of profit or goodwill regardless of (A) the negligence (either sole or concurrent) of Eurofins Lancaster Laboratories Environmental and (B) whether Eurofins Lancaster Laboratories Environmental has been informed of the possibility of such damages. We accept no legal responsibility for the purposes for which the client uses the test results. Except as otherwise agreed, no purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.



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# Definitions/Glossary

Client: Geochemical Testing

Project/Site: G2408E93

Job ID: 410-186091-1

## Qualifiers

### GC VOA

Qualifier	Qualifier Description
cn	Refer to Case Narrative for further detail

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Geochemical Testing  
Project: G2408E93

Job ID: 410-186091-1

**Job ID: 410-186091-1**

**Eurofins Lancaster Laboratories Environment**

## Job Narrative 410-186091-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

### Receipt

The samples were received on 8/29/2024 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.9°C.

### Receipt Exceptions

The Chain-of-Custody (COC) was incomplete as received. The COC is missing the Sample Collector Name. This does not meet regulatory requirements.

### GC VOA

Method RSK\_175: The following sample(s) were collected in unpreserved vials for analysis of by RSK\_175. Method requires HCl preservation to a pH <2. However, the pH was outside of the required criteria when verified by the laboratory, and corrective action was not possible: G2408E93-002 (410-186091-1), G2408E93-003 (410-186091-2) and G2408E93-006 (410-186091-3).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

## Detection Summary

Client: Geochemical Testing  
Project/Site: G2408E93

Job ID: 410-186091-1

### **Client Sample ID: G2408E93-002**

**Lab Sample ID: 410-186091-1**

No Detections.

### **Client Sample ID: G2408E93-003**

**Lab Sample ID: 410-186091-2**

No Detections.

### **Client Sample ID: G2408E93-006**

**Lab Sample ID: 410-186091-3**

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Lancaster Laboratories Environment Testing, LLC

# Client Sample Results

Client: Geochemical Testing  
Project/Site: G2408E93

Job ID: 410-186091-1

## **Client Sample ID: G2408E93-002**

Date Collected: 08/27/24 12:34  
Date Received: 08/29/24 09:30

**Lab Sample ID: 410-186091-1**

Matrix: Water

### **Method: RSK-175 - Dissolved Gases (GC)**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane (1C)	ND	cn	5.0	1.0	ug/L		09/04/24 10:31	09/04/24 11:55	1
Ethene (1C)	ND	cn	5.0	1.0	ug/L		09/04/24 10:31	09/04/24 11:55	1
Methane (1C)	ND	cn	5.0	3.0	ug/L		09/04/24 10:31	09/04/24 11:55	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Propene (1C)	59	cn	43 - 133				09/04/24 10:31	09/04/24 11:55	1

## **Client Sample ID: G2408E93-003**

Date Collected: 08/27/24 11:00  
Date Received: 08/29/24 09:30

**Lab Sample ID: 410-186091-2**

Matrix: Water

### **Method: RSK-175 - Dissolved Gases (GC)**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane (1C)	ND	cn	5.0	1.0	ug/L		09/04/24 10:31	09/04/24 12:14	1
Ethene (1C)	ND	cn	5.0	1.0	ug/L		09/04/24 10:31	09/04/24 12:14	1
Methane (1C)	ND	cn	5.0	3.0	ug/L		09/04/24 10:31	09/04/24 12:14	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Propene (1C)	60	cn	43 - 133				09/04/24 10:31	09/04/24 12:14	1

## **Client Sample ID: G2408E93-006**

Date Collected: 08/27/24 09:20  
Date Received: 08/29/24 09:30

**Lab Sample ID: 410-186091-3**

Matrix: Water

### **Method: RSK-175 - Dissolved Gases (GC)**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane (1C)	ND	cn	5.0	1.0	ug/L		09/04/24 10:31	09/04/24 12:33	1
Ethene (1C)	ND	cn	5.0	1.0	ug/L		09/04/24 10:31	09/04/24 12:33	1
Methane (1C)	ND	cn	5.0	3.0	ug/L		09/04/24 10:31	09/04/24 12:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Propene (1C)	56	cn	43 - 133				09/04/24 10:31	09/04/24 12:33	1

## **Surrogate Summary**

Client: Geochemical Testing  
Project/Site: G2408E93

Job ID: 410-186091-1

## Method: RSK-175 - Dissolved Gases (GC)

## Matrix: Water

### Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)		
Lab Sample ID	Client Sample ID	Propene1		
		(43-133)		
410-186091-1	G2408E93-002	59 cn		
410-186091-2	G2408E93-003	60 cn		
410-186091-3	G2408E93-006	56 cn		
LCS 410-547641/2-A	Lab Control Sample	102		
LCSD 410-547641/3-A	Lab Control Sample Dup	105		
MB 410-547641/1-A	Method Blank	107		

## **Surrogate Legend**

Propene = Propene

# QC Sample Results

Client: Geochemical Testing  
Project/Site: G2408E93

Job ID: 410-186091-1

## Method: RSK-175 - Dissolved Gases (GC)

**Lab Sample ID: MB 410-547641/1-A**

**Matrix: Water**

**Analysis Batch: 547589**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 547641**

Analyte	MB	MB	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier									
Ethane (1C)	ND		ND		5.0	1.0	ug/L		09/04/24 10:31	09/04/24 10:58	1
Ethene (1C)	ND		ND		5.0	1.0	ug/L		09/04/24 10:31	09/04/24 10:58	1
Methane (1C)	ND		ND		5.0	3.0	ug/L		09/04/24 10:31	09/04/24 10:58	1
Surrogate	MB	MB	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac	Prepared	Analyzed	Dil Fac
	Result	Qualifier									
Propene (1C)	107				43 - 133				09/04/24 10:31	09/04/24 10:58	1

**Lab Sample ID: LCS 410-547641/2-A**

**Matrix: Water**

**Analysis Batch: 547589**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

**Prep Batch: 547641**

Analyte	Spike	LCSD	LCS	Result	Qualifier	Unit	D	%Rec	Limits	%Rec	RPD
		Added	Result								
Ethane (1C)		61.7	63.2			ug/L		102	85 - 115		
Ethene (1C)		58.3	60.6			ug/L		104	83 - 115		
Methane (1C)		59.8	62.4			ug/L		104	85 - 115		
Surrogate	LCSD	LCS	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac	Prepared	Analyzed	Dil Fac
	Result	Qualifier									
Propene (1C)	102				43 - 133				09/04/24 10:31	09/04/24 10:58	1

**Lab Sample ID: LCSD 410-547641/3-A**

**Matrix: Water**

**Analysis Batch: 547589**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

**Prep Batch: 547641**

Analyte	Spike	LCSD	LCSD	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
		Added	Result								
Ethane (1C)		61.7	64.0			ug/L		104	85 - 115	1	20
Ethene (1C)		58.3	61.2			ug/L		105	83 - 115	1	20
Methane (1C)		59.8	63.2			ug/L		106	85 - 115	1	20
Surrogate	LCSD	LCSD	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac	Prepared	Analyzed	Dil Fac
	Result	Qualifier									
Propene (1C)	105				43 - 133				09/04/24 10:31	09/04/24 10:58	1

# QC Association Summary

Client: Geochemical Testing  
Project/Site: G2408E93

Job ID: 410-186091-1

## GC VOA

### Analysis Batch: 547589

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-186091-1	G2408E93-002	Total/NA	Water	RSK-175	547641
410-186091-2	G2408E93-003	Total/NA	Water	RSK-175	547641
410-186091-3	G2408E93-006	Total/NA	Water	RSK-175	547641
MB 410-547641/1-A	Method Blank	Total/NA	Water	RSK-175	547641
LCS 410-547641/2-A	Lab Control Sample	Total/NA	Water	RSK-175	547641
LCSD 410-547641/3-A	Lab Control Sample Dup	Total/NA	Water	RSK-175	547641

### Prep Batch: 547641

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-186091-1	G2408E93-002	Total/NA	Water	RSK-175	547641
410-186091-2	G2408E93-003	Total/NA	Water	RSK-175	547641
410-186091-3	G2408E93-006	Total/NA	Water	RSK-175	547641
MB 410-547641/1-A	Method Blank	Total/NA	Water	RSK-175	547641
LCS 410-547641/2-A	Lab Control Sample	Total/NA	Water	RSK-175	547641
LCSD 410-547641/3-A	Lab Control Sample Dup	Total/NA	Water	RSK-175	547641

## Lab Chronicle

Client: Geochemical Testing  
Project/Site: G2408E93

Job ID: 410-186091-1

### Client Sample ID: G2408E93-002

Date Collected: 08/27/24 12:34

Date Received: 08/29/24 09:30

Lab Sample ID: 410-186091-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	RSK-175			547641	HQR6	ELLE	09/04/24 10:31
Total/NA	Analysis	RSK-175		1	547589	LXF2	ELLE	09/04/24 11:55

### Client Sample ID: G2408E93-003

Date Collected: 08/27/24 11:00

Date Received: 08/29/24 09:30

Lab Sample ID: 410-186091-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	RSK-175			547641	HQR6	ELLE	09/04/24 10:31
Total/NA	Analysis	RSK-175		1	547589	LXF2	ELLE	09/04/24 12:14

### Client Sample ID: G2408E93-006

Date Collected: 08/27/24 09:20

Date Received: 08/29/24 09:30

Lab Sample ID: 410-186091-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	RSK-175			547641	HQR6	ELLE	09/04/24 10:31
Total/NA	Analysis	RSK-175		1	547589	LXF2	ELLE	09/04/24 12:33

#### Laboratory References:

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

## Accreditation/Certification Summary

Client: Geochemical Testing  
Project/Site: G2408E93

Job ID: 410-186091-1

### Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Virginia	NEILAP	460182	06-14-25

1

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## Method Summary

Client: Geochemical Testing  
Project/Site: G2408E93

Job ID: 410-186091-1

Method	Method Description	Protocol	Laboratory
RSK-175	Dissolved Gases (GC)	RSK	ELLE
RSK-175	Dissolved Gases Prep	RSK	ELLE

**Protocol References:**

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique , RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

**Laboratory References:**

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

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## Sample Summary

Client: Geochemical Testing  
Project/Site: G2408E93

Job ID: 410-186091-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
410-186091-1	G2408E93-002	Water	08/27/24 12:34	08/29/24 09:30
410-186091-2	G2408E93-003	Water	08/27/24 11:00	08/29/24 09:30
410-186091-3	G2408E93-006	Water	08/27/24 09:20	08/29/24 09:30

**REQUEST FOR LABORATORY  
ANALYTICAL SERVICES**  
Pennsylvania Chain of Custody (COC)

**410-186091 Chain of Custody**

**Shuttle/Cooler ID#**

Billing Client

**Mailing Address:**  
2005 North Center Ave

**City, State, Zip:**  
**Somerset Pa. 15501**

**Special Instructions/Project ID's/Analyte List/Comment:**

No Georgia certification needed. Please report to 0.03 mg/l if possible.

- \*PC-1: Nitric acid ( $\text{HNO}_3$ )
- \*PC-2: Hydrochloric acid (HCl)
- \*PC-3: Sulfuric acid ( $\text{H}_2\text{SO}_4$ )
- \*PC-4: Sodium Hydroxide (NaOH)
- \*PC-5: Sodium Thiosulfate ( $\text{Na}_2\text{S}_2\text{O}_3$ )
- \*PC-6: Ascorbic acid ( $\text{C}_6\text{H}_8\text{O}_6$ )
- \*PC-7: Zinc acetate ( $\text{C}_4\text{H}_8\text{O}_4\text{Zn}$ ) /  
Sodium Hydroxide (NaOH)
- \*PC-8: Ammonium chloride (NH<sub>4</sub>CL)
- \*PC9: Copper Sulfate ( $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ )
- \*PC-I: Ice \*PC-N: None\* PC-O: Other

SR 1st Review: CS 2nd Review:

**ANALYSIS REQUESTED**

Enter 'X' in box below to indicate request and use appropriate preservation code listed to the left

**Relinquished by:** *Leslie Nemeth*

Date/Time: 8/28/24 2:00PM

Received by:

Date/Time:

**B**eing relinquished by:

Date/Time:

Received at

Date/Time: 8/29/24 0930

Print Sampler Name: **Atlantic Coast Consultants**

Logged in by:

Sample Matrix:	GW Ground Water	ST Storm Water	SW Surface Water	PW Potable Water	WW Wastewater	SO Soil	SL Sludge	C Coal	PO/Quote#:
Sample Type:	G Grab	C Composite	D Distribution/DW	E Entry Point	R Raw/DW	S Special/DW	O Other	nHZ Not Hazardous / HZ Hazardous	

Please return completed form and samples to **Geochemical Testing • 2005 N Center Ave • Somerset, PA • 15501 • 814-443-1671 • (Fax: 814-445-6729)**  
**SAMPLES MUST BE PRESERVED ON ICE**

R: 4.2  
C: 3.9

## Login Sample Receipt Checklist

Client: Geochemical Testing

Job Number: 410-186091-1

**Login Number:** 186091

**List Source:** Eurofins Lancaster Laboratories Environment Testing, LLC

**List Number:** 1

**Creator:** Arroyo, Haley

Question	Answer	Comment
The cooler's custody seal is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature acceptable,where thermal pres is required(</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV:Container Temp acceptable,where thermal pres is required (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	Refer to Job Narrative for details.
There are no discrepancies between the containers received and the COC.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	True	
Sample custody seals are intact.	N/A	
VOA sample vials do not have headspace >6mm in diameter (none, if from WV)?	True	

# ANALYTICAL REPORT

## PREPARED FOR

Attn: Erica Bergstresser  
Geochemical Testing  
2005 North Center Avenue  
Somerset, Pennsylvania 15501

Generated 9/20/2024 3:38:12 AM

## JOB DESCRIPTION

Live Oak Landfill

## JOB NUMBER

410-186148-1

# Eurofins Lancaster Laboratories Environment Testing, LLC

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

## Authorization



Generated  
9/20/2024 3:38:12 AM

Authorized for release by  
Dana Kauffman, Project Manager  
[Dana.Kauffman@et.eurofinsus.com](mailto:Dana.Kauffman@et.eurofinsus.com)  
(717)556-7219

# Eurofins Lancaster Laboratories Environment Testing, LLC

## Compliance Statement

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- QC results that exceed the upper limits and are associated with non-detect samples are qualified but further narration is not required since the bias is high and does not change a non-detect result. Further narration is also not required with QC blank detection when the associated sample concentration is non-detect or more than ten times the level in the blank.
- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD is performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.

This report shall not be reproduced except in full, without the written approval of the laboratory.

**WARRANTY AND LIMITS OF LIABILITY** - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. The foregoing express warranty is exclusive and is given in lieu of all other warranties, expressed or implied, except as otherwise agreed. We disclaim any other warranties, expressed or implied, including a warranty of fitness for particular purpose and warranty of merchantability. In no event shall Eurofins Lancaster Laboratories Environmental, LLC be liable for indirect, special, consequential, or incidental damages including, but not limited to, damages for loss of profit or goodwill regardless of (A) the negligence (either sole or concurrent) of Eurofins Lancaster Laboratories Environmental and (B) whether Eurofins Lancaster Laboratories Environmental has been informed of the possibility of such damages. We accept no legal responsibility for the purposes for which the client uses the test results. Except as otherwise agreed, no purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.



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## Definitions/Glossary

Client: Geochemical Testing  
Project/Site: Live Oak Landfill

Job ID: 410-186148-1

### Qualifiers

#### GC VOA

Qualifier	Qualifier Description
cn	Refer to Case Narrative for further detail
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Geochemical Testing  
Project: Live Oak Landfill

Job ID: 410-186148-1

**Job ID: 410-186148-1**

**Eurofins Lancaster Laboratories Environment**

## Job Narrative 410-186148-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

### Receipt

The sample was received on 8/29/2024 9:30 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 4.7°C.

### GC VOA

Method RSK\_175: The following sample(s) were collected in unpreserved vials for analysis of by RSK\_175. Method requires HCl preservation to a pH <2. However, the pH was outside of the required criteria when verified by the laboratory, and corrective action was not possible: AMP-5 (410-186148-1).

Method RSK\_175: The following sample(s) was analysis was added after expiration of holding time. As such, the laboratory had insufficient time remaining to perform the analysis within holding time: AMP-5 (410-186148-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

## Detection Summary

Client: Geochemical Testing  
Project/Site: Live Oak Landfill

Job ID: 410-186148-1

### Client Sample ID: AMP-5

### Lab Sample ID: 410-186148-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Methane (1C) - DL	930	H cn	25	15	ug/L	5		RSK-175	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Lancaster Laboratories Environment Testing, LLC

# Client Sample Results

Client: Geochemical Testing  
Project/Site: Live Oak Landfill

Job ID: 410-186148-1

**Client Sample ID: AMP-5**  
**Date Collected: 08/28/24 12:02**  
**Date Received: 08/29/24 09:30**

**Lab Sample ID: 410-186148-1**  
**Matrix: Water**

## Method: RSK-175 - Dissolved Gases (GC) - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Methane (1C)	930	H cn	25	15	ug/L		09/18/24 10:50	09/18/24 20:51	5
<hr/>									
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Propene (1C)	81	cn	43 - 133				09/18/24 10:50	09/18/24 20:51	5

## Surrogate Summary

Client: Geochemical Testing  
Project/Site: Live Oak Landfill

Job ID: 410-186148-1

### Method: RSK-175 - Dissolved Gases (GC)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	(43-133)	Percent Surrogate Recovery (Acceptance Limits)											
			Propene1	81 cn	105	103								
410-186148-1 - DL	AMP-5	81 cn												
LCS 410-552861/2-A	Lab Control Sample	105												
MB 410-552861/1-A	Method Blank	103												

#### Surrogate Legend

Propene = Propene

# QC Sample Results

Client: Geochemical Testing  
Project/Site: Live Oak Landfill

Job ID: 410-186148-1

## Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 410-552861/1-A

Matrix: Water

Analysis Batch: 552680

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 552861

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Methane (1C)	ND		5.0	3.0	ug/L		09/18/24 10:50	09/18/24 10:53	1
<hr/>									
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
Propene (1C)	103		43 - 133				09/18/24 10:50	09/18/24 10:53	1

Lab Sample ID: LCS 410-552861/2-A

Matrix: Water

Analysis Batch: 552680

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 552861

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits	
Methane (1C)	59.8	62.7		ug/L		105	85 - 115	
<hr/>								
Surrogate	LCS %Recovery	LCS Qualifier	Limits					
Propene (1C)	105		43 - 133					

# QC Association Summary

Client: Geochemical Testing  
Project/Site: Live Oak Landfill

Job ID: 410-186148-1

## GC VOA

### Analysis Batch: 552680

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-186148-1 - DL	AMP-5	Total/NA	Water	RSK-175	552861
MB 410-552861/1-A	Method Blank	Total/NA	Water	RSK-175	552861
LCS 410-552861/2-A	Lab Control Sample	Total/NA	Water	RSK-175	552861

### Prep Batch: 552861

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-186148-1 - DL	AMP-5	Total/NA	Water	RSK-175	552861
MB 410-552861/1-A	Method Blank	Total/NA	Water	RSK-175	552861
LCS 410-552861/2-A	Lab Control Sample	Total/NA	Water	RSK-175	552861

## Lab Chronicle

Client: Geochemical Testing  
Project/Site: Live Oak Landfill

Job ID: 410-186148-1

**Client Sample ID: AMP-5**  
**Date Collected: 08/28/24 12:02**  
**Date Received: 08/29/24 09:30**

**Lab Sample ID: 410-186148-1**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	RSK-175	DL		552861	HQR6	ELLE	09/18/24 10:50
Total/NA	Analysis	RSK-175	DL	5	552680	LXF2	ELLE	09/18/24 20:51

**Laboratory References:**

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

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## Accreditation/Certification Summary

Client: Geochemical Testing  
Project/Site: Live Oak Landfill

Job ID: 410-186148-1

### Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Virginia	NEILAP	460182	06-14-25

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## Method Summary

Client: Geochemical Testing  
Project/Site: Live Oak Landfill

Job ID: 410-186148-1

Method	Method Description	Protocol	Laboratory
RSK-175	Dissolved Gases (GC)	RSK	ELLE
RSK-175	Dissolved Gases Prep	RSK	ELLE

**Protocol References:**

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique , RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

**Laboratory References:**

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

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## Sample Summary

Client: Geochemical Testing  
Project/Site: Live Oak Landfill

Job ID: 410-186148-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
410-186148-1	AMP-5	Water	08/28/24 12:02	08/29/24 09:30



410-186148 Chain of Custody

**REQUEST FOR LABORATORY  
ANALYTICAL SERVICES**  
Pennsylvania Chain of Custody (COC)

**Shuttle/Cooler ID#**

Please return completed form and samples to **Geochemical Testing • 2005 N Center Ave • Somerset, PA • 15501 • 814-443-1671 • (Fax: 814-445-6729)**

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## Login Sample Receipt Checklist

Client: Geochemical Testing

Job Number: 410-186148-1

**Login Number:** 186148

**List Source:** Eurofins Lancaster Laboratories Environment Testing, LLC

**List Number:** 1

**Creator:** Arroyo, Haley

Question	Answer	Comment	
The cooler's custody seal is intact.	True		1
The cooler or samples do not appear to have been compromised or tampered with.	True		2
Samples were received on ice.	True		3
Cooler Temperature acceptable, where thermal pres is required (</=6C, not frozen).	True		4
Cooler Temperature is recorded.	True		5
WV: Container Temp acceptable, where thermal pres is required (</=6C, not frozen).	N/A		6
WV: Container Temperature is recorded.	N/A		7
COC is present.	True		8
COC is filled out in ink and legible.	True		9
COC is filled out with all pertinent information.	True		10
There are no discrepancies between the containers received and the COC.	True		11
Sample containers have legible labels.	True		12
Containers are not broken or leaking.	True		13
Sample collection date/times are provided.	True		14
Appropriate sample containers are used.	True		15
Sample bottles are completely filled.	True		
There is sufficient vol. for all requested analyses.	True		
Is the Field Sampler's name present on COC?	True		
Sample custody seals are intact.	N/A		
VOA sample vials do not have headspace >6mm in diameter (none, if from WV)?	True		



Quality Assurance Project Report  
Prepared for  
LIVE OAK LANDFILL  
9/25/2024

David M. Glessner  
Quality Assurance Coordinator

### **Explanatory Notes**

1. Spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or greater.
2. Matrix Spike and MS Duplicates are sample specific controls and are not used to evaluate the analytical batch.
3. Laboratory duplicate. If one or both of the values is less than 5 times the PQL, the allowed difference is +/- the PQL.
4. "R" indicates a relative percent difference (RPD) was above the acceptance limit between duplicate QC samples or sample specific duplicates.

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E91  
Project: Live Oak 321A3

## Analytical QC Summary Report

SampleID: G2408E26-001ADUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309200		
		BatchID: R309200				Analysis Date: 8/28/2024				SeqNo: 8123945				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	112	mg/L CaCO <sub>3</sub>	10						111	0.9%	20			
SampleID: G2408E76-001ADUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309200		
		BatchID: R309200				Analysis Date: 8/28/2024				SeqNo: 8124022				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	50	mg/L CaCO <sub>3</sub>	10						49	2.0%	20			
SampleID: G2408E84-001ADUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309200		
		BatchID: R309200				Analysis Date: 8/28/2024				SeqNo: 8124083				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	73	mg/L CaCO <sub>3</sub>	10						72	1.4%	20			
SampleID: G2408E89-002ADUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309200		
		BatchID: R309200				Analysis Date: 8/28/2024				SeqNo: 8124142				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	316	mg/L CaCO <sub>3</sub>	10						314	0.6%	20			
SampleID: G2408E93-004BDUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309200		
		BatchID: R309200				Analysis Date: 8/28/2024				SeqNo: 8124197				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	61	mg/L CaCO <sub>3</sub>	10						61		20			
SampleID: ALK LCS		SampType: LCS		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309200		
		BatchID: R309200				Analysis Date: 8/28/2024				SeqNo: 8123926				

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E91  
Project: Live Oak 321A3

## Analytical QC Summary Report

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	52	mg/L CaCO3	10	47.5		109.5%	85	115				
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309200		
					<b>BatchID:</b> R309200					<b>Analysis Date:</b> 8/28/2024		<b>SeqNo:</b> 8124013
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	48	mg/L CaCO3	10	47.5		101.1%	85	115				
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309200		
					<b>BatchID:</b> R309200					<b>Analysis Date:</b> 8/28/2024		<b>SeqNo:</b> 8124069
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	49	mg/L CaCO3	10	47.5		103.2%	85	115				
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309200		
					<b>BatchID:</b> R309200					<b>Analysis Date:</b> 8/28/2024		<b>SeqNo:</b> 8124131
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	48	mg/L CaCO3	10	47.5		101.1%	85	115				
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309200		
					<b>BatchID:</b> R309200					<b>Analysis Date:</b> 8/28/2024		<b>SeqNo:</b> 8124189
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	49	mg/L CaCO3	10	47.5		103.2%	85	115				
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309200		
					<b>BatchID:</b> R309200					<b>Analysis Date:</b> 8/29/2024		<b>SeqNo:</b> 8124209
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	50	mg/L CaCO3	10	47.5		105.3%	85	115				

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E91  
Project: Live Oak 321A3

## Analytical QC Summary Report

SampleID: LCS		SampType: LCS		TestNo: ASTM D7511-17				Prep Date:				RunNo: 309285		
		BatchID: R309285				Analysis Date: 9/2/2024				SeqNo: 8126845				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Cyanide, total	0.11	mg/L	0.02	0.1		109.9%	86	114						
SampleID: CCB		SampType: MBLK		TestNo: ASTM D7511-17				Prep Date:				RunNo: 309285		
		BatchID: R309285				Analysis Date: 9/2/2024				SeqNo: 8126842				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Cyanide, total	< 0.02	mg/L	0.02											
SampleID: G2408E91-002CMS		SampType: MS		TestNo: ASTM D7511-17				Prep Date:				RunNo: 309285		
		BatchID: R309285				Analysis Date: 9/2/2024				SeqNo: 8126859				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Cyanide, total	0.054	mg/L	0.02	0.05		107.4%	75	125						
SampleID: G2408E91-002CMSD		SampType: MSD		TestNo: ASTM D7511-17				Prep Date:				RunNo: 309285		
		BatchID: R309285				Analysis Date: 9/2/2024				SeqNo: 8126860				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Cyanide, total	0.054	mg/L	0.02	0.05		108.4%	75	125	0.054	0.9%	20			
SampleID: G2408E23-001CDUP		SampType: DUP		TestNo: EPA 300.0 Rev 2.1				Prep Date: 8/28/2024				RunNo: 309181		
		BatchID: 258391				Analysis Date: 8/28/2024				SeqNo: 8123011				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Chloride	46.1	mg/L	1						46.1	0.1%	20			
SampleID: G2408E91-001FDUP		SampType: DUP		TestNo: EPA 300.0 Rev 2.1				Prep Date: 8/28/2024				RunNo: 309181		
		BatchID: 258391				Analysis Date: 8/28/2024				SeqNo: 8123024				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Chloride	13.7	mg/L	1						13.7	0.0%	20			

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E91  
Project: Live Oak 321A3

## Analytical QC Summary Report

SampleID: HRQC-258391		SampType: HRQC		TestNo: EPA 300.0 Rev 2.1		Prep Date: 8/28/2024		RunNo: 309181				
		BatchID: 258391				Analysis Date: 8/28/2024		SeqNo: 8123008				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	243	mg/L	1	250		97.1%	90	110				
SampleID: HRQC 1000-258391		SampType: HRQC 1000		TestNo: EPA 300.0 Rev 2.1		Prep Date: 8/28/2024		RunNo: 309181				
		BatchID: 258391				Analysis Date: 8/28/2024		SeqNo: 8123009				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	979	mg/L	1	1000		97.9%	90	110				
SampleID: LFB-258391		SampType: LFB		TestNo: EPA 300.0 Rev 2.1		Prep Date: 8/28/2024		RunNo: 309181				
		BatchID: 258391				Analysis Date: 8/28/2024		SeqNo: 8123004				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	47.4	mg/L	1	50		94.8%	90	110				
SampleID: LFB2-258391		SampType: LFB2		TestNo: EPA 300.0 Rev 2.1		Prep Date: 8/28/2024		RunNo: 309181				
		BatchID: 258391				Analysis Date: 8/28/2024		SeqNo: 8123005				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	4.81	mg/L	1	5		96.3%	90	110				
SampleID: G2408E23-001CLFM		SampType: LFM		TestNo: EPA 300.0 Rev 2.1		Prep Date: 8/28/2024		RunNo: 309181				
		BatchID: 258391				Analysis Date: 8/28/2024		SeqNo: 8123012				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	60.7	mg/L	1	15	46.1	96.8%	80	120				
SampleID: G2408E91-001FLFM		SampType: LFM		TestNo: EPA 300.0 Rev 2.1		Prep Date: 8/28/2024		RunNo: 309181				
		BatchID: 258391				Analysis Date: 8/28/2024		SeqNo: 8123025				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	26.1	mg/L	1	15	13.7	82.2%	80	120				

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E91  
Project: Live Oak 321A3

## Analytical QC Summary Report

SampleID: LRB-258391		SampType: LRB		TestNo: EPA 300.0 Rev 2.1				Prep Date: 8/28/2024		RunNo: 309181			
		BatchID: 258391				Analysis Date: 8/28/2024				SeqNo: 8123006			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Chloride	< 1	mg/L	1										
SampleID: CB-258391		SampType: MBLK		TestNo: EPA 300.0 Rev 2.1				Prep Date: 8/28/2024		RunNo: 309181			
		BatchID: 258391				Analysis Date: 8/28/2024				SeqNo: 8123003			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Chloride	< 1	mg/L	1										
SampleID: QCS-258391		SampType: QCS		TestNo: EPA 300.0 Rev 2.1				Prep Date: 8/28/2024		RunNo: 309181			
		BatchID: 258391				Analysis Date: 8/28/2024				SeqNo: 8123007			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Chloride	22.7	mg/L	1	24		94.7%	90	110					
SampleID: G2408E89-001BDUP		SampType: DUP		TestNo: EPA 350.1 Rev 2.0				Prep Date:		RunNo: 309213			
		BatchID: R309213				Analysis Date: 8/29/2024				SeqNo: 8124380			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Ammonia Nitrogen	< 0.1	mg/L as N	0.1						0.0467		20		
SampleID: G2408E91-004BDUP		SampType: DUP		TestNo: EPA 350.1 Rev 2.0				Prep Date:		RunNo: 309213			
		BatchID: R309213				Analysis Date: 8/29/2024				SeqNo: 8124390			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Ammonia Nitrogen	< 0.1	mg/L as N	0.1								20		
SampleID: LCS		SampType: LCS		TestNo: EPA 350.1 Rev 2.0				Prep Date:		RunNo: 309213			
		BatchID: R309213				Analysis Date: 8/29/2024				SeqNo: 8124374			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Ammonia Nitrogen	0.82	mg/L as N	0.1	0.82		100.0%	90	110					

Client: LIVE OAK LANDFILL

WorkOrder: G2408E91

Project: Live Oak 321A3

## Analytical QC Summary Report

<b>SampleID:</b> CCB	<b>SampType:</b> MBLK			<b>TestNo:</b> EPA 350.1 Rev 2.0			<b>Prep Date:</b>			<b>RunNo:</b> 309213		
	<b>BatchID:</b> R309213			<b>Analysis Date:</b> 8/29/2024			<b>SeqNo:</b> 8124372					

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Ammonia Nitrogen	< 0.1	mg/L as N	0.1									

<b>SampleID:</b> G2408E89-001BMS	<b>SampType:</b> MS			<b>TestNo:</b> EPA 350.1 Rev 2.0			<b>Prep Date:</b>			<b>RunNo:</b> 309213		
	<b>BatchID:</b> R309213			<b>Analysis Date:</b> 8/29/2024			<b>SeqNo:</b> 8124381					

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Ammonia Nitrogen	1.01	mg/L as N	0.1	1	0.0467	96.7%	90	110				

<b>SampleID:</b> G2408E91-004BMS	<b>SampType:</b> MS			<b>TestNo:</b> EPA 350.1 Rev 2.0			<b>Prep Date:</b>			<b>RunNo:</b> 309213		
	<b>BatchID:</b> R309213			<b>Analysis Date:</b> 8/29/2024			<b>SeqNo:</b> 8124391					

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Ammonia Nitrogen	1.03	mg/L as N	0.1	1		103.0%	90	110				

<b>SampleID:</b> LCS1-258454	<b>SampType:</b> LCS1			<b>TestNo:</b> EPA 6010 D			<b>Prep Date:</b> 8/29/2024			<b>RunNo:</b> 309251		
	<b>BatchID:</b> 258454			<b>Analysis Date:</b> 8/29/2024			<b>SeqNo:</b> 8125498					

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Barium	1.02	mg/L	0.01	1		102.0%	79.5	120.4				
Beryllium	0.199	mg/L	0.001	0.2		99.3%	79.5	120.4				
Cobalt	0.409	mg/L	0.005	0.4		102.2%	79.5	120.4				
Nickel	1.01	mg/L	0.01	1		100.8%	79.5	120.4				
Potassium	10.1	mg/L	0.5	10		101.0%	79.5	120.4				
Sodium	10.2	mg/L	0.2	10		102.2%	79.5	120.4				
Tin	0.995	mg/L	0.1	1		99.5%	79.5	120.4				
Vanadium	0.392	mg/L	0.005	0.4		98.1%	79.5	120.4				
Zinc	0.964	mg/L	0.01	1		96.4%	79.5	120.4				

Client: LIVE OAK LANDFILL

WorkOrder: G2408E91

Project: Live Oak 321A3

## Analytical QC Summary Report

<b>SampleID:</b> PB-258454	<b>SampType:</b> PB		<b>TestNo:</b> EPA 6010 D			<b>Prep Date:</b> 8/29/2024			<b>RunNo:</b> 309251		
	<b>BatchID:</b> 258454			<b>Analysis Date:</b> 8/29/2024			<b>SeqNo:</b> 8125497				

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Barium	< 0.01	mg/L	0.01									
Beryllium	< 0.001	mg/L	0.001									
Cobalt	< 0.005	mg/L	0.005									
Nickel	< 0.01	mg/L	0.01									
Potassium	< 0.5	mg/L	0.5									
Sodium	< 0.2	mg/L	0.2									
Tin	< 0.1	mg/L	0.1									
Vanadium	< 0.005	mg/L	0.005									
Zinc	< 0.01	mg/L	0.01									

<b>SampleID:</b> G2408E91-001JDUP	<b>SampType:</b> DUP		<b>TestNo:</b> EPA 6010 D			<b>Prep Date:</b> 8/29/2024			<b>RunNo:</b> 309251		
	<b>BatchID:</b> 258454			<b>Analysis Date:</b> 8/29/2024			<b>SeqNo:</b> 8125500				

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Barium	0.111	mg/L	0.01						0.11	0.1%	20	
Beryllium	< 0.001	mg/L	0.001								20	
Cobalt	< 0.005	mg/L	0.005								20	
Nickel	0.0335	mg/L	0.01						0.0332	0.9%	20	
Potassium	< 0.5	mg/L	0.5						0.297		20	
Sodium	6.25	mg/L	0.2						6.25	0.1%	20	
Tin	< 0.1	mg/L	0.1								20	
Vanadium	< 0.005	mg/L	0.005								20	
Zinc	< 0.01	mg/L	0.01						0.0072		20	

<b>SampleID:</b> G2408E91-001JMS	<b>SampType:</b> MS		<b>TestNo:</b> EPA 6010 D			<b>Prep Date:</b> 8/29/2024			<b>RunNo:</b> 309251		
	<b>BatchID:</b> 258454			<b>Analysis Date:</b> 8/29/2024			<b>SeqNo:</b> 8125501				

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Barium	1.04	mg/L	0.01	1	0.11	93.2%	75	125				
Beryllium	0.184	mg/L	0.001	0.2		91.9%	75	125				

Client: LIVE OAK LANDFILL

WorkOrder: G2408E91

Project: Live Oak 321A3

## Analytical QC Summary Report

Cobalt	0.371	mg/L	0.005	0.4		92.8%	75	125					
Nickel	0.94	mg/L	0.01	1	0.0332	90.7%	75	125					
Potassium	9.67	mg/L	0.5	10	0.297	93.8%	75	125					
Sodium	15.1	mg/L	0.2	10	6.25	88.9%	75	125					
Tin	0.921	mg/L	0.1	1		92.1%	75	125					
Vanadium	0.364	mg/L	0.005	0.4		91.0%	75	125					
Zinc	0.892	mg/L	0.01	1	0.0072	88.5%	75	125					

SampleID: G2408E93-005DMS	SampType: MS	TestNo: EPA 6010 D	Prep Date: 8/29/2024	RunNo: 309251
	BatchID: 258454		Analysis Date: 8/29/2024	SeqNo: 8125514

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Barium	1.02	mg/L	0.01	1	0.0181	100.2%	75	125					
Beryllium	0.195	mg/L	0.001	0.2		97.3%	75	125					
Cobalt	0.4	mg/L	0.005	0.4		100.0%	75	125					
Nickel	0.983	mg/L	0.01	1		98.3%	75	125					
Potassium	10.4	mg/L	0.5	10	0.332	100.3%	75	125					
Sodium	18.1	mg/L	0.2	10	8.68	94.5%	75	125					
Tin	0.994	mg/L	0.1	1		99.4%	75	125					
Vanadium	0.393	mg/L	0.005	0.4	0.0063	96.6%	75	125					
Zinc	0.954	mg/L	0.01	1		95.4%	75	125					

SampleID: LCS2-258456	SampType: LCS2	TestNo: EPA 6020 B	Prep Date: 8/29/2024	RunNo: 309267
	BatchID: 258456		Analysis Date: 8/30/2024	SeqNo: 8126135

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Antimony	6.3	µg/L	1	6		104.9%	79.5	120.45					
Arsenic	9.29	µg/L	1	10		92.9%	79.5	120.45					
Cadmium	5.02	µg/L	0.2	5		100.4%	79.5	120.45					
Chromium	47	µg/L	2	50		94.1%	79.5	120.45					
Copper	47.3	µg/L	1	50		94.7%	79.5	120.45					
Lead	5.14	µg/L	1	5		102.7%	79.5	120.45					
Selenium	17.7	µg/L	1	20		88.7%	79.5	120.45					
Silver	5.16	µg/L	0.2	5		103.2%	79.5	120.45					

Client: LIVE OAK LANDFILL

WorkOrder: G2408E91

Project: Live Oak 321A3

## Analytical QC Summary Report

Thallium	2.14	µg/L	0.2	2		106.9%	79.5	120.45				
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<b>SampleID:</b> PB-258456	<b>SampType:</b> PB	<b>TestNo:</b> EPA 6020 B	<b>Prep Date:</b> 8/29/2024	<b>RunNo:</b> 309267
	<b>BatchID:</b> 258456		<b>Analysis Date:</b> 8/30/2024	<b>SeqNo:</b> 8126134

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Antimony	< 1	µg/L	1					0.5				
Arsenic	< 1	µg/L	1					0.5				
Cadmium	< 0.2	µg/L	0.2					0.1				
Chromium	< 2	µg/L	2					0.5				
Copper	< 1	µg/L	1					0.5				
Lead	< 1	µg/L	1					0.2				
Selenium	< 1	µg/L	1					0.5				
Silver	< 0.2	µg/L	0.2					0.1				
Thallium	< 0.2	µg/L	0.2					0.1				

<b>SampleID:</b> G2408E91-001JDUP	<b>SampType:</b> DUP	<b>TestNo:</b> EPA 6020 B	<b>Prep Date:</b> 8/29/2024	<b>RunNo:</b> 309267
	<b>BatchID:</b> 258456		<b>Analysis Date:</b> 8/30/2024	<b>SeqNo:</b> 8126140

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Antimony	< 1	µg/L	1							20		
Arsenic	< 1	µg/L	1							20		
Cadmium	< 0.2	µg/L	0.2							20		
Chromium	< 2	µg/L	2							20		
Copper	< 1	µg/L	1							20		
Lead	< 1	µg/L	1							20		
Selenium	< 1	µg/L	1							20		
Silver	< 0.2	µg/L	0.2							20		
Thallium	< 0.2	µg/L	0.2							20		

<b>SampleID:</b> G2408E93-004DMS	<b>SampType:</b> MS	<b>TestNo:</b> EPA 6020 B	<b>Prep Date:</b> 8/29/2024	<b>RunNo:</b> 309267
	<b>BatchID:</b> 258456		<b>Analysis Date:</b> 8/30/2024	<b>SeqNo:</b> 8126149

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E91  
Project: Live Oak 321A3

## Analytical QC Summary Report

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Antimony	6.04	µg/L	1	6		100.7%	75	125				
Arsenic	9.54	µg/L	1	10		95.4%	75	125				
Cadmium	5.07	µg/L	0.2	5		101.4%	75	125				
Chromium	51.2	µg/L	2	50	5.3	91.8%	75	125				
Copper	48	µg/L	1	50	1.11	93.7%	75	125				
Lead	5.26	µg/L	1	5		105.3%	75	125				
Selenium	19.2	µg/L	1	20		95.8%	75	125				
Silver	5.37	µg/L	0.2	5		107.3%	75	125				
Thallium	2.05	µg/L	0.2	2		102.5%	75	125				

SampleID: G2408E93-007DMS	SampType: MS	TestNo: EPA 6020 B	Prep Date: 8/29/2024	RunNo: 309267
	BatchID: 258456		Analysis Date: 8/30/2024	SeqNo: 8126156

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Antimony	6.15	µg/L	1	6		102.5%	75	125				
Arsenic	9.32	µg/L	1	10		93.2%	75	125				
Cadmium	4.91	µg/L	0.2	5		98.1%	75	125				
Chromium	45.3	µg/L	2	50		90.6%	75	125				
Copper	46	µg/L	1	50	0.676	90.6%	75	125				
Lead	5.27	µg/L	1	5		105.5%	75	125				
Selenium	17.5	µg/L	1	20		87.5%	75	125				
Silver	5.18	µg/L	0.2	5		103.7%	75	125				
Thallium	2.21	µg/L	0.2	2		110.3%	75	125				

SampleID: LCS-258516	SampType: LCS	TestNo: EPA 7470A	Prep Date: 8/30/2024	RunNo: 309356
	BatchID: 258516		Analysis Date: 9/3/2024	SeqNo: 8128256

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Mercury	0.00195	mg/L	0.0002	0.002		97.5%	85	115				

SampleID: G2408E91-004JMS	SampType: MS	TestNo: EPA 7470A	Prep Date: 8/30/2024	RunNo: 309356
	BatchID: 258516		Analysis Date: 9/3/2024	SeqNo: 8128292

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E91  
Project: Live Oak 321A3

## Analytical QC Summary Report

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Mercury	0.00186	mg/L	0.0002	0.002		93.0%	85	115				
<b>SampleID:</b> PB-258516		<b>SampType:</b> PB		<b>TestNo:</b> EPA 7470A			<b>Prep Date:</b> 8/30/2024		<b>RunNo:</b> 309356			
		<b>BatchID:</b> 258516				<b>Analysis Date:</b> 9/3/2024			<b>SeqNo:</b> 8128250			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Mercury	< 0.0002	mg/L	0.0002									
<b>SampleID:</b> LCS-258519		<b>SampType:</b> LCS		<b>TestNo:</b> EPA 8011			<b>Prep Date:</b> 8/30/2024		<b>RunNo:</b> 309395			
		<b>BatchID:</b> 258519				<b>Analysis Date:</b> 9/3/2024			<b>SeqNo:</b> 8129229			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,2-Dibromo-3-chloropropane	0.113	µg/L	0.04	0.125		90.4%	60	140				
1,2-Dibromoethane	0.125	µg/L	0.04	0.125		100.0%	60	140				
Surr: 1,1,2,2-Tetrachloroethane	0.269	µg/L	0	0.286		94.1%	60	140				
<b>SampleID:</b> LCS-258519		<b>SampType:</b> LCS		<b>TestNo:</b> EPA 8011			<b>Prep Date:</b> 8/30/2024		<b>RunNo:</b> 309395			
		<b>BatchID:</b> 258519				<b>Analysis Date:</b> 9/3/2024			<b>SeqNo:</b> 8129273			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,2-Dibromo-3-chloropropane	0.121	µg/L	0.04	0.125		96.8%	60	140				
1,2-Dibromoethane	0.127	µg/L	0.04	0.125		101.6%	60	140				
Surr: 1,1,2,2-Tetrachloroethane	0.278	µg/L	0	0.286		97.2%	60	140				
<b>SampleID:</b> MBLK-258519		<b>SampType:</b> MBLK		<b>TestNo:</b> EPA 8011			<b>Prep Date:</b> 8/30/2024		<b>RunNo:</b> 309395			
		<b>BatchID:</b> 258519				<b>Analysis Date:</b> 9/3/2024			<b>SeqNo:</b> 8129188			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,2-Dibromo-3-chloropropane	< 0.04	µg/L	0.04									
1,2-Dibromoethane	< 0.04	µg/L	0.04									
Surr: 1,1,2,2-Tetrachloroethane	0.511	µg/L	0	0.571		89.5%	60	140				

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E91  
Project: Live Oak 321A3

## Analytical QC Summary Report

<b>SampleID:</b> G2408E91-004DMS		<b>SampType:</b> MS		<b>TestNo:</b> EPA 8011			<b>Prep Date:</b> 8/30/2024			<b>RunNo:</b> 309395		
		<b>BatchID:</b> 258519						<b>Analysis Date:</b> 9/3/2024			<b>SeqNo:</b> 8129199	

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,2-Dibromo-3-chloropropane	0.109	µg/L	0.04	0.125		87.2%	60	140				
1,2-Dibromoethane	0.113	µg/L	0.04	0.125		90.4%	60	140				
Surr: 1,1,2,2-Tetrachloroethane	0.262	µg/L	0	0.286		91.6%	60	140				

<b>SampleID:</b> G2408E91-004DMSD		<b>SampType:</b> MSD		<b>TestNo:</b> EPA 8011			<b>Prep Date:</b> 8/30/2024			<b>RunNo:</b> 309395		
		<b>BatchID:</b> 258519						<b>Analysis Date:</b> 9/3/2024			<b>SeqNo:</b> 8129200	

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,2-Dibromo-3-chloropropane	0.115	µg/L	0.04						0.109	5.4%	20	
1,2-Dibromoethane	0.117	µg/L	0.04						0.113	3.5%	20	
Surr: 1,1,2,2-Tetrachloroethane	0.278	µg/L	0	0.286		97.2%	60	140	0.262			

<b>SampleID:</b> LCS-258446		<b>SampType:</b> LCS		<b>TestNo:</b> EPA 8081 B			<b>Prep Date:</b> 8/29/2024			<b>RunNo:</b> 309271		
		<b>BatchID:</b> 258446						<b>Analysis Date:</b> 8/30/2024			<b>SeqNo:</b> 8126491	

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
4,4-DDD	0.19	µg/L	0.05	0.25		76.7%	50	120				
4,4-DDE	0.2	µg/L	0.05	0.25		79.2%	50	110				
4,4-DDT	0.25	µg/L	0.05	0.25		99.0%	50	130				
Aldrin	0.17	µg/L	0.05	0.25		66.5%	50	100				
Alpha BHC	0.19	µg/L	0.05	0.25		76.9%	50	110				
Alpha Endosulfan	0.18	µg/L	0.05	0.25		72.8%	50	110				
Beta BHC	0.19	µg/L	0.05	0.25		75.2%	50	110				
Beta Endosulfan	0.2	µg/L	0.05	0.25		79.6%	50	130				
Chlordane	< 1	µg/L	1				45	119				
Delta BHC	0.21	µg/L	0.05	0.25		82.6%	50	110				
Dieldrin	0.2	µg/L	0.05	0.25		80.9%	50	120				
Endosulfan Sulfate	0.22	µg/L	0.05	0.25		86.9%	50	130				
Endrin	0.22	µg/L	0.05	0.25		88.9%	50	130				
Endrin Aldehyde	0.23	µg/L	0.05	0.25		92.5%	50	130				

Client: LIVE OAK LANDFILL

WorkOrder: G2408E91

Project: Live Oak 321A3

## Analytical QC Summary Report

Gamma BHC (Lindane)	0.19	µg/L	0.05	0.25		77.8%	50	110				
Heptachlor	0.17	µg/L	0.05	0.25		69.6%	50	110				
Heptachlor epoxide	0.2	µg/L	0.05	0.25		80.3%	50	110				
Hexachlorobenzene	0.17	µg/L	0.1	0.25		67.4%	50	100				
Methoxychlor	0.23	µg/L	0.05	0.25		91.4%	50	130				
Toxaphene	< 2	µg/L	2				41	126				
Surr: Decachlorobiphenyl	0.21	µg/L	0	0.25		84.3%	10	133				
Surr: Tetrachloro-m-xylene	0.17	µg/L	0	0.25		68.7%	31	110				

SampleID: MBLK-258446	SampType: MBLK	TestNo: EPA 8081 B	Prep Date: 8/29/2024	RunNo: 309271
	BatchID: 258446		Analysis Date: 8/30/2024	SeqNo: 8127932

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
4,4-DDD	< 0.05	µg/L	0.05									
4,4-DDE	< 0.05	µg/L	0.05									
4,4-DDT	< 0.05	µg/L	0.05									
Aldrin	< 0.05	µg/L	0.05									
Alpha BHC	< 0.05	µg/L	0.05									
Alpha Endosulfan	< 0.05	µg/L	0.05									
Beta BHC	< 0.05	µg/L	0.05									
Beta Endosulfan	< 0.05	µg/L	0.05									
Chlordane	< 1	µg/L	1									
Delta BHC	< 0.05	µg/L	0.05									
Dieldrin	< 0.05	µg/L	0.05									
Endosulfan Sulfate	< 0.05	µg/L	0.05									
Endrin	< 0.05	µg/L	0.05									
Endrin Aldehyde	< 0.05	µg/L	0.05									
Gamma BHC (Lindane)	< 0.05	µg/L	0.05									
Heptachlor	< 0.05	µg/L	0.05									
Heptachlor epoxide	< 0.05	µg/L	0.05									
Hexachlorobenzene	< 0.1	µg/L	0.1									
Methoxychlor	< 0.05	µg/L	0.05									
Toxaphene	< 2	µg/L	2									
Surr: Decachlorobiphenyl	0.12	µg/L	0	0.5		23.9%	10	133				

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E91  
Project: Live Oak 321A3

## Analytical QC Summary Report

Surr: Tetrachloro-m-xylene	0.35	µg/L	0	0.5		70.6%	31	110					
<b>SampleID:</b> G2408E61-001BMS	<b>SampType:</b> MS			<b>TestNo:</b> EPA 8081 B			<b>Prep Date:</b> 8/29/2024			<b>RunNo:</b> 309271			
	<b>BatchID:</b> 258446						<b>Analysis Date:</b> 8/30/2024			<b>SeqNo:</b> 8126496			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
4,4-DDD	0.0019	mg/L	0.0005	0.0025		74.5%	36	134					
4,4-DDE	0.0017	mg/L	0.0005	0.0025		69.4%	34	119					
4,4-DDT	0.0023	mg/L	0.0005	0.0025		90.3%	32	130					
Aldrin	0.0017	mg/L	0.0005	0.0025		67.6%	25	110					
Alpha BHC	0.0019	mg/L	0.0005	0.0025		74.4%	39	113					
Alpha Endosulfan	0.0019	mg/L	0.0005	0.0025		75.6%	28	125					
Beta BHC	0.002	mg/L	0.0005	0.0025		80.2%	46	114					
Beta Endosulfan	0.002	mg/L	0.0005	0.0025		79.1%	34	122					
Chlordane	< 0.01	mg/L	0.01				45	119					
Dieldrin	0.0019	mg/L	0.0005	0.0025		76.1%	31	121					
Endosulfan Sulfate	0.0022	mg/L	0.0005	0.0025		86.7%	39	123					
Endrin	0.0022	mg/L	0.0005	0.0025		89.4%	48	132					
Endrin Aldehyde	0.0018	mg/L	0.0005	0.0025		73.3%	33	118					
Heptachlor	0.0018	mg/L	0.0005	0.0025		73.6%	38	116					
Heptachlor epoxide	0.0019	mg/L	0.0005	0.0025		77.4%	41	112					
Hexachlorobenzene	0.002	mg/L	0.001	0.0025	0.00087	45.6%	27	118					
Lindane	0.002	mg/L	0.0005	0.0025		78.2%	38	115					
Methoxychlor	0.0023	mg/L	0.0005	0.0025		92.0%	37	138					
Toxaphene	< 0.02	mg/L	0.02				41	126					
Heptachlor (and its epoxide)	0.0038	mg/L	0.001	0.005		75.5%	40	105					
Surr: Decachlorobiphenyl	0.0016	mg/L	0	0.0025		64.0%	10	133					
Surr: Tetrachloro-m-xylene	0.0015	mg/L	0	0.0025		61.6%	31	110					

<b>SampleID:</b> G2408E61-001BMSD	<b>SampType:</b> MSD			<b>TestNo:</b> EPA 8081 B			<b>Prep Date:</b> 8/29/2024			<b>RunNo:</b> 309271			
	<b>BatchID:</b> 258446						<b>Analysis Date:</b> 8/30/2024			<b>SeqNo:</b> 8126497			

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
4,4-DDD	0.0021	mg/L	0.0005						0.0019	12.1%	41		

Client: LIVE OAK LANDFILL

WorkOrder: G2408E91

Project: Live Oak 321A3

## Analytical QC Summary Report

4,4-DDE	0.002	mg/L	0.0005						0.0017	15.9%	59	
4,4-DDT	0.0026	mg/L	0.0005						0.0023	13.1%	51	
Aldrin	0.0019	mg/L	0.0005						0.0017	12.1%	44	
Alpha BHC	0.0019	mg/L	0.0005						0.0019	2.9%	29	
Alpha Endosulfan	0.002	mg/L	0.0005						0.0019	7.4%	36	
Beta BHC	0.0021	mg/L	0.0005						0.002	3.7%	26	
Beta Endosulfan	0.0022	mg/L	0.0005						0.002	10.6%	39	
Chlordane	< 0.01	mg/L	0.01								20	
Dieldrin	0.0022	mg/L	0.0005						0.0019	12.6%	36	
Endosulfan Sulfate	0.0023	mg/L	0.0005						0.0022	7.0%	35	
Endrin	0.0024	mg/L	0.0005						0.0022	8.9%	34	
Endrin Aldehyde	0.0017	mg/L	0.0005						0.0018	9.1%	35	
Heptachlor	0.0021	mg/L	0.0005						0.0018	11.3%	31	
Heptachlor epoxide	0.0022	mg/L	0.0005						0.0019	12.1%	32	
Hexachlorobenzene	0.0024	mg/L	0.001	0.00087					0.002	17.2%	48	
Lindane	0.0021	mg/L	0.0005						0.002	5.7%	36	
Methoxychlor	0.0026	mg/L	0.0005						0.0023	10.8%	39	
Toxaphene	< 0.02	mg/L	0.02								20	
Heptachlor (and its epoxide)	0.0042	mg/L	0.001						0.0038		20	
Surr: Decachlorobiphenyl	0.0022	mg/L	0	0.0025		88.9%	10	133	0.0016		20	
Surr: Tetrachloro-m-xylene	0.0018	mg/L	0	0.0025		71.3%	31	110	0.0015		20	

SampleID: LCS-258445

SampType: LCS

TestNo: EPA 8082 A

Prep Date: 8/29/2024

RunNo: 309284

BatchID: 258445

Analysis Date: 8/30/2024

SeqNo: 8126840

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
PCB 1016	3.9	µg/L	0.4	5		78.3%	57	120				
PCB 1221	< 0.4	µg/L	0.4									
PCB 1232	< 0.4	µg/L	0.4									
PCB 1242	< 0.4	µg/L	0.4									
PCB 1248	< 0.4	µg/L	0.4									
PCB 1254	< 0.4	µg/L	0.4									
PCB 1260	4.2	µg/L	0.4	5		84.4%	43	108				
Surr: Decachlorobiphenyl	0.22	µg/L	0	0.5		43.3%	10	110				

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E91  
Project: Live Oak 321A3

## Analytical QC Summary Report

Surr: Tetrachloro-m-xylene	0.37	µg/L	0	0.5		73.3%	12	120					
<b>SampleID:</b> MBLK-258445		<b>SampType:</b> MBLK		<b>TestNo:</b> EPA 8082 A			<b>Prep Date:</b> 8/29/2024			<b>RunNo:</b> 309284			
				<b>BatchID:</b> 258445				<b>Analysis Date:</b> 8/30/2024			<b>SeqNo:</b> 8126839		
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
PCB 1016	< 0.4	µg/L	0.4										
PCB 1221	< 0.4	µg/L	0.4										
PCB 1232	< 0.4	µg/L	0.4										
PCB 1242	< 0.4	µg/L	0.4										
PCB 1248	< 0.4	µg/L	0.4										
PCB 1254	< 0.4	µg/L	0.4										
PCB 1260	< 0.4	µg/L	0.4										
Surr: Decachlorobiphenyl	0.13	µg/L	0	0.5		25.0%	10	110					
Surr: Tetrachloro-m-xylene	0.38	µg/L	0	0.5		76.9%	12	120					
<b>SampleID:</b> G2408E91-004GMS		<b>SampType:</b> MS		<b>TestNo:</b> EPA 8082 A			<b>Prep Date:</b> 8/29/2024			<b>RunNo:</b> 309284			
				<b>BatchID:</b> 258445				<b>Analysis Date:</b> 8/30/2024			<b>SeqNo:</b> 8126852		
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
PCB 1016	3.9	µg/L	0.4	5.1		77.9%	45	118					
PCB 1221	< 0.4	µg/L	0.4										
PCB 1232	< 0.4	µg/L	0.4										
PCB 1242	< 0.4	µg/L	0.4										
PCB 1248	< 0.4	µg/L	0.4										
PCB 1254	< 0.4	µg/L	0.4										
PCB 1260	4.1	µg/L	0.4	5.1		81.2%	20	122					
Surr: Decachlorobiphenyl	0.27	µg/L	0	0.51		52.6%	10	110					
Surr: Tetrachloro-m-xylene	0.39	µg/L	0	0.51		77.9%	12	120					
<b>SampleID:</b> G2408E91-004GMSD		<b>SampType:</b> MSD		<b>TestNo:</b> EPA 8082 A			<b>Prep Date:</b> 8/29/2024			<b>RunNo:</b> 309284			
				<b>BatchID:</b> 258445				<b>Analysis Date:</b> 8/30/2024			<b>SeqNo:</b> 8126853		

Client: LIVE OAK LANDFILL

WorkOrder: G2408E91

Project: Live Oak 321A3

## Analytical QC Summary Report

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
PCB 1016	4.1	µg/L	0.41						3.9	4.6%	31	
PCB 1221	< 0.41	µg/L	0.41								20	
PCB 1232	< 0.41	µg/L	0.41								20	
PCB 1242	< 0.41	µg/L	0.41								20	
PCB 1248	< 0.41	µg/L	0.41								20	
PCB 1254	< 0.41	µg/L	0.41								20	
PCB 1260	4.3	µg/L	0.41						4.1	4.3%	35	
Surr: Decachlorobiphenyl	0.29	µg/L	0	0.51		57.4%	10	110	0.27			
Surr: Tetrachloro-m-xylene	0.41	µg/L	0	0.51		79.5%	12	120	0.39			

SampleID: 20 PPB LCS

SampType: LCS

TestNo: EPA 8260 D

Prep Date:

RunNo: 309244

BatchID: R309244

Analysis Date: 8/29/2024

SeqNo: 8125320

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,1,1,2-Tetrachloroethane	20.5	µg/L	1	20		102.7%	81	125				
1,1,1-Trichloroethane	19.2	µg/L	1	20		95.9%	71	125				
1,1,2,2-Tetrachloroethane	19.9	µg/L	1	20		99.4%	80	116				
1,1,2-Trichloroethane	20.2	µg/L	1	20		100.8%	83	126				
1,1-Dichloroethane	18.2	µg/L	1	20		90.8%	73	122				
1,1-Dichloroethene	19	µg/L	1	20		95.1%	74	121				
1,1-Dichloropropene	18.5	µg/L	1	20		92.4%	74	120				
1,2,3-Trichloropropane	19.3	µg/L	1	20		96.7%	77	118				
1,2-Dichlorobenzene	19.4	µg/L	1	20		96.8%	85	119				
1,2-Dichloroethane	19	µg/L	1	20		94.8%	72	123				
1,2-Dichloropropane	20.6	µg/L	1	20		103.1%	83	122				
1,3-Dichlorobenzene	19.5	µg/L	1	20		97.5%	82	119				
1,3-Dichloropropane	20.1	µg/L	1	20		100.5%	80	118				
1,4-Dichlorobenzene	19.4	µg/L	1	20		96.9%	83	120				
2,2-Dichloropropane	19.2	µg/L	1	20		96.2%	32	157				
2-Butanone	18.8	µg/L	5	20		94.2%	61	125				
2-chloro-1,3-butadiene	20	µg/L	1	20		99.8%	70	124				
2-Hexanone	19.7	µg/L	5	20		98.5%	58	132				
2-Methyl-1-propanol	195	µg/L	50	200		97.3%	29	163				

Client: LIVE OAK LANDFILL

WorkOrder: G2408E91

Project: Live Oak 321A3

## Analytical QC Summary Report

3-Chloro-1-Propene	19.3	µg/L	1	20		96.4%	65	127				
4-Methyl-2-Pentanone	20	µg/L	1	20		100.1%	68	127				
Acetone	21.1	µg/L	10	20		105.3%	60	133				
Acetonitrile	190	µg/L	20	200		95.1%	61	132				
Allyl chloride	19.3	µg/L	1	20		96.4%	65	127				
Benzene	19.2	µg/L	1	20		96.2%	76	122				
Bromochloromethane	19.7	µg/L	1	20		98.5%	78	124				
Bromodichloromethane	20.9	µg/L	1	20		104.5%	71	138				
Bromoform	20.9	µg/L	1	20		104.6%	71	125				
Bromomethane	18.2	µg/L	1	20		90.9%	47	152				
Carbon Disulfide	19.2	µg/L	1	20		95.9%	63	123				
Carbon Tetrachloride	18.8	µg/L	1	20		94.2%	68	133				
Chlorobenzene	19.8	µg/L	1	20		99.0%	83	118				
Chlorodibromomethane	20.8	µg/L	1	20		104.0%	74	131				
Chloroethane	21.3	µg/L	1	20		106.3%	56	127				
Chloroform	19.1	µg/L	1	20		95.3%	73	123				
Chloromethane	19.3	µg/L	1	20		96.4%	65	129				
Chloroprene	20	µg/L	1	20		99.8%	70	124				
cis-1,2-Dichloroethene	19.6	µg/L	1	20		98.2%	75	121				
cis-1,3-Dichloropropene	19.3	µg/L	1	20		96.6%	71	129				
Dibromomethane	18.7	µg/L	1	20		93.6%	83	118				
Dichlorobromomethane	20.9	µg/L	1	20		104.5%	56	145				
Dichlorodifluoromethane	24	µg/L	1	20		119.9%	60	138				
Ethyl Methacrylate	20.6	µg/L	1	20		103.2%	72	126				
Ethylbenzene	19.9	µg/L	1	20		99.7%	84	120				
Iodomethane	20.9	µg/L	5	20		104.4%	29	162				
Isobutyl alcohol	195	µg/L	50	200		97.3%	29	163				
Methacrylonitrile	199	µg/L	10	200		99.5%	69	126				
Methyl Ethyl Ketone	18.8	µg/L	5	20		94.2%	72	131				
Methyl methacrylate	21.2	µg/L	1	20		106.2%	74	122				
Methylene Chloride	20.1	µg/L	1	20		100.5%	73	133				
Propionitrile	195	µg/L	10	200		97.6%	63	129				
Styrene	20.7	µg/L	1	20		103.3%	88	116				
Tetrachloroethene	19.3	µg/L	1	20		96.4%	76	127				

Client: LIVE OAK LANDFILL  
 WorkOrder: G2408E91  
 Project: Live Oak 321A3

## Analytical QC Summary Report

Toluene	19.9	µg/L	1	20		99.7%	80	118					
trans-1,2-Dichloroethene	20.1	µg/L	1	20		100.4%	73	120					
trans-1,3-Dichloropropene	18.9	µg/L	1	20		94.3%	70	126					
trans-1,4-Dichloro-2-butene	19.8	µg/L	2	20		99.0%	46	137					
Tribromomethane	20.9	µg/L	1	20		104.6%	71	125					
Trichloroethene	19.8	µg/L	1	20		98.9%	73	123					
Trichlorofluoromethane	20.7	µg/L	1	20		103.6%	69	125					
Trichloromethane	19.1	µg/L	1	20		95.3%	73	123					
Vinyl Acetate	19.6	µg/L	1	20		97.9%	67	131					
Vinyl Chloride	19.8	µg/L	1	20		99.1%	56	125					
Total Xylene	58.9	µg/L	2	60		98.2%	87	116					
Surr: 1,2-Dichloroethane-d4	28	µg/L	0	30		93.2%	70	130					
Surr: 4-Bromofluorobenzene	30.4	µg/L	0	30		101.4%	70	130					
Surr: Dibromofluoromethane	28.4	µg/L	0	30		94.7%	70	130					
Surr: Toluene-d8	30	µg/L	0	30		100.1%	70	130					

SampleID: 20 PPB LCS	SampType: LCS	TestNo: EPA 8260 D	Prep Date:	RunNo: 309279
	BatchID: R309279		Analysis Date: 8/30/2024	SeqNo: 8126671

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Acrolein	18.6	µg/L	10	20		92.9%	30	152					

SampleID: BLANK	SampType: MBLK	TestNo: EPA 8260 D	Prep Date:	RunNo: 309244
	BatchID: R309244		Analysis Date: 8/29/2024	SeqNo: 8125352

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
1,1,1,2-Tetrachloroethane	< 1	µg/L	1										
1,1,1-Trichloroethane	< 1	µg/L	1										
1,1,2,2-Tetrachloroethane	< 1	µg/L	1										
1,1,2-Trichloroethane	< 1	µg/L	1										
1,1-Dichloroethane	< 1	µg/L	1										
1,1-Dichloroethene	< 1	µg/L	1										
1,1-Dichloropropene	< 1	µg/L	1										
1,2,3-Trichloropropane	< 1	µg/L	1										

**Client:** LIVE OAK LANDFILL

WorkOrder: G2408E91

Project: Live Oak 321A3

## Analytical QC Summary Report

Client: LIVE OAK LANDFILL

WorkOrder: G2408E91

Project: Live Oak 321A3

## Analytical QC Summary Report

Ethyl Methacrylate	< 1	µg/L	1										
Ethylbenzene	< 1	µg/L	1										
Iodomethane	< 5	µg/L	5										
Isobutyl alcohol	< 50	µg/L	50										
Methacrylonitrile	< 10	µg/L	10										
Methyl Ethyl Ketone	< 5	µg/L	5										
Methyl methacrylate	< 1	µg/L	1										
Methylene Chloride	< 1	µg/L	1										
Propionitrile	< 10	µg/L	10										
Styrene	< 1	µg/L	1										
Tetrachloroethene	< 1	µg/L	1										
Toluene	< 1	µg/L	1										
trans-1,2-Dichloroethene	< 1	µg/L	1										
trans-1,3-Dichloropropene	< 1	µg/L	1										
trans-1,4-Dichloro-2-butene	< 2	µg/L	2										
Tribromomethane	< 1	µg/L	1										
Trichloroethene	< 1	µg/L	1										
Trichlorofluoromethane	< 1	µg/L	1										
Trichloromethane	< 1	µg/L	1										
Vinyl Acetate	< 1	µg/L	1										
Vinyl Chloride	< 1	µg/L	1										
Total Xylene	< 2	µg/L	2										
Surr: 1,2-Dichloroethane-d4	29.2	µg/L	0	30		97.3%	70	130					
Surr: 4-Bromofluorobenzene	28.9	µg/L	0	30		96.5%	70	130					
Surr: Dibromofluoromethane	27.8	µg/L	0	30		92.8%	70	130					
Surr: Toluene-d8	30.6	µg/L	0	30		102.1%	70	130					

SampleID: BLANK

SampType: MBLK

TestNo: EPA 8260 D

Prep Date:

RunNo: 309279

BatchID: R309279

Analysis Date: 8/30/2024

SeqNo: 8126678

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Acrolein	< 10	µg/L	10									

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E91  
Project: Live Oak 321A3

## Analytical QC Summary Report

SampleID: G2408E87-005GMS		SampType: MS		TestNo: EPA 8260 D			Prep Date:			RunNo: 309244		
		BatchID: R309244							Analysis Date: 8/29/2024		SeqNo: 8125328	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,1,1,2-Tetrachloroethane	20.2	µg/L	1	20		101.0%	76	117				
1,1,1-Trichloroethane	20.6	µg/L	1	20		103.1%	72	122				
1,1,2,2-Tetrachloroethane	19.4	µg/L	1	20		97.2%	72	110				
1,1,2-Trichloroethane	19.7	µg/L	1	20		98.3%	76	126				
1,1-Dichloroethane	19.3	µg/L	1	20		96.5%	66	126				
1,1-Dichloroethene	21.4	µg/L	1	20		106.8%	66	121				
1,1-Dichloropropene	20.5	µg/L	1	20		102.3%	71	120				
1,2,3-Trichloropropane	19.1	µg/L	1	20		95.3%	72	112				
1,2-Dichlorobenzene	19.5	µg/L	1	20		97.4%	76	108				
1,2-Dichloroethane	18.8	µg/L	1	20		94.2%	69	116				
1,2-Dichloropropane	20.8	µg/L	1	20		103.8%	78	122				
1,3-Dichlorobenzene	19.6	µg/L	1	20		98.3%	71	120				
1,3-Dichloropropane	19.9	µg/L	1	20		99.5%	76	110				
1,4-Dichlorobenzene	19.5	µg/L	1	20		97.3%	70	121				
2,2-Dichloropropane	21.4	µg/L	1	20		107.2%	29	160				
2-Butanone	17.9	µg/L	5	20		89.3%	59	118				
2-chloro-1,3-butadiene	21.9	µg/L	1	20		109.5%	74	122				
2-Hexanone	19.3	µg/L	5	20		96.5%	63	120				
2-Methyl-1-propanol	189	µg/L	50	200		94.5%	37	145				
3-Chloro-1-Propene	20.4	µg/L	1	20		102.2%	64	124				
4-Methyl-2-Pentanone	19.8	µg/L	1	20		99.2%	68	116				
Acetone	16	µg/L	10	20		79.8%	51	133				
Acetonitrile	189	µg/L	20	200		94.7%	50	134				
Acrylonitrile	19	µg/L	5	20		94.9%	64	122				
Allyl chloride	20.4	µg/L	1				64	124				
Benzene	20	µg/L	1	20		100.0%	52	125				
Bromochloromethane	19.3	µg/L	1	20		96.3%	71	117				
Bromodichloromethane	21.5	µg/L	1	20		107.4%	68	132				
Bromoform	20.1	µg/L	1	20		100.5%	65	117				

Client: LIVE OAK LANDFILL

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## Analytical QC Summary Report

Bromomethane	19.1	µg/L	1	20		95.7%	40	156				
Carbon Disulfide	21.4	µg/L	1	20		106.9%	60	123				
Carbon Tetrachloride	20.6	µg/L	1	20		103.0%	67	132				
Chlorobenzene	20	µg/L	1	20		100.2%	78	111				
Chlorodibromomethane	20.1	µg/L	1	20		100.3%	70	123				
Chloroethane	22	µg/L	1	20		110.0%	46	132				
Chloroform	19.3	µg/L	1	20		96.7%	69	117				
Chloromethane	21	µg/L	1	20		104.9%	51	129				
Chloroprene	21.9	µg/L	1	20		109.5%	68	120				
cis-1,2-Dichloroethene	19.9	µg/L	1	20		99.4%	71	117				
cis-1,3-Dichloropropene	19.9	µg/L	1	20		99.5%	71	117				
Dibromomethane	18	µg/L	1	20		90.2%	77	110				
Dichlorobromomethane	21.5	µg/L	1	20		107.4%	74	117				
Dichlorodifluoromethane	26.8	µg/L	1	20		134.1%	34	140				
Ethyl Methacrylate	20.5	µg/L	1	20		102.4%	71	127				
Ethylbenzene	20.6	µg/L	1	20		103.2%	72	122				
Iodomethane	22	µg/L	5	20		109.9%	34	150				
Isobutyl alcohol	189	µg/L	50	200		94.5%	38	142				
Methacrylonitrile	192	µg/L	10	200		96.1%	65	119				
Methyl Ethyl Ketone	17.9	µg/L	5	20		89.3%	59	121				
Methyl methacrylate	20.4	µg/L	1	20		102.2%	71	121				
Methylene Chloride	19.1	µg/L	1	20		95.5%	64	121				
Propionitrile	188	µg/L	10	200		94.1%	59	122				
Styrene	20.5	µg/L	1	20		102.7%	78	117				
Tetrachloroethene	20.3	µg/L	1	20		101.3%	67	122				
Toluene	21	µg/L	1	20		105.2%	75	115				
trans-1,2-Dichloroethene	21.1	µg/L	1	20		105.6%	69	118				
trans-1,3-Dichloropropene	19.1	µg/L	1	20		95.5%	66	122				
trans-1,4-Dichloro-2-butene	20.1	µg/L	2	20		100.6%	46	131				
Tribromomethane	20.1	µg/L	1	20		100.5%	65	117				
Trichloroethene	21.2	µg/L	1	20		105.9%	75	117				
Trichlorofluoromethane	23.4	µg/L	1	20		116.9%	69	125				
Trichloromethane	19.3	µg/L	1	20		96.7%	69	117				
Vinyl Acetate	19	µg/L	1	20		94.9%	46	126				

Client: LIVE OAK LANDFILL

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## Analytical QC Summary Report

Vinyl Chloride	22.3	µg/L	1	20		111.3%	54	128					
Total Xylene	60.8	µg/L	2	60		101.3%	72	120					
Surr: 1,2-Dichloroethane-d4	27.4	µg/L	0	30		91.4%	70	130					
Surr: 4-Bromofluorobenzene	30.2	µg/L	0	30		100.6%	70	130					
Surr: Dibromofluoromethane	28.5	µg/L	0	30		95.1%	70	130					
Surr: Toluene-d8	29.7	µg/L	0	30		98.9%	70	130					

SampleID: G2408F29-002GMS	SampType: MS	TestNo: EPA 8260 D	Prep Date:	RunNo: 309279
	BatchID: R309279		Analysis Date: 8/30/2024	SeqNo: 8126790

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Acrolein	47.2	µg/L	10	20		236.1%	8	140					S

SampleID: G2408E87-005GMSD	SampType: MSD	TestNo: EPA 8260 D	Prep Date:	RunNo: 309244
	BatchID: R309244		Analysis Date: 8/29/2024	SeqNo: 8125334

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
1,1,1,2-Tetrachloroethane	20.9	µg/L	1						20.2	3.3%	11		
1,1,1-Trichloroethane	22	µg/L	1						20.6	6.5%	12		
1,1,2,2-Tetrachloroethane	20	µg/L	1						19.4	2.8%	14		
1,1,2-Trichloroethane	20.9	µg/L	1						19.7	6.1%	15		
1,1-Dichloroethane	20.2	µg/L	1						19.3	4.5%	12		
1,1-Dichloroethene	22.5	µg/L	1						21.4	5.3%	14		
1,1-Dichloropropene	21.9	µg/L	1						20.5	6.9%	13		
1,2,3-Trichloropropane	19.8	µg/L	1						19.1	3.8%	14		
1,2-Dichlorobenzene	20.1	µg/L	1						19.5	3.4%	13		
1,2-Dichloroethane	19.7	µg/L	1						18.8	4.7%	11		
1,2-Dichloropropane	21.5	µg/L	1						20.8	3.4%	12		
1,3-Dichlorobenzene	20.2	µg/L	1						19.6	2.8%	16		
1,3-Dichloropropane	20.7	µg/L	1						19.9	4.0%	17		
1,4-Dichlorobenzene	20.1	µg/L	1						19.5	3.3%	16		
2,2-Dichloropropane	23.1	µg/L	1						21.4	7.5%	13		
2-Butanone	17.5	µg/L	5						17.9	2.0%	23		
2-chloro-1,3-butadiene	23.2	µg/L	1						21.9	6.0%	12		

Client: LIVE OAK LANDFILL

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Project: Live Oak 321A3

## Analytical QC Summary Report

2-Hexanone	20.6	µg/L	5				19.3	6.5%	18	
2-Methyl-1-propanol	200	µg/L	50				189	5.8%	24	
3-Chloro-1-Propene	21.6	µg/L	1				20.4	5.7%	24	
4-Methyl-2-Pentanone	20.6	µg/L	1				19.8	3.8%	18	
Acetone	17.2	µg/L	10				16	7.4%	23	
Acetonitrile	202	µg/L	20				189	6.5%	28	
Acrylonitrile	20	µg/L	5				19	5.3%	16	
Allyl chloride	21.6	µg/L	1				20.4	5.7%	16	
Benzene	21.2	µg/L	1				20	6.0%	15	
Bromochloromethane	20.4	µg/L	1				19.3	5.5%	12	
Bromodichloromethane	22.3	µg/L	1				21.5	3.7%	18	
Bromoform	21.1	µg/L	1				20.1	4.8%	14	
Bromomethane	20.2	µg/L	1				19.1	5.3%	22	
Carbon Disulfide	22.3	µg/L	1				21.4	4.1%	13	
Carbon Tetrachloride	22.1	µg/L	1				20.6	7.0%	12	
Chlorobenzene	20.7	µg/L	1				20	3.0%	10	
Chlorodibromomethane	21.2	µg/L	1				20.1	5.7%	16	
Chloroethane	24.2	µg/L	1				22	9.7%	17	
Chloroform	20.7	µg/L	1				19.3	6.8%	13	
Chloromethane	22.2	µg/L	1				21	5.4%	16	
Chloroprene	23.2	µg/L	1				21.9	6.0%	13	
cis-1,2-Dichloroethene	21.1	µg/L	1				19.9	6.0%	12	
cis-1,3-Dichloropropene	20.8	µg/L	1				19.9	4.6%	16	
Dibromomethane	19.2	µg/L	1				18	6.3%	14	
Dichlorobromomethane	22.3	µg/L	1				21.5	3.7%	13	
Dichlorodifluoromethane	28.1	µg/L	1				26.8	4.6%	18	
Ethyl Methacrylate	21.3	µg/L	1				20.5	3.9%	17	
Ethylbenzene	21.5	µg/L	1				20.6	4.2%	16	
Iodomethane	23.4	µg/L	5				22	6.2%	19	
Isobutyl alcohol	200	µg/L	50				189	5.8%	23	
Methacrylonitrile	204	µg/L	10				192	6.0%	14	
Methyl Ethyl Ketone	17.5	µg/L	5				17.9	2.0%	21	
Methyl methacrylate	21.4	µg/L	1				20.4	4.3%	14	
Methylene Chloride	20.5	µg/L	1				19.1	7.0%	17	

Client: LIVE OAK LANDFILL

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## Analytical QC Summary Report

Propionitrile	202	µg/L	10							188	6.9%	22	
Styrene	21	µg/L	1							20.5	2.3%	12	
Tetrachloroethene	21.1	µg/L	1							20.3	4.0%	16	
Toluene	21.9	µg/L	1							21	3.9%	13	
trans-1,2-Dichloroethene	22.7	µg/L	1							21.1	7.2%	13	
trans-1,3-Dichloropropene	19.9	µg/L	1							19.1	4.2%	15	
trans-1,4-Dichloro-2-butene	20.9	µg/L	2							20.1	4.0%	17	
Tribromomethane	21.1	µg/L	1							20.1	4.8%	14	
Trichloroethene	22.1	µg/L	1							21.2	4.1%	11	
Trichlorofluoromethane	24.7	µg/L	1							23.4	5.4%	15	
Trichloromethane	20.7	µg/L	1							19.3	6.8%	12	
Vinyl Acetate	20.4	µg/L	1							19	7.3%	11	
Vinyl Chloride	24	µg/L	1							22.3	7.5%	15	
Total Xylene	63.3	µg/L	2							60.8		18	
Surr: 1,2-Dichloroethane-d4	28	µg/L	0	30		93.4%	70	130		27.4			
Surr: 4-Bromofluorobenzene	30.5	µg/L	0	30		101.8%	70	130		30.2			
Surr: Dibromofluoromethane	29	µg/L	0	30		96.8%	70	130		28.5			
Surr: Toluene-d8	29.8	µg/L	0	30		99.4%	70	130		29.7			

SampleID: G2408F29-002GMSD	SampType: MSD	TestNo: EPA 8260 D	Prep Date:	RunNo: 309279
	BatchID: R309279		Analysis Date: 8/30/2024	SeqNo: 8126791

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Acrolein	47.7	µg/L	10						47.2		25	

SampleID: LCS-258432	SampType: LCS	TestNo: EPA 8270 E	Prep Date: 8/28/2024	RunNo: 309312
	BatchID: 258432		Analysis Date: 8/30/2024	SeqNo: 8127160

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,2,4-Trichlorobenzene	29	µg/L	10	50		57.4%	33	95				
1,4-Naphthoquinone	2.2	µg/L	0	50		4.4%	4	125				
2,3,4,6-Tetrachlorophenol	47	µg/L	20	50		93.7%	35	134				
2,4,5-Trichlorophenol	45	µg/L	10	50		89.2%	40	134				
2,4,6-Trichlorophenol	45	µg/L	10	50		89.8%	41	133				

**Client:** LIVE OAK LANDFILL

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2,4-Dichlorophenol	41	µg/L	10	50		81.9%	27	115				
2,4-Dimethylphenol	41	µg/L	10	50		81.1%	39	144				
2,4-Dinitrophenol	40	µg/L	20	50		80.9%	32	138				
2,4-Dinitrotoluene	48	µg/L	10	50		96.0%	39	142				
2,6-Dichlorophenol	41	µg/L	10	50		81.2%	39	123				
2,6-Dinitrotoluene	48	µg/L	10	50		95.3%	43	130				
2-Chloro-Naphthalene	41	µg/L	10	50		81.9%	42	112				
2-Chlorophenol	40	µg/L	10	50		79.9%	38	108				
2-Methyl-4,6-dinitrophenol	42	µg/L	20	50		83.9%	31	126				
2-Methylnaphthalene	34	µg/L	10	50		67.6%	40	110				
2-Methylphenol	42	µg/L	10	50		83.5%	32	107				
2-Nitroaniline	46	µg/L	10	50		91.6%	46	121				
2-Nitrophenol	38	µg/L	10	50		75.7%	29	104				
3,3-Dichlorobenzidine	54	µg/L	20	50		108.4%	29	140				
3,4-Methylphenol	43	µg/L	10	50		86.1%	31	113				
3-Nitroaniline	47	µg/L	10	50		94.0%	33	125				
4,6-Dinitro-2-methylphenol	42	µg/L	20	50		83.9%	31	126				
4-Bromophenylphenoylether	46	µg/L	10	50		92.5%	45	125				
4-Chloro-3-methylphenol	41	µg/L	10	50		82.3%	38	119				
4-Chloroaniline	37	µg/L	10	50		74.6%	31	108				
4-Chlorophenylphenoylether	45	µg/L	10	50		90.2%	43	135				
4-Nitroaniline	46	µg/L	10	50		92.0%	47	131				
4-Nitrophenol	44	µg/L	20	50		87.3%	33	136				
Acenaphthene	44	µg/L	10	50		88.0%	38	118				
Acenaphthylene	42	µg/L	10	50		83.1%	44	126				
Acetophenone	41	µg/L	10	50		81.8%	32	126				
Anthracene	44	µg/L	10	50		88.0%	46	128				
Benzo(a)anthracene	47	µg/L	10	50		93.9%	45	132				
Benzo(a)pyrene	46	µg/L	10	50		92.5%	42	127				
Benzo(b)fluoranthene	44	µg/L	10	50		88.7%	40	122				
Benzo(g,h,i)perylene	47	µg/L	10	50		93.9%	29	133				
Benzo(k)fluoranthene	45	µg/L	10	50		90.3%	39	125				
Benzyl Alcohol	45	µg/L	20	50		90.1%	31	141				
bis(2-Chloroethoxy)methane	40	µg/L	10	50		79.5%	39	108				

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bis(2-Chloroethyl)ether	40	µg/L	10	50		80.6%	36	108				
bis(2-Chloroisopropyl)ether	52	µg/L	10	50		104.6%	35	119				
bis(2-Ethylhexyl)phthalate	48	µg/L	5	50		95.1%	25	125				
Butyl benzylphthalate	40	µg/L	10	50		79.8%	30	114				
Chrysene	30	µg/L	10	50		59.4%	38	124				
Di-N-Butyl Phthalate	42	µg/L	10	50		83.1%	32	119				
Di-N-Octylphthalate	45	µg/L	10	50		89.6%	35	131				
Di-n-propylnitrosamine	46	µg/L	10	50		91.4%	40	120				
Dibenzo(a,h)anthracene	23	µg/L	10	50		46.0%	32	125				
Dibenzofuran	42	µg/L	10	50		83.6%	42	104				
Diethyl Phthalate	25	µg/L	10	50		50.9%	10	114				
Dimethyl Phthalate	< 10	µg/L	10	50		20.4%	7	128				
Ethyl Methanesulfonate	38	µg/L	10	50		76.6%	38	118				
Fluoranthene	47	µg/L	10	50		94.5%	47	136				
Fluorene	46	µg/L	10	50		91.5%	41	127				
Hexachlorobutadiene	21	µg/L	10	50		42.2%	25	105				
Hexachlorocyclopentadiene	16	µg/L	10	50		31.5%	10	132				
Hexachloroethane	20	µg/L	10	50		39.9%	21	107				
Indeno(1,2,3-cd)pyrene	44	µg/L	10	50		88.3%	30	126				
Isophorone	46	µg/L	10	50		91.7%	45	133				
m,p-Cresol	43	µg/L	10	50		86.1%	31	112				
Methyl Methanesulfonate	34	µg/L	10	50		68.4%	19	93				
n-Nitrosodimethylamine	38	µg/L	10	50		75.1%	17	105				
n-Nitrosodiphenylamine	53	µg/L	20	50		106.5%	44	149				
N-nitrosodipropylamine	46	µg/L	10	50		91.4%	44	120				
Naphthalene	35	µg/L	10	50		69.6%	35	110				
Nitrobenzene	38	µg/L	10	50		75.8%	38	98				
o-Cresol	42	µg/L	10	50		83.5%	32	107				
Pentachloronitrobenzene	47	µg/L	10	50		93.3%	43	122				
Pentachlorophenol	46	µg/L	20	50		91.4%	20	130				
Phenanthrene	44	µg/L	10	50		88.2%	43	120				
Phenol	40	µg/L	10	50		79.1%	11	118				
Pyrene	46	µg/L	10	50		91.6%	47	116				
Surr: 2,4,6-Tribromophenol	73	µg/L	0	75		97.8%	34	131				

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## Analytical QC Summary Report

Surr: 2-Fluorobiphenyl	61	µg/L	0	75		80.9%	34	118					
Surr: 2-Fluorophenol	55	µg/L	0	75		72.7%	10	115					
Surr: Nitrobenzene-d5	55	µg/L	0	75		73.9%	32	119					
Surr: p-Terphenyl-d14	66	µg/L	0	75		88.6%	32	136					
Surr: Phenol-d6	60	µg/L	0	75		80.2%	11	119					

SampleID: APP II- 258432	SampType: LCS	TestNo: EPA 8270 E	Prep Date: 8/28/2024	RunNo: 309312
	BatchID: 258432		Analysis Date: 8/30/2024	SeqNo: 8127168

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,2,4,5-Tetrachlorobenzene	33	µg/L	10	50		65.9%	38	121				
1,3-Dinitrobenzene	36	µg/L	20	50		71.9%	38	125				
1-Naphthylamine	40	µg/L	10	50		81.0%	17	105				
1-Nitrosopiperidine	44	µg/L	10	50		87.2%	40	122				
2-Acetylaminofluorene	39	µg/L	20	50		77.5%	45	128				
2-Naphthylamine	45	µg/L	10	50		90.1%	18	106				
3,3-Dimethylbenzidine	34	µg/L	20	50		67.2%	10	108				
3-Methylcholanthrene	48	µg/L	10	50		96.1%	35	131				
4-Aminobiphenyl	47	µg/L	10	50		94.6%	15	121				
5-Nitro-o-toluidine	47	µg/L	20	50		94.3%	41	127				
7,12-Dimethylbenz(a)-anthracene	48	µg/L	10	50		96.7%	42	122				
Chlorobenzilate	15	µg/L	0	50		30.0%	12	109				
cis-Diallate	31	µg/L	10	35		88.7%	32	136				
Diallate-A	31	µg/L	20	35		88.7%	32	136				
Diallate-B	13	µg/L	0	15		87.9%	46	128				
Dimethoate	4.2	µg/L	0	50		8.5%	5	110				
Diphenylamine	48	µg/L	10	50		95.7%	40	132				
Disulfoton	42	µg/L	20	50		83.4%	31	114				
Famphur	11	µg/L	0	50		21.1%	10	105				
Hexachloropropene	5.5	µg/L	0	50		11.1%	12	108				S
Isodrin	36	µg/L	20	50		71.4%	35	122				
Isosafrole	35	µg/L	10	50		69.1%	42	120				
Kepone	25	µg/L	0	50		50.9%	10	120				

Client: LIVE OAK LANDFILL

WorkOrder: G2408E91

Project: Live Oak 321A3

## Analytical QC Summary Report

Methapyriline	25	µg/L	20	50		49.5%	21	114					
Methyl Parathion	39	µg/L	10	50		77.5%	33	114					
N-Nitrosodibutylamine	41	µg/L	10	50		81.4%	42	125					
N-Nitrosodiethylamine	40	µg/L	10	50		79.9%	35	110					
N-Nitrosomethylethylamine	37	µg/L	10	50		73.1%	25	113					
N-Nitrosopyrrolidine	43	µg/L	10	50		86.4%	33	118					
o,o,o-Triethylphosphorothioate	36	µg/L	10	50		71.7%	43	107					
o-Toluidine	42	µg/L	10	50		85.0%	18	115					
p-Dimethylaminoazobenzene	52	µg/L	10	50		104.2%	38	125					
p-Phenylenediamine	42	µg/L	20	50		84.5%	14	116					
Parathion	48	µg/L	10	50		95.4%	44	124					
Pentachlorobenzene	40	µg/L	10	50		80.7%	35	125					
Phenacetin	49	µg/L	10	50		97.8%	55	125					
Phorate	37	µg/L	20	50		73.3%	32	111					
Pronamide	47	µg/L	10	50		94.7%	40	130					
Safrole	32	µg/L	10	50		63.6%	41	112					
sym-Trinitrobenzene	41	µg/L	10	50		82.2%	39	139					
Thionazin	37	µg/L	20	50		74.6%	36	121					
trans-Diallate	13	µg/L	0	15		87.9%	46	128					
Diallate	44	µg/L	20	50		88.5%	23	134					
Surr: 2,4,6-Tribromophenol	71	µg/L	0	75		94.0%	34	131					
Surr: 2-Fluorobiphenyl	59	µg/L	0	75		78.9%	34	118					
Surr: 2-Fluorophenol	51	µg/L	0	75		68.2%	10	115					
Surr: Nitrobenzene-d5	51	µg/L	0	75		67.6%	32	119					
Surr: p-Terphenyl-d14	66	µg/L	0	75		87.4%	32	136					
Surr: Phenol-d6	58	µg/L	0	75		77.0%	11	119					

SampleID: APP II- 258432

SampType: LCS

TestNo: EPA 8270 E

Prep Date: 8/28/2024

RunNo: 309761

BatchID: 258432

Analysis Date: 9/11/2024

SeqNo: 8139747

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
a,a-Dimethylphenethylamine	44	µg/L	10	50		87.0%	5	98				

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E91  
Project: Live Oak 321A3

## Analytical QC Summary Report

SampleID: LCSD-258432		SampType: LCSD		TestNo: EPA 8270 E			Prep Date: 8/28/2024			RunNo: 309312		
		BatchID: 258432							Analysis Date: 8/30/2024		SeqNo: 8127163	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,2,4-Trichlorobenzene	31	µg/L	10	50		61.8%	33	95	29	7.3%	36	
1,4-Naphthoquinone	2.8	µg/L	0	50		5.6%	4	125	2.2	24.6%	31	
2,3,4,6-Tetrachlorophenol	48	µg/L	20	50		96.8%	35	134	47	3.2%	47	
2,4,5-Trichlorophenol	46	µg/L	10	50		91.8%	40	134	45	2.9%	51	
2,4,6-Trichlorophenol	46	µg/L	10	50		92.2%	41	133	45	2.7%	25	
2,4-Dichlorophenol	41	µg/L	10	50		82.1%	27	115	41	0.2%	37	
2,4-Dimethylphenol	39	µg/L	10	50		78.5%	39	144	41	3.2%	32	
2,4-Dinitrophenol	43	µg/L	20	50		85.5%	32	138	40	5.5%	70	
2,4-Dinitrotoluene	48	µg/L	10	50		96.9%	39	142	48	0.9%	35	
2,6-Dichlorophenol	41	µg/L	10	50		81.9%	39	123	41	0.8%	31	
2,6-Dinitrotoluene	49	µg/L	10	50		97.2%	43	130	48	2.0%	29	
2-Chloro-Naphthalene	42	µg/L	10	50		83.8%	42	112	41	2.3%	33	
2-Chlorophenol	41	µg/L	10	50		81.8%	38	108	40	2.4%	45	
2-Methyl-4,6-dinitrophenol	43	µg/L	20	50		85.3%	31	126	42	1.7%	53	
2-Methylnaphthalene	35	µg/L	10	50		69.4%	40	110	34	2.6%	30	
2-Methylphenol	44	µg/L	10	50		87.4%	32	107	42	4.6%	32	
2-Nitroaniline	47	µg/L	10	50		93.1%	46	121	46	1.6%	23	
2-Nitrophenol	39	µg/L	10	50		78.1%	29	104	38	3.1%	38	
3,3-Dichlorobenzidine	49	µg/L	20	50		98.1%	29	140	54	10.0%	71	
3,4-Methylphenol	45	µg/L	10	50		89.9%	31	113	43	4.4%	39	
3-Nitroaniline	48	µg/L	10	50		96.8%	33	125	47	2.9%	26	
4,6-Dinitro-2-methylphenol	43	µg/L	20	50		85.3%	31	126	42	1.7%	53	
4-Bromophenylphenylether	47	µg/L	10	50		94.9%	45	125	46	2.5%	25	
4-Chloro-3-methylphenol	42	µg/L	10	50		84.6%	38	119	41	2.7%	42	
4-Chloroaniline	37	µg/L	10	50		74.3%	31	108	37	0.4%	25	
4-Chlorophenylphenylether	46	µg/L	10	50		91.8%	43	135	45	1.8%	25	
4-Nitroaniline	47	µg/L	10	50		93.8%	47	131	46	2.0%	24	
4-Nitrophenol	44	µg/L	20	50		87.2%	33	136	44	0.2%	61	
Acenaphthene	45	µg/L	10	50		90.3%	38	118	44	2.6%	32	

Client: LIVE OAK LANDFILL

WorkOrder: G2408E91

Project: Live Oak 321A3

## Analytical QC Summary Report

Acenaphthylene	42	µg/L	10	50		85.0%	44	126	42	2.2%	32	
Acetophenone	42	µg/L	10	50		84.1%	32	126	41	2.8%	43	
Anthracene	45	µg/L	10	50		90.4%	46	128	44	2.7%	22	
Benzo(a)anthracene	47	µg/L	10	50		95.0%	45	132	47	1.2%	27	
Benzo(a)pyrene	47	µg/L	10	50		94.2%	42	127	46	1.8%	33	
Benzo(b)fluoranthene	46	µg/L	10	50		92.7%	40	122	44	4.5%	24	
Benzo(g,h,i)perylene	48	µg/L	10	50		95.8%	29	133	47	1.9%	31	
Benzo(k)fluoranthene	47	µg/L	10	50		93.1%	39	125	45	3.0%	24	
Benzyl Alcohol	48	µg/L	20	50		95.6%	31	141	45	5.8%	50	
bis(2-Chloroethoxy)methane	40	µg/L	10	50		80.2%	39	108	40	0.8%	36	
bis(2-Chloroethyl)ether	42	µg/L	10	50		83.3%	36	108	40	3.3%	36	
bis(2-Chloroisopropyl)ether	51	µg/L	10	50		102.2%	35	119	52	2.4%	36	
bis(2-Ethylhexyl)phthalate	48	µg/L	5	50		96.8%	25	125	48	1.7%	36	
Butyl benzylphthalate	41	µg/L	10	50		82.1%	30	114	40	2.8%	54	
Chrysene	30	µg/L	10	50		59.6%	38	124	30	0.3%	30	
Di-N-Butyl Phthalate	42	µg/L	10	50		84.6%	32	119	42	1.8%	38	
Di-N-Octylphthalate	46	µg/L	10	50		91.9%	35	131	45	2.5%	49	
Di-n-propylNitrosamine	47	µg/L	10	50		94.3%	40	120	46	3.2%	34	
Dibenzo(a,h)anthracene	23	µg/L	10	50		46.6%	32	125	23	1.4%	31	
Dibenzofuran	43	µg/L	10	50		85.8%	42	104	42	2.5%	51	
Diethyl Phthalate	28	µg/L	10	50		56.2%	10	114	25	9.9%	53	
Dimethyl Phthalate	13	µg/L	10	50		26.2%	7	128	10	25.1%	48	
Ethyl Methanesulfonate	39	µg/L	10	50		78.8%	38	118	38	2.8%	37	
Fluoranthene	48	µg/L	10	50		95.9%	47	136	47	1.4%	25	
Fluorene	46	µg/L	10	50		92.8%	41	127	46	1.4%	30	
Hexachlorobutadiene	24	µg/L	10	50		48.2%	25	105	21	13.4%	39	
Hexachlorocyclopentadiene	18	µg/L	10	50		35.1%	10	132	16	11.0%	68	
Hexachloroethane	23	µg/L	10	50		45.8%	21	107	20	13.8%	54	
Indeno(1,2,3-cd)pyrene	45	µg/L	10	50		89.6%	30	126	44	1.6%	37	
Isophorone	46	µg/L	10	50		91.6%	45	133	46	0.0%	31	
m,p-Cresol	45	µg/L	10	50		89.9%	31	112	43	4.4%	39	
Methyl Methanesulfonate	35	µg/L	10	50		69.4%	19	93	34	1.4%	41	
n-Nitrosodimethylamine	38	µg/L	10	50		76.7%	17	105	38	2.1%	37	
n-Nitrosodiphenylamine	54	µg/L	20	50		107.3%	44	149	53	0.7%	26	

Client: LIVE OAK LANDFILL  
 WorkOrder: G2408E91  
 Project: Live Oak 321A3

## Analytical QC Summary Report

N-nitrosodipropylamine	47	µg/L	10	50		94.3%	44	120	46	3.2%	33	
Naphthalene	35	µg/L	10	50		70.9%	35	110	35	1.8%	34	
Nitrobenzene	38	µg/L	10	50		76.1%	38	98	38	0.5%	35	
o-Cresol	44	µg/L	10	50		87.4%	32	107	42	4.6%	32	
Pentachloronitrobenzene	46	µg/L	10	50		92.4%	43	122	47	1.0%	25	
Pentachlorophenol	47	µg/L	20	50		93.3%	20	130	46	2.1%	48	
Phenanthrene	45	µg/L	10	50		89.3%	43	120	44	1.2%	24	
Phenol	41	µg/L	10	50		81.5%	11	118	40	2.9%	65	
Pyrene	46	µg/L	10	50		93.0%	47	116	46	1.5%	24	
Surr: 2,4,6-Tribromophenol	75	µg/L	0	75		99.7%	34	131	73			
Surr: 2-Fluorobiphenyl	63	µg/L	0	75		84.6%	34	118	61			
Surr: 2-Fluorophenol	56	µg/L	0	75		74.5%	10	115	55			
Surr: Nitrobenzene-d5	55	µg/L	0	75		72.8%	32	119	55			
Surr: p-Terphenyl-d14	68	µg/L	0	75		90.4%	32	136	66			
Surr: Phenol-d6	62	µg/L	0	75		82.8%	11	119	60			

SampleID: MBLK-258432	SampType: MBLK	TestNo: EPA 8270 E	Prep Date: 8/28/2024	RunNo: 309312
	BatchID: 258432		Analysis Date: 8/30/2024	SeqNo: 8127157

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,2,4,5-Tetrachlorobenzene	< 10	µg/L	10									
1,2,4-Trichlorobenzene	< 10	µg/L	10									
1,3-Dinitrobenzene	< 20	µg/L	20									
1,4-Naphthoquinone	< 10	µg/L	10									
1-Naphthylamine	< 10	µg/L	10									
1-Nitrosopiperidine	< 10	µg/L	10									
2,3,4,6-Tetrachlorophenol	< 20	µg/L	20									
2,4,5-Trichlorophenol	< 10	µg/L	10									
2,4,6-Trichlorophenol	< 10	µg/L	10									
2,4-Dichlorophenol	< 10	µg/L	10									
2,4-Dimethylphenol	< 10	µg/L	10									
2,4-Dinitrophenol	< 20	µg/L	20									
2,4-Dinitrotoluene	< 10	µg/L	10									
2,6-Dichlorophenol	< 10	µg/L	10									

**Client:** LIVE OAK LANDFILL

WorkOrder: G2408E91

## Project: Live Oak 321A3

## Analytical QC Summary Report

**Client:** LIVE OAK LANDFILL

WorkOrder: G2408E91

## Project: Live Oak 321A3

## Analytical QC Summary Report

**Client:** LIVE OAK LANDFILL

WorkOrder: G2408E91

## Project: Live Oak 321A3

## Analytical QC Summary Report

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E91  
Project: Live Oak 321A3

## Analytical QC Summary Report

Surrogate: 2,4,6-Tribromophenol	52	µg/L	0	75		69.7%	34	131					
Surrogate: 2-Fluorobiphenyl	44	µg/L	0	75		58.3%	34	118					
Surrogate: 2-Fluorophenol	41	µg/L	0	75		54.6%	10	115					
Surrogate: Nitrobenzene-d5	44	µg/L	0	75		58.7%	32	119					
Surrogate: p-Terphenyl-d14	66	µg/L	0	75		88.4%	32	136					
Surrogate: Phenol-d6	44	µg/L	0	75		59.1%	11	119					
<b>SampleID:</b> MBLK-258432		<b>SampType:</b> MBLK		<b>TestNo:</b> EPA 8270 E			<b>Prep Date:</b> 8/28/2024			<b>RunNo:</b> 309436			
							<b>BatchID:</b> 258432			<b>Analysis Date:</b> 9/4/2024			<b>SeqNo:</b> 8130226
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
1,2,4,5-Tetrachlorobenzene	< 10	µg/L	10										
1,2,4-Trichlorobenzene	< 10	µg/L	10										
1,3-Dinitrobenzene	< 20	µg/L	20										
1-Naphthylamine	< 10	µg/L	10										
1-Nitrosopiperidine	< 10	µg/L	10										
2,3,4,6-Tetrachlorophenol	< 20	µg/L	20										
2,4,5-Trichlorophenol	< 10	µg/L	10										
2,4,6-Trichlorophenol	< 10	µg/L	10										
2,4-Dichlorophenol	< 10	µg/L	10										
2,4-Dimethylphenol	< 10	µg/L	10										
2,4-Dinitrophenol	< 20	µg/L	20										
2,4-Dinitrotoluene	< 10	µg/L	10										
2,6-Dichlorophenol	< 10	µg/L	10										
2,6-Dinitrotoluene	< 10	µg/L	10										
2-Acetylaminofluorene	< 20	µg/L	20										
2-Chloro-Naphthalene	< 10	µg/L	10										
2-Chlorophenol	< 10	µg/L	10										
2-Methyl-4,6-dinitrophenol	< 20	µg/L	20										
2-Methylnaphthalene	< 10	µg/L	10										
2-Methylphenol	< 10	µg/L	10										
2-Naphthylamine	< 10	µg/L	10										
2-Nitrophenol	< 10	µg/L	10										
3,3-Dimethylbenzidine	< 20	µg/L	20										

**Client:** LIVE OAK LANDFILL

WorkOrder: G2408E91

Project: Live Oak 321A3

# Analytical QC Summary Report

**Client:** LIVE OAK LANDFILL

WorkOrder: G2408E91

## Project: Live Oak 321A3

## Analytical QC Summary Report

Client: LIVE OAK LANDFILL

WorkOrder: G2408E91

Project: Live Oak 321A3

## Analytical QC Summary Report

sym-Trinitrobenzene	< 10	µg/L	10										
3,4-Methylphenol	< 10	µg/L	10										
Surr: 2,4,6-Tribromophenol	54	µg/L	0	75		72.3%	34	131					
Surr: 2-Fluorobiphenyl	45	µg/L	0	75		59.3%	34	118					
Surr: 2-Fluorophenol	41	µg/L	0	75		54.6%	10	115					
Surr: Nitrobenzene-d5	43	µg/L	0	75		56.8%	32	119					
Surr: p-Terphenyl-d14	67	µg/L	0	75		89.1%	32	136					
Surr: Phenol-d6	45	µg/L	0	75		59.8%	11	119					

SampleID: MBLK-258432	SampType: MBLK	TestNo: EPA 8270 E	Prep Date: 8/28/2024	RunNo: 309761
	BatchID: 258432		Analysis Date: 9/11/2024	SeqNo: 8139725

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,2,4-Trichlorobenzene	< 10	µg/L	10									
2,3,4,6-Tetrachlorophenol	< 20	µg/L	20									
2,4,5-Trichlorophenol	< 10	µg/L	10									
2,4,6-Trichlorophenol	< 10	µg/L	10									
2,4-Dichlorophenol	< 10	µg/L	10									
2,4-Dimethylphenol	< 10	µg/L	10									
2,4-Dinitrophenol	< 20	µg/L	20									
2,4-Dinitrotoluene	< 10	µg/L	10									
2,6-Dichlorophenol	< 10	µg/L	10									
2,6-Dinitrotoluene	< 10	µg/L	10									
2-Chloro-Naphthalene	< 10	µg/L	10									
2-Chlorophenol	< 10	µg/L	10									
2-Methyl-4,6-dinitrophenol	< 20	µg/L	20									
2-Methylnaphthalene	< 10	µg/L	10									
2-Methylphenol	< 10	µg/L	10									
2-Nitrophenol	< 10	µg/L	10									
4,6-Dinitro-2-methylphenol	< 20	µg/L	20									
4-Bromophenylphenylether	< 10	µg/L	10									
4-Chloro-3-methylphenol	< 10	µg/L	10									
4-Chlorophenylphenylether	< 10	µg/L	10									
4-Nitrophenol	< 20	µg/L	20									

**Client:** LIVE OAK LANDFILL

WorkOrder: G2408E91

## Project: Live Oak 321A3

## Analytical QC Summary Report

Client: LIVE OAK LANDFILL

WorkOrder: G2408E91

Project: Live Oak 321A3

## Analytical QC Summary Report

N-nitrosodipropylamine	< 10	µg/L	10										
Naphthalene	< 10	µg/L	10										
Nitrobenzene	< 10	µg/L	10										
o-Cresol	< 10	µg/L	10										
Pentachlorophenol	< 20	µg/L	20										
Phenanthrene	< 10	µg/L	10										
Phenol	< 10	µg/L	10										
Pyrene	< 10	µg/L	10										
3,4-Methylphenol	< 10	µg/L	10										
Surr: 2,4,6-Tribromophenol	54	µg/L	0	75		72.4%	34	131					
Surr: 2-Fluorobiphenyl	44	µg/L	0	75		59.1%	34	118					
Surr: 2-Fluorophenol	41	µg/L	0	75		54.4%	10	115					
Surr: Nitrobenzene-d5	43	µg/L	0	75		56.9%	32	119					
Surr: p-Terphenyl-d14	68	µg/L	0	75		90.5%	32	136					
Surr: Phenol-d6	43	µg/L	0	75		57.4%	11	119					

SampleID: MBLK-258432

SampType: MBLK

TestNo: EPA 8270 E

Prep Date: 8/28/2024

RunNo: 310190

BatchID: 258432

Analysis Date: 9/19/2024

SeqNo: 8153033

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,2,4,5-Tetrachlorobenzene	< 10	µg/L	10									
1,2,4-Trichlorobenzene	< 10	µg/L	10									
1,3-Dinitrobenzene	< 20	µg/L	20									
1-Naphthylamine	< 10	µg/L	10									
1-Nitrosopiperidine	< 10	µg/L	10									
2,3,4,6-Tetrachlorophenol	< 20	µg/L	20									
2,4,5-Trichlorophenol	< 10	µg/L	10									
2,4,6-Trichlorophenol	< 10	µg/L	10									
2,4-Dichlorophenol	< 10	µg/L	10									
2,4-Dimethylphenol	< 10	µg/L	10									
2,4-Dinitrophenol	< 20	µg/L	20									
2,4-Dinitrotoluene	< 10	µg/L	10									
2,6-Dichlorophenol	< 10	µg/L	10									
2,6-Dinitrotoluene	< 10	µg/L	10									

**Client:** LIVE OAK LANDFILL

WorkOrder: G2408E91

## Project: Live Oak 321A3

## Analytical QC Summary Report

**Client:** LIVE OAK LANDFILL

WorkOrder: G2408E91

## Project: Live Oak 321A3

## Analytical QC Summary Report

Client: LIVE OAK LANDFILL

WorkOrder: G2408E91

Project: Live Oak 321A3

## Analytical QC Summary Report

p-Dimethylaminoazobenzene	< 10	µg/L	10										
p-Phenylenediamine	< 20	µg/L	20										
Pentachlorobenzene	< 10	µg/L	10										
Pentachlorophenol	< 20	µg/L	20										
Phenacetin	< 10	µg/L	10										
Phenanthrene	< 10	µg/L	10										
Phenol	< 10	µg/L	10										
Pronamide	< 10	µg/L	10										
Pyrene	< 10	µg/L	10										
Safrole	< 10	µg/L	10										
sym-Trinitrobenzene	< 10	µg/L	10										
3,4-Methylphenol	< 10	µg/L	10										
Surr: 2,4,6-Tribromophenol	52	µg/L	0	75		69.8%	34	131					
Surr: 2-Fluorobiphenyl	43	µg/L	0	75		57.2%	34	118					
Surr: 2-Fluorophenol	39	µg/L	0	75		51.7%	10	115					
Surr: Nitrobenzene-d5	44	µg/L	0	75		58.1%	32	119					
Surr: p-Terphenyl-d14	66	µg/L	0	75		87.3%	32	136					
Surr: Phenol-d6	42	µg/L	0	75		56.6%	11	119					

SampleID: G2408E91-001HMS

SampType: MS

TestNo: EPA 8270 E

Prep Date: 8/28/2024

RunNo: 309312

BatchID: 258432

Analysis Date: 8/30/2024

SeqNo: 8127185

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,2,4-Trichlorobenzene	31	µg/L	10	51		61.4%	33	95				
1,4-Naphthoquinone	2.4	µg/L	0	51		4.8%	4	125				
2,3,4,6-Tetrachlorophenol	43	µg/L	20	51		85.3%	37	141				
2,4,5-Trichlorophenol	42	µg/L	10	51		83.3%	38	132				
2,4,6-Trichlorophenol	40	µg/L	10	51		79.6%	41	127				
2,4-Dichlorophenol	37	µg/L	10	51		72.3%	30	132				
2,4-Dimethylphenol	41	µg/L	10	51		80.4%	26	138				
2,4-Dinitrophenol	42	µg/L	20	51		83.8%	21	150				
2,4-Dinitrotoluene	48	µg/L	10	51		94.7%	38	137				
2,6-Dichlorophenol	35	µg/L	10	51		70.2%	22	124				
2,6-Dinitrotoluene	49	µg/L	10	51		97.9%	40	132				

Client: LIVE OAK LANDFILL

WorkOrder: G2408E91

Project: Live Oak 321A3

## Analytical QC Summary Report

2-Chloro-Naphthalene	41	µg/L	10	51		82.0%	36	117				
2-Chlorophenol	35	µg/L	10	51		70.0%	30	113				
2-Methyl-4,6-dinitrophenol	43	µg/L	20	51		84.7%	35	129				
2-Methylnaphthalene	35	µg/L	10	51		68.7%	32	110				
2-Methylphenol	41	µg/L	10	51		80.8%	33	118				
2-Nitroaniline	46	µg/L	10	51		90.6%	36	111				
2-Nitrophenol	37	µg/L	10	51		74.1%	33	113				
3,3-Dichlorobenzidine	44	µg/L	20	51		87.6%	36	129				
3,4-Methylphenol	42	µg/L	10	51		83.5%	29	123				
3-Nitroaniline	46	µg/L	10	51		90.3%	4	121				
4,6-Dinitro-2-methylphenol	43	µg/L	20	51		84.7%	35	129				
4-Bromophenylphenylether	46	µg/L	10	51		90.1%	35	115				
4-Chloro-3-methylphenol	41	µg/L	10	51		81.2%	33	129				
4-Chloroaniline	36	µg/L	10	51		70.4%	27	113				
4-Chlorophenylphenylether	44	µg/L	10	51		87.5%	35	112				
4-Nitroaniline	46	µg/L	10	51		90.7%	13	134				
4-Nitrophenol	42	µg/L	20	51		82.5%	29	142				
Acenaphthene	44	µg/L	10	51		86.5%	36	128				
Acenaphthylene	41	µg/L	10	51		81.5%	44	126				
Anthracene	43	µg/L	10	51		85.8%	41	126				
Benzo(a)anthracene	46	µg/L	10	51		92.0%	36	121				
Benzo(a)pyrene	46	µg/L	10	51		91.3%	36	127				
Benzo(b)fluoranthene	44	µg/L	10	51		87.6%	32	122				
Benzo(g,h,i)perylene	47	µg/L	10	51		93.0%	29	130				
Benzo(k)fluoranthene	45	µg/L	10	51		89.4%	32	122				
Benzyl Alcohol	44	µg/L	20	51		87.4%	27	147				
bis(2-Chloroethoxy)methane	39	µg/L	10	51		77.0%	38	117				
bis(2-Chloroethyl)ether	39	µg/L	10	51		77.3%	27	122				
bis(2-Chloroisopropyl)ether	48	µg/L	10	51		94.5%	35	124				
bis(2-Ethylhexyl)phthalate	50	µg/L	5.1	51		98.5%	17	134				
Butyl benzylphthalate	42	µg/L	10	51		83.5%	18	131				
Chrysene	30	µg/L	10	51		58.4%	20	119				
Di-N-Butyl Phthalate	42	µg/L	10	51		84.1%	12	116				
Di-N-Octylphthalate	46	µg/L	10	51		90.3%	14	132				

Client: LIVE OAK LANDFILL

WorkOrder: G2408E91

Project: Live Oak 321A3

## Analytical QC Summary Report

Di-n-propylnitrosamine	45	µg/L	10	51		88.9%	26	129				
Dibenzo(a,h)anthracene	23	µg/L	10	51		45.2%	12	128				
Dibenzofuran	41	µg/L	10	51		81.7%	39	114				
Diethyl Phthalate	28	µg/L	10	51		54.9%	11	132				
Dimethyl Phthalate	15	µg/L	10	51		28.7%	8	129				
Ethyl Methanesulfonate	38	µg/L	10	51		74.3%	26	105				
Fluoranthene	46	µg/L	10	51		91.8%	32	133				
Fluorene	45	µg/L	10	51		88.9%	37	128				
Hexachlorobutadiene	26	µg/L	10	51		50.8%	19	101				
Hexachlorocyclopentadiene	21	µg/L	10	51		41.8%	3	137				
Hexachloroethane	22	µg/L	10	51		43.1%	17	105				
Indeno(1,2,3-cd)pyrene	44	µg/L	10	51		87.1%	28	123				
Isophorone	45	µg/L	10	51		88.6%	41	129				
m,p-Cresol	42	µg/L	10	51		83.5%	29	123				
Methyl Methanesulfonate	32	µg/L	10	51		62.6%	19	93				
n-Nitrosodimethylamine	35	µg/L	10	51		69.3%	26	111				
n-Nitrosodiphenylamine	51	µg/L	20	51		101.9%	43	145				
N-nitrosodipropylamine	45	µg/L	10	51		88.9%	32	129				
Naphthalene	34	µg/L	10	51		67.8%	29	106				
Nitrobenzene	36	µg/L	10	51		71.6%	26	123				
o-Cresol	41	µg/L	10	51		80.8%	33	118				
Pentachloronitrobenzene	46	µg/L	10	51		92.0%	35	101				
Pentachlorophenol	42	µg/L	20	51		83.9%	22	135				
Phenanthrene	44	µg/L	10	51		86.6%	34	146				
Phenol	36	µg/L	10	51		71.8%	14	114				
Pyrene	45	µg/L	10	51		90.0%	27	135				
Surr: 2,4,6-Tribromophenol	63	µg/L	0	76		83.8%	34	131				
Surr: 2-Fluorobiphenyl	61	µg/L	0	76		81.0%	34	118				
Surr: 2-Fluorophenol	44	µg/L	0	76		58.1%	10	115				
Surr: Nitrobenzene-d5	52	µg/L	0	76		69.1%	32	119				
Surr: p-Terphenyl-d14	66	µg/L	0	76		87.4%	32	136				
Surr: Phenol-d6	55	µg/L	0	76		72.5%	11	119				

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E91  
Project: Live Oak 321A3

## Analytical QC Summary Report

SampleID: LCS-258573		SampType: LCS		TestNo: SM 4500-S2- D-11			Prep Date: 9/1/2024			RunNo: 309379		
		BatchID: 258573						Analysis Date: 9/1/2024			SeqNo: 8128624	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Sulfide	0.519	mg/L	0.1	0.5		103.8%	90	110				
SampleID: G2408E91-001IILFM		SampType: LFM		TestNo: SM 4500-S2- D-11			Prep Date: 9/1/2024			RunNo: 309379		
		BatchID: 258573						Analysis Date: 9/1/2024			SeqNo: 8128629	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Sulfide	< 0.1	mg/L	0.1	0.25		32.8%	75	125				S
SampleID: G2408E91-001ILFMD		SampType: LFMD		TestNo: SM 4500-S2- D-11			Prep Date: 9/1/2024			RunNo: 309379		
		BatchID: 258573						Analysis Date: 9/1/2024			SeqNo: 8128630	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Sulfide	< 0.1	mg/L	0.1	0.25		33.6%	75	125	0.082		20	S
SampleID: BLANK-258573		SampType: MBLK		TestNo: SM 4500-S2- D-11			Prep Date: 9/1/2024			RunNo: 309379		
		BatchID: 258573						Analysis Date: 9/1/2024			SeqNo: 8128623	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Sulfide	< 0.1	mg/L	0.1									
SampleID: LCS-258495		SampType: LCS		TestNo: SM 6640 B-06			Prep Date: 8/29/2024			RunNo: 309256		
		BatchID: 258495						Analysis Date: 8/29/2024			SeqNo: 8125615	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
2,4,5-T	3.46	µg/L	0.5	4		86.6%	70	130				
2,4-D	3.5	µg/L	0.5	4		87.4%	70	130				
Dinoseb	3.33	µg/L	0.5	4		83.3%	70	130				
Pentachlorophenol	3.38	µg/L	0.5	4		84.4%	70	130				
Silvex	3.51	µg/L	0.5	4		87.9%	70	130				
Surr: 2,4-Dichlorophenyl acetic acid	7.09	µg/L	0	8		88.6%	70	130				

Client: LIVE OAK LANDFILL

WorkOrder: G2408E91

Project: Live Oak 321A3

## Analytical QC Summary Report

<b>SampleID:</b> LCS-258495	<b>SampType:</b> LCS			<b>TestNo:</b> SM 6640 B-06			<b>Prep Date:</b> 8/29/2024			<b>RunNo:</b> 309256		
	<b>BatchID:</b> 258495			<b>Analysis Date:</b> 8/29/2024			<b>SeqNo:</b> 8125646					

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
2,4,5-T	3.37	µg/L	0.5	4		84.3%	70	130				
2,4-D	3.61	µg/L	0.5	4		90.3%	70	130				
Dinoseb	3.29	µg/L	0.5	4		82.3%	70	130				
Pentachlorophenol	3.35	µg/L	0.5	4		83.8%	70	130				
Silvex	3.5	µg/L	0.5	4		87.4%	70	130				
Surr: 2,4-Dichlorophenyl acetic acid	6.88	µg/L	0	8		86.0%	70	130				

<b>SampleID:</b> MBLK-258495	<b>SampType:</b> MBLK			<b>TestNo:</b> SM 6640 B-06			<b>Prep Date:</b> 8/29/2024			<b>RunNo:</b> 309256		
	<b>BatchID:</b> 258495			<b>Analysis Date:</b> 8/29/2024			<b>SeqNo:</b> 8125599					

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
2,4,5-T	< 0.5	µg/L	0.5									
2,4-D	< 0.5	µg/L	0.5									
Dinoseb	< 0.5	µg/L	0.5									
Pentachlorophenol	< 0.5	µg/L	0.5									
Silvex	< 0.5	µg/L	0.5									
Surr: 2,4-Dichlorophenyl acetic acid	9.14	µg/L	0	10		91.4%	70	130				

<b>SampleID:</b> MBLK-258495	<b>SampType:</b> MBLK			<b>TestNo:</b> SM 6640 B-06			<b>Prep Date:</b> 8/29/2024			<b>RunNo:</b> 309256		
	<b>BatchID:</b> 258495			<b>Analysis Date:</b> 8/29/2024			<b>SeqNo:</b> 8125629					

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
2,4,5-T	< 0.5	µg/L	0.5									
2,4-D	< 0.5	µg/L	0.5									
Dinoseb	< 0.5	µg/L	0.5									
Pentachlorophenol	< 0.5	µg/L	0.5									
Silvex	< 0.5	µg/L	0.5									
Surr: 2,4-Dichlorophenyl acetic acid	8.8	µg/L	0	10		88.0%	70	130				

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E91  
Project: Live Oak 321A3

## Analytical QC Summary Report

<b>SampleID:</b> G2408E91-001EMS	<b>SampType:</b> MS	<b>TestNo:</b> SM 6640 B-06	<b>Prep Date:</b> 8/29/2024	<b>RunNo:</b> 309256
	<b>BatchID:</b> 258495		<b>Analysis Date:</b> 8/29/2024	<b>SeqNo:</b> 8125604

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
2,4,5-T	3.19	µg/L	0.5	4		79.8%	70	130				
2,4-D	3.22	µg/L	0.5	4		80.6%	70	130				
Dinoseb	3.13	µg/L	0.5	4		78.2%	70	130				
Pentachlorophenol	3.06	µg/L	0.5	4		76.4%	70	130				
Silvex	3.39	µg/L	0.5	4		84.7%	70	130				
Surr: 2,4-Dichlorophenyl acetic acid	6.63	µg/L	0	8		82.9%	70	130				

<b>SampleID:</b> G2408E91-001EMSD	<b>SampType:</b> MSD	<b>TestNo:</b> SM 6640 B-06	<b>Prep Date:</b> 8/29/2024	<b>RunNo:</b> 309256
	<b>BatchID:</b> 258495		<b>Analysis Date:</b> 8/29/2024	<b>SeqNo:</b> 8125605

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
2,4,5-T	3.36	µg/L	0.5						3.19	5.1%	20	
2,4-D	3.39	µg/L	0.5						3.22	5.1%	20	
Dinoseb	3.25	µg/L	0.5						3.13	3.9%	20	
Pentachlorophenol	3.14	µg/L	0.5						3.06	2.8%	20	
Silvex	3.52	µg/L	0.5						3.39	4.0%	20	
Surr: 2,4-Dichlorophenyl acetic acid	6.97	µg/L	0	8		87.1%	70	130	6.63		20	

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E91  
Project: Live Oak 321A3

## Analytical QC Summary Report

Prep Batch Report									
Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End
CB-258391		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 5:55:00 AM	8/28/2024 5:55:00 AM
G2408E23-001C	001	Surface Water	8/27/2024 6:30:00 AM	100	100		1.000	8/28/2024 6:40:00 AM	8/28/2024 6:40:00 AM
G2408E23-001CDUP		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 6:40:00 AM	8/28/2024 6:40:00 AM
G2408E23-001CLFM		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 6:40:00 AM	8/28/2024 6:40:00 AM
G2408E23-002C	Vault Above Pit	Surface Water	8/27/2024 8:00:00 AM	100	100		1.000	8/28/2024 6:40:00 AM	8/28/2024 6:40:00 AM
G2408E24-001C	Outfall 001 Comp.	Waste Water	8/27/2024 7:03:00 AM	100	100		1.000	8/28/2024 6:40:00 AM	8/28/2024 6:40:00 AM
G2408E34-001A	101 E	Potable Water	8/27/2024 7:58:00 AM	100	100		1.000	8/28/2024 6:40:00 AM	8/28/2024 6:40:00 AM
G2408E35-001C	Lower Works Sampling Point	Waste Water	8/27/2024 8:10:00 AM	100	100		1.000	8/28/2024 6:40:00 AM	8/28/2024 6:40:00 AM
G2408E37-001A	Outfall 001	Waste Water	8/26/2024 7:40:00 AM	100	100		1.000	8/28/2024 6:40:00 AM	8/28/2024 6:40:00 AM
G2408E37-002A	Outfall 002	Waste Water	8/26/2024 8:00:00 AM	100	100		1.000	8/28/2024 6:40:00 AM	8/28/2024 6:40:00 AM
G2408E48-001D	POTW OF	Waste Water	8/27/2024 7:45:00 AM	100	100		1.000	8/28/2024 6:40:00 AM	8/28/2024 6:40:00 AM
G2408E87-001D	CO-1	Groundwater	8/27/2024 8:29:00 AM	100	100		1.000	8/28/2024 12:36:00 PM	8/28/2024 12:36:00 PM
G2408E87-002D	BL-2Dd	Groundwater	8/27/2024 11:00:00 AM	100	100		1.000	8/28/2024 12:36:00 PM	8/28/2024 12:36:00 PM
G2408E91-001F	GWA-1A	Groundwater	8/26/2024 12:00:00 PM	100	100		1.000	8/28/2024 1:55:00 PM	8/28/2024 1:55:00 PM
G2408E91-001FDUP		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 1:55:00 PM	8/28/2024 1:55:00 PM
G2408E91-001FLFM		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 1:55:00 PM	8/28/2024 1:55:00 PM
G2408E91-002F	GWA-3A	Groundwater	8/26/2024 10:35:00 AM	100	100		1.000	8/28/2024 1:55:00 PM	8/28/2024 1:55:00 PM
G2408E91-003F	GWC-2A	Groundwater	8/26/2024 3:47:00 PM	100	100		1.000	8/28/2024 1:55:00 PM	8/28/2024 1:55:00 PM
G2408E91-004F	GWC-3A	Groundwater	8/26/2024 2:45:00 PM	100	100		1.000	8/28/2024 1:55:00 PM	8/28/2024 1:55:00 PM
G2408E91-005F	GWC-7	Groundwater	8/26/2024 1:15:00 PM	100	100		1.000	8/28/2024 1:55:00 PM	8/28/2024 1:55:00 PM
G2408E93-001C	GWB-1	Groundwater	8/27/2024 9:28:00 AM	100	100		1.000	8/28/2024 1:55:00 PM	8/28/2024 1:55:00 PM
G2408E93-002D	GWC-11	Groundwater	8/27/2024 12:34:00 PM	100	100		1.000	8/28/2024 1:55:00 PM	8/28/2024 1:55:00 PM
G2408E93-003D	GWC-4A	Groundwater	8/27/2024 11:00:00 AM	100	100		1.000	8/28/2024 1:55:00 PM	8/28/2024 1:55:00 PM
G2408E93-004C	GWC-5A	Groundwater	8/27/2024 10:15:00 AM	100	100		1.000	8/28/2024 1:55:00 PM	8/28/2024 1:55:00 PM
G2408E93-005C	GWC-12	Groundwater	8/27/2024 11:28:00 AM	100	100		1.000	8/28/2024 1:55:00 PM	8/28/2024 1:55:00 PM

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E91  
Project: Live Oak 321A3

## Analytical QC Summary Report

HRQC 1000-258391		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 5:55:00 AM	8/28/2024 5:55:00 AM
HRQC-258391		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 5:55:00 AM	8/28/2024 5:55:00 AM
IPC-258391		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 5:55:00 AM	8/28/2024 5:55:00 AM
LFB-258391		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 5:55:00 AM	8/28/2024 5:55:00 AM
LFB2-258391		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 5:55:00 AM	8/28/2024 5:55:00 AM
LRB-258391		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 5:55:00 AM	8/28/2024 5:55:00 AM
QCS-258391		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 5:55:00 AM	8/28/2024 5:55:00 AM

Prep Batch Report			Prep Start Date: 8/28/2024 7:30:00 AM					Technician: Lindsey R. Rummel		
Prep Batch: 258432			Prep End Date: 8/30/2024 4:00:00 PM					Prep Factor Units: mL		
Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End	
APP II- 258432		Aqueous	8/28/2024 12:00:00 AM	1000	1		0.001	8/28/2024 7:30:00 AM	8/30/2024 4:00:00 PM	
G2407D79-005A	CS3 LIQ MDL4 Set 2	Aqueous	8/28/2024 12:00:00 AM	1000	1		0.001	8/28/2024 7:30:00 AM	8/30/2024 4:00:00 PM	
G2407D80-005A	CS4 LIQ MDL4 Set 2	Aqueous	8/28/2024 12:00:00 AM	1000	1		0.001	8/28/2024 7:30:00 AM	8/30/2024 4:00:00 PM	
G2407D81-005A	CS6 LIQ MDL4 Set 2	Aqueous	8/28/2024 12:00:00 AM	1000	1		0.001	8/28/2024 7:30:00 AM	8/30/2024 4:00:00 PM	
G2408E91-001H	GWA-1A	Groundwater	8/26/2024 12:00:00 PM	990	1		0.001	8/28/2024 2:30:00 PM	8/30/2024 4:00:00 PM	
G2408E91-001HMS		Aqueous	8/29/2024 12:00:00 AM	990	1		0.001	8/28/2024 2:30:00 PM	8/30/2024 4:00:00 PM	
G2408E91-002H	GWA-3A	Groundwater	8/26/2024 10:35:00 AM	980	1		0.001	8/28/2024 2:30:00 PM	8/30/2024 4:00:00 PM	
G2408E91-003H	GWC-2A	Groundwater	8/26/2024 3:47:00 PM	930	1		0.001	8/28/2024 2:30:00 PM	8/30/2024 4:00:00 PM	
G2408E91-004H	GWC-3A	Groundwater	8/26/2024 2:45:00 PM	950	1		0.001	8/28/2024 2:30:00 PM	8/30/2024 4:00:00 PM	
G2408E91-005H	GWC-7	Groundwater	8/26/2024 1:15:00 PM	960	1		0.001	8/28/2024 2:30:00 PM	8/30/2024 4:00:00 PM	
LCS-258432		Aqueous	8/28/2024 12:00:00 AM	1000	1		0.001	8/28/2024 7:30:00 AM	8/30/2024 4:00:00 PM	
LCSD-258432		Aqueous	8/28/2024 12:00:00 AM	1000	1		0.001	8/28/2024 7:30:00 AM	8/30/2024 4:00:00 PM	
MBLK-258432		Aqueous	8/28/2024 12:00:00 AM	1000	1		0.001	8/28/2024 7:30:00 AM	8/30/2024 4:00:00 PM	

Prep Batch Report			Prep Start Date: 8/29/2024 9:00:00 AM					Technician: Jonathan J Pastuch		
Prep Batch: 258445			Prep End Date: 8/29/2024 2:18:27 PM					Prep Factor Units: MI		
Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End	
APP II- 258445		Aqueous	8/29/2024 12:00:00 AM	1000	1		0.001	8/29/2024 9:00:00 AM	8/30/2024 4:00:00 PM	
G2407D79-005H	CS3 LIQ MDL4 Set 2	Aqueous	8/29/2024 12:00:00 AM	1000	1		0.001	8/29/2024 9:00:00 AM	8/30/2024 4:00:00 PM	
G2407D80-005H	CS4 LIQ MDL4 Set 2	Aqueous	8/29/2024 12:00:00 AM	1000	1		0.001	8/29/2024 9:00:00 AM	8/30/2024 4:00:00 PM	
G2407D81-005H	CS6 LIQ MDL4 Set 2	Aqueous	8/29/2024 12:00:00 AM	1000	1		0.001	8/29/2024 9:00:00 AM	8/30/2024 4:00:00 PM	
G2408E91-001HMS	GWA-1A	Groundwater	8/29/2024 12:00:00 AM	990	1		0.001	8/29/2024 9:00:00 AM	8/30/2024 4:00:00 PM	
G2408E91-002H	GWA-3A	Groundwater	8/29/2024 10:35:00 AM	980	1		0.001	8/29/2024 9:00:00 AM	8/30/2024 4:00:00 PM	
G2408E91-003H	GWC-2A	Groundwater	8/29/2024 3:47:00 PM	930	1		0.001	8/29/2024 9:00:00 AM	8/30/2024 4:00:00 PM	
G2408E91-004H	GWC-3A	Groundwater	8/29/2024 2:45:00 PM	950	1		0.001	8/29/2024 9:00:00 AM	8/30/2024 4:00:00 PM	
G2408E91-005H	GWC-7	Groundwater	8/29/2024 1:15:00 PM	960	1		0.001	8/29/2024 9:00:00 AM	8/30/2024 4:00:00 PM	
LCS-258445		Aqueous	8/29/2024 12:00:00 AM	1000	1		0.001	8/29/2024 9:00:00 AM	8/30/2024 4:00:00 PM	
LCSD-258445		Aqueous	8/29/2024 12:00:00 AM	1000	1		0.001	8/29/2024 9:00:00 AM	8/30/2024 4:00:00 PM	
MBLK-258445		Aqueous	8/29/2024 12:00:00 AM	1000	1		0.001	8/29/2024 9:00:00 AM	8/30/2024 4:00:00 PM	

Client: LIVE OAK LANDFILL  
 WorkOrder: G2408E91  
 Project: Live Oak 321A3

## Analytical QC Summary Report

Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End
G2408E91-001G	GWA-1A	Groundwater	8/26/2024 12:00:00 PM	980	10		0.010	8/29/2024 9:00:00 AM	8/29/2024 2:18:27 PM
G2408E91-002G	GWA-3A	Groundwater	8/26/2024 10:35:00 AM	990	10		0.010	8/29/2024 9:00:00 AM	8/29/2024 2:18:27 PM
G2408E91-003G	GWC-2A	Groundwater	8/26/2024 3:47:00 PM	930	10		0.011	8/29/2024 9:00:00 AM	8/29/2024 2:18:27 PM
G2408E91-004G	GWC-3A	Groundwater	8/26/2024 2:45:00 PM	980	10		0.010	8/29/2024 9:00:00 AM	8/29/2024 2:18:27 PM
G2408E91-004GMS		Aqueous	8/29/2024 12:00:00 AM	990	10		0.010	8/29/2024 9:00:00 AM	8/29/2024 2:18:27 PM
G2408E91-004GMSD		Aqueous	8/29/2024 12:00:00 AM	980	10		0.010	8/29/2024 9:00:00 AM	8/29/2024 2:18:27 PM
G2408E91-005G	GWC-7	Groundwater	8/26/2024 1:15:00 PM	1000	10		0.010	8/29/2024 9:00:00 AM	8/29/2024 2:18:27 PM
LCS-258445		Aqueous	8/29/2024 12:00:00 AM	1000	10		0.010	8/29/2024 9:00:00 AM	8/29/2024 2:18:27 PM
MBLK-258445		Aqueous	8/29/2024 12:00:00 AM	1000	10		0.010	8/29/2024 9:00:00 AM	8/29/2024 2:18:27 PM

**Prep Batch:** 258446

**Prep Code:** ORPR\_PEST\_SPE

### Prep Batch Report

**Prep Start Date:** 8/29/2024 9:00:00 AM

**Prep End Date:** 8/29/2024 2:17:00 PM

**Technician:** Jonathan J Pastuch

**Prep Factor Units:** mL

Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End
G2408E61-001B	De-Watered Sludge	Sludge	8/27/2024 11:15:00 AM	100	10		0.100	8/29/2024 9:00:00 AM	8/29/2024 2:17:00 PM
G2408E61-001BMS		Aqueous	8/29/2024 12:00:00 AM	100	10		0.100	8/29/2024 9:00:00 AM	8/29/2024 2:17:00 PM
G2408E61-001BMSD		Aqueous	8/29/2024 12:00:00 AM	100	10		0.100	8/29/2024 9:00:00 AM	8/29/2024 2:17:00 PM
G2408E91-001G	GWA-1A	Groundwater	8/26/2024 12:00:00 PM	980	10		0.010	8/29/2024 9:00:00 AM	8/29/2024 2:17:00 PM
G2408E91-002G	GWA-3A	Groundwater	8/26/2024 10:35:00 AM	990	10		0.010	8/29/2024 9:00:00 AM	8/29/2024 2:17:00 PM
G2408E91-003G	GWC-2A	Groundwater	8/26/2024 3:47:00 PM	930	10		0.011	8/29/2024 9:00:00 AM	8/29/2024 2:17:00 PM
G2408E91-004G	GWC-3A	Groundwater	8/26/2024 2:45:00 PM	980	10		0.010	8/29/2024 9:00:00 AM	8/29/2024 2:17:00 PM
G2408E91-005G	GWC-7	Groundwater	8/26/2024 1:15:00 PM	1000	10		0.010	8/29/2024 9:00:00 AM	8/29/2024 2:17:00 PM
G2408F24-002A	TCLP Blank RSWC-9-49-2	Solid	8/28/2024 10:00:00 AM	100	10		0.100	8/29/2024 9:00:00 AM	8/29/2024 2:17:00 PM
LCS-258446		Aqueous	8/29/2024 12:00:00 AM	1000	10		0.010	8/29/2024 9:00:00 AM	8/29/2024 2:17:00 PM
MBLK-258446		Aqueous	8/29/2024 12:00:00 AM	1000	10		0.010	8/29/2024 9:00:00 AM	8/29/2024 2:17:00 PM

**Prep Batch:** 258454

**Prep Code:** MEPR6010\_3010

### Prep Batch Report

**Prep Start Date:** 8/29/2024 8:20:00 AM

**Prep End Date:** 8/29/2024 2:05:00 PM

**Technician:** Kristy L Botteicher

**Prep Factor Units:** mL

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E91  
Project: Live Oak 321A3

## Analytical QC Summary Report

Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End
G2408977-001A	Agilent5110 MDL3010 3rdQtr Part 2	Aqueous	8/29/2024 12:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408D58-001C	Little Clara Unit 5H	Solid	8/26/2024 10:05:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408D62-001C	Little Clara Unit 5H	Solid	8/26/2024 10:10:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E04-001B	Finished Mulch	Solid	8/26/2024 8:40:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E58-002B	TCLP Blank RSWC-9 -49-5	Solid	8/27/2024 10:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E61-001B	De-Watered Sludge	Sludge	8/27/2024 11:15:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E91-001J	GWA-1A	Groundwater	8/26/2024 12:00:00 PM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E91-001JDUP		Aqueous	8/29/2024 12:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E91-001JMS		Aqueous	8/29/2024 12:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E91-002J	GWA-3A	Groundwater	8/26/2024 10:35:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E91-003J	GWC-2A	Groundwater	8/26/2024 3:47:00 PM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E91-004J	GWC-3A	Groundwater	8/26/2024 2:45:00 PM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E91-005J	GWC-7	Groundwater	8/26/2024 1:15:00 PM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-001D	GWB-1	Groundwater	8/27/2024 9:28:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-002E	GWC-11	Groundwater	8/27/2024 12:34:00 PM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-003E	GWC-4A	Groundwater	8/27/2024 11:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-004D	GWC-5A	Groundwater	8/27/2024 10:15:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-005D	GWC-12	Groundwater	8/27/2024 11:28:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-005DMS		Aqueous	8/29/2024 12:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-006E	GWC-13A	Groundwater	8/27/2024 9:20:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-007D	GWC-6	Groundwater	8/27/2024 10:19:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
LCS1-258454		Aqueous	8/29/2024 12:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
PB-258454		Aqueous	8/29/2024 12:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM

### Prep Batch Report

Prep Start Date: 8/29/2024 8:20:00 AM  
Prep End Date: 8/29/2024 2:05:00 PM

Technician: Kristy L Botteicher  
Prep Factor Units:

Prep Batch: 258456

Prep Code: MEPR6020\_3010

Client: LIVE OAK LANDFILL  
 WorkOrder: G2408E91  
 Project: Live Oak 321A3

## Analytical QC Summary Report

Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End
G2408E91-001J	GWA-1A	Groundwater	8/26/2024 12:00:00 PM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E91-001JDUP			8/29/2024 12:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E91-002J	GWA-3A	Groundwater	8/26/2024 10:35:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E91-003J	GWC-2A	Groundwater	8/26/2024 3:47:00 PM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E91-004J	GWC-3A	Groundwater	8/26/2024 2:45:00 PM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E91-005J	GWC-7	Groundwater	8/26/2024 1:15:00 PM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-001D	GWB-1	Groundwater	8/27/2024 9:28:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-002E	GWC-11	Groundwater	8/27/2024 12:34:00 PM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-003E	GWC-4A	Groundwater	8/27/2024 11:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-004D	GWC-5A	Groundwater	8/27/2024 10:15:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-004DMS			8/29/2024 12:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-005D	GWC-12	Groundwater	8/27/2024 11:28:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-006E	GWC-13A	Groundwater	8/27/2024 9:20:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-007D	GWC-6	Groundwater	8/27/2024 10:19:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-007DMS			8/29/2024 12:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
LCS2-258456			8/29/2024 12:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
PB-258456			8/29/2024 12:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM

Prep Batch: 258495 Prep Code: ORPR_HERB_SM			Prep Batch Report Prep Start Date: 8/29/2024 7:45:00 AM Prep End Date: 8/29/2024 2:00:12 PM					Technician: Alexis P. Short Prep Factor Units: mL		
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Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End
G2408758-004A	APS DOC MDL 4	Potable Water	8/14/2024 8:42:00 AM	40	40		1.000	8/29/2024 7:45:00 AM	8/29/2024 2:00:12 PM
G2408758-005A	APS DOC MDL 5	Potable Water	8/14/2024 8:42:00 AM	40	40		1.000	8/29/2024 7:45:00 AM	8/29/2024 2:00:12 PM
G2408758-006A	APS DOC MDL 6	Potable Water	8/14/2024 8:42:00 AM	40	40		1.000	8/29/2024 7:45:00 AM	8/29/2024 2:00:12 PM
G2408D81-001A	TCLP Blank RSWC-9 -49-4	Solid	8/26/2024 10:00:00 AM	4	40		10.000	8/29/2024 7:45:00 AM	8/29/2024 2:00:12 PM
G2408E91-001E	GWA-1A	Groundwater	8/26/2024 12:00:00 PM	40	40		1.000	8/29/2024 7:45:00 AM	8/29/2024 1:59:38 PM
G2408E91-001EMS		Aqueous	8/29/2024 12:00:00 AM	40	40		1.000	8/29/2024 7:45:00 AM	8/29/2024 2:00:12 PM

Client: LIVE OAK LANDFILL  
 WorkOrder: G2408E91  
 Project: Live Oak 321A3

## Analytical QC Summary Report

G2408E91-001EMSD		Aqueous	8/29/2024 12:00:00 AM	40	40		1.000	8/29/2024 7:45:00 AM	8/29/2024 2:00:12 PM
G2408E91-002E	GWA-3A	Groundwater	8/26/2024 10:35:00 AM	40	40		1.000	8/29/2024 7:45:00 AM	8/29/2024 2:00:12 PM
G2408E91-003E	GWC-2A	Groundwater	8/26/2024 3:47:00 PM	40	40		1.000	8/29/2024 7:45:00 AM	8/29/2024 2:00:12 PM
G2408E91-004E	GWC-3A	Groundwater	8/26/2024 2:45:00 PM	40	40		1.000	8/29/2024 7:45:00 AM	8/29/2024 2:00:12 PM
G2408E91-005E	GWC-7	Groundwater	8/26/2024 1:15:00 PM	40	40		1.000	8/29/2024 7:45:00 AM	8/29/2024 2:00:12 PM
G2408F24-002A	TCLP Blank RSWC-9-49-2	Solid	8/28/2024 10:00:00 AM	4	40		10.000	8/29/2024 7:45:00 AM	8/29/2024 2:00:12 PM
LCS-258495		Aqueous	8/29/2024 12:00:00 AM	40	40		1.000	8/29/2024 7:45:00 AM	8/29/2024 2:00:12 PM
MBLK-258495		Aqueous	8/29/2024 12:00:00 AM	40	40		1.000	8/29/2024 7:45:00 AM	8/29/2024 2:00:12 PM

Prep Batch: 258516 Prep Code: HG_7470_PREP			Prep Batch Report Prep Start Date: 8/30/2024 6:00:00 AM Prep End Date: 8/30/2024 8:00:00 AM					Technician: Kristy L Botteicher Prep Factor Units: mL		
Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End	
G2408E91-001J	GWA-1A	Groundwater	8/26/2024 12:00:00 PM	25	25		1.000	8/30/2024 6:00:00 AM	8/30/2024 8:00:00 AM	
G2408E91-002J	GWA-3A	Groundwater	8/26/2024 10:35:00 AM	25	25		1.000	8/30/2024 6:00:00 AM	8/30/2024 8:00:00 AM	
G2408E91-003J	GWC-2A	Groundwater	8/26/2024 3:47:00 PM	25	25		1.000	8/30/2024 6:00:00 AM	8/30/2024 8:00:00 AM	
G2408E91-004J	GWC-3A	Groundwater	8/26/2024 2:45:00 PM	25	25		1.000	8/30/2024 6:00:00 AM	8/30/2024 8:00:00 AM	
G2408E91-004JMS		Aqueous	8/30/2024 12:00:00 AM	25	25		1.000	8/30/2024 6:00:00 AM	8/30/2024 8:00:00 AM	
G2408E91-005J	GWC-7	Groundwater	8/26/2024 1:15:00 PM	25	25		1.000	8/30/2024 6:00:00 AM	8/30/2024 8:00:00 AM	
LCS-258516		Aqueous	8/30/2024 12:00:00 AM	25	25		1.000	8/30/2024 6:00:00 AM	8/30/2024 8:00:00 AM	
PB-258516		Aqueous	8/30/2024 12:00:00 AM	25	25		1.000	8/30/2024 6:00:00 AM	8/30/2024 8:00:00 AM	

Prep Batch: 258519 Prep Code: PREP_8011			Prep Batch Report Prep Start Date: 8/30/2024 7:00:37 AM Prep End Date: 8/30/2024 12:55:59 PM					Technician: Kenneth J. Ward Prep Factor Units: MI		
Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End	
G2408E86-001C	SRE4	Groundwater	8/27/2024 9:00:00 AM	10	35	D4O4	3.500	8/30/2024 7:00:37 AM	8/30/2024 12:55:59 PM	
G2408E86-002A	Trip Blank L1	Aqueous	8/27/2024 9:00:00 AM	35	35		1.000	8/30/2024 7:00:37 AM	8/30/2024 12:55:59 PM	
G2408E91-001D	GWA-1A	Groundwater	8/26/2024 12:00:00 PM	35	35		1.000	8/30/2024 7:00:37 AM	8/30/2024 12:55:59 PM	
G2408E91-002D	GWA-3A	Groundwater	8/26/2024 10:35:00 AM	35	35		1.000	8/30/2024 7:00:37 AM	8/30/2024 12:55:59 PM	

Client: LIVE OAK LANDFILL  
 WorkOrder: G2408E91  
 Project: Live Oak 321A3

## Analytical QC Summary Report

G2408E91-003D	GWC-2A	Groundwater	8/26/2024 3:47:00 PM	35	35		1.000	8/30/2024 7:00:37 AM	8/30/2024 12:55:59 PM
G2408E91-004D	GWC-3A	Groundwater	8/26/2024 2:45:00 PM	35	35		1.000	8/30/2024 7:00:37 AM	8/30/2024 12:55:59 PM
G2408E91-004DMS		Aqueous	8/30/2024 12:00:00 AM	35	35		1.000	8/30/2024 7:00:37 AM	8/30/2024 12:55:59 PM
G2408E91-004DMSD		Aqueous	8/30/2024 12:00:00 AM	35	35		1.000	8/30/2024 7:00:37 AM	8/30/2024 12:55:59 PM
G2408E91-005D	GWC-7	Groundwater	8/26/2024 1:15:00 PM	35	35		1.000	8/30/2024 7:00:37 AM	8/30/2024 12:55:59 PM
G2408E91-006A	TB-04	Aqueous	8/26/2024 12:00:01 AM	35	35		1.000	8/30/2024 7:00:37 AM	8/30/2024 12:55:59 PM
G2408F77-001D	NEFF RUN	Surface Water	8/29/2024 7:50:00 AM	35	35		1.000	8/30/2024 7:00:37 AM	8/30/2024 12:55:59 PM
G2408F78-003E	Leachate (LDZ)	Leachate	8/29/2024 12:00:00 PM	35	35		1.000	8/30/2024 7:00:37 AM	8/30/2024 12:55:59 PM
G2408F78-004C	LCZ	Leachate	8/29/2024 12:00:00 PM	35	35		1.000	8/30/2024 7:00:37 AM	8/30/2024 12:55:59 PM
G2408F78-005A	T-Blank EDB	Aqueous	8/29/2024 2:16:00 PM	35	35		1.000	8/30/2024 7:00:37 AM	8/30/2024 12:55:59 PM
G2408F81-001B	M1-FR	Groundwater	8/29/2024 8:04:00 AM	35	35		1.000	8/30/2024 7:00:37 AM	8/30/2024 12:55:59 PM
G2408F81-002B	M12-FR	Groundwater	8/29/2024 10:02:00 AM	35	35		1.000	8/30/2024 7:00:37 AM	8/30/2024 12:55:59 PM
G2408F81-003B	F-Dup	Groundwater	8/29/2024 10:02:00 AM	35	35		1.000	8/30/2024 7:00:37 AM	8/30/2024 12:55:59 PM
G2408F81-004B	M9-LHR	Groundwater	8/29/2024 11:39:00 AM	35	35		1.000	8/30/2024 7:00:37 AM	8/30/2024 12:55:59 PM
G2408F81-005A	T-Blank	Aqueous	8/29/2024 2:25:00 PM	35	35		1.000	8/30/2024 7:00:37 AM	8/30/2024 12:55:59 PM
G2408F84-001B	M3-FR	Groundwater	8/29/2024 9:38:00 AM	35	35		1.000	8/30/2024 7:00:37 AM	8/30/2024 12:55:59 PM
G2408F84-002B	M3-LH	Groundwater	8/29/2024 10:28:00 AM	35	35		1.000	8/30/2024 7:00:37 AM	8/30/2024 12:55:59 PM
G2408F84-003B	M11-LP	Groundwater	8/29/2024 11:35:00 AM	35	35		1.000	8/30/2024 7:00:37 AM	8/30/2024 12:55:59 PM
LCS-258519		Aqueous	8/30/2024 12:00:00 AM	35	35		1.000	8/30/2024 7:00:37 AM	8/30/2024 12:55:59 PM
MBLK-258519		Aqueous	8/30/2024 12:00:00 AM	35	35		1.000	8/30/2024 7:00:37 AM	8/30/2024 12:55:59 PM

### Prep Batch Report

Prep Start Date: 9/1/2024 4:45:00 PM  
 Prep End Date: 9/1/2024 4:57:00 PM

Technician: Joseph E. Bonus  
 Prep Factor Units: mL

Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End
Blank-258573		Aqueous	9/2/2024 12:00:00 AM	100	100		1.000	9/1/2024 4:45:00 PM	9/1/2024 4:57:00 PM
CCV-258573		Aqueous	9/2/2024 12:00:00 AM	100	100		1.000	9/1/2024 4:45:00 PM	9/1/2024 4:57:00 PM
G2408E91-001I	GWA-1A	Groundwater	8/26/2024 12:00:00 PM	100	100		1.000	9/1/2024 4:45:00 PM	9/1/2024 4:57:00 PM
G2408E91-001IIfm		Aqueous	9/2/2024 12:00:00 AM	100	100		1.000	9/1/2024 4:45:00 PM	9/1/2024 4:57:00 PM
G2408E91-001IIfmd		Aqueous	9/2/2024 12:00:00 AM	100	100		1.000	9/1/2024 4:45:00 PM	9/1/2024 4:57:00 PM

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E91  
Project: Live Oak 321A3

## Analytical QC Summary Report

G2408E91-002I	GWA-3A	Groundwater	8/26/2024 10:35:00 AM	100	100		1.000	9/1/2024 4:45:00 PM	9/1/2024 4:57:00 PM
G2408E91-003I	GWC-2A	Groundwater	8/26/2024 3:47:00 PM	100	100		1.000	9/1/2024 4:45:00 PM	9/1/2024 4:57:00 PM
G2408E91-004I	GWC-3A	Groundwater	8/26/2024 2:45:00 PM	100	100		1.000	9/1/2024 4:45:00 PM	9/1/2024 4:57:00 PM
G2408E91-005I	GWC-7	Groundwater	8/26/2024 1:15:00 PM	100	100		1.000	9/1/2024 4:45:00 PM	9/1/2024 4:57:00 PM
LCS-258573		Aqueous	9/2/2024 12:00:00 AM	100	100		1.000	9/1/2024 4:45:00 PM	9/1/2024 4:57:00 PM
LOQ-258573		Aqueous	9/2/2024 12:00:00 AM	100	100		1.000	9/1/2024 4:45:00 PM	9/1/2024 4:57:00 PM

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E91  
Project: Live Oak 321A3

## Analytical QC Summary Report

### Batch Reference Report

Client Samp ID	Test No	Batch ID
GWA-1A	ASTM D1067-16	R309200
GWA-3A	ASTM D1067-16	R309200
GWC-2A	ASTM D1067-16	R309200
GWC-3A	ASTM D1067-16	R309200
GWC-7	ASTM D1067-16	R309200
GWA-1A	ASTM D7511-17	R309285
GWA-3A	ASTM D7511-17	R309285
GWC-2A	ASTM D7511-17	R309285
GWC-3A	ASTM D7511-17	R309285
GWC-7	ASTM D7511-17	R309285
GWA-1A	EPA 300.0 Rev 2.1	258391
GWA-3A	EPA 300.0 Rev 2.1	258391
GWC-2A	EPA 300.0 Rev 2.1	258391
GWC-3A	EPA 300.0 Rev 2.1	258391
GWC-7	EPA 300.0 Rev 2.1	258391
GWA-1A	EPA 350.1 Rev 2.0	R309213
GWA-3A	EPA 350.1 Rev 2.0	R309213
GWC-2A	EPA 350.1 Rev 2.0	R309213
GWC-3A	EPA 350.1 Rev 2.0	R309213
GWC-7	EPA 350.1 Rev 2.0	R309213
GWA-1A	EPA 6010 D	258454
GWA-3A	EPA 6010 D	258454
GWC-2A	EPA 6010 D	258454
GWC-3A	EPA 6010 D	258454

Client: LIVE OAK LANDFILL

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## Analytical QC Summary Report

GWC-7	EPA 6010 D	258454
GWA-1A	EPA 6020 B	258456
GWA-3A	EPA 6020 B	258456
GWC-2A	EPA 6020 B	258456
GWC-3A	EPA 6020 B	258456
GWC-7	EPA 6020 B	258456
GWA-1A	EPA 7470A	258516
GWA-3A	EPA 7470A	258516
GWC-2A	EPA 7470A	258516
GWC-3A	EPA 7470A	258516
GWC-7	EPA 7470A	258516
GWA-1A	EPA 8011	258519
GWA-3A	EPA 8011	258519
GWC-2A	EPA 8011	258519
GWC-3A	EPA 8011	258519
GWC-7	EPA 8011	258519
TB-04	EPA 8011	258519
GWA-1A	EPA 8081 B	258446
GWA-3A	EPA 8081 B	258446
GWC-2A	EPA 8081 B	258446
GWC-3A	EPA 8081 B	258446
GWC-7	EPA 8081 B	258446
GWA-1A	EPA 8082 A	258445
GWA-3A	EPA 8082 A	258445
GWC-2A	EPA 8082 A	258445
GWC-3A	EPA 8082 A	258445

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E91  
Project: Live Oak 321A3

## Analytical QC Summary Report

GWC-7	EPA 8082 A	258445
GWA-1A	EPA 8260 D	R309244
GWA-1A	EPA 8260 D	R309279
GWA-3A	EPA 8260 D	R309244
GWA-3A	EPA 8260 D	R309279
GWC-2A	EPA 8260 D	R309244
GWC-2A	EPA 8260 D	R309279
GWC-3A	EPA 8260 D	R309244
GWC-3A	EPA 8260 D	R309279
GWC-7	EPA 8260 D	R309244
GWC-7	EPA 8260 D	R309279
TB-04	EPA 8260 D	R309244
TB-04	EPA 8260 D	R309279
GWA-1A	EPA 8270 E	258432
GWA-3A	EPA 8270 E	258432
GWC-2A	EPA 8270 E	258432
GWC-3A	EPA 8270 E	258432
GWC-7	EPA 8270 E	258432
GWA-1A	SM 4500-S2- D-11	258573
GWA-3A	SM 4500-S2- D-11	258573
GWC-2A	SM 4500-S2- D-11	258573
GWC-3A	SM 4500-S2- D-11	258573
GWC-7	SM 4500-S2- D-11	258573
GWA-1A	SM 6640 B-06	258495
GWA-3A	SM 6640 B-06	258495
GWC-2A	SM 6640 B-06	258495

Client: LIVE OAK LANDFILL

WorkOrder: G2408E91

Project: Live Oak 321A3

## Analytical QC Summary Report

GWC-3A	SM 6640 B-06	258495
GWC-7	SM 6640 B-06	258495

**Table I ON Qualifiers**

Qualifier	Description
<b>1</b>	Spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or greater.
<b>B</b>	Analyte detected in the associated method Blank.
<b>B1</b>	Dilution water blank exceeded method criterion.
<b>C1</b>	CCV recovery above the acceptance limits. Results may be biased high.
<b>C2</b>	CCV recovery below the acceptance limits. Results may be biased low.
<b>C3</b>	ICV recovery above the acceptance limits. Results may be biased high.
<b>C4</b>	ICV recovery below the acceptance limits. Results may be biased low.
<b>C5</b>	Positive values verified by second column confirmation.
<b>C6</b>	Confirmation analysis by another detector or chromatographic column was not performed.
<b>D1</b>	The analysis did not meet the minimum DO depletion of at least 2 mg/L.
<b>D2</b>	The analysis did not meet the minimum residual DO of at least 1 mg/L.
<b>D3</b>	Sample required dilution due to a matrix interference.
<b>D4</b>	Sample was diluted in the extraction steps due to marked matrix interferences.
<b>D5</b>	Sample required dilution due to a chloride interference.
<b>D6</b>	Sample was diluted and the reporting limits were raised to achieve method compliant internal standard recovery.
<b>D7</b>	Sample was digested at a dilution due to the formation of a post-digestion precipitate.
<b>D8</b>	Sample was digested at a dilution to achieve method compliant matrix spike recovery.
<b>D9</b>	Sample was digested at a dilution to meet method compliant digestion criteria.
<b>E</b>	Value above quantitation range.
<b>E2</b>	Unable to obtain a stable weight within specified limits due to sample matrix. Value is estimated.
<b>F1</b>	Fecal sample tested positive for residual chlorine.
<b>H</b>	Method Hold Time exceeded and is not compliant with 40CFR136 Table II.
<b>H1</b>	Due to under-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.
<b>H2</b>	Due to over-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.
<b>H3</b>	Sample was re-analyzed outside of hold time due to error during original analysis.
<b>H4</b>	The Nitrite result used to report Nitrate was analyzed past the 48-hour holding time.
<b>I1</b>	Internal standard recovery above method acceptance limits. Results are estimated.
<b>I2</b>	Internal standard recovery was below method acceptance limits. Results are estimated.
<b>IP</b>	One of the instrument performance checks ( ) did not meet the acceptance criteria.
<b>J</b>	Indicates an estimated value.

Client: LIVE OAK LANDFILL  
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## Analytical QC Summary Report

<b>L1</b>	LCS above the acceptance limits. Result may be biased high.
<b>L2</b>	LCS below the acceptance limits. Result may be biased low.
<b>L3</b>	Analyte was spiked into the LCS, but was not recovered.
<b>M1</b>	Matrix Spike recovery above the acceptance limits.
<b>M2</b>	Matrix Spike recovery below the acceptance limits.
<b>M4</b>	The matrix spike failed high for the surrogate.
<b>M5</b>	The matrix spike failed low for the surrogate.
<b>M6</b>	The reporting limits were raised due to sample matrix interference.
<b>M7</b>	Recovery for matrix spike could not be quantified due to matrix interference.
<b>M8</b>	Analyte was spiked into the MS, but was not recovered.
<b>M9</b>	Analyte concentration was determined by the method of standard addition (MSA).
<b>N1</b>	The lab does not hold accreditation from PA-DEP for this parameter by this method
<b>N2</b>	PADEP does not accredit labs for this analyte by this method.
<b>N3</b>	The lab is accredited for this method in West Virginia, but not in PA (its primary accrediting body).
<b>N4</b>	PADEP does not accredit labs for this analyte by this method in drinking water.
<b>ND</b>	Not Detected.
<b>O1</b>	The flashpoint tester cannot detect below 50 degrees F.
<b>O2</b>	Result is temperature of the sample when flame observed. No flash observed. Result qualified.
<b>O3</b>	The reporting limits were raised due to the high concentration of non-target compounds.
<b>O4</b>	Sample was received with headspace.
<b>O5</b>	Sample was received in incorrect container and is not compliant with 40CFR136 Table II.
<b>O6</b>	Insufficient sample volume was received to comply with the method.
<b>P1</b>	The pH of the sample was >2 and is not compliant with 40CFR136 Table II.
<b>P2</b>	Sample contained residual chlorine and is not compliant with 40CFR136 Table II
<b>P3</b>	The pH of the sample was <10 and is not compliant with 40CFR136 Table II.
<b>P4</b>	Field preservation does not meet EPA or method recommendations for this analysis.
<b>P5</b>	Acid preservation may not be appropriate for the analysis of 2-Chloroethylvinyl ether.
<b>P6</b>	Sample required additional preservative upon receipt.
<b>P7</b>	The sample was received unpreserved.
<b>P8</b>	The pH of the sample was < 9 and is not compliant with 40 CFR136 Table II.
<b>Q1</b>	Qualified Data See Case Narrative.
<b>R</b>	Relative Percent Difference (RPD) was above the control limit.
<b>R1</b>	RPD above control limits between matrix spike and MS duplicates.

Client: LIVE OAK LANDFILL

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Project: Live Oak 321A3

## Analytical QC Summary Report

R2	RPD above the control limit between duplicates.
R3	RSD above the control limit between replicates.
R4	RPD above control limits between Inorganic Carbon check and spike.
R5	RPD above control limits between control sample and control sample duplicates.
S	Recovery for the spiked control sample outside accepted limits.
S2	Surrogate recovery in the blank was below the control limit.
S3	Surrogate recovery in the blank was above the control limit.
S4	Surrogate recovery in the LCS is above the control limit.
S5	Surrogate recovery in the LCS is below the control limit.
SR	Analyte recovery was outside the accepted recovery limits and above the control limit for RPD.
T	Sample temperature received outside the regulatory limit and is not compliant with 40CFR Part136 Table II (for NPW samples).
T1	Sample temperature received outside the regulatory limit. (Primarily for SCM samples).
T3	Target analyte found in trip/field blank.
TC	The MS tune check (tailing factor) did not meet the acceptance criteria.
U	The analyte was not detected at or above the listed concentration, which is below the laboratory quantitation limit.

**Note 1:** Other comments to clarify test results may be used. Examples include MCL (Contaminant Limit), and MDA (minimum detectable activity). The Q1 code requires additional qualifier information be described in the Case Narrative.

**Note 2:** NA is used in the Laboratory QC report as "Not Applicable."



Quality Assurance Project Report  
Prepared for  
LIVE OAK LANDFILL  
9/25/2024

David M. Glessner  
Quality Assurance Coordinator

### **Explanatory Notes**

1. Spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or greater.
2. Matrix Spike and MS Duplicates are sample specific controls and are not used to evaluate the analytical batch.
3. Laboratory duplicate. If one or both of the values is less than 5 times the PQL, the allowed difference is +/- the PQL.
4. "R" indicates a relative percent difference (RPD) was above the acceptance limit between duplicate QC samples or sample specific duplicates.

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E93  
Project: Live Oak 221A3

## Analytical QC Summary Report

SampleID: G2408E26-001ADUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309200		
		BatchID: R309200				Analysis Date: 8/28/2024				SeqNo: 8123945				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	112	mg/L CaCO <sub>3</sub>	10						111	0.9%	20			
SampleID: G2408E76-001ADUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309200		
		BatchID: R309200				Analysis Date: 8/28/2024				SeqNo: 8124022				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	50	mg/L CaCO <sub>3</sub>	10						49	2.0%	20			
SampleID: G2408E84-001ADUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309200		
		BatchID: R309200				Analysis Date: 8/28/2024				SeqNo: 8124083				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	73	mg/L CaCO <sub>3</sub>	10						72	1.4%	20			
SampleID: G2408E89-002ADUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309200		
		BatchID: R309200				Analysis Date: 8/28/2024				SeqNo: 8124142				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	316	mg/L CaCO <sub>3</sub>	10						314	0.6%	20			
SampleID: G2408E93-004BDUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309200		
		BatchID: R309200				Analysis Date: 8/28/2024				SeqNo: 8124197				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	61	mg/L CaCO <sub>3</sub>	10						61		20			
SampleID: G2408F31-001FDUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125773				

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E93  
Project: Live Oak 221A3

## Analytical QC Summary Report

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	66	mg/L CaCO3	10						65	1.5%	20	
<b>SampleID:</b> G2408F09-003ADUP		<b>SampType:</b> DUP		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309260		
				<b>BatchID:</b> R309260				<b>Analysis Date:</b> 8/29/2024			<b>SeqNo:</b> 8125833	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	86	mg/L CaCO3	10						87	1.2%	20	
<b>SampleID:</b> G2408F33-001ADUP		<b>SampType:</b> DUP		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309260		
				<b>BatchID:</b> R309260				<b>Analysis Date:</b> 8/29/2024			<b>SeqNo:</b> 8125874	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	91	mg/L CaCO3	10						90	1.1%	20	
<b>SampleID:</b> G2408F49-002BDUP		<b>SampType:</b> DUP		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309260		
				<b>BatchID:</b> R309260				<b>Analysis Date:</b> 8/29/2024			<b>SeqNo:</b> 8125911	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	157	mg/L CaCO3	10						155	1.3%	20	
<b>SampleID:</b> G2408F50-001ADUP		<b>SampType:</b> DUP		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309260		
				<b>BatchID:</b> R309260				<b>Analysis Date:</b> 8/29/2024			<b>SeqNo:</b> 8125935	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	237	mg/L CaCO3	10						234	1.3%	20	
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309200		
				<b>BatchID:</b> R309200				<b>Analysis Date:</b> 8/28/2024			<b>SeqNo:</b> 8123926	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	52	mg/L CaCO3	10	47.5		109.5%	85	115				

Client: LIVE OAK LANDFILL  
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SampleID: ALK LCS		SampType: LCS		TestNo: ASTM D1067-16			Prep Date:			RunNo: 309200		
		BatchID: R309200						Analysis Date: 8/28/2024			SeqNo: 8124013	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	48	mg/L CaCO3	10	47.5		101.1%	85	115				
SampleID: ALK LCS		SampType: LCS		TestNo: ASTM D1067-16			Prep Date:			RunNo: 309200		
		BatchID: R309200						Analysis Date: 8/28/2024			SeqNo: 8124069	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	49	mg/L CaCO3	10	47.5		103.2%	85	115				
SampleID: ALK LCS		SampType: LCS		TestNo: ASTM D1067-16			Prep Date:			RunNo: 309200		
		BatchID: R309200						Analysis Date: 8/28/2024			SeqNo: 8124131	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	48	mg/L CaCO3	10	47.5		101.1%	85	115				
SampleID: ALK LCS		SampType: LCS		TestNo: ASTM D1067-16			Prep Date:			RunNo: 309200		
		BatchID: R309200						Analysis Date: 8/28/2024			SeqNo: 8124189	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	49	mg/L CaCO3	10	47.5		103.2%	85	115				
SampleID: ALK LCS		SampType: LCS		TestNo: ASTM D1067-16			Prep Date:			RunNo: 309200		
		BatchID: R309200						Analysis Date: 8/29/2024			SeqNo: 8124209	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	50	mg/L CaCO3	10	47.5		105.3%	85	115				
SampleID: ALK LCS		SampType: LCS		TestNo: ASTM D1067-16			Prep Date:			RunNo: 309260		
		BatchID: R309260						Analysis Date: 8/29/2024			SeqNo: 8125758	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	49	mg/L CaCO3	10	47.5		103.2%	85	115				

Client: LIVE OAK LANDFILL  
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## Analytical QC Summary Report

SampleID: ALK LCS		SampType: LCS		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125824				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	48	mg/L CaCO3	10	47.5		101.1%	85	115						
SampleID: ALK LCS		SampType: LCS		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125866				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	48	mg/L CaCO3	10	47.5		101.1%	85	115						
SampleID: ALK LCS		SampType: LCS		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125904				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	48	mg/L CaCO3	10	47.5		101.1%	85	115						
SampleID: ALK LCS		SampType: LCS		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125926				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	48	mg/L CaCO3	10	47.5		101.1%	85	115						
SampleID: ALK LCS		SampType: LCS		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/30/2024				SeqNo: 8125947				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	49	mg/L CaCO3	10	47.5		103.2%	85	115						
SampleID: G2408E23-001CDUP		SampType: DUP		TestNo: EPA 300.0 Rev 2.1				Prep Date: 8/28/2024				RunNo: 309181		
		BatchID: 258391				Analysis Date: 8/28/2024				SeqNo: 8123011				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Chloride	46.1	mg/L	1							46.1	0.1%	20		

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SampleID: G2408E91-001FDUP		SampType: DUP	TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/28/2024			RunNo: 309181			
		BatchID: 258391				Analysis Date: 8/28/2024			SeqNo: 8123024			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	13.7	mg/L	1						13.7	0.0%	20	
SampleID: G2408E76-002DDUP		SampType: DUP	TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/28/2024			RunNo: 309194			
		BatchID: 258405				Analysis Date: 8/28/2024			SeqNo: 8123572			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	20.1	mg/L	1						20.1	0.0%	20	
SampleID: G2408E89-002DDUP		SampType: DUP	TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/28/2024			RunNo: 309194			
		BatchID: 258405				Analysis Date: 8/28/2024			SeqNo: 8123598			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	258	mg/L	1						258	0.1%	20	
SampleID: HRQC-258391		SampType: HRQC	TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/28/2024			RunNo: 309181			
		BatchID: 258391				Analysis Date: 8/28/2024			SeqNo: 8123008			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	243	mg/L	1	250		97.1%	90	110				
SampleID: HRQC-258405		SampType: HRQC	TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/28/2024			RunNo: 309194			
		BatchID: 258405				Analysis Date: 8/28/2024			SeqNo: 8123561			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	244	mg/L	1	250		97.6%	90	110				
SampleID: HRQC 1000-258391		SampType: HRQC 1000	TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/28/2024			RunNo: 309181			
		BatchID: 258391				Analysis Date: 8/28/2024			SeqNo: 8123009			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	979	mg/L	1	1000		97.9%	90	110				

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## Analytical QC Summary Report

SampleID: HRQC 1000-258405		SampType: HRQC 1000	TestNo: EPA 300.0 Rev 2.1	Prep Date: 8/28/2024	RunNo: 309194							
BatchID: 258405		Analysis Date: 8/28/2024		SeqNo: 8123563								
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	978	mg/L	1	1000		97.8%	90	110				
SampleID: LFB-258391		SampType: LFB	TestNo: EPA 300.0 Rev 2.1	Prep Date: 8/28/2024	RunNo: 309181							
BatchID: 258391		Analysis Date: 8/28/2024		SeqNo: 8123004								
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	47.4	mg/L	1	50		94.8%	90	110				
SampleID: LFB-258405		SampType: LFB	TestNo: EPA 300.0 Rev 2.1	Prep Date: 8/28/2024	RunNo: 309194							
BatchID: 258405		Analysis Date: 8/28/2024		SeqNo: 8123554								
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	47.5	mg/L	1	50		94.9%	90	110				
SampleID: LFB2-258391		SampType: LFB2	TestNo: EPA 300.0 Rev 2.1	Prep Date: 8/28/2024	RunNo: 309181							
BatchID: 258391		Analysis Date: 8/28/2024		SeqNo: 8123005								
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	4.81	mg/L	1	5		96.3%	90	110				
SampleID: LFB2-258405		SampType: LFB2	TestNo: EPA 300.0 Rev 2.1	Prep Date: 8/28/2024	RunNo: 309194							
BatchID: 258405		Analysis Date: 8/28/2024		SeqNo: 8123556								
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	4.81	mg/L	1	5		96.2%	90	110				
SampleID: G2408E23-001CLFM		SampType: LFM	TestNo: EPA 300.0 Rev 2.1	Prep Date: 8/28/2024	RunNo: 309181							
BatchID: 258391		Analysis Date: 8/28/2024		SeqNo: 8123012								
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	60.7	mg/L	1	15	46.1	96.8%	80	120				

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## Analytical QC Summary Report

SampleID: G2408E91-001FLFM		SampType: LFM	TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/28/2024			RunNo: 309181			
		BatchID: 258391				Analysis Date: 8/28/2024			SeqNo: 8123025			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	26.1	mg/L	1	15	13.7	82.2%	80	120				
SampleID: G2408E76-002DLFM		SampType: LFM	TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/28/2024			RunNo: 309194			
		BatchID: 258405				Analysis Date: 8/28/2024			SeqNo: 8123575			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	33.5	mg/L	1	15	20.1	89.2%	80	120				
SampleID: G2408E89-002DLFM		SampType: LFM	TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/28/2024			RunNo: 309194			
		BatchID: 258405				Analysis Date: 8/28/2024			SeqNo: 8123601			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	266	mg/L	1	15	258	54.6%	80	120				1
SampleID: LRB-258391		SampType: LRB	TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/28/2024			RunNo: 309181			
		BatchID: 258391				Analysis Date: 8/28/2024			SeqNo: 8123006			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	< 1	mg/L	1									
SampleID: LRB-258405		SampType: LRB	TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/28/2024			RunNo: 309194			
		BatchID: 258405				Analysis Date: 8/28/2024			SeqNo: 8123557			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	< 1	mg/L	1									
SampleID: CB-258391		SampType: MBLK	TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/28/2024			RunNo: 309181			
		BatchID: 258391				Analysis Date: 8/28/2024			SeqNo: 8123003			

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Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Chloride	< 1	mg/L	1										
<b>SampleID:</b> CB-258405		<b>SampType:</b> MBLK			<b>TestNo:</b> EPA 300.0 Rev 2.1			<b>Prep Date:</b> 8/28/2024			<b>RunNo:</b> 309194		
					<b>BatchID:</b> 258405					<b>Analysis Date:</b> 8/28/2024			<b>SeqNo:</b> 8123552
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Chloride	< 1	mg/L	1										
<b>SampleID:</b> QCS-258391		<b>SampType:</b> QCS			<b>TestNo:</b> EPA 300.0 Rev 2.1			<b>Prep Date:</b> 8/28/2024			<b>RunNo:</b> 309181		
					<b>BatchID:</b> 258391					<b>Analysis Date:</b> 8/28/2024			<b>SeqNo:</b> 8123007
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Chloride	22.7	mg/L	1	24		94.7%	90	110					
<b>SampleID:</b> QCS-258405		<b>SampType:</b> QCS			<b>TestNo:</b> EPA 300.0 Rev 2.1			<b>Prep Date:</b> 8/28/2024			<b>RunNo:</b> 309194		
					<b>BatchID:</b> 258405					<b>Analysis Date:</b> 8/28/2024			<b>SeqNo:</b> 8123559
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Chloride	22.8	mg/L	1	24		95.0%	90	110					
<b>SampleID:</b> G2408E89-001BDUP		<b>SampType:</b> DUP			<b>TestNo:</b> EPA 350.1 Rev 2.0			<b>Prep Date:</b>			<b>RunNo:</b> 309213		
					<b>BatchID:</b> R309213					<b>Analysis Date:</b> 8/29/2024			<b>SeqNo:</b> 8124380
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Ammonia Nitrogen	< 0.1	mg/L as N	0.1						0.0467		20		
<b>SampleID:</b> G2408E91-004BDUP		<b>SampType:</b> DUP			<b>TestNo:</b> EPA 350.1 Rev 2.0			<b>Prep Date:</b>			<b>RunNo:</b> 309213		
					<b>BatchID:</b> R309213					<b>Analysis Date:</b> 8/29/2024			<b>SeqNo:</b> 8124390
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Ammonia Nitrogen	< 0.1	mg/L as N	0.1								20		

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## Analytical QC Summary Report

SampleID: LCS		SampType: LCS		TestNo: EPA 350.1 Rev 2.0			Prep Date:			RunNo: 309213		
		BatchID: R309213						Analysis Date: 8/29/2024			SeqNo: 8124374	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Ammonia Nitrogen	0.82	mg/L as N	0.1	0.82		100.0%	90	110				
SampleID: CCB		SampType: MBLK		TestNo: EPA 350.1 Rev 2.0			Prep Date:			RunNo: 309213		
		BatchID: R309213						Analysis Date: 8/29/2024			SeqNo: 8124372	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Ammonia Nitrogen	< 0.1	mg/L as N	0.1									
SampleID: G2408E89-001BMS		SampType: MS		TestNo: EPA 350.1 Rev 2.0			Prep Date:			RunNo: 309213		
		BatchID: R309213						Analysis Date: 8/29/2024			SeqNo: 8124381	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Ammonia Nitrogen	1.01	mg/L as N	0.1	1	0.0467	96.7%	90	110				
SampleID: G2408E91-004BMS		SampType: MS		TestNo: EPA 350.1 Rev 2.0			Prep Date:			RunNo: 309213		
		BatchID: R309213						Analysis Date: 8/29/2024			SeqNo: 8124391	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Ammonia Nitrogen	1.03	mg/L as N	0.1	1		103.0%	90	110				
SampleID: LCS1-258454		SampType: LCS1		TestNo: EPA 6010 D			Prep Date: 8/29/2024			RunNo: 309251		
		BatchID: 258454						Analysis Date: 8/29/2024			SeqNo: 8125498	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Potassium	10.1	mg/L	0.5	10		101.0%	79.5	120.4				
Sodium	10.2	mg/L	0.2	10		102.2%	79.5	120.4				
SampleID: PB-258454		SampType: PB		TestNo: EPA 6010 D			Prep Date: 8/29/2024			RunNo: 309251		
		BatchID: 258454						Analysis Date: 8/29/2024			SeqNo: 8125497	

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Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Potassium	< 0.5	mg/L	0.5										
Sodium	< 0.2	mg/L	0.2										
<b>SampleID:</b> G2408E91-001JDUP			<b>SampType:</b> DUP		<b>TestNo:</b> EPA 6010 D			<b>Prep Date:</b> 8/29/2024		<b>RunNo:</b> 309251			
			<b>BatchID:</b> 258454						<b>Analysis Date:</b> 8/29/2024		<b>SeqNo:</b> 8125500		
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Potassium	< 0.5	mg/L	0.5						0.297		20		
Sodium	6.25	mg/L	0.2						6.25	0.1%	20		
<b>SampleID:</b> G2408E91-001JMS			<b>SampType:</b> MS		<b>TestNo:</b> EPA 6010 D			<b>Prep Date:</b> 8/29/2024		<b>RunNo:</b> 309251			
			<b>BatchID:</b> 258454						<b>Analysis Date:</b> 8/29/2024		<b>SeqNo:</b> 8125501		
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Potassium	9.67	mg/L	0.5	10	0.297	93.8%	75	125					
Sodium	15.1	mg/L	0.2	10	6.25	88.9%	75	125					
<b>SampleID:</b> G2408E93-005DMS			<b>SampType:</b> MS		<b>TestNo:</b> EPA 6010 D			<b>Prep Date:</b> 8/29/2024		<b>RunNo:</b> 309251			
			<b>BatchID:</b> 258454						<b>Analysis Date:</b> 8/29/2024		<b>SeqNo:</b> 8125514		
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Potassium	10.4	mg/L	0.5	10	0.332	100.3%	75	125					
Sodium	18.1	mg/L	0.2	10	8.68	94.5%	75	125					
<b>SampleID:</b> LCS2-258456			<b>SampType:</b> LCS2		<b>TestNo:</b> EPA 6020 B			<b>Prep Date:</b> 8/29/2024		<b>RunNo:</b> 309267			
			<b>BatchID:</b> 258456						<b>Analysis Date:</b> 8/30/2024		<b>SeqNo:</b> 8126135		
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Lead	5.14	µg/L	1	5		102.7%	79.5	120.45					
<b>SampleID:</b> PB-258456			<b>SampType:</b> PB		<b>TestNo:</b> EPA 6020 B			<b>Prep Date:</b> 8/29/2024		<b>RunNo:</b> 309267			
			<b>BatchID:</b> 258456						<b>Analysis Date:</b> 8/30/2024		<b>SeqNo:</b> 8126134		

Client: LIVE OAK LANDFILL  
 WorkOrder: G2408E93  
 Project: Live Oak 221A3

## Analytical QC Summary Report

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Lead	< 1	µg/L	1					0.2				
<b>SampleID:</b> G2408E91-001JDUP		<b>SampType:</b> DUP		<b>TestNo:</b> EPA 6020 B			<b>Prep Date:</b> 8/29/2024			<b>RunNo:</b> 309267		
		<b>BatchID:</b> 258456					<b>Analysis Date:</b> 8/30/2024			<b>SeqNo:</b> 8126140		
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Lead	< 1	µg/L	1								20	
<b>SampleID:</b> G2408E93-004DMS		<b>SampType:</b> MS		<b>TestNo:</b> EPA 6020 B			<b>Prep Date:</b> 8/29/2024			<b>RunNo:</b> 309267		
		<b>BatchID:</b> 258456					<b>Analysis Date:</b> 8/30/2024			<b>SeqNo:</b> 8126149		
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Lead	5.26	µg/L	1	5		105.3%	75	125				
<b>SampleID:</b> G2408E93-007DMS		<b>SampType:</b> MS		<b>TestNo:</b> EPA 6020 B			<b>Prep Date:</b> 8/29/2024			<b>RunNo:</b> 309267		
		<b>BatchID:</b> 258456					<b>Analysis Date:</b> 8/30/2024			<b>SeqNo:</b> 8126156		
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Lead	5.27	µg/L	1	5		105.5%	75	125				
<b>SampleID:</b> 20 PPB LCS		<b>SampType:</b> LCS		<b>TestNo:</b> EPA 8260 D			<b>Prep Date:</b>			<b>RunNo:</b> 309237		
		<b>BatchID:</b> R309237					<b>Analysis Date:</b> 8/29/2024			<b>SeqNo:</b> 8125098		
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,1,1,2-Tetrachloroethane	18.9	µg/L	1	20		94.7%	81	125				
1,1,1-Trichloroethane	21.8	µg/L	1	20		109.0%	71	125				
1,1,2,2-Tetrachloroethane	17.8	µg/L	1	20		88.8%	80	116				
1,1,2-Trichloroethane	20.7	µg/L	1	20		103.6%	83	126				
1,1-Dichloroethane	21.3	µg/L	1	20		106.3%	73	122				
1,1-Dichloroethene	21.3	µg/L	1	20		106.6%	74	121				
1,2,3-Trichloropropane	17.6	µg/L	1	20		87.9%	77	118				
1,2-Dibromo-3-chloropropane	18.6	µg/L	5	20		93.2%	64	126				
1,2-Dibromoethane	20.8	µg/L	1	20		104.0%	83	119				
1,2-Dichlorobenzene	16.8	µg/L	1	20		83.9%	85	119				S

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1,2-Dichloroethane	22.3	µg/L	1	20		111.7%	72	123				
1,2-Dichloropropane	20.5	µg/L	1	20		102.4%	83	122				
1,4-Dichlorobenzene	16.9	µg/L	1	20		84.5%	83	120				
2-Butanone	22.3	µg/L	5	20		111.5%	61	125				
2-Hexanone	21	µg/L	5	20		105.1%	58	132				
4-Methyl-2-Pentanone	20.9	µg/L	1	20		104.5%	68	127				
Acetone	24	µg/L	10	20		120.0%	60	133				
Benzene	21.4	µg/L	1	20		107.0%	76	122				
Bromochloromethane	21.6	µg/L	1	20		108.2%	78	124				
Bromodichloromethane	21.6	µg/L	1	20		108.0%	71	138				
Bromoform	16.6	µg/L	1	20		83.3%	71	125				
Bromomethane	17.7	µg/L	1	20		88.4%	47	152				
Carbon Disulfide	19.6	µg/L	1	20		98.1%	63	123				
Carbon Tetrachloride	21.5	µg/L	1	20		107.6%	68	133				
Chlorobenzene	17.9	µg/L	1	20		89.6%	83	118				
Chlorodibromomethane	21.3	µg/L	1	20		106.4%	74	131				
Chloroethane	25.7	µg/L	1	20		128.3%	56	127				S
Chloroform	21.5	µg/L	1	20		107.5%	73	123				
Chloromethane	22.6	µg/L	1	20		112.8%	65	129				
cis-1,2-Dichloroethene	21.3	µg/L	1	20		106.4%	75	121				
cis-1,3-Dichloropropene	20.5	µg/L	1	20		102.5%	71	129				
Dibromomethane	19.3	µg/L	1	20		96.7%	83	118				
Dichlorobromomethane	21.6	µg/L	1	20		108.0%	56	145				
Ethylbenzene	17.7	µg/L	1	20		88.7%	84	120				
Iodomethane	19.1	µg/L	5	20		95.3%	29	162				
Methyl Ethyl Ketone	22.3	µg/L	5	20		111.5%	72	131				
Methylene Chloride	22.4	µg/L	1	20		112.0%	73	133				B
Styrene	18.8	µg/L	1	20		93.8%	88	116				
Tetrachloroethene	19.2	µg/L	1	20		96.0%	76	127				
Toluene	20.1	µg/L	1	20		100.7%	80	118				
trans-1,2-Dichloroethene	21.9	µg/L	1	20		109.6%	73	120				
trans-1,3-Dichloropropene	20.4	µg/L	1	20		102.0%	70	126				
trans-1,4-Dichloro-2-butene	18.1	µg/L	2	20		90.3%	46	137				
Tribromomethane	16.6	µg/L	1	20		83.3%	71	125				

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Trichloroethene	20.2	µg/L	1	20		101.1%	73	123					
Trichlorofluoromethane	24.5	µg/L	1	20		122.6%	69	125					
Trichloromethane	21.5	µg/L	1	20		107.5%	73	123					
Vinyl Acetate	22.5	µg/L	1	20		112.7%	67	131					
Vinyl Chloride	24	µg/L	1	20		119.8%	56	125					
Total Xylene	53.4	µg/L	2	60		89.1%	87	116					
Surr: 1,2-Dichloroethane-d4	32.6	µg/L	0	30		108.7%	70	130					
Surr: 4-Bromofluorobenzene	29.8	µg/L	0	30		99.4%	70	130					
Surr: Dibromofluoromethane	32	µg/L	0	30		106.8%	70	130					
Surr: Toluene-d8	27.2	µg/L	0	30		90.6%	70	130					

SampleID: BLANK

SampType: MBLK

TestNo: EPA 8260 D

Prep Date:

RunNo: 309237

BatchID: R309237

Analysis Date: 8/29/2024

SeqNo: 8125102

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
1,1,1,2-Tetrachloroethane	< 1	µg/L	1										
1,1,1-Trichloroethane	< 1	µg/L	1										
1,1,2,2-Tetrachloroethane	< 1	µg/L	1										
1,1,2-Trichloroethane	< 1	µg/L	1										
1,1-Dichloroethane	< 1	µg/L	1										
1,1-Dichloroethene	< 1	µg/L	1										
1,2,3-Trichloropropane	< 1	µg/L	1										
1,2-Dibromo-3-chloropropane	< 5	µg/L	5										
1,2-Dibromoethane	< 1	µg/L	1										
1,2-Dichlorobenzene	< 1	µg/L	1										
1,2-Dichloroethane	< 1	µg/L	1										
1,2-Dichloropropane	< 1	µg/L	1										
1,4-Dichlorobenzene	< 1	µg/L	1										
2-Butanone	< 5	µg/L	5										
2-Hexanone	< 5	µg/L	5										
4-Methyl-2-Pentanone	< 1	µg/L	1										
Acetone	< 10	µg/L	10										
Benzene	< 1	µg/L	1										
Bromochloromethane	< 1	µg/L	1										

**Client:** LIVE OAK LANDFILL

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Bromodichloromethane	< 1	µg/L	1					
Bromoform	< 1	µg/L	1					
Bromomethane	< 1	µg/L	1					
Carbon Disulfide	< 1	µg/L	1					
Carbon Tetrachloride	< 1	µg/L	1					
Chlorobenzene	< 1	µg/L	1					
Chlorodibromomethane	< 1	µg/L	1					
Chloroethane	< 1	µg/L	1					
Chloroform	< 1	µg/L	1					
Chloromethane	< 1	µg/L	1					
cis-1,2-Dichloroethene	< 1	µg/L	1					
cis-1,3-Dichloropropene	< 1	µg/L	1					
Dibromomethane	< 1	µg/L	1					
Dichlorobromomethane	< 1	µg/L	1					
Ethylbenzene	< 1	µg/L	1					
Iodomethane	< 5	µg/L	5					
Methyl Ethyl Ketone	< 5	µg/L	5					
Methylene Chloride	2.84	µg/L	1					
Styrene	< 1	µg/L	1					
Tetrachloroethene	< 1	µg/L	1					
Toluene	< 1	µg/L	1					
trans-1,2-Dichloroethene	< 1	µg/L	1					
trans-1,3-Dichloropropene	< 1	µg/L	1					
trans-1,4-Dichloro-2-butene	< 2	µg/L	2					
Tribromomethane	< 1	µg/L	1					
Trichloroethene	< 1	µg/L	1					
Trichlorofluoromethane	< 1	µg/L	1					
Trichloromethane	< 1	µg/L	1					
Vinyl Acetate	< 1	µg/L	1					
Vinyl Chloride	< 1	µg/L	1					
Total Xylene	< 2	µg/L	2					
Surr: 1,2-Dichloroethane-d4	31.8	µg/L	0	30	106.0%	70	130	
Surr: 4-Bromofluorobenzene	29.6	µg/L	0	30	98.6%	70	130	
Surr: Dibromofluoromethane	30.8	µg/L	0	30	102.7%	70	130	

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## Analytical QC Summary Report

Surr: Toluene-d8	27.2	µg/L	0	30		90.7%	70	130					
<b>SampleID:</b> G2408E76-002GMS		<b>SampType:</b> MS		<b>TestNo:</b> EPA 8260 D		<b>Prep Date:</b>		<b>RunNo:</b> 309237					
				<b>BatchID:</b> R309237				<b>Analysis Date:</b> 8/29/2024		<b>SeqNo:</b> 8125106			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
1,1,1,2-Tetrachloroethane	20.6	µg/L	1	20		102.9%	76	117					
1,1,1-Trichloroethane	25.3	µg/L	1	20		126.3%	72	122					S
1,1,2,2-Tetrachloroethane	18	µg/L	1	20		90.2%	72	110					
1,1,2-Trichloroethane	21.9	µg/L	1	20		109.6%	76	126					
1,1-Dichloroethane	23.6	µg/L	1	20		118.1%	66	126					
1,1-Dichloroethene	25.5	µg/L	1	20		127.6%	66	121					S
1,2,3-Trichloropropane	18.3	µg/L	1	20		91.3%	72	112					
1,2-Dibromo-3-chloropropane	18.2	µg/L	5	20		91.2%	57	121					
1,2-Dibromoethane	22.2	µg/L	1	20		110.8%	75	113					
1,2-Dichlorobenzene	17.7	µg/L	1	20		88.6%	76	108					
1,2-Dichloroethane	24.1	µg/L	1	20		120.6%	69	116					S
1,2-Dichloropropane	22.6	µg/L	1	20		113.2%	78	122					
1,4-Dichlorobenzene	18.3	µg/L	1	20		91.3%	70	121					
2-Butanone	22.3	µg/L	5	20		111.6%	59	118					
2-Hexanone	21.4	µg/L	5	20		106.8%	63	120					
4-Methyl-2-Pentanone	21.2	µg/L	1	20		106.1%	68	116					
Acetone	22.6	µg/L	10	20		113.0%	51	133					
Benzene	23.8	µg/L	1	20		119.1%	52	125					
Bromochloromethane	23.6	µg/L	1	20		117.9%	71	117					S
Bromodichloromethane	23.9	µg/L	1	20		119.7%	68	132					
Bromoform	17.4	µg/L	1	20		87.1%	65	117					
Bromomethane	20.1	µg/L	1	20		100.4%	40	156					
Carbon Disulfide	23.9	µg/L	1	20		119.5%	60	123					
Carbon Tetrachloride	25.5	µg/L	1	20		127.5%	67	132					
Chlorobenzene	19.7	µg/L	1	20		98.7%	78	111					
Chlorodibromomethane	23	µg/L	1	20		114.9%	70	123					
Chloroethane	30.3	µg/L	1	20		151.6%	46	132					S
Chloroform	23.5	µg/L	1	20		117.6%	69	117					S

Client: LIVE OAK LANDFILL

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## Analytical QC Summary Report

Chloromethane	26.7	µg/L	1	20		133.6%	51	129				S
cis-1,2-Dichloroethene	23.6	µg/L	1	20		118.3%	71	117				S
cis-1,3-Dichloropropene	22.4	µg/L	1	20		112.2%	71	117				
Dibromomethane	20.9	µg/L	1	20		104.3%	77	110				
Dichlorobromomethane	23.9	µg/L	1	20		119.7%	74	117				S
Ethylbenzene	20	µg/L	1	20		100.2%	72	122				
Iodomethane	21.3	µg/L	5	20		106.5%	34	150				
Methyl Ethyl Ketone	22.3	µg/L	5	20		111.6%	59	121				
Methylene Chloride	23.9	µg/L	1	20		119.5%	64	121				B
Styrene	20.4	µg/L	1	20		102.2%	78	117				
Tetrachloroethene	21.3	µg/L	1	20		106.3%	67	122				
Toluene	22.6	µg/L	1	20		113.0%	75	115				
trans-1,2-Dichloroethene	25.5	µg/L	1	20		127.4%	69	118				S
trans-1,3-Dichloropropene	22.3	µg/L	1	20		111.6%	66	122				
trans-1,4-Dichloro-2-butene	18.4	µg/L	2	20		91.9%	46	131				
Tribromomethane	17.4	µg/L	1	20		87.1%	65	117				
Trichloroethene	23.2	µg/L	1	20		116.1%	75	117				
Trichlorofluoromethane	29.7	µg/L	1	20		148.4%	69	125				S
Trichloromethane	23.5	µg/L	1	20		117.6%	69	117				S
Vinyl Acetate	23.9	µg/L	1	20		119.7%	46	126				
Vinyl Chloride	28.8	µg/L	1	20		144.2%	54	128				S
Total Xylene	59.8	µg/L	2	60		99.6%	72	120				
Surr: 1,2-Dichloroethane-d4	31.4	µg/L	0	30		104.6%	70	130				
Surr: 4-Bromofluorobenzene	29.9	µg/L	0	30		99.8%	70	130				
Surr: Dibromofluoromethane	32	µg/L	0	30		106.7%	70	130				
Surr: Toluene-d8	27.3	µg/L	0	30		90.9%	70	130				

SampleID: G2408E76-002GMSD

SampType: MSD

TestNo: EPA 8260 D

Prep Date:

RunNo: 309237

BatchID: R309237

Analysis Date: 8/29/2024

SeqNo: 8125114

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,1,1,2-Tetrachloroethane	20.8	µg/L	1						20.6	1.0%	11	
1,1,1-Trichloroethane	25.7	µg/L	1						25.3	1.8%	12	
1,1,2,2-Tetrachloroethane	18.7	µg/L	1						18	3.5%	14	

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1,1,2-Trichloroethane	22.3	µg/L	1					21.9	1.5%	15	
1,1-Dichloroethane	23.9	µg/L	1					23.6	1.4%	12	
1,1-Dichloroethene	25.7	µg/L	1					25.5	0.7%	14	
1,2,3-Trichloropropane	18.6	µg/L	1					18.3	2.1%	14	
1,2-Dibromo-3-chloropropane	18.7	µg/L	5					18.2	2.7%	20	
1,2-Dibromoethane	22.7	µg/L	1					22.2	2.4%	17	
1,2-Dichlorobenzene	18.1	µg/L	1					17.7	2.3%	13	
1,2-Dichloroethane	24.4	µg/L	1					24.1	1.0%	11	
1,2-Dichloropropane	22.9	µg/L	1					22.6	1.0%	12	
1,4-Dichlorobenzene	18.6	µg/L	1					18.3	1.7%	16	
2-Butanone	23.5	µg/L	5					22.3	5.2%	23	
2-Hexanone	21.5	µg/L	5					21.4	0.8%	18	
4-Methyl-2-Pentanone	21.5	µg/L	1					21.2	1.3%	18	
Acetone	22.1	µg/L	10					22.6	2.0%	23	
Benzene	24.1	µg/L	1					23.8	1.4%	15	
Bromochloromethane	24	µg/L	1					23.6	1.8%	12	
Bromodichloromethane	23.6	µg/L	1					23.9	1.3%	18	
Bromoform	18.1	µg/L	1					17.4	3.6%	14	
Bromomethane	20.8	µg/L	1					20.1	3.3%	22	
Carbon Disulfide	24.1	µg/L	1					23.9	0.7%	13	
Carbon Tetrachloride	25.9	µg/L	1					25.5	1.6%	12	
Chlorobenzene	19.9	µg/L	1					19.7	0.9%	10	
Chlorodibromomethane	23.3	µg/L	1					23	1.3%	16	
Chloroethane	29.6	µg/L	1					30.3	2.2%	17	
Chloroform	23.9	µg/L	1					23.5	1.5%	13	
Chloromethane	26.6	µg/L	1					26.7	0.5%	16	
cis-1,2-Dichloroethene	24	µg/L	1					23.6	1.6%	12	
cis-1,3-Dichloropropene	22.7	µg/L	1					22.4	1.1%	16	
Dibromomethane	21.1	µg/L	1					20.9	0.9%	14	
Dichlorobromomethane	23.6	µg/L	1					23.9	1.3%	13	
Ethylbenzene	20.3	µg/L	1					20	1.1%	16	
Iodomethane	22.7	µg/L	5					21.3	6.3%	19	
Methyl Ethyl Ketone	23.5	µg/L	5					22.3	5.2%	21	
Methylene Chloride	24.1	µg/L	1					23.9	0.9%	17	B

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E93  
Project: Live Oak 221A3

## Analytical QC Summary Report

Styrene	20.6	µg/L	1					20.4	0.9%	12	
Tetrachloroethene	21.7	µg/L	1					21.3	2.0%	16	
Toluene	22.9	µg/L	1					22.6	1.1%	13	
trans-1,2-Dichloroethene	25.4	µg/L	1					25.5	0.2%	13	
trans-1,3-Dichloropropene	22.6	µg/L	1					22.3	1.2%	15	
trans-1,4-Dichloro-2-butene	19.1	µg/L	2					18.4	4.0%	17	
Tribromomethane	18.1	µg/L	1					17.4	3.6%	14	
Trichloroethene	23.1	µg/L	1					23.2	0.5%	11	
Trichlorofluoromethane	30	µg/L	1					29.7	1.2%	15	
Trichloromethane	23.9	µg/L	1					23.5	1.5%	12	
Vinyl Acetate	24.6	µg/L	1					23.9	2.7%	11	
Vinyl Chloride	29.4	µg/L	1					28.8	2.0%	15	
Total Xylene	60.5	µg/L	2					59.8		18	
Surr: 1,2-Dichloroethane-d4	31.5	µg/L	0	30		104.9%	70	130	31.4		
Surr: 4-Bromofluorobenzene	29.9	µg/L	0	30		99.5%	70	130	29.9		
Surr: Dibromofluoromethane	32.1	µg/L	0	30		107.1%	70	130	32		
Surr: Toluene-d8	27.2	µg/L	0	30		90.6%	70	130	27.3		

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E93  
Project: Live Oak 221A3

## Analytical QC Summary Report

Prep Batch Report									
Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End
CB-258391		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 5:55:00 AM	8/28/2024 5:55:00 AM
G2408E23-001C	001	Surface Water	8/27/2024 6:30:00 AM	100	100		1.000	8/28/2024 6:40:00 AM	8/28/2024 6:40:00 AM
G2408E23-001CDUP		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 6:40:00 AM	8/28/2024 6:40:00 AM
G2408E23-001CLFM		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 6:40:00 AM	8/28/2024 6:40:00 AM
G2408E23-002C	Vault Above Pit	Surface Water	8/27/2024 8:00:00 AM	100	100		1.000	8/28/2024 6:40:00 AM	8/28/2024 6:40:00 AM
G2408E24-001C	Outfall 001 Comp.	Waste Water	8/27/2024 7:03:00 AM	100	100		1.000	8/28/2024 6:40:00 AM	8/28/2024 6:40:00 AM
G2408E34-001A	101 E	Potable Water	8/27/2024 7:58:00 AM	100	100		1.000	8/28/2024 6:40:00 AM	8/28/2024 6:40:00 AM
G2408E35-001C	Lower Works Sampling Point	Waste Water	8/27/2024 8:10:00 AM	100	100		1.000	8/28/2024 6:40:00 AM	8/28/2024 6:40:00 AM
G2408E37-001A	Outfall 001	Waste Water	8/26/2024 7:40:00 AM	100	100		1.000	8/28/2024 6:40:00 AM	8/28/2024 6:40:00 AM
G2408E37-002A	Outfall 002	Waste Water	8/26/2024 8:00:00 AM	100	100		1.000	8/28/2024 6:40:00 AM	8/28/2024 6:40:00 AM
G2408E48-001D	POTW OF	Waste Water	8/27/2024 7:45:00 AM	100	100		1.000	8/28/2024 6:40:00 AM	8/28/2024 6:40:00 AM
G2408E87-001D	CO-1	Groundwater	8/27/2024 8:29:00 AM	100	100		1.000	8/28/2024 12:36:00 PM	8/28/2024 12:36:00 PM
G2408E87-002D	BL-2Dd	Groundwater	8/27/2024 11:00:00 AM	100	100		1.000	8/28/2024 12:36:00 PM	8/28/2024 12:36:00 PM
G2408E91-001F	GWA-1A	Groundwater	8/26/2024 12:00:00 PM	100	100		1.000	8/28/2024 1:55:00 PM	8/28/2024 1:55:00 PM
G2408E91-001FDUP		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 1:55:00 PM	8/28/2024 1:55:00 PM
G2408E91-001FLFM		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 1:55:00 PM	8/28/2024 1:55:00 PM
G2408E91-002F	GWA-3A	Groundwater	8/26/2024 10:35:00 AM	100	100		1.000	8/28/2024 1:55:00 PM	8/28/2024 1:55:00 PM
G2408E91-003F	GWC-2A	Groundwater	8/26/2024 3:47:00 PM	100	100		1.000	8/28/2024 1:55:00 PM	8/28/2024 1:55:00 PM
G2408E91-004F	GWC-3A	Groundwater	8/26/2024 2:45:00 PM	100	100		1.000	8/28/2024 1:55:00 PM	8/28/2024 1:55:00 PM
G2408E91-005F	GWC-7	Groundwater	8/26/2024 1:15:00 PM	100	100		1.000	8/28/2024 1:55:00 PM	8/28/2024 1:55:00 PM
G2408E93-001C	GWB-1	Groundwater	8/27/2024 9:28:00 AM	100	100		1.000	8/28/2024 1:55:00 PM	8/28/2024 1:55:00 PM
G2408E93-002D	GWC-11	Groundwater	8/27/2024 12:34:00 PM	100	100		1.000	8/28/2024 1:55:00 PM	8/28/2024 1:55:00 PM
G2408E93-003D	GWC-4A	Groundwater	8/27/2024 11:00:00 AM	100	100		1.000	8/28/2024 1:55:00 PM	8/28/2024 1:55:00 PM
G2408E93-004C	GWC-5A	Groundwater	8/27/2024 10:15:00 AM	100	100		1.000	8/28/2024 1:55:00 PM	8/28/2024 1:55:00 PM
G2408E93-005C	GWC-12	Groundwater	8/27/2024 11:28:00 AM	100	100		1.000	8/28/2024 1:55:00 PM	8/28/2024 1:55:00 PM

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E93  
Project: Live Oak 221A3

## Analytical QC Summary Report

HRQC 1000-258391		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 5:55:00 AM	8/28/2024 5:55:00 AM
HRQC-258391		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 5:55:00 AM	8/28/2024 5:55:00 AM
IPC-258391		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 5:55:00 AM	8/28/2024 5:55:00 AM
LFB-258391		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 5:55:00 AM	8/28/2024 5:55:00 AM
LFB2-258391		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 5:55:00 AM	8/28/2024 5:55:00 AM
LRB-258391		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 5:55:00 AM	8/28/2024 5:55:00 AM
QCS-258391		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 5:55:00 AM	8/28/2024 5:55:00 AM

Prep Batch: 258405  
Prep Code: INPR\_IC

### Prep Batch Report

Prep Start Date: 8/28/2024 3:34:00 PM  
Prep End Date: 8/28/2024 3:34:00 PM

Technician: Angela C. Watkins  
Prep Factor Units: mL

Sample ID	Client SampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End
CB-258405		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 7:45:00 AM	8/28/2024 7:45:00 AM
G2408E76-001D	BL-9UR	Groundwater	8/26/2024 12:20:00 PM	100	100		1.000	8/28/2024 10:16:00 AM	8/28/2024 10:16:00 AM
G2408E76-002D	BL-14DR	Groundwater	8/26/2024 4:15:00 PM	100	100		1.000	8/28/2024 10:16:00 AM	8/28/2024 10:16:00 AM
G2408E76-002DDUP		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 10:16:00 AM	8/28/2024 10:16:00 AM
G2408E76-002DLFM		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 10:16:00 AM	8/28/2024 10:16:00 AM
G2408E76-003D	BL-15D	Groundwater	8/26/2024 2:46:00 PM	100	100		1.000	8/28/2024 10:16:00 AM	8/28/2024 10:16:00 AM
G2408E76-004D	BL-16D	Groundwater	8/26/2024 10:50:00 AM	100	100		1.000	8/28/2024 10:16:00 AM	8/28/2024 10:16:00 AM
G2408E76-005D	BL-17D	Groundwater	8/26/2024 8:59:00 AM	100	100		1.000	8/28/2024 10:16:00 AM	8/28/2024 10:16:00 AM
G2408E87-003D	BL-2Ds	Groundwater	8/27/2024 11:59:00 AM	100	100		1.000	8/28/2024 12:42:00 PM	8/28/2024 12:42:00 PM
G2408E87-004D	BL-7D	Groundwater	8/27/2024 1:56:00 PM	100	100		1.000	8/28/2024 12:42:00 PM	8/28/2024 12:42:00 PM
G2408E87-005D	MP-9Dd	Groundwater	8/27/2024 3:54:00 PM	100	100		1.000	8/28/2024 12:42:00 PM	8/28/2024 12:42:00 PM
G2408E87-006D	MP-9Ds	Groundwater	8/27/2024 4:45:00 PM	100	100		1.000	8/28/2024 12:42:00 PM	8/28/2024 12:42:00 PM
G2408E89-001D	BL-4Dd	Groundwater	8/27/2024 4:19:00 PM	100	100		1.000	8/28/2024 12:51:00 PM	8/28/2024 12:51:00 PM
G2408E89-002D	MP-11Dd	Groundwater	8/27/2024 10:45:00 AM	100	100		1.000	8/28/2024 12:51:00 PM	8/28/2024 12:51:00 PM
G2408E89-002DDUP		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 12:51:00 PM	8/28/2024 12:51:00 PM
G2408E89-002DLFM		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 12:51:00 PM	8/28/2024 12:51:00 PM
G2408E89-003D	BL-19D	Groundwater	8/27/2024 2:58:00 PM	100	100		1.000	8/28/2024 12:51:00 PM	8/28/2024 12:51:00 PM
G2408E93-006D	GWC-13A	Groundwater	8/27/2024 9:20:00 AM	100	100		1.000	8/28/2024 2:01:00 PM	8/28/2024 2:01:00 PM

Client: LIVE OAK LANDFILL  
 WorkOrder: G2408E93  
 Project: Live Oak 221A3

## Analytical QC Summary Report

G2408E93-007C	GWC-6	Groundwater	8/27/2024 10:19:00 AM	100	100		1.000	8/28/2024 2:01:00 PM	8/28/2024 2:01:00 PM
G2408F06-003D	Leachate Composite	Leachate	8/28/2024 11:00:00 AM	100	100		1.000	8/28/2024 3:34:00 PM	8/28/2024 3:34:00 PM
G2408F08-001C	MW-28D	Groundwater	8/28/2024 8:02:00 AM	100	100		1.000	8/28/2024 3:34:00 PM	8/28/2024 3:34:00 PM
G2408F08-002D	MW-32D	Groundwater	8/28/2024 9:59:00 AM	100	100		1.000	8/28/2024 3:34:00 PM	8/28/2024 3:34:00 PM
G2408F08-003D	MW-26DR	Groundwater	8/28/2024 11:38:00 AM	100	100		1.000	8/28/2024 3:34:00 PM	8/28/2024 3:34:00 PM
G2408F09-001D	SW-3	Surface Water	8/28/2024 7:30:00 AM	100	100		1.000	8/28/2024 3:34:00 PM	8/28/2024 3:34:00 PM
G2408F09-002D	SW-101	Surface Water	8/28/2024 8:30:00 AM	100	100		1.000	8/28/2024 3:34:00 PM	8/28/2024 3:34:00 PM
HRQC 1000-258405		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 7:45:00 AM	8/28/2024 7:45:00 AM
HRQC-258405		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 7:45:00 AM	8/28/2024 7:45:00 AM
IPC-258405		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 7:45:00 AM	8/28/2024 7:45:00 AM
LFB-258405		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 7:45:00 AM	8/28/2024 7:45:00 AM
LFB2-258405		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 7:45:00 AM	8/28/2024 7:45:00 AM
LRB-258405		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 7:45:00 AM	8/28/2024 7:45:00 AM
QCS-258405		Aqueous	8/28/2024 12:00:00 AM	100	100		1.000	8/28/2024 7:45:00 AM	8/28/2024 7:45:00 AM

			Prep Batch Report							
			Prep Start Date: 8/29/2024 8:20:00 AM				Technician: Kristy L Botteicher			
			Prep End Date: 8/29/2024 2:05:00 PM				Prep Factor Units: mL			
Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start		Prep End
G2408977-001A	Agilent5110 MDL3010 3rdQtr Part 2	Aqueous	8/29/2024 12:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM	
G2408D58-001C	Little Clara Unit 5H	Solid	8/26/2024 10:05:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM	
G2408D62-001C	Little Clara Unit 5H	Solid	8/26/2024 10:10:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM	
G2408E04-001B	Finished Mulch	Solid	8/26/2024 8:40:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM	
G2408E58-002B	TCLP Blank RSWC-9 -49-5	Solid	8/27/2024 10:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM	
G2408E61-001B	De-Watered Sludge	Sludge	8/27/2024 11:15:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM	
G2408E91-001J	GWA-1A	Groundwater	8/26/2024 12:00:00 PM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM	
G2408E91-001JDUP		Aqueous	8/29/2024 12:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM	

Client: LIVE OAK LANDFILL  
 WorkOrder: G2408E93  
 Project: Live Oak 221A3

## Analytical QC Summary Report

G2408E91-001JMS		Aqueous	8/29/2024 12:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E91-002J	GWA-3A	Groundwater	8/26/2024 10:35:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E91-003J	GWC-2A	Groundwater	8/26/2024 3:47:00 PM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E91-004J	GWC-3A	Groundwater	8/26/2024 2:45:00 PM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E91-005J	GWC-7	Groundwater	8/26/2024 1:15:00 PM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-001D	GWB-1	Groundwater	8/27/2024 9:28:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-002E	GWC-11	Groundwater	8/27/2024 12:34:00 PM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-003E	GWC-4A	Groundwater	8/27/2024 11:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-004D	GWC-5A	Groundwater	8/27/2024 10:15:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-005D	GWC-12	Groundwater	8/27/2024 11:28:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-005DMS		Aqueous	8/29/2024 12:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-006E	GWC-13A	Groundwater	8/27/2024 9:20:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-007D	GWC-6	Groundwater	8/27/2024 10:19:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
LCS1-258454		Aqueous	8/29/2024 12:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
PB-258454		Aqueous	8/29/2024 12:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM

			Prep Batch Report								
			Prep Start Date: 8/29/2024 8:20:00 AM				Technician: Kristy L Botteicher				
			Prep End Date: 8/29/2024 2:05:00 PM				Prep Factor Units:				
Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End		

G2408E91-001J	GWA-1A	Groundwater	8/26/2024 12:00:00 PM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E91-001JDUP			8/29/2024 12:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E91-002J	GWA-3A	Groundwater	8/26/2024 10:35:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E91-003J	GWC-2A	Groundwater	8/26/2024 3:47:00 PM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E91-004J	GWC-3A	Groundwater	8/26/2024 2:45:00 PM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E91-005J	GWC-7	Groundwater	8/26/2024 1:15:00 PM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-001D	GWB-1	Groundwater	8/27/2024 9:28:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-002E	GWC-11	Groundwater	8/27/2024 12:34:00 PM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-003E	GWC-4A	Groundwater	8/27/2024 11:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-004D	GWC-5A	Groundwater	8/27/2024 10:15:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E93  
Project: Live Oak 221A3

## Analytical QC Summary Report

G2408E93-004DMS			8/29/2024 12:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-005D	GWC-12	Groundwater	8/27/2024 11:28:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-006E	GWC-13A	Groundwater	8/27/2024 9:20:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-007D	GWC-6	Groundwater	8/27/2024 10:19:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
G2408E93-007DMS			8/29/2024 12:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
LCS2-258456			8/29/2024 12:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM
PB-258456			8/29/2024 12:00:00 AM	50	50		1.000	8/29/2024 8:20:00 AM	8/29/2024 2:05:00 PM

Client: LIVE OAK LANDFILL

WorkOrder: G2408E93

Project: Live Oak 221A3

## Analytical QC Summary Report

### Batch Reference Report

Client Samp ID	Test No	Batch ID
GWB-1	ASTM D1067-16	R309200
GWC-11	ASTM D1067-16	R309200
GWC-12	ASTM D1067-16	R309260
GWC-13A	ASTM D1067-16	R309200
GWC-4A	ASTM D1067-16	R309200
GWC-5A	ASTM D1067-16	R309260
GWC-6	ASTM D1067-16	R309200
GWB-1	EPA 300.0 Rev 2.1	258391
GWC-11	EPA 300.0 Rev 2.1	258391
GWC-12	EPA 300.0 Rev 2.1	258391
GWC-13A	EPA 300.0 Rev 2.1	258405
GWC-4A	EPA 300.0 Rev 2.1	258391
GWC-5A	EPA 300.0 Rev 2.1	258391
GWC-6	EPA 300.0 Rev 2.1	258405
GWB-1	EPA 350.1 Rev 2.0	R309213
GWC-11	EPA 350.1 Rev 2.0	R309213
GWC-12	EPA 350.1 Rev 2.0	R309213
GWC-13A	EPA 350.1 Rev 2.0	R309213
GWC-4A	EPA 350.1 Rev 2.0	R309213
GWC-5A	EPA 350.1 Rev 2.0	R309213
GWC-6	EPA 350.1 Rev 2.0	R309213
GWB-1	EPA 6010 D	258454
GWC-11	EPA 6010 D	258454
GWC-12	EPA 6010 D	258454

Client: LIVE OAK LANDFILL  
WorkOrder: G2408E93  
Project: Live Oak 221A3

## Analytical QC Summary Report

GWC-13A	EPA 6010 D	258454
GWC-4A	EPA 6010 D	258454
GWC-5A	EPA 6010 D	258454
GWC-6	EPA 6010 D	258454
GWB-1	EPA 6020 B	258456
GWC-11	EPA 6020 B	258456
GWC-12	EPA 6020 B	258456
GWC-13A	EPA 6020 B	258456
GWC-4A	EPA 6020 B	258456
GWC-5A	EPA 6020 B	258456
GWC-6	EPA 6020 B	258456
GWB-1	EPA 8260 D	R309237
GWC-11	EPA 8260 D	R309237
GWC-12	EPA 8260 D	R309237
GWC-13A	EPA 8260 D	R309237
GWC-4A	EPA 8260 D	R309237
GWC-5A	EPA 8260 D	R309237
GWC-6	EPA 8260 D	R309237
TB-02	EPA 8260 D	R309237

**Table I ON Qualifiers**

Qualifier	Description
<b>1</b>	Spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or greater.
<b>B</b>	Analyte detected in the associated method Blank.
<b>B1</b>	Dilution water blank exceeded method criterion.
<b>C1</b>	CCV recovery above the acceptance limits. Results may be biased high.
<b>C2</b>	CCV recovery below the acceptance limits. Results may be biased low.
<b>C3</b>	ICV recovery above the acceptance limits. Results may be biased high.
<b>C4</b>	ICV recovery below the acceptance limits. Results may be biased low.
<b>C5</b>	Positive values verified by second column confirmation.
<b>C6</b>	Confirmation analysis by another detector or chromatographic column was not performed.
<b>D1</b>	The analysis did not meet the minimum DO depletion of at least 2 mg/L.
<b>D2</b>	The analysis did not meet the minimum residual DO of at least 1 mg/L.
<b>D3</b>	Sample required dilution due to a matrix interference.
<b>D4</b>	Sample was diluted in the extraction steps due to marked matrix interferences.
<b>D5</b>	Sample required dilution due to a chloride interference.
<b>D6</b>	Sample was diluted and the reporting limits were raised to achieve method compliant internal standard recovery.
<b>D7</b>	Sample was digested at a dilution due to the formation of a post-digestion precipitate.
<b>D8</b>	Sample was digested at a dilution to achieve method compliant matrix spike recovery.
<b>D9</b>	Sample was digested at a dilution to meet method compliant digestion criteria.
<b>E</b>	Value above quantitation range.
<b>E2</b>	Unable to obtain a stable weight within specified limits due to sample matrix. Value is estimated.
<b>F1</b>	Fecal sample tested positive for residual chlorine.
<b>H</b>	Method Hold Time exceeded and is not compliant with 40CFR136 Table II.
<b>H1</b>	Due to under-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.
<b>H2</b>	Due to over-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.
<b>H3</b>	Sample was re-analyzed outside of hold time due to error during original analysis.
<b>H4</b>	The Nitrite result used to report Nitrate was analyzed past the 48-hour holding time.
<b>I1</b>	Internal standard recovery above method acceptance limits. Results are estimated.
<b>I2</b>	Internal standard recovery was below method acceptance limits. Results are estimated.
<b>IP</b>	One of the instrument performance checks ( ) did not meet the acceptance criteria.
<b>J</b>	Indicates an estimated value.

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## Analytical QC Summary Report

<b>L1</b>	LCS above the acceptance limits. Result may be biased high.
<b>L2</b>	LCS below the acceptance limits. Result may be biased low.
<b>L3</b>	Analyte was spiked into the LCS, but was not recovered.
<b>M1</b>	Matrix Spike recovery above the acceptance limits.
<b>M2</b>	Matrix Spike recovery below the acceptance limits.
<b>M4</b>	The matrix spike failed high for the surrogate.
<b>M5</b>	The matrix spike failed low for the surrogate.
<b>M6</b>	The reporting limits were raised due to sample matrix interference.
<b>M7</b>	Recovery for matrix spike could not be quantified due to matrix interference.
<b>M8</b>	Analyte was spiked into the MS, but was not recovered.
<b>M9</b>	Analyte concentration was determined by the method of standard addition (MSA).
<b>N1</b>	The lab does not hold accreditation from PA-DEP for this parameter by this method
<b>N2</b>	PADEP does not accredit labs for this analyte by this method.
<b>N3</b>	The lab is accredited for this method in West Virginia, but not in PA (its primary accrediting body).
<b>N4</b>	PADEP does not accredit labs for this analyte by this method in drinking water.
<b>ND</b>	Not Detected.
<b>O1</b>	The flashpoint tester cannot detect below 50 degrees F.
<b>O2</b>	Result is temperature of the sample when flame observed. No flash observed. Result qualified.
<b>O3</b>	The reporting limits were raised due to the high concentration of non-target compounds.
<b>O4</b>	Sample was received with headspace.
<b>O5</b>	Sample was received in incorrect container and is not compliant with 40CFR136 Table II.
<b>O6</b>	Insufficient sample volume was received to comply with the method.
<b>P1</b>	The pH of the sample was >2 and is not compliant with 40CFR136 Table II.
<b>P2</b>	Sample contained residual chlorine and is not compliant with 40CFR136 Table II
<b>P3</b>	The pH of the sample was <10 and is not compliant with 40CFR136 Table II.
<b>P4</b>	Field preservation does not meet EPA or method recommendations for this analysis.
<b>P5</b>	Acid preservation may not be appropriate for the analysis of 2-Chloroethylvinyl ether.
<b>P6</b>	Sample required additional preservative upon receipt.
<b>P7</b>	The sample was received unpreserved.
<b>P8</b>	The pH of the sample was < 9 and is not compliant with 40 CFR136 Table II.
<b>Q1</b>	Qualified Data See Case Narrative.
<b>R</b>	Relative Percent Difference (RPD) was above the control limit.
<b>R1</b>	RPD above control limits between matrix spike and MS duplicates.

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R2	RPD above the control limit between duplicates.
R3	RSD above the control limit between replicates.
R4	RPD above control limits between Inorganic Carbon check and spike.
R5	RPD above control limits between control sample and control sample duplicates.
S	Recovery for the spiked control sample outside accepted limits.
S2	Surrogate recovery in the blank was below the control limit.
S3	Surrogate recovery in the blank was above the control limit.
S4	Surrogate recovery in the LCS is above the control limit.
S5	Surrogate recovery in the LCS is below the control limit.
SR	Analyte recovery was outside the accepted recovery limits and above the control limit for RPD.
T	Sample temperature received outside the regulatory limit and is not compliant with 40CFR Part136 Table II (for NPW samples).
T1	Sample temperature received outside the regulatory limit. (Primarily for SCM samples).
T3	Target analyte found in trip/field blank.
TC	The MS tune check (tailing factor) did not meet the acceptance criteria.
U	The analyte was not detected at or above the listed concentration, which is below the laboratory quantitation limit.

**Note 1:** Other comments to clarify test results may be used. Examples include MCL (Contaminant Limit), and MDA (minimum detectable activity). The Q1 code requires additional qualifier information be described in the Case Narrative.

**Note 2:** NA is used in the Laboratory QC report as "Not Applicable."



Quality Assurance Project Report  
Prepared for  
LIVE OAK LANDFILL  
9/25/2024

David M. Glessner  
Quality Assurance Coordinator

### **Explanatory Notes**

1. Spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or greater.
2. Matrix Spike and MS Duplicates are sample specific controls and are not used to evaluate the analytical batch.
3. Laboratory duplicate. If one or both of the values is less than 5 times the PQL, the allowed difference is +/- the PQL.
4. "R" indicates a relative percent difference (RPD) was above the acceptance limit between duplicate QC samples or sample specific duplicates.

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WorkOrder: G2408F33  
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## Analytical QC Summary Report

SampleID: G2408F31-001FDUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125773				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	66	mg/L CaCO <sub>3</sub>	10						65	1.5%	20			
SampleID: G2408F09-003ADUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125833				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	86	mg/L CaCO <sub>3</sub>	10						87	1.2%	20			
SampleID: G2408F33-001ADUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125874				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	91	mg/L CaCO <sub>3</sub>	10						90	1.1%	20			
SampleID: G2408F49-002BDUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125911				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	157	mg/L CaCO <sub>3</sub>	10						155	1.3%	20			
SampleID: G2408F50-001ADUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125935				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	237	mg/L CaCO <sub>3</sub>	10						234	1.3%	20			
SampleID: ALK LCS		SampType: LCS		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125758				

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## Analytical QC Summary Report

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	49	mg/L CaCO3	10	47.5		103.2%	85	115				
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309260		
					<b>BatchID:</b> R309260					<b>Analysis Date:</b> 8/29/2024		<b>SeqNo:</b> 8125824
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	48	mg/L CaCO3	10	47.5		101.1%	85	115				
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309260		
					<b>BatchID:</b> R309260					<b>Analysis Date:</b> 8/29/2024		<b>SeqNo:</b> 8125866
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	48	mg/L CaCO3	10	47.5		101.1%	85	115				
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309260		
					<b>BatchID:</b> R309260					<b>Analysis Date:</b> 8/29/2024		<b>SeqNo:</b> 8125904
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	48	mg/L CaCO3	10	47.5		101.1%	85	115				
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309260		
					<b>BatchID:</b> R309260					<b>Analysis Date:</b> 8/29/2024		<b>SeqNo:</b> 8125926
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	48	mg/L CaCO3	10	47.5		101.1%	85	115				
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309260		
					<b>BatchID:</b> R309260					<b>Analysis Date:</b> 8/30/2024		<b>SeqNo:</b> 8125947
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	49	mg/L CaCO3	10	47.5		103.2%	85	115				

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F33  
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## Analytical QC Summary Report

SampleID: G2408F33-001CDUP		SampType: DUP		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480						Analysis Date: 8/29/2024			SeqNo: 8124923	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	2.77	mg/L	1						2.77	0.1%	20	
SampleID: HRQC-258480		SampType: HRQC		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480						Analysis Date: 8/29/2024			SeqNo: 8124915	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	242	mg/L	1	250		96.9%	90	110				
SampleID: HRQC 1000-258480		SampType: HRQC 1000		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480						Analysis Date: 8/29/2024			SeqNo: 8124918	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	980	mg/L	1	1000		98.0%	90	110				
SampleID: LFB-258480		SampType: LFB		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480						Analysis Date: 8/29/2024			SeqNo: 8124903	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	47.9	mg/L	1	50		95.8%	90	110				
SampleID: LFB2-258480		SampType: LFB2		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480						Analysis Date: 8/29/2024			SeqNo: 8124906	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	4.91	mg/L	1	5		98.1%	90	110				
SampleID: G2408F33-001CLFM		SampType: LFM		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480						Analysis Date: 8/29/2024			SeqNo: 8124925	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	17.6	mg/L	1	15	2.77	99.1%	80	120				

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## Analytical QC Summary Report

SampleID: LRB-258480		SampType: LRB		TestNo: EPA 300.0 Rev 2.1				Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480				Analysis Date: 8/29/2024				SeqNo: 8124908			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Chloride	< 1	mg/L	1										
SampleID: CB-258480		SampType: MBLK		TestNo: EPA 300.0 Rev 2.1				Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480				Analysis Date: 8/29/2024				SeqNo: 8124901			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Chloride	< 1	mg/L	1										
SampleID: QCS-258480		SampType: QCS		TestNo: EPA 300.0 Rev 2.1				Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480				Analysis Date: 8/29/2024				SeqNo: 8124913			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Chloride	22.7	mg/L	1	24		94.5%	90	110					
SampleID: G2408C61-002ADUP		SampType: DUP		TestNo: EPA 350.1 Rev 2.0				Prep Date:			RunNo: 309325		
		BatchID: R309325				Analysis Date: 9/3/2024				SeqNo: 8127499			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Ammonia Nitrogen	< 0.1	mg/L as N	0.1						0.0865		20		
SampleID: G2408C47-002BDUP		SampType: DUP		TestNo: EPA 350.1 Rev 2.0				Prep Date:			RunNo: 309325		
		BatchID: R309325				Analysis Date: 9/3/2024				SeqNo: 8127502			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Ammonia Nitrogen	0.599	mg/L as N	0.1						0.594	1.0%	20		
SampleID: G2408C44-002ADUP		SampType: DUP		TestNo: EPA 350.1 Rev 2.0				Prep Date:			RunNo: 309325		
		BatchID: R309325				Analysis Date: 9/3/2024				SeqNo: 8127504			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Ammonia Nitrogen	0.157	mg/L as N	0.1						0.149	4.9%	20		

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## Analytical QC Summary Report

SampleID: G2408F08-001BDUP		SampType: DUP		TestNo: EPA 350.1 Rev 2.0				Prep Date:				RunNo: 309325		
		BatchID: R309325				Analysis Date: 9/3/2024				SeqNo: 8127513				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Ammonia Nitrogen	0.304	mg/L as N	0.1						0.306	0.6%	20			
SampleID: LCS		SampType: LCS		TestNo: EPA 350.1 Rev 2.0				Prep Date:				RunNo: 309325		
		BatchID: R309325				Analysis Date: 9/3/2024				SeqNo: 8127472				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Ammonia Nitrogen	0.835	mg/L as N	0.1	0.82		101.8%	90	110						
SampleID: CCB		SampType: MBLK		TestNo: EPA 350.1 Rev 2.0				Prep Date:				RunNo: 309325		
		BatchID: R309325				Analysis Date: 9/3/2024				SeqNo: 8127470				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Ammonia Nitrogen	< 0.1	mg/L as N	0.1											
SampleID: G2408C61-002AMS		SampType: MS		TestNo: EPA 350.1 Rev 2.0				Prep Date:				RunNo: 309325		
		BatchID: R309325				Analysis Date: 9/3/2024				SeqNo: 8127500				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Ammonia Nitrogen	1.11	mg/L as N	0.1	1	0.0865	102.7%	90	110						
SampleID: G2408F08-001BMS		SampType: MS		TestNo: EPA 350.1 Rev 2.0				Prep Date:				RunNo: 309325		
		BatchID: R309325				Analysis Date: 9/3/2024				SeqNo: 8127514				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Ammonia Nitrogen	1.35	mg/L as N	0.1	1	0.306	104.6%	90	110						
SampleID: LCS1-258588		SampType: LCS1		TestNo: EPA 6010 D				Prep Date: 9/3/2024				RunNo: 309399		
		BatchID: 258588				Analysis Date: 9/4/2024				SeqNo: 8129284				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Potassium	9.67	mg/L	0.5	10		96.7%	79.5	120.4						

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WorkOrder: G2408F33

Project: Live Oak 221A3

## Analytical QC Summary Report

Sodium	9.89	mg/L	0.2	10		98.9%	79.5	120.4					
<b>SampleID:</b> PB-258588	<b>SampType:</b> PB			<b>TestNo:</b> EPA 6010 D			<b>Prep Date:</b> 9/3/2024			<b>RunNo:</b> 309399			
	<b>BatchID:</b> 258588						<b>Analysis Date:</b> 9/4/2024			<b>SeqNo:</b> 8129281			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Potassium	< 0.5	mg/L	0.5										
Sodium	< 0.2	mg/L	0.2										
<b>SampleID:</b> G2408F33-001DDUP	<b>SampType:</b> DUP			<b>TestNo:</b> EPA 6010 D			<b>Prep Date:</b> 9/3/2024			<b>RunNo:</b> 309399			
	<b>BatchID:</b> 258588						<b>Analysis Date:</b> 9/4/2024			<b>SeqNo:</b> 8129286			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Potassium	< 0.5	mg/L	0.5						0.24		20		
Sodium	5.84	mg/L	0.2						5.86	0.2%	20		
<b>SampleID:</b> G2408F33-001DMS	<b>SampType:</b> MS			<b>TestNo:</b> EPA 6010 D			<b>Prep Date:</b> 9/3/2024			<b>RunNo:</b> 309399			
	<b>BatchID:</b> 258588						<b>Analysis Date:</b> 9/4/2024			<b>SeqNo:</b> 8129287			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Potassium	9.82	mg/L	0.5	10	0.24	95.8%	75	125					
Sodium	15.4	mg/L	0.2	10	5.86	95.9%	75	125					
<b>SampleID:</b> G2408F44-003DMS	<b>SampType:</b> MS			<b>TestNo:</b> EPA 6010 D			<b>Prep Date:</b> 9/3/2024			<b>RunNo:</b> 309399			
	<b>BatchID:</b> 258588						<b>Analysis Date:</b> 9/4/2024			<b>SeqNo:</b> 8129301			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Potassium	10.4	mg/L	0.5	10	0.659	97.7%	75	125					
Sodium	23.2	mg/L	0.2	10	13.2	100.3%	75	125					
<b>SampleID:</b> LCS2-258590	<b>SampType:</b> LCS2			<b>TestNo:</b> EPA 6020 B			<b>Prep Date:</b> 9/3/2024			<b>RunNo:</b> 309443			
	<b>BatchID:</b> 258590						<b>Analysis Date:</b> 9/5/2024			<b>SeqNo:</b> 8130694			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Lead	4.97	µg/L	1	5		99.5%	79.5	120.45					

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F33  
Project: Live Oak 221A3

## Analytical QC Summary Report

SampleID: PB-258590		SampType: PB		TestNo: EPA 6020 B				Prep Date: 9/3/2024			RunNo: 309443		
		BatchID: 258590				Analysis Date: 9/5/2024				SeqNo: 8130692			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Lead	< 1	µg/L	1					0.2					
SampleID: G2408F33-001DDUP		SampType: DUP		TestNo: EPA 6020 B				Prep Date: 9/3/2024			RunNo: 309443		
		BatchID: 258590				Analysis Date: 9/5/2024				SeqNo: 8130698			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Lead	< 1	µg/L	1									20	
SampleID: G2408F44-002DMS		SampType: MS		TestNo: EPA 6020 B				Prep Date: 9/3/2024			RunNo: 309443		
		BatchID: 258590				Analysis Date: 9/5/2024				SeqNo: 8130747			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Lead	4.65	µg/L	1	5		93.0%	75	125					
SampleID: 20 PPB LCS		SampType: LCS		TestNo: EPA 8260 D				Prep Date:			RunNo: 309244		
		BatchID: R309244				Analysis Date: 8/29/2024				SeqNo: 8125320			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
1,1,1,2-Tetrachloroethane	20.5	µg/L	1	20		102.7%	81	125					
1,1,1-Trichloroethane	19.2	µg/L	1	20		95.9%	71	125					
1,1,2,2-Tetrachloroethane	19.9	µg/L	1	20		99.4%	80	116					
1,1,2-Trichloroethane	20.2	µg/L	1	20		100.8%	83	126					
1,1-Dichloroethane	18.2	µg/L	1	20		90.8%	73	122					
1,1-Dichloroethene	19	µg/L	1	20		95.1%	74	121					
1,2,3-Trichloropropane	19.3	µg/L	1	20		96.7%	77	118					
1,2-Dibromo-3-chloropropane	19.3	µg/L	5	20		96.7%	64	126					
1,2-Dibromoethane	20.1	µg/L	1	20		100.7%	83	119					
1,2-Dichlorobenzene	19.4	µg/L	1	20		96.8%	85	119					
1,2-Dichloroethane	19	µg/L	1	20		94.8%	72	123					
1,2-Dichloropropane	20.6	µg/L	1	20		103.1%	83	122					

Client: LIVE OAK LANDFILL

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## Analytical QC Summary Report

Chemical Name	Sample Value	Unit	QC 1	QC 20	QC %	Mean	SD	CV	Min	Max	Q1	Q3
1,4-Dichlorobenzene	19.4	µg/L	1	20	96.9%	83	120					
2-Butanone	18.8	µg/L	5	20	94.2%	61	125					
2-Hexanone	19.7	µg/L	5	20	98.5%	58	132					
4-Methyl-2-Pentanone	20	µg/L	1	20	100.1%	68	127					
Acetone	21.1	µg/L	10	20	105.3%	60	133					
Benzene	19.2	µg/L	1	20	96.2%	76	122					
Bromochloromethane	19.7	µg/L	1	20	98.5%	78	124					
Bromodichloromethane	20.9	µg/L	1	20	104.5%	71	138					
Bromoform	20.9	µg/L	1	20	104.6%	71	125					
Bromomethane	18.2	µg/L	1	20	90.9%	47	152					
Carbon Disulfide	19.2	µg/L	1	20	95.9%	63	123					
Carbon Tetrachloride	18.8	µg/L	1	20	94.2%	68	133					
Chlorobenzene	19.8	µg/L	1	20	99.0%	83	118					
Chlorodibromomethane	20.8	µg/L	1	20	104.0%	74	131					
Chloroethane	21.3	µg/L	1	20	106.3%	56	127					
Chloroform	19.1	µg/L	1	20	95.3%	73	123					
Chloromethane	19.3	µg/L	1	20	96.4%	65	129					
cis-1,2-Dichloroethene	19.6	µg/L	1	20	98.2%	75	121					
cis-1,3-Dichloropropene	19.3	µg/L	1	20	96.6%	71	129					
Dibromomethane	18.7	µg/L	1	20	93.6%	83	118					
Dichlorobromomethane	20.9	µg/L	1	20	104.5%	56	145					
Ethylbenzene	19.9	µg/L	1	20	99.7%	84	120					
Iodomethane	20.9	µg/L	5	20	104.4%	29	162					
Methyl Ethyl Ketone	18.8	µg/L	5	20	94.2%	72	131					
Methylene Chloride	20.1	µg/L	1	20	100.5%	73	133					
Styrene	20.7	µg/L	1	20	103.3%	88	116					
Tetrachloroethene	19.3	µg/L	1	20	96.4%	76	127					
Toluene	19.9	µg/L	1	20	99.7%	80	118					
trans-1,2-Dichloroethene	20.1	µg/L	1	20	100.4%	73	120					
trans-1,3-Dichloropropene	18.9	µg/L	1	20	94.3%	70	126					
trans-1,4-Dichloro-2-butene	19.8	µg/L	2	20	99.0%	46	137					
Tribromomethane	20.9	µg/L	1	20	104.6%	71	125					
Trichloroethene	19.8	µg/L	1	20	98.9%	73	123					
Trichlorofluoromethane	20.7	µg/L	1	20	103.6%	69	125					

Client: LIVE OAK LANDFILL

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## Analytical QC Summary Report

Trichloromethane	19.1	µg/L	1	20		95.3%	73	123				
Vinyl Acetate	19.6	µg/L	1	20		97.9%	67	131				
Vinyl Chloride	19.8	µg/L	1	20		99.1%	56	125				
Total Xylene	58.9	µg/L	2	60		98.2%	87	116				
Surr: 1,2-Dichloroethane-d4	28	µg/L	0	30		93.2%	70	130				
Surr: 4-Bromofluorobenzene	30.4	µg/L	0	30		101.4%	70	130				
Surr: Dibromofluoromethane	28.4	µg/L	0	30		94.7%	70	130				
Surr: Toluene-d8	30	µg/L	0	30		100.1%	70	130				

SampleID: BLANK	SampType: MBLK	TestNo: EPA 8260 D	Prep Date:	RunNo: 309244
		BatchID: R309244	Analysis Date: 8/29/2024	SeqNo: 8125352

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,1,1,2-Tetrachloroethane	< 1	µg/L	1									
1,1,1-Trichloroethane	< 1	µg/L	1									
1,1,2,2-Tetrachloroethane	< 1	µg/L	1									
1,1,2-Trichloroethane	< 1	µg/L	1									
1,1-Dichloroethane	< 1	µg/L	1									
1,1-Dichloroethene	< 1	µg/L	1									
1,2,3-Trichloropropane	< 1	µg/L	1									
1,2-Dibromo-3-chloropropane	< 5	µg/L	5									
1,2-Dibromoethane	< 1	µg/L	1									
1,2-Dichlorobenzene	< 1	µg/L	1									
1,2-Dichloroethane	< 1	µg/L	1									
1,2-Dichloropropane	< 1	µg/L	1									
1,4-Dichlorobenzene	< 1	µg/L	1									
2-Butanone	< 5	µg/L	5									
2-Hexanone	< 5	µg/L	5									
4-Methyl-2-Pentanone	< 1	µg/L	1									
Acetone	< 10	µg/L	10									
Benzene	< 1	µg/L	1									
Bromochloromethane	< 1	µg/L	1									
Bromodichloromethane	< 1	µg/L	1									
Bromoform	< 1	µg/L	1									

**Client:** LIVE OAK LANDFILL

WorkOrder: G2408F33

## Project: Live Oak 221A3

## Analytical QC Summary Report

Bromomethane	< 1	µg/L	1					
Carbon Disulfide	< 1	µg/L	1					
Carbon Tetrachloride	< 1	µg/L	1					
Chlorobenzene	< 1	µg/L	1					
Chlorodibromomethane	< 1	µg/L	1					
Chloroethane	< 1	µg/L	1					
Chloroform	< 1	µg/L	1					
Chloromethane	< 1	µg/L	1					
cis-1,2-Dichloroethene	< 1	µg/L	1					
cis-1,3-Dichloropropene	< 1	µg/L	1					
Dibromomethane	< 1	µg/L	1					
Dichlorobromomethane	< 1	µg/L	1					
Ethylbenzene	< 1	µg/L	1					
Iodomethane	< 5	µg/L	5					
Methyl Ethyl Ketone	< 5	µg/L	5					
Methylene Chloride	< 1	µg/L	1					
Styrene	< 1	µg/L	1					
Tetrachloroethene	< 1	µg/L	1					
Toluene	< 1	µg/L	1					
trans-1,2-Dichloroethene	< 1	µg/L	1					
trans-1,3-Dichloropropene	< 1	µg/L	1					
trans-1,4-Dichloro-2-butene	< 2	µg/L	2					
Tribromomethane	< 1	µg/L	1					
Trichloroethene	< 1	µg/L	1					
Trichlorofluoromethane	< 1	µg/L	1					
Trichloromethane	< 1	µg/L	1					
Vinyl Acetate	< 1	µg/L	1					
Vinyl Chloride	< 1	µg/L	1					
Total Xylene	< 2	µg/L	2					
Surr: 1,2-Dichloroethane-d4	29.2	µg/L	0	30	97.3%	70	130	
Surr: 4-Bromofluorobenzene	28.9	µg/L	0	30	96.5%	70	130	
Surr: Dibromofluoromethane	27.8	µg/L	0	30	92.8%	70	130	
Surr: Toluene-d8	30.6	µg/L	0	30	102.1%	70	130	

Client: LIVE OAK LANDFILL

WorkOrder: G2408F33

Project: Live Oak 221A3

## Analytical QC Summary Report

<b>SampleID:</b> G2408E87-005GMS	<b>SampType:</b> MS	<b>TestNo:</b> EPA 8260 D	<b>Prep Date:</b>	<b>RunNo:</b> 309244
		<b>BatchID:</b> R309244	<b>Analysis Date:</b> 8/29/2024	<b>SeqNo:</b> 8125328

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,1,1,2-Tetrachloroethane	20.2	µg/L	1	20		101.0%	76	117				
1,1,1-Trichloroethane	20.6	µg/L	1	20		103.1%	72	122				
1,1,2,2-Tetrachloroethane	19.4	µg/L	1	20		97.2%	72	110				
1,1,2-Trichloroethane	19.7	µg/L	1	20		98.3%	76	126				
1,1-Dichloroethane	19.3	µg/L	1	20		96.5%	66	126				
1,1-Dichloroethene	21.4	µg/L	1	20		106.8%	66	121				
1,2,3-Trichloropropane	19.1	µg/L	1	20		95.3%	72	112				
1,2-Dibromo-3-chloropropane	19.8	µg/L	5	20		99.0%	57	121				
1,2-Dibromoethane	19.6	µg/L	1	20		98.0%	75	113				
1,2-Dichlorobenzene	19.5	µg/L	1	20		97.4%	76	108				
1,2-Dichloroethane	18.8	µg/L	1	20		94.2%	69	116				
1,2-Dichloropropane	20.8	µg/L	1	20		103.8%	78	122				
1,4-Dichlorobenzene	19.5	µg/L	1	20		97.3%	70	121				
2-Butanone	17.9	µg/L	5	20		89.3%	59	118				
2-Hexanone	19.3	µg/L	5	20		96.5%	63	120				
4-Methyl-2-Pentanone	19.8	µg/L	1	20		99.2%	68	116				
Acetone	16	µg/L	10	20		79.8%	51	133				
Acrylonitrile	19	µg/L	5	20		94.9%	64	122				
Benzene	20	µg/L	1	20		100.0%	52	125				
Bromochloromethane	19.3	µg/L	1	20		96.3%	71	117				
Bromodichloromethane	21.5	µg/L	1	20		107.4%	68	132				
Bromoform	20.1	µg/L	1	20		100.5%	65	117				
Bromomethane	19.1	µg/L	1	20		95.7%	40	156				
Carbon Disulfide	21.4	µg/L	1	20		106.9%	60	123				
Carbon Tetrachloride	20.6	µg/L	1	20		103.0%	67	132				
Chlorobenzene	20	µg/L	1	20		100.2%	78	111				
Chlorodibromomethane	20.1	µg/L	1	20		100.3%	70	123				
Chloroethane	22	µg/L	1	20		110.0%	46	132				
Chloroform	19.3	µg/L	1	20		96.7%	69	117				

Client: LIVE OAK LANDFILL

WorkOrder: G2408F33

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## Analytical QC Summary Report

Chloromethane	21	µg/L	1	20		104.9%	51	129				
cis-1,2-Dichloroethene	19.9	µg/L	1	20		99.4%	71	117				
cis-1,3-Dichloropropene	19.9	µg/L	1	20		99.5%	71	117				
Dibromomethane	18	µg/L	1	20		90.2%	77	110				
Dichlorobromomethane	21.5	µg/L	1	20		107.4%	74	117				
Ethylbenzene	20.6	µg/L	1	20		103.2%	72	122				
Iodomethane	22	µg/L	5	20		109.9%	34	150				
Methyl Ethyl Ketone	17.9	µg/L	5	20		89.3%	59	121				
Methylene Chloride	19.1	µg/L	1	20		95.5%	64	121				
Styrene	20.5	µg/L	1	20		102.7%	78	117				
Tetrachloroethene	20.3	µg/L	1	20		101.3%	67	122				
Toluene	21	µg/L	1	20		105.2%	75	115				
trans-1,2-Dichloroethene	21.1	µg/L	1	20		105.6%	69	118				
trans-1,3-Dichloropropene	19.1	µg/L	1	20		95.5%	66	122				
trans-1,4-Dichloro-2-butene	20.1	µg/L	2	20		100.6%	46	131				
Tribromomethane	20.1	µg/L	1	20		100.5%	65	117				
Trichloroethene	21.2	µg/L	1	20		105.9%	75	117				
Trichlorofluoromethane	23.4	µg/L	1	20		116.9%	69	125				
Trichloromethane	19.3	µg/L	1	20		96.7%	69	117				
Vinyl Acetate	19	µg/L	1	20		94.9%	46	126				
Vinyl Chloride	22.3	µg/L	1	20		111.3%	54	128				
Total Xylene	60.8	µg/L	2	60		101.3%	72	120				
Surr: 1,2-Dichloroethane-d4	27.4	µg/L	0	30		91.4%	70	130				
Surr: 4-Bromofluorobenzene	30.2	µg/L	0	30		100.6%	70	130				
Surr: Dibromofluoromethane	28.5	µg/L	0	30		95.1%	70	130				
Surr: Toluene-d8	29.7	µg/L	0	30		98.9%	70	130				

SampleID: G2408E87-005GMSD	SampType: MSD	TestNo: EPA 8260 D	Prep Date:	RunNo: 309244
	BatchID: R309244		Analysis Date: 8/29/2024	SeqNo: 8125334

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,1,1,2-Tetrachloroethane	20.9	µg/L	1						20.2	3.3%	11	
1,1,1-Trichloroethane	22	µg/L	1						20.6	6.5%	12	
1,1,2,2-Tetrachloroethane	20	µg/L	1						19.4	2.8%	14	

Client: LIVE OAK LANDFILL

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## Analytical QC Summary Report

1,1,2-Trichloroethane	20.9	µg/L	1					19.7	6.1%	15	
1,1-Dichloroethane	20.2	µg/L	1					19.3	4.5%	12	
1,1-Dichloroethene	22.5	µg/L	1					21.4	5.3%	14	
1,2,3-Trichloropropane	19.8	µg/L	1					19.1	3.8%	14	
1,2-Dibromo-3-chloropropane	20.7	µg/L	5					19.8	4.6%	20	
1,2-Dibromoethane	20.6	µg/L	1					19.6	5.1%	17	
1,2-Dichlorobenzene	20.1	µg/L	1					19.5	3.4%	13	
1,2-Dichloroethane	19.7	µg/L	1					18.8	4.7%	11	
1,2-Dichloropropane	21.5	µg/L	1					20.8	3.4%	12	
1,4-Dichlorobenzene	20.1	µg/L	1					19.5	3.3%	16	
2-Butanone	17.5	µg/L	5					17.9	2.0%	23	
2-Hexanone	20.6	µg/L	5					19.3	6.5%	18	
4-Methyl-2-Pentanone	20.6	µg/L	1					19.8	3.8%	18	
Acetone	17.2	µg/L	10					16	7.4%	23	
Acrylonitrile	20	µg/L	5					19	5.3%	16	
Benzene	21.2	µg/L	1					20	6.0%	15	
Bromochloromethane	20.4	µg/L	1					19.3	5.5%	12	
Bromodichloromethane	22.3	µg/L	1					21.5	3.7%	18	
Bromoform	21.1	µg/L	1					20.1	4.8%	14	
Bromomethane	20.2	µg/L	1					19.1	5.3%	22	
Carbon Disulfide	22.3	µg/L	1					21.4	4.1%	13	
Carbon Tetrachloride	22.1	µg/L	1					20.6	7.0%	12	
Chlorobenzene	20.7	µg/L	1					20	3.0%	10	
Chlorodibromomethane	21.2	µg/L	1					20.1	5.7%	16	
Chloroethane	24.2	µg/L	1					22	9.7%	17	
Chloroform	20.7	µg/L	1					19.3	6.8%	13	
Chloromethane	22.2	µg/L	1					21	5.4%	16	
cis-1,2-Dichloroethene	21.1	µg/L	1					19.9	6.0%	12	
cis-1,3-Dichloropropene	20.8	µg/L	1					19.9	4.6%	16	
Dibromomethane	19.2	µg/L	1					18	6.3%	14	
Dichlorobromomethane	22.3	µg/L	1					21.5	3.7%	13	
Ethylbenzene	21.5	µg/L	1					20.6	4.2%	16	
Iodomethane	23.4	µg/L	5					22	6.2%	19	
Methyl Ethyl Ketone	17.5	µg/L	5					17.9	2.0%	21	

Client: LIVE OAK LANDFILL

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## Analytical QC Summary Report

Methylene Chloride	20.5	µg/L	1					19.1	7.0%	17	
Styrene	21	µg/L	1					20.5	2.3%	12	
Tetrachloroethene	21.1	µg/L	1					20.3	4.0%	16	
Toluene	21.9	µg/L	1					21	3.9%	13	
trans-1,2-Dichloroethene	22.7	µg/L	1					21.1	7.2%	13	
trans-1,3-Dichloropropene	19.9	µg/L	1					19.1	4.2%	15	
trans-1,4-Dichloro-2-butene	20.9	µg/L	2					20.1	4.0%	17	
Tribromomethane	21.1	µg/L	1					20.1	4.8%	14	
Trichloroethene	22.1	µg/L	1					21.2	4.1%	11	
Trichlorofluoromethane	24.7	µg/L	1					23.4	5.4%	15	
Trichloromethane	20.7	µg/L	1					19.3	6.8%	12	
Vinyl Acetate	20.4	µg/L	1					19	7.3%	11	
Vinyl Chloride	24	µg/L	1					22.3	7.5%	15	
Total Xylene	63.3	µg/L	2					60.8		18	
Surr: 1,2-Dichloroethane-d4	28	µg/L	0	30		93.4%	70	130	27.4		
Surr: 4-Bromofluorobenzene	30.5	µg/L	0	30		101.8%	70	130	30.2		
Surr: Dibromofluoromethane	29	µg/L	0	30		96.8%	70	130	28.5		
Surr: Toluene-d8	29.8	µg/L	0	30		99.4%	70	130	29.7		

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F33  
Project: Live Oak 221A3

## Analytical QC Summary Report

Prep Batch Report		Prep Start Date: 8/29/2024 4:23:00 PM						Technician: Adam C. Brown	
Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End
CB-258480		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:00:00 AM	8/29/2024 8:00:00 AM
G2408F32-001A	011	Aqueous	8/28/2024 12:30:00 PM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F33-001C	GWA-2A	Groundwater	8/26/2024 1:48:00 PM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F33-001CDUP		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F33-001CLFM		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F35-001C	GWC-10	Groundwater	8/27/2024 12:50:00 PM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F35-002C	GWC-14	Groundwater	8/26/2024 12:13:00 PM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F37-003C	GWC-8	Groundwater	8/28/2024 9:20:00 AM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F37-004C	GWC-9	Groundwater	8/28/2024 9:20:00 AM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F39-001C	Leach Day 1	Leachate	8/28/2024 11:00:00 AM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F78-001A	LDZ-3	Leachate	8/29/2024 11:02:00 AM	100	100		1.000	8/29/2024 4:23:00 PM	8/29/2024 4:23:00 PM
G2408F78-002A	LDZ-4	Leachate	8/29/2024 11:35:00 AM	100	100		1.000	8/29/2024 4:23:00 PM	8/29/2024 4:23:00 PM
G2408F78-003J	Leachate (LDZ)	Leachate	8/29/2024 12:00:00 PM	100	100		1.000	8/29/2024 4:23:00 PM	8/29/2024 4:23:00 PM
HRQC 1000-258480		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:00:00 AM	8/29/2024 8:00:00 AM
HRQC-258480		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:00:00 AM	8/29/2024 8:00:00 AM
IPC-258480		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:00:00 AM	8/29/2024 8:00:00 AM
LFB-258480		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:00:00 AM	8/29/2024 8:00:00 AM
LFB2-258480		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:00:00 AM	8/29/2024 8:00:00 AM
LRB-258480		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:00:00 AM	8/29/2024 8:00:00 AM
QCS-258480		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:00:00 AM	8/29/2024 8:00:00 AM

Prep Batch Report		Prep Start Date: 9/3/2024 8:00:00 AM						Technician: Kristy L Botteicher	
Prep Batch	Prep Code	Prep Start Date	Prep End Date	Technician	Prep Factor Units				
Prep Batch: 258588	Prep Code: MEPR6010_3010	Prep Start Date: 9/3/2024 8:00:00 AM	Prep End Date: 9/3/2024 1:45:00 PM	Technician: Kristy L Botteicher	Prep Factor Units: mL				

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F33  
Project: Live Oak 221A3

## Analytical QC Summary Report

Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End
G2408F24-001A	TCLP Metals RSWC-9-49-7	Solid	8/28/2024 10:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F24-002B	TCLP Blank RSWC-9-49-2	Solid	8/28/2024 10:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F33-001D	GWA-2A	Groundwater	8/26/2024 1:48:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F33-001DDUP		Aqueous	9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F33-001DMS		Aqueous	9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F35-001D	GWC-10	Groundwater	8/27/2024 12:50:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F35-002D	GWC-14	Groundwater	8/26/2024 12:13:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F37-003D	GWC-8	Groundwater	8/28/2024 9:20:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F37-004D	GWC-9	Groundwater	8/28/2024 9:20:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F42-001E	SWC-5	Surface Water	8/28/2024 1:10:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-001D	GWB-2	Groundwater	8/28/2024 10:47:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-002D	GWC-1A	Groundwater	8/28/2024 10:22:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-003D	GWC-1B	Groundwater	8/28/2024 10:08:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-003DMS		Aqueous	9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F54-001B	Williams Auburn	Solid	8/28/2024 9:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F63-001B	PGE 726 D	Solid	8/28/2024 8:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F65-001B		Solid	8/28/2024 7:30:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F67-001B	TC Energy	Solid	8/28/2024 7:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F71-001B	Highlands Antrim	Solid	8/28/2024 12:00:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F95-001A	TCLP Metals RSWC-9-49-9	Solid	8/29/2024 10:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2409007-001B	TCLP Blank RSWC-9-49-11	Solid	9/2/2024 10:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
LCS1-258588		Aqueous	9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
PB-258588		Aqueous	9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F33  
Project: Live Oak 221A3

## Analytical QC Summary Report

Prep Batch Report			Technician: Kristy L Botteicher						
Prep Start Date: 9/3/2024 8:00:00 AM			Prep Factor Units:						
Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End
G2408F33-001D	GWA-2A	Groundwater	8/26/2024 1:48:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F33-001DDUP			9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F35-001D	GWC-10	Groundwater	8/27/2024 12:50:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F35-002D	GWC-14	Groundwater	8/26/2024 12:13:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F37-001A	01FB	Aqueous	8/28/2024 10:50:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F37-003D	GWC-8	Groundwater	8/28/2024 9:20:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F37-004D	GWC-9	Groundwater	8/28/2024 9:20:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F42-001E	SWC-5	Surface Water	8/28/2024 1:10:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-001D	GWB-2	Groundwater	8/28/2024 10:47:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-002D	GWC-1A	Groundwater	8/28/2024 10:22:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-002DMS			9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-003D	GWC-1B	Groundwater	8/28/2024 10:08:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
LCS2-258590			9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
PB-258590			9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F33  
Project: Live Oak 221A3

## Analytical QC Summary Report

### Batch Reference Report

Client Samp ID	Test No	Batch ID
GWA-2A	ASTM D1067-16	R309260
GWA-2A	EPA 300.0 Rev 2.1	258480
GWA-2A	EPA 350.1 Rev 2.0	R309325
GWA-2A	EPA 6010 D	258588
GWA-2A	EPA 6020 B	258590
GWA-2A	EPA 8260 D	R309244

**Table I ON Qualifiers**

Qualifier	Description
<b>1</b>	Spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or greater.
<b>B</b>	Analyte detected in the associated method Blank.
<b>B1</b>	Dilution water blank exceeded method criterion.
<b>C1</b>	CCV recovery above the acceptance limits. Results may be biased high.
<b>C2</b>	CCV recovery below the acceptance limits. Results may be biased low.
<b>C3</b>	ICV recovery above the acceptance limits. Results may be biased high.
<b>C4</b>	ICV recovery below the acceptance limits. Results may be biased low.
<b>C5</b>	Positive values verified by second column confirmation.
<b>C6</b>	Confirmation analysis by another detector or chromatographic column was not performed.
<b>D1</b>	The analysis did not meet the minimum DO depletion of at least 2 mg/L.
<b>D2</b>	The analysis did not meet the minimum residual DO of at least 1 mg/L.
<b>D3</b>	Sample required dilution due to a matrix interference.
<b>D4</b>	Sample was diluted in the extraction steps due to marked matrix interferences.
<b>D5</b>	Sample required dilution due to a chloride interference.
<b>D6</b>	Sample was diluted and the reporting limits were raised to achieve method compliant internal standard recovery.
<b>D7</b>	Sample was digested at a dilution due to the formation of a post-digestion precipitate.
<b>D8</b>	Sample was digested at a dilution to achieve method compliant matrix spike recovery.
<b>D9</b>	Sample was digested at a dilution to meet method compliant digestion criteria.
<b>E</b>	Value above quantitation range.
<b>E2</b>	Unable to obtain a stable weight within specified limits due to sample matrix. Value is estimated.
<b>F1</b>	Fecal sample tested positive for residual chlorine.
<b>H</b>	Method Hold Time exceeded and is not compliant with 40CFR136 Table II.
<b>H1</b>	Due to under-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.
<b>H2</b>	Due to over-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.
<b>H3</b>	Sample was re-analyzed outside of hold time due to error during original analysis.
<b>H4</b>	The Nitrite result used to report Nitrate was analyzed past the 48-hour holding time.
<b>I1</b>	Internal standard recovery above method acceptance limits. Results are estimated.
<b>I2</b>	Internal standard recovery was below method acceptance limits. Results are estimated.
<b>IP</b>	One of the instrument performance checks ( ) did not meet the acceptance criteria.
<b>J</b>	Indicates an estimated value.

Client: LIVE OAK LANDFILL

WorkOrder: G2408F33

Project: Live Oak 221A3

## Analytical QC Summary Report

<b>L1</b>	LCS above the acceptance limits. Result may be biased high.
<b>L2</b>	LCS below the acceptance limits. Result may be biased low.
<b>L3</b>	Analyte was spiked into the LCS, but was not recovered.
<b>M1</b>	Matrix Spike recovery above the acceptance limits.
<b>M2</b>	Matrix Spike recovery below the acceptance limits.
<b>M4</b>	The matrix spike failed high for the surrogate.
<b>M5</b>	The matrix spike failed low for the surrogate.
<b>M6</b>	The reporting limits were raised due to sample matrix interference.
<b>M7</b>	Recovery for matrix spike could not be quantified due to matrix interference.
<b>M8</b>	Analyte was spiked into the MS, but was not recovered.
<b>M9</b>	Analyte concentration was determined by the method of standard addition (MSA).
<b>N1</b>	The lab does not hold accreditation from PA-DEP for this parameter by this method
<b>N2</b>	PADEP does not accredit labs for this analyte by this method.
<b>N3</b>	The lab is accredited for this method in West Virginia, but not in PA (its primary accrediting body).
<b>N4</b>	PADEP does not accredit labs for this analyte by this method in drinking water.
<b>ND</b>	Not Detected.
<b>O1</b>	The flashpoint tester cannot detect below 50 degrees F.
<b>O2</b>	Result is temperature of the sample when flame observed. No flash observed. Result qualified.
<b>O3</b>	The reporting limits were raised due to the high concentration of non-target compounds.
<b>O4</b>	Sample was received with headspace.
<b>O5</b>	Sample was received in incorrect container and is not compliant with 40CFR136 Table II.
<b>O6</b>	Insufficient sample volume was received to comply with the method.
<b>P1</b>	The pH of the sample was >2 and is not compliant with 40CFR136 Table II.
<b>P2</b>	Sample contained residual chlorine and is not compliant with 40CFR136 Table II
<b>P3</b>	The pH of the sample was <10 and is not compliant with 40CFR136 Table II.
<b>P4</b>	Field preservation does not meet EPA or method recommendations for this analysis.
<b>P5</b>	Acid preservation may not be appropriate for the analysis of 2-Chloroethylvinyl ether.
<b>P6</b>	Sample required additional preservative upon receipt.
<b>P7</b>	The sample was received unpreserved.
<b>P8</b>	The pH of the sample was < 9 and is not compliant with 40 CFR136 Table II.
<b>Q1</b>	Qualified Data See Case Narrative.
<b>R</b>	Relative Percent Difference (RPD) was above the control limit.
<b>R1</b>	RPD above control limits between matrix spike and MS duplicates.

Client: LIVE OAK LANDFILL

WorkOrder: G2408F33

Project: Live Oak 221A3

## Analytical QC Summary Report

R2	RPD above the control limit between duplicates.
R3	RSD above the control limit between replicates.
R4	RPD above control limits between Inorganic Carbon check and spike.
R5	RPD above control limits between control sample and control sample duplicates.
S	Recovery for the spiked control sample outside accepted limits.
S2	Surrogate recovery in the blank was below the control limit.
S3	Surrogate recovery in the blank was above the control limit.
S4	Surrogate recovery in the LCS is above the control limit.
S5	Surrogate recovery in the LCS is below the control limit.
SR	Analyte recovery was outside the accepted recovery limits and above the control limit for RPD.
T	Sample temperature received outside the regulatory limit and is not compliant with 40CFR Part136 Table II (for NPW samples).
T1	Sample temperature received outside the regulatory limit. (Primarily for SCM samples).
T3	Target analyte found in trip/field blank.
TC	The MS tune check (tailing factor) did not meet the acceptance criteria.
U	The analyte was not detected at or above the listed concentration, which is below the laboratory quantitation limit.

**Note 1:** Other comments to clarify test results may be used. Examples include MCL (Contaminant Limit), and MDA (minimum detectable activity). The Q1 code requires additional qualifier information be described in the Case Narrative.

**Note 2:** NA is used in the Laboratory QC report as "Not Applicable."



Quality Assurance Project Report  
Prepared for  
LIVE OAK LANDFILL  
9/25/2024

David M. Glessner  
Quality Assurance Coordinator

**Explanatory Notes**

1. Spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or greater.
2. Matrix Spike and MS Duplicates are sample specific controls and are not used to evaluate the analytical batch.
3. Laboratory duplicate. If one or both of the values is less than 5 times the PQL, the allowed difference is +/- the PQL.
4. "R" indicates a relative percent difference (RPD) was above the acceptance limit between duplicate QC samples or sample specific duplicates.

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F35  
Project: Live Oak 221A3(a)

## Analytical QC Summary Report

SampleID: G2408F31-001FDUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125773				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	66	mg/L CaCO <sub>3</sub>	10						65	1.5%	20			
SampleID: G2408F09-003ADUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125833				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	86	mg/L CaCO <sub>3</sub>	10						87	1.2%	20			
SampleID: G2408F33-001ADUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125874				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	91	mg/L CaCO <sub>3</sub>	10						90	1.1%	20			
SampleID: G2408F49-002BDUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125911				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	157	mg/L CaCO <sub>3</sub>	10						155	1.3%	20			
SampleID: G2408F50-001ADUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125935				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	237	mg/L CaCO <sub>3</sub>	10						234	1.3%	20			
SampleID: ALK LCS		SampType: LCS		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125758				

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F35  
Project: Live Oak 221A3(a)

## Analytical QC Summary Report

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	49	mg/L CaCO3	10	47.5		103.2%	85	115				
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309260		
					<b>BatchID:</b> R309260					<b>Analysis Date:</b> 8/29/2024		<b>SeqNo:</b> 8125824
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	48	mg/L CaCO3	10	47.5		101.1%	85	115				
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309260		
					<b>BatchID:</b> R309260					<b>Analysis Date:</b> 8/29/2024		<b>SeqNo:</b> 8125866
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	48	mg/L CaCO3	10	47.5		101.1%	85	115				
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309260		
					<b>BatchID:</b> R309260					<b>Analysis Date:</b> 8/29/2024		<b>SeqNo:</b> 8125904
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	48	mg/L CaCO3	10	47.5		101.1%	85	115				
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309260		
					<b>BatchID:</b> R309260					<b>Analysis Date:</b> 8/29/2024		<b>SeqNo:</b> 8125926
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	48	mg/L CaCO3	10	47.5		101.1%	85	115				
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309260		
					<b>BatchID:</b> R309260					<b>Analysis Date:</b> 8/30/2024		<b>SeqNo:</b> 8125947
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	49	mg/L CaCO3	10	47.5		103.2%	85	115				

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F35  
Project: Live Oak 221A3(a)

## Analytical QC Summary Report

SampleID: G2408F33-001CDUP		SampType: DUP		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480						Analysis Date: 8/29/2024			SeqNo: 8124923	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	2.77	mg/L	1						2.77	0.1%	20	
SampleID: HRQC-258480		SampType: HRQC		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480						Analysis Date: 8/29/2024			SeqNo: 8124915	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	242	mg/L	1	250		96.9%	90	110				
SampleID: HRQC 1000-258480		SampType: HRQC 1000		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480						Analysis Date: 8/29/2024			SeqNo: 8124918	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	980	mg/L	1	1000		98.0%	90	110				
SampleID: LFB-258480		SampType: LFB		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480						Analysis Date: 8/29/2024			SeqNo: 8124903	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	47.9	mg/L	1	50		95.8%	90	110				
SampleID: LFB2-258480		SampType: LFB2		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480						Analysis Date: 8/29/2024			SeqNo: 8124906	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	4.91	mg/L	1	5		98.1%	90	110				
SampleID: G2408F33-001CLFM		SampType: LFM		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480						Analysis Date: 8/29/2024			SeqNo: 8124925	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	17.6	mg/L	1	15	2.77	99.1%	80	120				

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F35  
Project: Live Oak 221A3(a)

## Analytical QC Summary Report

SampleID: LRB-258480		SampType: LRB		TestNo: EPA 300.0 Rev 2.1				Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480				Analysis Date: 8/29/2024				SeqNo: 8124908			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Chloride	< 1	mg/L	1										
SampleID: CB-258480		SampType: MBLK		TestNo: EPA 300.0 Rev 2.1				Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480				Analysis Date: 8/29/2024				SeqNo: 8124901			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Chloride	< 1	mg/L	1										
SampleID: QCS-258480		SampType: QCS		TestNo: EPA 300.0 Rev 2.1				Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480				Analysis Date: 8/29/2024				SeqNo: 8124913			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Chloride	22.7	mg/L	1	24		94.5%	90	110					
SampleID: G2408F35-001BDUP		SampType: DUP		TestNo: EPA 350.1 Rev 2.0				Prep Date:			RunNo: 309327		
		BatchID: R309327				Analysis Date: 9/3/2024				SeqNo: 8127528			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Ammonia Nitrogen	< 0.1	mg/L as N	0.1									20	
SampleID: G2408F44-001BDUP		SampType: DUP		TestNo: EPA 350.1 Rev 2.0				Prep Date:			RunNo: 309327		
		BatchID: R309327				Analysis Date: 9/3/2024				SeqNo: 8127544			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Ammonia Nitrogen	< 0.1	mg/L as N	0.1									20	
SampleID: LCS		SampType: LCS		TestNo: EPA 350.1 Rev 2.0				Prep Date:			RunNo: 309327		
		BatchID: R309327				Analysis Date: 9/3/2024				SeqNo: 8127526			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Ammonia Nitrogen	0.814	mg/L as N	0.1	0.82		99.2%	90	110					

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F35  
Project: Live Oak 221A3(a)

## Analytical QC Summary Report

SampleID: CCB		SampType: MBLK		TestNo: EPA 350.1 Rev 2.0				Prep Date:			RunNo: 309327		
		BatchID: R309327				Analysis Date: 9/3/2024				SeqNo: 8127524			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Ammonia Nitrogen	< 0.1	mg/L as N	0.1										
SampleID: G2408F35-001BMS		SampType: MS		TestNo: EPA 350.1 Rev 2.0				Prep Date:			RunNo: 309327		
		BatchID: R309327				Analysis Date: 9/3/2024				SeqNo: 8127529			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Ammonia Nitrogen	0.996	mg/L as N	0.1	1		99.6%	90	110					
SampleID: G2408F44-001BMS		SampType: MS		TestNo: EPA 350.1 Rev 2.0				Prep Date:			RunNo: 309327		
		BatchID: R309327				Analysis Date: 9/3/2024				SeqNo: 8127545			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Ammonia Nitrogen	1.04	mg/L as N	0.1	1		104.1%	90	110					
SampleID: LCS1-258588		SampType: LCS1		TestNo: EPA 6010 D				Prep Date: 9/3/2024			RunNo: 309399		
		BatchID: 258588				Analysis Date: 9/4/2024				SeqNo: 8129284			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Barium	0.983	mg/L	0.01	1		98.3%	79.5	120.4					
Beryllium	0.197	mg/L	0.001	0.2		98.4%	79.5	120.4					
Cobalt	0.394	mg/L	0.005	0.4		98.5%	79.5	120.4					
Nickel	0.967	mg/L	0.01	1		96.7%	79.5	120.4					
Potassium	9.67	mg/L	0.5	10		96.7%	79.5	120.4					
Sodium	9.89	mg/L	0.2	10		98.9%	79.5	120.4					
Vanadium	0.387	mg/L	0.005	0.4		96.8%	79.5	120.4					
Zinc	0.984	mg/L	0.01	1		98.4%	79.5	120.4					
SampleID: PB-258588		SampType: PB		TestNo: EPA 6010 D				Prep Date: 9/3/2024			RunNo: 309399		
		BatchID: 258588				Analysis Date: 9/4/2024				SeqNo: 8129281			

Client: LIVE OAK LANDFILL

WorkOrder: G2408F35

Project: Live Oak 221A3(a)

## Analytical QC Summary Report

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Barium	< 0.01	mg/L	0.01									
Beryllium	< 0.001	mg/L	0.001									
Cobalt	< 0.005	mg/L	0.005									
Nickel	< 0.01	mg/L	0.01									
Potassium	< 0.5	mg/L	0.5									
Sodium	< 0.2	mg/L	0.2									
Vanadium	< 0.005	mg/L	0.005									
Zinc	< 0.01	mg/L	0.01									

SampleID: G2408F33-001DDUP	SampType: DUP	TestNo: EPA 6010 D	Prep Date: 9/3/2024	RunNo: 309399
	BatchID: 258588		Analysis Date: 9/4/2024	SeqNo: 8129286

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Barium	0.0143	mg/L	0.01						0.0142	0.7%	20	
Beryllium	< 0.001	mg/L	0.001								20	
Cobalt	< 0.005	mg/L	0.005								20	
Nickel	< 0.01	mg/L	0.01								20	
Potassium	< 0.5	mg/L	0.5						0.24		20	
Sodium	5.84	mg/L	0.2						5.86	0.2%	20	
Vanadium	0.0126	mg/L	0.005						0.0127	0.8%	20	
Zinc	< 0.01	mg/L	0.01								20	

SampleID: G2408F33-001DMS	SampType: MS	TestNo: EPA 6010 D	Prep Date: 9/3/2024	RunNo: 309399
	BatchID: 258588		Analysis Date: 9/4/2024	SeqNo: 8129287

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Barium	0.992	mg/L	0.01	1	0.0142	97.8%	75	125				
Beryllium	0.194	mg/L	0.001	0.2		97.1%	75	125				
Cobalt	0.384	mg/L	0.005	0.4		95.9%	75	125				
Nickel	0.936	mg/L	0.01	1		93.6%	75	125				
Potassium	9.82	mg/L	0.5	10	0.24	95.8%	75	125				
Sodium	15.4	mg/L	0.2	10	5.86	95.9%	75	125				
Vanadium	0.398	mg/L	0.005	0.4	0.0127	96.4%	75	125				

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F35  
Project: Live Oak 221A3(a)

## Analytical QC Summary Report

Zinc	0.972	mg/L	0.01	1		97.2%	75	125					
<b>SampleID:</b> G2408F44-003DMS			<b>SampType:</b> MS		<b>TestNo:</b> EPA 6010 D			<b>Prep Date:</b> 9/3/2024			<b>RunNo:</b> 309399		
				<b>BatchID:</b> 258588				<b>Analysis Date:</b> 9/4/2024				<b>SeqNo:</b> 8129301	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Barium	1.08	mg/L	0.01	1	0.0647	101.6%	75	125					
Beryllium	0.196	mg/L	0.001	0.2		98.0%	75	125					
Cobalt	0.386	mg/L	0.005	0.4		96.6%	75	125					
Nickel	0.954	mg/L	0.01	1	0.0097	94.4%	75	125					
Potassium	10.4	mg/L	0.5	10	0.659	97.7%	75	125					
Sodium	23.2	mg/L	0.2	10	13.2	100.3%	75	125					
Vanadium	0.416	mg/L	0.005	0.4	0.0188	99.3%	75	125					
Zinc	0.996	mg/L	0.01	1		99.6%	75	125					
<b>SampleID:</b> LCS2-258590			<b>SampType:</b> LCS2		<b>TestNo:</b> EPA 6020 B			<b>Prep Date:</b> 9/3/2024			<b>RunNo:</b> 309443		
				<b>BatchID:</b> 258590				<b>Analysis Date:</b> 9/5/2024				<b>SeqNo:</b> 8130694	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Antimony	6.08	µg/L	1	6		101.4%	79.5	120.45					
Arsenic	9.66	µg/L	1	10		96.6%	79.5	120.45					
Cadmium	4.74	µg/L	0.2	5		94.7%	79.5	120.45					
Chromium	51.5	µg/L	2	50		103.0%	79.5	120.45					
Copper	51.4	µg/L	1	50		102.8%	79.5	120.45					
Lead	4.97	µg/L	1	5		99.5%	79.5	120.45					
Selenium	18.5	µg/L	1	20		92.3%	79.5	120.45					
Silver	5.29	µg/L	0.2	5		105.8%	79.5	120.45					
Thallium	1.98	µg/L	0.2	2		99.2%	79.5	120.45					
<b>SampleID:</b> PB-258590			<b>SampType:</b> PB		<b>TestNo:</b> EPA 6020 B			<b>Prep Date:</b> 9/3/2024			<b>RunNo:</b> 309443		
				<b>BatchID:</b> 258590				<b>Analysis Date:</b> 9/5/2024				<b>SeqNo:</b> 8130692	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Antimony	< 1	µg/L	1					0.5					

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F35  
Project: Live Oak 221A3(a)

## Analytical QC Summary Report

Arsenic	< 1	µg/L	1					0.5				
Cadmium	< 0.2	µg/L	0.2					0.1				
Chromium	< 2	µg/L	2					0.5				
Copper	< 1	µg/L	1					0.5				
Lead	< 1	µg/L	1					0.2				
Selenium	< 1	µg/L	1					0.5				
Silver	< 0.2	µg/L	0.2					0.1				
Thallium	< 0.2	µg/L	0.2					0.1				

SampleID: G2408F33-001DDUP	SampType: DUP	TestNo: EPA 6020 B	Prep Date: 9/3/2024	RunNo: 309443
	BatchID: 258590		Analysis Date: 9/5/2024	SeqNo: 8130698

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Antimony	< 1	µg/L	1							20		
Arsenic	< 1	µg/L	1							20		
Cadmium	< 0.2	µg/L	0.2							20		
Chromium	25.4	µg/L	2					26.1	2.9%	20		
Copper	< 1	µg/L	1					0.61		20		
Lead	< 1	µg/L	1							20		
Selenium	< 1	µg/L	1							20		
Silver	< 0.2	µg/L	0.2							20		
Thallium	< 0.2	µg/L	0.2							20		

SampleID: G2408F44-002DMS	SampType: MS	TestNo: EPA 6020 B	Prep Date: 9/3/2024	RunNo: 309443
	BatchID: 258590		Analysis Date: 9/5/2024	SeqNo: 8130747

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Antimony	5.99	µg/L	1	6		99.8%	75	125				
Arsenic	8.88	µg/L	1	10		88.8%	75	125				
Cadmium	5.48	µg/L	0.2	5		109.6%	75	125				
Chromium	54.1	µg/L	2	50	2.31	103.5%	75	125				
Copper	51.2	µg/L	1	50		102.4%	75	125				
Lead	4.65	µg/L	1	5		93.0%	75	125				
Selenium	18.1	µg/L	1	20		90.4%	75	125				

Client: LIVE OAK LANDFILL

WorkOrder: G2408F35

Project: Live Oak 221A3(a)

## Analytical QC Summary Report

Silver	5.18	µg/L	0.2	5		103.6%	75	125					
Thallium	2.01	µg/L	0.2	2		100.4%	75	125					
<b>SampleID:</b> 20 PPB LCS			<b>SampType:</b> LCS			<b>TestNo:</b> EPA 8260 D			<b>Prep Date:</b>			<b>RunNo:</b> 309244	
			<b>BatchID:</b> R309244						<b>Analysis Date:</b> 8/29/2024			<b>SeqNo:</b> 8125320	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
1,1,1,2-Tetrachloroethane	20.5	µg/L	1	20		102.7%	81	125					
1,1,1-Trichloroethane	19.2	µg/L	1	20		95.9%	71	125					
1,1,2,2-Tetrachloroethane	19.9	µg/L	1	20		99.4%	80	116					
1,1,2-Trichloroethane	20.2	µg/L	1	20		100.8%	83	126					
1,1-Dichloroethane	18.2	µg/L	1	20		90.8%	73	122					
1,1-Dichloroethene	19	µg/L	1	20		95.1%	74	121					
1,2,3-Trichloropropane	19.3	µg/L	1	20		96.7%	77	118					
1,2-Dibromo-3-chloropropane	19.3	µg/L	5	20		96.7%	64	126					
1,2-Dibromoethane	20.1	µg/L	1	20		100.7%	83	119					
1,2-Dichlorobenzene	19.4	µg/L	1	20		96.8%	85	119					
1,2-Dichloroethane	19	µg/L	1	20		94.8%	72	123					
1,2-Dichloropropane	20.6	µg/L	1	20		103.1%	83	122					
1,4-Dichlorobenzene	19.4	µg/L	1	20		96.9%	83	120					
2-Butanone	18.8	µg/L	5	20		94.2%	61	125					
2-Hexanone	19.7	µg/L	5	20		98.5%	58	132					
4-Methyl-2-Pentanone	20	µg/L	1	20		100.1%	68	127					
Acetone	21.1	µg/L	10	20		105.3%	60	133					
Benzene	19.2	µg/L	1	20		96.2%	76	122					
Bromochloromethane	19.7	µg/L	1	20		98.5%	78	124					
Bromodichloromethane	20.9	µg/L	1	20		104.5%	71	138					
Bromoform	20.9	µg/L	1	20		104.6%	71	125					
Bromomethane	18.2	µg/L	1	20		90.9%	47	152					
Carbon Disulfide	19.2	µg/L	1	20		95.9%	63	123					
Carbon Tetrachloride	18.8	µg/L	1	20		94.2%	68	133					
Chlorobenzene	19.8	µg/L	1	20		99.0%	83	118					
Chlorodibromomethane	20.8	µg/L	1	20		104.0%	74	131					
Chloroethane	21.3	µg/L	1	20		106.3%	56	127					

Client: LIVE OAK LANDFILL

WorkOrder: G2408F35

Project: Live Oak 221A3(a)

## Analytical QC Summary Report

Chloroform	19.1	µg/L	1	20		95.3%	73	123					
Chloromethane	19.3	µg/L	1	20		96.4%	65	129					
cis-1,2-Dichloroethene	19.6	µg/L	1	20		98.2%	75	121					
cis-1,3-Dichloropropene	19.3	µg/L	1	20		96.6%	71	129					
Dibromomethane	18.7	µg/L	1	20		93.6%	83	118					
Dichlorobromomethane	20.9	µg/L	1	20		104.5%	56	145					
Ethylbenzene	19.9	µg/L	1	20		99.7%	84	120					
Iodomethane	20.9	µg/L	5	20		104.4%	29	162					
Methyl Ethyl Ketone	18.8	µg/L	5	20		94.2%	72	131					
Methylene Chloride	20.1	µg/L	1	20		100.5%	73	133					
Styrene	20.7	µg/L	1	20		103.3%	88	116					
Tetrachloroethene	19.3	µg/L	1	20		96.4%	76	127					
Toluene	19.9	µg/L	1	20		99.7%	80	118					
trans-1,2-Dichloroethene	20.1	µg/L	1	20		100.4%	73	120					
trans-1,3-Dichloropropene	18.9	µg/L	1	20		94.3%	70	126					
trans-1,4-Dichloro-2-butene	19.8	µg/L	2	20		99.0%	46	137					
Tribromomethane	20.9	µg/L	1	20		104.6%	71	125					
Trichloroethene	19.8	µg/L	1	20		98.9%	73	123					
Trichlorofluoromethane	20.7	µg/L	1	20		103.6%	69	125					
Trichloromethane	19.1	µg/L	1	20		95.3%	73	123					
Vinyl Acetate	19.6	µg/L	1	20		97.9%	67	131					
Vinyl Chloride	19.8	µg/L	1	20		99.1%	56	125					
Total Xylene	58.9	µg/L	2	60		98.2%	87	116					
Surr: 1,2-Dichloroethane-d4	28	µg/L	0	30		93.2%	70	130					
Surr: 4-Bromofluorobenzene	30.4	µg/L	0	30		101.4%	70	130					
Surr: Dibromofluoromethane	28.4	µg/L	0	30		94.7%	70	130					
Surr: Toluene-d8	30	µg/L	0	30		100.1%	70	130					

SampleID: 20 PPB LCS

SampType: LCS

TestNo: EPA 8260 D

Prep Date:

RunNo: 309263

BatchID: R309263

Analysis Date: 8/29/2024

SeqNo: 8126048

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,1,1,2-Tetrachloroethane	20.7	µg/L	1	20		103.7%	81	125				
1,1,1-Trichloroethane	19.6	µg/L	1	20		97.8%	71	125				

Client: LIVE OAK LANDFILL

WorkOrder: G2408F35

Project: Live Oak 221A3(a)

## Analytical QC Summary Report

1,1,2,2-Tetrachloroethane	20.3	µg/L	1	20		101.6%	80	116				
1,1,2-Trichloroethane	20.5	µg/L	1	20		102.5%	83	126				
1,1-Dichloroethane	19	µg/L	1	20		94.8%	73	122				
1,1-Dichloroethene	20	µg/L	1	20		100.0%	74	121				
1,2,3-Trichloropropane	19.5	µg/L	1	20		97.4%	77	118				
1,2-Dibromo-3-chloropropane	22.4	µg/L	5	20		111.8%	64	126				
1,2-Dibromoethane	20.4	µg/L	1	20		102.0%	83	119				
1,2-Dichlorobenzene	19.8	µg/L	1	20		99.0%	85	119				
1,2-Dichloroethane	19.7	µg/L	1	20		98.7%	72	123				
1,2-Dichloropropane	21.1	µg/L	1	20		105.4%	83	122				
1,4-Dichlorobenzene	19.3	µg/L	1	20		96.6%	83	120				
2-Butanone	19.7	µg/L	5	20		98.6%	61	125				
2-Hexanone	21.1	µg/L	5	20		105.4%	58	132				
4-Methyl-2-Pentanone	21.1	µg/L	1	20		105.4%	68	127				
Acetone	21.4	µg/L	10	20		107.0%	60	133				
Benzene	19.9	µg/L	1	20		99.5%	76	122				
Bromochloromethane	20.3	µg/L	1	20		101.3%	78	124				
Bromodichloromethane	21.8	µg/L	1	20		109.1%	71	138				
Bromoform	21.1	µg/L	1	20		105.7%	71	125				
Bromomethane	18.8	µg/L	1	20		94.2%	47	152				
Carbon Disulfide	19.7	µg/L	1	20		98.3%	63	123				
Carbon Tetrachloride	19.4	µg/L	1	20		96.8%	68	133				
Chlorobenzene	20	µg/L	1	20		100.0%	83	118				
Chlorodibromomethane	21.2	µg/L	1	20		106.2%	74	131				
Chloroethane	22.7	µg/L	1	20		113.4%	56	127				
Chloroform	19.5	µg/L	1	20		97.5%	73	123				
Chloromethane	20.4	µg/L	1	20		102.2%	65	129				
cis-1,2-Dichloroethene	20	µg/L	1	20		99.8%	75	121				
cis-1,3-Dichloropropene	19.9	µg/L	1	20		99.4%	71	129				
Dibromomethane	19.2	µg/L	1	20		95.8%	83	118				
Dichlorobromomethane	21.8	µg/L	1	20		109.1%	56	145				
Ethylbenzene	20.1	µg/L	1	20		100.7%	84	120				
Iodomethane	21.5	µg/L	5	20		107.7%	29	162				
Methyl Ethyl Ketone	19.7	µg/L	5	20		98.6%	72	131				

Client: LIVE OAK LANDFILL

WorkOrder: G2408F35

Project: Live Oak 221A3(a)

## Analytical QC Summary Report

Methylene Chloride	20	µg/L	1	20		100.2%	73	133				
Styrene	20.9	µg/L	1	20		104.3%	88	116				
Tetrachloroethene	21	µg/L	1	20		104.8%	76	127				
Toluene	20.8	µg/L	1	20		103.8%	80	118				
trans-1,2-Dichloroethene	20.6	µg/L	1	20		102.8%	73	120				
trans-1,3-Dichloropropene	19.1	µg/L	1	20		95.7%	70	126				
trans-1,4-Dichloro-2-butene	19.6	µg/L	2	20		98.0%	46	137				
Tribromomethane	21.1	µg/L	1	20		105.7%	71	125				
Trichloroethene	20.5	µg/L	1	20		102.4%	73	123				
Trichlorofluoromethane	21.3	µg/L	1	20		106.7%	69	125				
Trichloromethane	19.5	µg/L	1	20		97.5%	73	123				
Vinyl Acetate	20	µg/L	1	20		100.1%	67	131				
Vinyl Chloride	20.6	µg/L	1	20		103.2%	56	125				
Total Xylene	59.7	µg/L	2	60		99.5%	87	116				
Surr: 1,2-Dichloroethane-d4	27.8	µg/L	0	30		92.5%	70	130				
Surr: 4-Bromofluorobenzene	29.7	µg/L	0	30		99.1%	70	130				
Surr: Dibromofluoromethane	29.1	µg/L	0	30		97.0%	70	130				
Surr: Toluene-d8	29.9	µg/L	0	30		99.6%	70	130				

SampleID: BLANK	SampType: MBLK	TestNo: EPA 8260 D	Prep Date:	RunNo: 309244
	BatchID: R309244		Analysis Date: 8/29/2024	SeqNo: 8125352

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,1,1,2-Tetrachloroethane	< 1	µg/L	1									
1,1,1-Trichloroethane	< 1	µg/L	1									
1,1,2,2-Tetrachloroethane	< 1	µg/L	1									
1,1,2-Trichloroethane	< 1	µg/L	1									
1,1-Dichloroethane	< 1	µg/L	1									
1,1-Dichloroethene	< 1	µg/L	1									
1,2,3-Trichloropropane	< 1	µg/L	1									
1,2-Dibromo-3-chloropropane	< 5	µg/L	5									
1,2-Dibromoethane	< 1	µg/L	1									
1,2-Dichlorobenzene	< 1	µg/L	1									
1,2-Dichloroethane	< 1	µg/L	1									

**Client:** LIVE OAK LANDFILL

WorkOrder: G2408F35

## Project: Live Oak 221A3(a)

## Analytical QC Summary Report

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F35  
Project: Live Oak 221A3(a)

## Analytical QC Summary Report

Trichlorofluoromethane	< 1	µg/L	1									
Trichloromethane	< 1	µg/L	1									
Vinyl Acetate	< 1	µg/L	1									
Vinyl Chloride	< 1	µg/L	1									
Total Xylene	< 2	µg/L	2									
Surr: 1,2-Dichloroethane-d4	29.2	µg/L	0	30		97.3%	70	130				
Surr: 4-Bromofluorobenzene	28.9	µg/L	0	30		96.5%	70	130				
Surr: Dibromofluoromethane	27.8	µg/L	0	30		92.8%	70	130				
Surr: Toluene-d8	30.6	µg/L	0	30		102.1%	70	130				

SampleID: BLANK	SampType: MBLK	TestNo: EPA 8260 D	Prep Date:	RunNo: 309263
		BatchID: R309263	Analysis Date: 8/29/2024	SeqNo: 8126051

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,1,1,2-Tetrachloroethane	< 1	µg/L	1									
1,1,1-Trichloroethane	< 1	µg/L	1									
1,1,2,2-Tetrachloroethane	< 1	µg/L	1									
1,1,2-Trichloroethane	< 1	µg/L	1									
1,1-Dichloroethane	< 1	µg/L	1									
1,1-Dichloroethene	< 1	µg/L	1									
1,2,3-Trichloropropane	< 1	µg/L	1									
1,2-Dibromo-3-chloropropane	< 5	µg/L	5									
1,2-Dibromoethane	< 1	µg/L	1									
1,2-Dichlorobenzene	< 1	µg/L	1									
1,2-Dichloroethane	< 1	µg/L	1									
1,2-Dichloropropane	< 1	µg/L	1									
1,4-Dichlorobenzene	< 1	µg/L	1									
2-Butanone	< 5	µg/L	5									
2-Hexanone	< 5	µg/L	5									
4-Methyl-2-Pentanone	< 1	µg/L	1									
Acetone	< 10	µg/L	10									
Benzene	< 1	µg/L	1									
Bromochloromethane	< 1	µg/L	1									
Bromodichloromethane	< 1	µg/L	1									

Client: LIVE OAK LANDFILL

WorkOrder: G2408F35

## Project: Live Oak 221A3(a)

## Analytical QC Summary Report

Bromoform	< 1	µg/L	1					
Bromomethane	< 1	µg/L	1					
Carbon Disulfide	< 1	µg/L	1					
Carbon Tetrachloride	< 1	µg/L	1					
Chlorobenzene	< 1	µg/L	1					
Chlorodibromomethane	< 1	µg/L	1					
Chloroethane	< 1	µg/L	1					
Chloroform	< 1	µg/L	1					
Chloromethane	< 1	µg/L	1					
cis-1,2-Dichloroethene	< 1	µg/L	1					
cis-1,3-Dichloropropene	< 1	µg/L	1					
Dibromomethane	< 1	µg/L	1					
Dichlorobromomethane	< 1	µg/L	1					
Ethylbenzene	< 1	µg/L	1					
Iodomethane	< 5	µg/L	5					
Methyl Ethyl Ketone	< 5	µg/L	5					
Methylene Chloride	< 1	µg/L	1					
Styrene	< 1	µg/L	1					
Tetrachloroethene	< 1	µg/L	1					
Toluene	< 1	µg/L	1					
trans-1,2-Dichloroethene	< 1	µg/L	1					
trans-1,3-Dichloropropene	< 1	µg/L	1					
trans-1,4-Dichloro-2-butene	< 2	µg/L	2					
Tribromomethane	< 1	µg/L	1					
Trichloroethene	< 1	µg/L	1					
Trichlorofluoromethane	< 1	µg/L	1					
Trichloromethane	< 1	µg/L	1					
Vinyl Acetate	< 1	µg/L	1					
Vinyl Chloride	< 1	µg/L	1					
Total Xylene	< 2	µg/L	2					
Surr: 1,2-Dichloroethane-d4	29.9	µg/L	0	30		99.7%	70	130
Surr: 4-Bromofluorobenzene	29.1	µg/L	0	30		97.0%	70	130
Surr: Dibromofluoromethane	28.1	µg/L	0	30		93.5%	70	130
Surr: Toluene-d8	30.7	µg/L	0	30		102.3%	70	130

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F35  
Project: Live Oak 221A3(a)

## Analytical QC Summary Report

<b>SampleID:</b> G2408E87-005GMS	<b>SampType:</b> MS	<b>TestNo:</b> EPA 8260 D	<b>Prep Date:</b>	<b>RunNo:</b> 309244
		<b>BatchID:</b> R309244	<b>Analysis Date:</b> 8/29/2024	<b>SeqNo:</b> 8125328

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,1,1,2-Tetrachloroethane	20.2	µg/L	1	20		101.0%	76	117				
1,1,1-Trichloroethane	20.6	µg/L	1	20		103.1%	72	122				
1,1,2,2-Tetrachloroethane	19.4	µg/L	1	20		97.2%	72	110				
1,1,2-Trichloroethane	19.7	µg/L	1	20		98.3%	76	126				
1,1-Dichloroethane	19.3	µg/L	1	20		96.5%	66	126				
1,1-Dichloroethene	21.4	µg/L	1	20		106.8%	66	121				
1,2,3-Trichloropropane	19.1	µg/L	1	20		95.3%	72	112				
1,2-Dibromo-3-chloropropane	19.8	µg/L	5	20		99.0%	57	121				
1,2-Dibromoethane	19.6	µg/L	1	20		98.0%	75	113				
1,2-Dichlorobenzene	19.5	µg/L	1	20		97.4%	76	108				
1,2-Dichloroethane	18.8	µg/L	1	20		94.2%	69	116				
1,2-Dichloropropane	20.8	µg/L	1	20		103.8%	78	122				
1,4-Dichlorobenzene	19.5	µg/L	1	20		97.3%	70	121				
2-Butanone	17.9	µg/L	5	20		89.3%	59	118				
2-Hexanone	19.3	µg/L	5	20		96.5%	63	120				
4-Methyl-2-Pentanone	19.8	µg/L	1	20		99.2%	68	116				
Acetone	16	µg/L	10	20		79.8%	51	133				
Acrylonitrile	19	µg/L	5	20		94.9%	64	122				
Benzene	20	µg/L	1	20		100.0%	52	125				
Bromochloromethane	19.3	µg/L	1	20		96.3%	71	117				
Bromodichloromethane	21.5	µg/L	1	20		107.4%	68	132				
Bromoform	20.1	µg/L	1	20		100.5%	65	117				
Bromomethane	19.1	µg/L	1	20		95.7%	40	156				
Carbon Disulfide	21.4	µg/L	1	20		106.9%	60	123				
Carbon Tetrachloride	20.6	µg/L	1	20		103.0%	67	132				
Chlorobenzene	20	µg/L	1	20		100.2%	78	111				
Chlorodibromomethane	20.1	µg/L	1	20		100.3%	70	123				
Chloroethane	22	µg/L	1	20		110.0%	46	132				
Chloroform	19.3	µg/L	1	20		96.7%	69	117				

Client: LIVE OAK LANDFILL

WorkOrder: G2408F35

Project: Live Oak 221A3(a)

## Analytical QC Summary Report

Chloromethane	21	µg/L	1	20		104.9%	51	129					
cis-1,2-Dichloroethene	19.9	µg/L	1	20		99.4%	71	117					
cis-1,3-Dichloropropene	19.9	µg/L	1	20		99.5%	71	117					
Dibromomethane	18	µg/L	1	20		90.2%	77	110					
Dichlorobromomethane	21.5	µg/L	1	20		107.4%	74	117					
Ethylbenzene	20.6	µg/L	1	20		103.2%	72	122					
Iodomethane	22	µg/L	5	20		109.9%	34	150					
Methyl Ethyl Ketone	17.9	µg/L	5	20		89.3%	59	121					
Methylene Chloride	19.1	µg/L	1	20		95.5%	64	121					
Styrene	20.5	µg/L	1	20		102.7%	78	117					
Tetrachloroethene	20.3	µg/L	1	20		101.3%	67	122					
Toluene	21	µg/L	1	20		105.2%	75	115					
trans-1,2-Dichloroethene	21.1	µg/L	1	20		105.6%	69	118					
trans-1,3-Dichloropropene	19.1	µg/L	1	20		95.5%	66	122					
trans-1,4-Dichloro-2-butene	20.1	µg/L	2	20		100.6%	46	131					
Tribromomethane	20.1	µg/L	1	20		100.5%	65	117					
Trichloroethene	21.2	µg/L	1	20		105.9%	75	117					
Trichlorofluoromethane	23.4	µg/L	1	20		116.9%	69	125					
Trichloromethane	19.3	µg/L	1	20		96.7%	69	117					
Vinyl Acetate	19	µg/L	1	20		94.9%	46	126					
Vinyl Chloride	22.3	µg/L	1	20		111.3%	54	128					
Total Xylene	60.8	µg/L	2	60		101.3%	72	120					
Surr: 1,2-Dichloroethane-d4	27.4	µg/L	0	30		91.4%	70	130					
Surr: 4-Bromofluorobenzene	30.2	µg/L	0	30		100.6%	70	130					
Surr: Dibromofluoromethane	28.5	µg/L	0	30		95.1%	70	130					
Surr: Toluene-d8	29.7	µg/L	0	30		98.9%	70	130					

SampleID: G2408E87-002GMS

SampType: MS

TestNo: EPA 8260 D

Prep Date:

RunNo: 309263

BatchID: R309263

Analysis Date: 8/29/2024

SeqNo: 8126049

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
1,1,1,2-Tetrachloroethane	20.9	µg/L	1	20		104.5%	76	117					
1,1,1-Trichloroethane	21.3	µg/L	1	20		106.3%	72	122					
1,1,2,2-Tetrachloroethane	19.4	µg/L	1	20		97.2%	72	110					

Client: LIVE OAK LANDFILL

WorkOrder: G2408F35

Project: Live Oak 221A3(a)

## Analytical QC Summary Report

1,1,2-Trichloroethane	20.8	µg/L	1	20		103.9%	76	126				
1,1-Dichloroethane	19.8	µg/L	1	20		99.0%	66	126				
1,1-Dichloroethene	21.6	µg/L	1	20		108.0%	66	121				
1,2,3-Trichloropropane	18.8	µg/L	1	20		94.2%	72	112				
1,2-Dibromo-3-chloropropane	20.2	µg/L	5	20		101.2%	57	121				
1,2-Dibromoethane	20.3	µg/L	1	20		101.4%	75	113				
1,2-Dichlorobenzene	20.1	µg/L	1	20		100.3%	76	108				
1,2-Dichloroethane	19.8	µg/L	1	20		98.8%	69	116				
1,2-Dichloropropane	21.7	µg/L	1	20		108.3%	78	122				
1,4-Dichlorobenzene	19.9	µg/L	1	20		99.4%	70	121				
2-Butanone	16.4	µg/L	5	20		82.1%	59	118				
2-Hexanone	19	µg/L	5	20		94.8%	63	120				
4-Methyl-2-Pentanone	19.8	µg/L	1	20		99.1%	68	116				
Acetone	17.2	µg/L	10	20		85.9%	51	133				
Acrylonitrile	19.6	µg/L	5	20		97.9%	64	122				
Benzene	20.6	µg/L	1	20		103.1%	52	125				
Bromochloromethane	20.5	µg/L	1	20		102.3%	71	117				
Bromodichloromethane	22.1	µg/L	1	20		110.7%	68	132				
Bromoform	20.6	µg/L	1	20		102.8%	65	117				
Bromomethane	19.7	µg/L	1	20		98.5%	40	156				
Carbon Disulfide	21.5	µg/L	1	20		107.3%	60	123				
Carbon Tetrachloride	21.4	µg/L	1	20		106.8%	67	132				
Chlorobenzene	20.3	µg/L	1	20		101.4%	78	111				
Chlorodibromomethane	21.3	µg/L	1	20		106.3%	70	123				
Chloroethane	23.6	µg/L	1	20		118.0%	46	132				
Chloroform	21.2	µg/L	1	20	0.726	102.4%	69	117				
Chloromethane	21.8	µg/L	1	20		109.2%	51	129				
cis-1,2-Dichloroethene	20.6	µg/L	1	20		103.2%	71	117				
cis-1,3-Dichloropropene	20.3	µg/L	1	20		101.3%	71	117				
Dibromomethane	19.1	µg/L	1	20		95.7%	77	110				
Dichlorobromomethane	22.1	µg/L	1	20		110.7%	74	117				
Ethylbenzene	21	µg/L	1	20		104.8%	72	122				
Iodomethane	22.4	µg/L	5	20		112.2%	34	150				
Methyl Ethyl Ketone	16.4	µg/L	5	20		82.1%	59	121				

Client: LIVE OAK LANDFILL

WorkOrder: G2408F35

Project: Live Oak 221A3(a)

## Analytical QC Summary Report

Methylene Chloride	20	µg/L	1	20		100.2%	64	121				
Styrene	20.5	µg/L	1	20		102.6%	78	117				
Tetrachloroethene	20.5	µg/L	1	20		102.5%	67	122				
Toluene	21.6	µg/L	1	20		108.2%	75	115				
trans-1,2-Dichloroethene	21.3	µg/L	1	20		106.6%	69	118				
trans-1,3-Dichloropropene	19.6	µg/L	1	20		97.9%	66	122				
trans-1,4-Dichloro-2-butene	18.3	µg/L	2	20		91.6%	46	131				
Tribromomethane	20.6	µg/L	1	20		102.8%	65	117				
Trichloroethene	21.4	µg/L	1	20		107.0%	75	117				
Trichlorofluoromethane	23.9	µg/L	1	20		119.6%	69	125				
Trichloromethane	21.2	µg/L	1	20	0.726	102.4%	69	117				
Vinyl Acetate	18.9	µg/L	1	20		94.7%	46	126				
Vinyl Chloride	23	µg/L	1	20		114.8%	54	128				
Total Xylene	61.6	µg/L	2	60		102.7%	72	120				
Surr: 1,2-Dichloroethane-d4	28	µg/L	0	30		93.4%	70	130				
Surr: 4-Bromofluorobenzene	29.9	µg/L	0	30		99.7%	70	130				
Surr: Dibromofluoromethane	28.3	µg/L	0	30		94.5%	70	130				
Surr: Toluene-d8	29.8	µg/L	0	30		99.4%	70	130				

SampleID: G2408E87-005GMSD	SampType: MSD	TestNo: EPA 8260 D	Prep Date:	RunNo: 309244
	BatchID: R309244		Analysis Date: 8/29/2024	SeqNo: 8125334

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,1,1,2-Tetrachloroethane	20.9	µg/L	1						20.2	3.3%	11	
1,1,1-Trichloroethane	22	µg/L	1						20.6	6.5%	12	
1,1,2,2-Tetrachloroethane	20	µg/L	1						19.4	2.8%	14	
1,1,2-Trichloroethane	20.9	µg/L	1						19.7	6.1%	15	
1,1-Dichloroethane	20.2	µg/L	1						19.3	4.5%	12	
1,1-Dichloroethene	22.5	µg/L	1						21.4	5.3%	14	
1,2,3-Trichloropropane	19.8	µg/L	1						19.1	3.8%	14	
1,2-Dibromo-3-chloropropane	20.7	µg/L	5						19.8	4.6%	20	
1,2-Dibromoethane	20.6	µg/L	1						19.6	5.1%	17	
1,2-Dichlorobenzene	20.1	µg/L	1						19.5	3.4%	13	
1,2-Dichloroethane	19.7	µg/L	1						18.8	4.7%	11	

Client: LIVE OAK LANDFILL

WorkOrder: G2408F35

Project: Live Oak 221A3(a)

## Analytical QC Summary Report

1,2-Dichloropropane	21.5	µg/L	1					20.8	3.4%	12	
1,4-Dichlorobenzene	20.1	µg/L	1					19.5	3.3%	16	
2-Butanone	17.5	µg/L	5					17.9	2.0%	23	
2-Hexanone	20.6	µg/L	5					19.3	6.5%	18	
4-Methyl-2-Pentanone	20.6	µg/L	1					19.8	3.8%	18	
Acetone	17.2	µg/L	10					16	7.4%	23	
Acrylonitrile	20	µg/L	5					19	5.3%	16	
Benzene	21.2	µg/L	1					20	6.0%	15	
Bromochloromethane	20.4	µg/L	1					19.3	5.5%	12	
Bromodichloromethane	22.3	µg/L	1					21.5	3.7%	18	
Bromoform	21.1	µg/L	1					20.1	4.8%	14	
Bromomethane	20.2	µg/L	1					19.1	5.3%	22	
Carbon Disulfide	22.3	µg/L	1					21.4	4.1%	13	
Carbon Tetrachloride	22.1	µg/L	1					20.6	7.0%	12	
Chlorobenzene	20.7	µg/L	1					20	3.0%	10	
Chlorodibromomethane	21.2	µg/L	1					20.1	5.7%	16	
Chloroethane	24.2	µg/L	1					22	9.7%	17	
Chloroform	20.7	µg/L	1					19.3	6.8%	13	
Chloromethane	22.2	µg/L	1					21	5.4%	16	
cis-1,2-Dichloroethene	21.1	µg/L	1					19.9	6.0%	12	
cis-1,3-Dichloropropene	20.8	µg/L	1					19.9	4.6%	16	
Dibromomethane	19.2	µg/L	1					18	6.3%	14	
Dichlorobromomethane	22.3	µg/L	1					21.5	3.7%	13	
Ethylbenzene	21.5	µg/L	1					20.6	4.2%	16	
Iodomethane	23.4	µg/L	5					22	6.2%	19	
Methyl Ethyl Ketone	17.5	µg/L	5					17.9	2.0%	21	
Methylene Chloride	20.5	µg/L	1					19.1	7.0%	17	
Styrene	21	µg/L	1					20.5	2.3%	12	
Tetrachloroethene	21.1	µg/L	1					20.3	4.0%	16	
Toluene	21.9	µg/L	1					21	3.9%	13	
trans-1,2-Dichloroethene	22.7	µg/L	1					21.1	7.2%	13	
trans-1,3-Dichloropropene	19.9	µg/L	1					19.1	4.2%	15	
trans-1,4-Dichloro-2-butene	20.9	µg/L	2					20.1	4.0%	17	
Tribromomethane	21.1	µg/L	1					20.1	4.8%	14	

Client: LIVE OAK LANDFILL

WorkOrder: G2408F35

Project: Live Oak 221A3(a)

## Analytical QC Summary Report

Trichloroethene	22.1	µg/L	1						21.2	4.1%	11	
Trichlorofluoromethane	24.7	µg/L	1						23.4	5.4%	15	
Trichloromethane	20.7	µg/L	1						19.3	6.8%	12	
Vinyl Acetate	20.4	µg/L	1						19	7.3%	11	
Vinyl Chloride	24	µg/L	1						22.3	7.5%	15	
Total Xylene	63.3	µg/L	2						60.8		18	
Surr: 1,2-Dichloroethane-d4	28	µg/L	0	30		93.4%	70	130	27.4			
Surr: 4-Bromofluorobenzene	30.5	µg/L	0	30		101.8%	70	130	30.2			
Surr: Dibromofluoromethane	29	µg/L	0	30		96.8%	70	130	28.5			
Surr: Toluene-d8	29.8	µg/L	0	30		99.4%	70	130	29.7			

SampleID: G2408E87-002GMSD

SampType: MSD

TestNo: EPA 8260 D

Prep Date:

RunNo: 309263

BatchID: R309263

Analysis Date: 8/29/2024

SeqNo: 8126050

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,1,1,2-Tetrachloroethane	21.1	µg/L	1						20.9	1.2%	11	
1,1,1-Trichloroethane	21.7	µg/L	1						21.3	2.2%	12	
1,1,2,2-Tetrachloroethane	19.9	µg/L	1						19.4	2.3%	14	
1,1,2-Trichloroethane	21.1	µg/L	1						20.8	1.5%	15	
1,1-Dichloroethane	20.1	µg/L	1						19.8	1.6%	12	
1,1-Dichloroethene	22.3	µg/L	1						21.6	2.9%	14	
1,2,3-Trichloropropane	19.3	µg/L	1						18.8	2.2%	14	
1,2-Dibromo-3-chloropropane	20.2	µg/L	5						20.2	0.2%	20	
1,2-Dibromoethane	20.6	µg/L	1						20.3	1.4%	17	
1,2-Dichlorobenzene	20	µg/L	1						20.1	0.5%	13	
1,2-Dichloroethane	20.2	µg/L	1						19.8	2.3%	11	
1,2-Dichloropropane	21.5	µg/L	1						21.7	0.6%	12	
1,4-Dichlorobenzene	19.9	µg/L	1						19.9	0.0%	16	
2-Butanone	18.8	µg/L	5						16.4	13.8%	23	
2-Hexanone	20.6	µg/L	5						19	8.3%	18	
4-Methyl-2-Pentanone	20.5	µg/L	1						19.8	3.3%	18	
Acetone	18	µg/L	10						17.2	4.5%	23	
Acrylonitrile	20.5	µg/L	5						19.6	4.6%	16	
Benzene	20.9	µg/L	1						20.6	1.2%	15	

Client: LIVE OAK LANDFILL

WorkOrder: G2408F35

Project: Live Oak 221A3(a)

## Analytical QC Summary Report

Bromochloromethane	20.5	µg/L	1					20.5	0.0%	12	
Bromodichloromethane	22.8	µg/L	1					22.1	2.9%	18	
Bromoform	21	µg/L	1					20.6	2.3%	14	
Bromomethane	20.2	µg/L	1					19.7	2.7%	22	
Carbon Disulfide	21.9	µg/L	1					21.5	1.8%	13	
Carbon Tetrachloride	21.7	µg/L	1					21.4	1.5%	12	
Chlorobenzene	20.6	µg/L	1					20.3	1.8%	10	
Chlorodibromomethane	21.8	µg/L	1					21.3	2.4%	16	
Chloroethane	24.5	µg/L	1					23.6	3.8%	17	
Chloroform	21.2	µg/L	1	0.726				21.2	0.2%	13	
Chloromethane	22	µg/L	1					21.8	0.8%	16	
cis-1,2-Dichloroethene	21.2	µg/L	1					20.6	2.6%	12	
cis-1,3-Dichloropropene	20.4	µg/L	1					20.3	0.7%	16	
Dibromomethane	19.3	µg/L	1					19.1	0.6%	14	
Dichlorobromomethane	22.8	µg/L	1					22.1	2.9%	13	
Ethylbenzene	21	µg/L	1					21	0.3%	16	
Iodomethane	22.8	µg/L	5					22.4	1.8%	19	
Methyl Ethyl Ketone	18.8	µg/L	5					16.4	13.8%	21	
Methylene Chloride	20.4	µg/L	1					20	1.8%	17	
Styrene	20.7	µg/L	1					20.5	0.7%	12	
Tetrachloroethene	20.6	µg/L	1					20.5	0.7%	16	
Toluene	21.8	µg/L	1					21.6	0.6%	13	
trans-1,2-Dichloroethene	21.9	µg/L	1					21.3	2.5%	13	
trans-1,3-Dichloropropene	20	µg/L	1					19.6	2.1%	15	
trans-1,4-Dichloro-2-butene	19.1	µg/L	2					18.3	4.1%	17	
Tribromomethane	21	µg/L	1					20.6	2.3%	14	
Trichloroethene	21.8	µg/L	1					21.4	1.9%	11	
Trichlorofluoromethane	24.1	µg/L	1					23.9	0.8%	15	
Trichloromethane	21.2	µg/L	1	0.726				21.2	0.2%	12	
Vinyl Acetate	19.3	µg/L	1					18.9	2.0%	11	
Vinyl Chloride	23.4	µg/L	1					23	2.1%	15	
Total Xylene	62.1	µg/L	2					61.6		18	
Surr: 1,2-Dichloroethane-d4	28.1	µg/L	0	30		93.5%	70	130	28		
Surr: 4-Bromofluorobenzene	30	µg/L	0	30		99.9%	70	130	29.9		

Client: LIVE OAK LANDFILL

WorkOrder: G2408F35

Project: Live Oak 221A3(a)

## Analytical QC Summary Report

Surr: Dibromofluoromethane	29	µg/L	0	30		96.7%	70	130	28.3			
Surr: Toluene-d8	29.6	µg/L	0	30		98.6%	70	130	29.8			

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F35  
Project: Live Oak 221A3(a)

## Analytical QC Summary Report

Prep Batch Report		Prep Start Date: 8/29/2024 4:23:00 PM						Technician: Adam C. Brown	
Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End
CB-258480		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:00:00 AM	8/29/2024 8:00:00 AM
G2408F32-001A	011	Aqueous	8/28/2024 12:30:00 PM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F33-001C	GWA-2A	Groundwater	8/26/2024 1:48:00 PM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F33-001CDUP		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F33-001CLFM		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F35-001C	GWC-10	Groundwater	8/27/2024 12:50:00 PM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F35-002C	GWC-14	Groundwater	8/26/2024 12:13:00 PM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F37-003C	GWC-8	Groundwater	8/28/2024 9:20:00 AM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F37-004C	GWC-9	Groundwater	8/28/2024 9:20:00 AM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F39-001C	Leach Day 1	Leachate	8/28/2024 11:00:00 AM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F78-001A	LDZ-3	Leachate	8/29/2024 11:02:00 AM	100	100		1.000	8/29/2024 4:23:00 PM	8/29/2024 4:23:00 PM
G2408F78-002A	LDZ-4	Leachate	8/29/2024 11:35:00 AM	100	100		1.000	8/29/2024 4:23:00 PM	8/29/2024 4:23:00 PM
G2408F78-003J	Leachate (LDZ)	Leachate	8/29/2024 12:00:00 PM	100	100		1.000	8/29/2024 4:23:00 PM	8/29/2024 4:23:00 PM
HRQC 1000-258480		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:00:00 AM	8/29/2024 8:00:00 AM
HRQC-258480		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:00:00 AM	8/29/2024 8:00:00 AM
IPC-258480		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:00:00 AM	8/29/2024 8:00:00 AM
LFB-258480		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:00:00 AM	8/29/2024 8:00:00 AM
LFB2-258480		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:00:00 AM	8/29/2024 8:00:00 AM
LRB-258480		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:00:00 AM	8/29/2024 8:00:00 AM
QCS-258480		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:00:00 AM	8/29/2024 8:00:00 AM

Prep Batch Report		Prep Start Date: 9/3/2024 8:00:00 AM						Technician: Kristy L Botteicher	
Prep Batch	Prep Code	Prep Start Date	Prep End Date	Technician	Prep Factor Units				
258588	MEPR6010_3010	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	Kristy L Botteicher	mL				

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F35  
Project: Live Oak 221A3(a)

## Analytical QC Summary Report

Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End
G2408F24-001A	TCLP Metals RSWC-9-49-7	Solid	8/28/2024 10:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F24-002B	TCLP Blank RSWC-9-49-2	Solid	8/28/2024 10:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F33-001D	GWA-2A	Groundwater	8/26/2024 1:48:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F33-001DDUP		Aqueous	9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F33-001DMS		Aqueous	9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F35-001D	GWC-10	Groundwater	8/27/2024 12:50:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F35-002D	GWC-14	Groundwater	8/26/2024 12:13:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F37-003D	GWC-8	Groundwater	8/28/2024 9:20:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F37-004D	GWC-9	Groundwater	8/28/2024 9:20:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F42-001E	SWC-5	Surface Water	8/28/2024 1:10:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-001D	GWB-2	Groundwater	8/28/2024 10:47:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-002D	GWC-1A	Groundwater	8/28/2024 10:22:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-003D	GWC-1B	Groundwater	8/28/2024 10:08:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-003DMS		Aqueous	9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F54-001B	Williams Auburn	Solid	8/28/2024 9:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F63-001B	PGE 726 D	Solid	8/28/2024 8:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F65-001B		Solid	8/28/2024 7:30:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F67-001B	TC Energy	Solid	8/28/2024 7:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F71-001B	Highlands Antrim	Solid	8/28/2024 12:00:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F95-001A	TCLP Metals RSWC-9-49-9	Solid	8/29/2024 10:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2409007-001B	TCLP Blank RSWC-9-49-11	Solid	9/2/2024 10:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
LCS1-258588		Aqueous	9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
PB-258588		Aqueous	9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F35  
Project: Live Oak 221A3(a)

## Analytical QC Summary Report

Prep Batch Report			Technician: Kristy L Botteicher						
Prep Start Date: 9/3/2024 8:00:00 AM			Prep Factor Units:						
Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End
G2408F33-001D	GWA-2A	Groundwater	8/26/2024 1:48:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F33-001DDUP			9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F35-001D	GWC-10	Groundwater	8/27/2024 12:50:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F35-002D	GWC-14	Groundwater	8/26/2024 12:13:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F37-001A	01FB	Aqueous	8/28/2024 10:50:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F37-003D	GWC-8	Groundwater	8/28/2024 9:20:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F37-004D	GWC-9	Groundwater	8/28/2024 9:20:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F42-001E	SWC-5	Surface Water	8/28/2024 1:10:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-001D	GWB-2	Groundwater	8/28/2024 10:47:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-002D	GWC-1A	Groundwater	8/28/2024 10:22:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-002DMS			9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-003D	GWC-1B	Groundwater	8/28/2024 10:08:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
LCS2-258590			9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
PB-258590			9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F35  
Project: Live Oak 221A3(a)

## Analytical QC Summary Report

### Batch Reference Report

Client Samp ID	Test No	Batch ID
GWC-10	ASTM D1067-16	R309260
GWC-14	ASTM D1067-16	R309260
GWC-10	EPA 300.0 Rev 2.1	258480
GWC-14	EPA 300.0 Rev 2.1	258480
GWC-10	EPA 350.1 Rev 2.0	R309327
GWC-14	EPA 350.1 Rev 2.0	R309327
GWC-10	EPA 6010 D	258588
GWC-14	EPA 6010 D	258588
GWC-10	EPA 6020 B	258590
GWC-14	EPA 6020 B	258590
GWC-10	EPA 8260 D	R309244
GWC-14	EPA 8260 D	R309263
TB-03	EPA 8260 D	R309263

**Table I ON Qualifiers**

Qualifier	Description
<b>1</b>	Spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or greater.
<b>B</b>	Analyte detected in the associated method Blank.
<b>B1</b>	Dilution water blank exceeded method criterion.
<b>C1</b>	CCV recovery above the acceptance limits. Results may be biased high.
<b>C2</b>	CCV recovery below the acceptance limits. Results may be biased low.
<b>C3</b>	ICV recovery above the acceptance limits. Results may be biased high.
<b>C4</b>	ICV recovery below the acceptance limits. Results may be biased low.
<b>C5</b>	Positive values verified by second column confirmation.
<b>C6</b>	Confirmation analysis by another detector or chromatographic column was not performed.
<b>D1</b>	The analysis did not meet the minimum DO depletion of at least 2 mg/L.
<b>D2</b>	The analysis did not meet the minimum residual DO of at least 1 mg/L.
<b>D3</b>	Sample required dilution due to a matrix interference.
<b>D4</b>	Sample was diluted in the extraction steps due to marked matrix interferences.
<b>D5</b>	Sample required dilution due to a chloride interference.
<b>D6</b>	Sample was diluted and the reporting limits were raised to achieve method compliant internal standard recovery.
<b>D7</b>	Sample was digested at a dilution due to the formation of a post-digestion precipitate.
<b>D8</b>	Sample was digested at a dilution to achieve method compliant matrix spike recovery.
<b>D9</b>	Sample was digested at a dilution to meet method compliant digestion criteria.
<b>E</b>	Value above quantitation range.
<b>E2</b>	Unable to obtain a stable weight within specified limits due to sample matrix. Value is estimated.
<b>F1</b>	Fecal sample tested positive for residual chlorine.
<b>H</b>	Method Hold Time exceeded and is not compliant with 40CFR136 Table II.
<b>H1</b>	Due to under-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.
<b>H2</b>	Due to over-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.
<b>H3</b>	Sample was re-analyzed outside of hold time due to error during original analysis.
<b>H4</b>	The Nitrite result used to report Nitrate was analyzed past the 48-hour holding time.
<b>I1</b>	Internal standard recovery above method acceptance limits. Results are estimated.
<b>I2</b>	Internal standard recovery was below method acceptance limits. Results are estimated.
<b>IP</b>	One of the instrument performance checks ( ) did not meet the acceptance criteria.
<b>J</b>	Indicates an estimated value.

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<b>L1</b>	LCS above the acceptance limits. Result may be biased high.
<b>L2</b>	LCS below the acceptance limits. Result may be biased low.
<b>L3</b>	Analyte was spiked into the LCS, but was not recovered.
<b>M1</b>	Matrix Spike recovery above the acceptance limits.
<b>M2</b>	Matrix Spike recovery below the acceptance limits.
<b>M4</b>	The matrix spike failed high for the surrogate.
<b>M5</b>	The matrix spike failed low for the surrogate.
<b>M6</b>	The reporting limits were raised due to sample matrix interference.
<b>M7</b>	Recovery for matrix spike could not be quantified due to matrix interference.
<b>M8</b>	Analyte was spiked into the MS, but was not recovered.
<b>M9</b>	Analyte concentration was determined by the method of standard addition (MSA).
<b>N1</b>	The lab does not hold accreditation from PA-DEP for this parameter by this method
<b>N2</b>	PADEP does not accredit labs for this analyte by this method.
<b>N3</b>	The lab is accredited for this method in West Virginia, but not in PA (its primary accrediting body).
<b>N4</b>	PADEP does not accredit labs for this analyte by this method in drinking water.
<b>ND</b>	Not Detected.
<b>O1</b>	The flashpoint tester cannot detect below 50 degrees F.
<b>O2</b>	Result is temperature of the sample when flame observed. No flash observed. Result qualified.
<b>O3</b>	The reporting limits were raised due to the high concentration of non-target compounds.
<b>O4</b>	Sample was received with headspace.
<b>O5</b>	Sample was received in incorrect container and is not compliant with 40CFR136 Table II.
<b>O6</b>	Insufficient sample volume was received to comply with the method.
<b>P1</b>	The pH of the sample was >2 and is not compliant with 40CFR136 Table II.
<b>P2</b>	Sample contained residual chlorine and is not compliant with 40CFR136 Table II
<b>P3</b>	The pH of the sample was <10 and is not compliant with 40CFR136 Table II.
<b>P4</b>	Field preservation does not meet EPA or method recommendations for this analysis.
<b>P5</b>	Acid preservation may not be appropriate for the analysis of 2-Chloroethylvinyl ether.
<b>P6</b>	Sample required additional preservative upon receipt.
<b>P7</b>	The sample was received unpreserved.
<b>P8</b>	The pH of the sample was < 9 and is not compliant with 40 CFR136 Table II.
<b>Q1</b>	Qualified Data See Case Narrative.
<b>R</b>	Relative Percent Difference (RPD) was above the control limit.
<b>R1</b>	RPD above control limits between matrix spike and MS duplicates.

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R2	RPD above the control limit between duplicates.
R3	RSD above the control limit between replicates.
R4	RPD above control limits between Inorganic Carbon check and spike.
R5	RPD above control limits between control sample and control sample duplicates.
S	Recovery for the spiked control sample outside accepted limits.
S2	Surrogate recovery in the blank was below the control limit.
S3	Surrogate recovery in the blank was above the control limit.
S4	Surrogate recovery in the LCS is above the control limit.
S5	Surrogate recovery in the LCS is below the control limit.
SR	Analyte recovery was outside the accepted recovery limits and above the control limit for RPD.
T	Sample temperature received outside the regulatory limit and is not compliant with 40CFR Part136 Table II (for NPW samples).
T1	Sample temperature received outside the regulatory limit. (Primarily for SCM samples).
T3	Target analyte found in trip/field blank.
TC	The MS tune check (tailing factor) did not meet the acceptance criteria.
U	The analyte was not detected at or above the listed concentration, which is below the laboratory quantitation limit.

**Note 1:** Other comments to clarify test results may be used. Examples include MCL (Contaminant Limit), and MDA (minimum detectable activity). The Q1 code requires additional qualifier information be described in the Case Narrative.

**Note 2:** NA is used in the Laboratory QC report as "Not Applicable."



Quality Assurance Project Report  
Prepared for  
LIVE OAK LANDFILL  
9/25/2024

David M. Glessner  
Quality Assurance Coordinator

### **Explanatory Notes**

1. Spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or greater.
2. Matrix Spike and MS Duplicates are sample specific controls and are not used to evaluate the analytical batch.
3. Laboratory duplicate. If one or both of the values is less than 5 times the PQL, the allowed difference is +/- the PQL.
4. "R" indicates a relative percent difference (RPD) was above the acceptance limit between duplicate QC samples or sample specific duplicates.

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WorkOrder: G2408F37  
Project: Live Oak 221A3

## Analytical QC Summary Report

SampleID: G2408F31-001FDUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125773				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	66	mg/L CaCO <sub>3</sub>	10						65	1.5%	20			
SampleID: G2408F09-003ADUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125833				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	86	mg/L CaCO <sub>3</sub>	10						87	1.2%	20			
SampleID: G2408F33-001ADUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125874				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	91	mg/L CaCO <sub>3</sub>	10						90	1.1%	20			
SampleID: G2408F49-002BDUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125911				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	157	mg/L CaCO <sub>3</sub>	10						155	1.3%	20			
SampleID: G2408F50-001ADUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125935				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	237	mg/L CaCO <sub>3</sub>	10						234	1.3%	20			
SampleID: ALK LCS		SampType: LCS		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125758				

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## Analytical QC Summary Report

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	49	mg/L CaCO3	10	47.5		103.2%	85	115				
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309260		
					<b>BatchID:</b> R309260					<b>Analysis Date:</b> 8/29/2024		<b>SeqNo:</b> 8125824
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	48	mg/L CaCO3	10	47.5		101.1%	85	115				
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309260		
					<b>BatchID:</b> R309260					<b>Analysis Date:</b> 8/29/2024		<b>SeqNo:</b> 8125866
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	48	mg/L CaCO3	10	47.5		101.1%	85	115				
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309260		
					<b>BatchID:</b> R309260					<b>Analysis Date:</b> 8/29/2024		<b>SeqNo:</b> 8125904
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	48	mg/L CaCO3	10	47.5		101.1%	85	115				
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309260		
					<b>BatchID:</b> R309260					<b>Analysis Date:</b> 8/29/2024		<b>SeqNo:</b> 8125926
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	48	mg/L CaCO3	10	47.5		101.1%	85	115				
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309260		
					<b>BatchID:</b> R309260					<b>Analysis Date:</b> 8/30/2024		<b>SeqNo:</b> 8125947
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	49	mg/L CaCO3	10	47.5		103.2%	85	115				

Client: LIVE OAK LANDFILL  
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## Analytical QC Summary Report

SampleID: G2408F33-001CDUP		SampType: DUP		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480						Analysis Date: 8/29/2024			SeqNo: 8124923	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	2.77	mg/L	1						2.77	0.1%	20	
SampleID: HRQC-258480		SampType: HRQC		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480						Analysis Date: 8/29/2024			SeqNo: 8124915	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	242	mg/L	1	250		96.9%	90	110				
SampleID: HRQC 1000-258480		SampType: HRQC 1000		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480						Analysis Date: 8/29/2024			SeqNo: 8124918	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	980	mg/L	1	1000		98.0%	90	110				
SampleID: LFB-258480		SampType: LFB		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480						Analysis Date: 8/29/2024			SeqNo: 8124903	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	47.9	mg/L	1	50		95.8%	90	110				
SampleID: LFB2-258480		SampType: LFB2		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480						Analysis Date: 8/29/2024			SeqNo: 8124906	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	4.91	mg/L	1	5		98.1%	90	110				
SampleID: G2408F33-001CLFM		SampType: LFM		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480						Analysis Date: 8/29/2024			SeqNo: 8124925	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	17.6	mg/L	1	15	2.77	99.1%	80	120				

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## Analytical QC Summary Report

SampleID: LRB-258480		SampType: LRB		TestNo: EPA 300.0 Rev 2.1				Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480				Analysis Date: 8/29/2024				SeqNo: 8124908			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Chloride	< 1	mg/L	1										
SampleID: CB-258480		SampType: MBLK		TestNo: EPA 300.0 Rev 2.1				Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480				Analysis Date: 8/29/2024				SeqNo: 8124901			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Chloride	< 1	mg/L	1										
SampleID: QCS-258480		SampType: QCS		TestNo: EPA 300.0 Rev 2.1				Prep Date: 8/29/2024			RunNo: 309229		
		BatchID: 258480				Analysis Date: 8/29/2024				SeqNo: 8124913			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Chloride	22.7	mg/L	1	24		94.5%	90	110					
SampleID: G2408F35-001BDUP		SampType: DUP		TestNo: EPA 350.1 Rev 2.0				Prep Date:			RunNo: 309327		
		BatchID: R309327				Analysis Date: 9/3/2024				SeqNo: 8127528			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Ammonia Nitrogen	< 0.1	mg/L as N	0.1										20
SampleID: G2408F44-001BDUP		SampType: DUP		TestNo: EPA 350.1 Rev 2.0				Prep Date:			RunNo: 309327		
		BatchID: R309327				Analysis Date: 9/3/2024				SeqNo: 8127544			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Ammonia Nitrogen	< 0.1	mg/L as N	0.1										20
SampleID: G2409667-003ADUP		SampType: DUP		TestNo: EPA 350.1 Rev 2.0				Prep Date:			RunNo: 310284		
		BatchID: R310284				Analysis Date: 9/24/2024				SeqNo: 8156421			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Ammonia Nitrogen	< 0.1	mg/L as N	0.1						0.065				20

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## Analytical QC Summary Report

SampleID: G2408F37-003BDUP		SampType: DUP		TestNo: EPA 350.1 Rev 2.0				Prep Date:				RunNo: 310284		
		BatchID: R310284				Analysis Date: 9/24/2024				SeqNo: 8156426				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Ammonia Nitrogen	< 0.1	mg/L as N	0.1								20			
SampleID: G2409A20-001ADUP		SampType: DUP		TestNo: EPA 350.1 Rev 2.0				Prep Date:				RunNo: 310284		
		BatchID: R310284				Analysis Date: 9/24/2024				SeqNo: 8156454				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Ammonia Nitrogen	1.92	mg/L as N	0.1						1.97	2.8%	20			
SampleID: LCS		SampType: LCS		TestNo: EPA 350.1 Rev 2.0				Prep Date:				RunNo: 309327		
		BatchID: R309327				Analysis Date: 9/3/2024				SeqNo: 8127526				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Ammonia Nitrogen	0.814	mg/L as N	0.1	0.82		99.2%	90	110						
SampleID: LCS		SampType: LCS		TestNo: EPA 350.1 Rev 2.0				Prep Date:				RunNo: 310284		
		BatchID: R310284				Analysis Date: 9/24/2024				SeqNo: 8156419				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Ammonia Nitrogen	0.776	mg/L as N	0.1	0.82		94.6%	90	110						
SampleID: CCB		SampType: MBLK		TestNo: EPA 350.1 Rev 2.0				Prep Date:				RunNo: 309327		
		BatchID: R309327				Analysis Date: 9/3/2024				SeqNo: 8127524				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Ammonia Nitrogen	< 0.1	mg/L as N	0.1											
SampleID: CCB		SampType: MBLK		TestNo: EPA 350.1 Rev 2.0				Prep Date:				RunNo: 310284		
		BatchID: R310284				Analysis Date: 9/24/2024				SeqNo: 8156417				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Ammonia Nitrogen	< 0.1	mg/L as N	0.1											

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F37  
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## Analytical QC Summary Report

SampleID: G2408F35-001BMS		SampType: MS		TestNo: EPA 350.1 Rev 2.0				Prep Date:			RunNo: 309327		
		BatchID: R309327				Analysis Date: 9/3/2024				SeqNo: 8127529			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Ammonia Nitrogen	0.996	mg/L as N	0.1	1		99.6%	90	110					
SampleID: G2408F44-001BMS		SampType: MS		TestNo: EPA 350.1 Rev 2.0				Prep Date:			RunNo: 309327		
		BatchID: R309327				Analysis Date: 9/3/2024				SeqNo: 8127545			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Ammonia Nitrogen	1.04	mg/L as N	0.1	1		104.1%	90	110					
SampleID: G2409667-003AMS		SampType: MS		TestNo: EPA 350.1 Rev 2.0				Prep Date:			RunNo: 310284		
		BatchID: R310284				Analysis Date: 9/24/2024				SeqNo: 8156423			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Ammonia Nitrogen	1.02	mg/L as N	0.1	1	0.065	95.9%	90	110					
SampleID: G2409A20-001AMS		SampType: MS		TestNo: EPA 350.1 Rev 2.0				Prep Date:			RunNo: 310284		
		BatchID: R310284				Analysis Date: 9/24/2024				SeqNo: 8156456			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Ammonia Nitrogen	3.05	mg/L as N	0.1	1	1.97	107.6%	90	110					
SampleID: LCS1-258588		SampType: LCS1		TestNo: EPA 6010 D				Prep Date: 9/3/2024			RunNo: 309399		
		BatchID: 258588				Analysis Date: 9/4/2024				SeqNo: 8129284			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Potassium	9.67	mg/L	0.5	10		96.7%	79.5	120.4					
Sodium	9.89	mg/L	0.2	10		98.9%	79.5	120.4					
SampleID: PB-258588		SampType: PB		TestNo: EPA 6010 D				Prep Date: 9/3/2024			RunNo: 309399		
		BatchID: 258588				Analysis Date: 9/4/2024				SeqNo: 8129281			

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F37  
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## Analytical QC Summary Report

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Potassium	< 0.5	mg/L	0.5										
Sodium	< 0.2	mg/L	0.2										
<b>SampleID:</b> G2408F33-001DDUP			<b>SampType:</b> DUP		<b>TestNo:</b> EPA 6010 D			<b>Prep Date:</b> 9/3/2024		<b>RunNo:</b> 309399			
			<b>BatchID:</b> 258588						<b>Analysis Date:</b> 9/4/2024		<b>SeqNo:</b> 8129286		
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Potassium	< 0.5	mg/L	0.5						0.24		20		
Sodium	5.84	mg/L	0.2						5.86	0.2%	20		
<b>SampleID:</b> G2408F33-001DMS			<b>SampType:</b> MS		<b>TestNo:</b> EPA 6010 D			<b>Prep Date:</b> 9/3/2024		<b>RunNo:</b> 309399			
			<b>BatchID:</b> 258588						<b>Analysis Date:</b> 9/4/2024		<b>SeqNo:</b> 8129287		
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Potassium	9.82	mg/L	0.5	10	0.24	95.8%	75	125					
Sodium	15.4	mg/L	0.2	10	5.86	95.9%	75	125					
<b>SampleID:</b> G2408F44-003DMS			<b>SampType:</b> MS		<b>TestNo:</b> EPA 6010 D			<b>Prep Date:</b> 9/3/2024		<b>RunNo:</b> 309399			
			<b>BatchID:</b> 258588						<b>Analysis Date:</b> 9/4/2024		<b>SeqNo:</b> 8129301		
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Potassium	10.4	mg/L	0.5	10	0.659	97.7%	75	125					
Sodium	23.2	mg/L	0.2	10	13.2	100.3%	75	125					
<b>SampleID:</b> LCS2-258590			<b>SampType:</b> LCS2		<b>TestNo:</b> EPA 6020 B			<b>Prep Date:</b> 9/3/2024		<b>RunNo:</b> 309443			
			<b>BatchID:</b> 258590						<b>Analysis Date:</b> 9/5/2024		<b>SeqNo:</b> 8130694		
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Lead	4.97	µg/L	1	5		99.5%	79.5	120.45					
<b>SampleID:</b> PB-258590			<b>SampType:</b> PB		<b>TestNo:</b> EPA 6020 B			<b>Prep Date:</b> 9/3/2024		<b>RunNo:</b> 309443			
			<b>BatchID:</b> 258590						<b>Analysis Date:</b> 9/5/2024		<b>SeqNo:</b> 8130692		

Client: LIVE OAK LANDFILL  
 WorkOrder: G2408F37  
 Project: Live Oak 221A3

## Analytical QC Summary Report

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Lead	< 1	µg/L	1					0.2				
<b>SampleID:</b> G2408F33-001DDUP		<b>SampType:</b> DUP		<b>TestNo:</b> EPA 6020 B			<b>Prep Date:</b> 9/3/2024			<b>RunNo:</b> 309443		
		<b>BatchID:</b> 258590							<b>Analysis Date:</b> 9/5/2024			<b>SeqNo:</b> 8130698
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Lead	< 1	µg/L	1								20	
<b>SampleID:</b> G2408F44-002DMS		<b>SampType:</b> MS		<b>TestNo:</b> EPA 6020 B			<b>Prep Date:</b> 9/3/2024			<b>RunNo:</b> 309443		
		<b>BatchID:</b> 258590							<b>Analysis Date:</b> 9/5/2024			<b>SeqNo:</b> 8130747
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Lead	4.65	µg/L	1	5		93.0%	75	125				
<b>SampleID:</b> 20 PPB LCS		<b>SampType:</b> LCS		<b>TestNo:</b> EPA 8260 D			<b>Prep Date:</b>			<b>RunNo:</b> 309263		
		<b>BatchID:</b> R309263							<b>Analysis Date:</b> 8/29/2024			<b>SeqNo:</b> 8126048
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,1,1,2-Tetrachloroethane	20.7	µg/L	1	20		103.7%	81	125				
1,1,1-Trichloroethane	19.6	µg/L	1	20		97.8%	71	125				
1,1,2,2-Tetrachloroethane	20.3	µg/L	1	20		101.6%	80	116				
1,1,2-Trichloroethane	20.5	µg/L	1	20		102.5%	83	126				
1,1-Dichloroethane	19	µg/L	1	20		94.8%	73	122				
1,1-Dichloroethene	20	µg/L	1	20		100.0%	74	121				
1,2,3-Trichloropropene	19.5	µg/L	1	20		97.4%	77	118				
1,2-Dibromo-3-chloropropane	22.4	µg/L	5	20		111.8%	64	126				
1,2-Dibromoethane	20.4	µg/L	1	20		102.0%	83	119				
1,2-Dichlorobenzene	19.8	µg/L	1	20		99.0%	85	119				
1,2-Dichloroethane	19.7	µg/L	1	20		98.7%	72	123				
1,2-Dichloropropane	21.1	µg/L	1	20		105.4%	83	122				
1,4-Dichlorobenzene	19.3	µg/L	1	20		96.6%	83	120				
2-Butanone	19.7	µg/L	5	20		98.6%	61	125				
2-Hexanone	21.1	µg/L	5	20		105.4%	58	132				

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4-Methyl-2-Pentanone	21.1	µg/L	1	20		105.4%	68	127			
Acetone	21.4	µg/L	10	20		107.0%	60	133			
Benzene	19.9	µg/L	1	20		99.5%	76	122			
Bromochloromethane	20.3	µg/L	1	20		101.3%	78	124			
Bromodichloromethane	21.8	µg/L	1	20		109.1%	71	138			
Bromoform	21.1	µg/L	1	20		105.7%	71	125			
Bromomethane	18.8	µg/L	1	20		94.2%	47	152			
Carbon Disulfide	19.7	µg/L	1	20		98.3%	63	123			
Carbon Tetrachloride	19.4	µg/L	1	20		96.8%	68	133			
Chlorobenzene	20	µg/L	1	20		100.0%	83	118			
Chlorodibromomethane	21.2	µg/L	1	20		106.2%	74	131			
Chloroethane	22.7	µg/L	1	20		113.4%	56	127			
Chloroform	19.5	µg/L	1	20		97.5%	73	123			
Chloromethane	20.4	µg/L	1	20		102.2%	65	129			
cis-1,2-Dichloroethene	20	µg/L	1	20		99.8%	75	121			
cis-1,3-Dichloropropene	19.9	µg/L	1	20		99.4%	71	129			
Dibromomethane	19.2	µg/L	1	20		95.8%	83	118			
Dichlorobromomethane	21.8	µg/L	1	20		109.1%	56	145			
Ethylbenzene	20.1	µg/L	1	20		100.7%	84	120			
Iodomethane	21.5	µg/L	5	20		107.7%	29	162			
Methyl Ethyl Ketone	19.7	µg/L	5	20		98.6%	72	131			
Methylene Chloride	20	µg/L	1	20		100.2%	73	133			
Styrene	20.9	µg/L	1	20		104.3%	88	116			
Tetrachloroethene	21	µg/L	1	20		104.8%	76	127			
Toluene	20.8	µg/L	1	20		103.8%	80	118			
trans-1,2-Dichloroethene	20.6	µg/L	1	20		102.8%	73	120			
trans-1,3-Dichloropropene	19.1	µg/L	1	20		95.7%	70	126			
trans-1,4-Dichloro-2-butene	19.6	µg/L	2	20		98.0%	46	137			
Tribromomethane	21.1	µg/L	1	20		105.7%	71	125			
Trichloroethene	20.5	µg/L	1	20		102.4%	73	123			
Trichlorofluoromethane	21.3	µg/L	1	20		106.7%	69	125			
Trichloromethane	19.5	µg/L	1	20		97.5%	73	123			
Vinyl Acetate	20	µg/L	1	20		100.1%	67	131			
Vinyl Chloride	20.6	µg/L	1	20		103.2%	56	125			

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WorkOrder: G2408F37  
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## Analytical QC Summary Report

Total Xylene	59.7	µg/L	2	60		99.5%	87	116				
Surr: 1,2-Dichloroethane-d4	27.8	µg/L	0	30		92.5%	70	130				
Surr: 4-Bromofluorobenzene	29.7	µg/L	0	30		99.1%	70	130				
Surr: Dibromofluoromethane	29.1	µg/L	0	30		97.0%	70	130				
Surr: Toluene-d8	29.9	µg/L	0	30		99.6%	70	130				
<b>SampleID:</b> BLANK		<b>SampType:</b> MBLK		<b>TestNo:</b> EPA 8260 D			<b>Prep Date:</b>			<b>RunNo:</b> 309263		
		<b>BatchID:</b> R309263					<b>Analysis Date:</b> 8/29/2024			<b>SeqNo:</b> 8126051		
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,1,1,2-Tetrachloroethane	< 1	µg/L	1									
1,1,1-Trichloroethane	< 1	µg/L	1									
1,1,2,2-Tetrachloroethane	< 1	µg/L	1									
1,1,2-Trichloroethane	< 1	µg/L	1									
1,1-Dichloroethane	< 1	µg/L	1									
1,1-Dichloroethene	< 1	µg/L	1									
1,2,3-Trichloropropane	< 1	µg/L	1									
1,2-Dibromo-3-chloropropane	< 5	µg/L	5									
1,2-Dibromoethane	< 1	µg/L	1									
1,2-Dichlorobenzene	< 1	µg/L	1									
1,2-Dichloroethane	< 1	µg/L	1									
1,2-Dichloropropane	< 1	µg/L	1									
1,4-Dichlorobenzene	< 1	µg/L	1									
2-Butanone	< 5	µg/L	5									
2-Hexanone	< 5	µg/L	5									
4-Methyl-2-Pentanone	< 1	µg/L	1									
Acetone	< 10	µg/L	10									
Benzene	< 1	µg/L	1									
Bromochloromethane	< 1	µg/L	1									
Bromodichloromethane	< 1	µg/L	1									
Bromoform	< 1	µg/L	1									
Bromomethane	< 1	µg/L	1									
Carbon Disulfide	< 1	µg/L	1									
Carbon Tetrachloride	< 1	µg/L	1									

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## Analytical QC Summary Report

Chlorobenzene	< 1	µg/L	1						
Chlorodibromomethane	< 1	µg/L	1						
Chloroethane	< 1	µg/L	1						
Chloroform	< 1	µg/L	1						
Chloromethane	< 1	µg/L	1						
cis-1,2-Dichloroethene	< 1	µg/L	1						
cis-1,3-Dichloropropene	< 1	µg/L	1						
Dibromomethane	< 1	µg/L	1						
Dichlorobromomethane	< 1	µg/L	1						
Ethylbenzene	< 1	µg/L	1						
Iodomethane	< 5	µg/L	5						
Methyl Ethyl Ketone	< 5	µg/L	5						
Methylene Chloride	< 1	µg/L	1						
Styrene	< 1	µg/L	1						
Tetrachloroethene	< 1	µg/L	1						
Toluene	< 1	µg/L	1						
trans-1,2-Dichloroethene	< 1	µg/L	1						
trans-1,3-Dichloropropene	< 1	µg/L	1						
trans-1,4-Dichloro-2-butene	< 2	µg/L	2						
Tribromomethane	< 1	µg/L	1						
Trichloroethene	< 1	µg/L	1						
Trichlorofluoromethane	< 1	µg/L	1						
Trichloromethane	< 1	µg/L	1						
Vinyl Acetate	< 1	µg/L	1						
Vinyl Chloride	< 1	µg/L	1						
Total Xylene	< 2	µg/L	2						
Surr: 1,2-Dichloroethane-d4	29.9	µg/L	0	30	99.7%	70	130		
Surr: 4-Bromofluorobenzene	29.1	µg/L	0	30	97.0%	70	130		
Surr: Dibromofluoromethane	28.1	µg/L	0	30	93.5%	70	130		
Surr: Toluene-d8	30.7	µg/L	0	30	102.3%	70	130		

**SampleID:** G2408E87-002GMS

SampType: MS

TestNo: EPA 8260 D

Prep Date:

RunNo: 309263

BatchID: R309263

Analysis Date: 8/29/2024

SeqNo: 8126049

Client: LIVE OAK LANDFILL

WorkOrder: G2408F37

Project: Live Oak 221A3

## Analytical QC Summary Report

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,1,1,2-Tetrachloroethane	20.9	µg/L	1	20		104.5%	76	117				
1,1,1-Trichloroethane	21.3	µg/L	1	20		106.3%	72	122				
1,1,2,2-Tetrachloroethane	19.4	µg/L	1	20		97.2%	72	110				
1,1,2-Trichloroethane	20.8	µg/L	1	20		103.9%	76	126				
1,1-Dichloroethane	19.8	µg/L	1	20		99.0%	66	126				
1,1-Dichloroethene	21.6	µg/L	1	20		108.0%	66	121				
1,2,3-Trichloropropane	18.8	µg/L	1	20		94.2%	72	112				
1,2-Dibromo-3-chloropropane	20.2	µg/L	5	20		101.2%	57	121				
1,2-Dibromoethane	20.3	µg/L	1	20		101.4%	75	113				
1,2-Dichlorobenzene	20.1	µg/L	1	20		100.3%	76	108				
1,2-Dichloroethane	19.8	µg/L	1	20		98.8%	69	116				
1,2-Dichloropropane	21.7	µg/L	1	20		108.3%	78	122				
1,4-Dichlorobenzene	19.9	µg/L	1	20		99.4%	70	121				
2-Butanone	16.4	µg/L	5	20		82.1%	59	118				
2-Hexanone	19	µg/L	5	20		94.8%	63	120				
4-Methyl-2-Pentanone	19.8	µg/L	1	20		99.1%	68	116				
Acetone	17.2	µg/L	10	20		85.9%	51	133				
Acrylonitrile	19.6	µg/L	5	20		97.9%	64	122				
Benzene	20.6	µg/L	1	20		103.1%	52	125				
Bromochloromethane	20.5	µg/L	1	20		102.3%	71	117				
Bromodichloromethane	22.1	µg/L	1	20		110.7%	68	132				
Bromoform	20.6	µg/L	1	20		102.8%	65	117				
Bromomethane	19.7	µg/L	1	20		98.5%	40	156				
Carbon Disulfide	21.5	µg/L	1	20		107.3%	60	123				
Carbon Tetrachloride	21.4	µg/L	1	20		106.8%	67	132				
Chlorobenzene	20.3	µg/L	1	20		101.4%	78	111				
Chlorodibromomethane	21.3	µg/L	1	20		106.3%	70	123				
Chloroethane	23.6	µg/L	1	20		118.0%	46	132				
Chloroform	21.2	µg/L	1	20	0.726	102.4%	69	117				
Chloromethane	21.8	µg/L	1	20		109.2%	51	129				
cis-1,2-Dichloroethene	20.6	µg/L	1	20		103.2%	71	117				
cis-1,3-Dichloropropene	20.3	µg/L	1	20		101.3%	71	117				
Dibromomethane	19.1	µg/L	1	20		95.7%	77	110				

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Dichlorobromomethane	22.1	µg/L	1	20		110.7%	74	117				
Ethylbenzene	21	µg/L	1	20		104.8%	72	122				
Iodomethane	22.4	µg/L	5	20		112.2%	34	150				
Methyl Ethyl Ketone	16.4	µg/L	5	20		82.1%	59	121				
Methylene Chloride	20	µg/L	1	20		100.2%	64	121				
Styrene	20.5	µg/L	1	20		102.6%	78	117				
Tetrachloroethene	20.5	µg/L	1	20		102.5%	67	122				
Toluene	21.6	µg/L	1	20		108.2%	75	115				
trans-1,2-Dichloroethene	21.3	µg/L	1	20		106.6%	69	118				
trans-1,3-Dichloropropene	19.6	µg/L	1	20		97.9%	66	122				
trans-1,4-Dichloro-2-butene	18.3	µg/L	2	20		91.6%	46	131				
Tribromomethane	20.6	µg/L	1	20		102.8%	65	117				
Trichloroethene	21.4	µg/L	1	20		107.0%	75	117				
Trichlorofluoromethane	23.9	µg/L	1	20		119.6%	69	125				
Trichloromethane	21.2	µg/L	1	20	0.726	102.4%	69	117				
Vinyl Acetate	18.9	µg/L	1	20		94.7%	46	126				
Vinyl Chloride	23	µg/L	1	20		114.8%	54	128				
Total Xylene	61.6	µg/L	2	60		102.7%	72	120				
Surr: 1,2-Dichloroethane-d4	28	µg/L	0	30		93.4%	70	130				
Surr: 4-Bromofluorobenzene	29.9	µg/L	0	30		99.7%	70	130				
Surr: Dibromofluoromethane	28.3	µg/L	0	30		94.5%	70	130				
Surr: Toluene-d8	29.8	µg/L	0	30		99.4%	70	130				

SampleID: G2408E87-002GMSD

SampType: MSD

TestNo: EPA 8260 D

Prep Date:

RunNo: 309263

BatchID: R309263

Analysis Date: 8/29/2024

SeqNo: 8126050

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,1,1,2-Tetrachloroethane	21.1	µg/L	1						20.9	1.2%	11	
1,1,1-Trichloroethane	21.7	µg/L	1						21.3	2.2%	12	
1,1,2,2-Tetrachloroethane	19.9	µg/L	1						19.4	2.3%	14	
1,1,2-Trichloroethane	21.1	µg/L	1						20.8	1.5%	15	
1,1-Dichloroethane	20.1	µg/L	1						19.8	1.6%	12	
1,1-Dichloroethene	22.3	µg/L	1						21.6	2.9%	14	
1,2,3-Trichloropropane	19.3	µg/L	1						18.8	2.2%	14	

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1,2-Dibromo-3-chloropropane	20.2	µg/L	5					20.2	0.2%	20	
1,2-Dibromoethane	20.6	µg/L	1					20.3	1.4%	17	
1,2-Dichlorobenzene	20	µg/L	1					20.1	0.5%	13	
1,2-Dichloroethane	20.2	µg/L	1					19.8	2.3%	11	
1,2-Dichloropropane	21.5	µg/L	1					21.7	0.6%	12	
1,4-Dichlorobenzene	19.9	µg/L	1					19.9	0.0%	16	
2-Butanone	18.8	µg/L	5					16.4	13.8%	23	
2-Hexanone	20.6	µg/L	5					19	8.3%	18	
4-Methyl-2-Pentanone	20.5	µg/L	1					19.8	3.3%	18	
Acetone	18	µg/L	10					17.2	4.5%	23	
Acrylonitrile	20.5	µg/L	5					19.6	4.6%	16	
Benzene	20.9	µg/L	1					20.6	1.2%	15	
Bromochloromethane	20.5	µg/L	1					20.5	0.0%	12	
Bromodichloromethane	22.8	µg/L	1					22.1	2.9%	18	
Bromoform	21	µg/L	1					20.6	2.3%	14	
Bromomethane	20.2	µg/L	1					19.7	2.7%	22	
Carbon Disulfide	21.9	µg/L	1					21.5	1.8%	13	
Carbon Tetrachloride	21.7	µg/L	1					21.4	1.5%	12	
Chlorobenzene	20.6	µg/L	1					20.3	1.8%	10	
Chlorodibromomethane	21.8	µg/L	1					21.3	2.4%	16	
Chloroethane	24.5	µg/L	1					23.6	3.8%	17	
Chloroform	21.2	µg/L	1	0.726				21.2	0.2%	13	
Chloromethane	22	µg/L	1					21.8	0.8%	16	
cis-1,2-Dichloroethene	21.2	µg/L	1					20.6	2.6%	12	
cis-1,3-Dichloropropene	20.4	µg/L	1					20.3	0.7%	16	
Dibromomethane	19.3	µg/L	1					19.1	0.6%	14	
Dichlorobromomethane	22.8	µg/L	1					22.1	2.9%	13	
Ethylbenzene	21	µg/L	1					21	0.3%	16	
Iodomethane	22.8	µg/L	5					22.4	1.8%	19	
Methyl Ethyl Ketone	18.8	µg/L	5					16.4	13.8%	21	
Methylene Chloride	20.4	µg/L	1					20	1.8%	17	
Styrene	20.7	µg/L	1					20.5	0.7%	12	
Tetrachloroethene	20.6	µg/L	1					20.5	0.7%	16	
Toluene	21.8	µg/L	1					21.6	0.6%	13	

Client: LIVE OAK LANDFILL

WorkOrder: G2408F37

Project: Live Oak 221A3

## Analytical QC Summary Report

trans-1,2-Dichloroethene	21.9	µg/L	1					21.3	2.5%	13	
trans-1,3-Dichloropropene	20	µg/L	1					19.6	2.1%	15	
trans-1,4-Dichloro-2-butene	19.1	µg/L	2					18.3	4.1%	17	
Tribromomethane	21	µg/L	1					20.6	2.3%	14	
Trichloroethene	21.8	µg/L	1					21.4	1.9%	11	
Trichlorofluoromethane	24.1	µg/L	1					23.9	0.8%	15	
Trichloromethane	21.2	µg/L	1	0.726				21.2	0.2%	12	
Vinyl Acetate	19.3	µg/L	1					18.9	2.0%	11	
Vinyl Chloride	23.4	µg/L	1					23	2.1%	15	
Total Xylene	62.1	µg/L	2					61.6		18	
Surr: 1,2-Dichloroethane-d4	28.1	µg/L	0	30	93.5%	70	130	28			
Surr: 4-Bromofluorobenzene	30	µg/L	0	30	99.9%	70	130	29.9			
Surr: Dibromofluoromethane	29	µg/L	0	30	96.7%	70	130	28.3			
Surr: Toluene-d8	29.6	µg/L	0	30	98.6%	70	130	29.8			

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F37  
Project: Live Oak 221A3

## Analytical QC Summary Report

Prep Batch Report		Prep Start Date: 8/29/2024 4:23:00 PM		Prep End Date: 8/29/2024 4:23:00 PM		Technician: Adam C. Brown		Prep Factor Units: mL	
Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End
CB-258480		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:00:00 AM	8/29/2024 8:00:00 AM
G2408F32-001A	011	Aqueous	8/28/2024 12:30:00 PM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F33-001C	GWA-2A	Groundwater	8/26/2024 1:48:00 PM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F33-001CDUP		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F33-001CLFM		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F35-001C	GWC-10	Groundwater	8/27/2024 12:50:00 PM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F35-002C	GWC-14	Groundwater	8/26/2024 12:13:00 PM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F37-003C	GWC-8	Groundwater	8/28/2024 9:20:00 AM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F37-004C	GWC-9	Groundwater	8/28/2024 9:20:00 AM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F39-001C	Leach Day 1	Leachate	8/28/2024 11:00:00 AM	100	100		1.000	8/29/2024 11:54:00 AM	8/29/2024 11:54:00 AM
G2408F78-001A	LDZ-3	Leachate	8/29/2024 11:02:00 AM	100	100		1.000	8/29/2024 4:23:00 PM	8/29/2024 4:23:00 PM
G2408F78-002A	LDZ-4	Leachate	8/29/2024 11:35:00 AM	100	100		1.000	8/29/2024 4:23:00 PM	8/29/2024 4:23:00 PM
G2408F78-003J	Leachate (LDZ)	Leachate	8/29/2024 12:00:00 PM	100	100		1.000	8/29/2024 4:23:00 PM	8/29/2024 4:23:00 PM
HRQC 1000-258480		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:00:00 AM	8/29/2024 8:00:00 AM
HRQC-258480		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:00:00 AM	8/29/2024 8:00:00 AM
IPC-258480		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:00:00 AM	8/29/2024 8:00:00 AM
LFB-258480		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:00:00 AM	8/29/2024 8:00:00 AM
LFB2-258480		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:00:00 AM	8/29/2024 8:00:00 AM
LRB-258480		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:00:00 AM	8/29/2024 8:00:00 AM
QCS-258480		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:00:00 AM	8/29/2024 8:00:00 AM

Prep Batch Report		Prep Start Date: 9/3/2024 8:00:00 AM		Prep End Date: 9/3/2024 1:45:00 PM		Technician: Kristy L Botteicher		Prep Factor Units: mL	
Prep Batch	Prep Code	Technician	Prep Factor Units	Prep Start	Prep End	Prep Factor Units	Prep Start	Prep End	Prep Factor Units
Prep Batch: 258588	Prep Code: MEPR6010_3010								

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F37  
Project: Live Oak 221A3

## Analytical QC Summary Report

Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End
G2408F24-001A	TCLP Metals RSWC-9-49-7	Solid	8/28/2024 10:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F24-002B	TCLP Blank RSWC-9-49-2	Solid	8/28/2024 10:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F33-001D	GWA-2A	Groundwater	8/26/2024 1:48:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F33-001DDUP		Aqueous	9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F33-001DMS		Aqueous	9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F35-001D	GWC-10	Groundwater	8/27/2024 12:50:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F35-002D	GWC-14	Groundwater	8/26/2024 12:13:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F37-003D	GWC-8	Groundwater	8/28/2024 9:20:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F37-004D	GWC-9	Groundwater	8/28/2024 9:20:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F42-001E	SWC-5	Surface Water	8/28/2024 1:10:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-001D	GWB-2	Groundwater	8/28/2024 10:47:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-002D	GWC-1A	Groundwater	8/28/2024 10:22:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-003D	GWC-1B	Groundwater	8/28/2024 10:08:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-003DMS		Aqueous	9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F54-001B	Williams Auburn	Solid	8/28/2024 9:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F63-001B	PGE 726 D	Solid	8/28/2024 8:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F65-001B		Solid	8/28/2024 7:30:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F67-001B	TC Energy	Solid	8/28/2024 7:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F71-001B	Highlands Antrim	Solid	8/28/2024 12:00:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F95-001A	TCLP Metals RSWC-9-49-9	Solid	8/29/2024 10:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2409007-001B	TCLP Blank RSWC-9-49-11	Solid	9/2/2024 10:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
LCS1-258588		Aqueous	9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
PB-258588		Aqueous	9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F37  
Project: Live Oak 221A3

## Analytical QC Summary Report

Prep Batch Report			Technician: Kristy L Botteicher						
Prep Start Date: 9/3/2024 8:00:00 AM			Prep Factor Units:						
Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End
G2408F33-001D	GWA-2A	Groundwater	8/26/2024 1:48:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F33-001DDUP			9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F35-001D	GWC-10	Groundwater	8/27/2024 12:50:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F35-002D	GWC-14	Groundwater	8/26/2024 12:13:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F37-001A	01FB	Aqueous	8/28/2024 10:50:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F37-003D	GWC-8	Groundwater	8/28/2024 9:20:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F37-004D	GWC-9	Groundwater	8/28/2024 9:20:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F42-001E	SWC-5	Surface Water	8/28/2024 1:10:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-001D	GWB-2	Groundwater	8/28/2024 10:47:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-002D	GWC-1A	Groundwater	8/28/2024 10:22:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-002DMS			9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-003D	GWC-1B	Groundwater	8/28/2024 10:08:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
LCS2-258590			9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
PB-258590			9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F37  
Project: Live Oak 221A3

## Analytical QC Summary Report

### Batch Reference Report

Client Samp ID	Test No	Batch ID
GWC-8	ASTM D1067-16	R309260
GWC-9	ASTM D1067-16	R309260
GWC-8	EPA 300.0 Rev 2.1	258480
GWC-9	EPA 300.0 Rev 2.1	258480
GWC-8	EPA 350.1 Rev 2.0	R310284
GWC-9	EPA 350.1 Rev 2.0	R309327
GWC-8	EPA 6010 D	258588
GWC-9	EPA 6010 D	258588
01FB	EPA 6020 B	258590
GWC-8	EPA 6020 B	258590
GWC-9	EPA 6020 B	258590
01FB	EPA 8260 D	R309263
AMP-5	EPA 8260 D	R309263
GWC-8	EPA 8260 D	R309263
GWC-9	EPA 8260 D	R309263
TB	EPA 8260 D	R309263

**Table I ON Qualifiers**

Qualifier	Description
<b>1</b>	Spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or greater.
<b>B</b>	Analyte detected in the associated method Blank.
<b>B1</b>	Dilution water blank exceeded method criterion.
<b>C1</b>	CCV recovery above the acceptance limits. Results may be biased high.
<b>C2</b>	CCV recovery below the acceptance limits. Results may be biased low.
<b>C3</b>	ICV recovery above the acceptance limits. Results may be biased high.
<b>C4</b>	ICV recovery below the acceptance limits. Results may be biased low.
<b>C5</b>	Positive values verified by second column confirmation.
<b>C6</b>	Confirmation analysis by another detector or chromatographic column was not performed.
<b>D1</b>	The analysis did not meet the minimum DO depletion of at least 2 mg/L.
<b>D2</b>	The analysis did not meet the minimum residual DO of at least 1 mg/L.
<b>D3</b>	Sample required dilution due to a matrix interference.
<b>D4</b>	Sample was diluted in the extraction steps due to marked matrix interferences.
<b>D5</b>	Sample required dilution due to a chloride interference.
<b>D6</b>	Sample was diluted and the reporting limits were raised to achieve method compliant internal standard recovery.
<b>D7</b>	Sample was digested at a dilution due to the formation of a post-digestion precipitate.
<b>D8</b>	Sample was digested at a dilution to achieve method compliant matrix spike recovery.
<b>D9</b>	Sample was digested at a dilution to meet method compliant digestion criteria.
<b>E</b>	Value above quantitation range.
<b>E2</b>	Unable to obtain a stable weight within specified limits due to sample matrix. Value is estimated.
<b>F1</b>	Fecal sample tested positive for residual chlorine.
<b>H</b>	Method Hold Time exceeded and is not compliant with 40CFR136 Table II.
<b>H1</b>	Due to under-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.
<b>H2</b>	Due to over-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.
<b>H3</b>	Sample was re-analyzed outside of hold time due to error during original analysis.
<b>H4</b>	The Nitrite result used to report Nitrate was analyzed past the 48-hour holding time.
<b>I1</b>	Internal standard recovery above method acceptance limits. Results are estimated.
<b>I2</b>	Internal standard recovery was below method acceptance limits. Results are estimated.
<b>IP</b>	One of the instrument performance checks ( ) did not meet the acceptance criteria.
<b>J</b>	Indicates an estimated value.

Client: LIVE OAK LANDFILL

WorkOrder: G2408F37

Project: Live Oak 221A3

## Analytical QC Summary Report

<b>L1</b>	LCS above the acceptance limits. Result may be biased high.
<b>L2</b>	LCS below the acceptance limits. Result may be biased low.
<b>L3</b>	Analyte was spiked into the LCS, but was not recovered.
<b>M1</b>	Matrix Spike recovery above the acceptance limits.
<b>M2</b>	Matrix Spike recovery below the acceptance limits.
<b>M4</b>	The matrix spike failed high for the surrogate.
<b>M5</b>	The matrix spike failed low for the surrogate.
<b>M6</b>	The reporting limits were raised due to sample matrix interference.
<b>M7</b>	Recovery for matrix spike could not be quantified due to matrix interference.
<b>M8</b>	Analyte was spiked into the MS, but was not recovered.
<b>M9</b>	Analyte concentration was determined by the method of standard addition (MSA).
<b>N1</b>	The lab does not hold accreditation from PA-DEP for this parameter by this method
<b>N2</b>	PADEP does not accredit labs for this analyte by this method.
<b>N3</b>	The lab is accredited for this method in West Virginia, but not in PA (its primary accrediting body).
<b>N4</b>	PADEP does not accredit labs for this analyte by this method in drinking water.
<b>ND</b>	Not Detected.
<b>O1</b>	The flashpoint tester cannot detect below 50 degrees F.
<b>O2</b>	Result is temperature of the sample when flame observed. No flash observed. Result qualified.
<b>O3</b>	The reporting limits were raised due to the high concentration of non-target compounds.
<b>O4</b>	Sample was received with headspace.
<b>O5</b>	Sample was received in incorrect container and is not compliant with 40CFR136 Table II.
<b>O6</b>	Insufficient sample volume was received to comply with the method.
<b>P1</b>	The pH of the sample was >2 and is not compliant with 40CFR136 Table II.
<b>P2</b>	Sample contained residual chlorine and is not compliant with 40CFR136 Table II
<b>P3</b>	The pH of the sample was <10 and is not compliant with 40CFR136 Table II.
<b>P4</b>	Field preservation does not meet EPA or method recommendations for this analysis.
<b>P5</b>	Acid preservation may not be appropriate for the analysis of 2-Chloroethylvinyl ether.
<b>P6</b>	Sample required additional preservative upon receipt.
<b>P7</b>	The sample was received unpreserved.
<b>P8</b>	The pH of the sample was < 9 and is not compliant with 40 CFR136 Table II.
<b>Q1</b>	Qualified Data See Case Narrative.
<b>R</b>	Relative Percent Difference (RPD) was above the control limit.
<b>R1</b>	RPD above control limits between matrix spike and MS duplicates.

Client: LIVE OAK LANDFILL

WorkOrder: G2408F37

Project: Live Oak 221A3

## Analytical QC Summary Report

R2	RPD above the control limit between duplicates.
R3	RSD above the control limit between replicates.
R4	RPD above control limits between Inorganic Carbon check and spike.
R5	RPD above control limits between control sample and control sample duplicates.
S	Recovery for the spiked control sample outside accepted limits.
S2	Surrogate recovery in the blank was below the control limit.
S3	Surrogate recovery in the blank was above the control limit.
S4	Surrogate recovery in the LCS is above the control limit.
S5	Surrogate recovery in the LCS is below the control limit.
SR	Analyte recovery was outside the accepted recovery limits and above the control limit for RPD.
T	Sample temperature received outside the regulatory limit and is not compliant with 40CFR Part136 Table II (for NPW samples).
T1	Sample temperature received outside the regulatory limit. (Primarily for SCM samples).
T3	Target analyte found in trip/field blank.
TC	The MS tune check (tailing factor) did not meet the acceptance criteria.
U	The analyte was not detected at or above the listed concentration, which is below the laboratory quantitation limit.

**Note 1:** Other comments to clarify test results may be used. Examples include MCL (Contaminant Limit), and MDA (minimum detectable activity). The Q1 code requires additional qualifier information be described in the Case Narrative.

**Note 2:** NA is used in the Laboratory QC report as "Not Applicable."



Quality Assurance Project Report  
Prepared for  
LIVE OAK LANDFILL  
9/25/2024

David M. Glessner  
Quality Assurance Coordinator

### **Explanatory Notes**

1. Spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or greater.
2. Matrix Spike and MS Duplicates are sample specific controls and are not used to evaluate the analytical batch.
3. Laboratory duplicate. If one or both of the values is less than 5 times the PQL, the allowed difference is +/- the PQL.
4. "R" indicates a relative percent difference (RPD) was above the acceptance limit between duplicate QC samples or sample specific duplicates.

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F42  
Project: Live Oak 721S

## Analytical QC Summary Report

SampleID: LCS		SampType: LCS		TestNo: ASTM D7511-17				Prep Date:				RunNo: 309285		
		BatchID: R309285				Analysis Date: 9/2/2024				SeqNo: 8126845				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Cyanide, total	0.11	mg/L	0.02	0.1		109.9%	86	114						
SampleID: CCB		SampType: MBLK		TestNo: ASTM D7511-17				Prep Date:				RunNo: 309285		
		BatchID: R309285				Analysis Date: 9/2/2024				SeqNo: 8126842				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Cyanide, total	< 0.02	mg/L	0.02											
SampleID: G2408E91-002CMS		SampType: MS		TestNo: ASTM D7511-17				Prep Date:				RunNo: 309285		
		BatchID: R309285				Analysis Date: 9/2/2024				SeqNo: 8126859				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Cyanide, total	0.054	mg/L	0.02	0.05		107.4%	75	125						
SampleID: G2408E91-002CMSD		SampType: MSD		TestNo: ASTM D7511-17				Prep Date:				RunNo: 309285		
		BatchID: R309285				Analysis Date: 9/2/2024				SeqNo: 8126860				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Cyanide, total	0.054	mg/L	0.02	0.05		108.4%	75	125	0.054	0.9%	20			
SampleID: G2408F42-001CDUP		SampType: DUP		TestNo: EPA 300.0 Rev 2.1				Prep Date: 8/29/2024				RunNo: 309223		
		BatchID: 258494				Analysis Date: 8/29/2024				SeqNo: 8124648				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Chloride	3.42	mg/L	1						3.42	0.2%	20			
SampleID: G2408F84-006DDUP		SampType: DUP		TestNo: EPA 300.0 Rev 2.1				Prep Date: 8/29/2024				RunNo: 309223		
		BatchID: 258494				Analysis Date: 8/29/2024				SeqNo: 8124660				

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F42  
Project: Live Oak 721S

## Analytical QC Summary Report

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	< 1	mg/L	1						0.419		20	
<b>SampleID:</b> HRQC-258494		<b>SampType:</b> HRQC		<b>TestNo:</b> EPA 300.0 Rev 2.1		<b>Prep Date:</b> 8/29/2024		<b>RunNo:</b> 309223				
<b>BatchID:</b> 258494					<b>Analysis Date:</b> 8/29/2024					<b>SeqNo:</b> 8124642		
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	243	mg/L	1	250		97.1%	90	110				
<b>SampleID:</b> HRQC 1000-258494		<b>SampType:</b> HRQC 1000		<b>TestNo:</b> EPA 300.0 Rev 2.1		<b>Prep Date:</b> 8/29/2024		<b>RunNo:</b> 309223				
<b>BatchID:</b> 258494					<b>Analysis Date:</b> 8/29/2024					<b>SeqNo:</b> 8124644		
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	976	mg/L	1	1000		97.6%	90	110				
<b>SampleID:</b> LFB-258494		<b>SampType:</b> LFB		<b>TestNo:</b> EPA 300.0 Rev 2.1		<b>Prep Date:</b> 8/29/2024		<b>RunNo:</b> 309223				
<b>BatchID:</b> 258494					<b>Analysis Date:</b> 8/29/2024					<b>SeqNo:</b> 8124635		
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	47.7	mg/L	1	50		95.5%	90	110				
<b>SampleID:</b> LFB2-258494		<b>SampType:</b> LFB2		<b>TestNo:</b> EPA 300.0 Rev 2.1		<b>Prep Date:</b> 8/29/2024		<b>RunNo:</b> 309223				
<b>BatchID:</b> 258494					<b>Analysis Date:</b> 8/29/2024					<b>SeqNo:</b> 8124637		
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	4.81	mg/L	1	5		96.2%	90	110				
<b>SampleID:</b> G2408F42-001CLFM		<b>SampType:</b> LFM		<b>TestNo:</b> EPA 300.0 Rev 2.1		<b>Prep Date:</b> 8/29/2024		<b>RunNo:</b> 309223				
<b>BatchID:</b> 258494					<b>Analysis Date:</b> 8/29/2024					<b>SeqNo:</b> 8124649		
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	18.4	mg/L	1	15	3.42	100.1%	80	120				

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F42  
Project: Live Oak 721S

## Analytical QC Summary Report

SampleID: G2408F84-006DLFM		SampType: LFM		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309223		
		BatchID: 258494						Analysis Date: 8/29/2024			SeqNo: 8124661	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	15.1	mg/L	1	15	0.419	97.7%	80	120				
SampleID: LRB-258494		SampType: LRB		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309223		
		BatchID: 258494						Analysis Date: 8/29/2024			SeqNo: 8124639	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	< 1	mg/L	1									
SampleID: CB-258494		SampType: MBLK		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309223		
		BatchID: 258494						Analysis Date: 8/29/2024			SeqNo: 8124634	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	< 1	mg/L	1									
SampleID: QCS-258494		SampType: QCS		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309223		
		BatchID: 258494						Analysis Date: 8/29/2024			SeqNo: 8124641	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	22.7	mg/L	1	24		94.8%	90	110				
SampleID: LCS1-258588		SampType: LCS1		TestNo: EPA 6010 D			Prep Date: 9/3/2024			RunNo: 309399		
		BatchID: 258588						Analysis Date: 9/4/2024			SeqNo: 8129284	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Arsenic	0.969	mg/L	0.02	1		96.9%	79.5	120.4				
Silver	0.0095	mg/L	0.005	0.01		95.0%	79.5	120.4				
SampleID: PB-258588		SampType: PB		TestNo: EPA 6010 D			Prep Date: 9/3/2024			RunNo: 309399		
		BatchID: 258588						Analysis Date: 9/4/2024			SeqNo: 8129281	

Client: LIVE OAK LANDFILL

WorkOrder: G2408F42

Project: Live Oak 721S

## Analytical QC Summary Report

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Arsenic	< 0.02	mg/L	0.02										
Silver	< 0.005	mg/L	0.005										
<b>SampleID:</b> G2408F33-001DDUP			<b>SampType:</b> DUP		<b>TestNo:</b> EPA 6010 D			<b>Prep Date:</b> 9/3/2024		<b>RunNo:</b> 309399			
			<b>BatchID:</b> 258588						<b>Analysis Date:</b> 9/4/2024		<b>SeqNo:</b> 8129286		
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Arsenic	< 0.02	mg/L	0.02								20		
Silver	< 0.005	mg/L	0.005								20		
<b>SampleID:</b> G2408F33-001DMS			<b>SampType:</b> MS		<b>TestNo:</b> EPA 6010 D			<b>Prep Date:</b> 9/3/2024		<b>RunNo:</b> 309399			
			<b>BatchID:</b> 258588						<b>Analysis Date:</b> 9/4/2024		<b>SeqNo:</b> 8129287		
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Arsenic	0.962	mg/L	0.02	1		96.2%	75	125					
Silver	0.009	mg/L	0.005	0.01		90.0%	75	125					
<b>SampleID:</b> G2408F44-003DMS			<b>SampType:</b> MS		<b>TestNo:</b> EPA 6010 D			<b>Prep Date:</b> 9/3/2024		<b>RunNo:</b> 309399			
			<b>BatchID:</b> 258588						<b>Analysis Date:</b> 9/4/2024		<b>SeqNo:</b> 8129301		
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Arsenic	0.993	mg/L	0.02	1		99.3%	75	125					
Silver	0.0089	mg/L	0.005	0.01		89.0%	75	125					
<b>SampleID:</b> LCS2-258590			<b>SampType:</b> LCS2		<b>TestNo:</b> EPA 6020 B			<b>Prep Date:</b> 9/3/2024		<b>RunNo:</b> 309443			
			<b>BatchID:</b> 258590						<b>Analysis Date:</b> 9/5/2024		<b>SeqNo:</b> 8130694		
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Barium	48.3	µg/L	5	50		96.6%	79.5	120.45					
Cadmium	4.74	µg/L	0.2	5		94.7%	79.5	120.45					
Chromium	51.5	µg/L	2	50		103.0%	79.5	120.45					
Lead	4.97	µg/L	1	5		99.5%	79.5	120.45					
Nickel	50.9	µg/L	0.5	50		101.9%	79.5	120.45					
Selenium	18.5	µg/L	1	20		92.3%	79.5	120.45					

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F42  
Project: Live Oak 721S

## Analytical QC Summary Report

Zinc	51.7	µg/L	5	50		103.4%	79.5	120.45				
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<b>SampleID:</b> PB-258590	<b>SampType:</b> PB	<b>TestNo:</b> EPA 6020 B	<b>Prep Date:</b> 9/3/2024	<b>RunNo:</b> 309443
	<b>BatchID:</b> 258590		<b>Analysis Date:</b> 9/5/2024	<b>SeqNo:</b> 8130692

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Barium	< 5	µg/L	5					2				
Cadmium	< 0.2	µg/L	0.2					0.1				
Chromium	< 2	µg/L	2					0.5				
Lead	< 1	µg/L	1					0.2				
Nickel	< 0.5	µg/L	0.5					0.2				
Selenium	< 1	µg/L	1					0.5				
Zinc	< 5	µg/L	5					2				

<b>SampleID:</b> G2408F33-001DDUP	<b>SampType:</b> DUP	<b>TestNo:</b> EPA 6020 B	<b>Prep Date:</b> 9/3/2024	<b>RunNo:</b> 309443
	<b>BatchID:</b> 258590		<b>Analysis Date:</b> 9/5/2024	<b>SeqNo:</b> 8130698

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Barium	13.8	µg/L	5						13.8	0.0%	20	
Cadmium	< 0.2	µg/L	0.2								20	
Chromium	25.4	µg/L	2						26.1	2.9%	20	
Lead	< 1	µg/L	1								20	
Nickel	0.987	µg/L	0.5						1.2	19.6%	20	
Selenium	< 1	µg/L	1								20	
Zinc	< 5	µg/L	5								20	

<b>SampleID:</b> G2408F44-002DMS	<b>SampType:</b> MS	<b>TestNo:</b> EPA 6020 B	<b>Prep Date:</b> 9/3/2024	<b>RunNo:</b> 309443
	<b>BatchID:</b> 258590		<b>Analysis Date:</b> 9/5/2024	<b>SeqNo:</b> 8130747

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Barium	90.8	µg/L	5	50	45.2	91.2%	75	125				
Cadmium	5.48	µg/L	0.2	5		109.6%	75	125				
Chromium	54.1	µg/L	2	50	2.31	103.5%	75	125				
Lead	4.65	µg/L	1	5		93.0%	75	125				

Client: LIVE OAK LANDFILL

WorkOrder: G2408F42

Project: Live Oak 721S

## Analytical QC Summary Report

Nickel	52.2	µg/L	0.5	50	1.93	100.5%	75	125					
Selenium	18.1	µg/L	1	20		90.4%	75	125					
Zinc	53.5	µg/L	5	50	3.95	99.2%	75	125					
<b>SampleID:</b> LCS-258688		<b>SampType:</b> LCS		<b>TestNo:</b> EPA 7470A			<b>Prep Date:</b> 9/4/2024			<b>RunNo:</b> 309498			
		<b>BatchID:</b> 258688				<b>Analysis Date:</b> 9/5/2024				<b>SeqNo:</b> 8131941			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Mercury	0.00196	mg/L	0.0002	0.002		98.0%	85	115					
<b>SampleID:</b> PB-258688		<b>SampType:</b> PB		<b>TestNo:</b> EPA 7470A			<b>Prep Date:</b> 9/4/2024			<b>RunNo:</b> 309498			
		<b>BatchID:</b> 258688				<b>Analysis Date:</b> 9/5/2024				<b>SeqNo:</b> 8131935			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Mercury	< 0.0002	mg/L	0.0002										
<b>SampleID:</b> LCS 50-258775		<b>SampType:</b> LCS1		<b>TestNo:</b> HACH 8000			<b>Prep Date:</b> 9/4/2024			<b>RunNo:</b> 309460			
		<b>BatchID:</b> 258775				<b>Analysis Date:</b> 9/5/2024				<b>SeqNo:</b> 8131048			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Chemical Oxygen Demand	53.5	mg/L	10	50		107.1%	90	110					
<b>SampleID:</b> MBLK-1-258775		<b>SampType:</b> MBLK-1		<b>TestNo:</b> HACH 8000			<b>Prep Date:</b> 9/4/2024			<b>RunNo:</b> 309460			
		<b>BatchID:</b> 258775				<b>Analysis Date:</b> 9/5/2024				<b>SeqNo:</b> 8131047			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Chemical Oxygen Demand	< 10	mg/L	10										
<b>SampleID:</b> G2408F84-002AMS		<b>SampType:</b> MS		<b>TestNo:</b> HACH 8000			<b>Prep Date:</b> 9/4/2024			<b>RunNo:</b> 309460			
		<b>BatchID:</b> 258775				<b>Analysis Date:</b> 9/5/2024				<b>SeqNo:</b> 8131069			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Chemical Oxygen Demand	58.2	mg/L	10	50		116.5%	75	125					

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F42  
Project: Live Oak 721S

## Analytical QC Summary Report

SampleID: G2408F84-002AMSD		SampType: MSD		TestNo: HACH 8000				Prep Date: 9/4/2024			RunNo: 309460		
		BatchID: 258775								Analysis Date: 9/5/2024			SeqNo: 8131070
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Chemical Oxygen Demand	56.2	mg/L	10						58.2	3.5%	20		
SampleID: G2408F50-001EDUP		SampType: DUP		TestNo: SM 5310 C-14				Prep Date:			RunNo: 309232		
		BatchID: R309232								Analysis Date: 8/29/2024			SeqNo: 8125006
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Total Organic Carbon	1.18	mg/L	1						1.18	0.3%	15		
SampleID: LCS		SampType: LCS		TestNo: SM 5310 C-14				Prep Date:			RunNo: 309232		
		BatchID: R309232								Analysis Date: 8/29/2024			SeqNo: 8124972
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Total Organic Carbon	5.1	mg/L	1	5		101.9%	90	110					
SampleID: QC Blank		SampType: MBLK		TestNo: SM 5310 C-14				Prep Date:			RunNo: 309232		
		BatchID: R309232								Analysis Date: 8/29/2024			SeqNo: 8124959
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Total Organic Carbon	< 1	mg/L	1										
SampleID: Blank		SampType: MBLK		TestNo: SM 5310 C-14				Prep Date:			RunNo: 309232		
		BatchID: R309232								Analysis Date: 8/29/2024			SeqNo: 8125003
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Total Organic Carbon	< 1	mg/L	1										
SampleID: Blank		SampType: MBLK		TestNo: SM 5310 C-14				Prep Date:			RunNo: 309232		
		BatchID: R309232								Analysis Date: 8/29/2024			SeqNo: 8125051
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Total Organic Carbon	< 1	mg/L	1										

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F42  
Project: Live Oak 721S

## Analytical QC Summary Report

<b>SampleID:</b> G2408F29-001EMS	<b>SampType:</b> MS	<b>TestNo:</b> SM 5310 C-14	<b>Prep Date:</b>	<b>RunNo:</b> 309232
		<b>BatchID:</b> R309232	<b>Analysis Date:</b> 8/29/2024	<b>SeqNo:</b> 8124980

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Total Organic Carbon	11.1	mg/L	1	10	0.827	102.5%	85	115				

<b>SampleID:</b> G2408F29-001EMSD	<b>SampType:</b> MSD	<b>TestNo:</b> SM 5310 C-14	<b>Prep Date:</b>	<b>RunNo:</b> 309232
		<b>BatchID:</b> R309232	<b>Analysis Date:</b> 8/29/2024	<b>SeqNo:</b> 8124983

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Total Organic Carbon	11.1	mg/L	1		0.827				11.1	0.2%	15	

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F42  
Project: Live Oak 721S

## Analytical QC Summary Report

Prep Batch Report			Prep Start Date: 8/29/2024 4:40:00 PM						Technician: Angela C. Watkins		
Prep Batch: 258494			Prep End Date: 8/29/2024 4:40:00 PM						Prep Factor Units: mL		
Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End		
CB-258494		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:25:00 AM	8/29/2024 8:25:00 AM		
G2408F42-001C	SWC-5	Surface Water	8/28/2024 1:10:00 PM	100	100		1.000	8/29/2024 12:44:00 PM	8/29/2024 12:44:00 PM		
G2408F42-001CDUP		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 12:44:00 PM	8/29/2024 12:44:00 PM		
G2408F42-001CLFM		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 12:44:00 PM	8/29/2024 12:44:00 PM		
G2408F43-001B	PS04 Weekly	Waste Water	8/28/2024 10:00:00 AM	100	100		1.000	8/29/2024 12:44:00 PM	8/29/2024 12:44:00 PM		
G2408F50-002D	BL-13D	Groundwater	8/28/2024 1:23:00 PM	100	100		1.000	8/29/2024 12:44:00 PM	8/29/2024 12:44:00 PM		
G2408F50-003D	BL-20D	Groundwater	8/28/2024 9:22:00 AM	100	100		1.000	8/29/2024 12:44:00 PM	8/29/2024 12:44:00 PM		
G2408F78-004D	LCZ	Leachate	8/29/2024 12:00:00 PM	100	100		1.000	8/29/2024 4:40:00 PM	8/29/2024 4:40:00 PM		
G2408F83-001B	R. Hill 1 SP-12	Surface Water	8/29/2024 12:50:00 PM	100	100		1.000	8/29/2024 4:40:00 PM	8/29/2024 4:40:00 PM		
G2408F84-005D	F-Blank	Aqueous	8/29/2024 9:05:00 AM	100	100		1.000	8/29/2024 4:40:00 PM	8/29/2024 4:40:00 PM		
G2408F84-006D	M2-LH	Groundwater	8/29/2024 9:20:00 AM	100	100		1.000	8/29/2024 4:40:00 PM	8/29/2024 4:40:00 PM		
G2408F84-006DDUP		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 4:40:00 PM	8/29/2024 4:40:00 PM		
G2408F84-006DLFM		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 4:40:00 PM	8/29/2024 4:40:00 PM		
G2408F84-007D	M10R-LP	Groundwater	8/29/2024 10:15:00 AM	100	100		1.000	8/29/2024 4:40:00 PM	8/29/2024 4:40:00 PM		
HRQC 1000-258494		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:25:00 AM	8/29/2024 8:25:00 AM		
HRQC-258494		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:25:00 AM	8/29/2024 8:25:00 AM		
IPC-258494		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:25:00 AM	8/29/2024 8:25:00 AM		
LFB-258494		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:25:00 AM	8/29/2024 8:25:00 AM		
LFB2-258494		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:25:00 AM	8/29/2024 8:25:00 AM		
LRB-258494		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:25:00 AM	8/29/2024 8:25:00 AM		
QCS-258494		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 8:25:00 AM	8/29/2024 8:25:00 AM		

Prep Batch Report			Prep Start Date: 9/3/2024 8:00:00 AM						Technician: Kristy L Botteicher		
Prep Batch: 258588			Prep End Date: 9/3/2024 1:45:00 PM						Prep Factor Units: mL		
Prep Code: MEPR6010_3010											

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F42  
Project: Live Oak 721S

## Analytical QC Summary Report

Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End
G2408F24-001A	TCLP Metals RSWC-9-49-7	Solid	8/28/2024 10:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F24-002B	TCLP Blank RSWC-9-49-2	Solid	8/28/2024 10:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F33-001D	GWA-2A	Groundwater	8/26/2024 1:48:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F33-001DDUP		Aqueous	9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F33-001DMS		Aqueous	9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F35-001D	GWC-10	Groundwater	8/27/2024 12:50:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F35-002D	GWC-14	Groundwater	8/26/2024 12:13:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F37-003D	GWC-8	Groundwater	8/28/2024 9:20:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F37-004D	GWC-9	Groundwater	8/28/2024 9:20:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F42-001E	SWC-5	Surface Water	8/28/2024 1:10:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-001D	GWB-2	Groundwater	8/28/2024 10:47:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-002D	GWC-1A	Groundwater	8/28/2024 10:22:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-003D	GWC-1B	Groundwater	8/28/2024 10:08:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F44-003DMS		Aqueous	9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F54-001B	Williams Auburn	Solid	8/28/2024 9:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F63-001B	PGE 726 D	Solid	8/28/2024 8:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F65-001B		Solid	8/28/2024 7:30:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F67-001B	TC Energy	Solid	8/28/2024 7:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F71-001B	Highlands Antrim	Solid	8/28/2024 12:00:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F95-001A	TCLP Metals RSWC-9-49-9	Solid	8/29/2024 10:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2409007-001B	TCLP Blank RSWC-9-49-11	Solid	9/2/2024 10:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
LCS1-258588		Aqueous	9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
PB-258588		Aqueous	9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F42  
Project: Live Oak 721S

## Analytical QC Summary Report

<b>Prep Batch:</b> 258590 <b>Prep Code:</b> MEPR6020_3010			<b>Prep Batch Report</b> <b>Prep Start Date:</b> 9/3/2024 8:00:00 AM <b>Prep End Date:</b> 9/3/2024 1:45:00 PM					<b>Technician:</b> Kristy L Botteicher <b>Prep Factor Units:</b>		
Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End	
G2408F33-001D	GWA-2A	Groundwater	8/26/2024 1:48:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F33-001DDUP			9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F35-001D	GWC-10	Groundwater	8/27/2024 12:50:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F35-002D	GWC-14	Groundwater	8/26/2024 12:13:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F37-001A	01FB	Aqueous	8/28/2024 10:50:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F37-003D	GWC-8	Groundwater	8/28/2024 9:20:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F37-004D	GWC-9	Groundwater	8/28/2024 9:20:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F42-001E	SWC-5	Surface Water	8/28/2024 1:10:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F44-001D	GWB-2	Groundwater	8/28/2024 10:47:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F44-002D	GWC-1A	Groundwater	8/28/2024 10:22:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F44-002DMS			9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F44-003D	GWC-1B	Groundwater	8/28/2024 10:08:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
LCS2-258590			9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
PB-258590			9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
<b>Prep Batch:</b> 258688 <b>Prep Code:</b> HG_7470_PREP			<b>Prep Batch Report</b> <b>Prep Start Date:</b> 9/4/2024 12:30:00 PM <b>Prep End Date:</b> 9/4/2024 2:30:00 PM					<b>Technician:</b> Kristy L Botteicher <b>Prep Factor Units:</b> mL		
Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End	
G2408F42-001E	SWC-5	Surface Water	8/28/2024 1:10:00 PM	25	25		1.000	9/4/2024 12:30:00 PM	9/4/2024 2:30:00 PM	
LCS-258688		Aqueous	9/4/2024 12:00:00 AM	25	25		1.000	9/4/2024 12:30:00 PM	9/4/2024 2:30:00 PM	
PB-258688		Aqueous	9/4/2024 12:00:00 AM	25	25		1.000	9/4/2024 12:30:00 PM	9/4/2024 2:30:00 PM	
<b>Prep Batch:</b> 258775 <b>Prep Code:</b> INPR_COD			<b>Prep Batch Report</b> <b>Prep Start Date:</b> 9/4/2024 12:28:00 PM <b>Prep End Date:</b> 9/4/2024 2:28:00 PM					<b>Technician:</b> Emma M. Ferlan <b>Prep Factor Units:</b> mL		

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F42  
Project: Live Oak 721S

## Analytical QC Summary Report

Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End
CCV 1-258775		Aqueous	9/5/2024 12:00:00 AM	2	2		1.000	9/4/2024 12:28:00 PM	9/4/2024 2:28:00 PM
G2408F09-002C	SW-101	Surface Water	8/28/2024 8:30:00 AM	2	2		1.000	9/4/2024 12:28:00 PM	9/4/2024 2:28:00 PM
G2408F09-003C	SW-2	Surface Water	8/28/2024 9:00:00 AM	2	2		1.000	9/4/2024 12:28:00 PM	9/4/2024 2:28:00 PM
G2408F09-004C	SW-1A	Surface Water	8/28/2024 9:20:00 AM	2	2		1.000	9/4/2024 12:28:00 PM	9/4/2024 2:28:00 PM
G2408F09-005B	SW-7	Surface Water	8/28/2024 9:40:00 AM	2	2		1.000	9/4/2024 12:28:00 PM	9/4/2024 2:28:00 PM
G2408F29-001B	MP-11Ds	Groundwater	8/28/2024 11:56:00 AM	2	2		1.000	9/4/2024 12:28:00 PM	9/4/2024 2:28:00 PM
G2408F29-002B	BL-8D	Groundwater	8/28/2024 8:23:00 AM	2	2		1.000	9/4/2024 12:28:00 PM	9/4/2024 2:28:00 PM
G2408F41-001B	MP-12D	Groundwater	8/28/2024 10:25:00 AM	2	2		1.000	9/4/2024 12:28:00 PM	9/4/2024 2:28:00 PM
G2408F42-001A	SWC-5	Surface Water	8/28/2024 1:10:00 PM	2	2		1.000	9/4/2024 12:28:00 PM	9/4/2024 2:28:00 PM
G2408F49-001A	Hahn Well	Potable Water	8/28/2024 3:24:00 PM	2	2		1.000	9/4/2024 12:28:00 PM	9/4/2024 2:28:00 PM
G2408F49-002A	Flowers Well	Potable Water	8/28/2024 2:48:00 PM	2	2		1.000	9/4/2024 12:28:00 PM	9/4/2024 2:28:00 PM
G2408F50-001B	BL-18D	Groundwater	8/28/2024 11:35:00 AM	2	2		1.000	9/4/2024 12:28:00 PM	9/4/2024 2:28:00 PM
G2408F50-002B	BL-13D	Groundwater	8/28/2024 1:23:00 PM	2	2		1.000	9/4/2024 12:28:00 PM	9/4/2024 2:28:00 PM
G2408F50-003B	BL-20D	Groundwater	8/28/2024 9:22:00 AM	2	2		1.000	9/4/2024 12:28:00 PM	9/4/2024 2:28:00 PM
G2408F77-001B	NEFF RUN	Surface Water	8/29/2024 7:50:00 AM	2	2		1.000	9/4/2024 12:28:00 PM	9/4/2024 2:28:00 PM
G2408F81-001A	M1-FR	Groundwater	8/29/2024 8:04:00 AM	2	2		1.000	9/4/2024 12:28:00 PM	9/4/2024 2:28:00 PM
G2408F81-002A	M12-FR	Groundwater	8/29/2024 10:02:00 AM	2	2		1.000	9/4/2024 12:28:00 PM	9/4/2024 2:28:00 PM
G2408F81-003A	F-Dup	Groundwater	8/29/2024 10:02:00 AM	2	2		1.000	9/4/2024 12:28:00 PM	9/4/2024 2:28:00 PM
G2408F81-004A	M9-LHR	Groundwater	8/29/2024 11:39:00 AM	2	2		1.000	9/4/2024 12:28:00 PM	9/4/2024 2:28:00 PM
G2408F84-001A	M3-FR	Groundwater	8/29/2024 9:38:00 AM	2	2		1.000	9/4/2024 12:28:00 PM	9/4/2024 2:28:00 PM
G2408F84-002A	M3-LH	Groundwater	8/29/2024 10:28:00 AM	2	2		1.000	9/4/2024 12:28:00 PM	9/4/2024 2:28:00 PM
G2408F84-002AMS		Aqueous	9/5/2024 12:00:00 AM	2	2		1.000	9/4/2024 12:28:00 PM	9/4/2024 2:28:00 PM
G2408F84-002AMSD		Aqueous	9/5/2024 12:00:00 AM	2	2		1.000	9/4/2024 12:28:00 PM	9/4/2024 2:28:00 PM
LCS 50-258775		Aqueous	9/5/2024 12:00:00 AM	2	2		1.000	9/4/2024 12:28:00 PM	9/4/2024 2:28:00 PM
MBLK-1-258775		Aqueous	9/5/2024 12:00:00 AM	2	2		1.000	9/4/2024 12:28:00 PM	9/4/2024 2:28:00 PM

Client: LIVE OAK LANDFILL

WorkOrder: G2408F42

Project: Live Oak 721S

## Analytical QC Summary Report

### Batch Reference Report

Client Samp ID	Test No	Batch ID
SWC-5	ASTM D7511-17	R309285
SWC-5	EPA 300.0 Rev 2.1	258494
SWC-5	EPA 6010 D	258588
SWC-5	EPA 6020 B	258590
SWC-5	EPA 7470A	258688
SWC-5	HACH 8000	258775
SWC-5	SM 5310 C-14	R309232

**Table I ON Qualifiers**

Qualifier	Description
<b>1</b>	Spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or greater.
<b>B</b>	Analyte detected in the associated method Blank.
<b>B1</b>	Dilution water blank exceeded method criterion.
<b>C1</b>	CCV recovery above the acceptance limits. Results may be biased high.
<b>C2</b>	CCV recovery below the acceptance limits. Results may be biased low.
<b>C3</b>	ICV recovery above the acceptance limits. Results may be biased high.
<b>C4</b>	ICV recovery below the acceptance limits. Results may be biased low.
<b>C5</b>	Positive values verified by second column confirmation.
<b>C6</b>	Confirmation analysis by another detector or chromatographic column was not performed.
<b>D1</b>	The analysis did not meet the minimum DO depletion of at least 2 mg/L.
<b>D2</b>	The analysis did not meet the minimum residual DO of at least 1 mg/L.
<b>D3</b>	Sample required dilution due to a matrix interference.
<b>D4</b>	Sample was diluted in the extraction steps due to marked matrix interferences.
<b>D5</b>	Sample required dilution due to a chloride interference.
<b>D6</b>	Sample was diluted and the reporting limits were raised to achieve method compliant internal standard recovery.
<b>D7</b>	Sample was digested at a dilution due to the formation of a post-digestion precipitate.
<b>D8</b>	Sample was digested at a dilution to achieve method compliant matrix spike recovery.
<b>D9</b>	Sample was digested at a dilution to meet method compliant digestion criteria.
<b>E</b>	Value above quantitation range.
<b>E2</b>	Unable to obtain a stable weight within specified limits due to sample matrix. Value is estimated.
<b>F1</b>	Fecal sample tested positive for residual chlorine.
<b>H</b>	Method Hold Time exceeded and is not compliant with 40CFR136 Table II.
<b>H1</b>	Due to under-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.
<b>H2</b>	Due to over-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.
<b>H3</b>	Sample was re-analyzed outside of hold time due to error during original analysis.
<b>H4</b>	The Nitrite result used to report Nitrate was analyzed past the 48-hour holding time.
<b>I1</b>	Internal standard recovery above method acceptance limits. Results are estimated.
<b>I2</b>	Internal standard recovery was below method acceptance limits. Results are estimated.
<b>IP</b>	One of the instrument performance checks ( ) did not meet the acceptance criteria.
<b>J</b>	Indicates an estimated value.

Client: LIVE OAK LANDFILL

WorkOrder: G2408F42

Project: Live Oak 721S

## Analytical QC Summary Report

<b>L1</b>	LCS above the acceptance limits. Result may be biased high.
<b>L2</b>	LCS below the acceptance limits. Result may be biased low.
<b>L3</b>	Analyte was spiked into the LCS, but was not recovered.
<b>M1</b>	Matrix Spike recovery above the acceptance limits.
<b>M2</b>	Matrix Spike recovery below the acceptance limits.
<b>M4</b>	The matrix spike failed high for the surrogate.
<b>M5</b>	The matrix spike failed low for the surrogate.
<b>M6</b>	The reporting limits were raised due to sample matrix interference.
<b>M7</b>	Recovery for matrix spike could not be quantified due to matrix interference.
<b>M8</b>	Analyte was spiked into the MS, but was not recovered.
<b>M9</b>	Analyte concentration was determined by the method of standard addition (MSA).
<b>N1</b>	The lab does not hold accreditation from PA-DEP for this parameter by this method
<b>N2</b>	PADEP does not accredit labs for this analyte by this method.
<b>N3</b>	The lab is accredited for this method in West Virginia, but not in PA (its primary accrediting body).
<b>N4</b>	PADEP does not accredit labs for this analyte by this method in drinking water.
<b>ND</b>	Not Detected.
<b>O1</b>	The flashpoint tester cannot detect below 50 degrees F.
<b>O2</b>	Result is temperature of the sample when flame observed. No flash observed. Result qualified.
<b>O3</b>	The reporting limits were raised due to the high concentration of non-target compounds.
<b>O4</b>	Sample was received with headspace.
<b>O5</b>	Sample was received in incorrect container and is not compliant with 40CFR136 Table II.
<b>O6</b>	Insufficient sample volume was received to comply with the method.
<b>P1</b>	The pH of the sample was >2 and is not compliant with 40CFR136 Table II.
<b>P2</b>	Sample contained residual chlorine and is not compliant with 40CFR136 Table II
<b>P3</b>	The pH of the sample was <10 and is not compliant with 40CFR136 Table II.
<b>P4</b>	Field preservation does not meet EPA or method recommendations for this analysis.
<b>P5</b>	Acid preservation may not be appropriate for the analysis of 2-Chloroethylvinyl ether.
<b>P6</b>	Sample required additional preservative upon receipt.
<b>P7</b>	The sample was received unpreserved.
<b>P8</b>	The pH of the sample was < 9 and is not compliant with 40 CFR136 Table II.
<b>Q1</b>	Qualified Data See Case Narrative.
<b>R</b>	Relative Percent Difference (RPD) was above the control limit.
<b>R1</b>	RPD above control limits between matrix spike and MS duplicates.

Client: LIVE OAK LANDFILL

WorkOrder: G2408F42

Project: Live Oak 721S

## Analytical QC Summary Report

R2	RPD above the control limit between duplicates.
R3	RSD above the control limit between replicates.
R4	RPD above control limits between Inorganic Carbon check and spike.
R5	RPD above control limits between control sample and control sample duplicates.
S	Recovery for the spiked control sample outside accepted limits.
S2	Surrogate recovery in the blank was below the control limit.
S3	Surrogate recovery in the blank was above the control limit.
S4	Surrogate recovery in the LCS is above the control limit.
S5	Surrogate recovery in the LCS is below the control limit.
SR	Analyte recovery was outside the accepted recovery limits and above the control limit for RPD.
T	Sample temperature received outside the regulatory limit and is not compliant with 40CFR Part136 Table II (for NPW samples).
T1	Sample temperature received outside the regulatory limit. (Primarily for SCM samples).
T3	Target analyte found in trip/field blank.
TC	The MS tune check (tailing factor) did not meet the acceptance criteria.
U	The analyte was not detected at or above the listed concentration, which is below the laboratory quantitation limit.

**Note 1:** Other comments to clarify test results may be used. Examples include MCL (Contaminant Limit), and MDA (minimum detectable activity). The Q1 code requires additional qualifier information be described in the Case Narrative.

**Note 2:** NA is used in the Laboratory QC report as "Not Applicable."



Quality Assurance Project Report  
Prepared for  
LIVE OAK LANDFILL  
9/25/2024

David M. Glessner  
Quality Assurance Coordinator

### **Explanatory Notes**

1. Spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or greater.
2. Matrix Spike and MS Duplicates are sample specific controls and are not used to evaluate the analytical batch.
3. Laboratory duplicate. If one or both of the values is less than 5 times the PQL, the allowed difference is +/- the PQL.
4. "R" indicates a relative percent difference (RPD) was above the acceptance limit between duplicate QC samples or sample specific duplicates.

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F44  
Project: Live Oak 221A3

## Analytical QC Summary Report

SampleID: G2408F31-001FDUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125773				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	66	mg/L CaCO <sub>3</sub>	10						65	1.5%	20			
SampleID: G2408F09-003ADUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125833				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	86	mg/L CaCO <sub>3</sub>	10						87	1.2%	20			
SampleID: G2408F33-001ADUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125874				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	91	mg/L CaCO <sub>3</sub>	10						90	1.1%	20			
SampleID: G2408F49-002BDUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125911				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	157	mg/L CaCO <sub>3</sub>	10						155	1.3%	20			
SampleID: G2408F50-001ADUP		SampType: DUP		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125935				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Alkalinity to pH 4.5	237	mg/L CaCO <sub>3</sub>	10						234	1.3%	20			
SampleID: ALK LCS		SampType: LCS		TestNo: ASTM D1067-16				Prep Date:				RunNo: 309260		
		BatchID: R309260				Analysis Date: 8/29/2024				SeqNo: 8125758				

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F44  
Project: Live Oak 221A3

## Analytical QC Summary Report

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	49	mg/L CaCO3	10	47.5		103.2%	85	115				
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309260		
					<b>BatchID:</b> R309260					<b>Analysis Date:</b> 8/29/2024		<b>SeqNo:</b> 8125824
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	48	mg/L CaCO3	10	47.5		101.1%	85	115				
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309260		
					<b>BatchID:</b> R309260					<b>Analysis Date:</b> 8/29/2024		<b>SeqNo:</b> 8125866
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	48	mg/L CaCO3	10	47.5		101.1%	85	115				
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309260		
					<b>BatchID:</b> R309260					<b>Analysis Date:</b> 8/29/2024		<b>SeqNo:</b> 8125904
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	48	mg/L CaCO3	10	47.5		101.1%	85	115				
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309260		
					<b>BatchID:</b> R309260					<b>Analysis Date:</b> 8/29/2024		<b>SeqNo:</b> 8125926
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	48	mg/L CaCO3	10	47.5		101.1%	85	115				
<b>SampleID:</b> ALK LCS		<b>SampType:</b> LCS		<b>TestNo:</b> ASTM D1067-16			<b>Prep Date:</b>			<b>RunNo:</b> 309260		
					<b>BatchID:</b> R309260					<b>Analysis Date:</b> 8/30/2024		<b>SeqNo:</b> 8125947
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Alkalinity to pH 4.5	49	mg/L CaCO3	10	47.5		103.2%	85	115				

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F44  
Project: Live Oak 221A3

## Analytical QC Summary Report

SampleID: G2408F12-003CDUP		SampType: DUP		TestNo: EPA 300.0 Rev 2.1		Prep Date: 8/29/2024		RunNo: 309225				
		BatchID: 258442				Analysis Date: 8/29/2024		SeqNo: 8124723				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	< 1	mg/L	1						0.977		20	
SampleID: G2408F12-004CDUP		SampType: DUP		TestNo: EPA 300.0 Rev 2.1		Prep Date: 8/29/2024		RunNo: 309225				
		BatchID: 258442				Analysis Date: 8/29/2024		SeqNo: 8124736				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	6.8	mg/L	1						6.83	0.5%	20	
SampleID: G2408C26-001DDUP		SampType: DUP		TestNo: EPA 300.0 Rev 2.1		Prep Date: 8/29/2024		RunNo: 309225				
		BatchID: 258442				Analysis Date: 8/29/2024		SeqNo: 8124741				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	2.15	mg/L	1						2.16	0.4%	20	
SampleID: HRQC-258442		SampType: HRQC		TestNo: EPA 300.0 Rev 2.1		Prep Date: 8/29/2024		RunNo: 309225				
		BatchID: 258442				Analysis Date: 8/29/2024		SeqNo: 8124720				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	246	mg/L	1	250		98.4%	90	110				
SampleID: HRQC 1000-258442		SampType: HRQC 1000		TestNo: EPA 300.0 Rev 2.1		Prep Date: 8/29/2024		RunNo: 309225				
		BatchID: 258442				Analysis Date: 8/29/2024		SeqNo: 8124721				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	980	mg/L	1	1000		98.0%	90	110				
SampleID: LFB-258442		SampType: LFB		TestNo: EPA 300.0 Rev 2.1		Prep Date: 8/29/2024		RunNo: 309225				
		BatchID: 258442				Analysis Date: 8/29/2024		SeqNo: 8124716				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	47.9	mg/L	1	50		95.7%	90	110				

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F44  
Project: Live Oak 221A3

## Analytical QC Summary Report

SampleID: LFB2-258442		SampType: LFB2		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309225		
		BatchID: 258442						Analysis Date: 8/29/2024			SeqNo: 8124717	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	5.05	mg/L	1	5		101.0%	90	110				
SampleID: G2408F12-003CLFM		SampType: LFM		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309225		
		BatchID: 258442						Analysis Date: 8/29/2024			SeqNo: 8124724	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	17	mg/L	1	15	0.977	106.7%	80	120				
SampleID: G2408F12-004CLFM		SampType: LFM		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309225		
		BatchID: 258442						Analysis Date: 8/29/2024			SeqNo: 8124737	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	22.1	mg/L	1	15	6.83	101.7%	80	120				
SampleID: LRB-258442		SampType: LRB		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309225		
		BatchID: 258442						Analysis Date: 8/29/2024			SeqNo: 8124718	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	< 1	mg/L	1									
SampleID: CB-258442		SampType: MBLK		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309225		
		BatchID: 258442						Analysis Date: 8/29/2024			SeqNo: 8124715	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	< 1	mg/L	1									
SampleID: QCS-258442		SampType: QCS		TestNo: EPA 300.0 Rev 2.1			Prep Date: 8/29/2024			RunNo: 309225		
		BatchID: 258442						Analysis Date: 8/29/2024			SeqNo: 8124719	
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Chloride	23.2	mg/L	1	24		96.5%	90	110				

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F44  
Project: Live Oak 221A3

## Analytical QC Summary Report

SampleID: G2408F35-001BDUP		SampType: DUP		TestNo: EPA 350.1 Rev 2.0				Prep Date:				RunNo: 309327		
		BatchID: R309327				Analysis Date: 9/3/2024				SeqNo: 8127528				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Ammonia Nitrogen	< 0.1	mg/L as N	0.1								20			
SampleID: G2408F44-001BDUP		SampType: DUP		TestNo: EPA 350.1 Rev 2.0				Prep Date:				RunNo: 309327		
		BatchID: R309327				Analysis Date: 9/3/2024				SeqNo: 8127544				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Ammonia Nitrogen	< 0.1	mg/L as N	0.1								20			
SampleID: LCS		SampType: LCS		TestNo: EPA 350.1 Rev 2.0				Prep Date:				RunNo: 309327		
		BatchID: R309327				Analysis Date: 9/3/2024				SeqNo: 8127526				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Ammonia Nitrogen	0.814	mg/L as N	0.1	0.82		99.2%	90	110						
SampleID: CCB		SampType: MBLK		TestNo: EPA 350.1 Rev 2.0				Prep Date:				RunNo: 309327		
		BatchID: R309327				Analysis Date: 9/3/2024				SeqNo: 8127524				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Ammonia Nitrogen	< 0.1	mg/L as N	0.1											
SampleID: G2408F35-001BMS		SampType: MS		TestNo: EPA 350.1 Rev 2.0				Prep Date:				RunNo: 309327		
		BatchID: R309327				Analysis Date: 9/3/2024				SeqNo: 8127529				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Ammonia Nitrogen	0.996	mg/L as N	0.1	1		99.6%	90	110						
SampleID: G2408F44-001BMS		SampType: MS		TestNo: EPA 350.1 Rev 2.0				Prep Date:				RunNo: 309327		
		BatchID: R309327				Analysis Date: 9/3/2024				SeqNo: 8127545				
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual		
Ammonia Nitrogen	1.04	mg/L as N	0.1	1		104.1%	90	110						

Client: LIVE OAK LANDFILL

WorkOrder: G2408F44

Project: Live Oak 221A3

## Analytical QC Summary Report

<b>SampleID:</b> LCS1-258588		<b>SampType:</b> LCS1		<b>TestNo:</b> EPA 6010 D			<b>Prep Date:</b> 9/3/2024			<b>RunNo:</b> 309399		
		<b>BatchID:</b> 258588						<b>Analysis Date:</b> 9/4/2024			<b>SeqNo:</b> 8129284	

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Potassium	9.67	mg/L	0.5	10		96.7%	79.5	120.4				
Sodium	9.89	mg/L	0.2	10		98.9%	79.5	120.4				

<b>SampleID:</b> PB-258588		<b>SampType:</b> PB		<b>TestNo:</b> EPA 6010 D			<b>Prep Date:</b> 9/3/2024			<b>RunNo:</b> 309399		
		<b>BatchID:</b> 258588						<b>Analysis Date:</b> 9/4/2024			<b>SeqNo:</b> 8129281	

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Potassium	< 0.5	mg/L	0.5									
Sodium	< 0.2	mg/L	0.2									

<b>SampleID:</b> G2408F33-001DDUP		<b>SampType:</b> DUP		<b>TestNo:</b> EPA 6010 D			<b>Prep Date:</b> 9/3/2024			<b>RunNo:</b> 309399		
		<b>BatchID:</b> 258588						<b>Analysis Date:</b> 9/4/2024			<b>SeqNo:</b> 8129286	

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Potassium	< 0.5	mg/L	0.5						0.24		20	
Sodium	5.84	mg/L	0.2						5.86	0.2%	20	

<b>SampleID:</b> G2408F33-001DMS		<b>SampType:</b> MS		<b>TestNo:</b> EPA 6010 D			<b>Prep Date:</b> 9/3/2024			<b>RunNo:</b> 309399		
		<b>BatchID:</b> 258588						<b>Analysis Date:</b> 9/4/2024			<b>SeqNo:</b> 8129287	

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Potassium	9.82	mg/L	0.5	10	0.24	95.8%	75	125				
Sodium	15.4	mg/L	0.2	10	5.86	95.9%	75	125				

<b>SampleID:</b> G2408F44-003DMS		<b>SampType:</b> MS		<b>TestNo:</b> EPA 6010 D			<b>Prep Date:</b> 9/3/2024			<b>RunNo:</b> 309399		
		<b>BatchID:</b> 258588						<b>Analysis Date:</b> 9/4/2024			<b>SeqNo:</b> 8129301	

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
Potassium	10.4	mg/L	0.5	10	0.659	97.7%	75	125				
Sodium	23.2	mg/L	0.2	10	13.2	100.3%	75	125				

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F44  
Project: Live Oak 221A3

## Analytical QC Summary Report

SampleID: LCS2-258590		SampType: LCS2		TestNo: EPA 6020 B				Prep Date: 9/3/2024		RunNo: 309443			
		BatchID: 258590				Analysis Date: 9/5/2024				SeqNo: 8130694			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Lead	4.97	µg/L	1	5		99.5%	79.5	120.45					
SampleID: PB-258590		SampType: PB		TestNo: EPA 6020 B				Prep Date: 9/3/2024		RunNo: 309443			
		BatchID: 258590				Analysis Date: 9/5/2024				SeqNo: 8130692			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Lead	< 1	µg/L	1					0.2					
SampleID: G2408F33-001DDUP		SampType: DUP		TestNo: EPA 6020 B				Prep Date: 9/3/2024		RunNo: 309443			
		BatchID: 258590				Analysis Date: 9/5/2024				SeqNo: 8130698			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Lead	< 1	µg/L	1									20	
SampleID: G2408F44-002DMS		SampType: MS		TestNo: EPA 6020 B				Prep Date: 9/3/2024		RunNo: 309443			
		BatchID: 258590				Analysis Date: 9/5/2024				SeqNo: 8130747			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
Lead	4.65	µg/L	1	5		93.0%	75	125					
SampleID: 20 PPB LCS		SampType: LCS		TestNo: EPA 8260 D				Prep Date:		RunNo: 309263			
		BatchID: R309263				Analysis Date: 8/29/2024				SeqNo: 8126048			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
1,1,1,2-Tetrachloroethane	20.7	µg/L	1	20		103.7%	81	125					
1,1,1-Trichloroethane	19.6	µg/L	1	20		97.8%	71	125					
1,1,2,2-Tetrachloroethane	20.3	µg/L	1	20		101.6%	80	116					
1,1,2-Trichloroethane	20.5	µg/L	1	20		102.5%	83	126					
1,1-Dichloroethane	19	µg/L	1	20		94.8%	73	122					
1,1-Dichloroethene	20	µg/L	1	20		100.0%	74	121					

Client: LIVE OAK LANDFILL

WorkOrder: G2408F44

Project: Live Oak 221A3

## Analytical QC Summary Report

1,2,3-Trichloropropane	19.5	µg/L	1	20		97.4%	77	118				
1,2-Dibromo-3-chloropropane	22.4	µg/L	5	20		111.8%	64	126				
1,2-Dibromoethane	20.4	µg/L	1	20		102.0%	83	119				
1,2-Dichlorobenzene	19.8	µg/L	1	20		99.0%	85	119				
1,2-Dichloroethane	19.7	µg/L	1	20		98.7%	72	123				
1,2-Dichloropropane	21.1	µg/L	1	20		105.4%	83	122				
1,4-Dichlorobenzene	19.3	µg/L	1	20		96.6%	83	120				
2-Butanone	19.7	µg/L	5	20		98.6%	61	125				
2-Hexanone	21.1	µg/L	5	20		105.4%	58	132				
4-Methyl-2-Pentanone	21.1	µg/L	1	20		105.4%	68	127				
Acetone	21.4	µg/L	10	20		107.0%	60	133				
Benzene	19.9	µg/L	1	20		99.5%	76	122				
Bromochloromethane	20.3	µg/L	1	20		101.3%	78	124				
Bromodichloromethane	21.8	µg/L	1	20		109.1%	71	138				
Bromoform	21.1	µg/L	1	20		105.7%	71	125				
Bromomethane	18.8	µg/L	1	20		94.2%	47	152				
Carbon Disulfide	19.7	µg/L	1	20		98.3%	63	123				
Carbon Tetrachloride	19.4	µg/L	1	20		96.8%	68	133				
Chlorobenzene	20	µg/L	1	20		100.0%	83	118				
Chlorodibromomethane	21.2	µg/L	1	20		106.2%	74	131				
Chloroethane	22.7	µg/L	1	20		113.4%	56	127				
Chloroform	19.5	µg/L	1	20		97.5%	73	123				
Chloromethane	20.4	µg/L	1	20		102.2%	65	129				
cis-1,2-Dichloroethene	20	µg/L	1	20		99.8%	75	121				
cis-1,3-Dichloropropene	19.9	µg/L	1	20		99.4%	71	129				
Dibromomethane	19.2	µg/L	1	20		95.8%	83	118				
Dichlorobromomethane	21.8	µg/L	1	20		109.1%	56	145				
Ethylbenzene	20.1	µg/L	1	20		100.7%	84	120				
Iodomethane	21.5	µg/L	5	20		107.7%	29	162				
Methyl Ethyl Ketone	19.7	µg/L	5	20		98.6%	72	131				
Methylene Chloride	20	µg/L	1	20		100.2%	73	133				
Styrene	20.9	µg/L	1	20		104.3%	88	116				
Tetrachloroethene	21	µg/L	1	20		104.8%	76	127				
Toluene	20.8	µg/L	1	20		103.8%	80	118				

Client: LIVE OAK LANDFILL

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## Analytical QC Summary Report

trans-1,2-Dichloroethene	20.6	µg/L	1	20		102.8%	73	120				
trans-1,3-Dichloropropene	19.1	µg/L	1	20		95.7%	70	126				
trans-1,4-Dichloro-2-butene	19.6	µg/L	2	20		98.0%	46	137				
Tribromomethane	21.1	µg/L	1	20		105.7%	71	125				
Trichloroethene	20.5	µg/L	1	20		102.4%	73	123				
Trichlorofluoromethane	21.3	µg/L	1	20		106.7%	69	125				
Trichloromethane	19.5	µg/L	1	20		97.5%	73	123				
Vinyl Acetate	20	µg/L	1	20		100.1%	67	131				
Vinyl Chloride	20.6	µg/L	1	20		103.2%	56	125				
Total Xylene	59.7	µg/L	2	60		99.5%	87	116				
Surr: 1,2-Dichloroethane-d4	27.8	µg/L	0	30		92.5%	70	130				
Surr: 4-Bromofluorobenzene	29.7	µg/L	0	30		99.1%	70	130				
Surr: Dibromofluoromethane	29.1	µg/L	0	30		97.0%	70	130				
Surr: Toluene-d8	29.9	µg/L	0	30		99.6%	70	130				

SampleID: BLANK	SampType: MBLK	TestNo: EPA 8260 D	Prep Date:	RunNo: 309263
	BatchID: R309263		Analysis Date: 8/29/2024	SeqNo: 8126051

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,1,1,2-Tetrachloroethane	< 1	µg/L	1									
1,1,1-Trichloroethane	< 1	µg/L	1									
1,1,2,2-Tetrachloroethane	< 1	µg/L	1									
1,1,2-Trichloroethane	< 1	µg/L	1									
1,1-Dichloroethane	< 1	µg/L	1									
1,1-Dichloroethene	< 1	µg/L	1									
1,2,3-Trichloropropane	< 1	µg/L	1									
1,2-Dibromo-3-chloropropane	< 5	µg/L	5									
1,2-Dibromoethane	< 1	µg/L	1									
1,2-Dichlorobenzene	< 1	µg/L	1									
1,2-Dichloroethane	< 1	µg/L	1									
1,2-Dichloropropane	< 1	µg/L	1									
1,4-Dichlorobenzene	< 1	µg/L	1									
2-Butanone	< 5	µg/L	5									
2-Hexanone	< 5	µg/L	5									

**Client: LIVE OAK LANDFILL**

WorkOrder: G2408F44

Project: Live Oak 221A3

## Analytical QC Summary Report

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F44  
Project: Live Oak 221A3

## Analytical QC Summary Report

Total Xylene	< 2	µg/L	2										
Surr: 1,2-Dichloroethane-d4	29.9	µg/L	0	30		99.7%	70	130					
Surr: 4-Bromofluorobenzene	29.1	µg/L	0	30		97.0%	70	130					
Surr: Dibromofluoromethane	28.1	µg/L	0	30		93.5%	70	130					
Surr: Toluene-d8	30.7	µg/L	0	30		102.3%	70	130					
<b>SampleID:</b> G2408E87-002GMS		<b>SampType:</b> MS		<b>TestNo:</b> EPA 8260 D			<b>Prep Date:</b>			<b>RunNo:</b> 309263			
		<b>BatchID:</b> R309263					<b>Analysis Date:</b> 8/29/2024			<b>SeqNo:</b> 8126049			
Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual	
1,1,1,2-Tetrachloroethane	20.9	µg/L	1	20		104.5%	76	117					
1,1,1-Trichloroethane	21.3	µg/L	1	20		106.3%	72	122					
1,1,2,2-Tetrachloroethane	19.4	µg/L	1	20		97.2%	72	110					
1,1,2-Trichloroethane	20.8	µg/L	1	20		103.9%	76	126					
1,1-Dichloroethane	19.8	µg/L	1	20		99.0%	66	126					
1,1-Dichloroethene	21.6	µg/L	1	20		108.0%	66	121					
1,2,3-Trichloropropane	18.8	µg/L	1	20		94.2%	72	112					
1,2-Dibromo-3-chloropropane	20.2	µg/L	5	20		101.2%	57	121					
1,2-Dibromoethane	20.3	µg/L	1	20		101.4%	75	113					
1,2-Dichlorobenzene	20.1	µg/L	1	20		100.3%	76	108					
1,2-Dichloroethane	19.8	µg/L	1	20		98.8%	69	116					
1,2-Dichloropropane	21.7	µg/L	1	20		108.3%	78	122					
1,4-Dichlorobenzene	19.9	µg/L	1	20		99.4%	70	121					
2-Butanone	16.4	µg/L	5	20		82.1%	59	118					
2-Hexanone	19	µg/L	5	20		94.8%	63	120					
4-Methyl-2-Pentanone	19.8	µg/L	1	20		99.1%	68	116					
Acetone	17.2	µg/L	10	20		85.9%	51	133					
Acrylonitrile	19.6	µg/L	5	20		97.9%	64	122					
Benzene	20.6	µg/L	1	20		103.1%	52	125					
Bromochloromethane	20.5	µg/L	1	20		102.3%	71	117					
Bromodichloromethane	22.1	µg/L	1	20		110.7%	68	132					
Bromoform	20.6	µg/L	1	20		102.8%	65	117					
Bromomethane	19.7	µg/L	1	20		98.5%	40	156					
Carbon Disulfide	21.5	µg/L	1	20		107.3%	60	123					

Client: LIVE OAK LANDFILL

WorkOrder: G2408F44

Project: Live Oak 221A3

## Analytical QC Summary Report

Carbon Tetrachloride	21.4	µg/L	1	20		106.8%	67	132			
Chlorobenzene	20.3	µg/L	1	20		101.4%	78	111			
Chlorodibromomethane	21.3	µg/L	1	20		106.3%	70	123			
Chloroethane	23.6	µg/L	1	20		118.0%	46	132			
Chloroform	21.2	µg/L	1	20	0.726	102.4%	69	117			
Chloromethane	21.8	µg/L	1	20		109.2%	51	129			
cis-1,2-Dichloroethene	20.6	µg/L	1	20		103.2%	71	117			
cis-1,3-Dichloropropene	20.3	µg/L	1	20		101.3%	71	117			
Dibromomethane	19.1	µg/L	1	20		95.7%	77	110			
Dichlorobromomethane	22.1	µg/L	1	20		110.7%	74	117			
Ethylbenzene	21	µg/L	1	20		104.8%	72	122			
Iodomethane	22.4	µg/L	5	20		112.2%	34	150			
Methyl Ethyl Ketone	16.4	µg/L	5	20		82.1%	59	121			
Methylene Chloride	20	µg/L	1	20		100.2%	64	121			
Styrene	20.5	µg/L	1	20		102.6%	78	117			
Tetrachloroethene	20.5	µg/L	1	20		102.5%	67	122			
Toluene	21.6	µg/L	1	20		108.2%	75	115			
trans-1,2-Dichloroethene	21.3	µg/L	1	20		106.6%	69	118			
trans-1,3-Dichloropropene	19.6	µg/L	1	20		97.9%	66	122			
trans-1,4-Dichloro-2-butene	18.3	µg/L	2	20		91.6%	46	131			
Tribromomethane	20.6	µg/L	1	20		102.8%	65	117			
Trichloroethene	21.4	µg/L	1	20		107.0%	75	117			
Trichlorofluoromethane	23.9	µg/L	1	20		119.6%	69	125			
Trichloromethane	21.2	µg/L	1	20	0.726	102.4%	69	117			
Vinyl Acetate	18.9	µg/L	1	20		94.7%	46	126			
Vinyl Chloride	23	µg/L	1	20		114.8%	54	128			
Total Xylene	61.6	µg/L	2	60		102.7%	72	120			
Surr: 1,2-Dichloroethane-d4	28	µg/L	0	30		93.4%	70	130			
Surr: 4-Bromofluorobenzene	29.9	µg/L	0	30		99.7%	70	130			
Surr: Dibromofluoromethane	28.3	µg/L	0	30		94.5%	70	130			
Surr: Toluene-d8	29.8	µg/L	0	30		99.4%	70	130			

Client: LIVE OAK LANDFILL

WorkOrder: G2408F44

Project: Live Oak 221A3

## Analytical QC Summary Report

<b>SampleID:</b> G2408E87-002GMSD	<b>SampType:</b> MSD	<b>TestNo:</b> EPA 8260 D	<b>Prep Date:</b>	<b>RunNo:</b> 309263
		<b>BatchID:</b> R309263	<b>Analysis Date:</b> 8/29/2024	<b>SeqNo:</b> 8126050

Analyte	Calc Val	Units	PQL	Spk Val	SPKrefval	REC	Low Limit	High Limit	RPDrefval	RPD	RPDlimit	Qual
1,1,1,2-Tetrachloroethane	21.1	µg/L	1						20.9	1.2%	11	
1,1,1-Trichloroethane	21.7	µg/L	1						21.3	2.2%	12	
1,1,2,2-Tetrachloroethane	19.9	µg/L	1						19.4	2.3%	14	
1,1,2-Trichloroethane	21.1	µg/L	1						20.8	1.5%	15	
1,1-Dichloroethane	20.1	µg/L	1						19.8	1.6%	12	
1,1-Dichloroethene	22.3	µg/L	1						21.6	2.9%	14	
1,2,3-Trichloropropane	19.3	µg/L	1						18.8	2.2%	14	
1,2-Dibromo-3-chloropropane	20.2	µg/L	5						20.2	0.2%	20	
1,2-Dibromoethane	20.6	µg/L	1						20.3	1.4%	17	
1,2-Dichlorobenzene	20	µg/L	1						20.1	0.5%	13	
1,2-Dichloroethane	20.2	µg/L	1						19.8	2.3%	11	
1,2-Dichloropropane	21.5	µg/L	1						21.7	0.6%	12	
1,4-Dichlorobenzene	19.9	µg/L	1						19.9	0.0%	16	
2-Butanone	18.8	µg/L	5						16.4	13.8%	23	
2-Hexanone	20.6	µg/L	5						19	8.3%	18	
4-Methyl-2-Pentanone	20.5	µg/L	1						19.8	3.3%	18	
Acetone	18	µg/L	10						17.2	4.5%	23	
Acrylonitrile	20.5	µg/L	5						19.6	4.6%	16	
Benzene	20.9	µg/L	1						20.6	1.2%	15	
Bromochloromethane	20.5	µg/L	1						20.5	0.0%	12	
Bromodichloromethane	22.8	µg/L	1						22.1	2.9%	18	
Bromoform	21	µg/L	1						20.6	2.3%	14	
Bromomethane	20.2	µg/L	1						19.7	2.7%	22	
Carbon Disulfide	21.9	µg/L	1						21.5	1.8%	13	
Carbon Tetrachloride	21.7	µg/L	1						21.4	1.5%	12	
Chlorobenzene	20.6	µg/L	1						20.3	1.8%	10	
Chlorodibromomethane	21.8	µg/L	1						21.3	2.4%	16	
Chloroethane	24.5	µg/L	1		0.726				23.6	3.8%	17	
Chloroform	21.2	µg/L	1						21.2	0.2%	13	

Client: LIVE OAK LANDFILL

WorkOrder: G2408F44

Project: Live Oak 221A3

## Analytical QC Summary Report

Chloromethane	22	µg/L	1					21.8	0.8%	16	
cis-1,2-Dichloroethene	21.2	µg/L	1					20.6	2.6%	12	
cis-1,3-Dichloropropene	20.4	µg/L	1					20.3	0.7%	16	
Dibromomethane	19.3	µg/L	1					19.1	0.6%	14	
Dichlorobromomethane	22.8	µg/L	1					22.1	2.9%	13	
Ethylbenzene	21	µg/L	1					21	0.3%	16	
Iodomethane	22.8	µg/L	5					22.4	1.8%	19	
Methyl Ethyl Ketone	18.8	µg/L	5					16.4	13.8%	21	
Methylene Chloride	20.4	µg/L	1					20	1.8%	17	
Styrene	20.7	µg/L	1					20.5	0.7%	12	
Tetrachloroethene	20.6	µg/L	1					20.5	0.7%	16	
Toluene	21.8	µg/L	1					21.6	0.6%	13	
trans-1,2-Dichloroethene	21.9	µg/L	1					21.3	2.5%	13	
trans-1,3-Dichloropropene	20	µg/L	1					19.6	2.1%	15	
trans-1,4-Dichloro-2-butene	19.1	µg/L	2					18.3	4.1%	17	
Tribromomethane	21	µg/L	1					20.6	2.3%	14	
Trichloroethene	21.8	µg/L	1					21.4	1.9%	11	
Trichlorofluoromethane	24.1	µg/L	1					23.9	0.8%	15	
Trichloromethane	21.2	µg/L	1	0.726				21.2	0.2%	12	
Vinyl Acetate	19.3	µg/L	1					18.9	2.0%	11	
Vinyl Chloride	23.4	µg/L	1					23	2.1%	15	
Total Xylene	62.1	µg/L	2					61.6		18	
Surr: 1,2-Dichloroethane-d4	28.1	µg/L	0	30	93.5%	70	130	28			
Surr: 4-Bromofluorobenzene	30	µg/L	0	30	99.9%	70	130	29.9			
Surr: Dibromofluoromethane	29	µg/L	0	30	96.7%	70	130	28.3			
Surr: Toluene-d8	29.6	µg/L	0	30	98.6%	70	130	29.8			

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F44  
Project: Live Oak 221A3

## Analytical QC Summary Report

Prep Batch Report		Prep Start Date: 8/29/2024 12:46:00 PM						Technician: Angela C. Watkins		
Prep Batch: 258442			Prep End Date: 8/29/2024 12:46:00 PM						Prep Factor Units: mL	
Sample ID	ClientSampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End	
CB-258442		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 5:05:00 AM	8/29/2024 5:05:00 AM	
G2408C26-001D	MW-6	Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 7:14:00 AM	8/29/2024 7:14:00 AM	
G2408C26-001DDUP		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 7:14:00 AM	8/29/2024 7:14:00 AM	
G2408F11-001A	Laurel Refuse - 001 TP2	Surface Water	8/28/2024 7:15:00 AM	100	100		1.000	8/29/2024 6:07:00 AM	8/29/2024 6:07:00 AM	
G2408F12-001C	Cell 11 Primary LCZ	Groundwater	8/28/2024 9:30:00 AM	100	100		1.000	8/29/2024 6:07:00 AM	8/29/2024 6:07:00 AM	
G2408F12-002C	Cell 11 Secondary LDZ	Groundwater	8/28/2024 9:45:00 AM	100	100		1.000	8/29/2024 6:07:00 AM	8/29/2024 6:07:00 AM	
G2408F12-003C	MW-106DR	Groundwater	8/28/2024 12:35:00 PM	100	100		1.000	8/29/2024 6:07:00 AM	8/29/2024 6:07:00 AM	
G2408F12-003CDUP		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 6:07:00 AM	8/29/2024 6:07:00 AM	
G2408F12-003CLFM		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 6:07:00 AM	8/29/2024 6:07:00 AM	
G2408F12-004C	MW-101U	Groundwater	8/28/2024 10:30:00 AM	100	100		1.000	8/29/2024 6:07:00 AM	8/29/2024 6:07:00 AM	
G2408F12-004CDUP		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 6:07:00 AM	8/29/2024 6:07:00 AM	
G2408F12-004CLFM		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 6:07:00 AM	8/29/2024 6:07:00 AM	
G2408F12-005C	MW-104D	Groundwater	8/28/2024 11:10:00 AM	100	100		1.000	8/29/2024 6:07:00 AM	8/29/2024 6:07:00 AM	
G2408F12-006C	MW-105DR	Groundwater	8/28/2024 12:00:00 PM	100	100		1.000	8/29/2024 6:07:00 AM	8/29/2024 6:07:00 AM	
G2408F19-001A	Outfall 003	Aqueous	8/26/2024 6:51:00 AM	100	100		1.000	8/29/2024 6:07:00 AM	8/29/2024 6:07:00 AM	
G2408F19-002A	Outfall 004	Aqueous	8/26/2024 7:01:00 AM	100	100		1.000	8/29/2024 6:07:00 AM	8/29/2024 6:07:00 AM	
G2408F20-002A	EQ	Waste Water	8/28/2024 4:48:00 AM	100	100		1.000	8/29/2024 6:07:00 AM	8/29/2024 6:07:00 AM	
G2408F20-006C	SE	Waste Water	8/28/2024 4:51:00 AM	100	100		1.000	8/29/2024 6:07:00 AM	8/29/2024 6:07:00 AM	
G2408F22-001B	Weekly DI	Aqueous	8/28/2024 5:25:00 PM	100	100		1.000	8/29/2024 6:07:00 AM	8/29/2024 6:07:00 AM	
G2408F25-001C	Outfall 101	Aqueous	8/28/2024 10:00:00 AM	100	100		1.000	8/29/2024 7:14:00 AM	8/29/2024 7:14:00 AM	
G2408F44-001C	GWB-2	Groundwater	8/28/2024 10:47:00 AM	100	100		1.000	8/29/2024 12:46:00 PM	8/29/2024 12:46:00 PM	
G2408F44-002C	GWC-1A	Groundwater	8/28/2024 10:22:00 AM	100	100		1.000	8/29/2024 12:46:00 PM	8/29/2024 12:46:00 PM	
G2408F44-003C	GWC-1B	Groundwater	8/28/2024 10:08:00 AM	100	100		1.000	8/29/2024 12:46:00 PM	8/29/2024 12:46:00 PM	
HRQC 1000-258442		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 5:05:00 AM	8/29/2024 5:05:00 AM	

Client: LIVE OAK LANDFILL  
 WorkOrder: G2408F44  
 Project: Live Oak 221A3

## Analytical QC Summary Report

HRQC-258442		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 5:05:00 AM	8/29/2024 5:05:00 AM
IPC-258442		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 5:05:00 AM	8/29/2024 5:05:00 AM
LFB-258442		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 5:05:00 AM	8/29/2024 5:05:00 AM
LFB2-258442		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 5:05:00 AM	8/29/2024 5:05:00 AM
LRB-258442		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 5:05:00 AM	8/29/2024 5:05:00 AM
QCS-258442		Aqueous	8/29/2024 12:00:00 AM	100	100		1.000	8/29/2024 5:05:00 AM	8/29/2024 5:05:00 AM

Prep Batch: 258588 Prep Code: MEPR6010_3010			Prep Batch Report Prep Start Date: 9/3/2024 8:00:00 AM Prep End Date: 9/3/2024 1:45:00 PM					Technician: Kristy L Botteicher Prep Factor Units: mL		
Sample ID	Client SampID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End	
G2408F24-001A	TCLP Metals RSWC-9-49-7	Solid	8/28/2024 10:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F24-002B	TCLP Blank RSWC-9-49-2	Solid	8/28/2024 10:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F33-001D	GWA-2A	Groundwater	8/26/2024 1:48:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F33-001DDUP		Aqueous	9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F33-001DMS		Aqueous	9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F35-001D	GWC-10	Groundwater	8/27/2024 12:50:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F35-002D	GWC-14	Groundwater	8/26/2024 12:13:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F37-003D	GWC-8	Groundwater	8/28/2024 9:20:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F37-004D	GWC-9	Groundwater	8/28/2024 9:20:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F42-001E	SWC-5	Surface Water	8/28/2024 1:10:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F44-001D	GWB-2	Groundwater	8/28/2024 10:47:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F44-002D	GWC-1A	Groundwater	8/28/2024 10:22:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F44-003D	GWC-1B	Groundwater	8/28/2024 10:08:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F44-003DMS		Aqueous	9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F54-001B	Williams Auburn	Solid	8/28/2024 9:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F63-001B	PGE 726 D	Solid	8/28/2024 8:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F65-001B		Solid	8/28/2024 7:30:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F67-001B	TC Energy	Solid	8/28/2024 7:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	

Client: LIVE OAK LANDFILL  
 WorkOrder: G2408F44  
 Project: Live Oak 221A3

## Analytical QC Summary Report

G2408F71-001B	Highlands Antrim	Solid	8/28/2024 12:00:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2408F95-001A	TCLP Metals RSWC-9-49-9	Solid	8/29/2024 10:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
G2409007-001B	TCLP Blank RSWC-9-49-11	Solid	9/2/2024 10:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
LCS1-258588		Aqueous	9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM
PB-258588		Aqueous	9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM

Prep Batch Report			Prep Start Date: 9/3/2024 8:00:00 AM					Technician: Kristy L Botteicher		
Prep Batch: 258590			Prep End Date: 9/3/2024 1:45:00 PM					Prep Factor Units:		
Sample ID	ClientSamplID	Matrix	Collection Date	Samp Amt	Fin Vol	PQual	Factor	Prep Start	Prep End	
G2408F33-001D	GWA-2A	Groundwater	8/26/2024 1:48:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F33-001DDUP			9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F35-001D	GWC-10	Groundwater	8/27/2024 12:50:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F35-002D	GWC-14	Groundwater	8/26/2024 12:13:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F37-001A	01FB	Aqueous	8/28/2024 10:50:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F37-003D	GWC-8	Groundwater	8/28/2024 9:20:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F37-004D	GWC-9	Groundwater	8/28/2024 9:20:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F42-001E	SWC-5	Surface Water	8/28/2024 1:10:00 PM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F44-001D	GWB-2	Groundwater	8/28/2024 10:47:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F44-002D	GWC-1A	Groundwater	8/28/2024 10:22:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F44-002DMS			9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
G2408F44-003D	GWC-1B	Groundwater	8/28/2024 10:08:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
LCS2-258590			9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	
PB-258590			9/3/2024 12:00:00 AM	50	50		1.000	9/3/2024 8:00:00 AM	9/3/2024 1:45:00 PM	

Client: LIVE OAK LANDFILL  
WorkOrder: G2408F44  
Project: Live Oak 221A3

## Analytical QC Summary Report

### Batch Reference Report

Client Samp ID	Test No	Batch ID
GWB-2	ASTM D1067-16	R309260
GWC-1A	ASTM D1067-16	R309260
GWC-1B	ASTM D1067-16	R309260
GWB-2	EPA 300.0 Rev 2.1	258442
GWC-1A	EPA 300.0 Rev 2.1	258442
GWC-1B	EPA 300.0 Rev 2.1	258442
GWB-2	EPA 350.1 Rev 2.0	R309327
GWC-1A	EPA 350.1 Rev 2.0	R309327
GWC-1B	EPA 350.1 Rev 2.0	R309327
GWB-2	EPA 6010 D	258588
GWC-1A	EPA 6010 D	258588
GWC-1B	EPA 6010 D	258588
GWB-2	EPA 6020 B	258590
GWC-1A	EPA 6020 B	258590
GWC-1B	EPA 6020 B	258590
GWB-2	EPA 8260 D	R309263
GWC-1A	EPA 8260 D	R309263
GWC-1B	EPA 8260 D	R309263

**Table I ON Qualifiers**

Qualifier	Description
<b>1</b>	Spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or greater.
<b>B</b>	Analyte detected in the associated method Blank.
<b>B1</b>	Dilution water blank exceeded method criterion.
<b>C1</b>	CCV recovery above the acceptance limits. Results may be biased high.
<b>C2</b>	CCV recovery below the acceptance limits. Results may be biased low.
<b>C3</b>	ICV recovery above the acceptance limits. Results may be biased high.
<b>C4</b>	ICV recovery below the acceptance limits. Results may be biased low.
<b>C5</b>	Positive values verified by second column confirmation.
<b>C6</b>	Confirmation analysis by another detector or chromatographic column was not performed.
<b>D1</b>	The analysis did not meet the minimum DO depletion of at least 2 mg/L.
<b>D2</b>	The analysis did not meet the minimum residual DO of at least 1 mg/L.
<b>D3</b>	Sample required dilution due to a matrix interference.
<b>D4</b>	Sample was diluted in the extraction steps due to marked matrix interferences.
<b>D5</b>	Sample required dilution due to a chloride interference.
<b>D6</b>	Sample was diluted and the reporting limits were raised to achieve method compliant internal standard recovery.
<b>D7</b>	Sample was digested at a dilution due to the formation of a post-digestion precipitate.
<b>D8</b>	Sample was digested at a dilution to achieve method compliant matrix spike recovery.
<b>D9</b>	Sample was digested at a dilution to meet method compliant digestion criteria.
<b>E</b>	Value above quantitation range.
<b>E2</b>	Unable to obtain a stable weight within specified limits due to sample matrix. Value is estimated.
<b>F1</b>	Fecal sample tested positive for residual chlorine.
<b>H</b>	Method Hold Time exceeded and is not compliant with 40CFR136 Table II.
<b>H1</b>	Due to under-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.
<b>H2</b>	Due to over-depletion from the initial dilutions for BOD, the sample was reanalyzed outside the hold time.
<b>H3</b>	Sample was re-analyzed outside of hold time due to error during original analysis.
<b>H4</b>	The Nitrite result used to report Nitrate was analyzed past the 48-hour holding time.
<b>I1</b>	Internal standard recovery above method acceptance limits. Results are estimated.
<b>I2</b>	Internal standard recovery was below method acceptance limits. Results are estimated.
<b>IP</b>	One of the instrument performance checks ( ) did not meet the acceptance criteria.
<b>J</b>	Indicates an estimated value.

Client: LIVE OAK LANDFILL

WorkOrder: G2408F44

Project: Live Oak 221A3

## Analytical QC Summary Report

<b>L1</b>	LCS above the acceptance limits. Result may be biased high.
<b>L2</b>	LCS below the acceptance limits. Result may be biased low.
<b>L3</b>	Analyte was spiked into the LCS, but was not recovered.
<b>M1</b>	Matrix Spike recovery above the acceptance limits.
<b>M2</b>	Matrix Spike recovery below the acceptance limits.
<b>M4</b>	The matrix spike failed high for the surrogate.
<b>M5</b>	The matrix spike failed low for the surrogate.
<b>M6</b>	The reporting limits were raised due to sample matrix interference.
<b>M7</b>	Recovery for matrix spike could not be quantified due to matrix interference.
<b>M8</b>	Analyte was spiked into the MS, but was not recovered.
<b>M9</b>	Analyte concentration was determined by the method of standard addition (MSA).
<b>N1</b>	The lab does not hold accreditation from PA-DEP for this parameter by this method
<b>N2</b>	PADEP does not accredit labs for this analyte by this method.
<b>N3</b>	The lab is accredited for this method in West Virginia, but not in PA (its primary accrediting body).
<b>N4</b>	PADEP does not accredit labs for this analyte by this method in drinking water.
<b>ND</b>	Not Detected.
<b>O1</b>	The flashpoint tester cannot detect below 50 degrees F.
<b>O2</b>	Result is temperature of the sample when flame observed. No flash observed. Result qualified.
<b>O3</b>	The reporting limits were raised due to the high concentration of non-target compounds.
<b>O4</b>	Sample was received with headspace.
<b>O5</b>	Sample was received in incorrect container and is not compliant with 40CFR136 Table II.
<b>O6</b>	Insufficient sample volume was received to comply with the method.
<b>P1</b>	The pH of the sample was >2 and is not compliant with 40CFR136 Table II.
<b>P2</b>	Sample contained residual chlorine and is not compliant with 40CFR136 Table II
<b>P3</b>	The pH of the sample was <10 and is not compliant with 40CFR136 Table II.
<b>P4</b>	Field preservation does not meet EPA or method recommendations for this analysis.
<b>P5</b>	Acid preservation may not be appropriate for the analysis of 2-Chloroethylvinyl ether.
<b>P6</b>	Sample required additional preservative upon receipt.
<b>P7</b>	The sample was received unpreserved.
<b>P8</b>	The pH of the sample was < 9 and is not compliant with 40 CFR136 Table II.
<b>Q1</b>	Qualified Data See Case Narrative.
<b>R</b>	Relative Percent Difference (RPD) was above the control limit.
<b>R1</b>	RPD above control limits between matrix spike and MS duplicates.

Client: LIVE OAK LANDFILL

WorkOrder: G2408F44

Project: Live Oak 221A3

## Analytical QC Summary Report

R2	RPD above the control limit between duplicates.
R3	RSD above the control limit between replicates.
R4	RPD above control limits between Inorganic Carbon check and spike.
R5	RPD above control limits between control sample and control sample duplicates.
S	Recovery for the spiked control sample outside accepted limits.
S2	Surrogate recovery in the blank was below the control limit.
S3	Surrogate recovery in the blank was above the control limit.
S4	Surrogate recovery in the LCS is above the control limit.
S5	Surrogate recovery in the LCS is below the control limit.
SR	Analyte recovery was outside the accepted recovery limits and above the control limit for RPD.
T	Sample temperature received outside the regulatory limit and is not compliant with 40CFR Part136 Table II (for NPW samples).
T1	Sample temperature received outside the regulatory limit. (Primarily for SCM samples).
T3	Target analyte found in trip/field blank.
TC	The MS tune check (tailing factor) did not meet the acceptance criteria.
U	The analyte was not detected at or above the listed concentration, which is below the laboratory quantitation limit.

**Note 1:** Other comments to clarify test results may be used. Examples include MCL (Contaminant Limit), and MDA (minimum detectable activity). The Q1 code requires additional qualifier information be described in the Case Narrative.

**Note 2:** NA is used in the Laboratory QC report as "Not Applicable."

Form F-5002, Rev. 9  
\*\*\* Lab Work Order #

REQUEST FOR LABORATORY  
ANALYTICAL SERVICES  
Pennsylvania Chain of Custody (COC)

Shuttle/Cooler ID#

62408E91

Billing Client	Company Atlantic Coast Consulting, Inc.					Name Owens Fuquea			E-mail Address owens.fuquea@atlcc.net																					
	Mailing Address 1150 Northmeadow Parkway, Suite 100					Telephone No. 770-548-7741 (cell), 770-594-5998 (office)			Landfill Site Live Oak Landfill																					
	City, State, Zip Roswell, GA 30076					State Sampled GA		PWS Number		Date Results Required																				
<b>SAMPLES MUST BE PRESERVED ON ICE.</b> <b>SPECIAL INSTRUCTIONS:</b>					<b>*PC-1:</b> Nitric acid (HNO <sub>3</sub> ) <b>*PC-2:</b> Hydrochloric acid (HCl) <b>*PC-3:</b> Sulfuric acid (H <sub>2</sub> SO <sub>4</sub> ) <b>*PC-4:</b> Sodium Hydroxide (NaOH) <b>*PC-5:</b> Sodium Thiosulfate (Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> ) <b>*PC-6:</b> Ascorbic acid (C <sub>6</sub> H <sub>8</sub> O <sub>6</sub> ) <b>*PC-7:</b> Zinc acetate (C <sub>4</sub> H <sub>8</sub> O <sub>2</sub> Zn) <b>*PC-8:</b> Ammonium chloride (NH <sub>4</sub> Cl) <b>*PC-9:</b> Copper Sulfate (CuSO <sub>4</sub> ·5H <sub>2</sub> O) <b>*PC-I:</b> Ice *PC-N: None* PC-O: Other					<b>ANALYSIS REQUESTED</b> Enter 'X' in box below to indicate request and use appropriate preservation code listed to the left																				
SR 1st Review: <u>NSY</u>	CS 2nd Review: <u>LAN</u>	Number of Containers	ALK_D1067	Preservative*: PC-Ice	IC_300_0_28	Preservative*: PC-Ice	NH3_350.1	Preservative*: PC-3, PC-Ice	MET_6010_6020_App IR/Na	Preservative*: PC-1, PC-Ice	8260_VOA	Preservative*: PC-2, PC-Ice	GCFID_Methane/Ethane/Ethene	Preservative*: PC-Ice	PC-1, <u>met-tolu-B-PYRIMIDINE</u> , <u>met-4-TIO</u>	Preservative*: <u>6020</u> , <u>1470</u>	PC-4, <u>PC-7</u>	Preservative*: <u>PC-7</u> , sulfite, <u>43000 D</u>	PC-2	Preservative*: <u>EBS-B-8011</u> , <u>GCS-A1-H2B</u> , <u>Preservative* BPR, H2B-SM</u>	Preservative*: <u>PC-1, PC-2, PC-3, PC-4, PC-5, PC-6, PC-7</u>	Preservative*: <u>PC-1, PC-2, PC-3, PC-4, PC-5, PC-6, PC-7</u>	Preservative*: <u>PC-1, PC-2, PC-3, PC-4, PC-5, PC-6, PC-7</u>	Preservative*: <u>PC-1, PC-2, PC-3, PC-4, PC-5, PC-6, PC-7</u>	Preservative*: <u>PC-1, PC-2, PC-3, PC-4, PC-5, PC-6, PC-7</u>	Preservative*: <u>PC-1, PC-2, PC-3, PC-4, PC-5, PC-6, PC-7</u>	Preservative*: <u>PC-1, PC-2, PC-3, PC-4, PC-5, PC-6, PC-7</u>	Preservative*: <u>PC-1, PC-2, PC-3, PC-4, PC-5, PC-6, PC-7</u>	Preservative*: <u>PC-1, PC-2, PC-3, PC-4, PC-5, PC-6, PC-7</u>	
CLIENT SAMPLE ID		Lab Use Only	DATE SAMPLED	TIME (24 hr)	SAMPLE MATRIX	SAMPLE TYPE																								
GWA-1A		001	8/26/24	1200	GW	G	18	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GWA-3A		002	8/26/24	1035	GW	G	10	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GWC-2A		003	8/26/24	1547	GW	G	10	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GWC-3A		004	8/26/24	1445	GW	G	18	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GWC-7		005	8/26/24	1315	GW	G	18	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
TB-04		006	8/26/24	—	W	G	3							X																
Relinquished by: <u>Ben Fuquea</u>		Date/Time: <u>8/27/2024</u>			Received by: <u>Ben Fuquea</u>					Date/Time: <u>8-28-24 / 1222</u>																				
Relinquished by:		Date/Time: <u>1530</u>			Received at lab by: <u>Ben Fuquea</u>					Date/Time: <u>1</u>																				
Sampler Name: <u>Ben Fuquea</u>		Comments:																												
Sample Matrix:		GW Ground Water	ST Storm Water	SW Surface Water	PW Potable Water	WW Wastewater	SO Soil	SL Sludge	C Coal																					
Sample Type:		G Grab	C Composite	D Distribution/DW	R Raw/DW	S Special/DW	O Other	nHZ Not Hazardous / HZ Hazardous																						

Please return completed form and samples to Geochemical Testing • 2005 N Center Ave • Somerset, PA • 15501 • 814-443-1671 • (Fax: 814-445-6729) *See*

Ice present on receipt:  Yes or  No

Cooler(s) Temperature on Receipt: */*

G2408E93

**REQUEST FOR LABORATORY  
ANALYTICAL SERVICES**  
Pennsylvania Chain of Custody (COC)

Shuttle/Cooler ID#

**REQUEST FOR LABORATORY  
ANALYTICAL SERVICES**  
Pennsylvania Chain of Custody (COC)

Shuttle/Cooler ID#

G2408F33

**REQUEST FOR LABORATORY  
ANALYTICAL SERVICES**

Pennsylvania Chain of Custody (COC)

Shuttle/Cooler ID#

Billing Client	Company Atlantic Coast Consulting, Inc.	Name Owens Fuquea	E-mail Address owens.fuquea@aticc.net
	Mailing Address 1150 Northmeadow Parkway, Suite 100	Telephone No. 770-548-7741 (cell), 770-594-5998 (office)	Landfill Site Live Oak Landfill
	City, State, Zip Roswell, GA 30076	State Sampled GA	PWS Number

SAMPLES MUST BE PRESERVED ON ICE.

SPECIAL INSTRUCTIONS:

- \*PC-1: Nitric acid (HNO<sub>3</sub>)
- \*PC-2: Hydrochloric acid (HCl)
- \*PC-3: Sulfuric acid (H<sub>2</sub>SO<sub>4</sub>)
- \*PC-4: Sodium Hydroxide (NaOH)
- \*PC-5: Sodium Thiosulfate (Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>)
- \*PC-6: Ascorbic acid (C<sub>6</sub>H<sub>8</sub>O<sub>6</sub>)
- \*PC-7: Zinc acetate (C<sub>4</sub>H<sub>8</sub>O<sub>2</sub>Zn)
- \*PC-8: Ammonium chloride (NH<sub>4</sub>CL)
- \*PC-9: Copper Sulfate (CuSO<sub>4</sub>·5H<sub>2</sub>O)
- \*PC-I: Ice \*PC-N: None\* PC-O: Other

SR 1st Review: *LSF*CS 2nd Review: *LAN*

CLIENT SAMPLE ID	Lab Use Only	DATE SAMPLED	TIME (24 hr)	SAMPLE MATRIX	SAMPLE TYPE	Number of Containers	ANALYSIS REQUESTED												
							Enter 'X' in box below to indicate request and use appropriate preservation code listed to the left												
01FB				W	G	4	X	X	X	X	X								
AMP-5				GW	G	6					X	X							
GWA-2A	001	8/26/24 1348		GW	G	7	X	X	X	X	X								
GWC-12	-	8/27/24 1128		GW	G	7	X	X	X	X	X								
GWC-13A	-	8/27/24 0920		GW	G	10	X	X	X	X	X	X							
GWC-6	-	8/27/24 1019		GW	G	7	X	X	X	X	X								
GWC-8				GW	G	7	X	X	X	X	X								
GWC-9				GW	G	7	X	X	X	X	X								
TB				W	G	3						X							
TB-02	-	8/27/24 -		W	G	3						X							

CHAIN OF CUSTODY	Relinquished by: <i>Adeline Flach</i>	Date/Time: 8/27/24 / 1536	Received by: <i>JL 182</i>	Date/Time: 8-29-24 0951
	Relinquished by:	Date/Time:	Received at lab by: <i>JL 182</i>	Date/Time: <i>1</i>
	Sampler Name: Adeline Flach		Comments:	

Sample Matrix:	GW Ground Water	ST Storm Water	SW Surface Water	PW Potable Water	WW Wastewater	SO Soil	SL Sludge	C Coal	
Sample Type:	G Grab	C Composite	D Distribution/DW	R Raw/DW	S Special/DW	O Other	nHZ Not Hazardous / HZ Hazardous		

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Ice present on receipt:  Yes or  NoCooler(s) Temperature on Receipt *4*

REQUEST FOR LABORATORY  
ANALYTICAL SERVICES  
Pennsylvania Chain of Custody (COC)

Shuttle/Cooler ID#

<b>Billing Client</b>	Company Atlantic Coast Consulting, Inc.					Name Owens Fuquea					E-mail Address owens.fuquea@atlcc.net											
	Mailing Address 1150 Northmeadow Parkway, Suite 100					Telephone No. 770-548-7741 (cell), 770-594-5998 (office)					Landfill Site Live Oak Landfill											
	City, State, Zip Roswell, GA 30076					State Sampled GA			PWS Number		Date Results Required											
SAMPLES MUST BE PRESERVED ON ICE. SPECIAL INSTRUCTIONS:						ANALYSIS REQUESTED Enter 'X' in box below to indicate request and use appropriate preservation code listed to the left																
						Number of Containers	ALK_D1067	Preservative*: PC-Ice	IC_300_0_28	NH3_350_1	MET_6010_6020_App UR/Na	Preservative*: PC-1	Preservative*: PC-2, PC-Ice	Preservative*: MET_6010_6020_VOA	Preservative*: PC-1	Preservative*: PC-2, PC-Ice	Preservative*: MET_6010_6020_VOA	Preservative*: PC-1	Preservative*: PC-2, PC-Ice	Preservative*: MET_6010_6020_VOA	Preservative*: PC-1	Preservative*: PC-2, PC-Ice
SR 1st Review: <i>MSL</i>	CS 2nd Review: <i>LAN</i>																					
CLIENT SAMPLE ID		Lab Use Only	DATE SAMPLED	TIME (24 hr)	SAMPLE MATRIX	SAMPLE TYPE																
GWC-10		001	8/27/24	1250	GW	G	7	X	X	X	X	X	X									
GWC-14		002	8/26/24	1213	GW	G	7	X	X	X	X	X	X									
TB-03		003	8/27/24	—	W	G	3						X									
																		Ice present on receipt: <input checked="" type="checkbox"/> Yes or <input type="checkbox"/> No				
<b>CHAIN OF CUSTODY</b>	Relinquished by: <i>Adeline Flack</i>				Date/Time: 8/27/24 / 1530			Received by: <i>hr. jat</i>					Date/Time: 8-29-24 0956									
	Relinquished by:				Date/Time:			Received at lab by:					Date/Time:									
	Sampler Name: <i>Adeline Flack</i>							Comments:														
Sample Matrix:	GW Ground Water	ST Storm Water	SW Surface Water	PW Potable Water	WW Wastewater	SO Soil	SL Sludge	C Coal														
Sample Type:	G Grab	C Composite	D Distribution/DW	R Raw/DW	S Special/DW	O Other	nHZ Not Hazardous / HZ Hazardous															

G2408F37

**REQUEST FOR LABORATORY  
ANALYTICAL SERVICES**

Shuttle/Cooler ID#

G24.8 F42

**REQUEST FOR LABORATORY  
ANALYTICAL SERVICES**  
Pennsylvania Chain of Custody (COC)

**Shuttle/Cooler ID#**

Please return completed form and samples to **Geochemical Testing • 2005 N Center Ave • Somerset, PA • 15501 • 814-443-1671 • (Fax: 814-445-6729)**

G2408F44

**REQUEST FOR LABORATORY  
ANALYTICAL SERVICES**  
Pennsylvania Chain of Custody (COC)

**Shuttle/Cooler ID#**

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## **APPENDIX C**

### **STATISTICAL ANALYSIS REPORT BY OTTER CREEK ENVIRONMENTAL SERVICES, LLC.**

---

# **Results of the Ground Water Statistics for Live Oak Landfill**

Second Semi-Annual Monitoring Event in 2024

*Prepared for:*  
Live Oak Landfill  
1189 Henrico Road  
Conley, GA 30027

*Prepared by:*  
Jeffrey A. Holmgren  
**Otter Creek Environmental Services, L.L.C.**  
40W565 Foxwick Court  
Elgin, IL 60124  
(847) 464-1355

---

**October 2024**

## INTRODUCTION

This report summarizes the results of the statistical analyses used to evaluate the ground water data obtained during the second semi-annual monitoring event in 2024 at Live Oak Landfill in Conley, Georgia. Ground water monitoring wells GWA01A, GWA02A, GWA03A, GWB01, GWB02, GWC01A, GWC01B, GWC02A, GWC03A, GWC04A, GWC05A, GWC06, GWC07, GWC08, GWC09, GWC10, GWC11, GWC12, GWC13A, and GWC14 were sampled on August 26-28, 2024 and analyzed for the 40 CFR Part 258 Appendix I volatile organic compounds (VOCs), total lead, and the approved site-specific inorganic indicator parameters, which include chloride, sodium, and potassium. Additionally, monitoring wells GWA01A, GWA03A, GWC02A, GWC03A, GWC07, GWC10, and GWC14 were sampled and analyzed for the 40 CFR Part 258 Appendix I trace metals.

In accordance with the Live Oak Landfill statistical plan, introwell comparisons were used to evaluate the current ground water data. The statistical method used to evaluate the ground water data was prepared by Dr. Robert Gibbons in accordance with the EPA statistical guidance document (“*Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Unified Guidance*”, March 2009) and ASTM standard D6312-98 (“*Standard Guide for Developing Appropriate Statistical Approaches for Ground-Water Detection Monitoring Programs*”).

## Ground Water Data Comparisons

The ground water data obtained during the second semi-annual monitoring event in 2024 are summarized in Attachment A. In accordance with the Live Oak Landfill Ground Water Monitoring Plan, statistical comparisons are required on lead and the approved site-specific inorganic indicator parameters, which include chloride, sodium, and potassium.

### **40 CFR Part 258, Appendix I Volatile Organic Compounds**

The ground water samples obtained during the second semi-annual monitoring event in 2024 were monitored for the 40 CFR Part 258, Appendix I VOCs. Organic compounds detected in the ground water during the second semi-annual monitoring event in 2024 are summarized in the table below.

#### **Organic compounds detected in the ground water during the second semi-annual monitoring event in 2024.**

Well	VOC Detected	Result, µg/L	Reporting Limit, µg/L	Verified/Awaiting Verification	Water Quality Standard
GWA03A	1,1-Dichloroethane	14.0	2	Verified	800 <sup>b</sup>
	cis-1,2-Dichloroethene	18.9	10	Verified	70 <sup>a</sup>
GWC03A	1,1-Dichloroethane	2.9	2	Verified	800 <sup>b</sup>
GWC07	1,1-Dichloroethane	3.2	2	Verified	800 <sup>b</sup>

a - USEPA MCL

b- Regional Screening Level

These are generally verified VOC detections since similar levels were detected during previous monitoring periods. Methane was monitored for and detected at AMP-5 (930 µg/L). Methane was monitored for but not detected in the ground water at wells GWC11 (<5 µg/L), GWC13A (<5 µg/L), and GWC04A (<5 µg/L).

A historical summary of the VOCs detected in the ground water at Live Oak is in Attachment B.

The past and current verified VOC detections in the ground water were evaluated against the ground water protection standards (GWPS) using confidence limits calculated in accordance with the Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, USEPA, March 2009 (Attachment C). The analysis was conducted to evaluate whether verified concentrations are significantly above the water quality standard. The 95% lower confidence limit (LCL) for the mean of the historical data was used to evaluate whether the regulated unit is in compliance with the ground-water protection standards under 40 CFR 264 (e.g. whether the verified constituent is detected at a significant level above the GWPS). For constituents that do not have an MCL, the Region Screening Level (RSL) was used. An exceedance is verified if the LCL is above the Regulatory GWPS.

The calculated 95% LCLs are below the respective GWPS.

#### **40 CFR Part 258, Appendix I Trace Metals**

Sample points GWA01A, GWA03A, GWC02A, GWC03A, GWC07, GWC10, and GWC14 were monitored for the trace metals under 40 CFR Part 258 Appendix I. The metals data obtained were compared to background using introwell statistics.

Introwell statistics are appropriate for facilities where the upgradient wells do not accurately characterize the natural ground water conditions downgradient from the facility. This may be due to different hydrogeological conditions where the wells are screened, having too few upgradient wells to account for the spatial variability, or the site exhibiting no definable hydraulic gradient. Introwell statistics compare new measurements to the historical data at each ground water monitoring well independently. It is recommended that at least eight background samples are obtained prior to performing the statistics to control the number of false assessments.

The most useful technique for introwell comparisons is the combined Shewhart-CUSUM control chart. This control chart procedure is useful because it will detect releases both in terms of the constituent concentration and cumulative increases. This method is also extremely sensitive to sudden and gradual releases. A requirement for constructing these control charts is that the parameter is detected at a frequency greater than or equal to 25%.

The database is screened for outliers using the Dixon test. An erroneous data point, if not removed prior to the mean and variance computations, would yield a larger control limit thus increasing the false negative rate. Anomalous data will still be plotted on the graphs but will not be included in the calculations. The background data is tested for existing trends using Sen's slope test.

The combined Shewhart-CUSUM control chart assumes that the data are independent and normally distributed with a fixed mean and a constant variance. It is recommended that at least eight rounds of data be available to provide a reliable estimate of the mean and standard deviation of the parameter concentration, although the control charts will be generated with as few as four data points.

Many ground water-monitoring parameters are not detected at a frequency great enough to generate the combined Shewhart-CUSUM control charts. For constituents that are detected less than 25% of the time monitored at a particular well, the data should be plotted as a time series until a sufficient number of data points are available to provide a 99% confidence nonparametric prediction limit. Thirteen independent measurements (with 1 resample) are necessary to achieve a 99% confidence (1% false positive rate) nonparametric prediction limit. The nonparametric prediction limit is the largest determination out of the data set collected for that well and parameter. If the detection frequency is 0% after thirteen samples have been collected, the PQL becomes the nonparametric prediction limit.

The previous background included ground water data obtained from November 1993 through March 1999 for GWA01A, GWC01A, GWC03A, GWC04A, GWC05A, and GW07; the background was extended at GWB01, GWC01B, GWC10, GWC11, GWC13A and GWC14 to obtain the necessary eight rounds. As ground water monitoring at a municipal solid waste facility proceeds, it is recommended to update background data sets periodically with valid detection monitoring results that are representative of background groundwater quality not affected by leakage from a monitored unit. Failure to update background will exclude factors such as natural temporal variation, changes in field or laboratory methodologies, and changes in the water table due to meteorological conditions or other influences. Since there have been no exceedances attributed to the landfill, the background was updated to include data obtained through June 2018 for each of the wells.

The data obtained during the second semi-annual monitoring event in 2024 were compared to background. A summary of the introwell statistics is included in Attachment D, Table 1 “Summary Statistics and Intermediate Computations for Combined Shewhart-CUSUM Control Charts.” The control charts or time series graphs follow the table. For the parameters evaluated, the control limit exceedances detected are summarized in the table below.

#### **Control Limit Exceedances During the Second Semi-Annual Monitoring Event in 2024**

Sample Point	Trace Metal	Result	CUSUM Value	Control Limit	Control Limit Type	Verified/Awaiting Verification
GWC07	Barium	340	440.4697	392.1240	Normal	Verified

The background data for each well and constituent is tested for existing trends using Sen's nonparametric estimate of trend. An increasing trend was detected in the background for barium at GWC07.

For introwell analysis, the site-wide false positive rate is 2% and the test becomes sensitive to 3 standard deviation unit increases over background.

#### **Total Lead**

Total lead was analyzed for due to the elevated level in the landfill leachate. There were no detections above the reporting limit in any of the ground water wells monitored. Introwell control charts plotting the lead data are in Attachment E.

### **Chloride**

Intrawell comparisons were performed for wells where at least eight rounds of chloride data have been obtained. The current chloride data was compared to background using the combined Shewhart-CUSUM control chart method (Attachment F). The background includes ground water data obtained from November 1993 through June 2018. For the parameters evaluated, the control limit exceedances detected are summarized in the table below.

#### **Summary of Control Limit Exceedances Detected During the Second Semi-Annual Monitoring Period in 2024.**

Well	Parameter	Result	CUSUM Value	Control limit	Control Limit Type	Verified/Awaiting Verification
GWA01A	Chloride, mg/L	13.7	19.0887	10.4926	Normal	Verified
GWC10	Chloride, mg/L	11.7	17.6657	11.4148	Normal	Verified

Increasing trends were identified in the background data at GWA01A, GWC02A, GWC04A, GWC07, GWC08, GWC10, GWC11, GWC13A, and GWC14.

### **Potassium and Sodium**

Intrawell comparisons were performed for wells where at least eight rounds of potassium and sodium data have been obtained. The background includes ground water data obtained from November 1993 through June 2018. The current data obtained for potassium and sodium were evaluated using the combined Shewhart-CUSUM control chart (Attachment G). For the parameters evaluated, the control limit exceedances detected are summarized in the table below.

#### **Summary of Control Limit Exceedances Detected During the Second Semi-Annual Monitoring Period in 2024.**

Well	Parameter	Result	CUSUM Value	Control limit	Control Limit Type	Verified/Awaiting Verification
GWA01A	Sodium, mg/L	6.2	9.6856	9.3722	Normal	Verified
GWC07	Sodium, mg/L	15.2	17.1022	16.2451	Normal	Verified
GWC14	Sodium, mg/L	33.7	38.4144	11.0297	Normal	Verified

Increasing trends were identified in the background for sodium at GWC01B, GWC04A, GWC07, GWC10, and GWC13A.

## **SUMMARY**

This report summarizes the results of the statistical analyses used to evaluate the ground water data obtained during the second semi-annual monitoring event in 2024 at Live Oak Landfill. Ground water monitoring wells GWA01A, GWA02A, GWA03A, GWB01, GWB02, GWC01A, GWC01B, GWC02A, GWC03A, GWC04A, GWC05A, GWC06, GWC07, GWC08, GWC09, GWC10, GWC11, GWC12, GWC13A, and GWC14 were sampled during August 26-28, 2024 and analyzed for the 40 CFR Part 258 Appendix I volatile organic compounds (VOCs), total lead, and the approved site-specific inorganic indicator parameters, which include chloride, sodium, and potassium. Additionally, monitoring wells GWA01A, GWA03A, GWC02A, GWC03A, GWC07, GWC10, and GWC14 were sampled and analyzed for the 40 CFR Part 258

*Results of the Ground Water Statistics for Live Oak Landfill  
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Appendix I trace metals. For the ground water wells monitored, the exceedances are summarized in the following table.

**Exceedances during the second semi-annual monitoring in 2024**

Well	Parameter	Comment
GWA01A	Chloride	Verified Exceedance, Increasing Trend
	Sodium	Verified Exceedance
GWA03A	1,1-Dichloroethane	Verified Detection, 95% LCL does not exceed standard
	cis-1,2-Dichloroethene	Verified Detection, 95% LCL does not exceed standard
GWC01B	Sodium	Increasing Trend
GWC02A	Chloride	Increasing Trend
GWC03A	1,1-Dichloroethane	Verified Detection, 95% LCL does not exceed standard
GWC04A	Chloride	Increasing Trend
	Sodium	Increasing Trend
GWC07	1,1-Dichloroethane	Verified Detection, 95% LCL does not exceed standard
	Barium	Verified Exceedance, Increasing Trend
	Chloride	Increasing Trend
	Sodium	Verified Exceedance, Increasing Trend
GWC08	Chloride	Increasing Trend
GWC10	Chloride	Verified Exceedance, Increasing Trend
	Sodium	Increasing Trend
GWC11	Chloride	Increasing Trend
GWC13A	Chloride	Increasing Trend
	Sodium	Increasing Trend
GWC14	Chloride	Increasing Trend
	Sodium	Verified Exceedance

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**Attachment A**

Summary of Ground Water Data obtained during the Second Semi-Annual  
Monitoring Event in 2024 at Live Oak Landfill

**Table 1****Analytical Data Summary for 8/26/2024 to 8/28/2024**

Constituents	Units	AMP-5	GWA01A	GWA02A	GWA03A	GWB01	GWB02	GWC01A	GWC01B
1,1,1,2-tetrachloroethane	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
1,1,1-trichloroethane	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
1,1,2,2-tetrachloroethane	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
1,1,2-trichloroethane	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
1,1-dichloroethane	ug/L	<2.4	<2.0	<2.4	14.0	<2.4	<2.4	<2.4	<2.4
1,1-dichloroethene	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
1,1-dichloropropene	ug/L		<5		<5				
1,2,3-trichloropropane	ug/L	<10	<10	<10	<10	<10	<10	<10	<10
1,2,4,5-tetrachlorobenzene	ug/L		<10		<10				
1,2,4-trichlorobenzene	ug/L		<10		<10				
1,2-dibromo-3-chloropropane	ug/L	<5.00	<.04	<5.00	<.04	<5.00	<5.00	<5.00	<5.00
1,2-dibromoethane	ug/L	<1.00	<.04	<1.00	<.04	<1.00	<1.00	<1.00	<1.00
1,2-dichlorobenzene	ug/L	<10	<10	<10	<10	<10	<10	<10	<10
1,2-dichloroethane	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
1,2-dichloropropane	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
1,3-dichlorobenzene	ug/L		<10		<10				
1,3-dichloropropane	ug/L		<5		<5				
1,3-Dinitrobenzene	ug/L		<20		<20				
1,4-dichlorobenzene	ug/L	<10	<10	<10	<10	<10	<10	<10	<10
1,4-naphthoquinone	ug/L		<10		<10				
1-naphthylamine	ug/L		<10		<10				
2,2-dichloropropane	ug/L		<5		<5				
2,3,4,6-tetrachlorophenol	ug/L		<20		<20				
2,4,5-t	ug/L		<.5		<.5				
2,4,5-trichlorophenol	ug/L		<10		<10				
2,4,6-trichlorophenol	ug/L		<10		<10				
2,4-d	ug/L		<.5		<.5				
2,4-dichlorophenol	ug/L		<10		<10				
2,4-dimethylphenol	ug/L		<10		<10				
2,4-dinitrophenol	ug/L		<20		<20				
2,4-dinitrotoluene	ug/L		<10		<10				
2,6-dichlorophenol	ug/L		<10		<10				
2,6-dinitrotoluene	ug/L		<10		<10				
2-acetylaminofluorene	ug/L		<20		<20				
2-butanone	ug/L	<50	<50	<50	<50	<50	<50	<50	<50
2-chloro-1,3-butadiene	ug/L		<5		<5				
2-chloronaphthalene	ug/L		<10		<10				
2-chlorophenol	ug/L		<10		<10				
2-hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10	<10
2-Methyl-1-propanol	ug/L		<50		<50				
2-Methyl-4,6-dinitrophenol	ug/L		<20		<20				
2-methylnaphthalene	ug/L		<10		<10				
2-methylphenol	ug/L		<10		<10				
2-naphthylamine	ug/L		<10		<10				
2-nitroaniline	ug/L		<10		<10				
2-nitrophenol	ug/L		<10		<10				
3,3'-dichlorobenzidine	ug/L		<20		<20				
3,3'-dimethylbenzidine	ug/L		<20		<20				
3-Chloro-1-Propene	ug/L		<5		<5				
3-methylcholanthrene	ug/L		<10		<10				
3-nitroaniline	ug/L		<10		<10				
4,4-ddd	ug/L		<.051		<.051				
4,4'-dde	ug/L		<.051		<.051				
4,4'-ddt	ug/L		<.051		<.051				
4-aminobiphenyl	ug/L		<10		<10				
4-bromophenyl phenyl ether	ug/L		<10		<10				
4-chloro-3-methylphenol	ug/L		<10		<10				
4-chloroaniline	ug/L		<10		<10				
4-chlorophenyl phenyl ether	ug/L		<10		<10				
4-methyl-2-pentanone	ug/L	<10	<10	<10	<10	<10	<10	<10	<10
4-nitroaniline	ug/L		<10		<10				
4-nitrophenol	ug/L		<20		<20				
5-nitro-o-toluidine	ug/L		<20		<20				
7,12-dimethylbenz(a)anthracene	ug/L		<10		<10				
a,a-Dimethylphenethylamine	ug/L		<10		<10				
Acenaphthene	ug/L		<10		<10				
Acenaphthylene	ug/L		<10		<10				
Acetone	ug/L	<34	<34	<34	<34	<34	<34	<34	<34
Acetonitrile	ug/L		<40		<40				
Acetophenone	ug/L		<10		<10				
Acrolein	ug/L		<20		<20				
Acrylonitrile	ug/L	<100	<100	<100	<100	<100	<100	<100	<100
Aldrin	ug/L		<.051		<.051				
Alkalinity (as caco3)	mg/L		88	90	134	149	82	113	155
Alpha Endosulfan	ug/L		<.051		<.051				
Alpha-bhc	ug/L		<.051		<.051				
Anthracene	ug/L		<10		<10				

\* - The displayed value is the arithmetic mean of multiple database matches.

**Table 1****Analytical Data Summary for 8/26/2024 to 8/28/2024**

Constituents	GWC02A	GWC03A	GWC04A	GWC05A	GWC06	GWC07	GWC08	GWC09	GWC10	GWC11
1,1,1,2-tetrachloroethane	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1,1-trichloroethane	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1,2,2-tetrachloroethane	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1,2-trichloroethane	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1-dichloroethane	<2.0	2.9	<2.4	<2.4	<2.4	3.2	<2.4	<2.4	<2.4	<2.4
1,1-dichloroethene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1-dichloropropene	<5	<5					<5			
1,2,3-trichloropropane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,2,4,5-tetrachlorobenzene	<11	<11				<10				
1,2,4-trichlorobenzene	<11	<11				<10				
1,2-dibromo-3-chloropropane	<.04	<.04	<5.00	<5.00	<5.00	<.04	<5.00	<5.00	<5.00	<5.00
1,2-dibromoethane	<.04	<.04	<1.00	<1.00	<1.00	<.04	<1.00	<1.00	<1.00	<1.00
1,2-dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,2-dichloroethane	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,2-dichloropropane	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,3-dichlorobenzene	<10	<10				<10				
1,3-dichloropropane	<5	<5				<5				
1,3-Dinitrobenzene	<22	<21				<21				
1,4-dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,4-naphthoquinone	<11	<11				<10				
1-naphthylamine	<11	<11				<10				
2,2-dichloropropane	<5	<5				<5				
2,3,4,6-tetrachlorophenol	<22	<21				<21				
2,4,5-t	<.5	<.5				<.5				
2,4,5-trichlorophenol	<11	<11				<10				
2,4,6-trichlorophenol	<11	<11				<10				
2,4-d	<.5	<.5				<.5				
2,4-dichlorophenol	<11	<11				<10				
2,4-dimethylphenol	<11	<11				<10				
2,4-dinitrophenol	<22	<21				<21				
2,4-dinitrotoluene	<11	<11				<10				
2,6-dichlorophenol	<11	<11				<10				
2,6-dinitrotoluene	<11	<11				<10				
2-acetylaminofluorene	<22	<21				<21				
2-butanone	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
2-chloro-1,3-butadiene	<5	<5				<5				
2-chloronaphthalene	<11	<11				<10				
2-chlorophenol	<11	<11				<10				
2-hexanone	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2-Methyl-1-propanol	<50	<50				<50				
2-Methyl-4,6-dinitrophenol	<22	<21				<21				
2-methylnaphthalene	<11	<11				<10				
2-methylphenol	<11	<11				<10				
2-naphthylamine	<11	<11				<10				
2-nitroaniline	<11	<11				<10				
2-nitrophenol	<11	<11				<10				
3,3'-dichlorobenzidine	<22	<21				<21				
3,3'-dimethylbenzidine	<22	<21				<21				
3-Chloro-1-Propene	<5	<5				<5				
3-methylcholanthrene	<11	<11				<10				
3-nitroaniline	<11	<11				<10				
4,4-ddd	<.054	<.051				<.050				
4,4'-dde	<.054	<.051				<.050				
4,4'-ddt	<.054	<.051				<.050				
4-aminobiphenyl	<11	<11				<10				
4-bromophenyl phenyl ether	<11	<11				<10				
4-chloro-3-methylphenol	<11	<11				<10				
4-chloroaniline	<11	<11				<10				
4-chlorophenyl phenyl ether	<11	<11				<10				
4-methyl-2-pentanone	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
4-nitroaniline	<11	<11				<10				
4-nitrophenol	<22	<21				<21				
5-nitro-o-toluidine	<22	<21				<21				
7,12-dimethylbenz(a)anthracene	<11	<11				<10				
a,a-Dimethylphenethylamine	<11	<11				<10				
Acenaphthene	<11	<11				<10				
Acenaphthylene	<11	<11				<10				
Acetone	<34	<34	<34	<34	<34	<34	<34	<34	<34	<34
Acetonitrile	<40	<40				<40				
Acetophenone	<11	<11				<10				
Acrolein	<20	<20				<20				
Acrylonitrile	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Aldrin	<.054	<.051				<.050				
Alkalinity (as caco3)	87	181	66	61	82	264	90	87	161	94
Alpha Endosulfan	<.054	<.051				<.050				
Alpha-bhc	<.054	<.051				<.050				
Anthracene	<11	<11				<10				

\* - The displayed value is the arithmetic mean of multiple database matches.

**Table 1****Analytical Data Summary for 8/26/2024 to 8/28/2024**

Constituents	GWC12	GWC13A	GWC14	SWC05
1,1,1,2-tetrachloroethane	<5	<5	<5	
1,1,1-trichloroethane	<5	<5	<5	
1,1,2,2-tetrachloroethane	<5	<5	<5	
1,1,2-trichloroethane	<5	<5	<5	
1,1-dichloroethane	<2.4	<2.4	<2.4	
1,1-dichloroethene	<5	<5	<5	
1,1-dichloropropene				
1,2,3-trichloropropane	<10	<10	<10	
1,2,4,5-tetrachlorobenzene				
1,2,4-trichlorobenzene				
1,2-dibromo-3-chloropropane	<5.00	<5.00	<5.00	
1,2-dibromoethane	<1.00	<1.00	<1.00	
1,2-dichlorobenzene	<10	<10	<10	
1,2-dichloroethane	<5	<5	<5	
1,2-dichloropropane	<5	<5	<5	
1,3-dichlorobenzene				
1,3-dichloropropene				
1,3-Dinitrobenzene				
1,4-dichlorobenzene				
1,4-naphthoquinone				
1-naphthylamine				
2,2-dichloropropane				
2,3,4,6-tetrachlorophenol				
2,4,5-t				
2,4,5-trichlorophenol				
2,4,6-trichlorophenol				
2,4-d				
2,4-dichlorophenol				
2,4-dimethylphenol				
2,4-dinitrophenol				
2,4-dinitrotoluene				
2,6-dichlorophenol				
2,6-dinitrotoluene				
2-acetylaminofluorene				
2-butanone	<50	<50	<50	
2-chloro-1,3-butadiene				
2-chloronaphthalene				
2-chlorophenol				
2-hexanone	<10	<10	<10	
2-Methyl-1-propanol				
2-Methyl-4,6-dinitrophenol				
2-methylnaphthalene				
2-methylphenol				
2-naphthylamine				
2-nitroaniline				
2-nitrophenol				
3,3'-dichlorobenzidine				
3,3'-dimethylbenzidine				
3-Chloro-1-Propene				
3-methylcholanthrene				
3-nitroaniline				
4,4-ddd				
4,4'-dde				
4,4'-ddt				
4-aminobiphenyl				
4-bromophenyl phenyl ether				
4-chloro-3-methylphenol				
4-chloroaniline				
4-chlorophenyl phenyl ether				
4-methyl-2-pentanone				
4-nitroaniline				
4-nitrophenoI				
5-nitro-o-toluidine				
7,12-dimethylbenz(a)anthracene				
a,a-Dimethylphenethylamine				
Acenaphthene				
Acenaphthylene				
Acetone	<34	<34	<34	
Acetonitrile				
Acetophenone				
Acrolein				
Acrylonitrile				
Aldrin				
Alkalinity (as caco3)	62	289	123	
Alpha Endosulfan				
Alpha-bhc				
Anthracene				

\* - The displayed value is the arithmetic mean of multiple database matches.

**Table 1****Analytical Data Summary for 8/26/2024 to 8/28/2024**

Constituents	Units	AMP-5	GWA01A	GWA02A	GWA03A	GWB01	GWB02	GWC01A	GWC01B
Antimony-total	ug/L		<2		<2				
Arsenic-total	ug/L		<7		<7				
Barium-total	ug/L		110.0		<10.0				
Benzene	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Benzo(a)anthracene	ug/L		<10		<10				
Benzo(a)pyrene	ug/L		<10		<10				
Benzo(b)fluoranthene	ug/L		<10		<10				
Benzo(ghi)perylene	ug/L		<10		<10				
Benzo(k)fluoranthene	ug/L		<10		<10				
Benzyl alcohol	ug/L		<20		<20				
Beryllium-total	ug/L		<1		<1				
Beta Endosulfan	ug/L		<.051		<.051				
Beta-bhc	ug/L		<.051		<.051				
Bis(2-chloroethoxy)methane	ug/L		<10		<10				
Bis(2-chloroethyl)ether	ug/L		<10		<10				
Bis(2-chloroisopropyl)ether	ug/L		<10		<10				
Bis(2-ethylhexyl)phthalate	ug/L		<5.1		<5.1				
Bromochloromethane	ug/L	<10	<10	<10	<10	<10	<10	<10	<10
Bromodichloromethane	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Bromoform	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Bromomethane	ug/L	<10	<10	<10	<10	<10	<10	<10	<10
Butyl benzyl phthalate	ug/L		<10		<10				
Cadmium-total	ug/L		<1		<1				
Carbon disulfide	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Carbon tetrachloride	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Chemical oxygen demand	mg/L								
Chlordane	ug/L		<1.0		<1.0				
Chloride	mg/L		13.7	2.8	8.3	6.4	2.2	<1.0	4.1
Chlorobenzene	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Chlorobenzilate	ug/L		<10		<10				
Chloroethane	ug/L	<10	<10	<10	<10	<10	<10	<10	<10
Chloroform	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Chloromethane	ug/L	<10	<10	<10	<10	<10	<10	<10	<10
Chromium-total	ug/L		<2.0		<2.0				
Chrysene	ug/L		<10		<10				
Cis-1,2-dichloroethene	ug/L	<10.0	<10.0	<10.0	18.9	<10.0	<10.0	<10.0	<10.0
Cis-1,3-dichloropropene	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Cobalt-total	ug/L		<5		<5				
Copper-total	ug/L		<5		<5				
Cyanide, total	mg/L		<.02		<.02				
Delta-bhc	ug/L		<.051		<.051				
Diallate	ug/L		<20		<20				
Dibenzo(a,h)anthracene	ug/L		<10		<10				
Dibenzofuran	ug/L		<10		<10				
Dibromochloromethane	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Dibromomethane	ug/L	<10	<10	<10	<10	<10	<10	<10	<10
Dichlorodifluoromethane	ug/L		<5		<5				
Dieldrin	ug/L		<.051		<.051				
Diethyl phthalate	ug/L		<10		<10				
Dimethoate	ug/L		<20		<20				
Dimethyl phthalate	ug/L		<10		<10				
Di-n-butyl phthalate	ug/L		<10		<10				
Di-n-octylphthalate	ug/L		<10		<10				
Dinoseb	ug/L		<.5		<.5				
Diphenylamine	ug/L		<10		<10				
Disulfoton	ug/L		<20		<20				
Endosulfan sulfate	ug/L		<.051		<.051				
Endrin	ug/L		<.051		<.051				
Endrin aldehyde	ug/L		<.051		<.051				
Ethyl methacrylate	ug/L		<5		<5				
Ethyl methanesulfonate	ug/L		<10		<10				
Ethylbenzene	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Famphur	ug/L		<20		<20				
Fluoranthene	ug/L		<10		<10				
Fluorene	ug/L		<10		<10				
Gamma-bhc (lindane)	ug/L		<.051		<.051				
Heptachlor	ug/L		<.051		<.051				
Heptachlor epoxide	ug/L		<.051		<.051				
Hexachlorobenzene	ug/L		<.10		<.10				
Hexachlorobutadiene	ug/L		<10		<10				
Hexachlorocyclopentadiene	ug/L		<10		<10				
Hexachloroethane	ug/L		<10		<10				
Hexachloropropene	ug/L		<10		<10				
Indeno(1,2,3-cd)pyrene	ug/L		<10		<10				
Iodomethane	ug/L	<10	<10	<10	<10	<10	<10	<10	<10
Isodrin	ug/L		<20		<20				
Isophorone	ug/L		<10		<10				

\* - The displayed value is the arithmetic mean of multiple database matches.

Table 1

## Analytical Data Summary for 8/26/2024 to 8/28/2024

Constituents	GWC02A	GWC03A	GWC04A	GWC05A	GWC06	GWC07	GWC08	GWC09	GWC10	GWC11
Antimony-total	<2	<2				<2			<2	
Arsenic-total	<7	<7				<7			<7	
Barium-total	30.0	80.0				340.0			30.0	
Benzene	<5	<5	<5	<5	<5	<5			<5	<5
Benzo(a)anthracene	<11	<11				<10				
Benzo(a)pyrene	<11	<11				<10				
Benzo(b)fluoranthene	<11	<11				<10				
Benzo(ghi)perylene	<11	<11				<10				
Benzo(k)fluoranthene	<11	<11				<10				
Benzyl alcohol	<22	<21				<21				
Beryllium-total	<1	<1				<1			<1	
Beta Endosulfan	<.054	<.051				<.050				
Beta-bhc	<.054	<.051				<.050				
Bis(2-chloroethoxy)methane	<11	<11				<10				
Bis(2-chloroethyl)ether	<11	<11				<10				
Bis(2-chloroisopropyl)ether	<11	<11				<10				
Bis(2-ethylhexyl)phthalate	<5.4	<5.3				<5.2				
Bromochloromethane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Bromodichloromethane	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bromoform	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bromomethane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Butyl benzyl phthalate	<11	<11				<10				
Cadmium-total	<1	<1				<1				
Carbon disulfide	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Carbon tetrachloride	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chemical oxygen demand										
Chlordane	<1.1	<1.0				<1.0				
Chloride	2.5	4.9	2.8	<1.0	<1.0	9.5	2.1	1.6	11.7	4.3
Chlorobenzene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chlorobenzilate	<11	<11				<10				
Chloroethane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Chloroform	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chloromethane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Chromium-total	<2.0	2.7				<2.0				
Chrysene	<11	<11				<10				
Cis-1,2-dichloroethene	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Cis-1,3-dichloropropene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Cobalt-total	<5	<5				<5				
Copper-total	<5	<5				<5				
Cyanide, total	<.02	<.02				<.02				
Delta-bhc	<.054	<.051				<.050				
Diallate	<22	<21				<21				
Dibenzo(a,h)anthracene	<11	<11				<10				
Dibenzofuran	<11	<11				<10				
Dibromochloromethane	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Dibromomethane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Dichlorodifluoromethane	<5	<5				<5				
Dieldrin	<.054	<.051				<.050				
Diethyl phthalate	<11	<11				<10				
Dimethoate	<22	<21				<21				
Dimethyl phthalate	<11	<11				<10				
Di-n-butyl phthalate	<11	<11				<10				
Di-n-octylphthalate	<11	<11				<10				
Dinoseb	<.5	<.5				<.5				
Diphenylamine	<11	<11				<10				
Disulfoton	<22	<21				<21				
Endosulfan sulfate	<.054	<.051				<.050				
Endrin	<.054	<.051				<.050				
Endrin aldehyde	<.054	<.051				<.050				
Ethyl methacrylate	<5	<5				<5				
Ethyl methanesulfonate	<11	<11				<10				
Ethylbenzene	<5	<5	<5			<5				
Famphur	<22	<21				<21				
Fluoranthene	<11	<11				<10				
Fluorene	<11	<11				<10				
Gamma-bhc (lindane)	<.054	<.051				<.050				
Heptachlor	<.054	<.051				<.050				
Heptachlor epoxide	<.054	<.051				<.050				
Hexachlorobenzene	<.11	<.10				<.10				
Hexachlorobutadiene	<11	<11				<10				
Hexachlorocyclopentadiene	<11	<11				<10				
Hexachloroethane	<11	<11				<10				
Hexachloropropene	<11	<11				<10				
Indeno(1,2,3-cd)pyrene	<11	<11				<10				
Iodomethane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Isodrin	<22	<21				<21				
Isophorone	<11	<11				<10				

\* - The displayed value is the arithmetic mean of multiple database matches.

**Table 1****Analytical Data Summary for 8/26/2024 to 8/28/2024**

Constituents	GWC12	GWC13A	GWC14	SWC05
Antimony-total			<2	
Arsenic-total			<7	<20
Barium-total			110.0	47.1
Benzene	<5	<5	<5	
Benzo(a)anthracene				
Benzo(a)pyrene				
Benzo(b)fluoranthene				
Benzo(ghi)perylene				
Benzo(k)fluoranthene				
Benzyl alcohol				
Beryllium-total			<1	
Beta Endosulfan				
Beta-bhc				
Bis(2-chloroethoxy)methane				
Bis(2-chloroethyl)ether				
Bis(2-chloroisopropyl)ether				
Bis(2-ethylhexyl)phthalate				
Bromochloromethane	<10	<10	<10	
Bromodichloromethane	<5	<5	<5	
Bromoform	<5	<5	<5	
Bromomethane	<10	<10	<10	
Butyl benzyl phthalate				
Cadmium-total			<1	<1
Carbon disulfide	<5	<5	<5	
Carbon tetrachloride	<5	<5	<5	
Chemical oxygen demand				<10
Chlordane				
Chloride	<1.0	4.1	14.2	3.4
Chlorobenzene	<5	<5	<5	
Chlorobenzilate				
Chloroethane	<10	<10	<10	
Chloroform	<5	<5	<5	
Chloromethane	<10	<10	<10	
Chromium-total			32.7	<2.0
Chrysene				
Cis-1,2-dichloroethene	<10.0	<10.0	<10.0	
Cis-1,3-dichloropropene	<5	<5	<5	
Cobalt-total				
Copper-total			<5	
Cyanide, total				<.02
Delta-bhc				
Diallate				
Dibenzo(a,h)anthracene				
Dibenzofuran				
Dibromochloromethane	<5	<5	<5	
Dibromomethane	<10	<10	<10	
Dichlorodifluoromethane				
Dieldrin				
Diethyl phthalate				
Dimethoate				
Dimethyl phthalate				
Di-n-butyl phthalate				
Di-n-octylphthalate				
Dinoseb				
Diphenylamine				
Disulfoton				
Endosulfan sulfate				
Endrin				
Endrin aldehyde				
Ethyl methacrylate				
Ethyl methanesulfonate				
Ethylbenzene	<5	<5	<5	
Famphur				
Fluoranthene				
Fluorene				
Gamma-bhc (lindane)				
Heptachlor				
Heptachlor epoxide				
Hexachlorobenzene				
Hexachlorobutadiene				
Hexachlorocyclopentadiene				
Hexachloroethane				
Hexachloropropene				
Indeno(1,2,3-cd)pyrene				
Iodomethane				
Isodrin				
Isophorone				

\* - The displayed value is the arithmetic mean of multiple database matches.

Table 1

## Analytical Data Summary for 8/26/2024 to 8/28/2024

Constituents	Units	AMP-5	GWA01A	GWA02A	GWA03A	GWB01	GWB02	GWC01A	GWC01B
Isosafrole	ug/L		<10		<10				
Kepone	ug/L		<40		<41				
Lead-total	ug/L		<5		<5				
m,p-Cresol	ug/L		<10		<10				
Mercury-total	ug/L		<.4		<.4				
Methacrylonitrile	ug/L		<10		<10				
Methane	ug/L	930							
Methapyrilene	ug/L		<20		<20				
Methoxychlor	ug/L		<.051		<.051				
Methyl methacrylate	ug/L		<5		<5				
Methyl methanesulfonate	ug/L		<10		<10				
Methyl parathion	ug/L		<10		<10				
Methylene chloride	ug/L		<5		<5				
Naphthalene	ug/L		<10		<10				
Nickel-total	ug/L		30		<10				
Nitrobenzene	ug/L		<10		<10				
Nitrogen, ammonia	mg/L		<.1		<.1				
N-nitrosodiethylamine	ug/L		<10		<10				
N-nitrosodimethylamine	ug/L		<10		<10				
N-nitrosodi-n-butylamine	ug/L		<10		<10				
N-nitroso-di-n-propylamine	ug/L		<10		<10				
N-nitrosodiphenylamine	ug/L		<20		<20				
N-nitrosomethylethylenimine	ug/L		<10		<10				
N-nitrosopiperidine	ug/L		<10		<10				
N-nitrosopyrrolidine	ug/L		<10		<10				
o,o,o-Triethylphosphorothioate	ug/L		<10		<10				
O-toluidine	ug/L		<10		<10				
Parathion	ug/L		<10		<10				
Pcb 1016	ug/L		<.41		<.40				
Pcb 1221	ug/L		<.41		<.40				
Pcb 1232	ug/L		<.41		<.40				
Pcb 1242	ug/L		<.41		<.40				
Pcb 1248	ug/L		<.41		<.40				
Pcb 1254	ug/L		<.41		<.40				
Pcb 1260	ug/L		<.41		<.40				
P-dimethylaminoazobenzene	ug/L		<10		<10				
Pentachlorobenzene	ug/L		<10		<10				
Pentachloronitrobenzene	ug/L		<10		<10				
Pentachlorophenol	ug/L		<10.3 *		<10.3 *				
pH FIELD	pH units	6.00	5.68	6.39	5.70	6.92	6.74	7.14	6.20
Phenacetin	ug/L		<10		<10				
Phenanthrene	ug/L		<10		<10				
Phenol	ug/L		<10		<10				
Phorate	ug/L		<20		<20				
Potassium-total	mg/L		<.5		.7				
P-phenylenediamine	ug/L		<20		<20				
Pronamide	ug/L		<10		<10				
Propionitrile	ug/L		<10		<10				
Pyrene	ug/L		<10		<10				
Safrole	ug/L		<10		<10				
Selenium-total	ug/L		<10		<10				
Silver-total	ug/L		<3		<3				
Silvex	ug/L		<.5		<.5				
Sodium-total	mg/L		6.2	5.9	3.1	5.6	5.0	6.4	13.2
Specific conductance field	umhos/cm	353.00	224.00	195.00	308.00	320.00	175.00	247.00	378.00
Styrene	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Sulfide	mg/L		<.1		<.1				
Sym-trinitrobenzene	ug/L		<10		<10				
Tetrachloroethene	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Thallium-total	ug/L		<1		<1				
Thioniazin	ug/L		<20		<20				
Tin, total	ug/L		<100		<100				
Toluene	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Total organic carbon	mg/L								
Toxaphene	ug/L		<2.0		<2.0				
Trans-1,2-dichloroethene	ug/L	<10	<10	<10	<10	<10	<10	<10	<10
Trans-1,3-dichloropropene	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Trans-1,4-dichloro-2-butene	ug/L	<10	<10	<10	<10	<10	<10	<10	<10
Trichloroethene	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Trichlorofluoromethane	ug/L	<10	<10	<10	<10	<10	<10	<10	<10
Turbidity (field)	NTU	2.0	.8	.7	3.2	1.3	.4	1.2	.6
Vanadium-total	ug/L		<5		<5				
Vinyl acetate	ug/L	<10	<10	<10	<10	<10	<10	<10	<10
Vinyl chloride	ug/L	<2	<2	<2	<2	<2	<2	<2	<2
Water temperature in deg. celsius field	degrees C	23.0	21.7	22.0	18.1	18.9	18.3	19.5	19.7
Xylene(total)	ug/L	<10	<10	<10	<10	<10	<10	<10	<10
Zinc-total	ug/L		<20		<20				

\* - The displayed value is the arithmetic mean of multiple database matches.

Table 1

## Analytical Data Summary for 8/26/2024 to 8/28/2024

Constituents	GWC02A	GWC03A	GWC04A	GWC05A	GWC06	GWC07	GWC08	GWC09	GWC10	GWC11
Isosafrole	<11	<11				<10				
Kepone	<43	<42				<42				
Lead-total	<5	<5	<5	<5	<5	<5				
m,p-Cresol	<11	<11				<10				
Mercury-total	<.4	<.4				<.4				
Methacrylonitrile	<10	<10				<10				
Methane			<5							<5
Methaprylene	<22	<21				<21				
Methoxychlor	<.054	<.051				<.050				
Methyl methacrylate	<5	<5				<5				
Methyl methanesulfonate	<11	<11				<10				
Methyl parathion	<11	<11				<10				
Methylene chloride	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Naphthalene	<11	<11				<10				
Nickel-total	<10	<10				30			30	
Nitrobenzene	<11	<11				<10				
Nitrogen, ammonia	<.1	<.1	<.1	<.1	<.1	<.1	<.1	.1	<.1	<.1
N-nitrosodiethylamine	<11	<11				<10				
N-nitrosodimethylamine	<11	<11				<10				
N-nitrosodi-n-butylamine	<11	<11				<10				
N-nitroso-di-n-propylamine	<11	<11				<10				
N-nitrosodiphenylamine	<22	<21				<21				
N-nitrosomethylamine	<11	<11				<10				
N-nitrosopiperidine	<11	<11				<10				
N-nitrosopyrrolidine	<11	<11				<10				
o,o,o-Triethylphosphorothioate	<11	<11				<10				
O-toluidine	<11	<11				<10				
Parathion	<11	<11				<10				
Pcb 1016	<.43	<.41				<.40				
Pcb 1221	<.43	<.41				<.40				
Pcb 1232	<.43	<.41				<.40				
Pcb 1242	<.43	<.41				<.40				
Pcb 1248	<.43	<.41				<.40				
Pcb 1254	<.43	<.41				<.40				
Pcb 1260	<.43	<.41				<.40				
P-dimethylaminoazobenzene	<11	<11				<10				
Pentachlorobenzene	<11	<11				<10				
Pentachloronitrobenzene	<11	<11				<10				
Pentachlorophenol	<11.3 *	<10.8 *				<10.8 *				
pH FIELD	6.37	6.39	6.04	6.29	7.29	5.39	6.02	6.30	6.67	6.82
Phenacetin	<11	<11				<10				
Phenanthrene	<11	<11				<10				
Phenol	<11	<11				<10				
Phorate	<22	<21				<21				
Potassium-total	.5	.7	.7	<.5	1.8	3.8	<.5	.7	<.5	.9
P-phenylenediamine	<22	<21				<21				
Pronamide	<11	<11				<10				
Propionitrile	<10	<10				<10				
Pyrene	<11	<11				<10				
Safrole	<11	<11				<10				
Selenium-total	<10	<10				<10			<10	
Silver-total	<3	<3				<3			<3	
Silvex	<.5	<.5				<.5				
Sodium-total	4.5	9.2	3.9	4.7	10.7	15.2	4.1	4.8	9.6	7.0
Specific conductance field	182.00	389.00	153.00	136.00	171.00	533.00	187.00	184.00	380.00	357.00
Styrene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Sulfide	<.1	<.1				<.1				
Sym-trinitrobenzene	<11	<11				<10				
Tetrachloroethene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Thallium-total	<1	<1				<1			<1	
Thionazin	<22	<21				<21				
Tin, total	<100	<100				<100				
Toluene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Total organic carbon										
Toxaphene	<2.2	<2.0				<2.0				
Trans-1,2-dichloroethene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Trans-1,3-dichloropropene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Trans-1,4-dichloro-2-butene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Trichloroethene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Trichlorofluoromethane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Turbidity (field)	1.3	1.1	1.9	3.1	.6	4.5	.7	.9	1.3	.5
Vanadium-total	16	52				5			16	
Vinyl acetate	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Vinyl chloride	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Water temperature in deg. celsius field	23.0	20.6	22.5	18.8	19.3	25.0	19.5	19.5	29.5	19.9
Xylene(total)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Zinc-total	<20	<20				<20			<20	

\* - The displayed value is the arithmetic mean of multiple database matches.

**Table 1****Analytical Data Summary for 8/26/2024 to 8/28/2024**

Constituents	GWC12	GWC13A	GWC14	SWC05
Isosafrole				
Kepone				
Lead-total	<5	<5	<5	<5
m,p-Cresol				
Mercury-total				<.4
Methacrylonitrile				
Methane		<5		
Methaprylene				
Methoxychlor				
Methyl methacrylate				
Methyl methanesulfonate				
Methyl parathion				
Methylene chloride	<5	<5	<5	
Naphthalene				
Nickel-total			<10	<4
Nitrobenzene				
Nitrogen, ammonia	<.1	<.1	<.1	
N-nitrosodiethylamine				
N-nitrosodimethylamine				
N-nitrosodi-n-butylamine				
N-nitroso-di-n-propylamine				
N-nitrosodiphenylamine				
N-nitrosomethylethyldamine				
N-nitrosopiperidine				
N-nitrosopyrrolidine				
o,o,o-Triethylphosphorothioate				
O-toluidine				
Parathion				
Pcb 1016				
Pcb 1221				
Pcb 1232				
Pcb 1242				
Pcb 1248				
Pcb 1254				
Pcb 1260				
P-dimethylaminoazobenzene				
Pentachlorobenzene				
Pentachloronitrobenzene				
Pentachlorophenol				
pH FIELD	6.14	6.18	5.81	6.89
Phenacetin				
Phenanthrene				
Phenol				
Phorate				
Potassium-total	<.5	8.9	<.5	
P-phenylenediamine				
Pronamide				
Propionitrile				
Pyrene				
Safrole				
Selenium-total			<10	<10
Silver-total			<3	<50
Silvex				
Sodium-total	8.7	13.6	33.7	
Specific conductance field	128.00	5.88	336.00	223.00
Styrene	<5	<5	<5	
Sulfide				
Sym-trinitrobenzene				
Tetrachloroethene	<5	<5	<5	
Thallium-total			<1	
Thionazin				
Tin, total				
Toluene	<5	<5	<5	
Total organic carbon				1.5
Toxaphene				
Trans-1,2-dichloroethene	<10	<10	<10	
Trans-1,3-dichloropropene	<5	<5	<5	
Trans-1,4-dichloro-2-butene	<10	<10	<10	
Trichloroethene	<5	<5	<5	
Trichlorofluoromethane	<10	<10	<10	
Turbidity (field)	4.4	7.5	1.2	.8
Vanadium-total			<5	
Vinyl acetate	<10	<10	<10	
Vinyl chloride	<2	<2	<2	
Water temperature in deg. celsius field	21.3	17.3	24.5	26.2
Xylene(total)	<10	<10	<10	
Zinc-total			<20	<5

\* - The displayed value is the arithmetic mean of multiple database matches.

*Results of the Ground Water Statistics for Live Oak Landfill  
Second Semi-Annual Monitoring Event in 2024*

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**Attachment B**

Historical VOC Detections

**Table 1****Historical Volatile Organic Compound Detections**

Constituent	Well	Date	Identifier	Result	Limit	Units
Methane	AMP-5	9/25/2018		2400	100	ug/L
Methane	AMP-5	2/27/2019		5200	110	ug/L
Methane	AMP-5	10/29/2019		2400	110	ug/L
Methane	AMP-5	2/27/2020		5100	30	ug/L
Methane	AMP-5	9/09/2020		4200	30	ug/L
Methane	AMP-5	2/23/2021		4000	30	ug/L
Methane	AMP-5	2/23/2022		2600	30	ug/L
Methane	AMP-5	8/24/2022		1500	30	ug/L
Methane	AMP-5	2/27/2023		2200	30	ug/L
Methane	AMP-5	8/23/2023		1800	30	ug/L
Methane	AMP-5	2/28/2024		240	30	ug/L
Methane	AMP-5	8/28/2024		930	25	ug/L
4,4'-ddt	GWA01A	8/04/2015		.180	.055	ug/L
Acetone	GWA01A	2/03/2004		64	34	ug/L
Acetone	GWA01A	8/19/2004		34	34	ug/L
Acetone	GWA01A	2/07/2005		100	34	ug/L
Acetone	GWA01A	8/09/2005		140	34	ug/L
Acetone	GWA01A	2/21/2006		160	34	ug/L
Acetone	GWA01A	8/21/2006		52	34	ug/L
Aldrin	GWA01A	8/09/2005		.75	.05	ug/L
Aldrin	GWA01A	8/04/2015		.14	.05	ug/L
Alpha-bhc	GWA01A	8/22/2007		.220	.052	ug/L
Alpha-bhc	GWA01A	8/22/2007		.190	.052	ug/L
Alpha-bhc	GWA01A	12/14/2007		.085	.050	ug/L
Alpha-bhc	GWA01A	2/27/2008		.130	.050	ug/L
Alpha-bhc	GWA01A	2/18/2009		.079	.048	ug/L
Alpha-bhc	GWA01A	2/15/2010		.230	.048	ug/L
Alpha-bhc	GWA01A	2/23/2011		.120	.048	ug/L
Alpha-bhc	GWA01A	8/04/2011		.160	.047	ug/L
Alpha-bhc	GWA01A	1/31/2012		.100	.050	ug/L
Alpha-bhc	GWA01A	1/31/2012		.100	.048	ug/L
Alpha-bhc	GWA01A	8/03/2012		.110	.050	ug/L
Alpha-bhc	GWA01A	8/03/2012		.110	.050	ug/L
Alpha-bhc	GWA01A	2/28/2013		.110	.050	ug/L
Benzene	GWA01A	8/21/2006		5.4	5.0	ug/L
Beta-bhc	GWA01A	8/09/2005		.26	.05	ug/L
Bis(2-ethylhexyl) phthalate	GWA01A	8/09/2005		18	10	ug/L
Delta-bhc	GWA01A	8/09/2005		.12	.05	ug/L
Dieldrin	GWA01A	8/22/2007		.12	.10	ug/L
Dieldrin	GWA01A	8/22/2007		.10	.10	ug/L
Endosulfan ii	GWA01A	8/04/2015		.56	.06	ug/L
Ethane	GWA01A	8/16/2010		.02	.10	ug/L
Gamma-bhc (lindane)	GWA01A	8/04/2015		.081	.050	ug/L
Heptachlor	GWA01A	8/22/2007		.099	.053	ug/L
Heptachlor	GWA01A	8/22/2007		.080	.053	ug/L
Heptachlor	GWA01A	8/04/2015		.072	.050	ug/L
Heptachlor epoxide	GWA01A	8/22/2007		.140	.068	ug/L
Methane	GWA01A	2/21/2006		660.0	200.0	ug/L
Methane	GWA01A	2/27/2008		2100.0	200.0	ug/L
Methane	GWA01A	8/16/2010		2900.0	2.2	ug/L
Methane	GWA01A	8/04/2011		1700.0	500.0	ug/L
Methane	GWA01A	8/03/2012		220.0	26.0	ug/L
Methane	GWA01A	8/03/2012		220.0	26.0	ug/L
Methane	GWA01A	8/02/2013		540.0	11.0	ug/L
Methane	GWA01A	8/05/2014		280.0	50.0	ug/L
Methane	GWA01A	8/04/2015		61.0	10.0	ug/L
Methane	GWA01A	2/01/2017		17.0	4.0	ug/L
Methane	GWA01A	8/02/2017		12.0	4.0	ug/L
Methane	GWA01A	2/27/2018		280.0	22.0	ug/L
Methane	GWA01A	9/27/2018		1800.0	22.0	ug/L
Methane	GWA01A	2/27/2019		610.0	22.0	ug/L
Methane	GWA01A	10/28/2019		2400.0	22.0	ug/L
Methane	GWA01A	10/28/2019		2600.0	22.0	ug/L
Methane	GWA01A	2/27/2020		5400.0	30.0	ug/L
Methane	GWA01A	2/23/2021		1900.0	30.0	ug/L
Methane	GWA01A	2/23/2022		1200.0	30.0	ug/L
Methane	GWA01A	8/24/2022		2100.0	30.0	ug/L
Toluene	GWA01A	8/21/2006		8.3	5.0	ug/L
Trichloroethene	GWA01A	8/22/2007		6	5	ug/L
Vinyl chloride	GWA01A	8/06/2003		2.0	2.0	ug/L
Vinyl chloride	GWA01A	10/23/2003		5.0	2.0	ug/L
Vinyl chloride	GWA01A	2/03/2004		4.6	2.0	ug/L
Vinyl chloride	GWA01A	8/19/2004		3.2	2.0	ug/L
Vinyl chloride	GWA01A	2/07/2005		4.6	2.0	ug/L
Vinyl chloride	GWA01A	8/09/2005		3.0	2.0	ug/L
Vinyl chloride	GWA01A	2/19/2007		2.1	2.0	ug/L

Detections are shown for the constituents and sample points selected for the analysis  
The Limit column refers to the laboratory reporting limit

**Table 1****Historical Volatile Organic Compound Detections**

Constituent	Well	Date	Identifier	Result	Limit	Units
1,1-dichloroethane	GWA03A	8/06/2012		2.7	2.4	ug/L
1,1-dichloroethane	GWA03A	11/07/2012		3.6	1.0	ug/L
1,1-dichloroethane	GWA03A	2/27/2013		3.1	2.4	ug/L
1,1-dichloroethane	GWA03A	8/02/2013		4.6	2.4	ug/L
1,1-dichloroethane	GWA03A	2/05/2014		7.2	2.4	ug/L
1,1-dichloroethane	GWA03A	8/05/2014		7.8	2.4	ug/L
1,1-dichloroethane	GWA03A	2/05/2015		9.2	2.4	ug/L
1,1-dichloroethane	GWA03A	8/04/2015		11.0	2.4	ug/L
1,1-dichloroethane	GWA03A	3/08/2016		13.0	2.4	ug/L
1,1-dichloroethane	GWA03A	8/11/2016		11.0	2.4	ug/L
1,1-dichloroethane	GWA03A	2/01/2017		12.0	2.4	ug/L
1,1-dichloroethane	GWA03A	8/02/2017		13.0	2.4	ug/L
1,1-dichloroethane	GWA03A	2/26/2018		14.0	2.4	ug/L
1,1-dichloroethane	GWA03A	9/27/2018		12.0	2.4	ug/L
1,1-dichloroethane	GWA03A	2/27/2019		15.0	2.4	ug/L
1,1-dichloroethane	GWA03A	10/28/2019		12.0	2.4	ug/L
1,1-dichloroethane	GWA03A	10/28/2019		13.0	2.4	ug/L
1,1-dichloroethane	GWA03A	2/25/2020		10.6	2.0	ug/L
1,1-dichloroethane	GWA03A	9/10/2020		10.7	2.0	ug/L
1,1-dichloroethane	GWA03A	2/23/2021		14.2	2.0	ug/L
1,1-dichloroethane	GWA03A	9/29/2021		12.7	2.0	ug/L
1,1-dichloroethane	GWA03A	2/22/2022		13.1	2.4	ug/L
1,1-dichloroethane	GWA03A	8/23/2022		12.4	2.4	ug/L
1,1-dichloroethane	GWA03A	2/27/2023		14.3	2.4	ug/L
1,1-dichloroethane	GWA03A	8/22/2023		13.3	2.4	ug/L
1,1-dichloroethane	GWA03A	2/28/2024		11.6	2.4	ug/L
1,1-dichloroethane	GWA03A	8/26/2024		14.0	2.0	ug/L
Carbon disulfide	GWA03A	6/27/2001		5.8	5.0	ug/L
Carbon disulfide	GWA03A	2/20/2002		6.3	5.0	ug/L
Cis-1,2-dichloroethene	GWA03A	8/04/2015		12.0	10.0	ug/L
Cis-1,2-dichloroethene	GWA03A	3/08/2016		15.0	10.0	ug/L
Cis-1,2-dichloroethene	GWA03A	8/11/2016		13.0	10.0	ug/L
Cis-1,2-dichloroethene	GWA03A	2/01/2017		14.0	10.0	ug/L
Cis-1,2-dichloroethene	GWA03A	8/02/2017		16.0	10.0	ug/L
Cis-1,2-dichloroethene	GWA03A	2/26/2018		16.0	10.0	ug/L
Cis-1,2-dichloroethene	GWA03A	9/27/2018		17.0	10.0	ug/L
Cis-1,2-dichloroethene	GWA03A	2/27/2019		18.0	10.0	ug/L
Cis-1,2-dichloroethene	GWA03A	10/28/2019		16.0	10.0	ug/L
Cis-1,2-dichloroethene	GWA03A	10/28/2019		15.0	10.0	ug/L
Cis-1,2-dichloroethene	GWA03A	2/25/2020		13.8	10.0	ug/L
Cis-1,2-dichloroethene	GWA03A	9/10/2020		13.4	10.0	ug/L
Cis-1,2-dichloroethene	GWA03A	2/23/2021		18.8	10.0	ug/L
Cis-1,2-dichloroethene	GWA03A	9/29/2021		16.4	10.0	ug/L
Cis-1,2-dichloroethene	GWA03A	2/22/2022		16.3	10.0	ug/L
Cis-1,2-dichloroethene	GWA03A	8/23/2022		16.8	10.0	ug/L
Cis-1,2-dichloroethene	GWA03A	2/27/2023		17.5	10.0	ug/L
Cis-1,2-dichloroethene	GWA03A	8/22/2023		18.1	10.0	ug/L
Cis-1,2-dichloroethene	GWA03A	2/28/2024		15.5	10.0	ug/L
Cis-1,2-dichloroethene	GWA03A	8/26/2024		18.9	10.0	ug/L
Methane	GWA03A	2/27/2013		49	4	ug/L
Methane	GWA03A	8/02/2013		270	11	ug/L
Methane	GWA03A	8/05/2014		240	50	ug/L
Methane	GWA03A	8/04/2015		500	50	ug/L
Methane	GWA03A	8/11/2016		330	50	ug/L
Methane	GWA03A	8/02/2017		1000	44	ug/L
Methane	GWA03A	9/27/2018		1900	22	ug/L
Methane	GWA03A	10/28/2019		1500	22	ug/L
Methane	GWA03A	2/23/2021		2700	30	ug/L
Methane	GWA03A	9/29/2021		2100	30	ug/L
Methane	GWA03A	2/22/2022		970	30	ug/L
Methane	GWA03A	8/23/2022		1900	30	ug/L
Methane	GWA03A	2/28/2024		1300	30	ug/L
1,1-dichloroethane	GWC02A	3/07/2016		2.7	2.4	ug/L
1,1-dichloroethane	GWC02A	2/01/2017		2.6	2.4	ug/L
1,1-dichloroethane	GWC02A	5/04/2017		4.1	2.4	ug/L
1,1-dichloroethane	GWC02A	8/03/2017		3.3	2.4	ug/L
1,1-dichloroethane	GWC02A	2/26/2018		6.4	2.4	ug/L
1,1-dichloroethane	GWC02A	9/27/2018		3.5	2.4	ug/L
1,1-dichloroethane	GWC02A	2/27/2019		5.6	2.4	ug/L
1,1-dichloroethane	GWC02A	10/28/2019		3.3	2.4	ug/L
1,1-dichloroethane	GWC02A	2/26/2020		7.0	2.0	ug/L
1,1-dichloroethane	GWC02A	9/09/2020		4.8	2.0	ug/L
1,1-dichloroethane	GWC02A	2/23/2021		4.0	2.0	ug/L
1,1-dichloroethane	GWC02A	9/29/2021		3.0	2.0	ug/L
1,1-dichloroethane	GWC02A	8/24/2022		2.4	2.4	ug/L
1,1-dichloroethane	GWC02A	2/27/2023		3.7	2.4	ug/L

Detections are shown for the constituents and sample points selected for the analysis  
The Limit column refers to the laboratory reporting limit

**Table 1****Historical Volatile Organic Compound Detections**

Constituent	Well	Date	Identifier	Result	Limit	Units
Methane	GWC02A	6/17/2016		210	10	ug/L
Methane	GWC02A	2/01/2017		220	20	ug/L
Methane	GWC02A	8/03/2017		460	11	ug/L
Methane	GWC02A	2/26/2018		3000	11	ug/L
Methane	GWC02A	9/27/2018		2200	11	ug/L
Methane	GWC02A	2/27/2019		2000	22	ug/L
Methane	GWC02A	10/28/2019		1400	22	ug/L
Methane	GWC02A	2/26/2020		5700	30	ug/L
Methane	GWC02A	9/09/2020		3600	30	ug/L
Methane	GWC02A	2/23/2021		2400	30	ug/L
Methane	GWC02A	9/29/2021		2100	30	ug/L
Methane	GWC02A	2/23/2022		1300	30	ug/L
Methane	GWC02A	8/24/2022		1500	30	ug/L
Tetrachloroethene	GWC02A	2/26/2018		6.9	5.0	ug/L
Tetrachloroethene	GWC02A	6/22/2018		6.9	5.0	ug/L
Tetrachloroethene	GWC02A	2/27/2019		6.7	5.0	ug/L
Tetrachloroethene	GWC02A	2/26/2020		7.5	5.0	ug/L
Tetrachloroethene	GWC02A	9/09/2020		6.0	5.0	ug/L
1,1-dichloroethane	GWC03A	12/03/2001		6.0	2.0	ug/L
1,1-dichloroethane	GWC03A	8/06/2003		3.0	2.0	ug/L
1,1-dichloroethane	GWC03A	2/21/2006		6.8	5.0	ug/L
1,1-dichloroethane	GWC03A	8/21/2006		8.0	5.0	ug/L
1,1-dichloroethane	GWC03A	2/19/2007		6.2	5.0	ug/L
1,1-dichloroethane	GWC03A	8/22/2007		8.0	5.0	ug/L
1,1-dichloroethane	GWC03A	2/27/2008		5.8	5.0	ug/L
1,1-dichloroethane	GWC03A	8/27/2008		6.5	5.0	ug/L
1,1-dichloroethane	GWC03A	2/17/2009		5.2	5.0	ug/L
1,1-dichloroethane	GWC03A	8/03/2009		5.4	5.0	ug/L
1,1-dichloroethane	GWC03A	2/16/2010		4.8	2.4	ug/L
1,1-dichloroethane	GWC03A	2/22/2011		4.8	2.4	ug/L
1,1-dichloroethane	GWC03A	8/04/2011		3.3	2.4	ug/L
1,1-dichloroethane	GWC03A	1/31/2012		2.7	2.4	ug/L
1,1-dichloroethane	GWC03A	8/01/2017		2.4	2.4	ug/L
1,1-dichloroethane	GWC03A	11/01/2017		3.3	2.4	ug/L
1,1-dichloroethane	GWC03A	2/27/2018		2.7	2.4	ug/L
1,1-dichloroethane	GWC03A	9/26/2018		2.7	2.4	ug/L
1,1-dichloroethane	GWC03A	10/29/2019		4.0	2.4	ug/L
1,1-dichloroethane	GWC03A	2/27/2020		2.2	2.0	ug/L
1,1-dichloroethane	GWC03A	9/09/2020		2.5	2.0	ug/L
1,1-dichloroethane	GWC03A	2/24/2021		2.2	2.0	ug/L
1,1-dichloroethane	GWC03A	9/29/2021		3.3	2.0	ug/L
1,1-dichloroethane	GWC03A	8/23/2022		3.0	2.4	ug/L
1,1-dichloroethane	GWC03A	8/23/2023		2.8	2.4	ug/L
1,1-dichloroethane	GWC03A	2/27/2024		2.6	2.4	ug/L
1,1-dichloroethane	GWC03A	8/26/2024		2.9	2.0	ug/L
Carbon disulfide	GWC03A	8/06/2003		40	4	ug/L
Ethane	GWC03A	8/16/2010		.03	.10	ug/L
Methane	GWC03A	12/11/2002		920.0	10.0	ug/L
Methane	GWC03A	2/21/2006		4000.0	500.0	ug/L
Methane	GWC03A	2/27/2008		2900.0	500.0	ug/L
Methane	GWC03A	8/27/2008		2200.0	500.0	ug/L
Methane	GWC03A	8/03/2009		2200.0	500.0	ug/L
Methane	GWC03A	8/16/2010		1800.0	2.2	ug/L
Methane	GWC03A	8/04/2011		800.0	100.0	ug/L
Methane	GWC03A	8/02/2012		140.0	13.0	ug/L
Methane	GWC03A	8/02/2012		140.0	13.0	ug/L
Methane	GWC03A	8/01/2013		630.0	2.2	ug/L
Methane	GWC03A	8/05/2014		250.0	10.0	ug/L
Methane	GWC03A	11/01/2017		210.0	11.0	ug/L
Methane	GWC03A	9/26/2018		700.0	11.0	ug/L
Methane	GWC03A	2/27/2020		420.0	30.0	ug/L
Methane	GWC03A	2/24/2021		70.0	30.0	ug/L
Methane	GWC03A	2/21/2022		160.0	30.0	ug/L
Methane	GWC03A	8/23/2022		280.0	30.0	ug/L
Tetrachloroethene	GWC03A	12/03/2001		3	1	ug/L
Tetrachloroethene	GWC03A	8/06/2003		2	1	ug/L
Vinyl chloride	GWC03A	12/18/2000		3.1	2.0	ug/L
Vinyl chloride	GWC03A	6/27/2001		5.0	2.0	ug/L
Vinyl chloride	GWC03A	12/03/2001		6.0	2.0	ug/L
Vinyl chloride	GWC03A	2/21/2002		4.2	2.0	ug/L
Vinyl chloride	GWC03A	9/30/2002		5.0	2.0	ug/L
Vinyl chloride	GWC03A	12/11/2002		3.8	2.0	ug/L
Vinyl chloride	GWC03A	2/04/2003		2.7	2.0	ug/L
Vinyl chloride	GWC03A	8/06/2003		4.0	2.0	ug/L
Vinyl chloride	GWC03A	2/03/2004		4.6	2.0	ug/L
Vinyl chloride	GWC03A	8/17/2004		5.0	2.0	ug/L

Detections are shown for the constituents and sample points selected for the analysis  
The Limit column refers to the laboratory reporting limit

**Table 1****Historical Volatile Organic Compound Detections**

Constituent	Well	Date	Identifier	Result	Limit	Units
Vinyl chloride	GWC03A	2/07/2005		4.7	2.0	ug/L
Vinyl chloride	GWC03A	8/09/2005		4.0	2.0	ug/L
Vinyl chloride	GWC03A	2/21/2006		5.2	2.0	ug/L
Vinyl chloride	GWC03A	8/21/2006		4.2	2.0	ug/L
Vinyl chloride	GWC03A	2/19/2007		4.1	2.0	ug/L
Vinyl chloride	GWC03A	8/22/2007		3.0	2.0	ug/L
Vinyl chloride	GWC03A	2/27/2008		3.0	2.0	ug/L
Vinyl chloride	GWC03A	8/27/2008		3.0	2.0	ug/L
Vinyl chloride	GWC03A	2/17/2009		2.6	2.0	ug/L
Vinyl chloride	GWC03A	8/03/2009		2.5	2.0	ug/L
1,1-dichloroethane	GWC04A	2/27/2008		5.0	5.0	ug/L
1,1-dichloroethane	GWC04A	8/26/2008		5.9	5.0	ug/L
1,1-dichloroethane	GWC04A	2/18/2009		6.3	5.0	ug/L
1,1-dichloroethane	GWC04A	2/16/2010		5.2	2.4	ug/L
1,1-dichloroethane	GWC04A	8/17/2010		6.0	2.4	ug/L
1,1-dichloroethane	GWC04A	2/22/2011		10.0	2.4	ug/L
1,1-dichloroethane	GWC04A	8/02/2011		9.4	2.4	ug/L
1,1-dichloroethane	GWC04A	10/13/2011		9.4	2.4	ug/L
1,1-dichloroethane	GWC04A	1/31/2012		11.0	2.4	ug/L
1,1-dichloroethane	GWC04A	8/02/2012		13.0	2.4	ug/L
1,1-dichloroethane	GWC04A	8/02/2012		13.0	2.4	ug/L
1,1-dichloroethane	GWC04A	3/01/2013		13.0	2.4	ug/L
1,1-dichloroethane	GWC04A	8/01/2013		12.0	2.4	ug/L
1,1-dichloroethane	GWC04A	2/05/2014		11.0	2.4	ug/L
1,1-dichloroethane	GWC04A	8/05/2014		10.0	2.4	ug/L
1,1-dichloroethane	GWC04A	2/05/2015		9.2	2.4	ug/L
1,1-dichloroethane	GWC04A	8/05/2015		8.5	2.4	ug/L
1,1-dichloroethane	GWC04A	3/08/2016		8.6	2.4	ug/L
1,1-dichloroethane	GWC04A	8/11/2016		6.5	2.4	ug/L
1,1-dichloroethane	GWC04A	2/01/2017		5.3	2.4	ug/L
1,1-dichloroethane	GWC04A	8/02/2017		4.2	2.4	ug/L
1,1-dichloroethane	GWC04A	2/26/2018		2.5	2.4	ug/L
1,1-dichloroethane	GWC04A	9/26/2018		3.5	2.4	ug/L
1,1-dichloroethane	GWC04A	2/27/2019		4.4	2.4	ug/L
1,1-dichloroethane	GWC04A	10/28/2019		3.2	2.4	ug/L
1,1-dichloroethane	GWC04A	2/25/2020		2.8	2.0	ug/L
Alpha-bhc	GWC04A	2/27/2008	.052	.050	ug/L	
Chloroform	GWC04A	3/23/1990		7.9	5.0	ug/L
Cis-1,2-dichloroethene	GWC04A	8/02/2012		11	10	ug/L
Cis-1,2-dichloroethene	GWC04A	8/02/2012		11	10	ug/L
Dichlorodifluoromethane	GWC04A	8/02/2011		1.2	1.0	ug/L
Dichlorodifluoromethane	GWC04A	10/13/2011		1.1	1.0	ug/L
Ethane	GWC04A	9/21/2010		.02	.10	ug/L
Methane	GWC04A	2/27/2008		1600.0	100.0	ug/L
Methane	GWC04A	8/03/2009		1900.0	100.0	ug/L
Methane	GWC04A	9/21/2010		2300.0	2.0	ug/L
Methane	GWC04A	8/02/2011		1300.0	100.0	ug/L
Methane	GWC04A	8/02/2012		340.0	13.0	ug/L
Methane	GWC04A	8/02/2012		340.0	13.0	ug/L
Methane	GWC04A	8/01/2013		490.0	2.2	ug/L
Tetrachloroethene	GWC04A	2/18/2009		5.7	5.0	ug/L
Tetrachloroethene	GWC04A	2/16/2010		5.8	5.0	ug/L
Tetrachloroethene	GWC04A	8/17/2010		5.5	5.0	ug/L
Tetrachloroethene	GWC04A	2/22/2011		5.4	5.0	ug/L
Tetrachloroethene	GWC04A	8/02/2011		6.0	5.0	ug/L
Tetrachloroethene	GWC04A	10/13/2011		5.7	5.0	ug/L
Tetrachloroethene	GWC04A	1/31/2012		5.3	5.0	ug/L
Tetrachloroethene	GWC04A	8/02/2012		5.9	5.0	ug/L
Tetrachloroethene	GWC04A	8/02/2012		5.9	5.0	ug/L
Tetrachloroethene	GWC04A	3/01/2013		5.9	5.0	ug/L
Tetrachloroethene	GWC04A	8/01/2013		5.1	5.0	ug/L
Tetrachloroethene	GWC04A	2/05/2015		5.4	5.0	ug/L
Vinyl chloride	GWC04A	8/23/2007		3.3	2.0	ug/L
Vinyl chloride	GWC04A	12/14/2007		4.0	2.0	ug/L
Vinyl chloride	GWC04A	2/27/2008		3.0	2.0	ug/L
Vinyl chloride	GWC04A	8/26/2008		4.3	2.0	ug/L
Vinyl chloride	GWC04A	2/18/2009		4.6	2.0	ug/L
Vinyl chloride	GWC04A	8/03/2009		3.6	2.0	ug/L
Vinyl chloride	GWC04A	2/16/2010		4.1	2.0	ug/L
Vinyl chloride	GWC04A	8/17/2010		6.0	2.0	ug/L
Vinyl chloride	GWC04A	2/22/2011		4.4	2.0	ug/L
Vinyl chloride	GWC04A	8/02/2011		3.4	2.0	ug/L
Vinyl chloride	GWC04A	10/13/2011		3.0	2.0	ug/L
Vinyl chloride	GWC04A	1/31/2012		3.2	2.0	ug/L
Vinyl chloride	GWC04A	8/02/2012		2.8	2.0	ug/L
Vinyl chloride	GWC04A	8/02/2012		2.8	2.0	ug/L

Detections are shown for the constituents and sample points selected for the analysis  
The Limit column refers to the laboratory reporting limit

**Table 1****Historical Volatile Organic Compound Detections**

Constituent	Well	Date	Identifier	Result	Limit	Units
Vinyl chloride	GWC04A	8/01/2013		2.1	2.0	ug/L
Bis(2-ethylhexyl) phthalate	GWC05A	8/06/2003		35	10	ug/L
Bis(2-ethylhexyl) phthalate	GWC05A	8/09/2005		10	10	ug/L
1,1-dichloroethane	GWC07	8/04/2003		6.2	5.0	ug/L
1,1-dichloroethane	GWC07	10/23/2003		6.4	5.0	ug/L
1,1-dichloroethane	GWC07	2/05/2004		6.0	2.0	ug/L
1,1-dichloroethane	GWC07	8/16/2004		6.1	5.0	ug/L
1,1-dichloroethane	GWC07	2/07/2005		7.7	5.0	ug/L
1,1-dichloroethane	GWC07	8/09/2005		8.0	5.0	ug/L
1,1-dichloroethane	GWC07	2/21/2006		8.7	5.0	ug/L
1,1-dichloroethane	GWC07	8/21/2006		10.0	5.0	ug/L
1,1-dichloroethane	GWC07	2/21/2007		9.2	5.0	ug/L
1,1-dichloroethane	GWC07	8/21/2007		10.0	5.0	ug/L
1,1-dichloroethane	GWC07	2/27/2008		8.1	5.0	ug/L
1,1-dichloroethane	GWC07	8/26/2008		10.0	5.0	ug/L
1,1-dichloroethane	GWC07	2/18/2009		9.6	5.0	ug/L
1,1-dichloroethane	GWC07	8/04/2009		8.2	5.0	ug/L
1,1-dichloroethane	GWC07	2/15/2010		8.2	2.4	ug/L
1,1-dichloroethane	GWC07	8/17/2010		9.0	2.4	ug/L
1,1-dichloroethane	GWC07	2/23/2011		8.4	2.4	ug/L
1,1-dichloroethane	GWC07	8/02/2011		9.1	2.4	ug/L
1,1-dichloroethane	GWC07	1/31/2012		7.6	2.4	ug/L
1,1-dichloroethane	GWC07	8/02/2012		7.7	2.4	ug/L
1,1-dichloroethane	GWC07	8/02/2012		7.7	2.4	ug/L
1,1-dichloroethane	GWC07	2/28/2013		6.2	2.4	ug/L
1,1-dichloroethane	GWC07	8/02/2013		7.5	2.4	ug/L
1,1-dichloroethane	GWC07	2/06/2014		6.8	2.4	ug/L
1,1-dichloroethane	GWC07	8/05/2014		8.7	2.4	ug/L
1,1-dichloroethane	GWC07	2/05/2015		6.2	2.4	ug/L
1,1-dichloroethane	GWC07	8/04/2015		6.6	2.4	ug/L
1,1-dichloroethane	GWC07	3/08/2016		6.2	2.4	ug/L
1,1-dichloroethane	GWC07	8/11/2016		6.2	2.4	ug/L
1,1-dichloroethane	GWC07	2/01/2017		4.8	2.4	ug/L
1,1-dichloroethane	GWC07	8/02/2017		5.4	2.4	ug/L
1,1-dichloroethane	GWC07	2/27/2018		4.8	2.4	ug/L
1,1-dichloroethane	GWC07	9/26/2018		4.0	2.4	ug/L
1,1-dichloroethane	GWC07	2/27/2019		4.3	2.4	ug/L
1,1-dichloroethane	GWC07	10/28/2019		4.6	2.4	ug/L
1,1-dichloroethane	GWC07	10/28/2019		4.8	2.4	ug/L
1,1-dichloroethane	GWC07	2/25/2020		2.6	2.0	ug/L
1,1-dichloroethane	GWC07	9/09/2020		3.8	2.0	ug/L
1,1-dichloroethane	GWC07	2/23/2021		2.7	2.0	ug/L
1,1-dichloroethane	GWC07	9/29/2021		4.2	2.0	ug/L
1,1-dichloroethane	GWC07	2/21/2022		3.2	2.4	ug/L
1,1-dichloroethane	GWC07	8/24/2022		3.7	2.4	ug/L
1,1-dichloroethane	GWC07	2/27/2023		3.7	2.4	ug/L
1,1-dichloroethane	GWC07	8/22/2023		3.3	2.4	ug/L
1,1-dichloroethane	GWC07	2/27/2024		3.1	2.4	ug/L
1,1-dichloroethane	GWC07	8/26/2024		3.2	2.0	ug/L
1,3-dichlorobenzene	GWC07	8/05/2014		1.8	1.0	ug/L
Beta-bhc	GWC07	9/26/2018		.063	.050	ug/L
Bis(2-ethylhexyl) phthalate	GWC07	8/09/2005		11	10	ug/L
Gamma-bhc (lindane)	GWC07	9/26/2018		.062	.050	ug/L
Methane	GWC07	2/27/2008		1200	100	ug/L
Methane	GWC07	8/02/2012		330	13	ug/L
Methane	GWC07	8/02/2012		330	13	ug/L
Methane	GWC07	8/02/2013		820	11	ug/L
Methane	GWC07	8/05/2014		500	50	ug/L
Methane	GWC07	8/04/2015		410	50	ug/L
Methane	GWC07	9/26/2018		850	22	ug/L
Tetrachloroethene	GWC07	2/05/2004		2	1	ug/L
1,1-dichloroethane	GWC10	2/16/2010		3.3	2.4	ug/L
1,1-dichloroethane	GWC10	6/11/2010		3.3	1.0	ug/L
1,1-dichloroethane	GWC10	8/16/2010		3.5	2.4	ug/L
1,1-dichloroethane	GWC10	2/22/2011		3.5	2.4	ug/L
1,1-dichloroethane	GWC10	8/04/2011		3.2	2.4	ug/L
1,1-dichloroethane	GWC10	1/31/2012		3.5	2.4	ug/L
1,1-dichloroethane	GWC10	8/02/2012		3.1	2.4	ug/L
1,1-dichloroethane	GWC10	8/02/2012		3.1	2.4	ug/L
1,1-dichloroethane	GWC10	3/01/2013		3.4	2.4	ug/L
1,1-dichloroethane	GWC10	8/01/2013		3.3	2.4	ug/L
1,1-dichloroethane	GWC10	2/05/2014		3.7	2.4	ug/L
1,1-dichloroethane	GWC10	8/05/2014		3.5	2.4	ug/L
1,1-dichloroethane	GWC10	2/05/2015		3.5	2.4	ug/L
1,1-dichloroethane	GWC10	8/05/2015		2.7	2.4	ug/L
1,1-dichloroethane	GWC10	2/01/2017		3.2	2.4	ug/L

Detections are shown for the constituents and sample points selected for the analysis  
The Limit column refers to the laboratory reporting limit

**Table 1****Historical Volatile Organic Compound Detections**

Constituent	Well	Date	Identifier	Result	Limit	Units
1,1-dichloroethane	GWC10	5/04/2017		3.6	2.4	ug/L
1,1-dichloroethane	GWC10	8/03/2017		3.5	2.4	ug/L
1,1-dichloroethane	GWC10	2/26/2018		3.8	2.4	ug/L
1,1-dichloroethane	GWC10	9/26/2018		3.1	2.4	ug/L
1,1-dichloroethane	GWC10	2/27/2019		2.5	2.4	ug/L
1,1-dichloroethane	GWC10	2/26/2020		2.2	2.0	ug/L
1,1-dichloroethane	GWC10	9/28/2021		2.3	2.0	ug/L
Dichlorodifluoromethane	GWC10	1/31/2012		1.3	1.0	ug/L
Methane	GWC10	8/04/2011		1100.0	500.0	ug/L
Methane	GWC10	8/01/2013		1200.0	2.2	ug/L
Methane	GWC10	8/05/2014		330.0	10.0	ug/L
Methane	GWC10	9/26/2018		110.0	11.0	ug/L
Methane	GWC10	10/28/2019		50.0	1.0	ug/L
1,1-dichloroethane	GWC11	2/27/2013		4.4	2.4	ug/L
Methane	GWC11	2/27/2008		1600.0	200.0	ug/L
Methane	GWC11	8/03/2012		79.0	1.3	ug/L
Methane	GWC11	2/27/2013		130.0	1.0	ug/L
Methane	GWC11	8/01/2013		20.0	1.0	ug/L
Methane	GWC11	2/04/2014		2.7	1.0	ug/L
Methane	GWC11	8/03/2017		4.8	1.0	ug/L
Methane	GWC11	2/26/2018		2.6	1.0	ug/L
Vinyl chloride	GWC11	2/21/2007		2.0	2.0	ug/L
Vinyl chloride	GWC11	8/22/2007		2.0	2.0	ug/L
Vinyl chloride	GWC11	8/26/2008		2.2	2.0	ug/L
Vinyl chloride	GWC11	2/18/2009		2.0	2.0	ug/L
Bromodichloromethane	GWC12	11/09/1995		5	5	ug/L
Carbon disulfide	GWC12	10/01/2002		9.5	5.0	ug/L
Chloroform	GWC12	11/09/1995		21	5	ug/L
1,1-dichloroethane	GWC13A	12/15/1999		8.5	5.0	ug/L
1,1-dichloroethane	GWC13A	3/13/2000		15.0	5.0	ug/L
1,1-dichloroethane	GWC13A	6/08/2000		13.0	1.0	ug/L
1,1-dichloroethane	GWC13A	12/18/2000		21.0	5.0	ug/L
1,1-dichloroethane	GWC13A	12/18/2000		18.0	2.0	ug/L
1,1-dichloroethane	GWC13A	10/26/2001		20.0	5.0	ug/L
1,1-dichloroethane	GWC13A	2/21/2002		23.0	5.0	ug/L
1,1-dichloroethane	GWC13A	10/01/2002		29.0	5.0	ug/L
1,1-dichloroethane	GWC13A	12/12/2002		30.0	5.0	ug/L
1,1-dichloroethane	GWC13A	2/06/2003		26.0	5.0	ug/L
1,1-dichloroethane	GWC13A	8/06/2003		25.0	2.0	ug/L
1,1-dichloroethane	GWC13A	2/03/2004		25.0	5.0	ug/L
1,1-dichloroethane	GWC13A	8/16/2004		28.0	5.0	ug/L
1,1-dichloroethane	GWC13A	2/07/2005		28.0	5.0	ug/L
1,1-dichloroethane	GWC13A	8/09/2005		26.0	5.0	ug/L
1,1-dichloroethane	GWC13A	2/21/2006		28.0	5.0	ug/L
1,1-dichloroethane	GWC13A	8/21/2006		25.0	5.0	ug/L
1,1-dichloroethane	GWC13A	2/21/2007		21.0	5.0	ug/L
1,1-dichloroethane	GWC13A	8/22/2007		22.0	5.0	ug/L
1,1-dichloroethane	GWC13A	2/27/2008		16.0	5.0	ug/L
1,1-dichloroethane	GWC13A	8/27/2008		20.0	5.0	ug/L
1,1-dichloroethane	GWC13A	2/18/2009		17.0	5.0	ug/L
1,1-dichloroethane	GWC13A	8/04/2009		16.0	5.0	ug/L
1,1-dichloroethane	GWC13A	2/15/2010		12.0	2.4	ug/L
1,1-dichloroethane	GWC13A	8/16/2010		12.0	2.4	ug/L
1,1-dichloroethane	GWC13A	2/23/2011		11.0	2.4	ug/L
1,1-dichloroethane	GWC13A	8/02/2011		9.6	2.4	ug/L
1,1-dichloroethane	GWC13A	1/31/2012		8.2	2.4	ug/L
1,1-dichloroethane	GWC13A	8/02/2012		8.3	2.4	ug/L
1,1-dichloroethane	GWC13A	8/02/2012		8.3	2.4	ug/L
1,1-dichloroethane	GWC13A	2/28/2013		6.7	2.4	ug/L
1,1-dichloroethane	GWC13A	8/01/2013		7.3	2.4	ug/L
1,1-dichloroethane	GWC13A	2/05/2014		5.4	2.4	ug/L
1,1-dichloroethane	GWC13A	8/05/2014		4.0	2.4	ug/L
1,1-dichloroethane	GWC13A	2/05/2015		3.4	2.4	ug/L
1,1-dichloroethane	GWC13A	8/04/2015		3.2	2.4	ug/L
1,1-dichloroethane	GWC13A	3/08/2016		2.7	2.4	ug/L
1,1-dichloroethane	GWC13A	8/11/2016		2.5	2.4	ug/L
1,1-dichloroethane	GWC13A	2/01/2017		2.8	2.4	ug/L
1,1-dichloroethane	GWC13A	8/02/2017		2.4	2.4	ug/L
1,1-dichloroethene	GWC13A	3/13/2000		.36	5.00	ug/L
1,3-dichlorobenzene	GWC13A	8/02/2012		1.8	1.0	ug/L
1,3-dichlorobenzene	GWC13A	8/02/2012		1.8	1.0	ug/L
1,3-dichlorobenzene	GWC13A	8/05/2014		1.7	1.0	ug/L
Benzene	GWC13A	3/13/2000		.62	5.00	ug/L
Bis(2-ethylhexyl) phthalate	GWC13A	8/06/2003		13	10	ug/L
Bis(2-ethylhexyl) phthalate	GWC13A	8/09/2005		18	10	ug/L
Chloroethane	GWC13A	3/13/2000		.75	10.00	ug/L

Detections are shown for the constituents and sample points selected for the analysis  
The Limit column refers to the laboratory reporting limit

**Table 1****Historical Volatile Organic Compound Detections**

Constituent	Well	Date	Identifier	Result	Limit	Units
Cis-1,2-dichloroethene	GWC13A	3/13/2000		2.2	10.0	ug/L
Cis-1,2-dichloroethene	GWC13A	6/08/2000		2.1	1.0	ug/L
Cis-1,2-dichloroethene	GWC13A	12/18/2000		4.0	2.0	ug/L
Cis-1,2-dichloroethene	GWC13A	10/01/2002		10.0	10.0	ug/L
Cis-1,2-dichloroethene	GWC13A	12/12/2002		13.0	10.0	ug/L
Cis-1,2-dichloroethene	GWC13A	2/06/2003		14.0	10.0	ug/L
Cis-1,2-dichloroethene	GWC13A	8/06/2003		20.0	2.0	ug/L
Cis-1,2-dichloroethene	GWC13A	2/03/2004		15.0	10.0	ug/L
Cis-1,2-dichloroethene	GWC13A	8/16/2004		34.0	10.0	ug/L
Cis-1,2-dichloroethene	GWC13A	2/07/2005		39.0	10.0	ug/L
Cis-1,2-dichloroethene	GWC13A	8/09/2005		38.0	10.0	ug/L
Cis-1,2-dichloroethene	GWC13A	2/21/2006		46.0	10.0	ug/L
Cis-1,2-dichloroethene	GWC13A	8/21/2006		40.0	10.0	ug/L
Cis-1,2-dichloroethene	GWC13A	2/21/2007		33.0	10.0	ug/L
Cis-1,2-dichloroethene	GWC13A	8/22/2007		34.0	10.0	ug/L
Cis-1,2-dichloroethene	GWC13A	2/27/2008		25.0	10.0	ug/L
Cis-1,2-dichloroethene	GWC13A	8/27/2008		27.0	10.0	ug/L
Cis-1,2-dichloroethene	GWC13A	2/18/2009		27.0	10.0	ug/L
Cis-1,2-dichloroethene	GWC13A	8/04/2009		27.0	10.0	ug/L
Cis-1,2-dichloroethene	GWC13A	2/15/2010		21.0	10.0	ug/L
Cis-1,2-dichloroethene	GWC13A	8/16/2010		20.0	10.0	ug/L
Cis-1,2-dichloroethene	GWC13A	2/23/2011		17.0	10.0	ug/L
Cis-1,2-dichloroethene	GWC13A	8/02/2011		14.0	10.0	ug/L
Cis-1,2-dichloroethene	GWC13A	1/31/2012		10.0	10.0	ug/L
Cis-1,2-dichloroethene	GWC13A	8/02/2012		12.0	10.0	ug/L
Cis-1,2-dichloroethene	GWC13A	8/02/2012		12.0	10.0	ug/L
Cis-1,2-dichloroethene	GWC13A	8/01/2013		10.0	10.0	ug/L
Ethene	GWC13A	8/16/2010		.04	.10	ug/L
Methane	GWC13A	12/12/2002		700.0	10.0	ug/L
Methane	GWC13A	2/21/2006		830.0	200.0	ug/L
Methane	GWC13A	2/27/2008		240.0	50.0	ug/L
Methane	GWC13A	8/27/2008		180.0	25.0	ug/L
Methane	GWC13A	8/04/2009		270.0	50.0	ug/L
Methane	GWC13A	8/16/2010		100.0	.1	ug/L
Methane	GWC13A	8/02/2011		17.0	5.0	ug/L
Methane	GWC13A	8/02/2012		4.4	3.9	ug/L
Methane	GWC13A	8/02/2012		4.4	3.9	ug/L
Methane	GWC13A	8/01/2013		310.0	2.2	ug/L
Methane	GWC13A	8/05/2014		3.7	1.0	ug/L
Methane	GWC13A	8/11/2016		1.2	1.0	ug/L
Methane	GWC13A	8/02/2017		5.8	4.0	ug/L
Methane	GWC13A	9/26/2018		4.9	4.0	ug/L
Tetrachloroethene	GWC13A	6/08/2000		7.6	1.0	ug/L
Tetrachloroethene	GWC13A	12/18/2000		8.7	5.0	ug/L
Tetrachloroethene	GWC13A	12/18/2000		11.0	1.0	ug/L
Tetrachloroethene	GWC13A	10/26/2001		10.0	5.0	ug/L
Tetrachloroethene	GWC13A	2/21/2002		12.0	5.0	ug/L
Tetrachloroethene	GWC13A	10/01/2002		14.0	5.0	ug/L
Tetrachloroethene	GWC13A	12/12/2002		18.0	5.0	ug/L
Tetrachloroethene	GWC13A	2/06/2003		13.0	5.0	ug/L
Tetrachloroethene	GWC13A	8/06/2003		22.0	1.0	ug/L
Tetrachloroethene	GWC13A	2/03/2004		16.0	5.0	ug/L
Tetrachloroethene	GWC13A	8/16/2004		23.0	5.0	ug/L
Tetrachloroethene	GWC13A	2/07/2005		20.0	5.0	ug/L
Tetrachloroethene	GWC13A	8/09/2005		23.0	5.0	ug/L
Tetrachloroethene	GWC13A	2/21/2006		22.0	5.0	ug/L
Tetrachloroethene	GWC13A	8/21/2006		23.0	5.0	ug/L
Tetrachloroethene	GWC13A	2/21/2007		23.0	5.0	ug/L
Tetrachloroethene	GWC13A	8/22/2007		22.0	5.0	ug/L
Tetrachloroethene	GWC13A	2/27/2008		16.0	5.0	ug/L
Tetrachloroethene	GWC13A	8/27/2008		16.0	5.0	ug/L
Tetrachloroethene	GWC13A	2/18/2009		15.0	5.0	ug/L
Tetrachloroethene	GWC13A	8/04/2009		19.0	5.0	ug/L
Tetrachloroethene	GWC13A	2/15/2010		16.0	5.0	ug/L
Tetrachloroethene	GWC13A	8/16/2010		15.0	5.0	ug/L
Tetrachloroethene	GWC13A	2/23/2011		10.0	5.0	ug/L
Tetrachloroethene	GWC13A	8/02/2011		9.4	5.0	ug/L
Tetrachloroethene	GWC13A	1/31/2012		10.0	5.0	ug/L
Tetrachloroethene	GWC13A	8/02/2012		8.7	5.0	ug/L
Tetrachloroethene	GWC13A	8/02/2012		8.7	5.0	ug/L
Tetrachloroethene	GWC13A	2/28/2013		7.8	5.0	ug/L
Tetrachloroethene	GWC13A	8/01/2013		8.3	5.0	ug/L
Tetrachloroethene	GWC13A	2/05/2014		6.8	5.0	ug/L
Tetrachloroethene	GWC13A	8/05/2014		6.5	5.0	ug/L
Tetrachloroethene	GWC13A	2/05/2015		5.4	5.0	ug/L
Tetrachloroethene	GWC13A	8/04/2015		5.3	5.0	ug/L

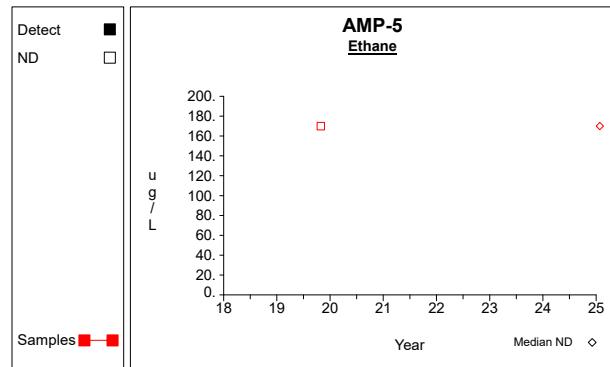
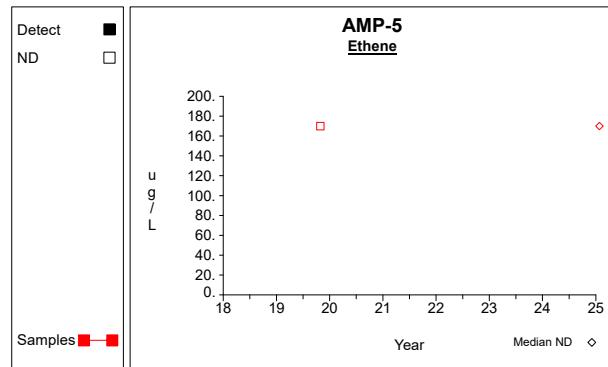
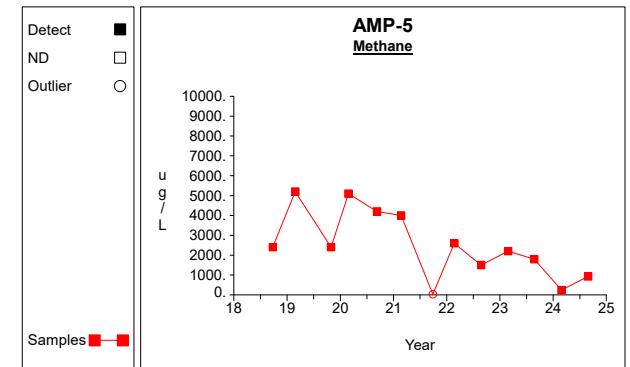
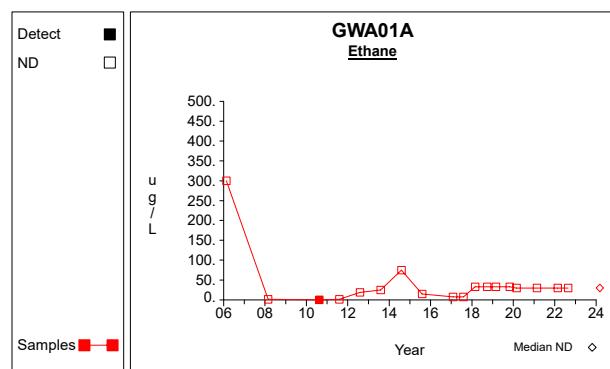
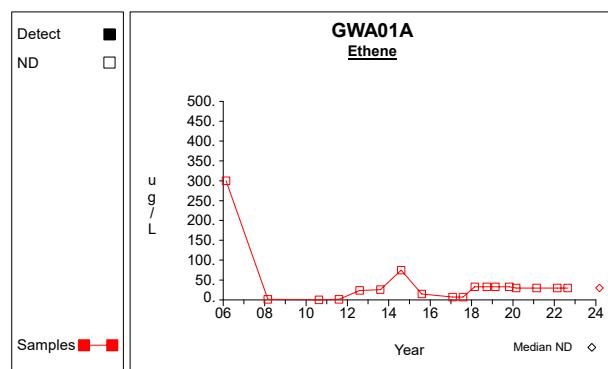
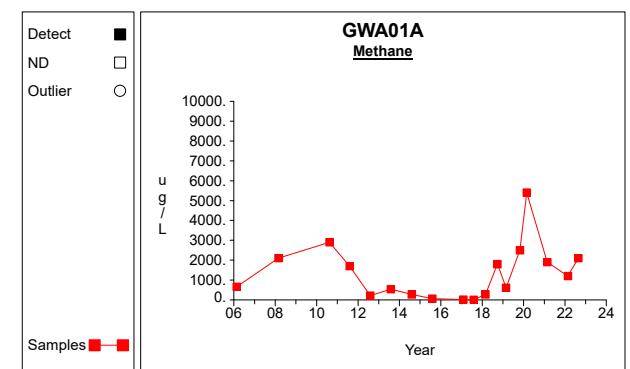
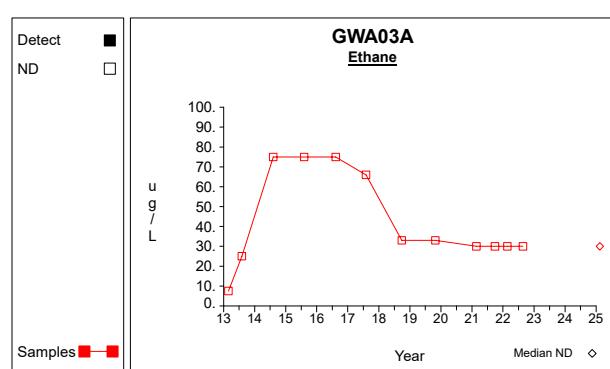
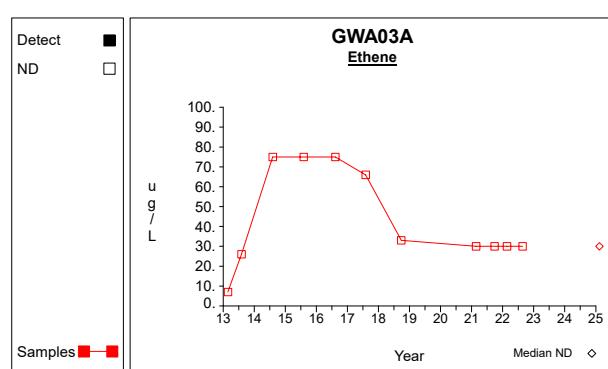
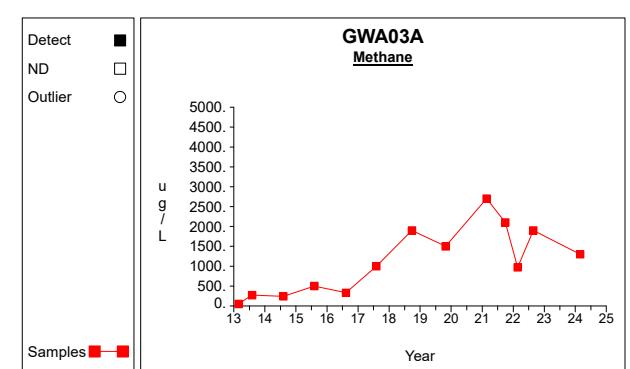
Detections are shown for the constituents and sample points selected for the analysis  
The Limit column refers to the laboratory reporting limit

**Table 1****Historical Volatile Organic Compound Detections**

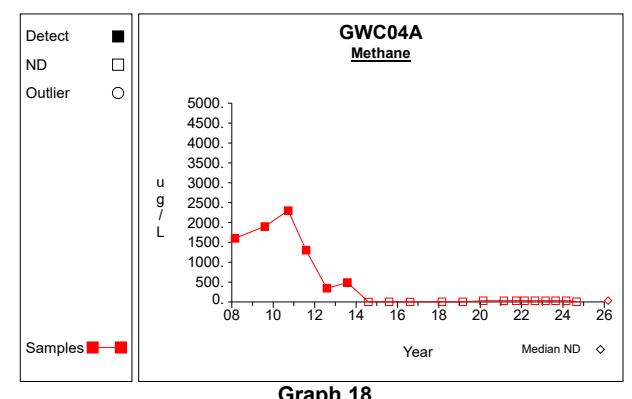
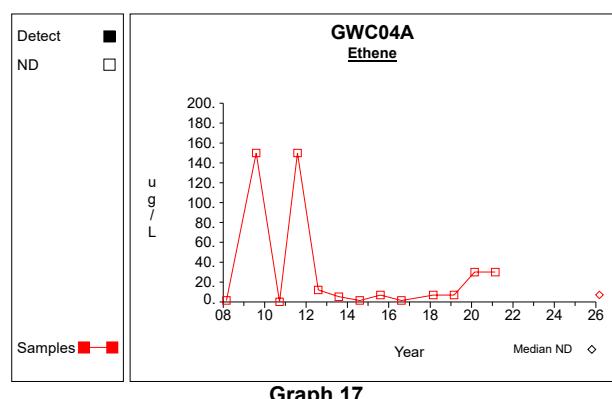
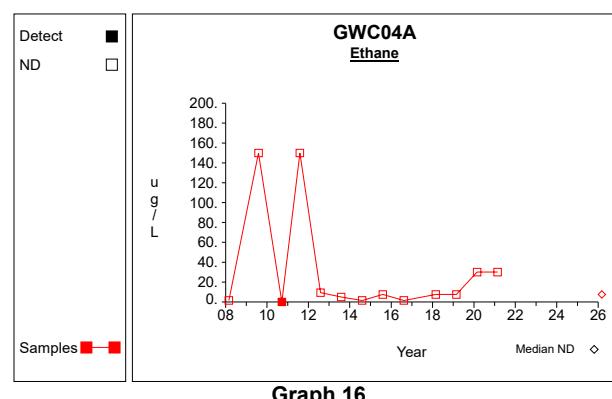
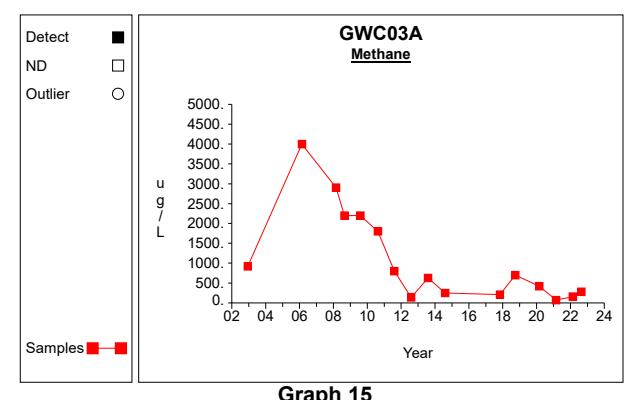
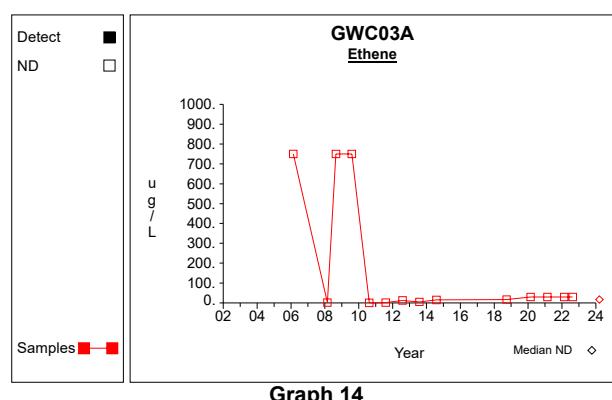
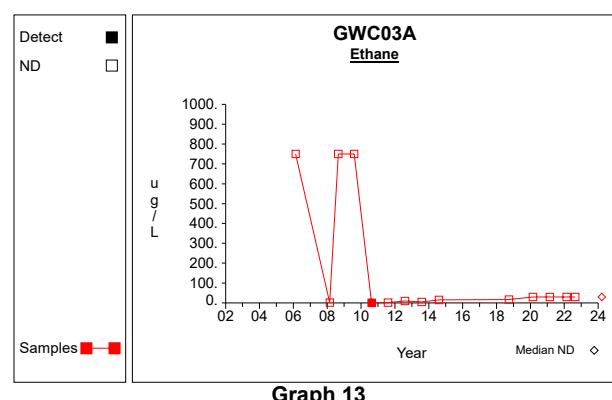
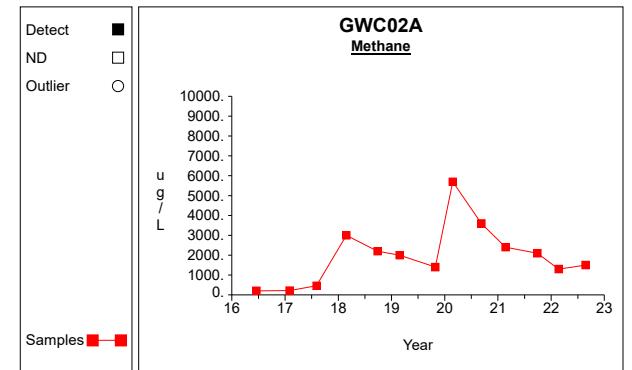
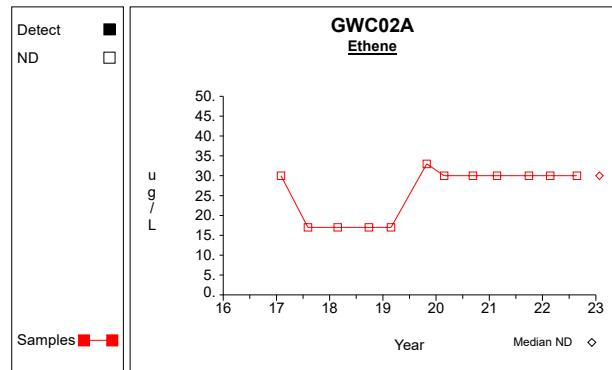
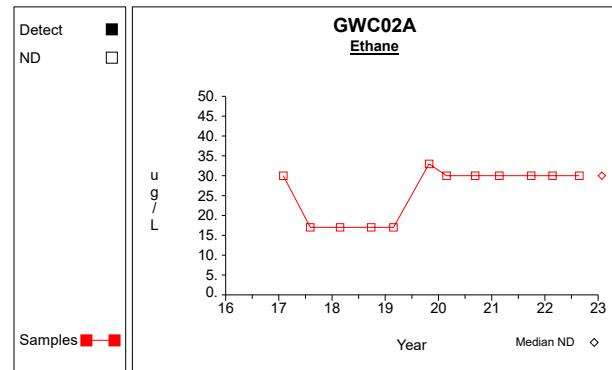
Constituent	Well	Date	Identifier	Result	Limit	Units
Trichloroethene	GWC13A	3/13/2000		2.1	5.0	ug/L
Trichloroethene	GWC13A	6/08/2000		1.6	1.0	ug/L
Trichloroethene	GWC13A	12/12/2002		5.7	5.0	ug/L
Trichloroethene	GWC13A	8/06/2003		6.0	3.0	ug/L
Trichloroethene	GWC13A	8/16/2004		6.4	5.0	ug/L
Trichloroethene	GWC13A	2/07/2005		6.1	5.0	ug/L
Trichloroethene	GWC13A	8/09/2005		6.0	5.0	ug/L
Trichloroethene	GWC13A	2/21/2006		6.4	5.0	ug/L
Trichloroethene	GWC13A	8/21/2006		6.3	5.0	ug/L
Trichloroethene	GWC13A	2/21/2007		5.6	5.0	ug/L
Trichloroethene	GWC13A	8/22/2007		6.0	5.0	ug/L

Detections are shown for the constituents and sample points selected for the analysis  
The Limit column refers to the laboratory reporting limit

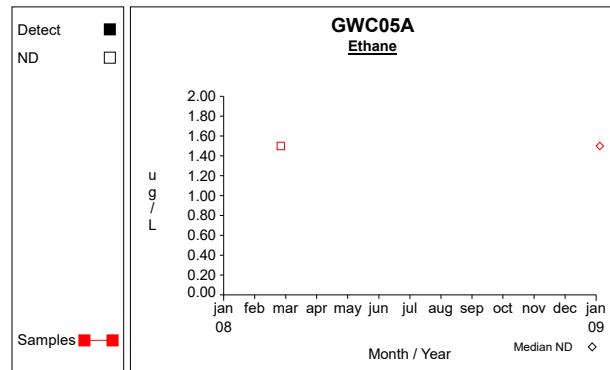
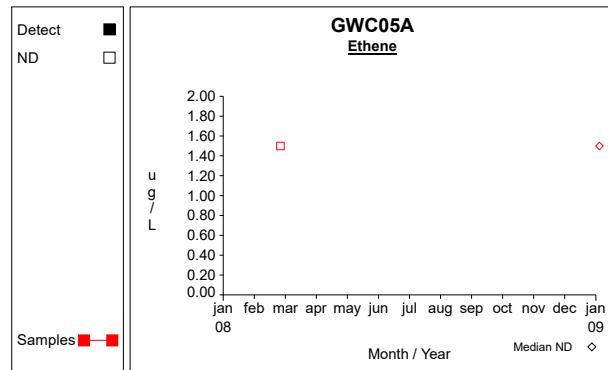
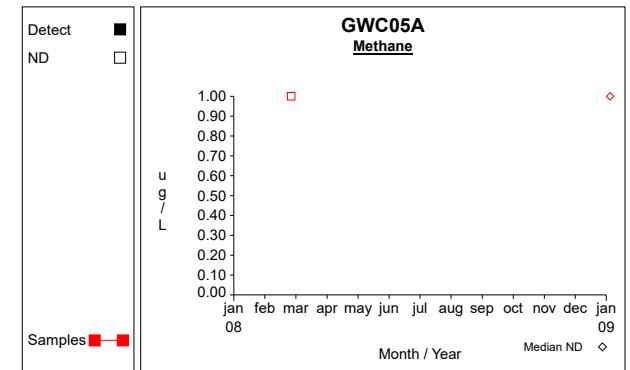
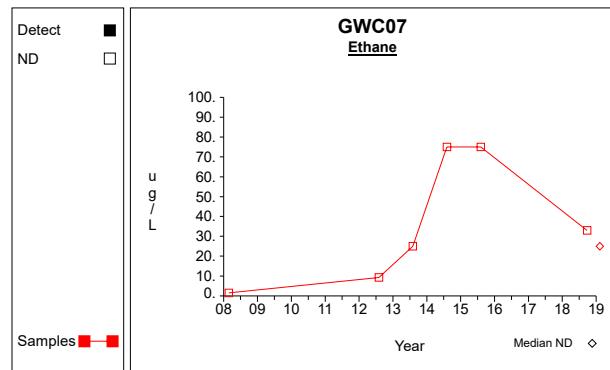
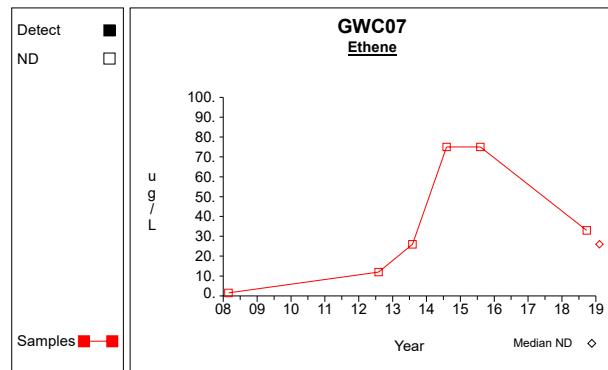
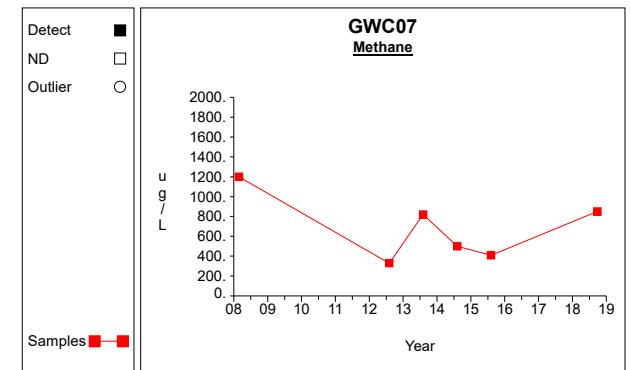
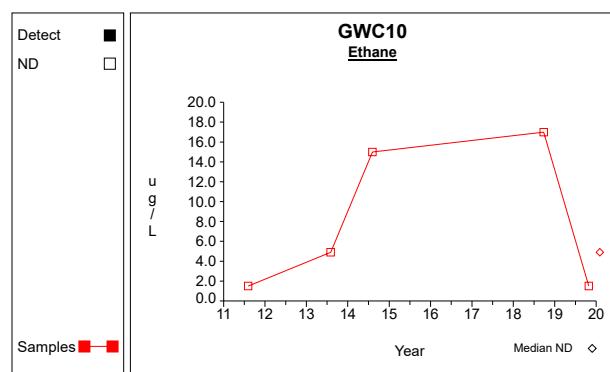
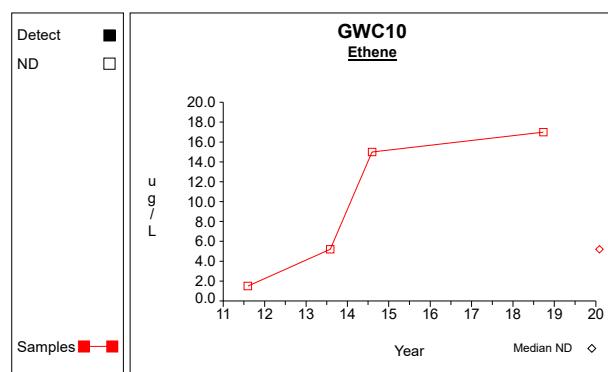
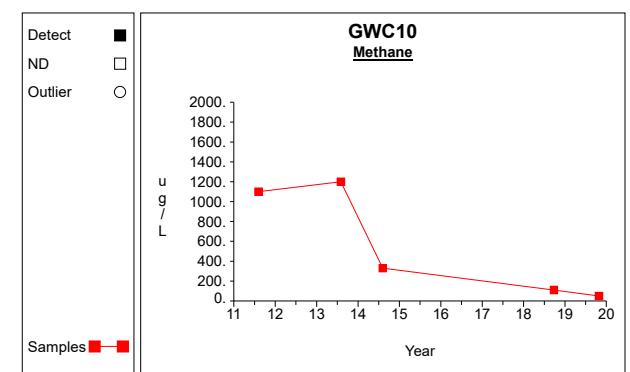
## Time Series

**Graph 1****Graph 2****Graph 3****Graph 4****Graph 5****Graph 6****Graph 7****Graph 8****Graph 9**

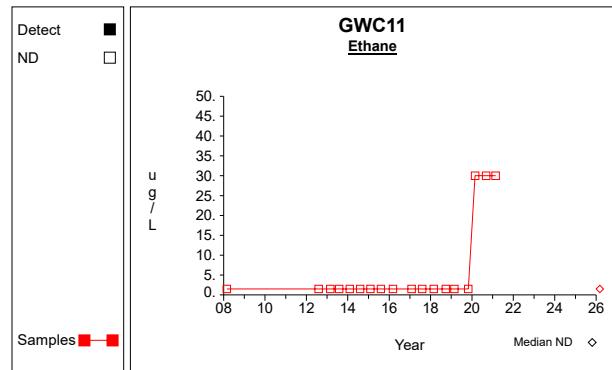
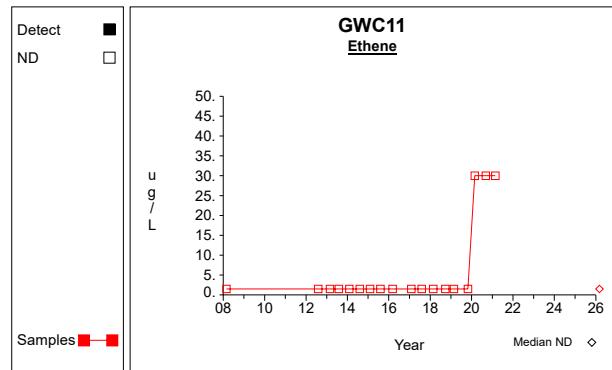
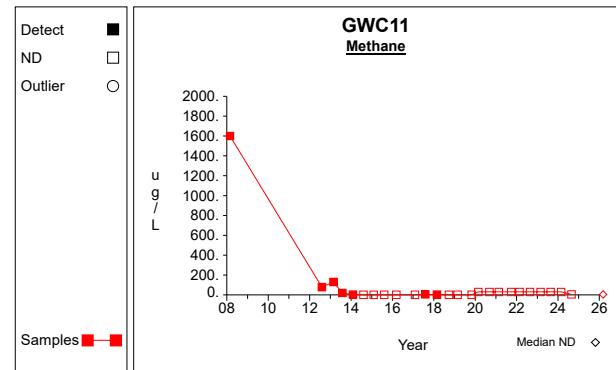
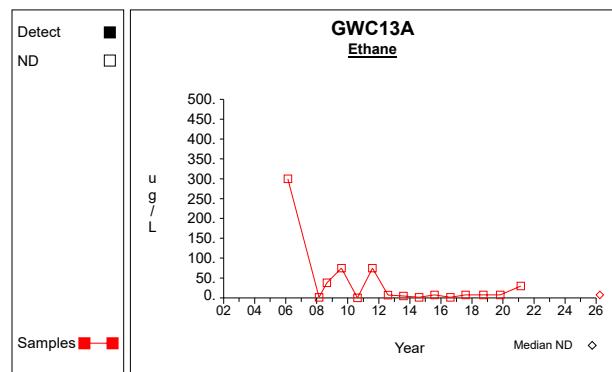
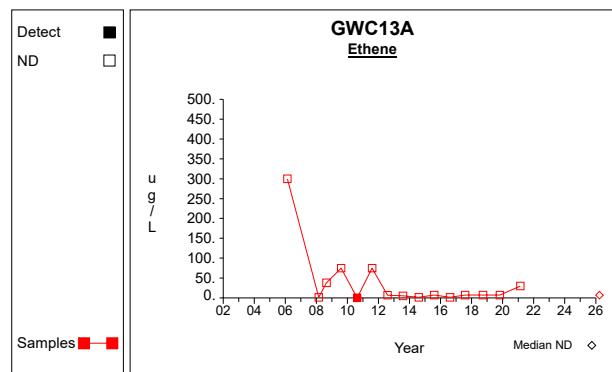
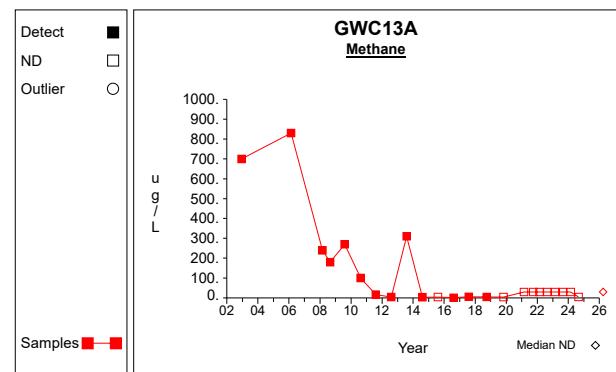
## Time Series



## Time Series

**Graph 19****Graph 20****Graph 21****Graph 22****Graph 23****Graph 24****Graph 25****Graph 26****Graph 27**

## Time Series

**Graph 28****Graph 29****Graph 30****Graph 31****Graph 32****Graph 33**

*Results of the Ground Water Statistics for Live Oak Landfill  
Second Semi-Annual Monitoring Event in 2024*

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**Attachment C**

VOC Detections compared to GWPS

**Table 1**

**Confidence Intervals for Comparing the Mean of the Last  
4 Measurements to an Assessment Monitoring Standard**

<b>Constituent</b>	<b>Units</b>	<b>Well</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>Factor</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Standard</b>	<b>Trend</b>
1,1-dichloroethane	ug/L	GWA03A	4	13.300	1.208	1.176	11.879	14.721	800.000	inc
1,1-dichloroethane	ug/L	GWC02A	4	2.800	0.600	1.176	2.094	3.506	800.000	
1,1-dichloroethane	ug/L	GWC03A	4	2.700	0.183	1.176	2.485	2.915	800.000	
1,1-dichloroethane	ug/L	GWC07	4	3.325	0.263	1.176	3.016	3.634	800.000	
1,1-dichloroethane	ug/L	GWC10	4	2.500	0.000	1.176	2.500	2.500	800.000	

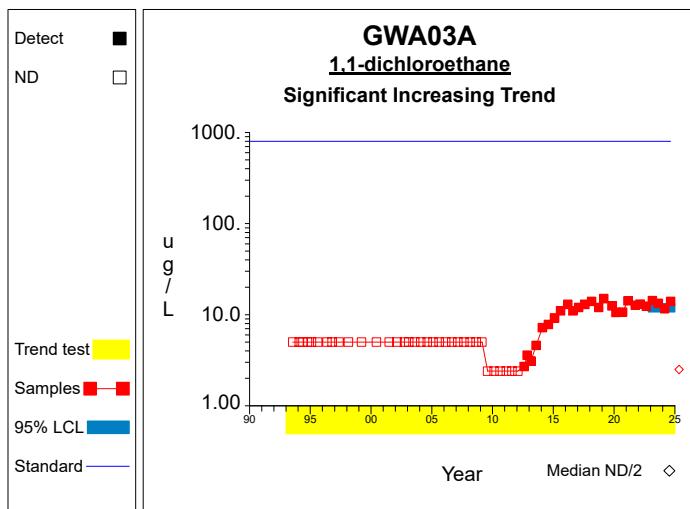
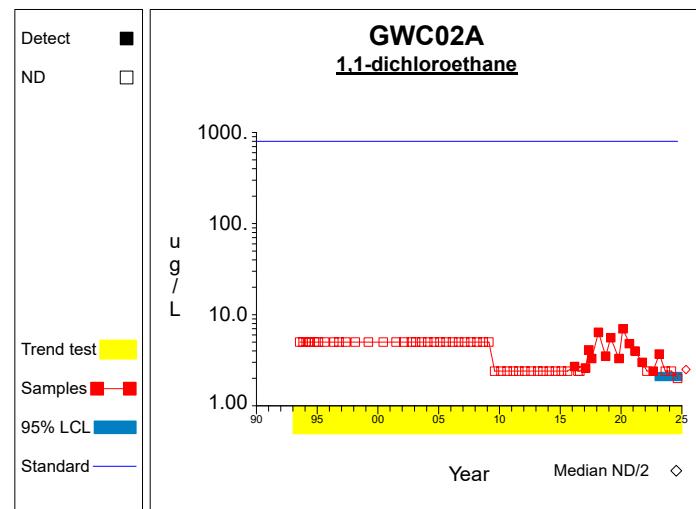
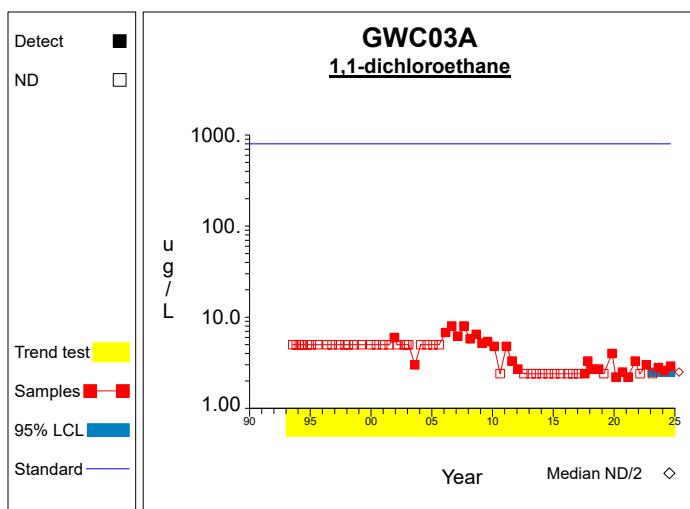
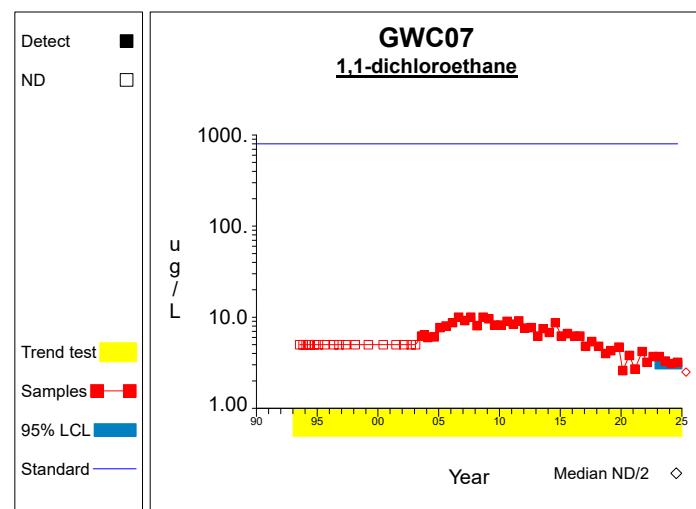
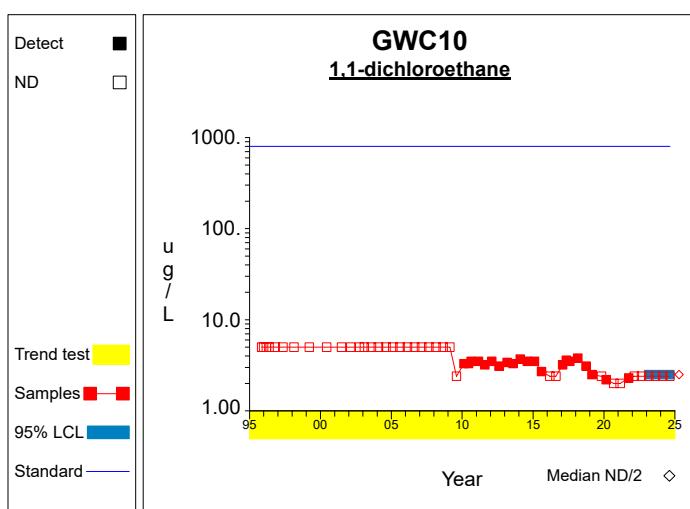
\* - Insufficient Data

\*\* - Significant Exceedance

LCL = Lower Confidence Limit

UCL = Upper Confidence Limit

## Confidence Limits (Assessment)

**Graph 1****Graph 2****Graph 3****Graph 4****Graph 5**

**Worksheet 6 - Assessment Monitoring**  
**1,1-dichloroethane (ug/L) at GWA03A**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 53.2 / 4$ $= 13.3$	Compute the mean of the last 4 measurements.
2	$S = ((\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1))^{1/2}$ $= ((711.94 - 2830.24/4) / (4-1))^{1/2}$ $= 1.208$	Compute sd of the last 4 measurements.
3	$LCL = \bar{X} - tS/N^{1/2}$ $= 13.3 - 2.353 * 1.208/4^{1/2}$ $= 11.879$	Compute lower confidence limit for the mean of the last 4 measurements.
4	$UCL = \bar{X} + tS/N^{1/2}$ $= 13.3 + 2.353 * 1.208/4^{1/2}$ $= 14.721$	Compute upper confidence limit for the mean of the last 4 measurements.
5	$N' = N * (N-1) / 2$ $= 60 * (60-1) / 2$ $= 1770$	Number of sample pairs during trend detection period.
6	$S = 0.378$	Sen's estimator of trend.
7	$\text{var}(S) = 20029.0$	Variance estimate for slope.
8	$M(S) = (N' \pm Z_{.995} * \text{var}(S)^{1/2}) / 2$ $= (1770 \pm 2.576 * 20029.0^{1/2}) / 2$ $= [ 702.717, 1067.283 ]$	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the $M^{\text{th}}$ largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	$\text{CL}(S) = [ 0.081, 0.491 ]$	Two-sided confidence interval for slope.
10	$LCL(S) > 0$	<b>Significant increasing trend.</b>

**Worksheet 6 - Assessment Monitoring**  
**1,1-dichloroethane (ug/L) at GWC02A**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 11.2 / 4 = 2.8	Compute the mean of the last 4 measurements.
2	$S = ((\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1))^{1/2}$ = ((32.44 - 125.44/4) / (4-1))^{1/2} = 0.6	Compute sd of the last 4 measurements.
3	$LCL = \bar{X} - tS/N^{1/2}$ = 2.8 - 2.353 * 0.6/4 <sup>1/2</sup> = 2.094	Compute lower confidence limit for the mean of the last 4 measurements.
4	$UCL = \bar{X} + tS/N^{1/2}$ = 2.8 + 2.353 * 0.6/4 <sup>1/2</sup> = 3.506	Compute upper confidence limit for the mean of the last 4 measurements.
5	$N' = N * (N-1) / 2$ = 63 * (63-1) / 2 = 1953	Number of sample pairs during trend detection period.
6	$S = 0.0$	Sen's estimator of trend.
7	$\text{var}(S) = 14967.333$	Variance estimate for slope.
8	$M(S) = (N' \pm Z_{.995} * \text{var}(S)^{1/2}) / 2$ = (1953 ± 2.576 * 14967.333 <sup>1/2</sup> ) / 2 = [ 818.925, 1134.075 ]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the M <sup>th</sup> largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	$CL(S) = [ 0.0, 0.0 ]$	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

**Worksheet 6 - Assessment Monitoring**  
**1,1-dichloroethane (ug/L) at GWC03A**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 10.8 / 4$ $= 2.7$	Compute the mean of the last 4 measurements.
2	$S = ((\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1))^{1/2}$ $= ((29.26 - 116.64/4) / (4-1))^{1/2}$ $= 0.183$	Compute sd of the last 4 measurements.
3	$LCL = \bar{X} - tS/N^{1/2}$ $= 2.7 - 2.353 * 0.183/4^{1/2}$ $= 2.485$	Compute lower confidence limit for the mean of the last 4 measurements.
4	$UCL = \bar{X} + tS/N^{1/2}$ $= 2.7 + 2.353 * 0.183/4^{1/2}$ $= 2.915$	Compute upper confidence limit for the mean of the last 4 measurements.
5	$N' = N * (N-1) / 2$ $= 68 * (68-1) / 2$ $= 2278$	Number of sample pairs during trend detection period.
6	$S = 0.0$	Sen's estimator of trend.
7	$\text{var}(S) = 27163.0$	Variance estimate for slope.
8	$M(S) = (N' \pm Z_{.995} * \text{var}(S)^{1/2}) / 2$ $= (2278 \pm 2.576 * 27163.0^{1/2}) / 2$ $= [926.722, 1351.278]$	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the $M^{\text{th}}$ largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	$CL(S) = [0.0, 0.0]$	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

**Worksheet 6 - Assessment Monitoring**  
**1,1-dichloroethane (ug/L) at GWC07**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 13.3 / 4$ $= 3.325$	Compute the mean of the last 4 measurements.
2	$S = ((\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1))^{1/2}$ $= ((44.43 - 176.89/4) / (4-1))^{1/2}$ $= 0.263$	Compute sd of the last 4 measurements.
3	$LCL = \bar{X} - tS/N^{1/2}$ $= 3.325 - 2.353 * 0.263/4^{1/2}$ $= 3.016$	Compute lower confidence limit for the mean of the last 4 measurements.
4	$UCL = \bar{X} + tS/N^{1/2}$ $= 3.325 + 2.353 * 0.263/4^{1/2}$ $= 3.634$	Compute upper confidence limit for the mean of the last 4 measurements.
5	$N' = N * (N-1) / 2$ $= 62 * (62-1) / 2$ $= 1891$	Number of sample pairs during trend detection period.
6	$S = 0.008$	Sen's estimator of trend.
7	$\text{var}(S) = 26381.0$	Variance estimate for slope.
8	$M(S) = (N' \pm Z_{.995} * \text{var}(S)^{1/2}) / 2$ $= (1891 \pm 2.576 * 26381.0^{1/2}) / 2$ $= [ 736.3, 1154.7 ]$	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the $M^{\text{th}}$ largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	$CL(S) = [ -0.04, 0.087 ]$	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

**Worksheet 6 - Assessment Monitoring**  
**1,1-dichloroethane (ug/L) at GWC10**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 10.0 / 4 = 2.5	Compute the mean of the last 4 measurements.
2	$S = ((\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1))^{1/2}$ = ((25.0 - 100.0/4) / (4-1))^{1/2} = 0.0	Compute sd of the last 4 measurements.
3	$LCL = \bar{X} - tS/N^{1/2}$ = 2.5 - 2.353 * 0.0/4^{1/2} = 2.5	Compute lower confidence limit for the mean of the last 4 measurements.
4	$UCL = \bar{X} + tS/N^{1/2}$ = 2.5 + 2.353 * 0.0/4^{1/2} = 2.5	Compute upper confidence limit for the mean of the last 4 measurements.
5	$N' = N * (N-1) / 2$ = 58 * (58-1) / 2 = 1653	Number of sample pairs during trend detection period.
6	$S = 0.0$	Sen's estimator of trend.
7	$\text{var}(S) = 15862.667$	Variance estimate for slope.
8	$M(S) = (N' \pm Z_{.995} * \text{var}(S)^{1/2}) / 2$ = (1653 ± 2.576 * 15862.667^{1/2}) / 2 = [ 664.28, 988.72 ]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the $M^{\text{th}}$ largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	$CL(S) = [ 0.0, 0.0 ]$	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

**Table 1**

**Confidence Intervals for Comparing the Mean of the Last  
4 Measurements to an Assessment Monitoring Standard**

<b>Constituent</b>	<b>Units</b>	<b>Well</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>Factor</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Standard</b>	<b>Trend</b>
Cis-1,2-dichloroethene	ug/L	GWA03A	4	17.500	1.451	1.176	15.793	19.207	70.000	

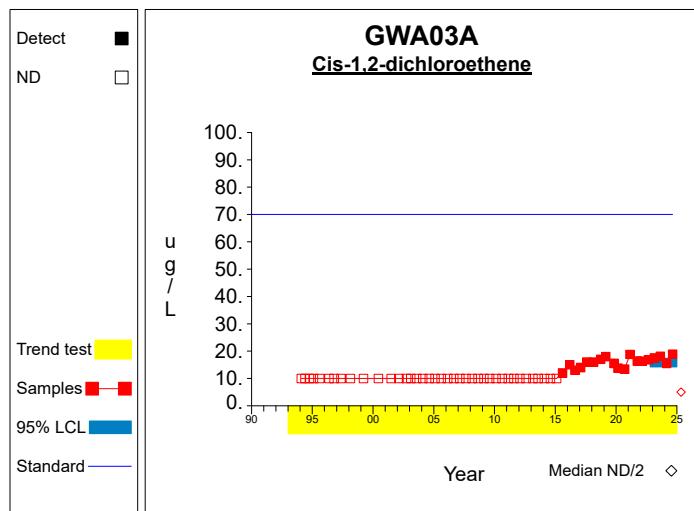
\* - Insufficient Data

\*\* - Significant Exceedance

LCL = Lower Confidence Limit

UCL = Upper Confidence Limit

## Confidence Limits (Assessment)



**Graph 1**

**Worksheet 6 - Assessment Monitoring**  
**Cis-1,2-dichloroethene (ug/L) at GWA03A**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \frac{\text{sum}[X]}{N}$ $= 70.0 / 4$ $= 17.5$	Compute the mean of the last 4 measurements.
2	$S = \sqrt{(\frac{\text{sum}[X^2]}{N} - \bar{X}^2) / (N-1)}$ $= \sqrt{(1231.32 - 4900.0/4) / (4-1)}$ $= 1.451$	Compute sd of the last 4 measurements.
3	$LCL = \bar{X} - tS/\sqrt{N}$ $= 17.5 - 2.353 * 1.451/\sqrt{4}$ $= 15.793$	Compute lower confidence limit for the mean of the last 4 measurements.
4	$UCL = \bar{X} + tS/\sqrt{N}$ $= 17.5 + 2.353 * 1.451/\sqrt{4}$ $= 19.207$	Compute upper confidence limit for the mean of the last 4 measurements.
5	$N' = N * (N-1) / 2$ $= 58 * (58-1) / 2$ $= 1653$	Number of sample pairs during trend detection period.
6	$S = 0.349$	Sen's estimator of trend.
7	$\text{var}(S) = 15388.0$	Variance estimate for slope.
8	$M(S) = (N' \pm Z_{.995} * \sqrt{\text{var}(S)}) / 2$ $= (1653 \pm 2.576 * \sqrt{15388.0}) / 2$ $= [666.726, 986.274]$	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the $M^{th}$ largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	$CL(S) = [0.0, 0.505]$	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

*Results of the Ground Water Statistics for Live Oak Landfill  
Second Semi-Annual Monitoring Event in 2024*

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**Attachment D**

Trace Metals - Summary Tables and Graphs for the Intrawell Statistics

**Table 1**

**Summary Statistics and Intermediate Computations  
for Combined Shewhart-CUSUM Control Charts**

Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	Conf	
Antimony-total	ug/L	GWA01A	46	13	59			2.0000	2.0000			2.0000	nonpar	.99	**
Arsenic-total	ug/L	GWA01A	46	13	59			7.0000	7.0000			7.0000	nonpar	.99	**
Barium-total	ug/L	GWA01A	46	13	59			100.0000	110.0000	115.3913	115.3913	323.2947	normal		
Beryllium-total	ug/L	GWA01A	46	13	59	115.3913	51.9758	1.0000	1.0000			1.0000	nonpar	.99	**
Cadmium-total	ug/L	GWA01A	46	13	59			1.0000	1.0000			1.0000	nonpar	.99	**
Chromium-total	ug/L	GWA01A	46	13	59	8.0152	6.7668	2.0000	2.0000	8.0152	8.0152	35.0825	normal		
Cobalt-total	ug/L	GWA01A	46	13	59			5.0000	5.0000			18.0000	nonpar	.99	**
Copper-total	ug/L	GWA01A	46	13	59			5.0000	5.0000			13.0000	nonpar	.99	**
Lead-total	ug/L	GWA01A	49	13	62			10.0000	5.0000			10.0000	nonpar	.99	**
Nickel-total	ug/L	GWA01A	46	13	59	36.5304	14.5171	30.0000	30.0000	36.5304	36.5304	94.5990	normal		
Selenium-total	ug/L	GWA01A	46	13	59			10.0000	10.0000			10.0000	nonpar	.99	**
Silver-total	ug/L	GWA01A	46	13	59			3.0000	3.0000			3.0000	nonpar	.99	**
Thallium-total	ug/L	GWA01A	46	13	59			1.0000	1.0000			1.0000	nonpar	.99	**
Vanadium-total	ug/L	GWA01A	46	13	59			5.0000	5.0000			6.1000	nonpar	.99	**
Zinc-total	ug/L	GWA01A	46	13	59	20.9630	7.5748	20.0000	20.0000	20.9630	20.9630	51.2621	normal		
Antimony-total	ug/L	GWA03A	19	13	32			2.0000	2.0000			2.0000	nonpar	.99	**
Arsenic-total	ug/L	GWA03A	19	13	32			7.0000	7.0000			7.0000	nonpar	.99	**
Barium-total	ug/L	GWA03A	19	13	32	85.3105	100.4879	10.0000	10.0000	85.3105	85.3105	487.2619	normal		
Beryllium-total	ug/L	GWA03A	19	13	32			1.0000	1.0000			1.0000	nonpar	.99	**
Cadmium-total	ug/L	GWA03A	19	13	32			1.0000	1.0000			1.0000	nonpar	.99	**
Chromium-total	ug/L	GWA03A	19	13	32			2.0000	2.0000			11.8000	nonpar	.99	**
Cobalt-total	ug/L	GWA03A	19	13	32			5.0000	5.0000			5.0000	nonpar	.99	**
Copper-total	ug/L	GWA03A	19	13	32			5.0000	5.0000			12.0000	nonpar	.99	**
Lead-total	ug/L	GWA03A	45	13	58			10.0000	5.0000			10.0000	nonpar	.99	**
Nickel-total	ug/L	GWA03A	19	13	32			10.0000	10.0000			10.0000	nonpar	.99	**
Selenium-total	ug/L	GWA03A	19	13	32			10.0000	10.0000			10.0000	nonpar	.99	**
Silver-total	ug/L	GWA03A	19	13	32			3.0000	3.0000			3.0000	nonpar	.99	**
Thallium-total	ug/L	GWA03A	19	13	32			1.0000	1.0000			1.0000	nonpar	.99	**
Vanadium-total	ug/L	GWA03A	19	13	32			5.0000	5.0000			5.0000	nonpar	.99	**
Zinc-total	ug/L	GWA03A	19	13	32			20.0000	20.0000			20.0000	nonpar	.99	**
Antimony-total	ug/L	GWC02A	20	13	33			2.0000	2.0000			2.0000	nonpar	.99	**
Arsenic-total	ug/L	GWC02A	20	13	33			7.0000	7.0000			7.0000	nonpar	.99	**
Barium-total	ug/L	GWC02A	20	13	33	117.0500	85.3491	30.0000	30.0000	117.0500	117.0500	458.4465	normal		
Beryllium-total	ug/L	GWC02A	20	13	33			1.0000	1.0000			1.0000	nonpar	.99	**
Cadmium-total	ug/L	GWC02A	20	13	33			1.0000	1.0000			1.0000	nonpar	.99	**
Chromium-total	ug/L	GWC02A	20	13	33	8.0550	3.8588	2.0000	2.0000	8.0550	8.0550	23.4900	normal		
Cobalt-total	ug/L	GWC02A	20	13	33			5.0000	5.0000			5.0000	nonpar	.99	**
Copper-total	ug/L	GWC02A	20	13	33			5.0000	5.0000			25.0000	nonpar	.99	**
Lead-total	ug/L	GWC02A	47	13	60			10.0000	5.0000			10.0000	nonpar	.99	**
Nickel-total	ug/L	GWC02A	20	13	33			10.0000	10.0000			10.0000	nonpar	.99	**
Selenium-total	ug/L	GWC02A	20	13	33			10.0000	10.0000			10.0000	nonpar	.99	**
Silver-total	ug/L	GWC02A	20	13	33			3.0000	3.0000			3.0000	nonpar	.99	**
Thallium-total	ug/L	GWC02A	20	13	33			1.0000	1.0000			1.0000	nonpar	.99	**
Vanadium-total	ug/L	GWC02A	20	13	33	31.1150	21.4391	16.0000	16.0000	31.1150	31.1150	116.8716	normal		
Zinc-total	ug/L	GWC02A	20	13	33			20.0000	20.0000			20.0000	nonpar	.99	**
Antimony-total	ug/L	GWC03A	41	13	54			2.0000	2.0000			2.0000	nonpar	.99	**

N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.

N(tot) = All independent measurements for that constituent and well.

For transformed data, mean and SD in transformed units and control limit in original units.

Conf = confidence level for passing initial test or one of two verification resamples (nonparametric test only).

\* - Insufficient Data.

\*\* - Detection Frequency &lt; 25%.

\*\*\* - Zero Variance.

**Table 1**

**Summary Statistics and Intermediate Computations  
for Combined Shewhart-CUSUM Control Charts**

Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	Conf	
Arsenic-total	ug/L	GWC03A	41	13	54			7.0000	7.0000			7.0000	nonpar	.99	**
Barium-total	ug/L	GWC03A	41	13	54	115.9634	69.5935	70.0000	80.0000	115.9634	115.9634	394.3374	normal	.99	**
Beryllium-total	ug/L	GWC03A	41	13	54			1.0000	1.0000			1.0000	nonpar	.99	**
Cadmium-total	ug/L	GWC03A	41	13	54			1.0000	1.0000			1.0000	nonpar	.99	**
Chromium-total	ug/L	GWC03A	41	13	54	7.3049	11.4820	2.0000	2.7000	7.3049	7.3049	53.2327	normal	.99	**
Cobalt-total	ug/L	GWC03A	41	13	54			5.0000	5.0000			5.0000	nonpar	.99	**
Copper-total	ug/L	GWC03A	41	13	54			5.0000	5.0000			5.0000	nonpar	.99	**
Lead-total	ug/L	GWC03A	54	13	67			10.0000	5.0000			10.0000	nonpar	.99	**
Nickel-total	ug/L	GWC03A	41	13	54	12.4902	10.6526	10.0000	10.0000	12.4902	12.4902	55.1005	normal	.99	**
Selenium-total	ug/L	GWC03A	41	13	54			10.0000	10.0000			10.0000	nonpar	.99	**
Silver-total	ug/L	GWC03A	41	13	54			3.0000	3.0000			3.0000	nonpar	.99	**
Thallium-total	ug/L	GWC03A	41	13	54			1.0000	1.0000			1.0000	nonpar	.99	**
Vanadium-total	ug/L	GWC03A	41	13	54	28.3561	21.9240	52.0000	52.0000	91.3608	98.5617	116.0519	normal	.99	**
Zinc-total	ug/L	GWC03A	41	13	54			20.0000	20.0000			61.6000	nonpar	.99	**
Antimony-total	ug/L	GWC07	40	13	53			2.0000	2.0000			2.0000	nonpar	.99	**
Arsenic-total	ug/L	GWC07	40	13	53			7.0000	7.0000			7.0000	nonpar	.99	**
Barium-total	ug/L	GWC07	40	13	53	240.6250	37.8748	370.0000	340.0000	470.4697	440.4697	392.1240	normal	.99	**
Beryllium-total	ug/L	GWC07	40	13	53			1.0000	1.0000			1.0000	nonpar	.99	**
Cadmium-total	ug/L	GWC07	40	13	53			1.0000	1.0000			1.0000	nonpar	.99	**
Chromium-total	ug/L	GWC07	40	13	53	2.5150	1.7488	2.0000	2.0000	2.5150	2.5150	9.5101	normal	.99	**
Cobalt-total	ug/L	GWC07	40	13	53			5.0000	5.0000			5.0000	nonpar	.99	**
Copper-total	ug/L	GWC07	40	13	53			5.0000	5.0000			6.0000	nonpar	.99	**
Lead-total	ug/L	GWC07	48	13	61			10.0000	5.0000			10.0000	nonpar	.99	**
Nickel-total	ug/L	GWC07	40	13	53	22.7950	10.3409	30.0000	30.0000	22.7950	22.7950	64.1585	normal	.99	**
Selenium-total	ug/L	GWC07	40	13	53			10.0000	10.0000			10.0000	nonpar	.99	**
Silver-total	ug/L	GWC07	40	13	53			3.0000	3.0000			3.0000	nonpar	.99	**
Thallium-total	ug/L	GWC07	40	13	53			1.0000	1.0000			1.0000	nonpar	.99	**
Vanadium-total	ug/L	GWC07	40	13	53	25.4000	21.4599	5.0000	5.0000	25.4000	25.4000	111.2394	normal	.99	**
Zinc-total	ug/L	GWC07	40	13	53			20.0000	20.0000			190.0000	nonpar	.99	**
Antimony-total	ug/L	GWC10	25	13	38			2.0000	2.0000			2.0000	nonpar	.99	**
Arsenic-total	ug/L	GWC10	25	13	38			7.0000	7.0000			7.0000	nonpar	.99	**
Barium-total	ug/L	GWC10	25	13	38	69.1920	75.0502	30.0000	30.0000	69.1920	69.1920	369.3929	normal	.99	**
Beryllium-total	ug/L	GWC10	25	13	38			1.0000	1.0000			1.0000	nonpar	.99	**
Cadmium-total	ug/L	GWC10	25	13	38			1.0000	1.0000			1.0000	nonpar	.99	**
Chromium-total	ug/L	GWC10	24	13	38			2.0000	2.0000			13.9000	nonpar	.99	**
Cobalt-total	ug/L	GWC10	24	13	38			5.0000	5.0000			7.7000	nonpar	.99	**
Copper-total	ug/L	GWC10	23	13	37	7.5522	7.0150	5.0000	5.0000	7.5522	7.5522	35.6121	normal	.99	**
Lead-total	ug/L	GWC10	43	13	56			5.0000	5.0000			10.0000	nonpar	.99	**
Nickel-total	ug/L	GWC10	24	13	38	37.6958	17.4410	30.0000	30.0000	37.6958	37.6958	107.4598	normal	.99	**
Selenium-total	ug/L	GWC10	25	13	38			10.0000	10.0000			10.5000	nonpar	.99	**
Silver-total	ug/L	GWC10	25	13	38			3.0000	3.0000			3.0000	nonpar	.99	**
Thallium-total	ug/L	GWC10	25	13	38			1.0000	1.0000			1.0000	nonpar	.99	**
Vanadium-total	ug/L	GWC10	24	13	38	21.1542	15.4650	15.0000	16.0000	21.1542	21.1542	83.0141	normal	.99	**
Zinc-total	ug/L	GWC10	25	13	38			20.0000	20.0000			20.0000	nonpar	.99	**
Antimony-total	ug/L	GWC14	37	13	50			2.0000	2.0000			2.0000	nonpar	.99	**
Arsenic-total	ug/L	GWC14	37	13	50			7.0000	7.0000			10.0000	nonpar	.99	**

N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.

N(tot) = All independent measurements for that constituent and well.

For transformed data, mean and SD in transformed units and control limit in original units.

Conf = confidence level for passing initial test or one of two verification resamples (nonparametric test only).

\* - Insufficient Data.

\*\* - Detection Frequency &lt; 25%.

\*\*\* - Zero Variance.

**Table 1**

**Summary Statistics and Intermediate Computations  
for Combined Shewhart-CUSUM Control Charts**

Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	Conf	
Barium-total	ug/L	GWC14	37	13	50	88.3541	74.9058	120.0000	110.0000	88.3541	88.3541	387.9774	normal	.99	**
Beryllium-total	ug/L	GWC14	37	13	50			1.0000	1.0000			1.0000	nonpar	.99	**
Cadmium-total	ug/L	GWC14	37	13	50			1.0000	1.0000			1.9000	nonpar	.99	**
Chromium-total	ug/L	GWC14	37	13	50	35.5703	12.0896	31.7000	32.7000	35.5703	35.5703	83.9286	normal		
Cobalt-total	ug/L	GWC14	37	13	50			5.0000	5.0000			5.0000	nonpar	.99	**
Copper-total	ug/L	GWC14	36	13	49			5.0000	5.0000			46.6000	nonpar	.99	**
Lead-total	ug/L	GWC14	48	13	61			5.0000	5.0000			10.0000	nonpar	.99	**
Nickel-total	ug/L	GWC14	37	13	50	15.9324	12.7400	10.0000	10.0000	15.9324	15.9324	66.8925	normal		
Selenium-total	ug/L	GWC14	37	13	50			10.0000	10.0000			10.0000	nonpar	.99	**
Silver-total	ug/L	GWC14	37	13	50			3.0000	3.0000			3.0000	nonpar	.99	**
Thallium-total	ug/L	GWC14	37	13	50			1.0000	1.0000			1.0000	nonpar	.99	**
Vanadium-total	ug/L	GWC14	37	13	50			5.0000	5.0000			5.0000	nonpar	.99	**
Zinc-total	ug/L	GWC14	37	13	50	28.6946	18.4718	20.0000	20.0000	28.6946	28.6946	102.5817	normal		

N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.

N(tot) = All independent measurements for that constituent and well.

For transformed data, mean and SD in transformed units and control limit in original units.

Conf = confidence level for passing initial test or one of two verification resamples (nonparametric test only).

\* - Insufficient Data.

\*\* - Detection Frequency < 25%.

\*\*\* - Zero Variance.

**Table 4****Dixon's Test Outliers  
1% Significance Level**

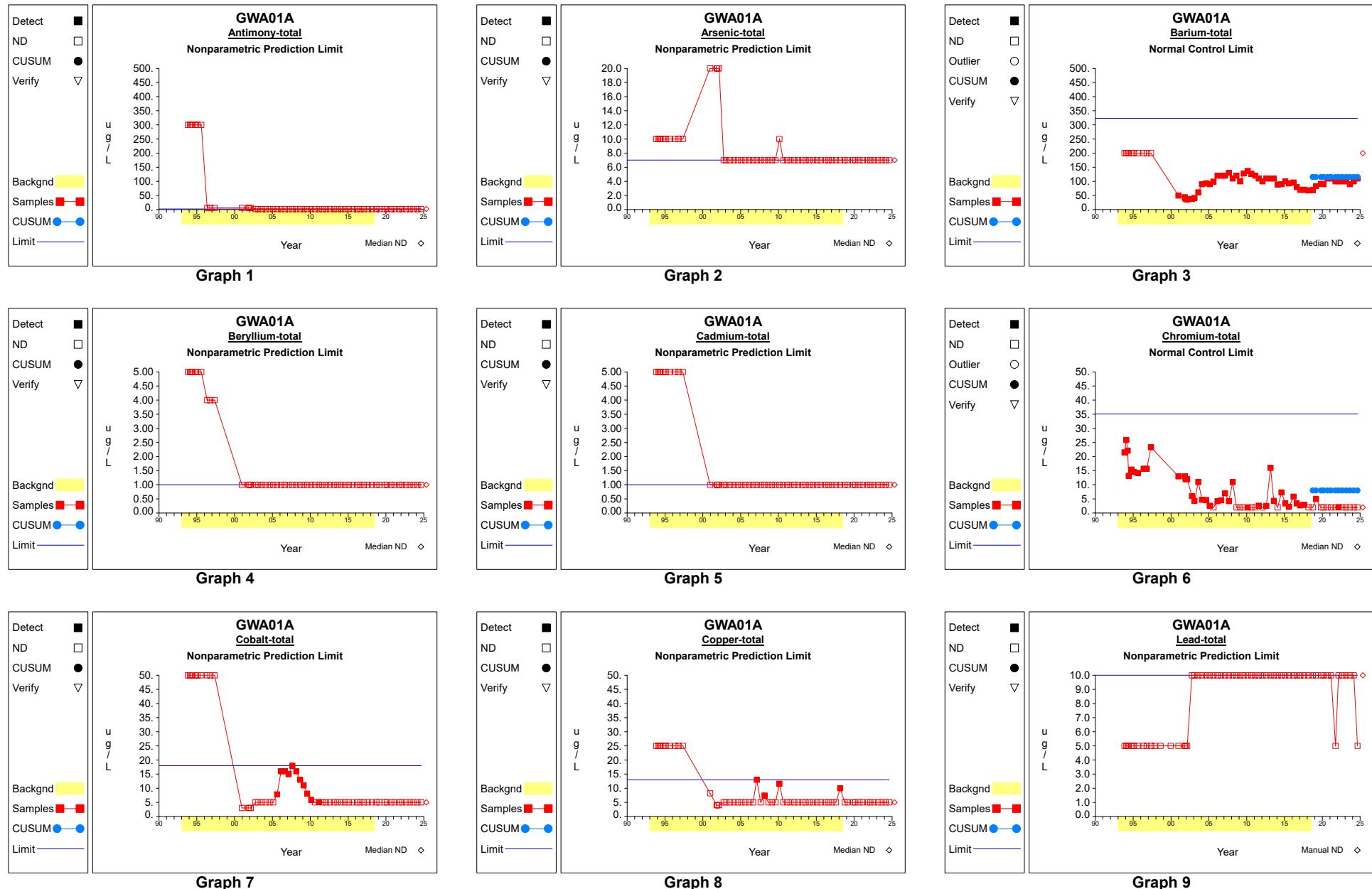
Constituent	Units	Well	Date	Result	ND Qualifier	Date Range	N	Critical Value
Copper-total	ug/L	GWC10	11/08/1995	169.0000		11/08/1995-02/26/2018	24	0.4969
Nickel-total	ug/L	GWC10	11/08/1995	388.0000		11/08/1995-02/26/2018	25	0.4893

N = Total number of independent measurements in background at each well.

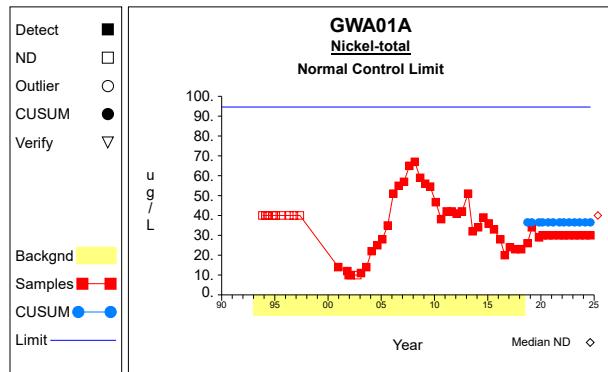
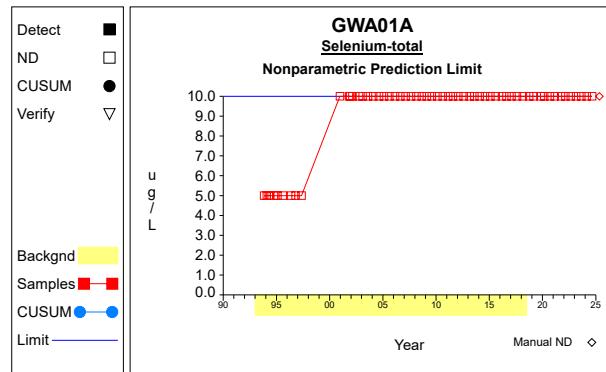
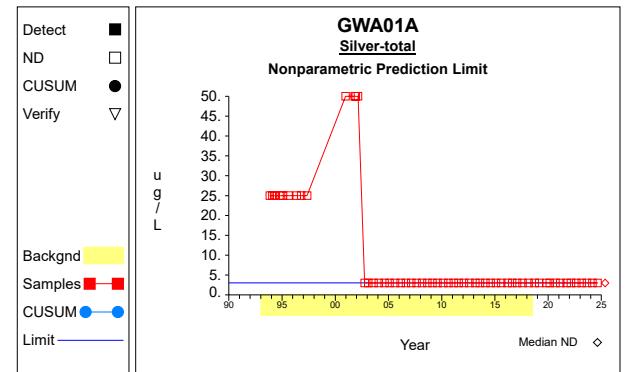
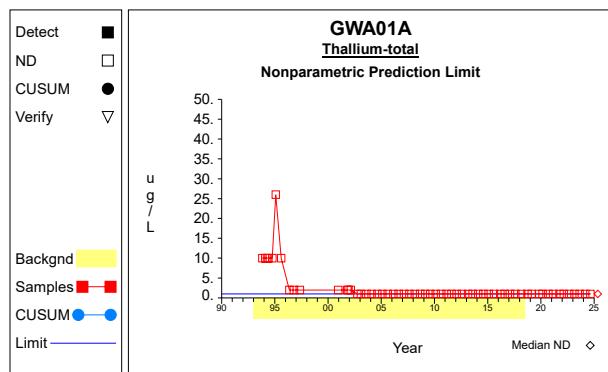
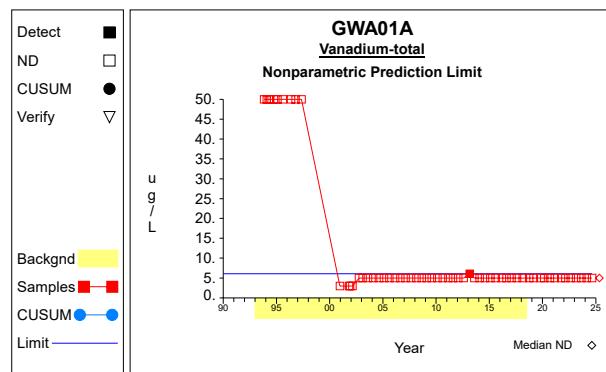
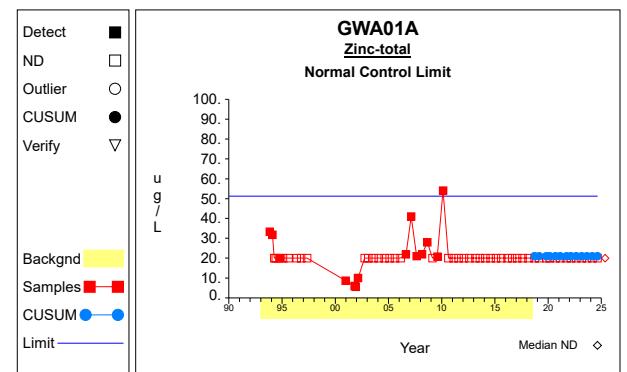
Date Range = Dates of the first and last measurements included in background at each well.

Critical Value depends on the significance level and on N-1 when the two most extreme values are tested or N for the most extreme value.

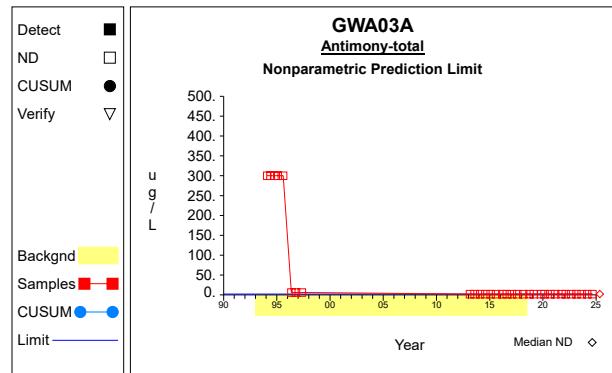
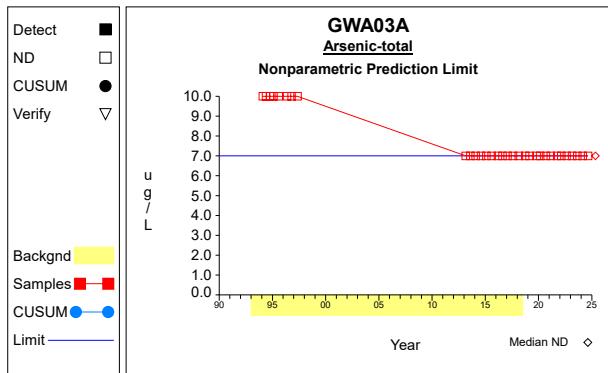
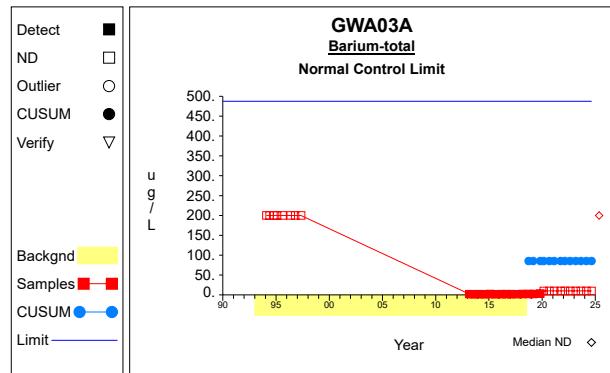
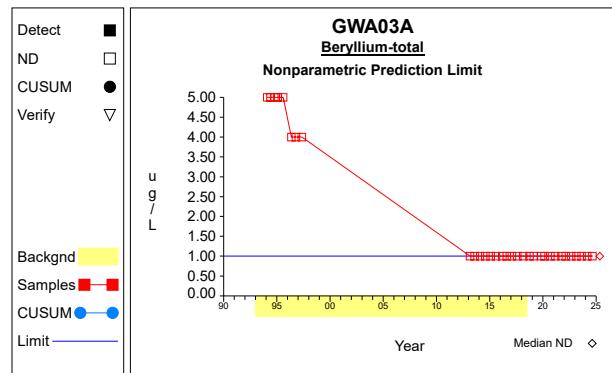
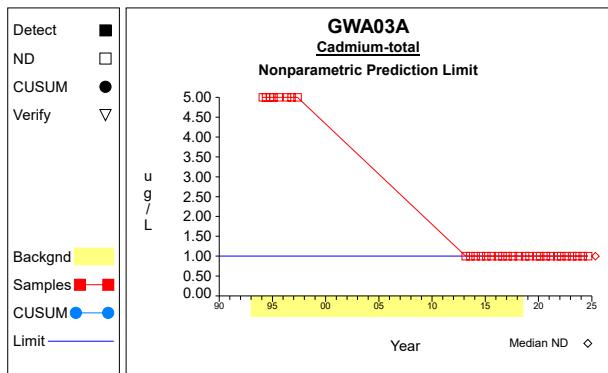
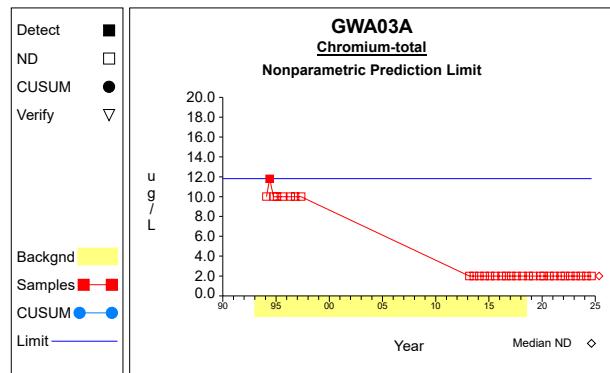
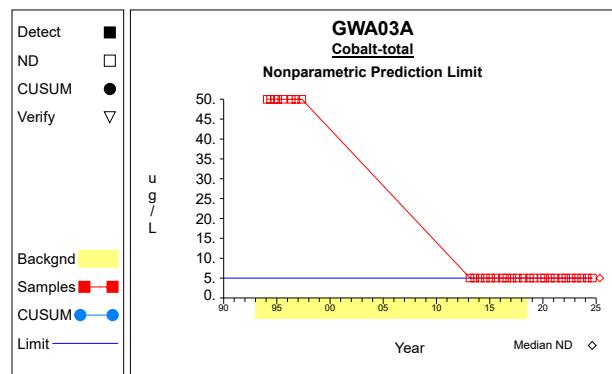
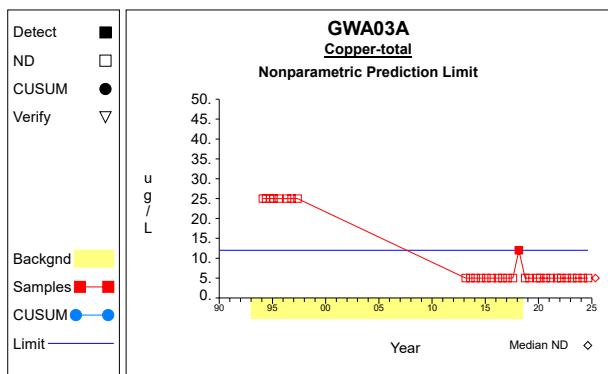
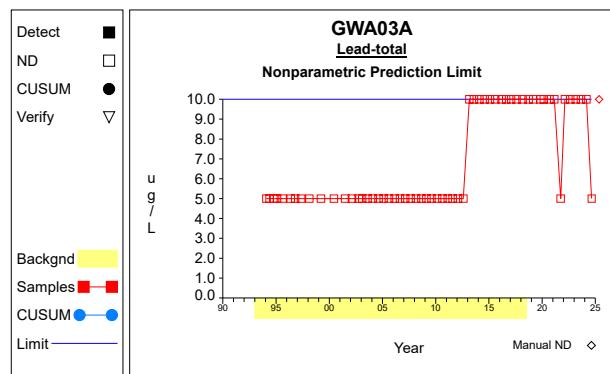
## Intra-Well Control Charts / Prediction Limits



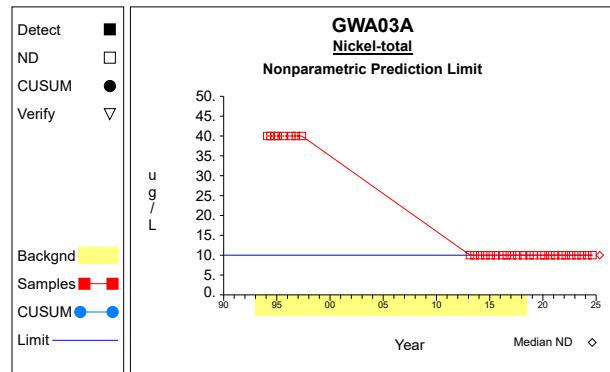
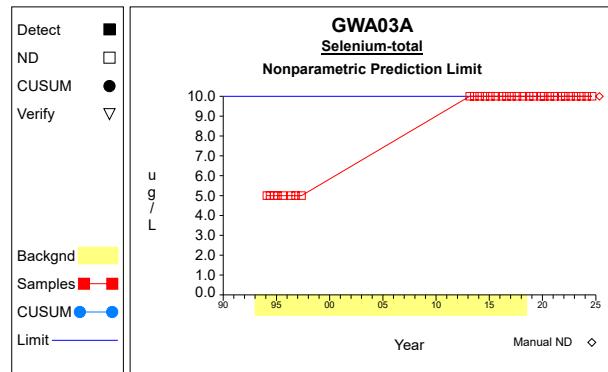
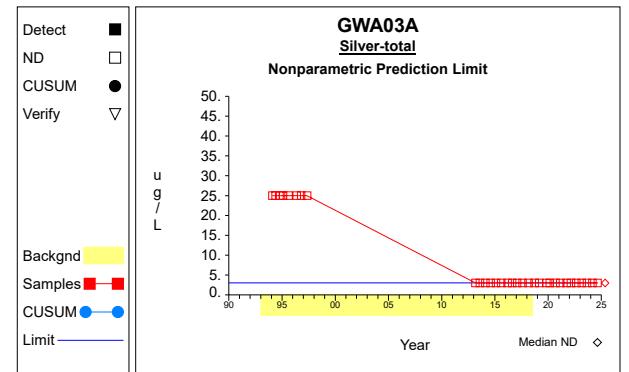
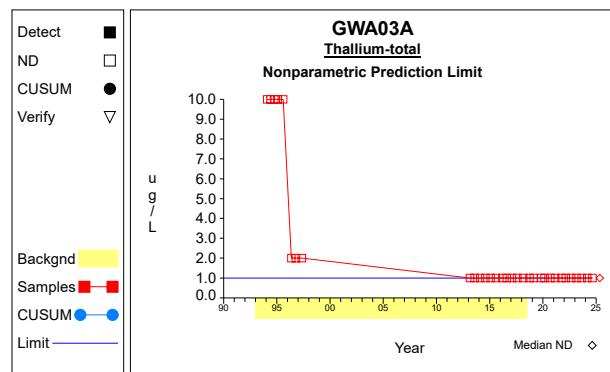
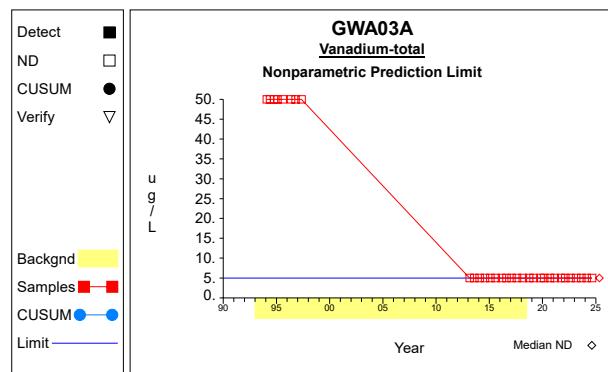
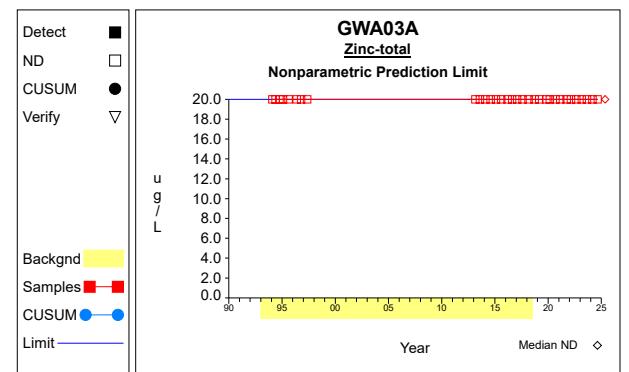
## Intra-Well Control Charts / Prediction Limits

**Graph 10****Graph 11****Graph 12****Graph 13****Graph 14****Graph 15**

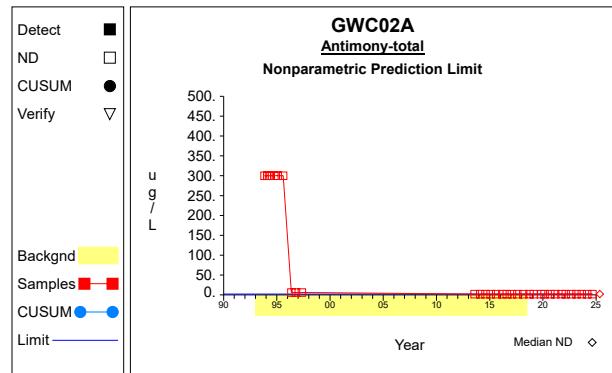
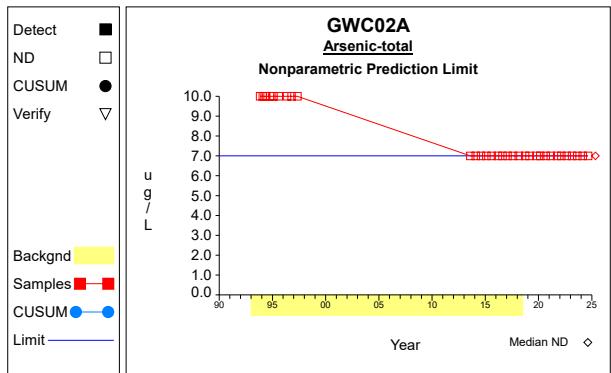
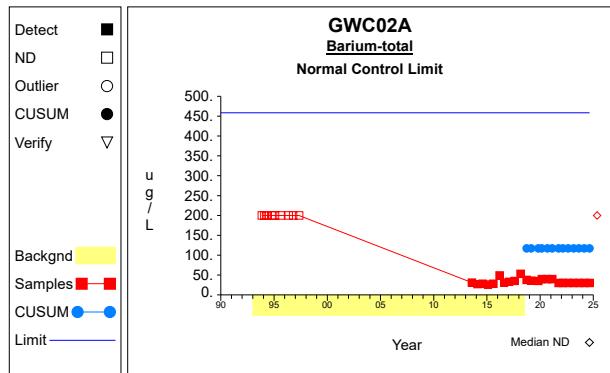
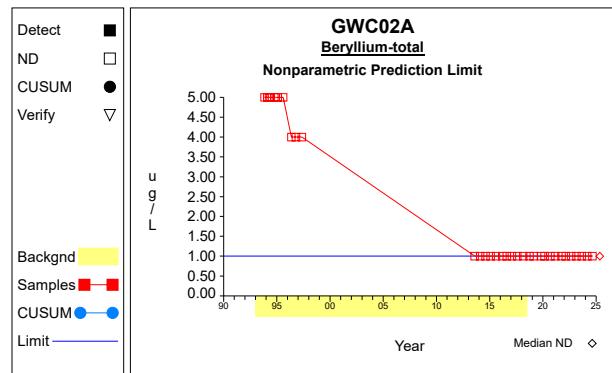
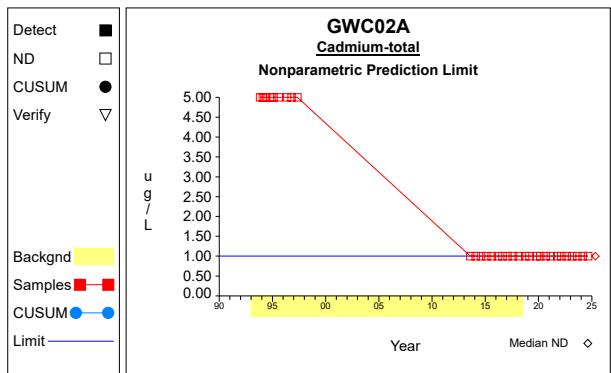
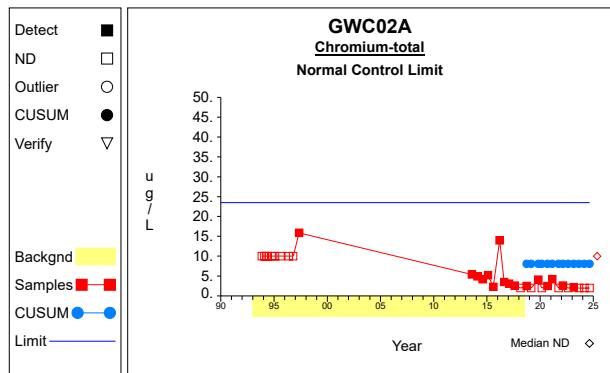
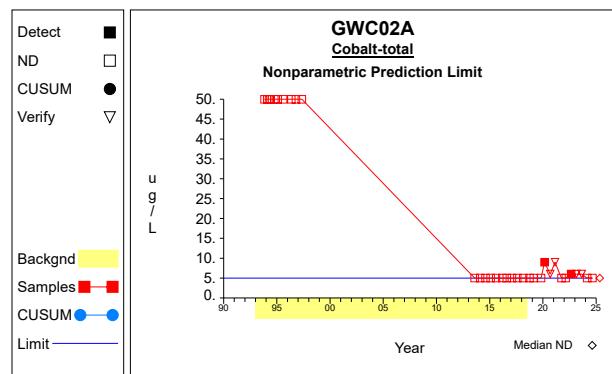
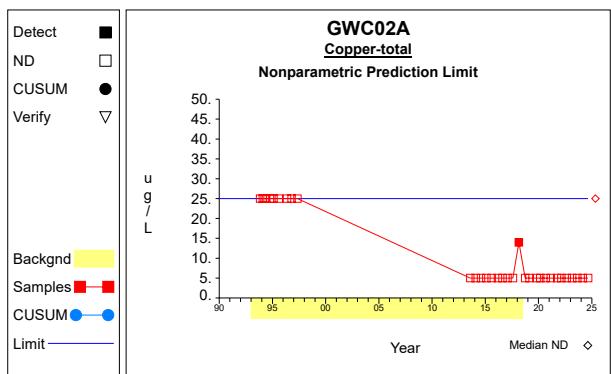
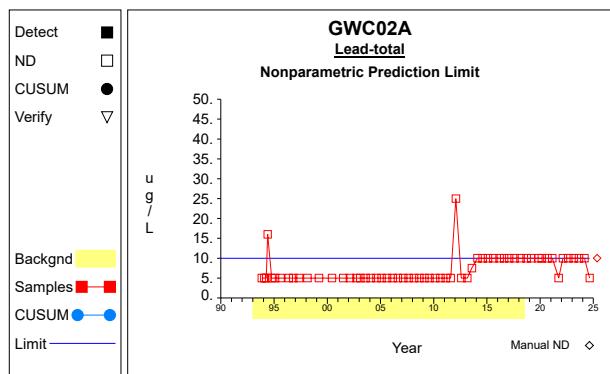
## Intra-Well Control Charts / Prediction Limits

**Graph 16****Graph 17****Graph 18****Graph 19****Graph 20****Graph 21****Graph 22****Graph 23****Graph 24**

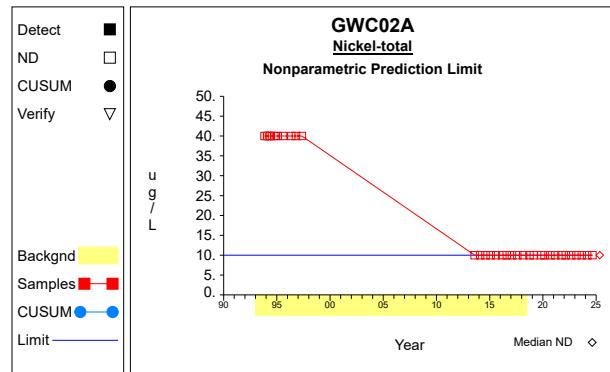
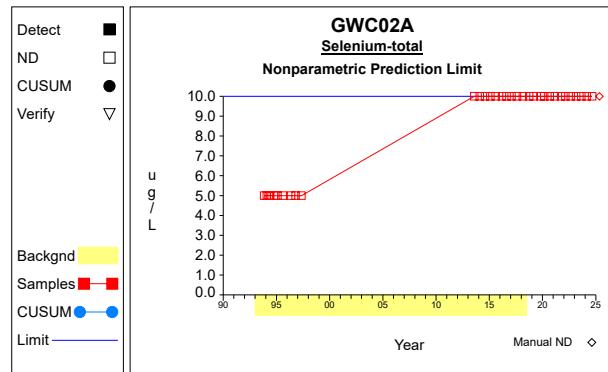
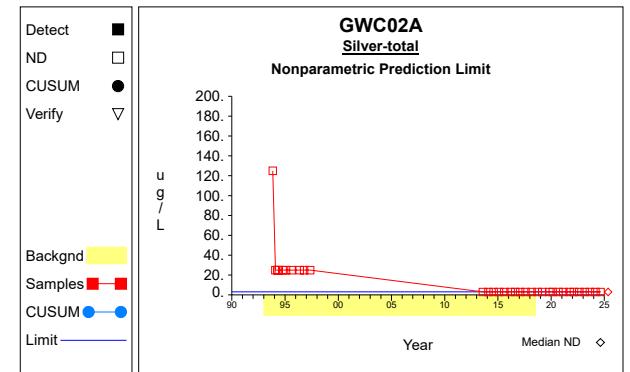
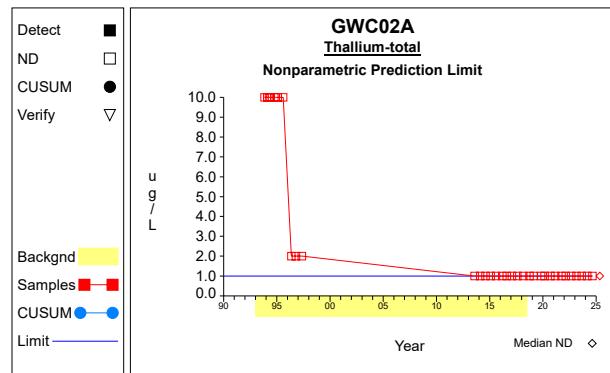
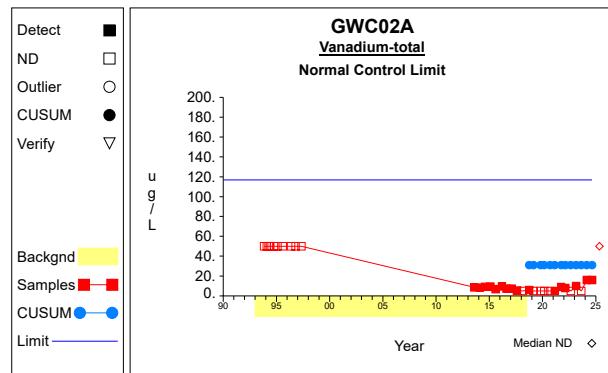
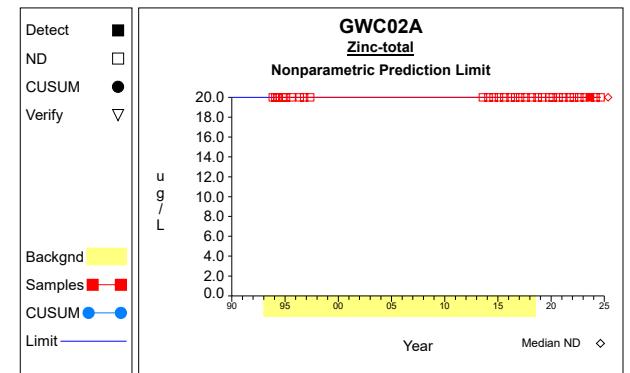
## Intra-Well Control Charts / Prediction Limits

**Graph 25****Graph 26****Graph 27****Graph 28****Graph 29****Graph 30**

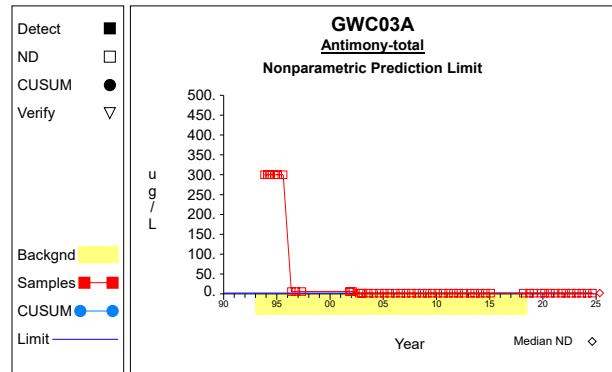
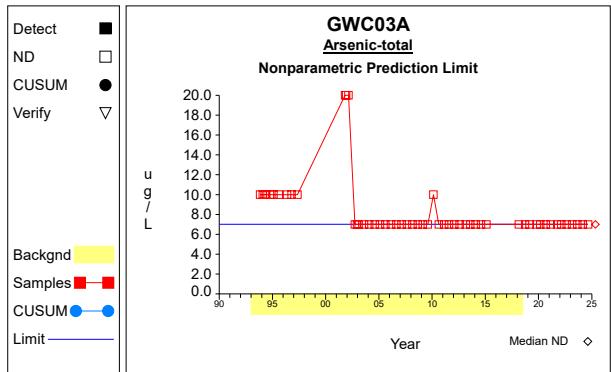
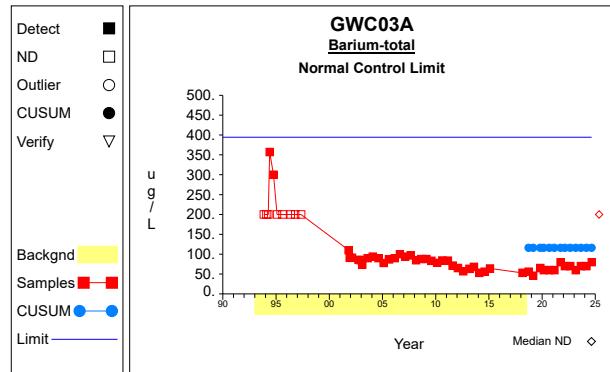
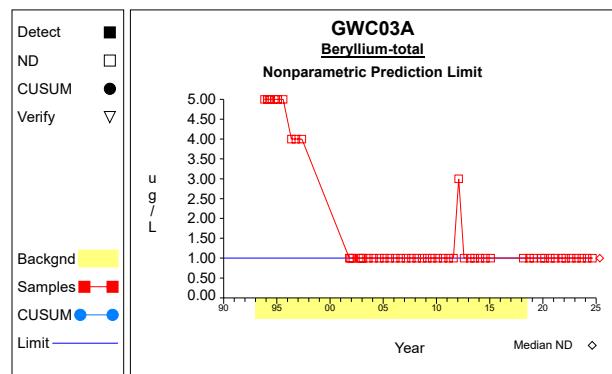
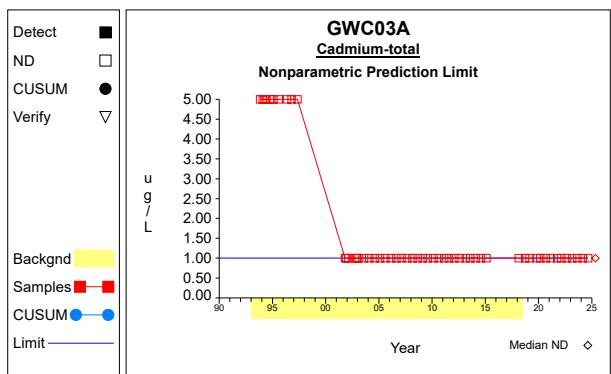
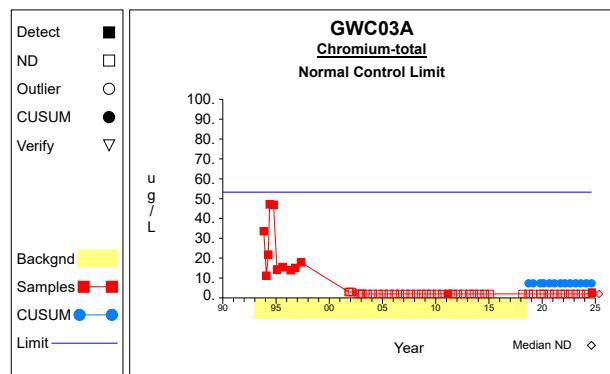
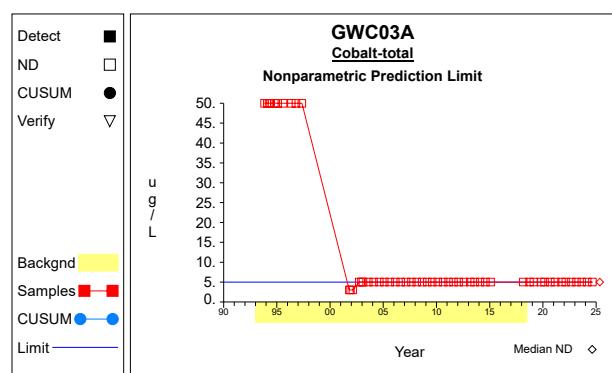
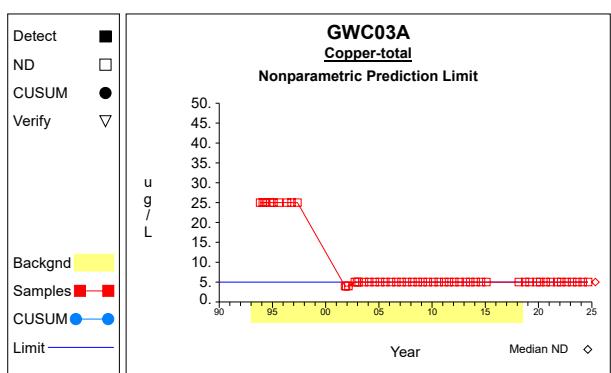
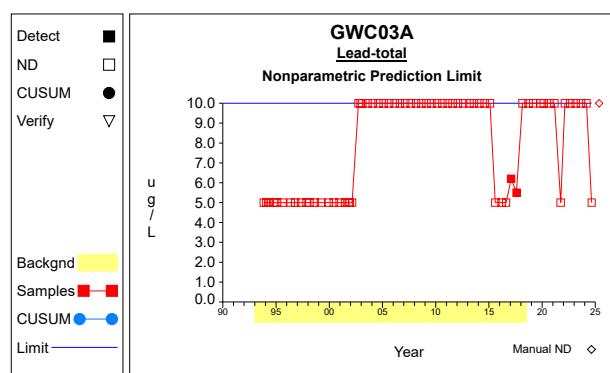
## Intra-Well Control Charts / Prediction Limits

**Graph 31****Graph 32****Graph 33****Graph 34****Graph 35****Graph 36****Graph 37****Graph 38****Graph 39**

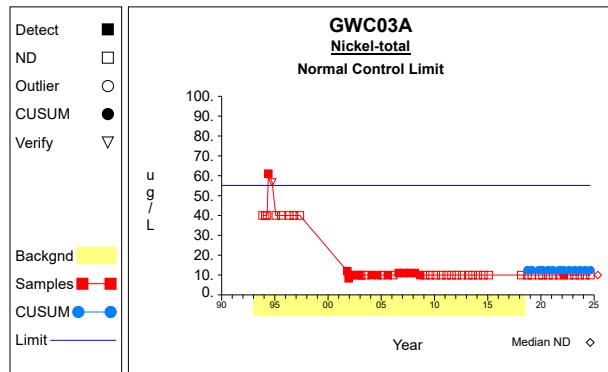
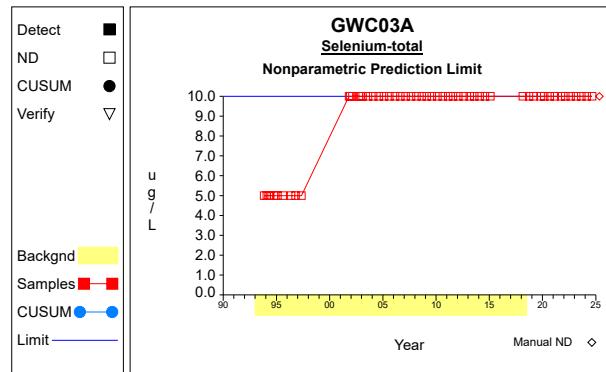
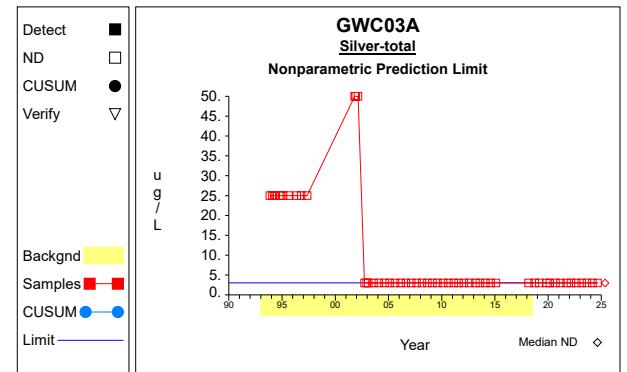
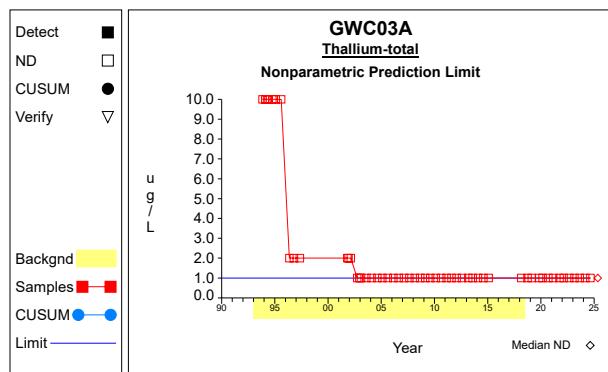
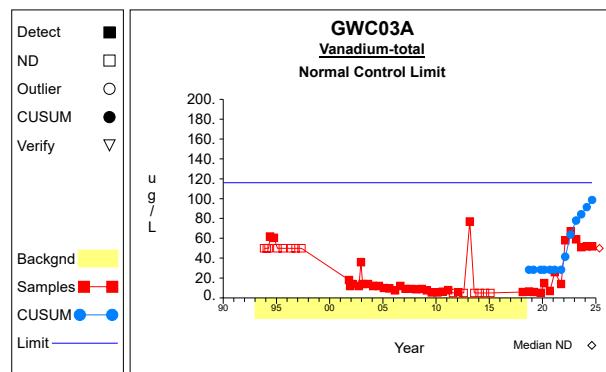
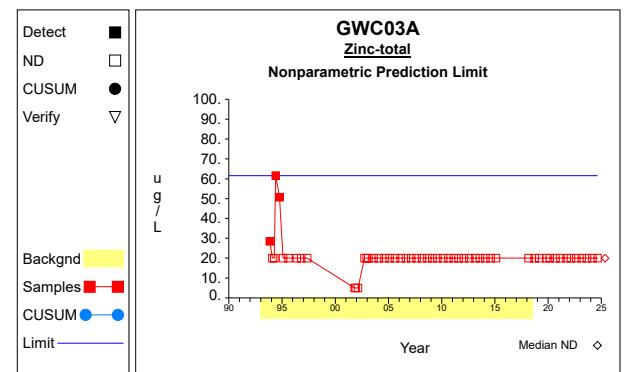
## Intra-Well Control Charts / Prediction Limits

**Graph 40****Graph 41****Graph 42****Graph 43****Graph 44****Graph 45**

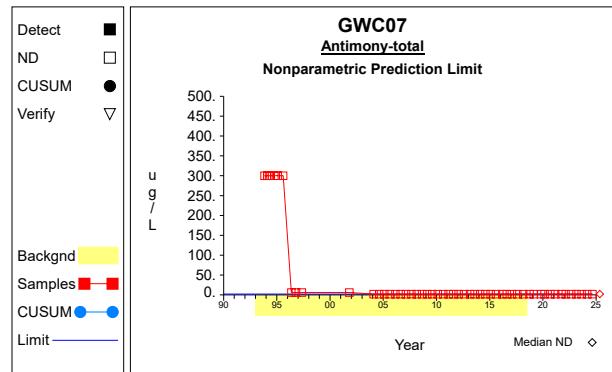
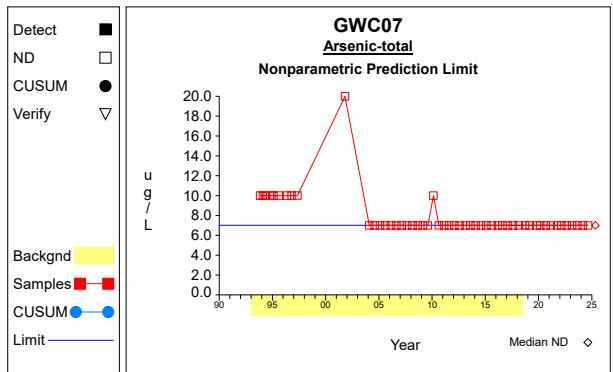
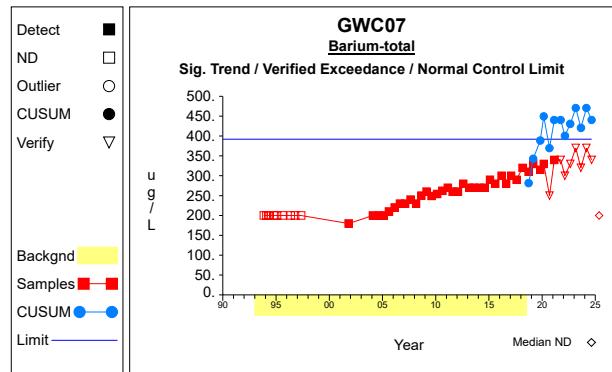
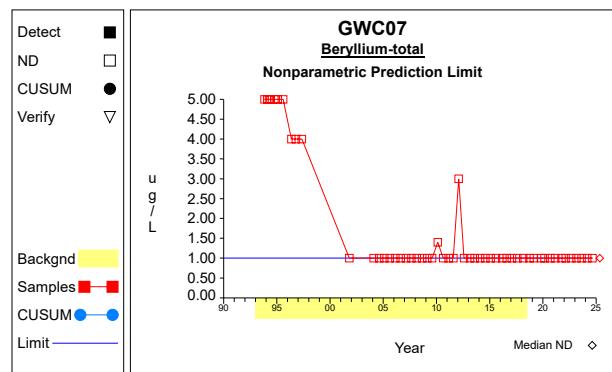
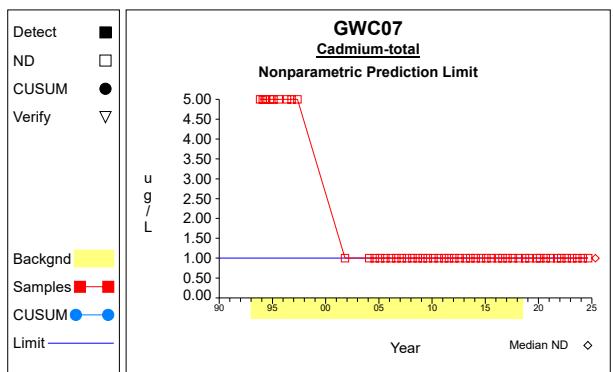
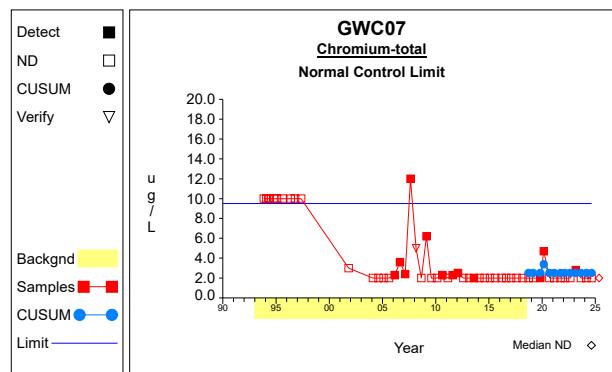
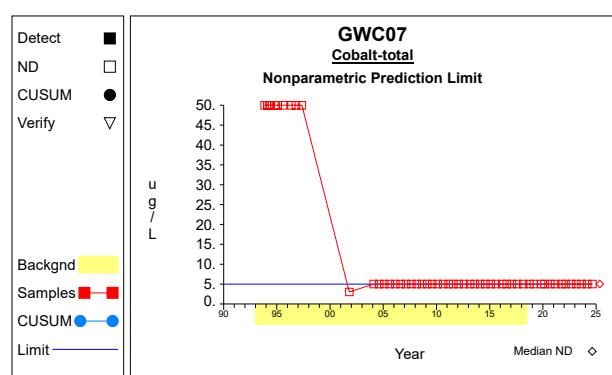
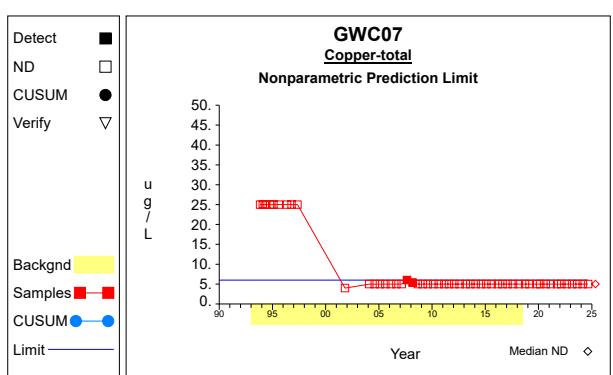
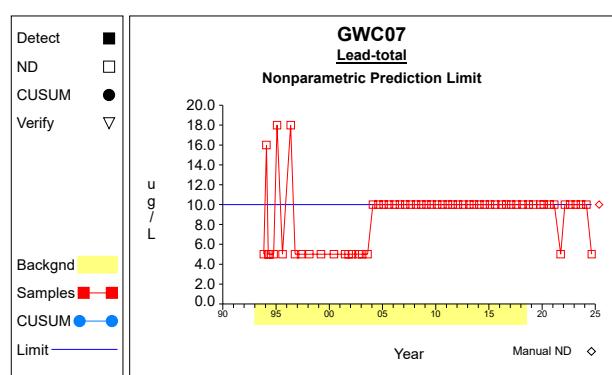
## Intra-Well Control Charts / Prediction Limits

**Graph 46****Graph 47****Graph 48****Graph 49****Graph 50****Graph 51****Graph 52****Graph 53****Graph 54**

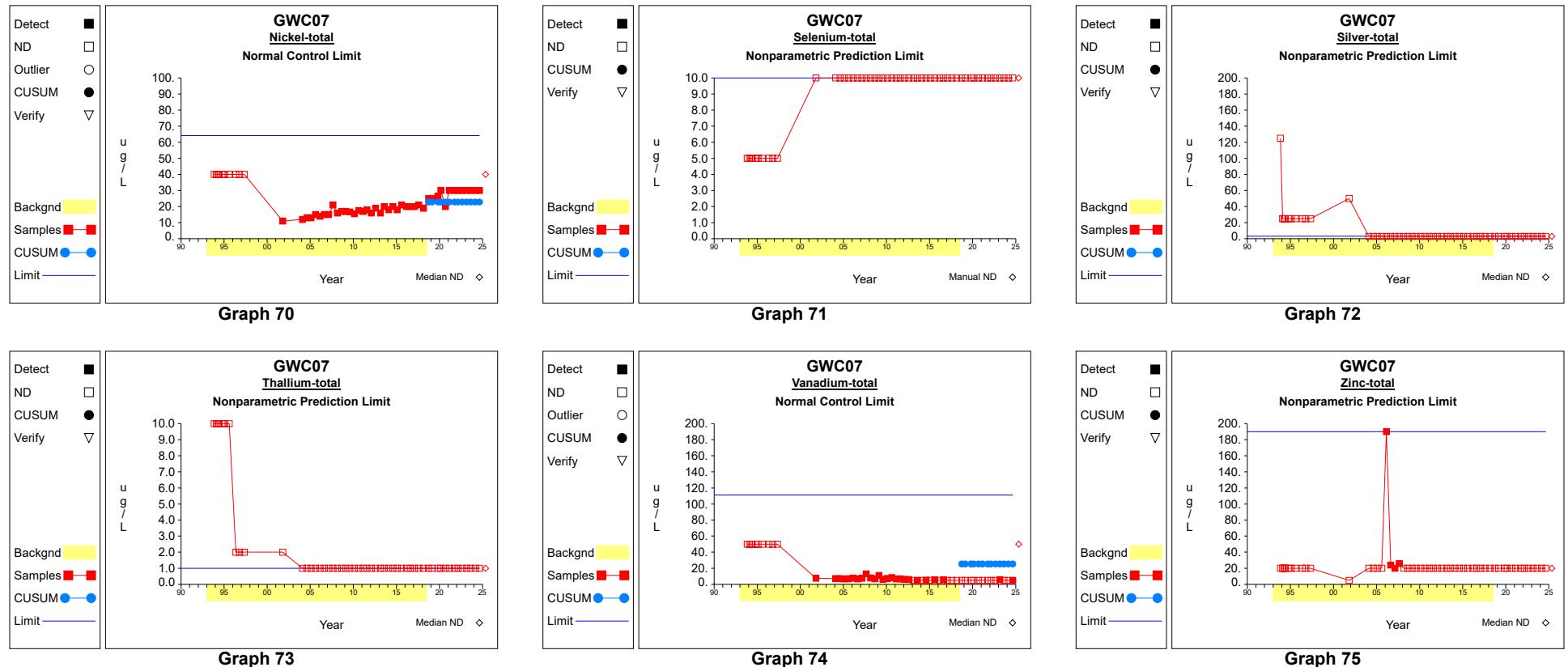
## Intra-Well Control Charts / Prediction Limits

**Graph 55****Graph 56****Graph 57****Graph 58****Graph 59****Graph 60**

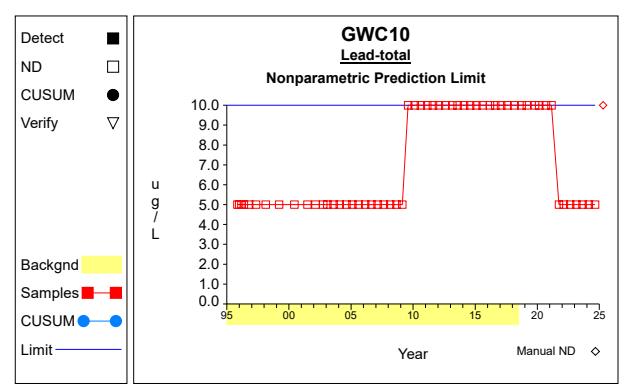
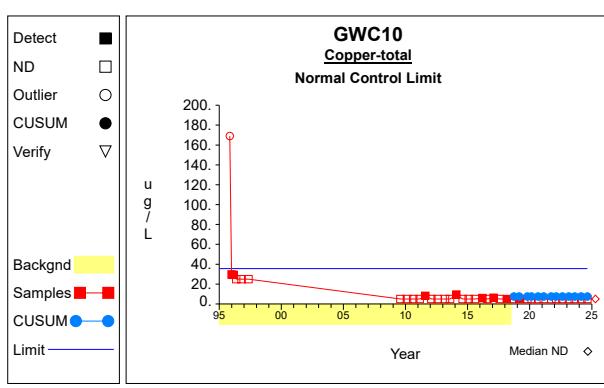
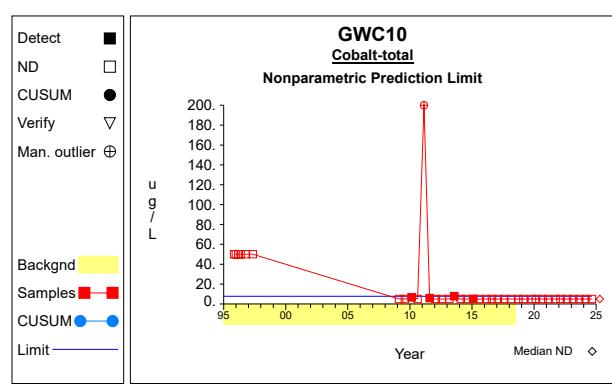
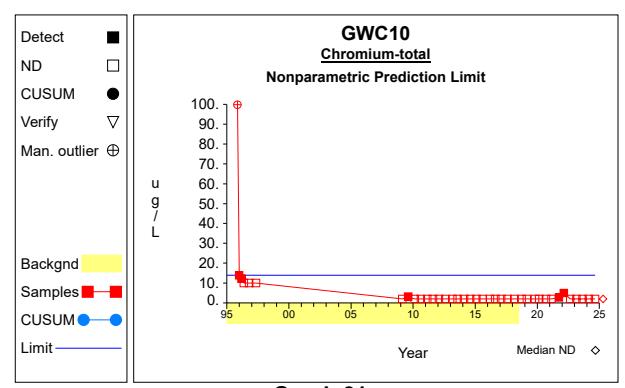
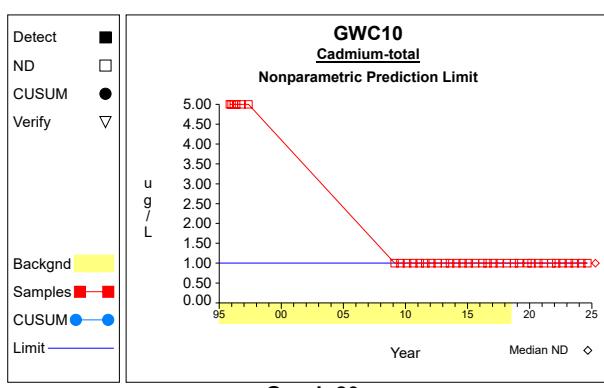
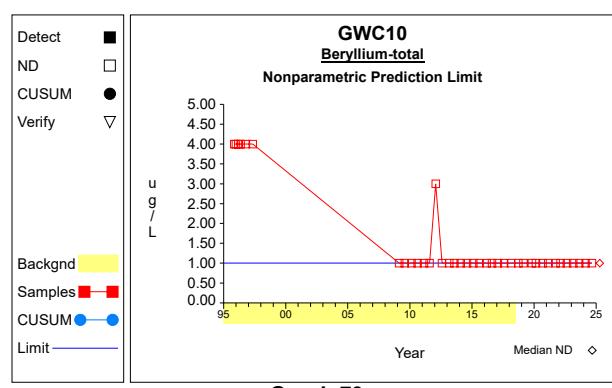
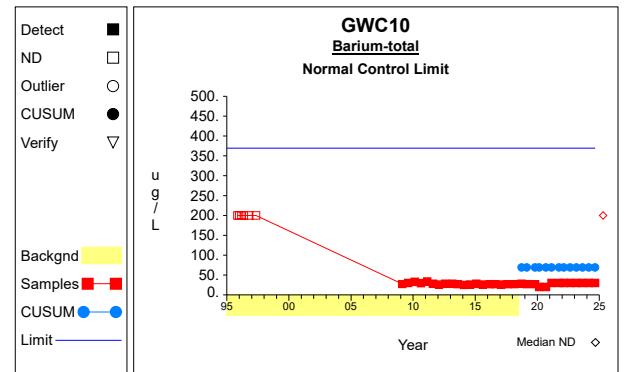
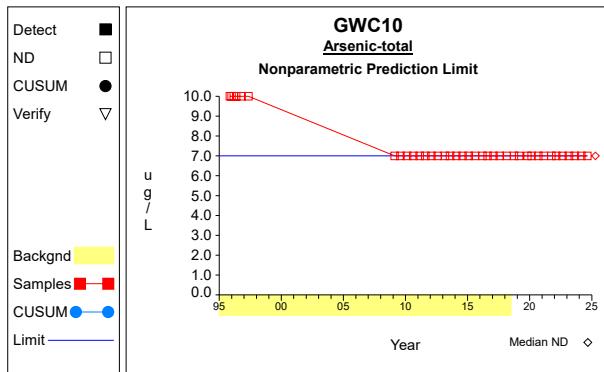
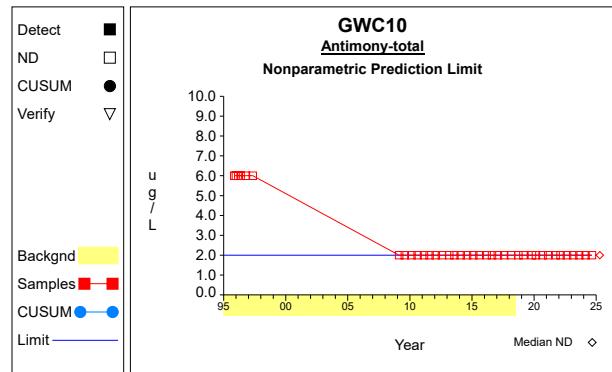
## Intra-Well Control Charts / Prediction Limits

**Graph 61****Graph 62****Graph 63****Graph 64****Graph 65****Graph 66****Graph 67****Graph 68****Graph 69**

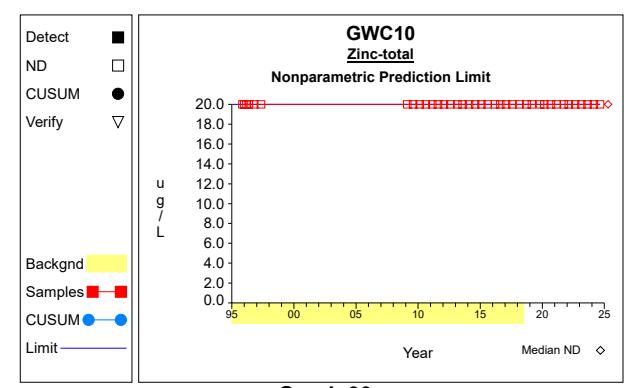
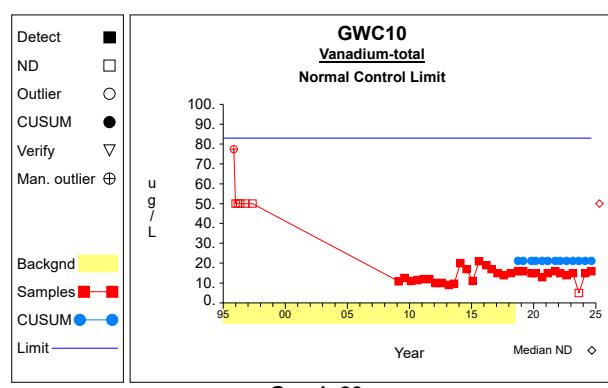
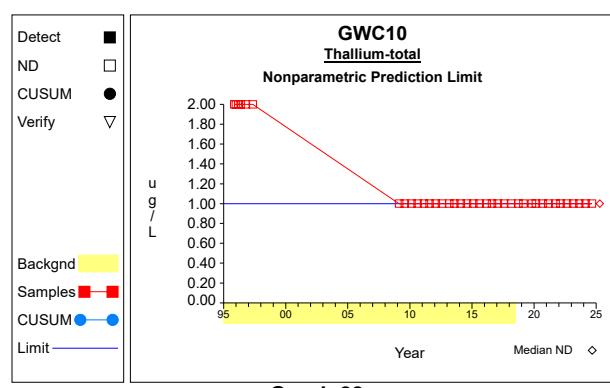
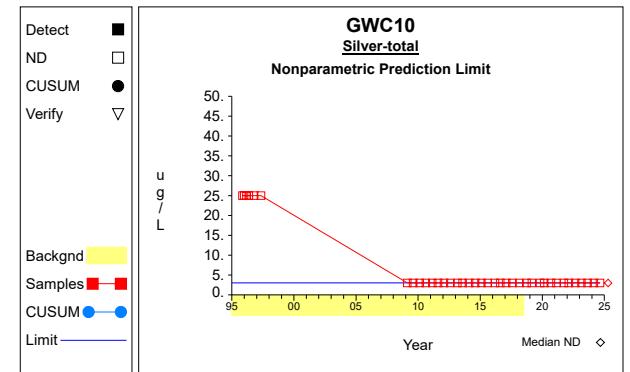
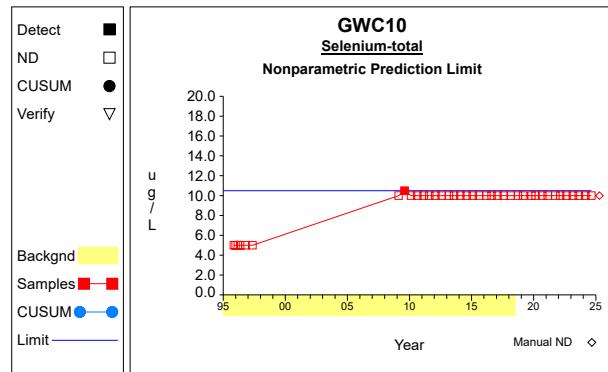
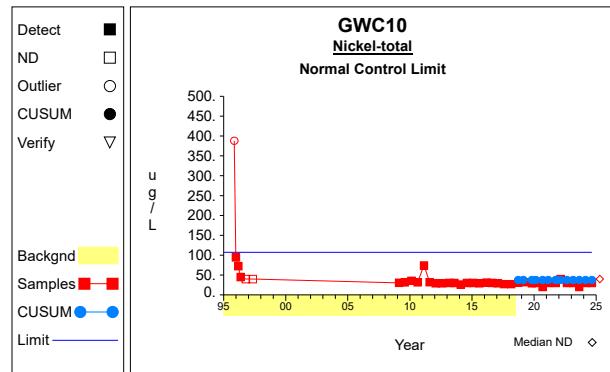
## Intra-Well Control Charts / Prediction Limits



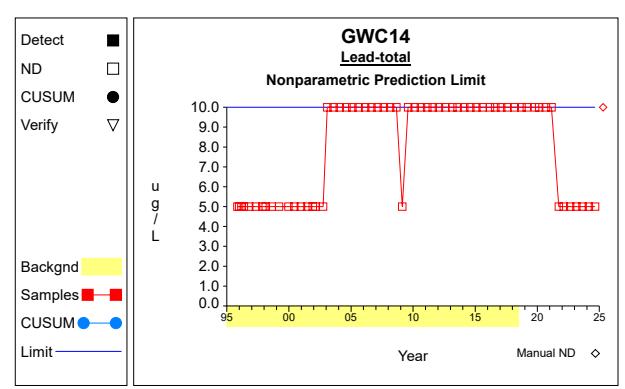
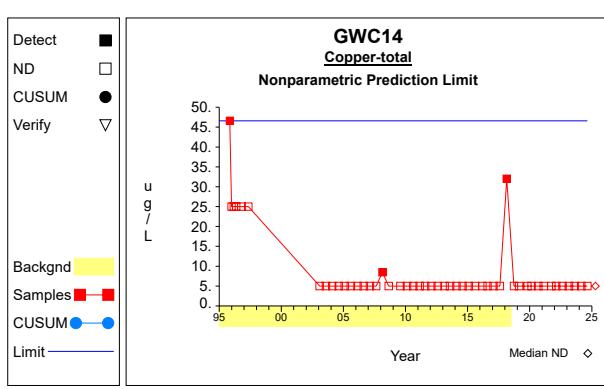
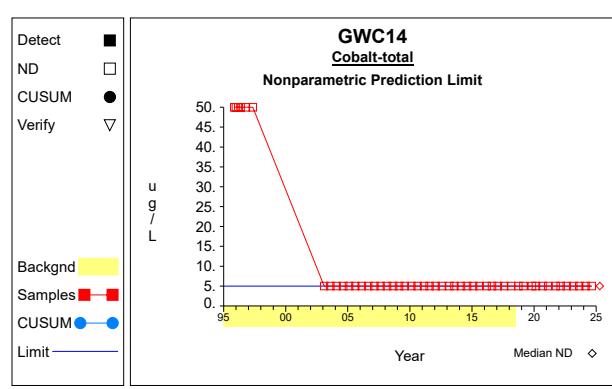
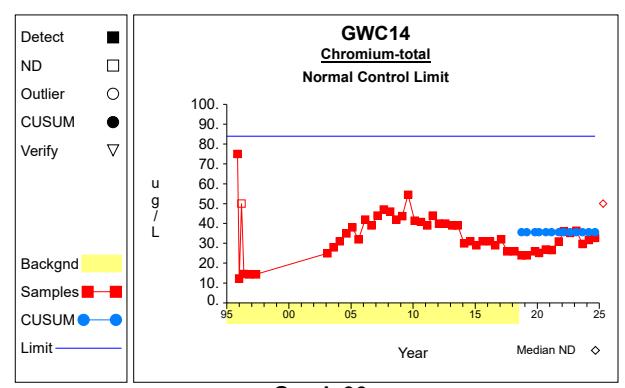
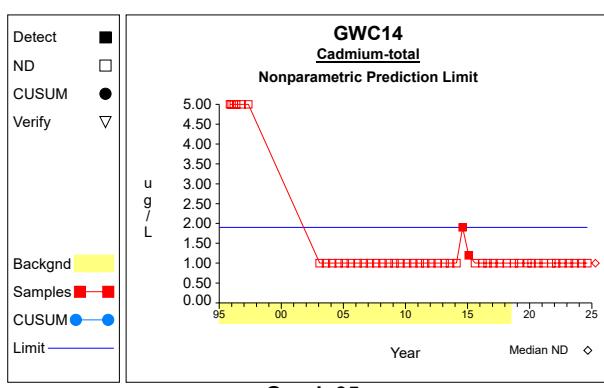
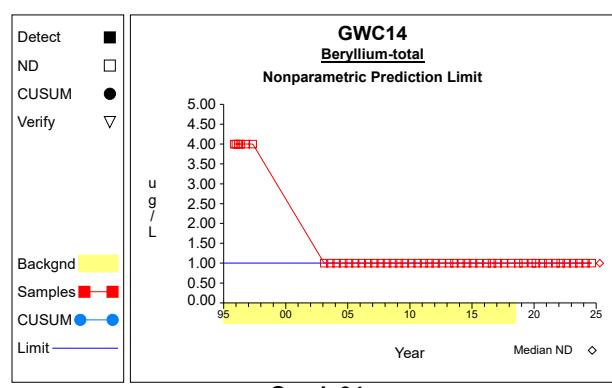
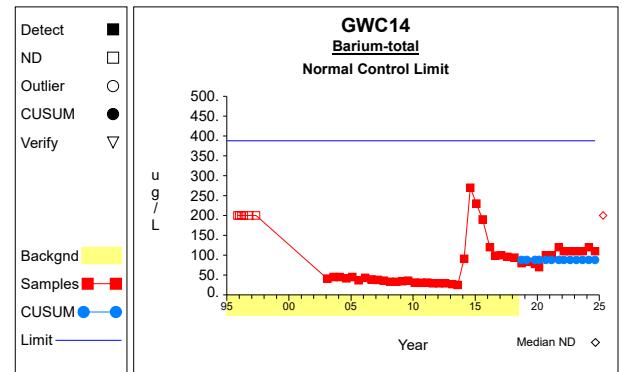
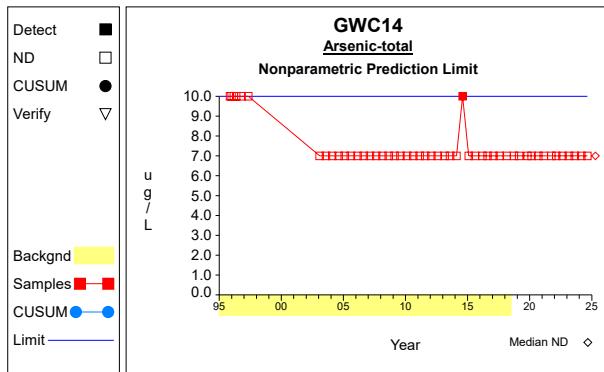
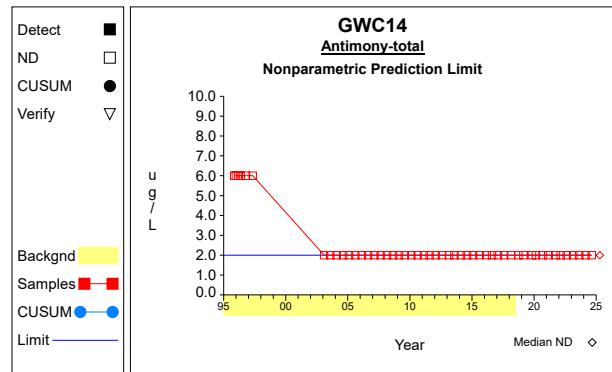
## Intra-Well Control Charts / Prediction Limits



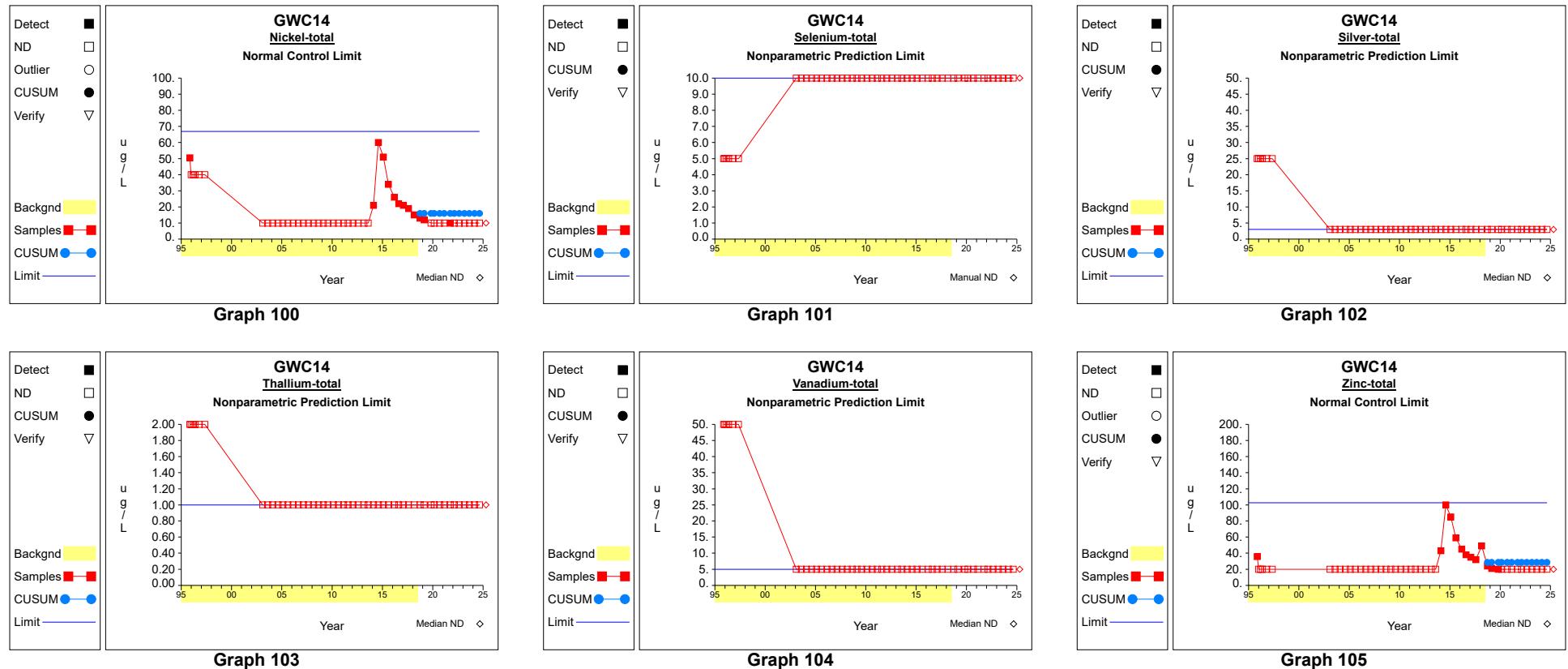
## Intra-Well Control Charts / Prediction Limits



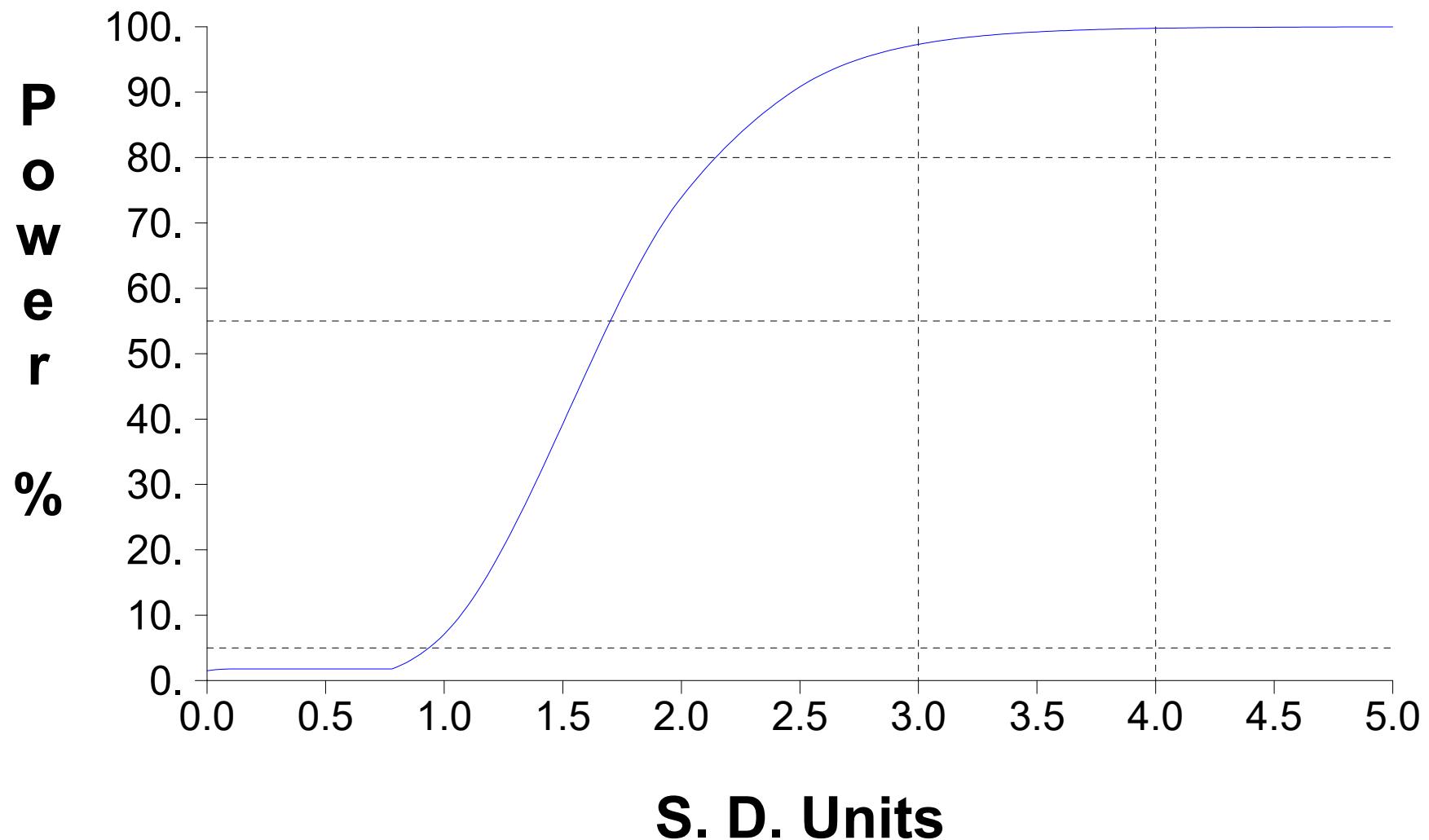
## Intra-Well Control Charts / Prediction Limits



## Intra-Well Control Charts / Prediction Limits



# False Positive and False Negative Rates for Current Intra-Well Control Charts Monitoring Program



**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Antimony-total (ug/L) at GWA01A****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{median}(X)$ <b>= 2.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Arsenic-total (ug/L) at GWA01A****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{median}(X)$ <b>= 7.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Barium-total (ug/L) at GWA01A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 5308.0 / 46 = 115.391	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = ((734064.0 - 2.82x10 <sup>7</sup> /46) / (46-1)) <sup>1/2</sup> = 51.976	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 115.391 + 4.0 * 51.976 = 323.295	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 46 * (46-1) / 2 = 1035	Number of sample pairs during trend detection period.
5	$S = -4.349$	Sen's estimator of trend.
6	$\text{var}(S) = 10986.333$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (1035 - 2.326 * 10986.333 <sup>1/2</sup> ) / 2 = 395.599	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{th}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -5.43$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Beryllium-total (ug/L) at GWA01A**  
**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = 1.0	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Cadmium-total (ug/L) at GWA01A****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{median}(X)$ = <b>1.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Chromium-total (ug/L) at GWA01A****Normal Control Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$\bar{X} = \text{sum}[X] / N$ = <b>368.7 / 46</b> = <b>8.015</b>	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = $(5015.75 - 135939.69/46) / (46-1)^{1/2}$ = <b>6.767</b>	Compute background sd.
3	$SCL = \bar{X} + F * S$ = <b>8.015 + 4.0 * 6.767</b> = <b>35.082</b>	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = <b>46 * (46-1) / 2</b> = <b>1035</b>	Number of sample pairs during trend detection period.
5	$S = -0.614$	Sen's estimator of trend.
6	$\text{var}(S) = 11022.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = $(1035 - 2.326 * 11022.0^{1/2}) / 2$ = <b>395.402</b>	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1$ th largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -0.846$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Cobalt-total (ug/L) at GWA01A****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \max(X)$ <b>= 18.0</b>	Compute nonparametric prediction limit as largest background measurement.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Copper-total (ug/L) at GWA01A****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \max(X)$ <b>= 13.0</b>	Compute nonparametric prediction limit as largest background measurement.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GWA01A****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{median}(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Nickel-total (ug/L) at GWA01A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = <b>1680.4 / 46</b> = <b>36.53</b>	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = $(70869.38 - 2.82 \times 10^6 / 46) / (46-1)^{1/2}$ = <b>14.517</b>	Compute background sd.
3	$SCL = \bar{X} + F * S$ = <b>36.53 + 4.0 * 14.517</b> = <b>94.599</b>	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = <b>46 * (46-1) / 2</b> = <b>1035</b>	Number of sample pairs during trend detection period.
5	$S = 0.0$	Sen's estimator of trend.
6	$\text{var}(S) = 10981.333$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = $(1035 - 2.326 * 10981.333^{1/2}) / 2$ = <b>395.627</b>	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -0.725$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Selenium-total (ug/L) at GWA01A**  
**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>10.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Silver-total (ug/L) at GWA01A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>3.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Thallium-total (ug/L) at GWA01A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>1.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Vanadium-total (ug/L) at GWA01A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \max(X)$ = <b>6.1</b>	Compute nonparametric prediction limit as largest background measurement.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Zinc-total (ug/L) at GWA01A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 964.3 / 46 = 20.963	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = ((22796.63 - 929874.49/46) / (46-1))^{1/2} = 7.575	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 20.963 + 4.0 * 7.575 = 51.262	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 46 * (46-1) / 2 = 1035	Number of sample pairs during trend detection period.
5	$S = 0.0$	Sen's estimator of trend.
6	$\text{var}(S) = 6988.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (1035 - 2.326 * 6988.667^{1/2}) / 2 = 420.275	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = 0.0$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Antimony-total (ug/L) at GWA03A**  
**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = 2.0	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**

**Arsenic-total (ug/L) at GWA03A**

**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>7.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**

**Barium-total (ug/L) at GWA03A**

**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = <b>1620.9 / 19</b> = <b>85.311</b>	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = $(320040.39 - 2.63 \times 10^6 / 19) / (19-1)^{1/2}$ = <b>100.488</b>	Compute background sd.
3	$SCL = \bar{X} + F * S$ = <b>85.311 + 4.0 * 100.488</b> = <b>487.262</b>	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = <b>19 * (19-1) / 2</b> = <b>171</b>	Number of sample pairs during trend detection period.
5	$S = -8.437$	Sen's estimator of trend.
6	$\text{var}(S) = 743.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = $(171 - 2.326 * 743.0^{1/2}) / 2$ = <b>53.799</b>	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1$ th largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -9.574$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Beryllium-total (ug/L) at GWA03A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>1.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Cadmium-total (ug/L) at GWA03A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>1.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Chromium-total (ug/L) at GWA03A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \max(X)$ = <b>11.8</b>	Compute nonparametric prediction limit as largest background measurement.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Cobalt-total (ug/L) at GWA03A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>5.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Copper-total (ug/L) at GWA03A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \max(X)$ <b>= 12.0</b>	Compute nonparametric prediction limit as largest background measurement.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GWA03A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Nickel-total (ug/L) at GWA03A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Selenium-total (ug/L) at GWA03A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Silver-total (ug/L) at GWA03A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = 3.0	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = 0.99	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Thallium-total (ug/L) at GWA03A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = 1.0	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = 0.99	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Vanadium-total (ug/L) at GWA03A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = 5.0	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = 0.99	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Zinc-total (ug/L) at GWA03A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = 20.0	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = 0.99	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Antimony-total (ug/L) at GWC02A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>2.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Arsenic-total (ug/L) at GWC02A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>7.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Barium-total (ug/L) at GWC02A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = <b>2341.0 / 20</b> = <b>117.05</b>	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = $(412419.0 - 5.48 \times 10^6 / 20) / (20-1)^{1/2}$ = <b>85.349</b>	Compute background sd.
3	$SCL = \bar{X} + F * S$ = <b>117.05 + 4.0 * 85.349</b> = <b>458.446</b>	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = <b>20 * (20-1) / 2</b> = <b>190</b>	Number of sample pairs during trend detection period.
5	$S = -6.798$	Sen's estimator of trend.
6	$\text{var}(S) = 823.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = $(190 - 2.326 * 823.0^{1/2}) / 2$ = <b>61.636</b>	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -7.958$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Beryllium-total (ug/L) at GWC02A**  
**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>1.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Cadmium-total (ug/L) at GWC02A**  
**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>1.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Chromium-total (ug/L) at GWC02A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = <b>161.1 / 20</b> = <b>8.055</b>	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = $(1580.57 - 25953.21/20) / (20-1)^{1/2}$ = <b>3.859</b>	Compute background sd.
3	$SCL = \bar{X} + F * S$ = <b>8.055 + 4.0 * 3.859</b> = <b>23.49</b>	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = <b>20 * (20-1) / 2</b> = <b>190</b>	Number of sample pairs during trend detection period.
5	$S = -0.247$	Sen's estimator of trend.
6	$\text{var}(S) = 825.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \sqrt{\text{var}(S)}) / 2$ = $(190 - 2.326 * \sqrt{825.0}) / 2$ = <b>61.595</b>	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{th}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -0.309$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Cobalt-total (ug/L) at GWC02A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>5.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Copper-total (ug/L) at GWC02A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{max}(X)$ = <b>25.0</b>	Compute nonparametric prediction limit as largest background measurement.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GWC02A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>10.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Nickel-total (ug/L) at GWC02A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>10.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Selenium-total (ug/L) at GWC02A****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{median}(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Silver-total (ug/L) at GWC02A****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{median}(X)$ <b>= 3.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Thallium-total (ug/L) at GWC02A****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{median}(X)$ <b>= 1.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Zinc-total (ug/L) at GWC02A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 622.3 / 20 = 31.115	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = (28095.97 - 387257.29/20) / (20-1) = 21.439	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 31.115 + 4.0 * 21.439 = 116.872	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 20 * (20-1) / 2 = 190	Number of sample pairs during trend detection period.
5	$S = -1.831$	Sen's estimator of trend.
6	$\text{var}(S) = 784.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (190 - 2.326 * 784.0^{1/2}) / 2 = 62.436	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -2.006$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Zinc-total (ug/L) at GWC02A**  
**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = 20.0	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Antimony-total (ug/L) at GWC03A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>2.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Arsenic-total (ug/L) at GWC03A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>7.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Barium-total (ug/L) at GWC03A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 4754.5 / 41 = 115.963	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = ((745078.31 - 2.26x10 <sup>7</sup> /41) / (41-1)) <sup>1/2</sup> = 69.594	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 115.963 + 4.0 * 69.594 = 394.337	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 41 * (41-1) / 2 = 820	Number of sample pairs during trend detection period.
5	$S = -5.699$	Sen's estimator of trend.
6	$\text{var}(S) = 7852.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (820 - 2.326 * 7852.667 <sup>1/2</sup> ) / 2 = 306.94	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{th}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -7.668$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Beryllium-total (ug/L) at GWC03A**  
**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = 1.0	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Cadmium-total (ug/L) at GWC03A**  
**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>1.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Chromium-total (ug/L) at GWC03A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = <b>299.5 / 41</b> = <b>7.305</b>	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = $(7461.23 - 89700.25/41) / (41-1)^{1/2}$ = <b>11.482</b>	Compute background sd.
3	$SCL = \bar{X} + F * S$ = <b>7.305 + 4.0 * 11.482</b> = <b>53.233</b>	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = <b>41 * (41-1) / 2</b> = <b>820</b>	Number of sample pairs during trend detection period.
5	$S = 0.0$	Sen's estimator of trend.
6	$\text{var}(S) = 4785.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = $(820 - 2.326 * 4785.0^{1/2}) / 2$ = <b>329.551</b>	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -0.477$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Cobalt-total (ug/L) at GWC03A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>5.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Copper-total (ug/L) at GWC03A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>5.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GWC03A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \max(X)$ = <b>10.0</b>	Compute nonparametric prediction limit as largest background measurement.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Nickel-total (ug/L) at GWC03A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 512.1 / 41 = 12.49	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = ((10935.33 - 262246.41/41) / (41-1))^{1/2} = 10.653	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 12.49 + 4.0 * 10.653 = 55.1	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 41 * (41-1) / 2 = 820	Number of sample pairs during trend detection period.
5	$S = 0.0$	Sen's estimator of trend.
6	$\text{var}(S) = 3752.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (820 - 2.326 * 3752.667^{1/2}) / 2 = 338.756	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = 0.0$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Selenium-total (ug/L) at GWC03A**  
**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = 10.0	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Silver-total (ug/L) at GWC03A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>3.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Thallium-total (ug/L) at GWC03A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>1.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Vanadium-total (ug/L) at GWC03A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 1162.6 / 41 = 28.356	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = ((52193.2 - 1.35x10^6/41) / (41-1))^{1/2} = 21.924	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 28.356 + 4.0 * 21.924 = 116.052	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 41 * (41-1) / 2 = 820	Number of sample pairs during trend detection period.
5	$S = -0.803$	Sen's estimator of trend.
6	$\text{var}(S) = 7570.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (820 - 2.326 * 7570.667^{1/2}) / 2 = 308.808	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -1.959$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Zinc-total (ug/L) at GWC03A**  
**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \max(X)$ = 61.6	Compute nonparametric prediction limit as largest background measurement.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Antimony-total (ug/L) at GWC07****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{median}(X)$ <b>= 2.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Arsenic-total (ug/L) at GWC07****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{median}(X)$ <b>= 7.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Barium-total (ug/L) at GWC07**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 9625.0 / 40 = 240.625	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = (2.37x10 <sup>6</sup> - 9.26x10 <sup>7</sup> /40) / (40-1) <sup>1/2</sup> = 37.875	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 240.625 + 4.0 * 37.875 = 392.124	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 40 * (40-1) / 2 = 780	Number of sample pairs during trend detection period.
5	$S = 4.476$	Sen's estimator of trend.
6	$\text{var}(S) = 7068.333$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (780 - 2.326 * 7068.333 <sup>1/2</sup> ) / 2 = 292.223	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = 3.828$	One-sided lower confidence limit for slope.
9	$LCL(S) > 0$	<b>Significant increasing trend.</b>

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Beryllium-total (ug/L) at GWC07**  
**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = 1.0	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**

**Cadmium-total (ug/L) at GWC07**

**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>1.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**

**Chromium-total (ug/L) at GWC07**

**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = <b>100.6 / 40</b> = <b>2.515</b>	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = $(372.28 - 10120.36/40) / (40-1)^{1/2}$ = <b>1.749</b>	Compute background sd.
3	$SCL = \bar{X} + F * S$ = <b>2.515 + 4.0 * 1.749</b> = <b>9.51</b>	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = <b>40 * (40-1) / 2</b> = <b>780</b>	Number of sample pairs during trend detection period.
5	$S = 0.0$	Sen's estimator of trend.
6	$\text{var}(S) = 3901.333$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = $(780 - 2.326 * 3901.333^{1/2}) / 2$ = <b>317.358</b>	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1$ th largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = 0.0$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Cobalt-total (ug/L) at GWC07****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{median}(X)$ = <b>5.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Copper-total (ug/L) at GWC07****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{max}(X)$ = <b>6.0</b>	Compute nonparametric prediction limit as largest background measurement.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GWC07****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{median}(X)$ = <b>10.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Nickel-total (ug/L) at GWC07**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 911.8 / 40 = 22.795	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = ((24954.9 - 831379.24/40) / (40-1))^{1/2} = 10.341	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 22.795 + 4.0 * 10.341 = 64.159	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 40 * (40-1) / 2 = 780	Number of sample pairs during trend detection period.
5	$S = 0.0$	Sen's estimator of trend.
6	$\text{var}(S) = 7204.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (780 - 2.326 * 7204.667^{1/2}) / 2 = 291.284	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -0.917$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Selenium-total (ug/L) at GWC07**  
**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = 10.0	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Silver-total (ug/L) at GWC07****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>3.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Thallium-total (ug/L) at GWC07****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>1.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Vanadium-total (ug/L) at GWC07**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 1016.0 / 40 = 25.4	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = ((43766.9 - 1.03 \times 10^6 / 40) / (40-1))^{1/2} = 21.46	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 25.4 + 4.0 * 21.46 = 111.239	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 40 * (40-1) / 2 = 780	Number of sample pairs during trend detection period.
5	$S = -0.112$	Sen's estimator of trend.
6	$\text{var}(S) = 6773.333$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (780 - 2.326 * 6773.333^{1/2}) / 2 = 294.285	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -0.491$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Zinc-total (ug/L) at GWC07**  
**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \max(X)$ = 190.0	Compute nonparametric prediction limit as largest background measurement.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Antimony-total (ug/L) at GWC10****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{median}(X)$ <b>= 2.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Arsenic-total (ug/L) at GWC10****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{median}(X)$ <b>= 7.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Barium-total (ug/L) at GWC10**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 1729.8 / 25 = 69.192	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = ((254869.22 - 2.99x10 <sup>6</sup> /25) / (25-1)) <sup>1/2</sup> = 75.05	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 69.192 + 4.0 * 75.05 = 369.393	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 25 * (25-1) / 2 = 300	Number of sample pairs during trend detection period.
5	$S = -1.098$	Sen's estimator of trend.
6	$\text{var}(S) = 1771.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (300 - 2.326 * 1771.0 <sup>1/2</sup> ) / 2 = 101.057	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{th}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -8.387$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Beryllium-total (ug/L) at GWC10**  
**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = 1.0	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Cadmium-total (ug/L) at GWC10****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{median}(X)$ <b>= 1.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Chromium-total (ug/L) at GWC10****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{max}(X)$ <b>= 13.9</b>	Compute nonparametric prediction limit as largest background measurement.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Cobalt-total (ug/L) at GWC10****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{max}(X)$ <b>= 7.7</b>	Compute nonparametric prediction limit as largest background measurement.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Copper-total (ug/L) at GWC10**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 173.7 / 23 = 7.552	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = ((2394.43 - 30171.69/23) / (23-1))^{1/2} = 7.015	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 7.552 + 4.0 * 7.015 = 35.612	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 23 * (23-1) / 2 = 253	Number of sample pairs during trend detection period.
5	$S = 0.0$	Sen's estimator of trend.
6	$\text{var}(S) = 844.333$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (253 - 2.326 * 844.333^{1/2}) / 2 = 92.706	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = 0.0$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Lead-total (ug/L) at GWC10**  
**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = 10.0	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Nickel-total (ug/L) at GWC10**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 904.7 / 24 = 37.696	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = (41099.75 - 818482.09/24) / (24-1) = 17.441	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 37.696 + 4.0 * 17.441 = 107.46	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 24 * (24-1) / 2 = 276	Number of sample pairs during trend detection period.
5	$S = -0.7$	Sen's estimator of trend.
6	$\text{var}(S) = 1598.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (276 - 2.326 * 1598.0 <sup>1/2</sup> ) / 2 = 91.509	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -1.206$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Selenium-total (ug/L) at GWC10**  
**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \max(X)$ = 10.5	Compute nonparametric prediction limit as largest background measurement.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Silver-total (ug/L) at GWC10**  
**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>3.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Thallium-total (ug/L) at GWC10**  
**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>1.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Vanadium-total (ug/L) at GWC10**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 507.7 / 24 = 21.154	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = ((16240.79 - 257759.29/24) / (24-1))^{1/2} = 15.465	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 21.154 + 4.0 * 15.465 = 83.014	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 24 * (24-1) / 2 = 276	Number of sample pairs during trend detection period.
5	$S = -0.594$	Sen's estimator of trend.
6	$\text{var}(S) = 1603.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (276 - 2.326 * 1603.667^{1/2}) / 2 = 91.427	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -1.686$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Zinc-total (ug/L) at GWC10**  
**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = 20.0	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Antimony-total (ug/L) at GWC14****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{median}(X)$ <b>= 2.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Arsenic-total (ug/L) at GWC14****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \max(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as largest background measurement.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Barium-total (ug/L) at GWC14**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 3269.1 / 37 = 88.354	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = ((490830.05 - 1.07x10 <sup>7</sup> /37) / (37-1)) <sup>1/2</sup> = 74.906	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 88.354 + 4.0 * 74.906 = 387.977	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 37 * (37-1) / 2 = 666	Number of sample pairs during trend detection period.
5	$S = -1.627$	Sen's estimator of trend.
6	$\text{var}(S) = 5809.333$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (666 - 2.326 * 5809.333 <sup>1/2</sup> ) / 2 = 244.357	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{th}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -2.512$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Beryllium-total (ug/L) at GWC14**  
**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = 1.0	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Cadmium-total (ug/L) at GWC14****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \max(X)$ = <b>1.9</b>	Compute nonparametric prediction limit as largest background measurement.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Chromium-total (ug/L) at GWC14****Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = <b>1316.1 / 37</b> = <b>35.57</b>	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = $(52075.71 - 1.73 \times 10^6 / 37) / (37-1)^{1/2}$ = <b>12.09</b>	Compute background sd.
3	$SCL = \bar{X} + F * S$ = <b>35.57 + 4.0 * 12.09</b> = <b>83.929</b>	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = <b>37 * (37-1) / 2</b> = <b>666</b>	Number of sample pairs during trend detection period.
5	$S = -0.291$	Sen's estimator of trend.
6	$\text{var}(S) = 5821.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = $(666 - 2.326 * 5821.667^{1/2}) / 2$ = <b>244.263</b>	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1$ th largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -1.119$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Cobalt-total (ug/L) at GWC14****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{median}(X)$ <b>= 5.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Copper-total (ug/L) at GWC14****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \max(X)$ <b>= 46.6</b>	Compute nonparametric prediction limit as largest background measurement.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GWC14****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{median}(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Nickel-total (ug/L) at GWC14**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 589.5 / 37 = 15.932	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = ((15235.25 - 347510.25/37) / (37-1))^{1/2} = 12.74	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 15.932 + 4.0 * 12.74 = 66.892	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 37 * (37-1) / 2 = 666	Number of sample pairs during trend detection period.
5	$S = 0.0$	Sen's estimator of trend.
6	$\text{var}(S) = 3544.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (666 - 2.326 * 3544.0^{1/2}) / 2 = 263.765	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = 0.0$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Selenium-total (ug/L) at GWC14**  
**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = 10.0	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Silver-total (ug/L) at GWC14****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	PL = median(X) = <b>3.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Thallium-total (ug/L) at GWC14****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	PL = median(X) = <b>1.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Vanadium-total (ug/L) at GWC14****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	PL = median(X) = <b>5.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Zinc-total (ug/L) at GWC14**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 1061.7 / 37$ $= 28.695$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((42748.49 - 1.13 \times 10^6 / 37) / (37-1))^{1/2}$ $= 18.472$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 28.695 + 4.0 * 18.472$ $= 102.582$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 37 * (37-1) / 2$ $= 666$	Number of sample pairs during trend detection period.
5	$S = 0.0$	Sen's estimator of trend.
6	$\text{var}(S) = 3545.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (666 - 2.326 * 3545.0^{1/2}) / 2$ $= 263.755$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = 0.0$	One-sided lower confidence limit for slope.

*Results of the Ground Water Statistics for Live Oak Landfill  
Second Semi-Annual Monitoring Event in 2024*

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**Attachment E**

Total Lead - Summary Tables and Graphs for the Intrawell Statistics

**Table 1**

**Summary Statistics and Intermediate Computations  
for Combined Shewhart-CUSUM Control Charts**

<b>Constituent</b>	<b>Units</b>	<b>Well</b>	<b>N(back)</b>	<b>N(mon)</b>	<b>N(tot)</b>	<b>Mean</b>	<b>SD</b>	<b>R(i-1)</b>	<b>R(i)</b>	<b>S(i-1)</b>	<b>S(i)</b>	<b>Limit</b>	<b>Type</b>	<b>Conf</b>	
Lead-total	ug/L	GWA01A	23	7	62			10.0000	5.0000			10.0000	nonpar	.99	**
Lead-total	ug/L	GWA02A	23	7	60			5.0000	5.0000			10.0000	nonpar	.99	**
Lead-total	ug/L	GWA03A	23	7	58			10.0000	5.0000			10.0000	nonpar	.99	**
Lead-total	ug/L	GWB01	23	7	56			5.0000	5.0000			10.0000	nonpar	.99	**
Lead-total	ug/L	GWB02	23	7	56			5.0000	5.0000			10.0000	nonpar	.99	**
Lead-total	ug/L	GWC01A	23	7	61			5.0000	5.0000			10.0000	nonpar	.99	**
Lead-total	ug/L	GWC01B	23	7	61			5.0000	5.0000			10.0000	nonpar	.99	**
Lead-total	ug/L	GWC02A	23	7	60			10.0000	5.0000			10.0000	nonpar	.99	**
Lead-total	ug/L	GWC03A	23	7	67			10.0000	5.0000			10.0000	nonpar	.99	**
Lead-total	ug/L	GWC04A	23	7	61			5.0000	5.0000			10.0000	nonpar	.99	**
Lead-total	ug/L	GWC05A	23	7	67			5.0000	5.0000			10.0000	nonpar	.99	**
Lead-total	ug/L	GWC06	23	7	61			5.0000	5.0000			10.0000	nonpar	.99	**
Lead-total	ug/L	GWC07	23	7	61			10.0000	5.0000			10.0000	nonpar	.99	**
Lead-total	ug/L	GWC08	23	7	55			5.0000	5.0000			10.0000	nonpar	.99	**
Lead-total	ug/L	GWC09	23	7	56			5.0000	5.0000			10.0000	nonpar	.99	**
Lead-total	ug/L	GWC10	23	7	56			5.0000	5.0000			10.0000	nonpar	.99	**
Lead-total	ug/L	GWC11	23	7	56			5.0000	5.0000			10.0000	nonpar	.99	**
Lead-total	ug/L	GWC12	23	7	58			5.0000	5.0000			10.0000	nonpar	.99	**
Lead-total	ug/L	GWC13A	23	7	59			5.0000	5.0000			10.0000	nonpar	.99	**
Lead-total	ug/L	GWC14	23	7	61			5.0000	5.0000			10.0000	nonpar	.99	**

N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.

N(tot) = All independent measurements for that constituent and well.

For transformed data, mean and SD in transformed units and control limit in original units.

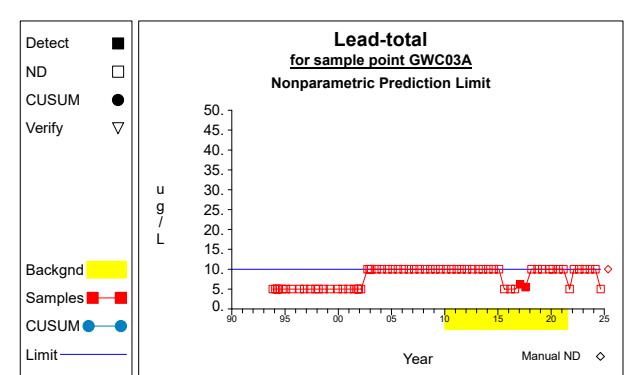
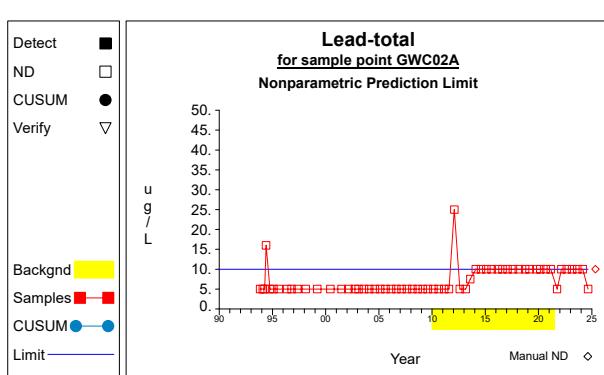
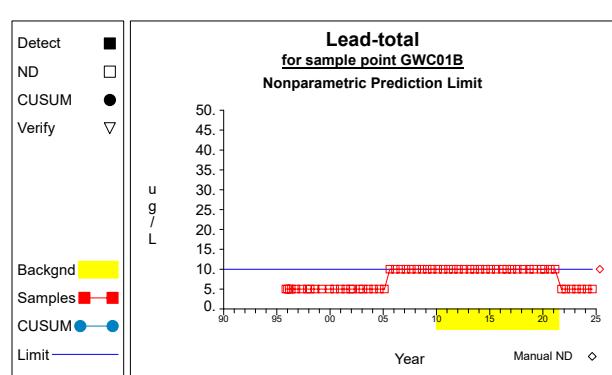
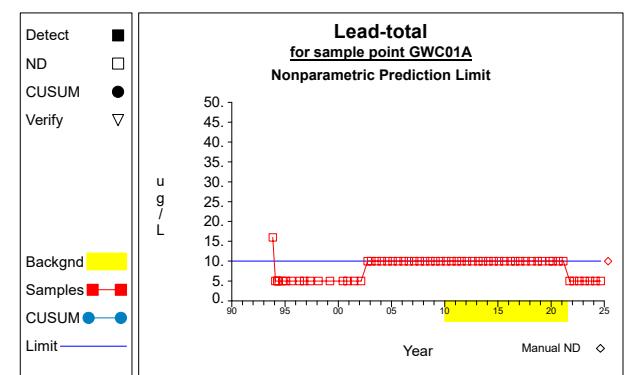
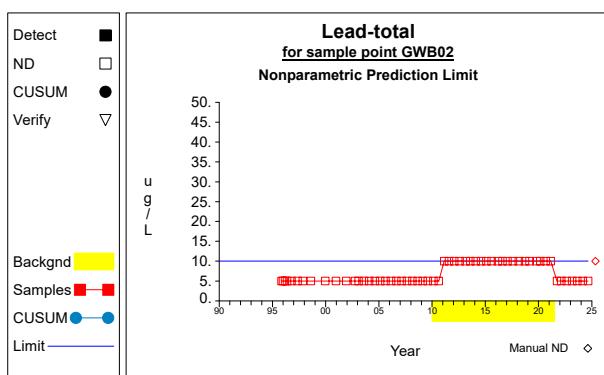
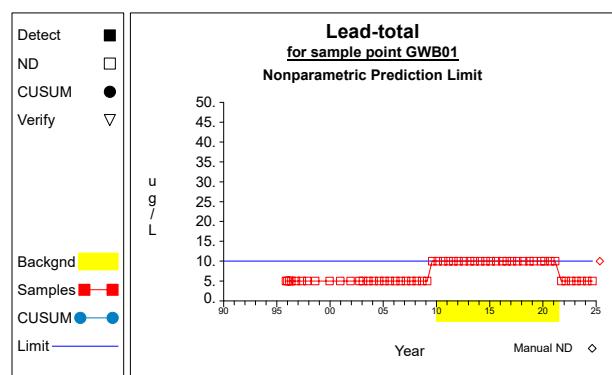
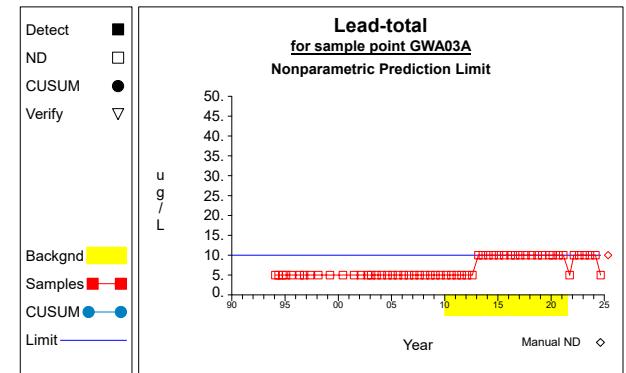
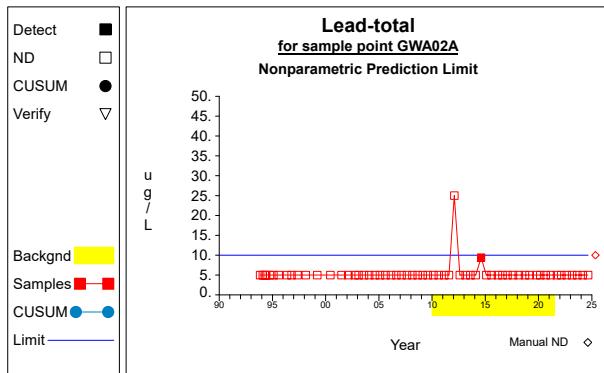
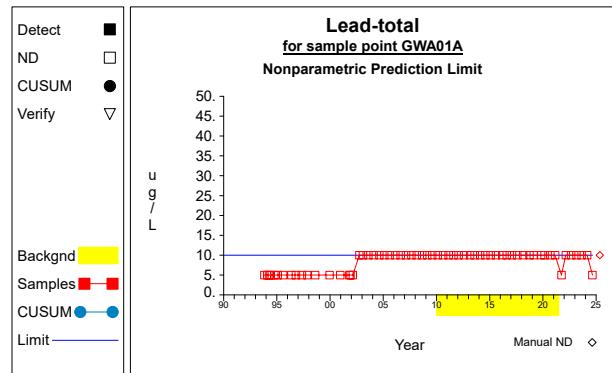
Conf = confidence level for passing initial test or one of two verification resamples (nonparametric test only).

\* - Insufficient Data.

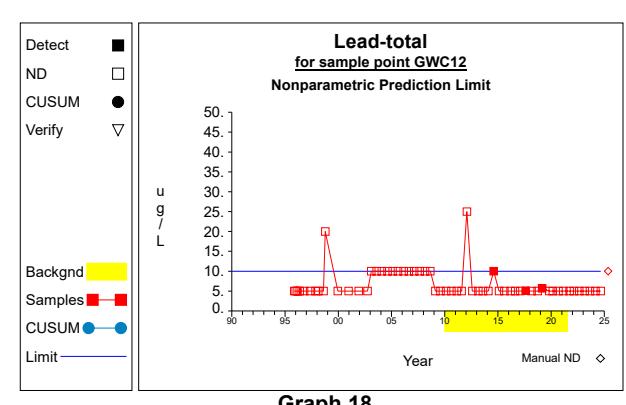
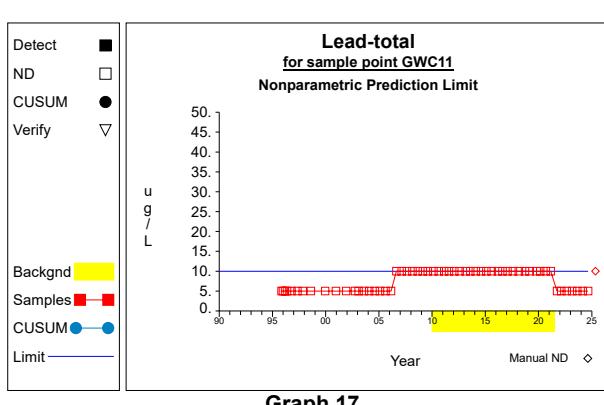
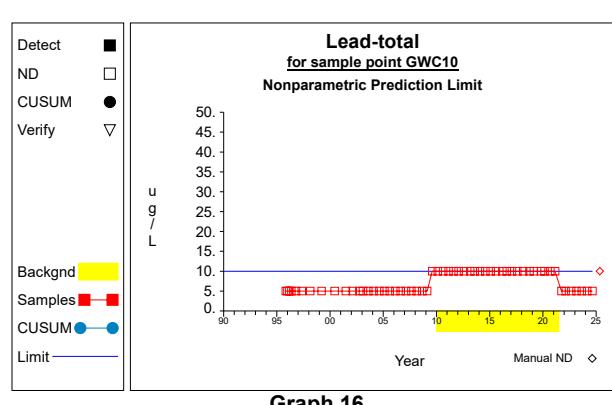
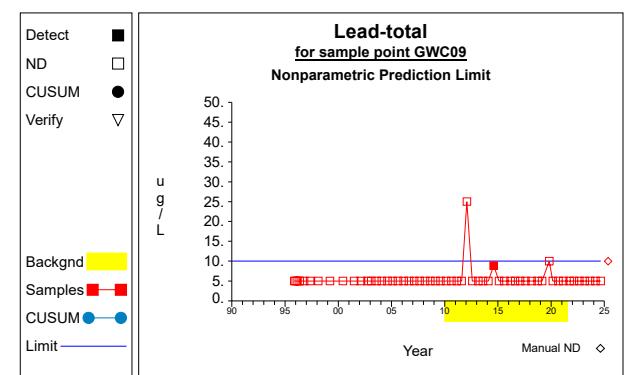
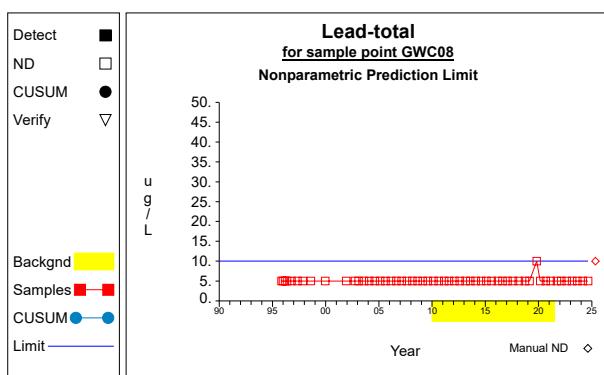
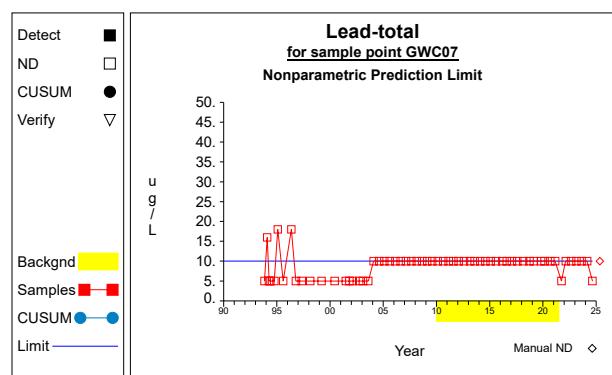
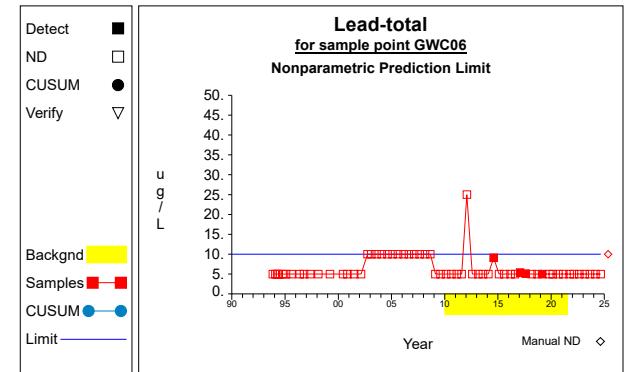
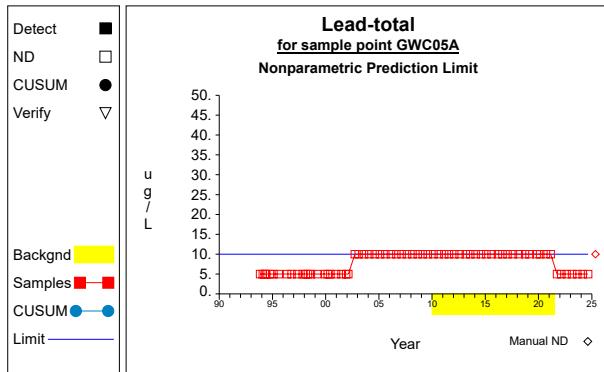
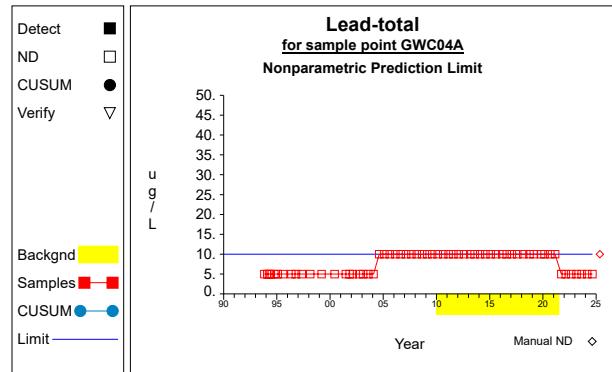
\*\* - Detection Frequency < 25%.

\*\*\* - Zero Variance.

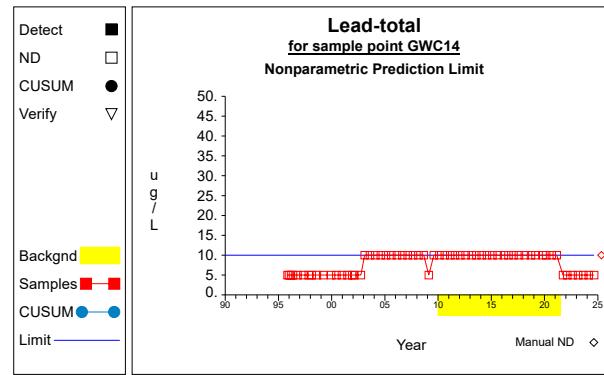
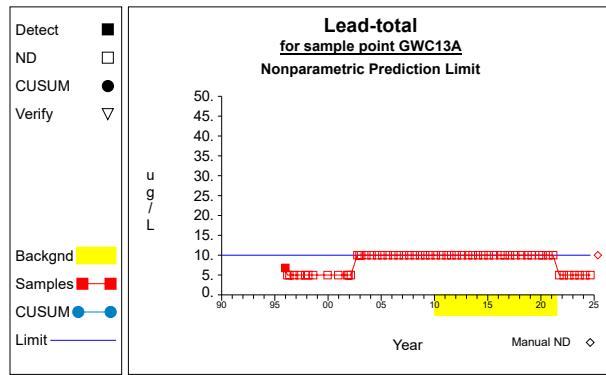
## Intra-Well Control Charts / Prediction Limits



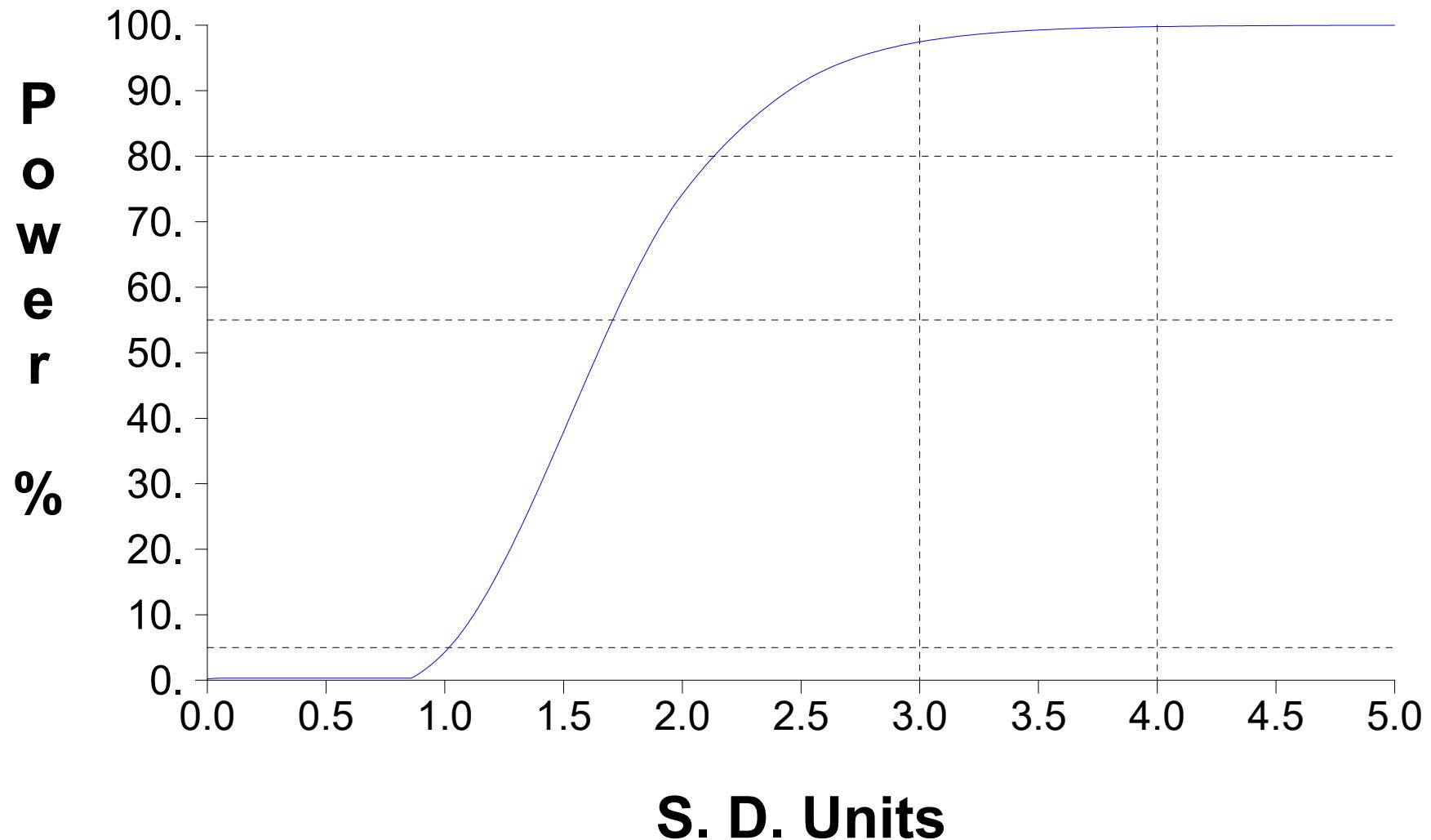
## Intra-Well Control Charts / Prediction Limits



## Intra-Well Control Charts / Prediction Limits



# False Positive and False Negative Rates for Current Intra-Well Control Charts Monitoring Program



**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GWA01A****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{median}(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GWA02A****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{max}(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as largest background measurement.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GWA03A****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{median}(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GWB01****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{median}(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GBW02****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GWC01A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GWC01B****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GWC02A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GWC03A****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \max(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as largest background measurement.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GWC04A****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{median}(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GWC05A****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \text{median}(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GWC06****Nonparametric Prediction Limit**

<b><u>Step</u></b>	<b><u>Equation</u></b>	<b><u>Description</u></b>
1	$PL = \max(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as largest background measurement.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GWC07****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GWC08****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GWC09****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \max(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as largest background measurement.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GWC10****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GWC11****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GWC12****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \max(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as largest background measurement.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GWC13A****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Lead-total (ug/L) at GWC14****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ <b>= 10.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

*Results of the Ground Water Statistics for Live Oak Landfill  
Second Semi-Annual Monitoring Event in 2024*

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**Attachment F**

Chloride - Summary Tables and Graphs for the Intrawell Statistics

**Table 1**

**Summary Statistics and Intermediate Computations  
for Combined Shewhart-CUSUM Control Charts**

Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	Conf
Chloride	mg/L	GWA01A	46	13	71	3.4630	1.7574	13.0000	13.7000	18.3887	19.0887	10.4926	normal	
Chloride	mg/L	GWA02A	43	13	68	2.6965	0.3981	1.8000	2.8000	2.6965	2.6965	4.2890	normal	
Chloride	mg/L	GWA03A	42	13	56	6.4133	1.3024	6.7000	8.3000	6.4133	7.3232	11.6229	normal	
Chloride	mg/L	GWB01	38	13	51	10.1287	6.2277	6.0000	6.4000	10.1287	10.1287	35.0397	normal	
Chloride	mg/L	GWB02	38	13	51	1.6039	0.3748	1.3000	2.2000	1.7833	2.0983	3.1032	normal	
Chloride	mg/L	GWC01A	44	13	69	9.8705	4.5615	2.6000	1.0000	9.8705	9.8705	28.1166	normal	
Chloride	mg/L	GWC01B	43	13	56	10.7837	4.8452	3.6000	4.1000	10.7837	10.7837	30.1646	normal	
Chloride	mg/L	GWC02A	44	13	69	2.6384	0.9164	2.0000	2.5000	2.6384	2.6384	6.3039	normal	
Chloride	mg/L	GWC03A	51	13	76	4.2863	0.6968	3.5000	4.9000	4.2863	4.3774	7.0733	normal	
Chloride	mg/L	GWC04A	45	13	70	22.7933	13.9938	2.4000	2.8000	22.7933	22.7933	78.7685	normal	
Chloride	mg/L	GWC05A	49	13	73	13.5680	8.5815	1.0000	1.0000	13.5680	13.5680	47.8938	normal	
Chloride	mg/L	GWC06	44	13	68	10.8127	7.0416	1.0000	1.0000	10.8127	10.8127	38.9791	normal	
Chloride	mg/L	GWC07	45	13	69	8.3889	2.7822	8.1000	9.5000	8.3889	8.3889	19.5175	normal	
Chloride	mg/L	GWC08	36	13	49	2.0264	0.4061	1.4000	2.1000	2.0264	2.0264	3.6508	normal	
Chloride	mg/L	GWC09	38	13	51	1.9947	0.3309	1.2000	1.6000	1.9947	1.9947	3.3184	normal	
Chloride	mg/L	GWC10	38	13	51	3.9050	1.8774	12.2000	11.7000	18.1657	17.6657	11.4148	normal	
Chloride	mg/L	GWC11	38	13	51	9.0421	2.9644	6.4000	4.3000	9.0421	9.0421	20.8999	normal	
Chloride	mg/L	GWC12	37	13	50	11.9768	5.2721	1.0000	1.0000	11.9768	11.9768	33.0650	normal	
Chloride	mg/L	GWC13A	43	13	56	17.9605	6.1182	3.0000	4.1000	17.9605	17.9605	42.4331	normal	
Chloride	mg/L	GWC14	43	13	56	62.0860	114.4630	18.2000	14.2000	62.0860	62.0860	519.9382	normal	

N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.

N(tot) = All independent measurements for that constituent and well.

For transformed data, mean and SD in transformed units and control limit in original units.

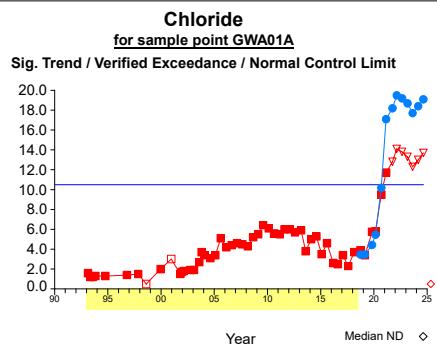
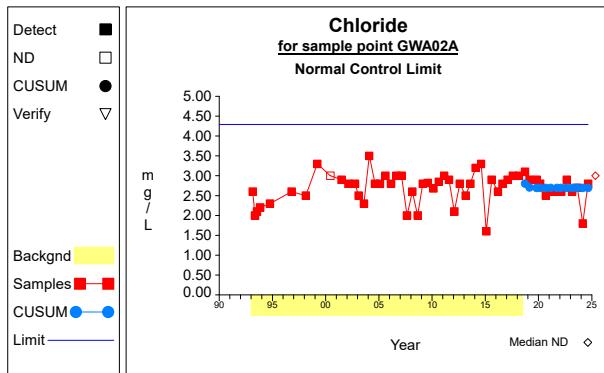
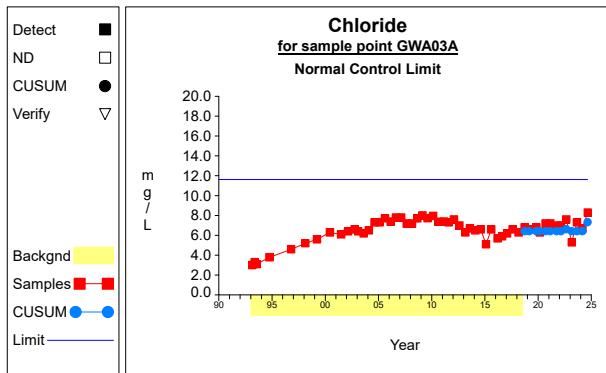
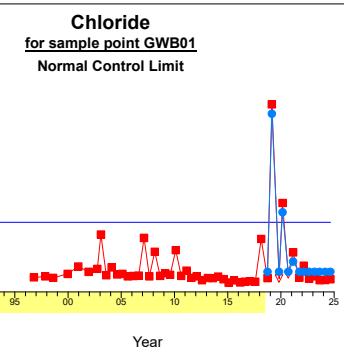
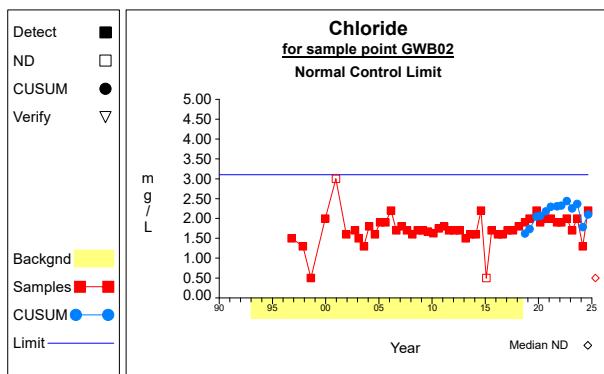
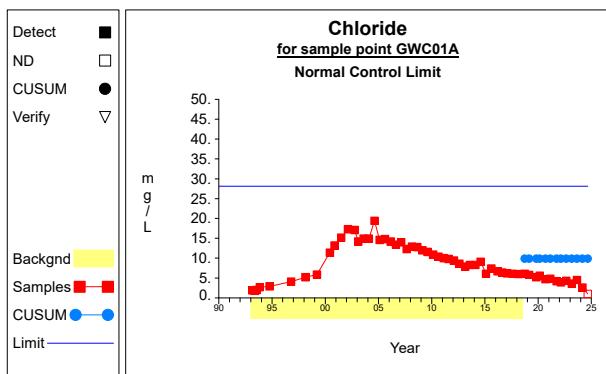
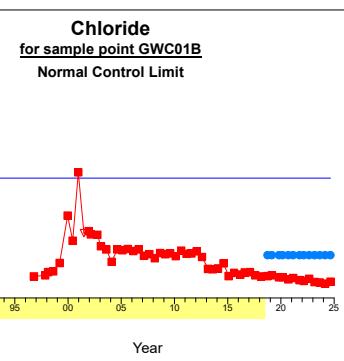
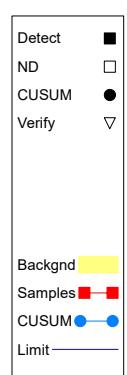
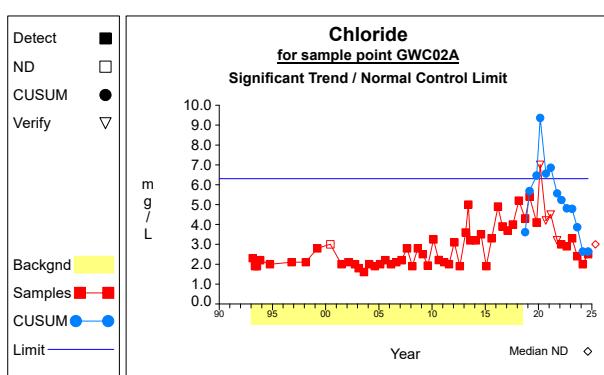
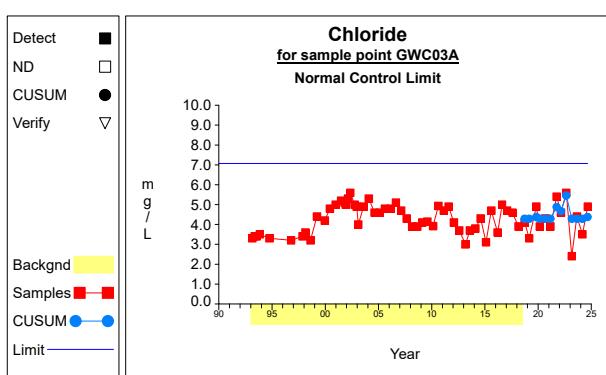
Conf = confidence level for passing initial test or one of two verification resamples (nonparametric test only).

\* - Insufficient Data.

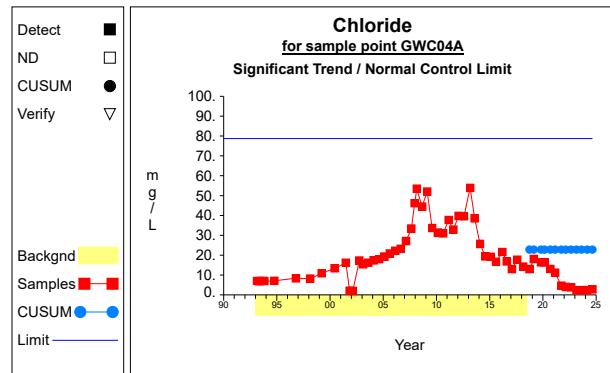
\*\* - Detection Frequency < 25%.

\*\*\* - Zero Variance.

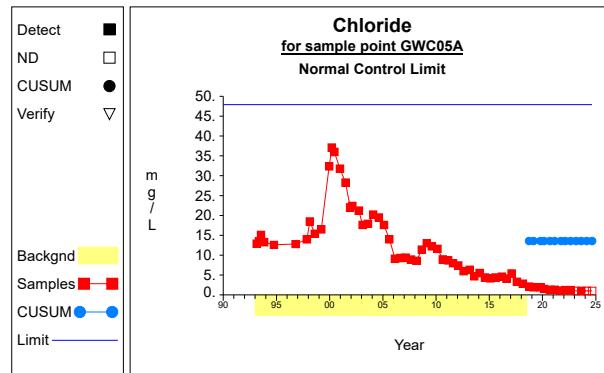
## Intra-Well Control Charts / Prediction Limits

**Graph 1****Graph 2****Graph 3****Graph 4****Graph 5****Graph 6****Graph 7****Graph 8****Graph 9**

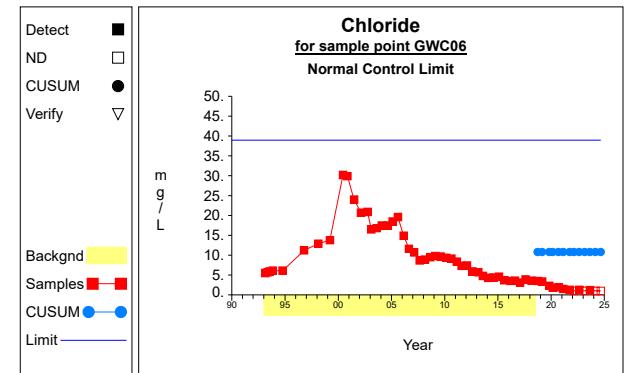
## Intra-Well Control Charts / Prediction Limits



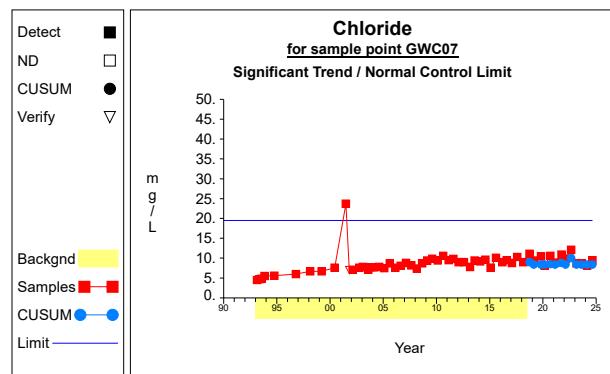
## Graph 10



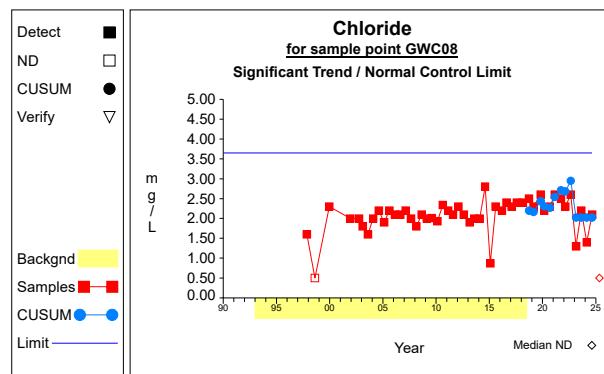
## **Graph 11**



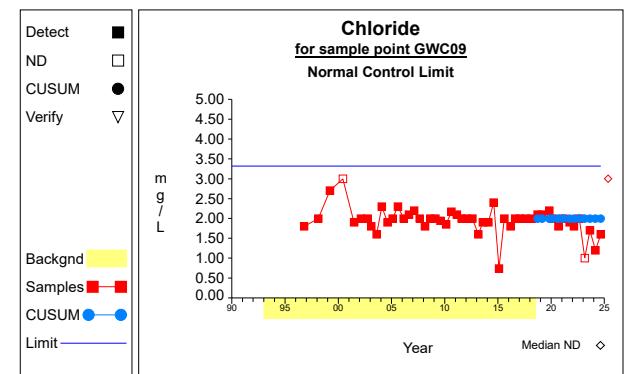
Graph 12



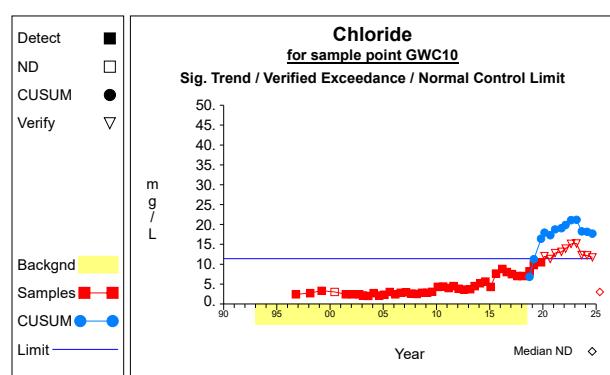
### **Graph 13**



## **Graph 14**

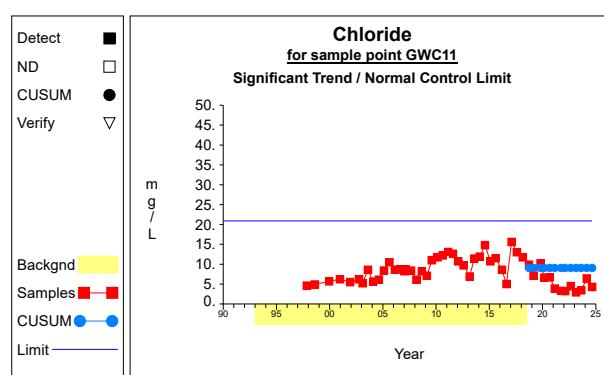


Graph 15

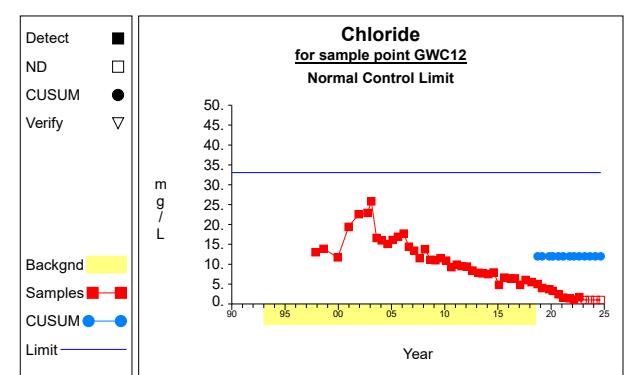


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**Graph 16**



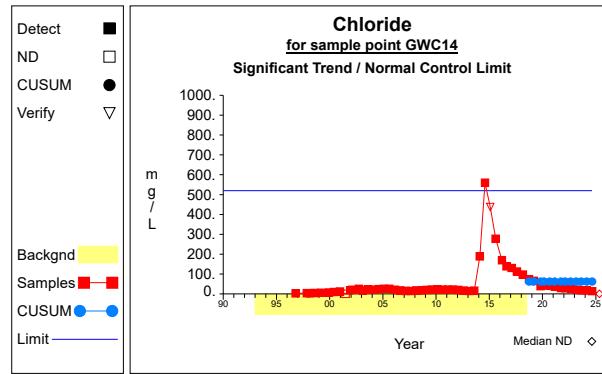
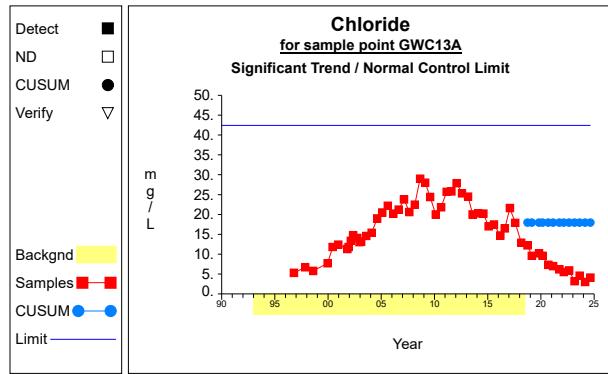
Graph 17



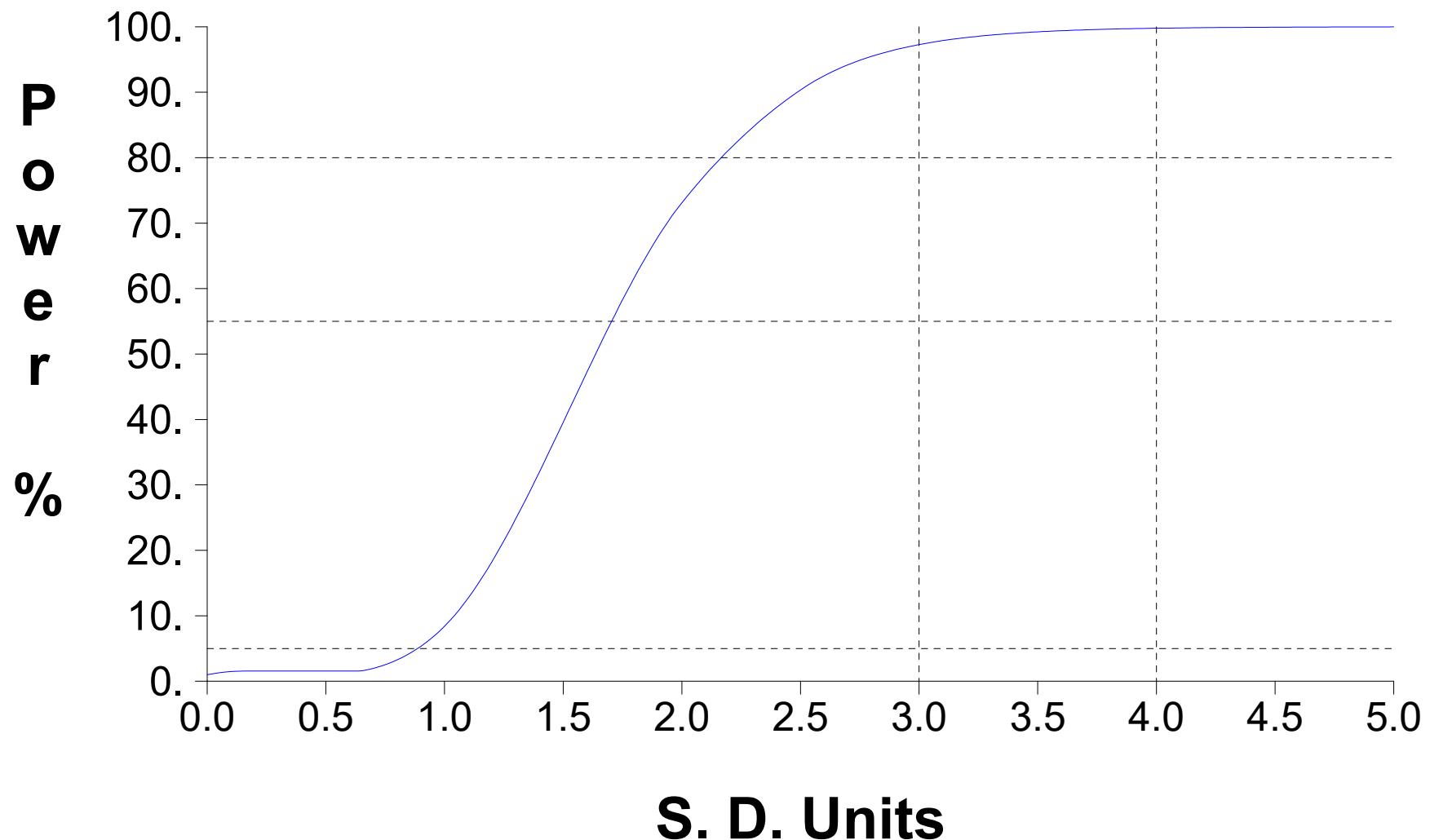
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Graph 18

## Intra-Well Control Charts / Prediction Limits



# False Positive and False Negative Rates for Current Intra-Well Control Charts Monitoring Program



**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Chloride (mg/L) at GWA01A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 159.3 / 46$ $= 3.463$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((690.643 - 25376.49/46) / (46-1))^{1/2}$ $= 1.757$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 3.463 + 4.0 * 1.757$ $= 10.493$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 46 * (46-1) / 2$ $= 1035$	Number of sample pairs during trend detection period.
5	$S = 0.197$	Sen's estimator of trend.
6	$\text{var}(S) = 11142.333$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (1035 - 2.326 * 11142.333^{1/2}) / 2$ $= 394.737$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = 0.099$	One-sided lower confidence limit for slope.
9	$\text{LCL}(S) > 0$	<b>Significant increasing trend.</b>

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Chloride (mg/L) at GWA02A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 115.95 / 43$ $= 2.697$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((319.317 - 13444.403/43) / (43-1))^{1/2}$ $= 0.398$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 2.697 + 4.0 * 0.398$ $= 4.289$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 43 * (43-1) / 2$ $= 903$	Number of sample pairs during trend detection period.
5	$S = 0.014$	Sen's estimator of trend.
6	$\text{var}(S) = 8966.333$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (903 - 2.326 * 8966.333^{1/2}) / 2$ $= 341.375$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = 0.0$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Chloride (mg/L) at GWA03A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 269.36 / 42 = 6.413	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = ((1797.041 - 72554.81/42) / (42-1))^{1/2} = 1.302	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 6.413 + 4.0 * 1.302 = 11.623	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 42 * (42-1) / 2 = 861	Number of sample pairs during trend detection period.
5	$S = 0.068$	Sen's estimator of trend.
6	$\text{var}(S) = 8491.333$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (861 - 2.326 * 8491.333^{1/2}) / 2 = 323.331	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -0.007$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Chloride (mg/L) at GWB01**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 384.89 / 38$ $= 10.129$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((5333.468 - 148140.312/38) / (38-1))^{1/2}$ $= 6.228$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 10.129 + 4.0 * 6.228$ $= 35.04$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 38 * (38-1) / 2$ $= 703$	Number of sample pairs during trend detection period.
5	$S = -0.241$	Sen's estimator of trend.
6	$\text{var}(S) = 6320.333$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (703 - 2.326 * 6320.333^{1/2}) / 2$ $= 259.041$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = -0.417$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Chloride (mg/L) at GWB02**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = <b>60.95 / 38</b> = <b>1.604</b>	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = $(102.958 - 3714.903/38) / (38-1)^{1/2}$ = <b>0.375</b>	Compute background sd.
3	$SCL = \bar{X} + F * S$ = <b>1.604 + 4.0 * 0.375</b> = <b>3.103</b>	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = <b>38 * (38-1) / 2</b> = <b>703</b>	Number of sample pairs during trend detection period.
5	$S = 0.0$	Sen's estimator of trend.
6	$\text{var}(S) = 6098.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = $(703 - 2.326 * 6098.667^{1/2}) / 2$ = <b>260.677</b>	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -0.008$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Chloride (mg/L) at GWC01A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 434.3 / 44$ $= 9.87$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((5181.47 - 188616.49/44) / (44-1))^{1/2}$ $= 4.562$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 9.87 + 4.0 * 4.562$ $= 28.117$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 44 * (44-1) / 2$ $= 946$	Number of sample pairs during trend detection period.
5	$S = -0.444$	Sen's estimator of trend.
6	$\text{var}(S) = 9771.333$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (946 - 2.326 * 9771.333^{1/2}) / 2$ $= 358.037$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = -0.642$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Chloride (mg/L) at GWC01B**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 463.7 / 43$ $= 10.784$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((5986.41 - 215017.69/43) / (43-1))^{1/2}$ $= 4.845$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 10.784 + 4.0 * 4.845$ $= 30.165$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 43 * (43-1) / 2$ $= 903$	Number of sample pairs during trend detection period.
5	$S = -0.464$	Sen's estimator of trend.
6	$\text{var}(S) = 9121.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (903 - 2.326 * 9121.667^{1/2}) / 2$ $= 340.425$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = -0.591$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Chloride (mg/L) at GWC02A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 116.09 / 44 = 2.638	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = (342.402 - 13476.888/44) / (44-1) = 0.916	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 2.638 + 4.0 * 0.916 = 6.304	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 44 * (44-1) / 2 = 946	Number of sample pairs during trend detection period.
5	$S = 0.066$	Sen's estimator of trend.
6	$\text{var}(S) = 9677.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (946 - 2.326 * 9677.667^{1/2}) / 2 = 358.59	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = 0.022$	One-sided lower confidence limit for slope.
9	$LCL(S) > 0$	<b>Significant increasing trend.</b>

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Chloride (mg/L) at GWC03A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 218.6 / 51 = 4.286	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = (961.254 - 47785.96/51) / (51-1) = 0.697	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 4.286 + 4.0 * 0.697 = 7.073	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 51 * (51-1) / 2 = 1275	Number of sample pairs during trend detection period.
5	$S = 0.0$	Sen's estimator of trend.
6	$\text{var}(S) = 15114.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (1275 - 2.326 * 15114.667^{1/2}) / 2 = 494.519	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -0.037$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Chloride (mg/L) at GWC04A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 1025.7 / 45$ $= 22.793$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((31995.47 - 1.05 \times 10^6 / 45) / (45-1))^{1/2}$ $= 13.994$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 22.793 + 4.0 * 13.994$ $= 78.768$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 45 * (45-1) / 2$ $= 990$	Number of sample pairs during trend detection period.
5	$S = 1.11$	Sen's estimator of trend.
6	$\text{var}(S) = 10445.333$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (990 - 2.326 * 10445.333^{1/2}) / 2$ $= 376.139$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = 0.442$	One-sided lower confidence limit for slope.
9	$LCL(S) > 0$	<b>Significant increasing trend.</b>

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Chloride (mg/L) at GWC05A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 664.83 / 49$ $= 13.568$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((12555.175 - 441998.929/49) / (49-1))^{1/2}$ $= 8.581$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 13.568 + 4.0 * 8.581$ $= 47.894$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 49 * (49-1) / 2$ $= 1176$	Number of sample pairs during trend detection period.
5	$S = -0.759$	Sen's estimator of trend.
6	$\text{var}(S) = 13455.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (1176 - 2.326 * 13455.667^{1/2}) / 2$ $= 453.094$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = -1.139$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Chloride (mg/L) at GWC06**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 475.76 / 44$ $= 10.813$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((7276.375 - 226347.578/44) / (44-1))^{1/2}$ $= 7.042$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 10.813 + 4.0 * 7.042$ $= 38.979$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 44 * (44-1) / 2$ $= 946$	Number of sample pairs during trend detection period.
5	$S = -0.736$	Sen's estimator of trend.
6	$\text{var}(S) = 9770.333$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (946 - 2.326 * 9770.333^{1/2}) / 2$ $= 358.043$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = -1.054$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Chloride (mg/L) at GWC07**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 377.5 / 45$ $= 8.389$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((3507.385 - 142506.25/45) / (45-1))^{1/2}$ $= 2.782$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 8.389 + 4.0 * 2.782$ $= 19.518$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 45 * (45-1) / 2$ $= 990$	Number of sample pairs during trend detection period.
5	$S = 0.185$	Sen's estimator of trend.
6	$\text{var}(S) = 10422.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (990 - 2.326 * 10422.0^{1/2}) / 2$ $= 376.271$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = 0.14$	One-sided lower confidence limit for slope.
9	$\text{LCL}(S) > 0$	<b>Significant increasing trend.</b>

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Chloride (mg/L) at GWC08**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 72.95 / 36 = 2.026	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = ((153.598 - 5321.703/36) / (36-1))^{1/2} = 0.406	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 2.026 + 4.0 * 0.406 = 3.651	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 36 * (36-1) / 2 = 630	Number of sample pairs during trend detection period.
5	$S = 0.025$	Sen's estimator of trend.
6	$\text{var}(S) = 5297.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (630 - 2.326 * 5297.0^{1/2}) / 2 = 230.356	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = 0.002$	One-sided lower confidence limit for slope.
9	$LCL(S) > 0$	<b>Significant increasing trend.</b>

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Chloride (mg/L) at GWC09**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 75.8 / 38 = 1.995	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = ((155.253 - 5745.64/38) / (38-1))^{1/2} = 0.331	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 1.995 + 4.0 * 0.331 = 3.318	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 38 * (38-1) / 2 = 703	Number of sample pairs during trend detection period.
5	$S = 0.0$	Sen's estimator of trend.
6	$\text{var}(S) = 5813.333$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (703 - 2.326 * 5813.333^{1/2}) / 2 = 262.827	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -0.02$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Chloride (mg/L) at GWC10**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = <b>148.39 / 38</b> = <b>3.905</b>	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = $(709.881 - 22019.592/38) / (38-1)^{1/2}$ = <b>1.877</b>	Compute background sd.
3	$SCL = \bar{X} + F * S$ = <b>3.905 + 4.0 * 1.877</b> = <b>11.415</b>	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = <b>38 * (38-1) / 2</b> = <b>703</b>	Number of sample pairs during trend detection period.
5	$S = 0.227$	Sen's estimator of trend.
6	$\text{var}(S) = 6301.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = $(703 - 2.326 * 6301.667^{1/2}) / 2$ = <b>259.178</b>	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = 0.145$	One-sided lower confidence limit for slope.
9	$LCL(S) > 0$	<b>Significant increasing trend.</b>

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Chloride (mg/L) at GWC11**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 343.6 / 38 = 9.042	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = (3432.02 - 118060.96/38) / (38-1)^{1/2} = 2.964	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 9.042 + 4.0 * 2.964 = 20.9	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 38 * (38-1) / 2 = 703	Number of sample pairs during trend detection period.
5	$S = 0.405$	Sen's estimator of trend.
6	$\text{var}(S) = 6316.333$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (703 - 2.326 * 6316.333^{1/2}) / 2 = 259.07	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = 0.242$	One-sided lower confidence limit for slope.
9	$LCL(S) > 0$	<b>Significant increasing trend.</b>

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Chloride (mg/L) at GWC12**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 443.14 / 37$ $= 11.977$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((6307.988 - 196373.06/37) / (37-1))^{1/2}$ $= 5.272$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 11.977 + 4.0 * 5.272$ $= 33.065$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 37 * (37-1) / 2$ $= 666$	Number of sample pairs during trend detection period.
5	$S = -0.827$	Sen's estimator of trend.
6	$\text{var}(S) = 5843.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (666 - 2.326 * 5843.0^{1/2}) / 2$ $= 244.101$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = -0.971$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Chloride (mg/L) at GWC13A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 772.3 / 43 = 17.96	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = ((15443.01 - 596447.29/43) / (43-1))^{1/2} = 6.118	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 17.96 + 4.0 * 6.118 = 42.433	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 43 * (43-1) / 2 = 903	Number of sample pairs during trend detection period.
5	$S = 0.758$	Sen's estimator of trend.
6	$\text{var}(S) = 9127.333$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (903 - 2.326 * 9127.333^{1/2}) / 2 = 340.39	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = 0.346$	One-sided lower confidence limit for slope.
9	$LCL(S) > 0$	<b>Significant increasing trend.</b>

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Chloride (mg/L) at GWC14**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 2669.7 / 43$ $= 62.086$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((716026.19 - 7.13 \times 10^6 / 43) / (43-1))^{1/2}$ $= 114.463$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 62.086 + 4.0 * 114.463$ $= 519.938$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 43 * (43-1) / 2$ $= 903$	Number of sample pairs during trend detection period.
5	$S = 2.134$	Sen's estimator of trend.
6	$\text{var}(S) = 9129.333$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (903 - 2.326 * 9129.333^{1/2}) / 2$ $= 340.378$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = 1.197$	One-sided lower confidence limit for slope.
9	$\text{LCL}(S) > 0$	<b>Significant increasing trend.</b>

*Results of the Ground Water Statistics for Live Oak Landfill  
Second Semi-Annual Monitoring Event in 2024*

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**Attachment G**

Potassium and Sodium - Summary Tables and Graphs for the Intrawell Statistics

**Table 1**

**Summary Statistics and Intermediate Computations  
for Combined Shewhart-CUSUM Control Charts**

Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	Conf	
Potassium-total	mg/L	GWA01A	40	13	53	0.9018	1.5698	0.5000	0.5000	0.9018	0.9018	7.1811	normal		
Sodium-total	mg/L	GWA01A	40	13	53	3.9275	1.3612	6.0000	6.2000	9.4856	9.6856	9.3722	normal		
Potassium-total	mg/L	GWA02A	37	13	50			0.5000	0.5000			5.0000	nonpar	.99	**
Sodium-total	mg/L	GWA02A	38	13	51	5.3292	0.4147	5.5000	5.9000	6.1669	6.4266	6.9881	normal		
Potassium-total	mg/L	GWA03A	37	13	50	3.7784	1.9139	0.9000	0.7000	3.7784	3.7784	11.4339	normal		
Sodium-total	mg/L	GWA03A	37	13	50	4.3541	1.0098	3.0000	3.1000	4.3541	4.3541	8.3934	normal		
Potassium-total	mg/L	GWB01	37	13	50	4.1931	3.6851	0.5000	0.5000	4.1931	4.1931	18.9337	normal		
Sodium-total	mg/L	GWB01	37	13	50	5.4643	1.0461	7.7000	5.6000	8.2196	7.5707	9.6489	normal		
Potassium-total	mg/L	GWB02	37	13	50	3.3951	1.9714	1.2000	1.0000	3.3951	3.3951	11.2807	normal		
Sodium-total	mg/L	GWB02	38	13	51	5.0484	0.1780	5.5000	5.0000	5.4846	5.3026	5.7605	normal		
Potassium-total	mg/L	GWC01A	37	13	50	1.6943	1.3447	1.1000	1.0000	1.6943	1.6943	7.0733	normal		
Sodium-total	mg/L	GWC01A	37	13	50	6.9976	0.7485	7.0000	6.4000	6.9976	6.9976	9.9915	normal		
Potassium-total	mg/L	GWC01B	42	13	55	2.3160	2.1319	0.7000	0.7000	2.3160	2.3160	10.8436	normal		
Sodium-total	mg/L	GWC01B	42	13	55	12.5500	1.5173	14.1000	13.2000	16.4464	15.9585	18.6190	normal		
Potassium-total	mg/L	GWC02A	37	13	50	3.8696	1.9190	0.5000	0.5000	3.8696	3.8696	11.5457	normal		
Sodium-total	mg/L	GWC02A	38	13	51	5.1726	0.3222	4.7000	4.5000	5.1726	5.1726	6.4614	normal		
Potassium-total	mg/L	GWC03A	44	13	57	2.1340	2.0824	0.6000	0.7000	2.1340	2.1340	10.4636	normal		
Sodium-total	mg/L	GWC03A	44	13	57	9.3091	1.2340	8.1000	9.2000	9.3091	9.3091	14.2452	normal		
Potassium-total	mg/L	GWC04A	38	13	51	2.1633	1.7250	0.7000	0.7000	2.1633	2.1633	9.0632	normal		
Sodium-total	mg/L	GWC04A	38	13	51	6.5921	3.1560	4.2000	3.9000	6.5921	6.5921	19.2160	normal		
Potassium-total	mg/L	GWC05A	43	13	56	1.7916	1.6833	0.5000	0.5000	1.7916	1.7916	8.5250	normal		
Sodium-total	mg/L	GWC05A	43	13	56	7.5902	1.1781	4.9000	4.7000	7.5902	7.5902	12.3027	normal		
Potassium-total	mg/L	GWC06	37	13	50	4.4962	0.8218	2.0000	1.8000	4.4962	4.4962	7.7836	normal		
Sodium-total	mg/L	GWC06	37	13	50	13.1027	1.7001	10.6000	10.7000	13.1027	13.1027	19.9030	normal		
Potassium-total	mg/L	GWC07	38	13	51	3.8813	0.6492	4.4000	3.8000	3.9131	3.8813	6.4780	normal		
Sodium-total	mg/L	GWC07	38	13	51	12.0237	1.0553	15.5000	15.2000	17.4022	17.4022	16.2451	normal		
Potassium-total	mg/L	GWC08	36	13	49			0.5000	0.5000			5.0000	nonpar	.99	**
Sodium-total	mg/L	GWC08	36	13	49			4.0000	4.1000			5.8600	nonpar	.99	**
Potassium-total	mg/L	GWC09	37	13	50			0.7000	0.7000			5.0000	nonpar	.99	**
Sodium-total	mg/L	GWC09	38	13	51			4.7000	4.8000			5.3000	nonpar	.99	**
Potassium-total	mg/L	GWC10	37	13	50	2.9731	2.2346	0.6000	0.5000	2.9731	2.9731	11.9113	normal		
Sodium-total	mg/L	GWC10	37	13	50	8.8227	0.9854	9.9000	9.6000	11.5906	11.6288	12.7642	normal		
Potassium-total	mg/L	GWC11	38	13	51	2.5374	1.8077	1.0000	0.9000	2.5374	2.5374	9.7681	normal		
Sodium-total	mg/L	GWC11	38	13	51	8.3097	1.0356	7.4000	7.0000	8.3097	8.3097	12.4520	normal		
Potassium-total	mg/L	GWC12	37	13	50	3.5762	2.0843	0.5000	0.5000	3.5762	3.5762	11.9132	normal		
Sodium-total	mg/L	GWC12	38	13	51	13.6158	1.4310	9.0000	8.7000	13.6158	13.6158	19.3399	normal		
Potassium-total	mg/L	GWC13A	42	13	55	12.4024	1.7960	9.1000	8.9000	12.4024	12.4024	19.5863	normal		
Sodium-total	mg/L	GWC13A	42	13	55	13.8738	1.7156	13.6000	13.6000	13.8738	13.8738	20.7362	normal		
Potassium-total	mg/L	GWC14	42	13	55			0.5000	0.5000			7.0000	nonpar	.99	**
Sodium-total	mg/L	GWC14	42	13	55	4.9262	1.5259	33.4000	33.7000	38.1144	38.4144	11.0297	normal		

N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.

N(tot) = All independent measurements for that constituent and well.

For transformed data, mean and SD in transformed units and control limit in original units.

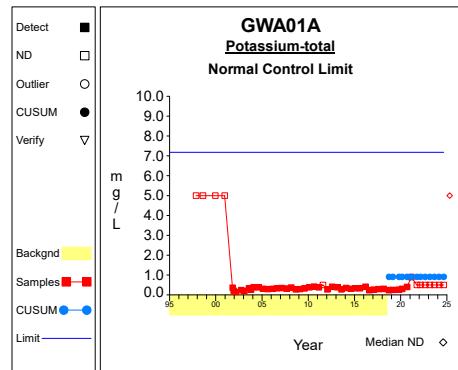
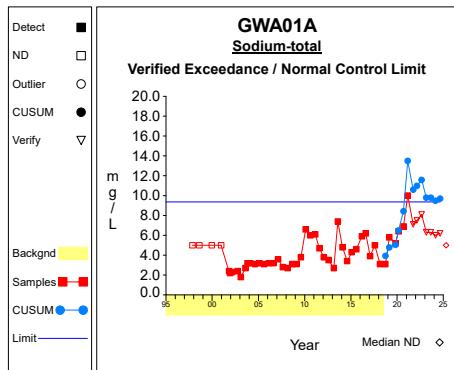
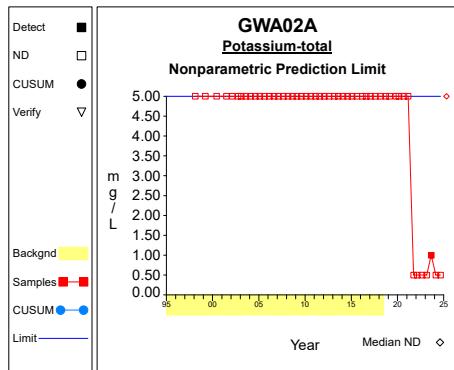
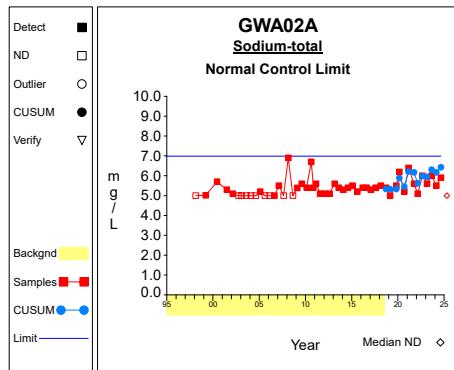
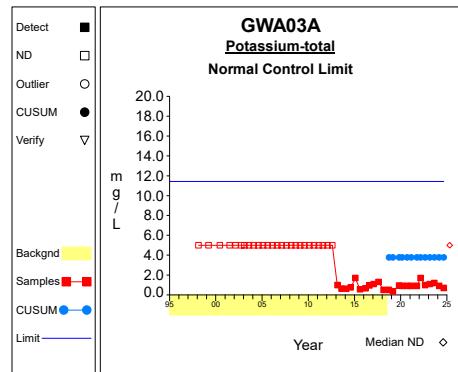
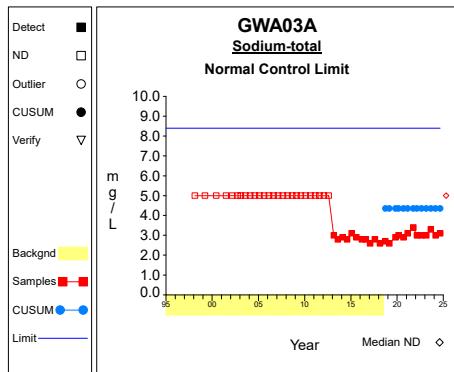
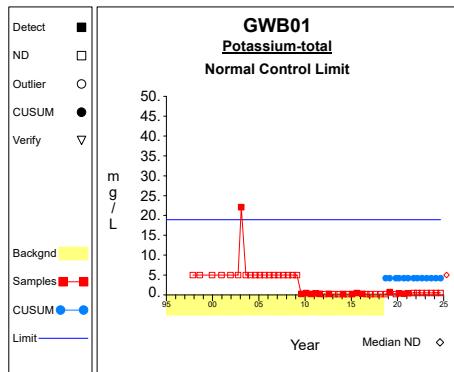
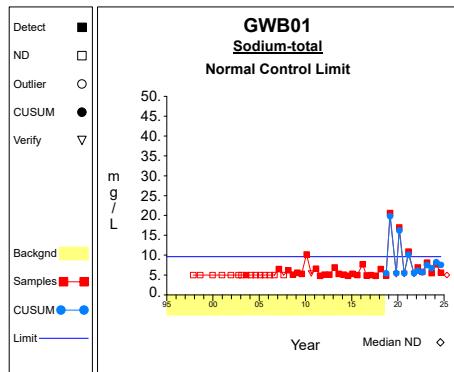
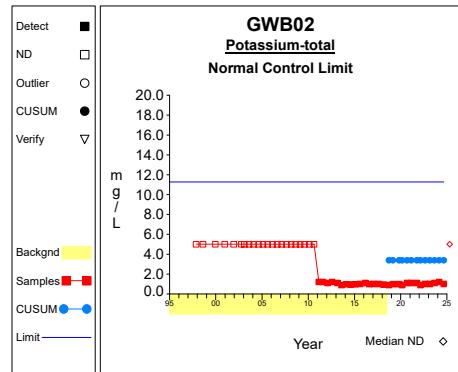
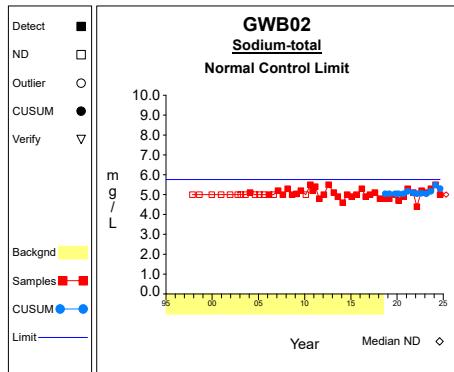
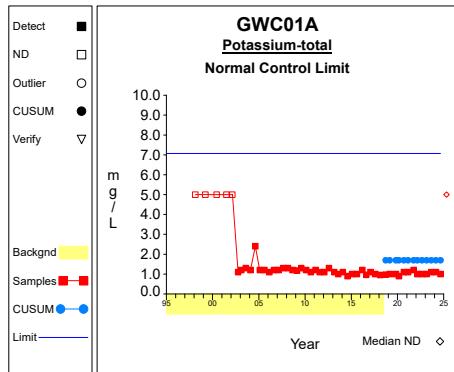
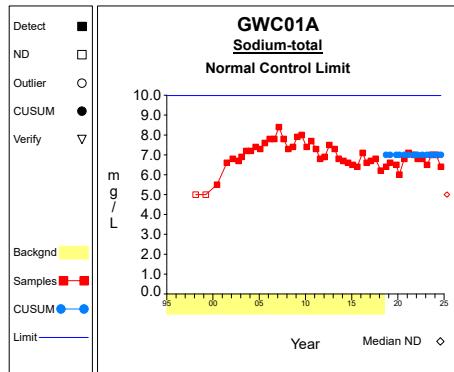
Conf = confidence level for passing initial test or one of two verification resamples (nonparametric test only).

\* - Insufficient Data.

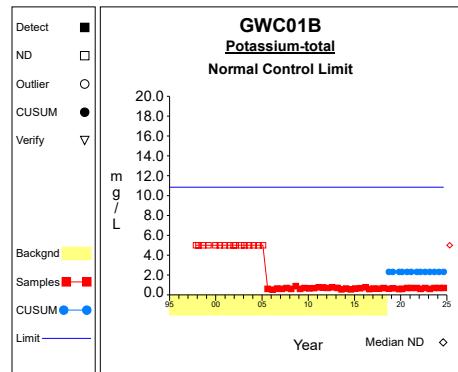
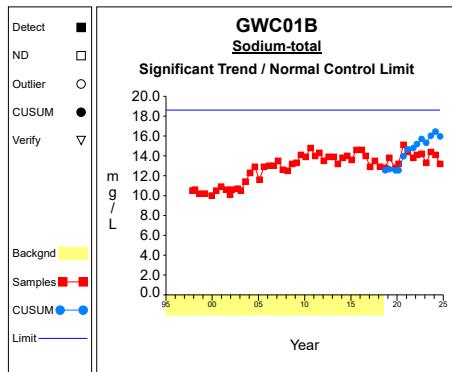
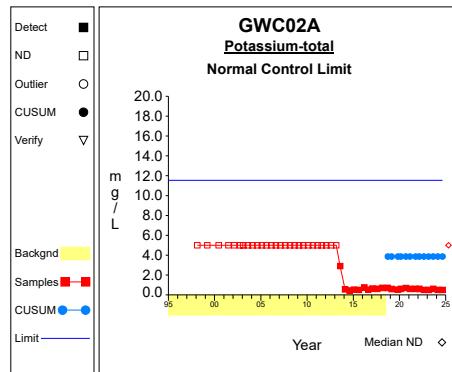
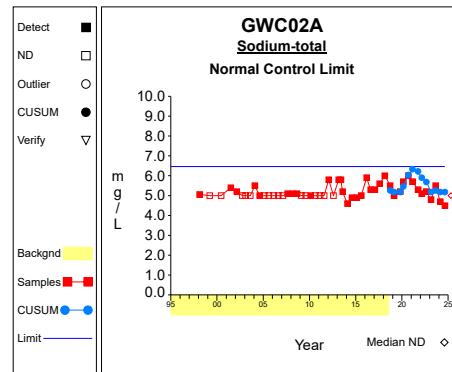
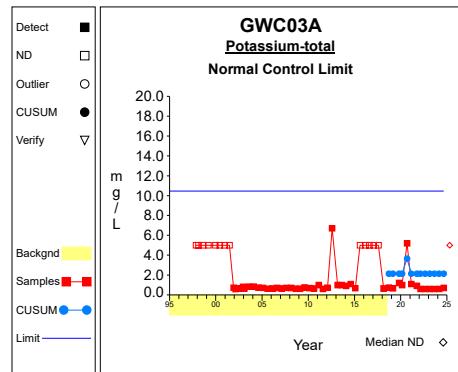
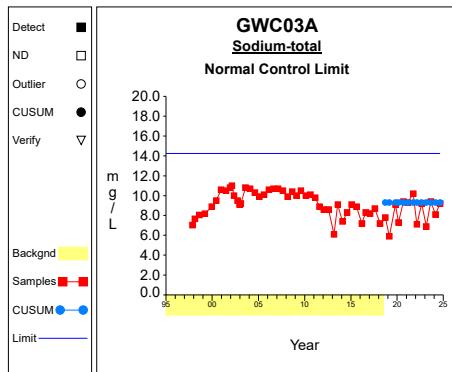
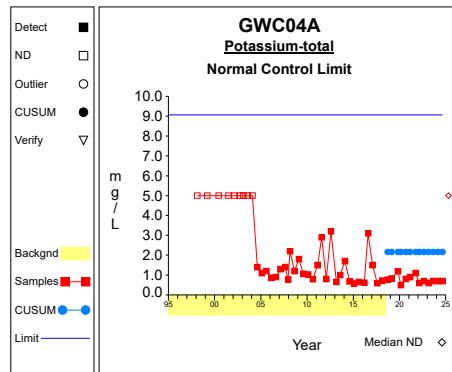
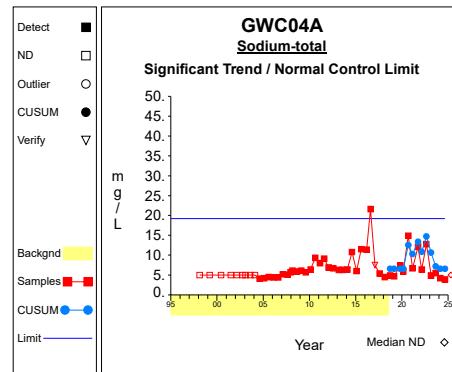
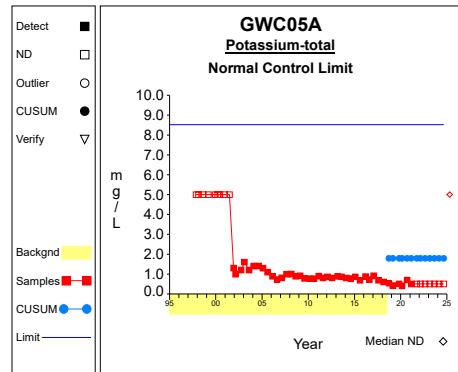
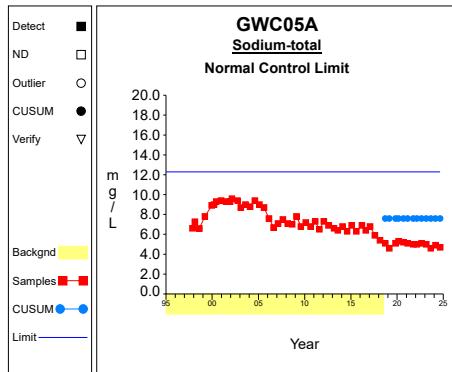
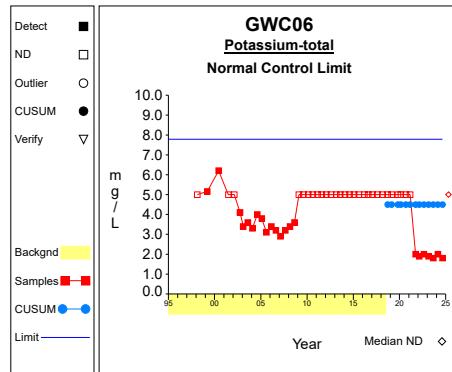
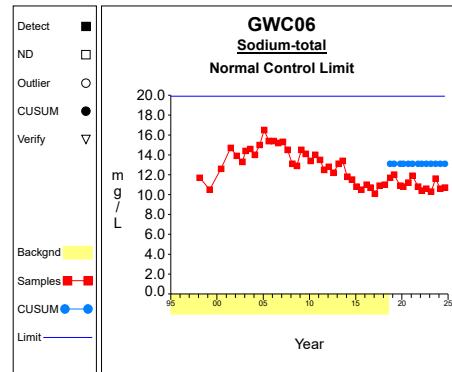
\*\* - Detection Frequency < 25%.

\*\*\* - Zero Variance.

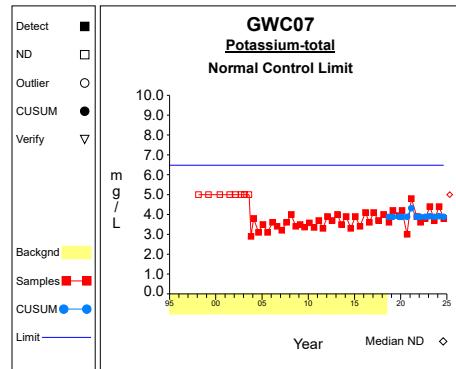
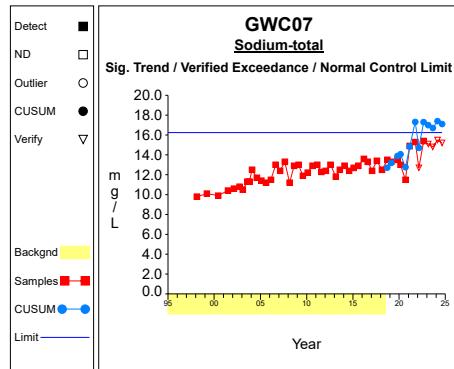
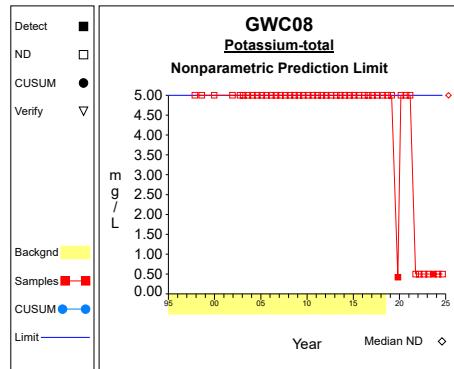
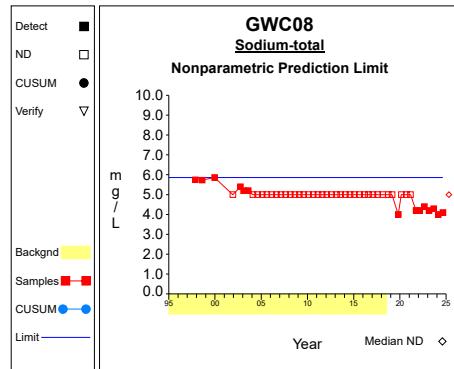
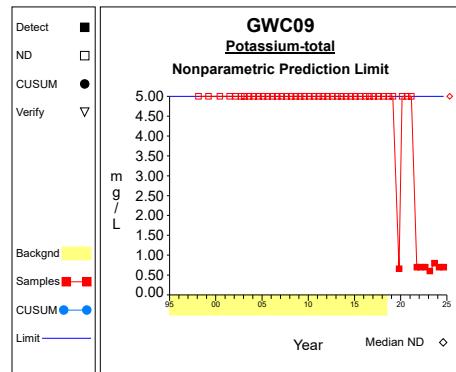
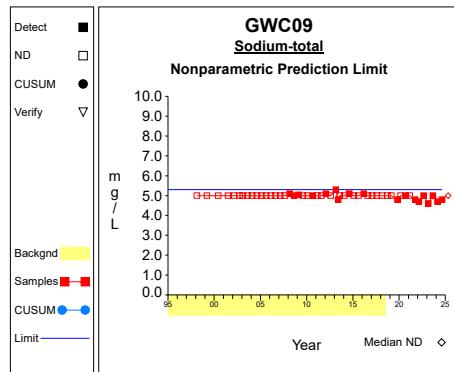
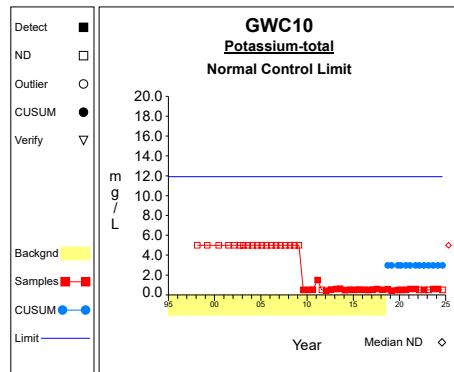
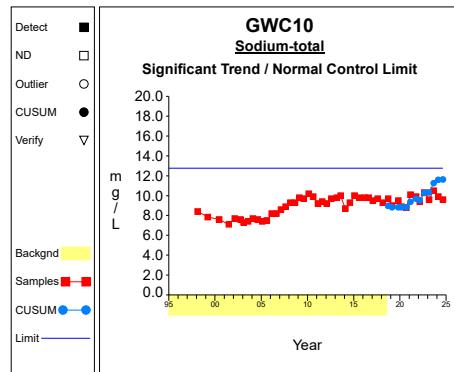
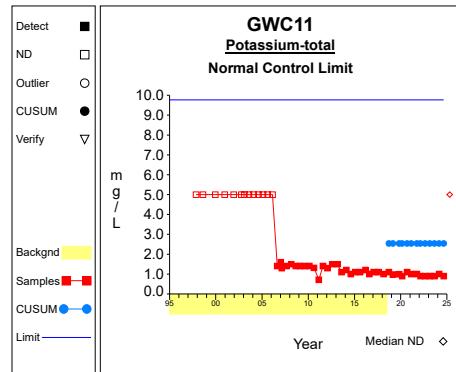
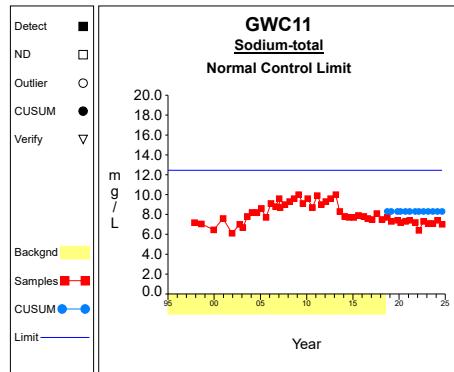
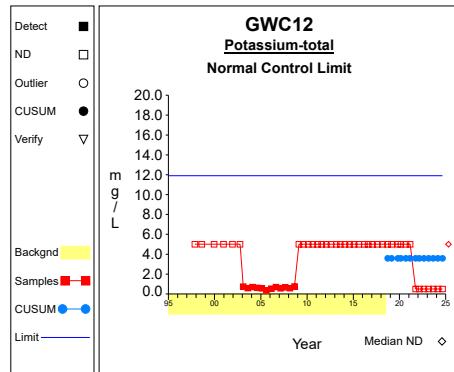
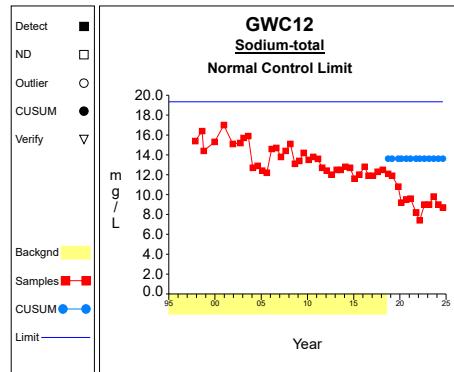
## Intra-Well Control Charts / Prediction Limits

**Graph 1****Graph 2****Graph 3****Graph 4****Graph 5****Graph 6****Graph 7****Graph 8****Graph 9****Graph 10****Graph 11****Graph 12**

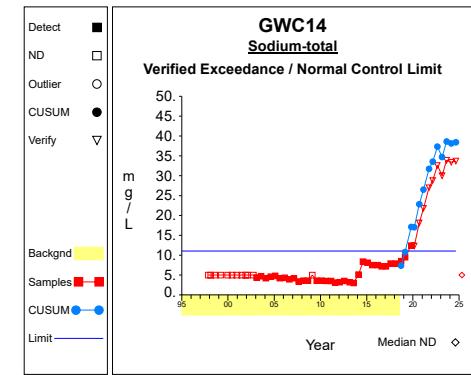
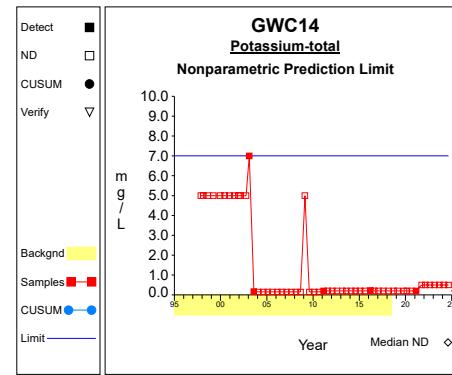
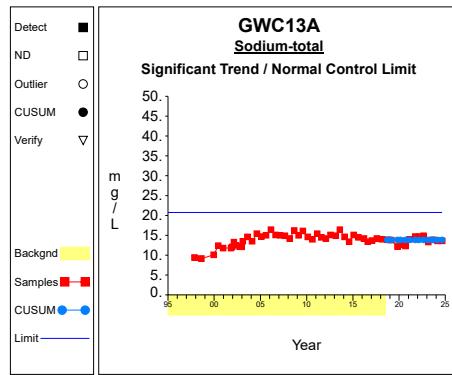
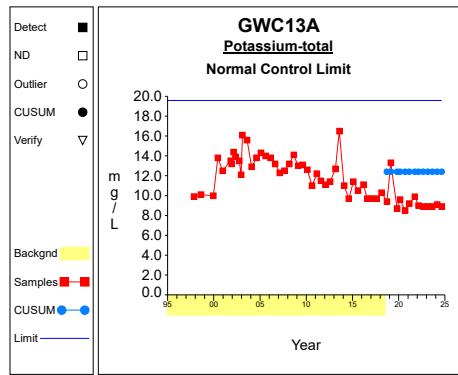
## Intra-Well Control Charts / Prediction Limits

**Graph 13****Graph 14****Graph 15****Graph 16****Graph 17****Graph 18****Graph 19****Graph 20****Graph 21****Graph 22****Graph 23****Graph 24**

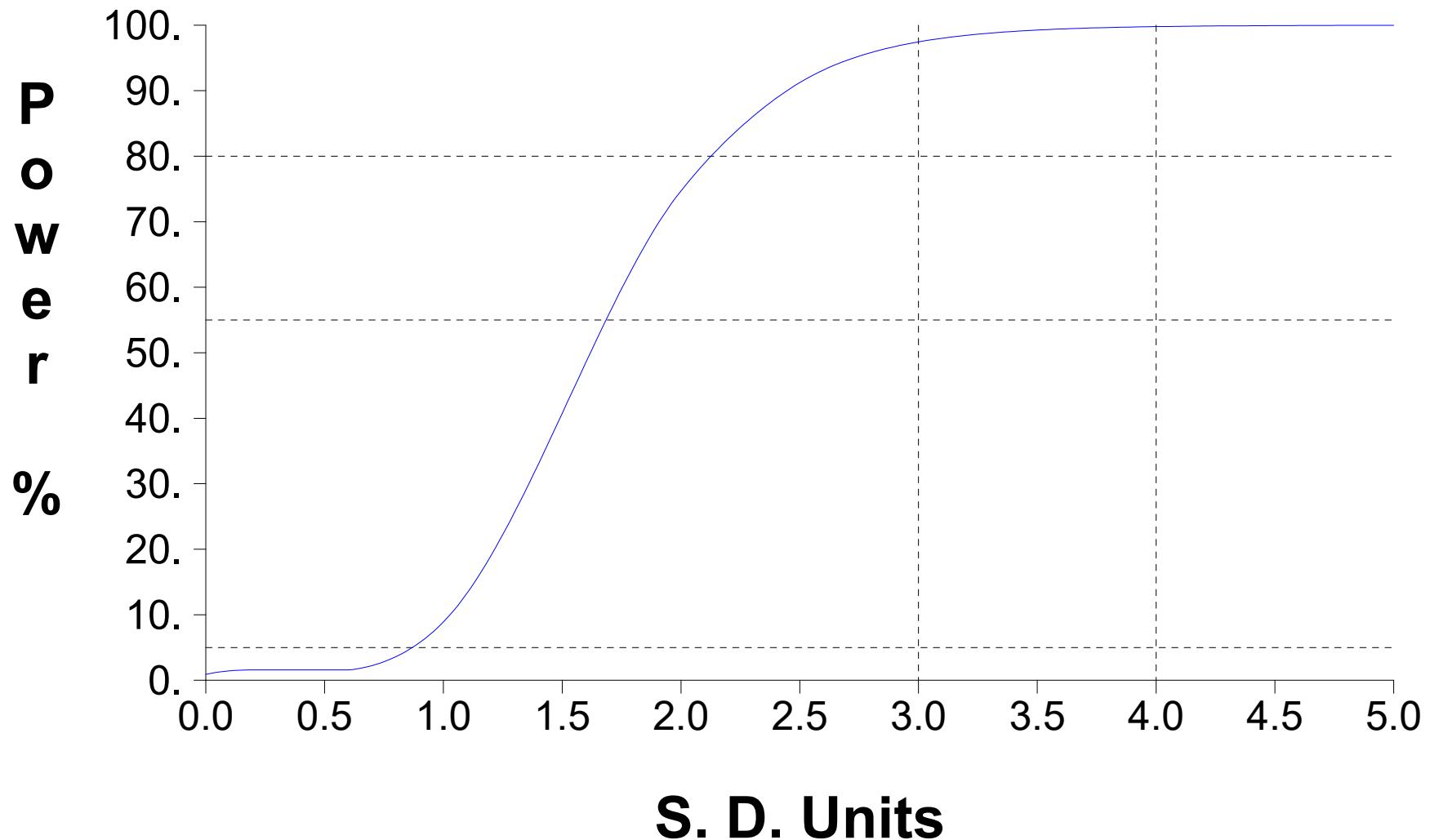
## Intra-Well Control Charts / Prediction Limits

**Graph 25****Graph 26****Graph 27****Graph 28****Graph 29****Graph 30****Graph 31****Graph 32****Graph 33****Graph 34****Graph 35****Graph 36**

## Intra-Well Control Charts / Prediction Limits



# False Positive and False Negative Rates for Current Intra-Well Control Charts Monitoring Program



**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Potassium-total (mg/L) at GWA01A****Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 36.072 / 40 = 0.902	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = ((128.638 - 1301.189/40) / (40-1))^{1/2} = 1.57	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 0.902 + 4.0 * 1.57 = 7.181	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 40 * (40-1) / 2 = 780	Number of sample pairs during trend detection period.
5	$S = -0.002$	Sen's estimator of trend.
6	$\text{var}(S) = 7325.333$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (780 - 2.326 * 7325.333^{1/2}) / 2 = 290.461	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -0.01$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Sodium-total (mg/L) at GWA01A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 157.1 / 40 = 3.928	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = ((689.27 - 24680.41/40) / (40-1))^{1/2} = 1.361	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 3.928 + 4.0 * 1.361 = 9.372	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 40 * (40-1) / 2 = 780	Number of sample pairs during trend detection period.
5	$S = 0.101$	Sen's estimator of trend.
6	$\text{var}(S) = 7311.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (780 - 2.326 * 7311.0^{1/2}) / 2 = 290.558	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = 0.0$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Potassium-total (mg/L) at GWA02A**  
**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = 5.0	Compute nonparametric prediction limit as median reporting limit in background.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Sodium-total (mg/L) at GWA02A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 202.51 / 38$ $= 5.329$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((1085.583 - 41010.3/38) / (38-1))^{1/2}$ $= 0.415$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 5.329 + 4.0 * 0.415$ $= 6.988$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 38 * (38-1) / 2$ $= 703$	Number of sample pairs during trend detection period.
5	$S = 0.017$	Sen's estimator of trend.
6	$\text{var}(S) = 6097.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (703 - 2.326 * 6097.0^{1/2}) / 2$ $= 260.689$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = 0.0$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Potassium-total (mg/L) at GWA03A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = <b>139.8 / 37</b> = <b>3.778</b>	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = $(660.082 - 19544.04/37) / (37-1)^{1/2}$ = <b>1.914</b>	Compute background sd.
3	$SCL = \bar{X} + F * S$ = <b>3.778 + 4.0 * 1.914</b> = <b>11.434</b>	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = <b>37 * (37-1) / 2</b> = <b>666</b>	Number of sample pairs during trend detection period.
5	$S = 0.0$	Sen's estimator of trend.
6	$\text{var}(S) = 3787.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = $(666 - 2.326 * 3787.667^{1/2}) / 2$ = <b>261.424</b>	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -0.274$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Sodium-total (mg/L) at GWA03A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = <b>161.1 / 37</b> = <b>4.354</b>	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = $(738.15 - 25953.21/37) / (37-1)^{1/2}$ = <b>1.01</b>	Compute background sd.
3	$SCL = \bar{X} + F * S$ = <b>4.354 + 4.0 * 1.01</b> = <b>8.393</b>	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = <b>37 * (37-1) / 2</b> = <b>666</b>	Number of sample pairs during trend detection period.
5	$S = 0.0$	Sen's estimator of trend.
6	$\text{var}(S) = 3769.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = $(666 - 2.326 * 3769.0^{1/2}) / 2$ = <b>261.601</b>	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -0.15$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Potassium-total (mg/L) at GWB01**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 155.146 / 37$ $= 4.193$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((1139.437 - 24070.281/37) / (37-1))^{1/2}$ $= 3.685$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 4.193 + 4.0 * 3.685$ $= 18.934$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 37 * (37-1) / 2$ $= 666$	Number of sample pairs during trend detection period.
5	$S = 0.0$	Sen's estimator of trend.
6	$\text{var}(S) = 3786.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (666 - 2.326 * 3786.667^{1/2}) / 2$ $= 261.434$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = 0.0$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Sodium-total (mg/L) at GWB01**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 202.18 / 37 = 5.464	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = ((1144.176 - 40876.752/37) / (37-1))^{1/2} = 1.046	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 5.464 + 4.0 * 1.046 = 9.649	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 37 * (37-1) / 2 = 666	Number of sample pairs during trend detection period.
5	$S = 0.0$	Sen's estimator of trend.
6	$\text{var}(S) = 5239.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (666 - 2.326 * 5239.667^{1/2}) / 2 = 248.816	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = 0.0$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Potassium-total (mg/L) at GWB02**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 125.62 / 37$ $= 3.395$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((566.408 - 15780.384/37) / (37-1))^{1/2}$ $= 1.971$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 3.395 + 4.0 * 1.971$ $= 11.281$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 37 * (37-1) / 2$ $= 666$	Number of sample pairs during trend detection period.
5	$S = -0.2$	Sen's estimator of trend.
6	$\text{var}(S) = 4576.333$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (666 - 2.326 * 4576.333^{1/2}) / 2$ $= 254.325$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = -0.309$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Sodium-total (mg/L) at GWB02**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 191.84 / 38$ $= 5.048$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((969.662 - 36802.586/38) / (38-1))^{1/2}$ $= 0.178$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 5.048 + 4.0 * 0.178$ $= 5.76$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 38 * (38-1) / 2$ $= 703$	Number of sample pairs during trend detection period.
5	$S = 0.0$	Sen's estimator of trend.
6	$\text{var}(S) = 5363.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (703 - 2.326 * 5363.0^{1/2}) / 2$ $= 266.331$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = 0.0$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Potassium-total (mg/L) at GWC01A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = <b>62.69 / 37</b> = <b>1.694</b>	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = $(171.317 - 3930.036/37) / (37-1)^{1/2}$ = <b>1.345</b>	Compute background sd.
3	$SCL = \bar{X} + F * S$ = <b>1.694 + 4.0 * 1.345</b> = <b>7.073</b>	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = <b>37 * (37-1) / 2</b> = <b>666</b>	Number of sample pairs during trend detection period.
5	$S = -0.028$	Sen's estimator of trend.
6	$\text{var}(S) = 5613.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = $(666 - 2.326 * 5613.667^{1/2}) / 2$ = <b>245.863</b>	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -0.054$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Sodium-total (mg/L) at GWC01A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 258.91 / 37$ $= 6.998$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((1831.908 - 67034.388/37) / (37-1))^{1/2}$ $= 0.748$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 6.998 + 4.0 * 0.748$ $= 9.991$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 37 * (37-1) / 2$ $= 666$	Number of sample pairs during trend detection period.
5	$S = -0.008$	Sen's estimator of trend.
6	$\text{var}(S) = 5811.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (666 - 2.326 * 5811.0^{1/2}) / 2$ $= 244.345$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = -0.067$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Potassium-total (mg/L) at GWC01B**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 97.273 / 42$ $= 2.316$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((411.631 - 9462.037/42) / (42-1))^{1/2}$ $= 2.132$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 2.316 + 4.0 * 2.132$ $= 10.844$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 42 * (42-1) / 2$ $= 861$	Number of sample pairs during trend detection period.
5	$S = -0.1$	Sen's estimator of trend.
6	$\text{var}(S) = 8014.333$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (861 - 2.326 * 8014.333^{1/2}) / 2$ $= 326.385$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = -0.308$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Sodium-total (mg/L) at GWC01B**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 527.1 / 42 = 12.55	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = ((6709.49 - 277834.41/42) / (42-1))^{1/2} = 1.517	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 12.55 + 4.0 * 1.517 = 18.619	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 42 * (42-1) / 2 = 861	Number of sample pairs during trend detection period.
5	$S = 0.221$	Sen's estimator of trend.
6	$\text{var}(S) = 8483.333$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (861 - 2.326 * 8483.333^{1/2}) / 2 = 323.382	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = 0.15$	One-sided lower confidence limit for slope.
9	$LCL(S) > 0$	<b>Significant increasing trend.</b>

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Potassium-total (mg/L) at GWC02A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 143.175 / 37$ $= 3.87$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((686.606 - 20499.081/37) / (37-1))^{1/2}$ $= 1.919$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 3.87 + 4.0 * 1.919$ $= 11.546$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 37 * (37-1) / 2$ $= 666$	Number of sample pairs during trend detection period.
5	$S = 0.0$	Sen's estimator of trend.
6	$\text{var}(S) = 3544.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (666 - 2.326 * 3544.0^{1/2}) / 2$ $= 263.765$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = -0.243$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Sodium-total (mg/L) at GWC02A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 196.56 / 38$ $= 5.173$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((1020.574 - 38635.834/38) / (38-1))^{1/2}$ $= 0.322$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 5.173 + 4.0 * 0.322$ $= 6.461$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 38 * (38-1) / 2$ $= 703$	Number of sample pairs during trend detection period.
5	$S = 0.0$	Sen's estimator of trend.
6	$\text{var}(S) = 5499.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (703 - 2.326 * 5499.667^{1/2}) / 2$ $= 265.252$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = 0.0$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Potassium-total (mg/L) at GWC03A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 93.898 / 44$ $= 2.134$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((386.845 - 8816.834/44) / (44-1))^{1/2}$ $= 2.082$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 2.134 + 4.0 * 2.082$ $= 10.464$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 44 * (44-1) / 2$ $= 946$	Number of sample pairs during trend detection period.
5	$S = 0.0$	Sen's estimator of trend.
6	$\text{var}(S) = 9495.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (946 - 2.326 * 9495.0^{1/2}) / 2$ $= 359.675$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -0.014$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Sodium-total (mg/L) at GWC03A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 409.6 / 44$ $= 9.309$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((3878.486 - 167772.16/44) / (44-1))^{1/2}$ $= 1.234$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 9.309 + 4.0 * 1.234$ $= 14.245$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 44 * (44-1) / 2$ $= 946$	Number of sample pairs during trend detection period.
5	$S = -0.081$	Sen's estimator of trend.
6	$\text{var}(S) = 9751.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (946 - 2.326 * 9751.667^{1/2}) / 2$ $= 358.153$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = -0.154$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Potassium-total (mg/L) at GWC04A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 82.204 / 38 = 2.163	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = (287.925 - 6757.498/38) / (38-1) = 1.725	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 2.163 + 4.0 * 1.725 = 9.063	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 38 * (38-1) / 2 = 703	Number of sample pairs during trend detection period.
5	$S = -0.131$	Sen's estimator of trend.
6	$\text{var}(S) = 6231.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (703 - 2.326 * 6231.0 <sup>1/2</sup> ) / 2 = 259.697	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{th}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -0.271$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Sodium-total (mg/L) at GWC04A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = <b>250.5 / 38</b> = <b>6.592</b>	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = $(2019.85 - 62750.25/38) / (38-1)^{1/2}$ = <b>3.156</b>	Compute background sd.
3	$SCL = \bar{X} + F * S$ = <b>6.592 + 4.0 * 3.156</b> = <b>19.216</b>	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = <b>38 * (38-1) / 2</b> = <b>703</b>	Number of sample pairs during trend detection period.
5	$S = 0.174$	Sen's estimator of trend.
6	$\text{var}(S) = 6229.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = $(703 - 2.326 * 6229.0^{1/2}) / 2$ = <b>259.711</b>	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = 0.092$	One-sided lower confidence limit for slope.
9	$LCL(S) > 0$	<b>Significant increasing trend.</b>

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Potassium-total (mg/L) at GWC05A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 77.04 / 43 = 1.792	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = ((257.038 - 5935.162/43) / (43-1))^{1/2} = 1.683	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 1.792 + 4.0 * 1.683 = 8.525	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 43 * (43-1) / 2 = 903	Number of sample pairs during trend detection period.
5	$S = -0.061$	Sen's estimator of trend.
6	$\text{var}(S) = 9024.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (903 - 2.326 * 9024.667^{1/2}) / 2 = 341.017	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -0.14$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Sodium-total (mg/L) at GWC05A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 326.38 / 43$ $= 7.59$	Compute background mean.
2	$S = ( (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1) )^{1/2}$ $= ( (2535.595 - 106523.904/43) / (43-1) )^{1/2}$ $= 1.178$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 7.59 + 4.0 * 1.178$ $= 12.303$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 43 * (43-1) / 2$ $= 903$	Number of sample pairs during trend detection period.
5	$S = -0.159$	Sen's estimator of trend.
6	$\text{var}(S) = 9100.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (903 - 2.326 * 9100.0^{1/2}) / 2$ $= 340.557$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = -0.207$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Potassium-total (mg/L) at GWC06**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 166.36 / 37 = 4.496	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = ((772.306 - 27675.65/37) / (37-1))^{1/2} = 0.822	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 4.496 + 4.0 * 0.822 = 7.784	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 37 * (37-1) / 2 = 666	Number of sample pairs during trend detection period.
5	$S = 0.0$	Sen's estimator of trend.
6	$\text{var}(S) = 4582.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (666 - 2.326 * 4582.667^{1/2}) / 2 = 254.27	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = 0.0$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Sodium-total (mg/L) at GWC06**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 484.8 / 37$ $= 13.103$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((6456.24 - 235031.04/37) / (37-1))^{1/2}$ $= 1.7$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 13.103 + 4.0 * 1.7$ $= 19.903$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 37 * (37-1) / 2$ $= 666$	Number of sample pairs during trend detection period.
5	$S = -0.247$	Sen's estimator of trend.
6	$\text{var}(S) = 5839.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (666 - 2.326 * 5839.0^{1/2}) / 2$ $= 244.131$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = -0.35$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Potassium-total (mg/L) at GWC07**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 147.49 / 38$ $= 3.881$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((588.049 - 21753.3/38) / (38-1))^{1/2}$ $= 0.649$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 3.881 + 4.0 * 0.649$ $= 6.478$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 38 * (38-1) / 2$ $= 703$	Number of sample pairs during trend detection period.
5	$S = -0.014$	Sen's estimator of trend.
6	$\text{var}(S) = 6236.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (703 - 2.326 * 6236.667^{1/2}) / 2$ $= 259.655$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = -0.08$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Sodium-total (mg/L) at GWC07**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 456.9 / 38$ $= 12.024$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((5534.83 - 208757.61/38) / (38-1))^{1/2}$ $= 1.055$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 12.024 + 4.0 * 1.055$ $= 16.245$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 38 * (38-1) / 2$ $= 703$	Number of sample pairs during trend detection period.
5	$S = 0.16$	Sen's estimator of trend.
6	$\text{var}(S) = 6294.333$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (703 - 2.326 * 6294.333^{1/2}) / 2$ $= 259.231$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = 0.106$	One-sided lower confidence limit for slope.
9	$\text{LCL}(S) > 0$	Significant increasing trend.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Potassium-total (mg/L) at GWC08**  
**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ $= 5.0$	Compute nonparametric prediction limit as median reporting limit in background.
2	$\text{Conf} = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Sodium-total (mg/L) at GWC08****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \max(X)$ = <b>5.86</b>	Compute nonparametric prediction limit as largest background measurement.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Potassium-total (mg/L) at GWC09****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \text{median}(X)$ = <b>5.0</b>	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits****Sodium-total (mg/L) at GWC09****Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \max(X)$ = <b>5.3</b>	Compute nonparametric prediction limit as largest background measurement.
2	Conf = <b>0.99</b>	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Potassium-total (mg/L) at GWC10**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 110.003 / 37$ $= 2.973$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((506.803 - 12100.66/37) / (37-1))^{1/2}$ $= 2.235$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 2.973 + 4.0 * 2.235$ $= 11.911$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 37 * (37-1) / 2$ $= 666$	Number of sample pairs during trend detection period.
5	$S = -0.256$	Sen's estimator of trend.
6	$\text{var}(S) = 4894.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (666 - 2.326 * 4894.0^{1/2}) / 2$ $= 251.64$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = -0.365$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Sodium-total (mg/L) at GWC10**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 326.44 / 37 = 8.823	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = ((2915.038 - 106563.074/37) / (37-1))^{1/2} = 0.985	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 8.823 + 4.0 * 0.985 = 12.764	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 37 * (37-1) / 2 = 666	Number of sample pairs during trend detection period.
5	$S = 0.145$	Sen's estimator of trend.
6	$\text{var}(S) = 5816.333$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (666 - 2.326 * 5816.333^{1/2}) / 2 = 244.304	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = 0.092$	One-sided lower confidence limit for slope.
9	$LCL(S) > 0$	<b>Significant increasing trend.</b>

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Potassium-total (mg/L) at GWC11**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = <b>96.42 / 38</b> = <b>2.537</b>	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = $(365.56 - 9296.816/38) / (38-1)^{1/2}$ = <b>1.808</b>	Compute background sd.
3	$SCL = \bar{X} + F * S$ = <b>2.537 + 4.0 * 1.808</b> = <b>9.768</b>	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = <b>38 * (38-1) / 2</b> = <b>703</b>	Number of sample pairs during trend detection period.
5	$S = -0.153$	Sen's estimator of trend.
6	$\text{var}(S) = 5988.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = $(703 - 2.326 * 5988.0^{1/2}) / 2$ = <b>261.505</b>	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -0.301$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Sodium-total (mg/L) at GWC11**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 315.77 / 38 = 8.31	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = (2663.644 - 99710.693/38) / (38-1) = 1.036	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 8.31 + 4.0 * 1.036 = 12.452	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 38 * (38-1) / 2 = 703	Number of sample pairs during trend detection period.
5	$S = 0.059$	Sen's estimator of trend.
6	$\text{var}(S) = 6303.0$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (703 - 2.326 * 6303.0^{1/2}) / 2 = 259.168	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -0.045$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Potassium-total (mg/L) at GWC12**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 132.32 / 37$ $= 3.576$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((629.593 - 17508.582/37) / (37-1))^{1/2}$ $= 2.084$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 3.576 + 4.0 * 2.084$ $= 11.913$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 37 * (37-1) / 2$ $= 666$	Number of sample pairs during trend detection period.
5	$S = 0.0$	Sen's estimator of trend.
6	$\text{var}(S) = 4009.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (666 - 2.326 * 4009.667^{1/2}) / 2$ $= 259.357$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = 0.0$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Sodium-total (mg/L) at GWC12**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 517.4 / 38$ $= 13.616$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((7120.58 - 267702.76/38) / (38-1))^{1/2}$ $= 1.431$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 13.616 + 4.0 * 1.431$ $= 19.34$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 38 * (38-1) / 2$ $= 703$	Number of sample pairs during trend detection period.
5	$S = -0.2$	Sen's estimator of trend.
6	$\text{var}(S) = 6312.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (703 - 2.326 * 6312.667^{1/2}) / 2$ $= 259.097$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = -0.261$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Potassium-total (mg/L) at GWC13A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ $= 520.9 / 42$ $= 12.402$	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ $= ((6592.648 - 271336.81/42) / (42-1))^{1/2}$ $= 1.796$	Compute background sd.
3	$SCL = \bar{X} + F * S$ $= 12.402 + 4.0 * 1.796$ $= 19.586$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ $= 42 * (42-1) / 2$ $= 861$	Number of sample pairs during trend detection period.
5	$S = -0.196$	Sen's estimator of trend.
6	$\text{var}(S) = 8493.333$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ $= (861 - 2.326 * 8493.333^{1/2}) / 2$ $= 323.319$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$\text{LCL}(S) = -0.274$	One-sided lower confidence limit for slope.

**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Sodium-total (mg/L) at GWC13A**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = 582.7 / 42 = 13.874	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = (8204.944 - 339539.29/42) / (42-1) = 1.716	Compute background sd.
3	$SCL = \bar{X} + F * S$ = 13.874 + 4.0 * 1.716 = 20.736	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = 42 * (42-1) / 2 = 861	Number of sample pairs during trend detection period.
5	$S = 0.147$	Sen's estimator of trend.
6	$\text{var}(S) = 8485.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = (861 - 2.326 * 8485.667^{1/2}) / 2 = 323.367	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = 0.034$	One-sided lower confidence limit for slope.
9	$LCL(S) > 0$	Significant increasing trend.

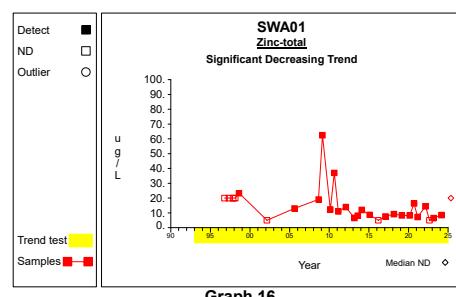
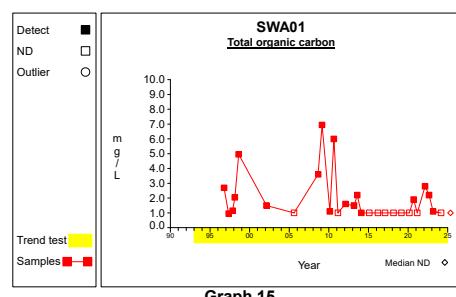
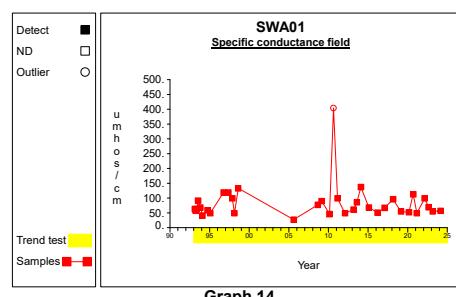
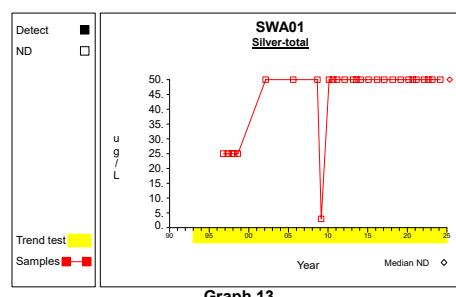
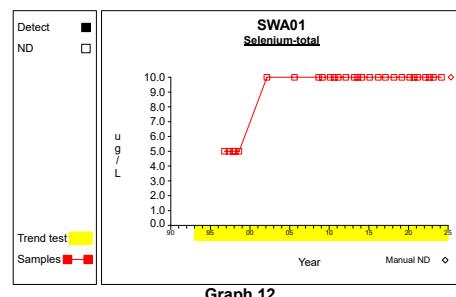
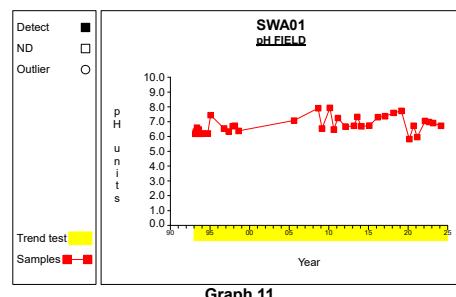
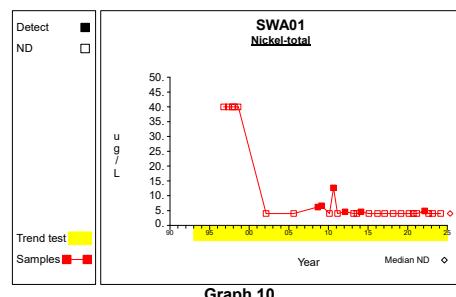
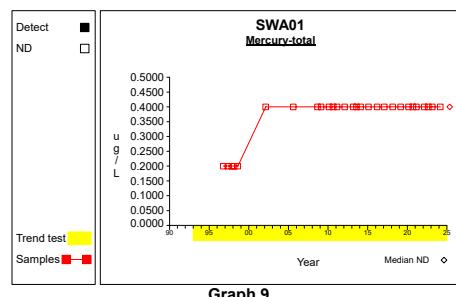
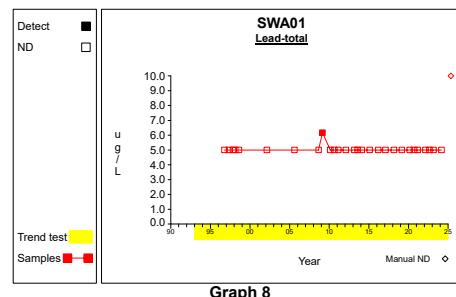
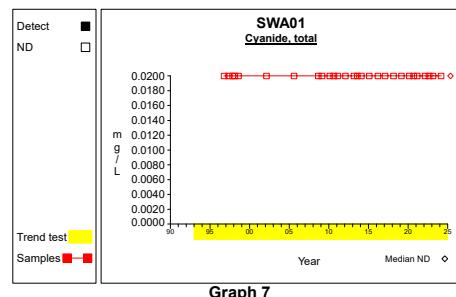
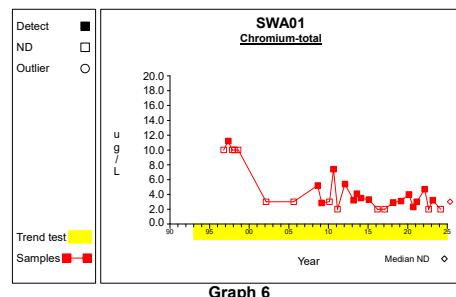
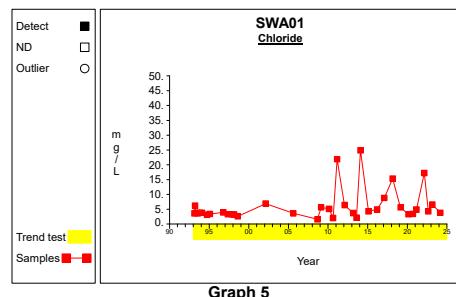
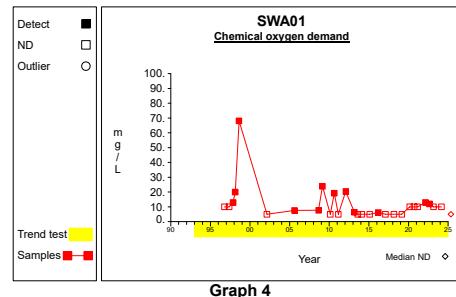
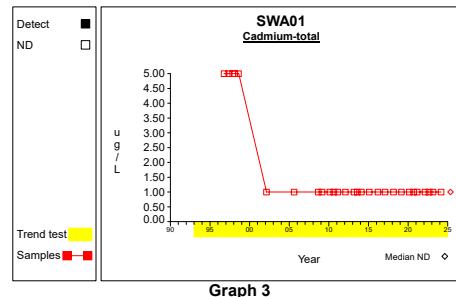
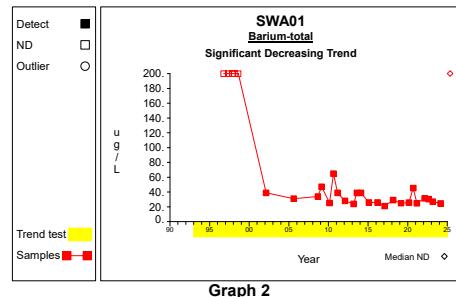
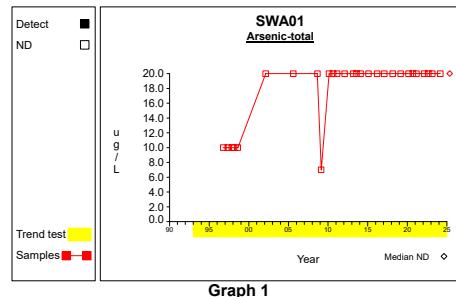
**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Potassium-total (mg/L) at GWC14**  
**Nonparametric Prediction Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$PL = \max(X)$ = 7.0	Compute nonparametric prediction limit as largest background measurement.
2	$Conf = 0.99$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

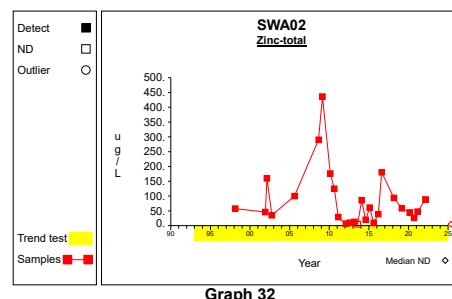
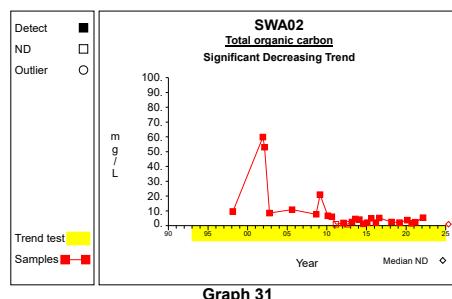
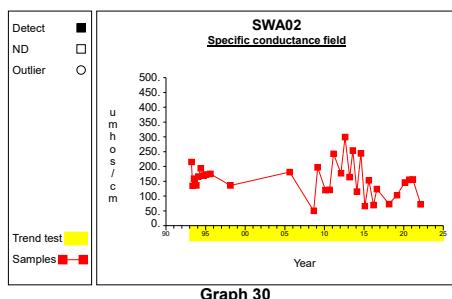
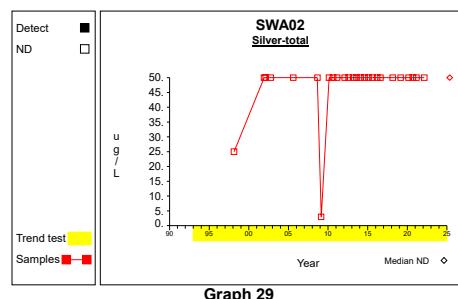
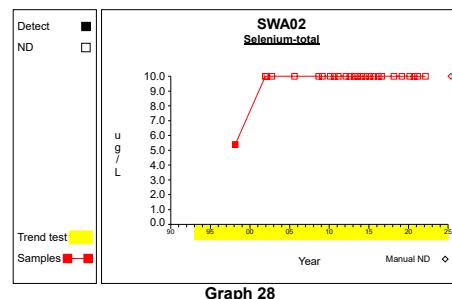
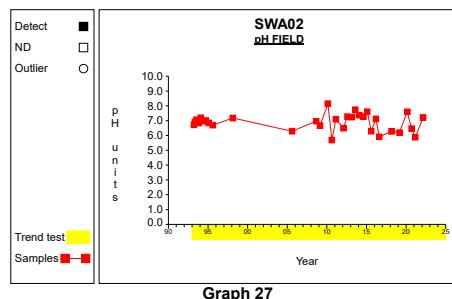
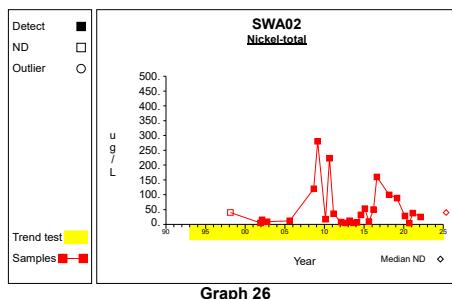
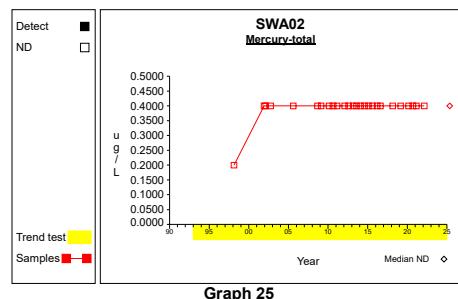
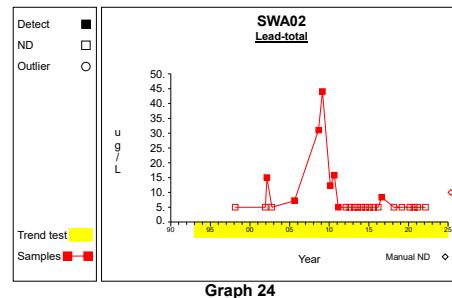
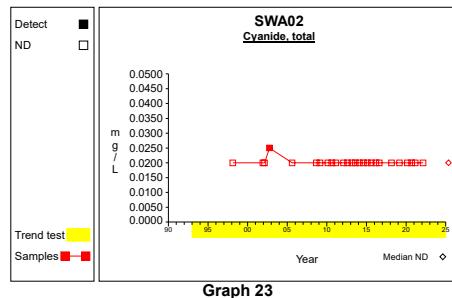
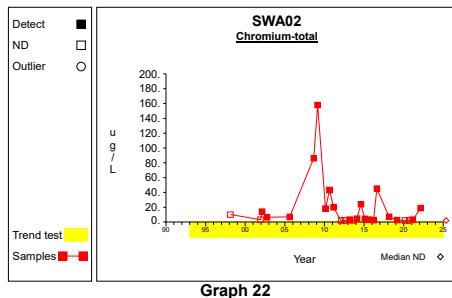
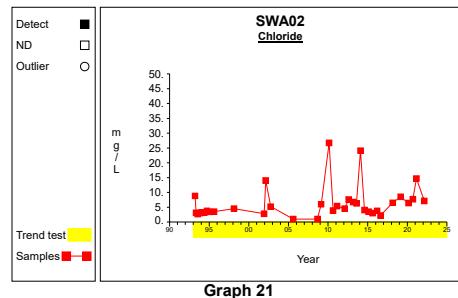
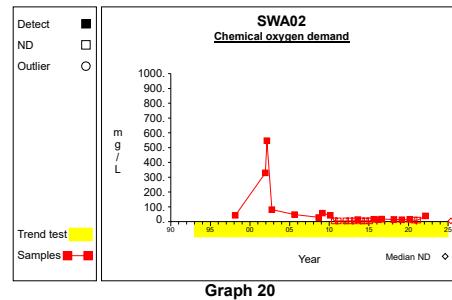
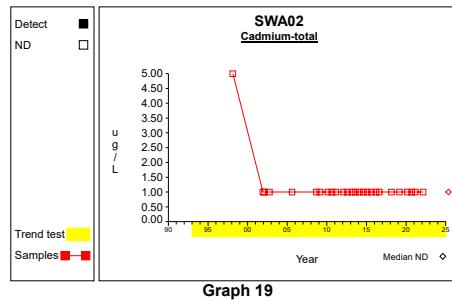
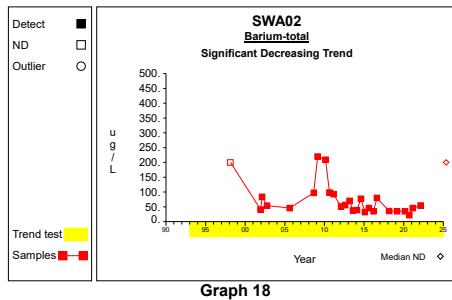
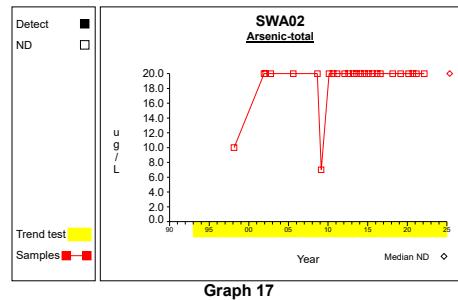
**Worksheet 2 - Intra-Well Control Charts / Prediction Limits**  
**Sodium-total (mg/L) at GWC14**  
**Normal Control Limit**

<u>Step</u>	<u>Equation</u>	<u>Description</u>
1	$\bar{X} = \text{sum}[X] / N$ = <b>206.9 / 42</b> = <b>4.926</b>	Compute background mean.
2	$S = (\text{sum}[X^2] - \text{sum}[X]^2/N) / (N-1)^{1/2}$ = $(1114.69 - 42807.61/42) / (42-1)^{1/2}$ = <b>1.526</b>	Compute background sd.
3	$SCL = \bar{X} + F * S$ = <b>4.926 + 4.0 * 1.526</b> = <b>11.03</b>	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = N * (N-1) / 2$ = <b>42 * (42-1) / 2</b> = <b>861</b>	Number of sample pairs during trend detection period.
5	$S = -0.028$	Sen's estimator of trend.
6	$\text{var}(S) = 8281.667$	Variance estimate for slope.
7	$M_1(S) = (N' - Z_{.99} * \text{var}(S)^{1/2}) / 2$ = $(861 - 2.326 * 8281.667^{1/2}) / 2$ = <b>324.663</b>	Ordinal position for one-sided lower confidence limit for slope. The LCL is the $M_1^{\text{th}}$ largest slope estimate. When $M_1$ is not an integer, interpolation is used.
8	$LCL(S) = -0.123$	One-sided lower confidence limit for slope.

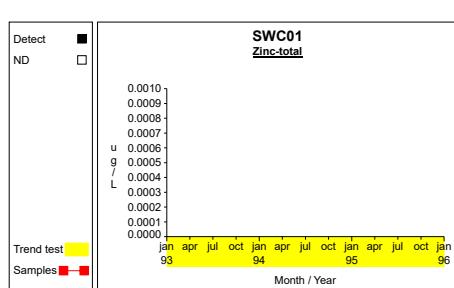
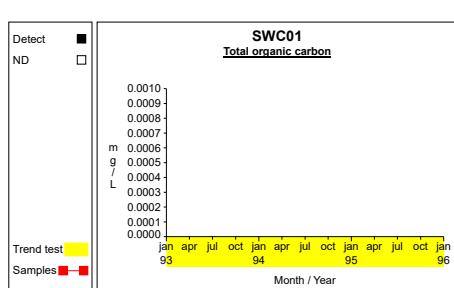
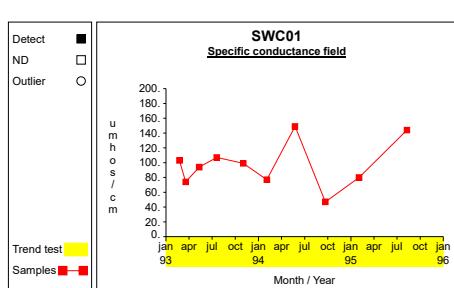
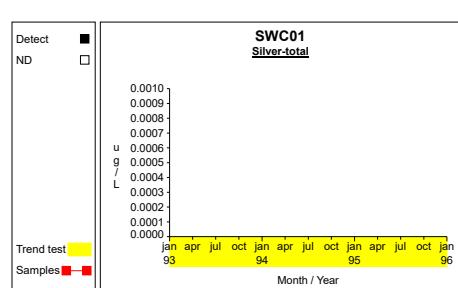
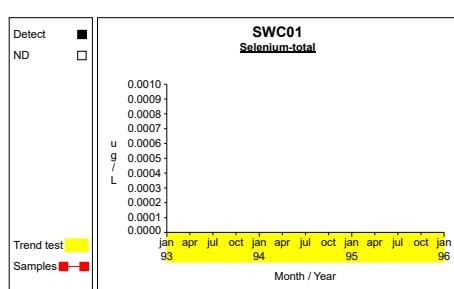
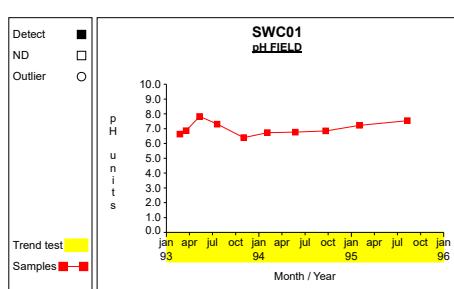
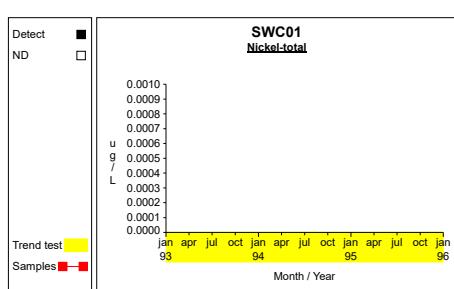
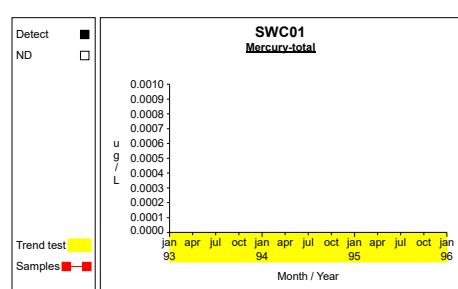
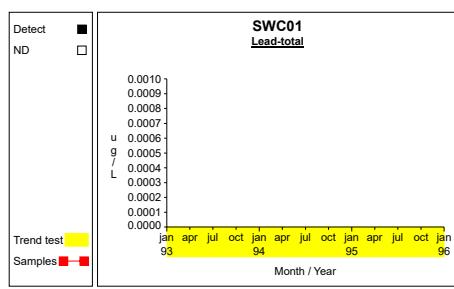
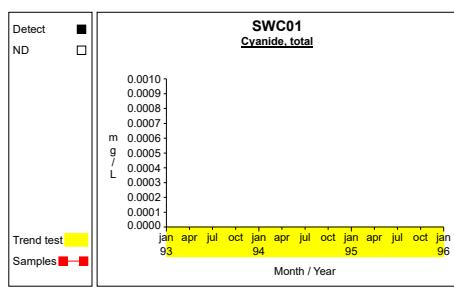
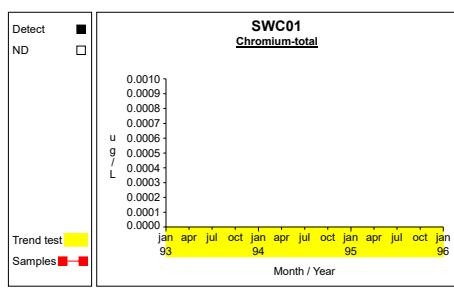
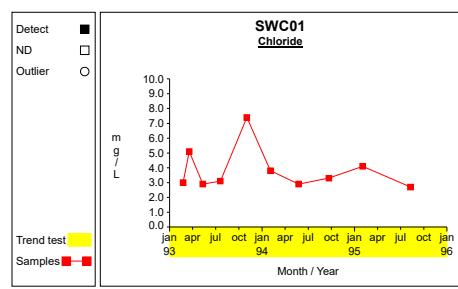
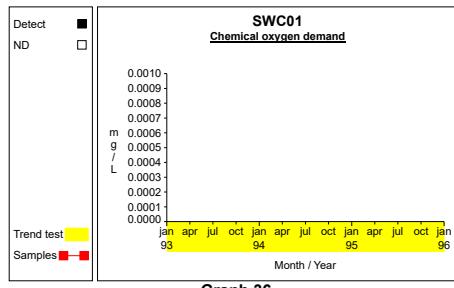
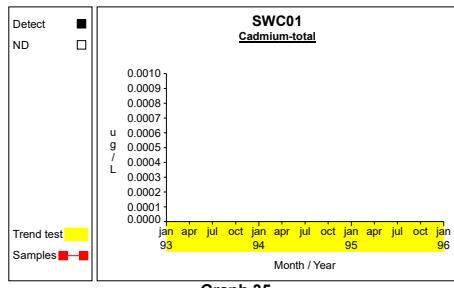
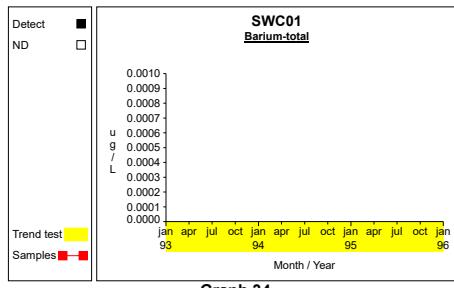
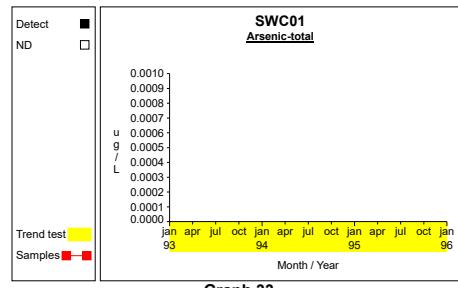
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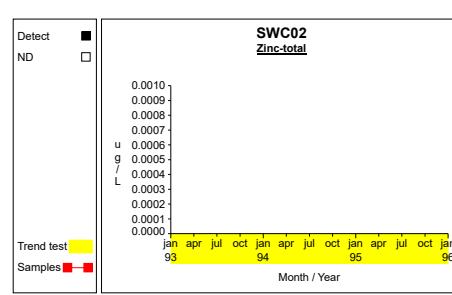
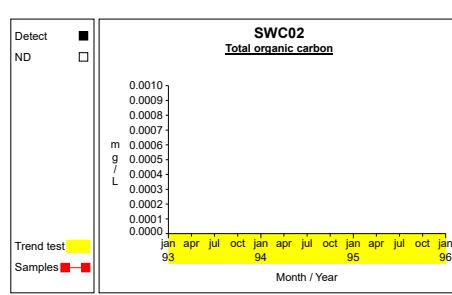
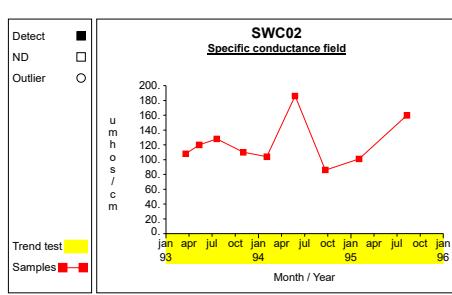
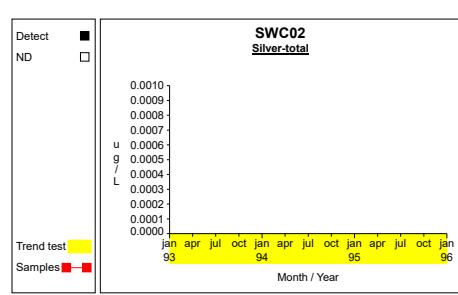
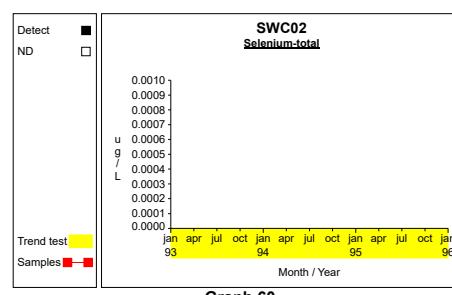
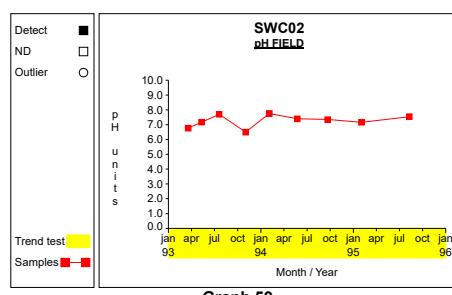
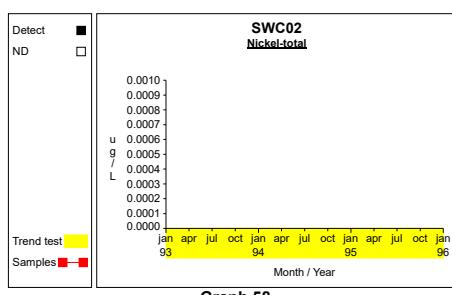
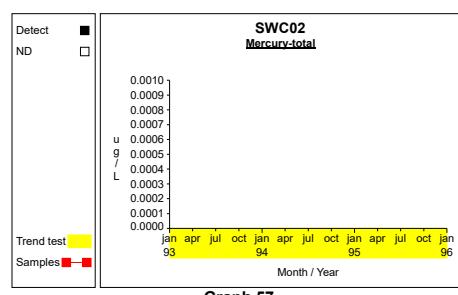
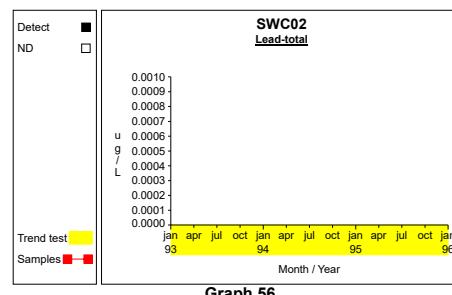
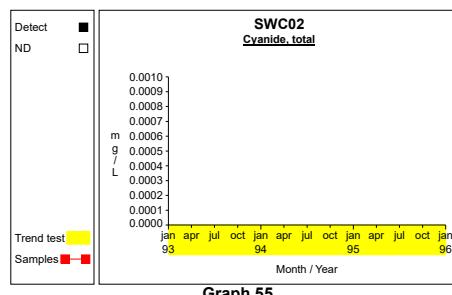
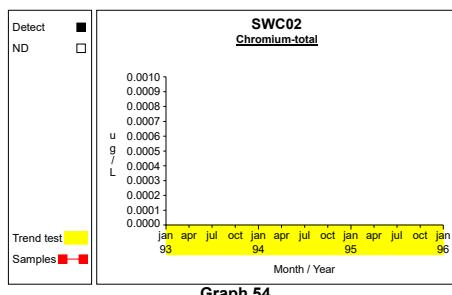
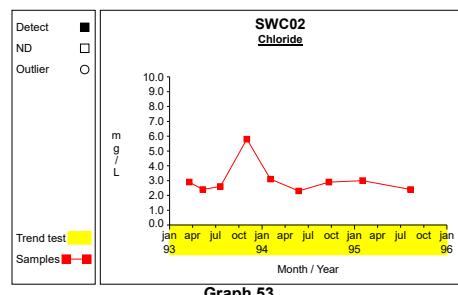
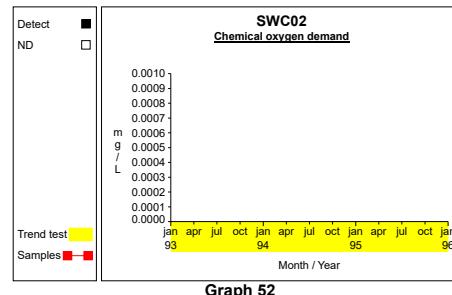
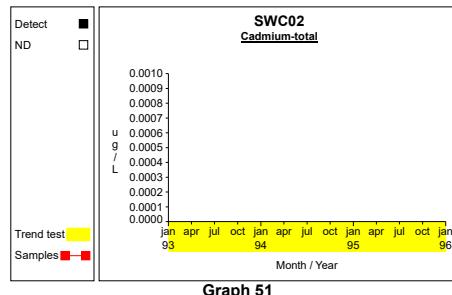
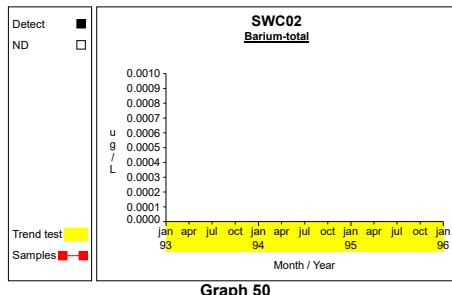
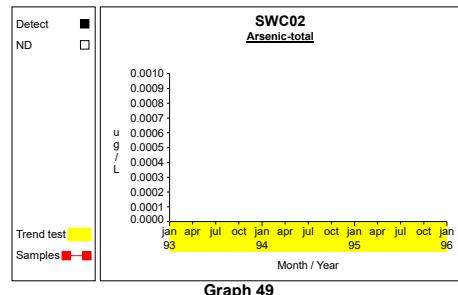
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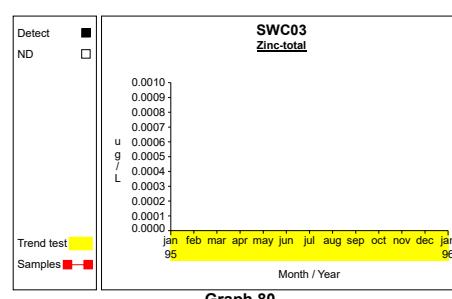
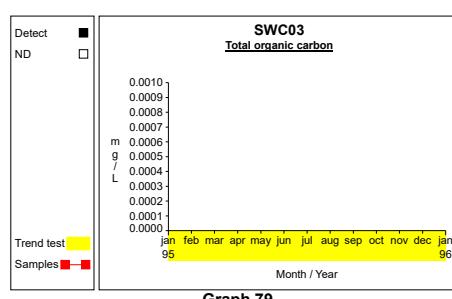
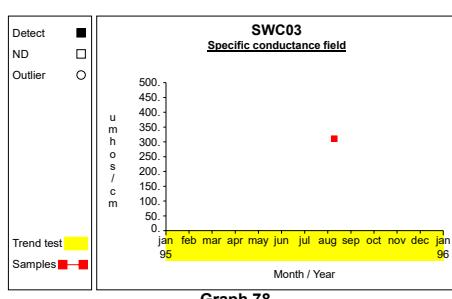
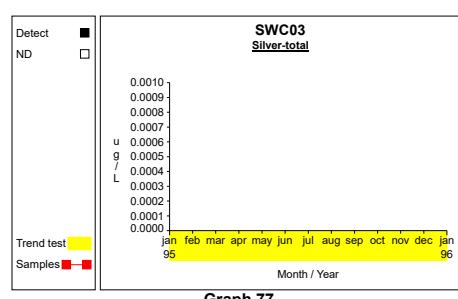
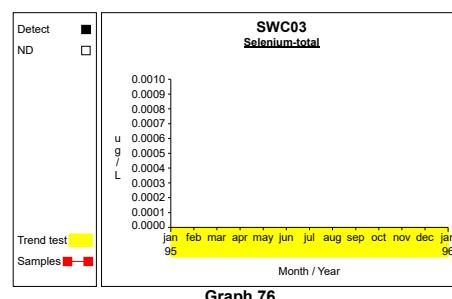
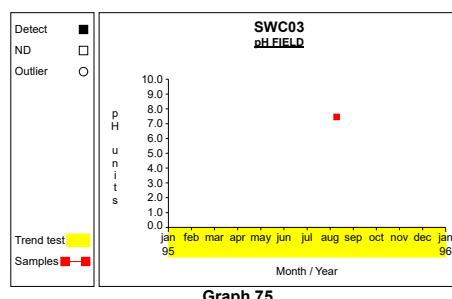
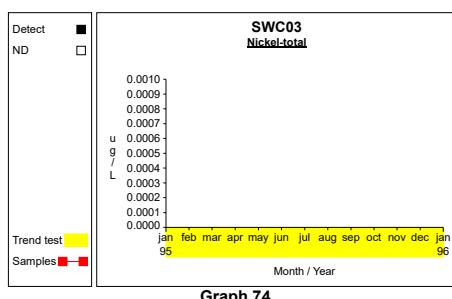
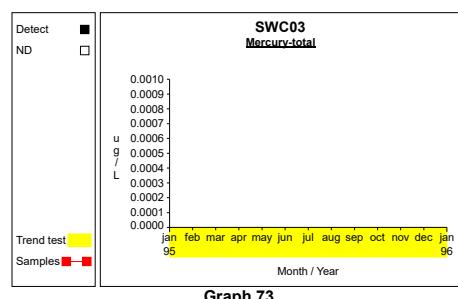
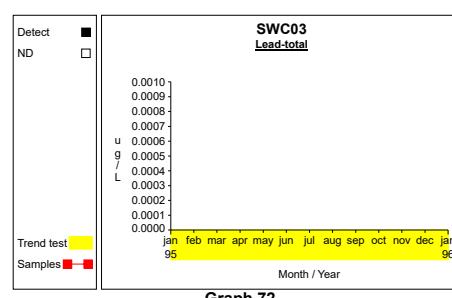
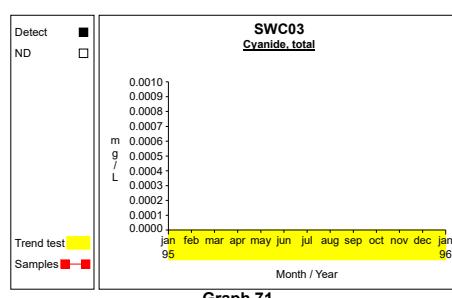
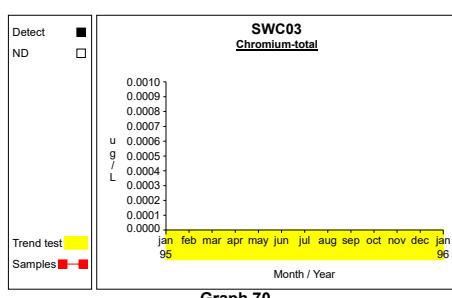
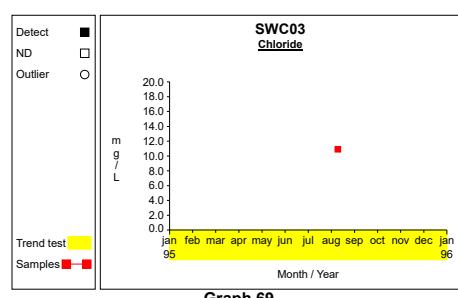
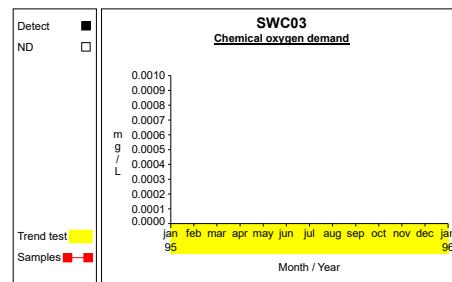
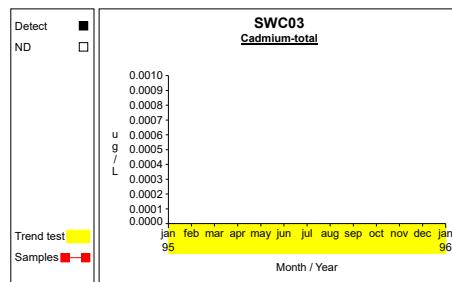
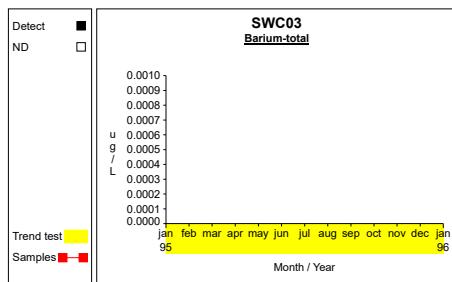
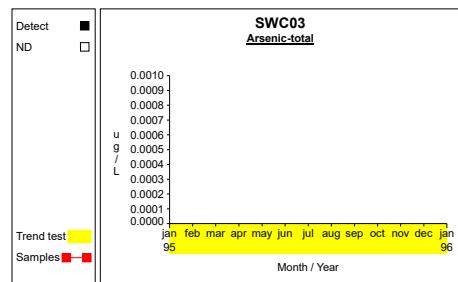
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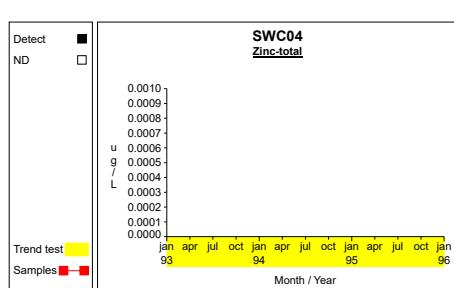
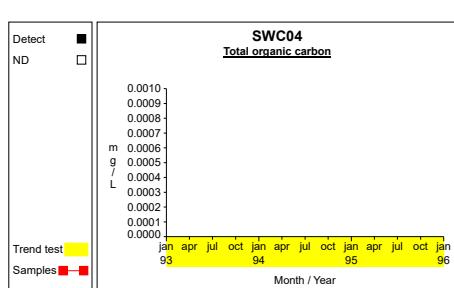
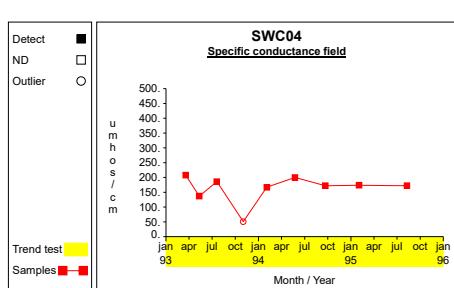
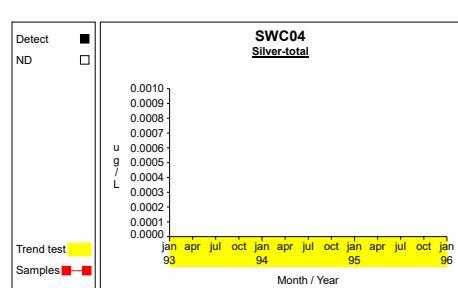
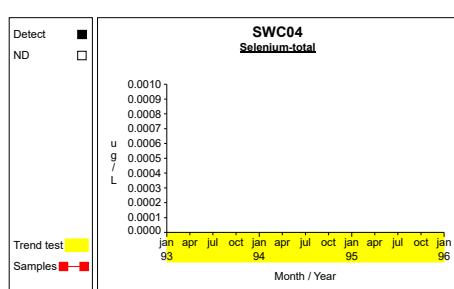
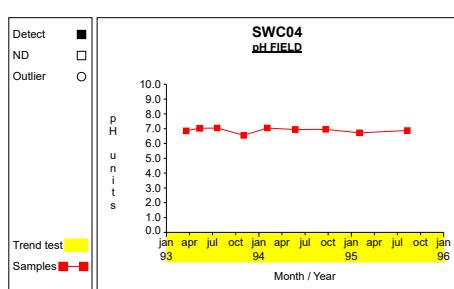
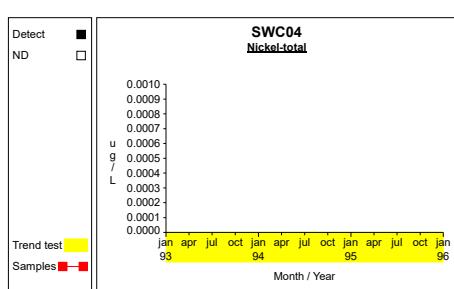
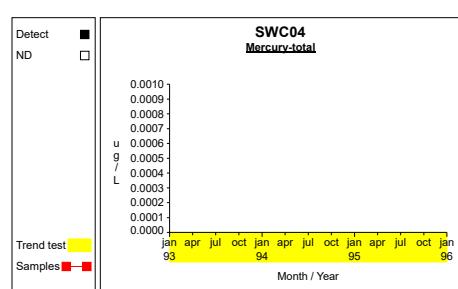
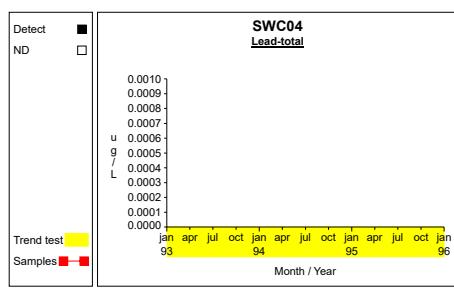
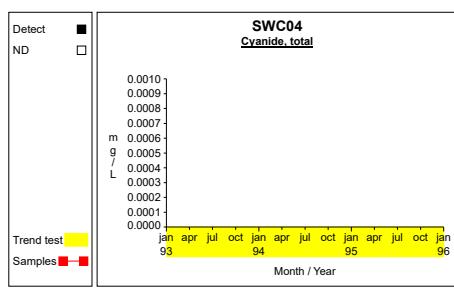
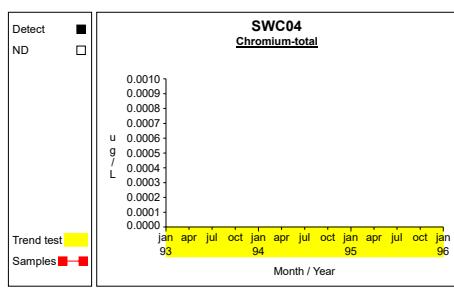
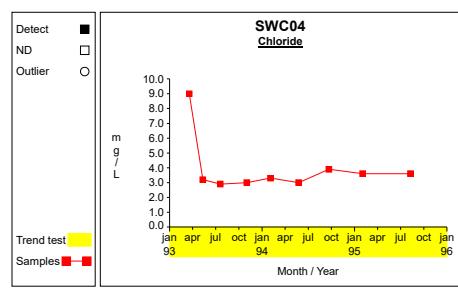
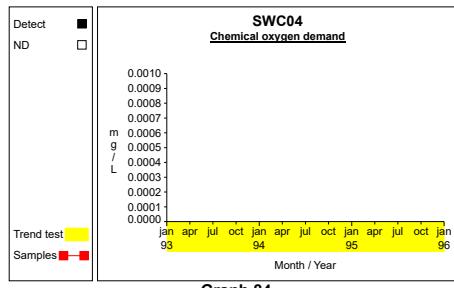
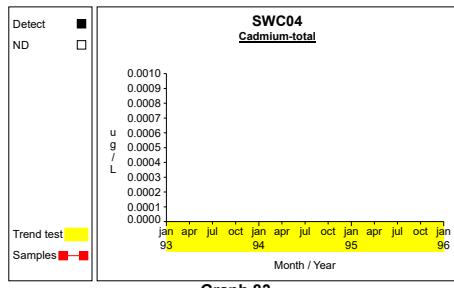
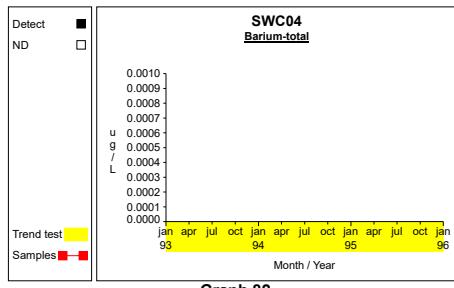
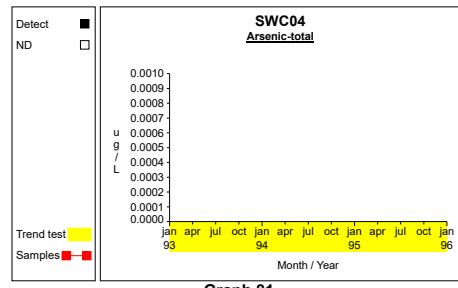
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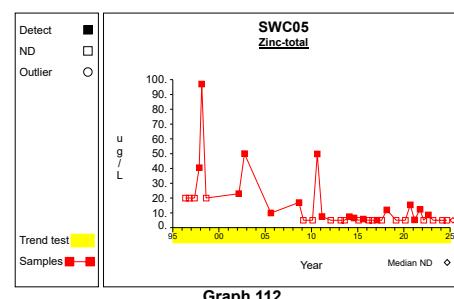
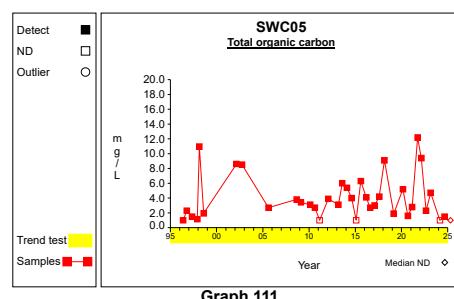
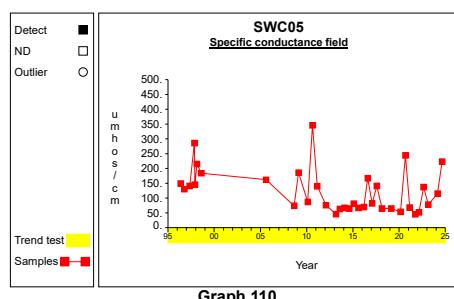
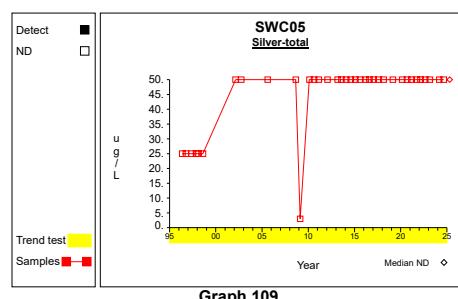
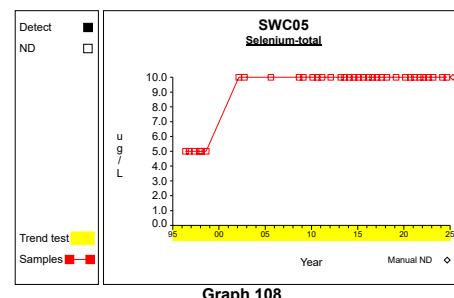
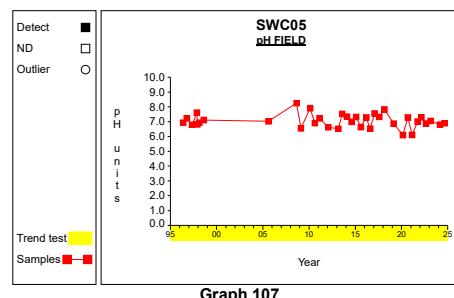
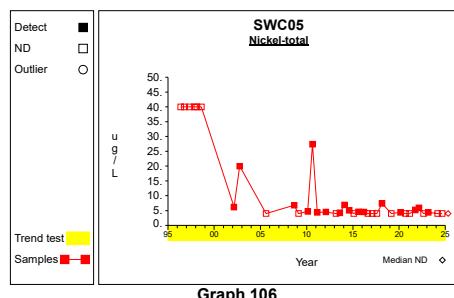
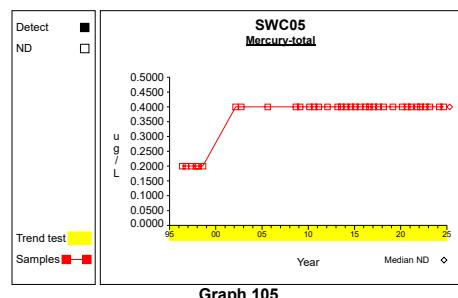
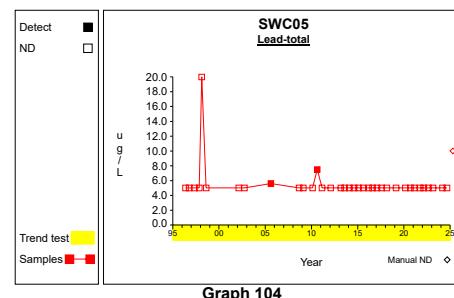
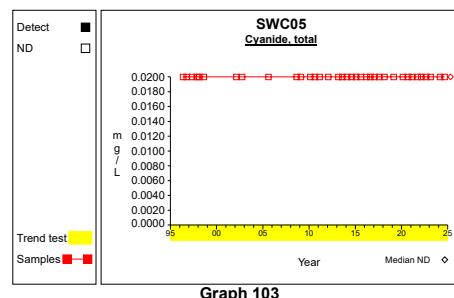
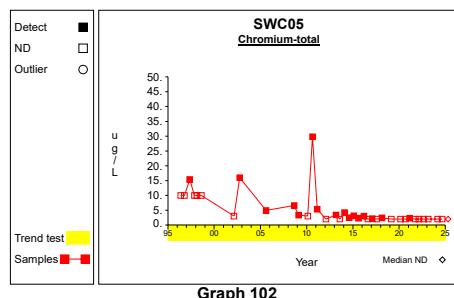
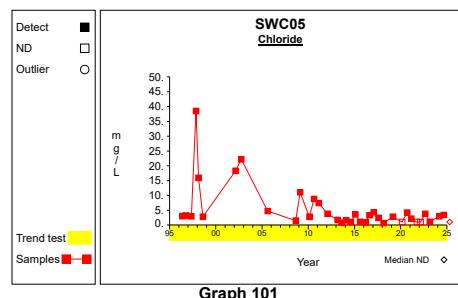
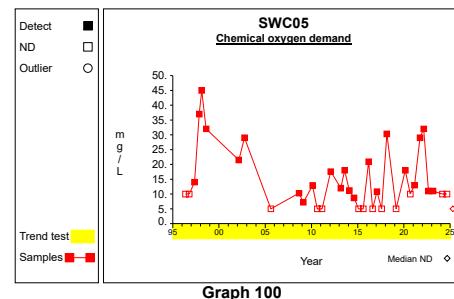
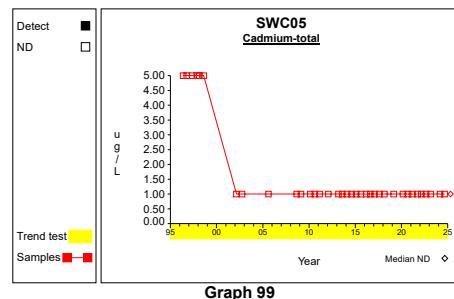
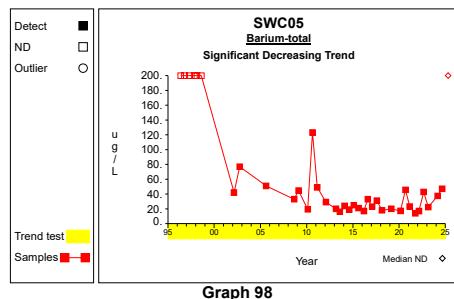
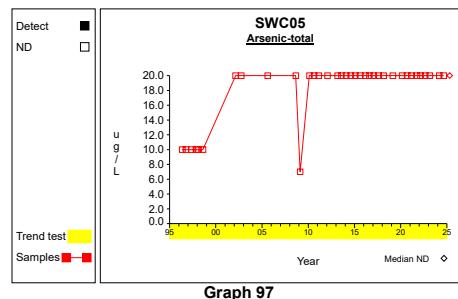
## Time Series



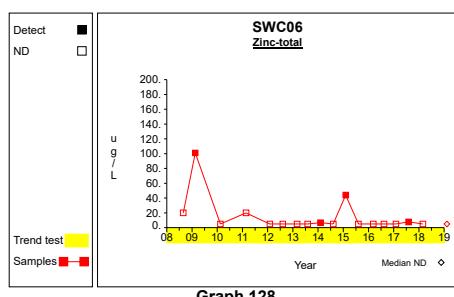
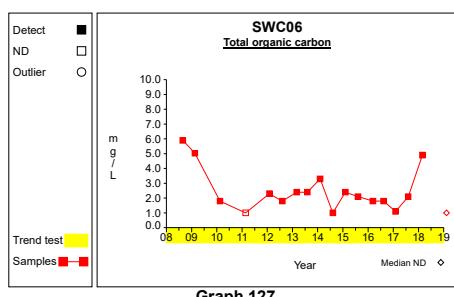
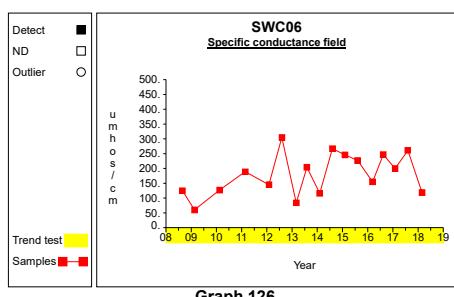
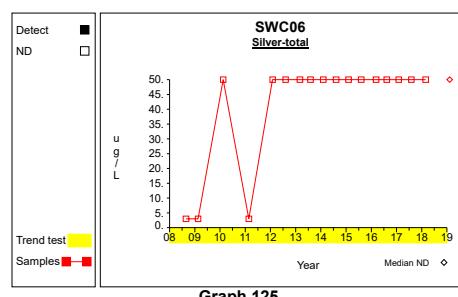
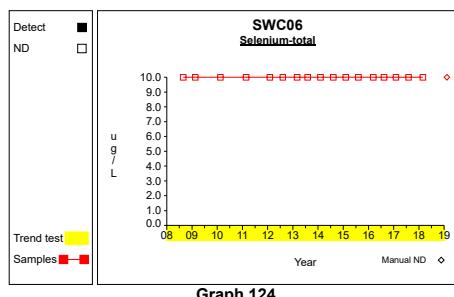
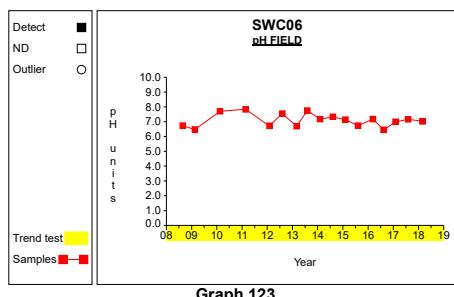
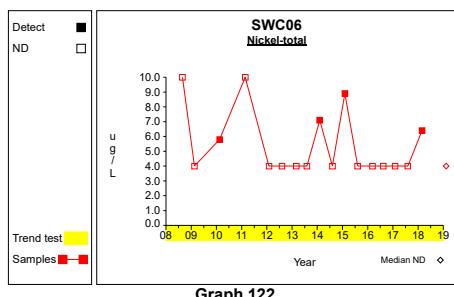
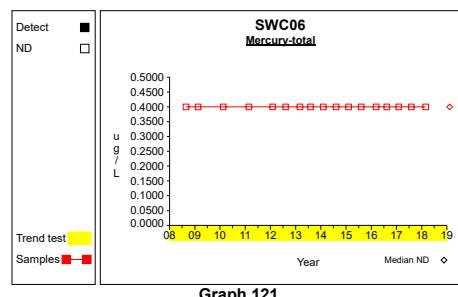
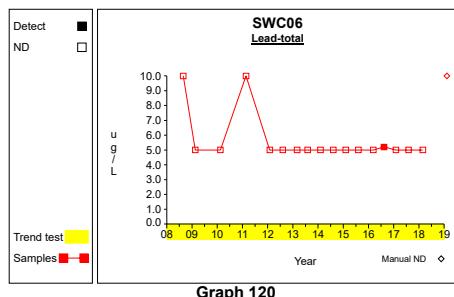
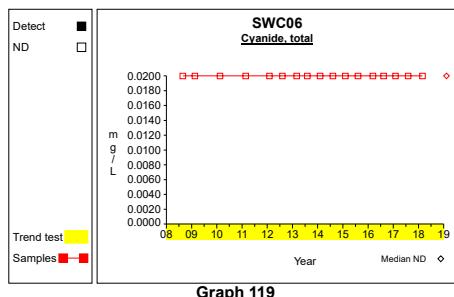
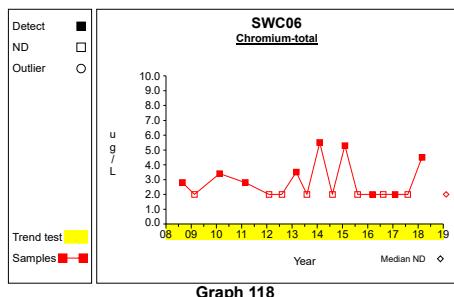
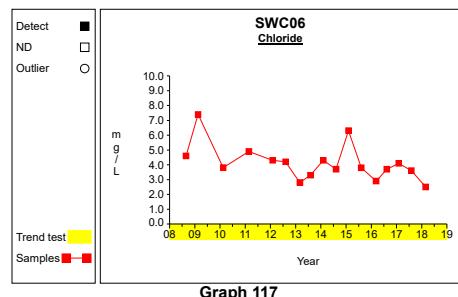
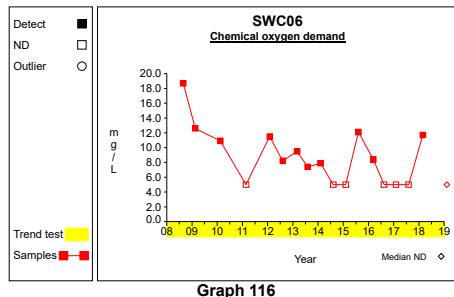
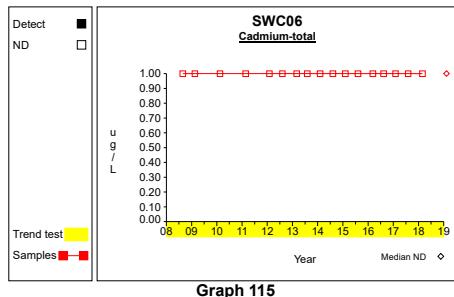
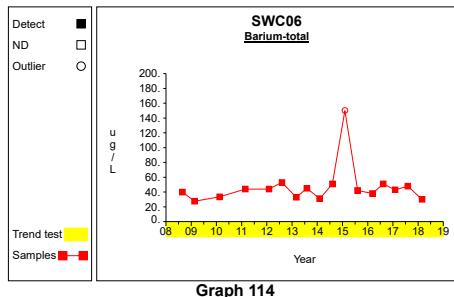
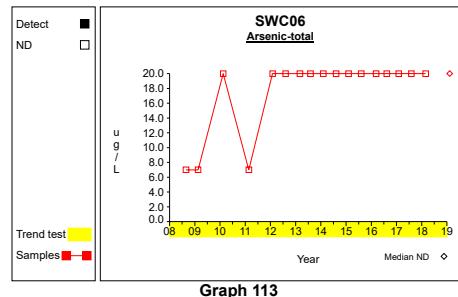
## Time Series



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