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November 25, 2024

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Dear Mr. Hendricks and Ms. Nielsen:

**C-746-U CONTAINED LANDFILL THIRD QUARTER CALENDAR YEAR 2024  
(JULY–SEPTEMBER) COMPLIANCE MONITORING REPORT, PADUCAH  
GASEOUS DIFFUSION PLANT, PADUCAH, KENTUCKY, FRNP-RPT-0350/V3,  
PERMIT NUMBER SW07300014, SW07300015, SW07300045, AGENCY INTEREST ID  
NO. 3059**

The subject report for the third quarter calendar year (CY) 2024 has been uploaded to the Kentucky eForms portal via the Kentucky Online Gateway. Other recipients outside the Solid Waste Branch are receiving this document via email distribution (see distribution list). This report is required in accordance with Permit Condition ACTV0006, Special Condition Number 3, of Solid Waste Landfill Permit Number SW07300014, SW07300015, SW07300045 (Permit). This report includes groundwater analytical data, a validation summary, groundwater flow rate and direction determination, figures depicting well locations, and methane monitoring results.

The statistical analyses on the third quarter CY 2024 monitoring well data collected from the C-746-U Landfill were performed in accordance with Monitoring Condition GSTR0001, Standard Requirement 3, using the U.S. Environmental Protection Agency guidance document, *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Final Guidance* (1989). This report also serves as the statistical exceedance notification for the third quarter CY 2024, in accordance with Monitoring Condition GSTR0001, Standard Requirement 5, of the Permit.

If you have any questions or require additional information, please contact Tom Reed at (859) 397-7003.

Sincerely,

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LADD**

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Enclosure:

*C-746-U Contained Landfill Third Quarter Calendar Year 2024 (July–September) Compliance Monitoring Report, Paducah Gaseous Diffusion Plant, Paducah, Kentucky,*  
FRNP-RPT-0350/V3

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FRNP-RPT-0350/V3

**C-746-U Contained Landfill  
Third Quarter Calendar Year 2024  
(July–September)  
Compliance Monitoring Report,  
Paducah Gaseous Diffusion Plant,  
Paducah, Kentucky**



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**C-746-U Contained Landfill  
Third Quarter Calendar Year 2024  
(July–September)  
Compliance Monitoring Report,  
Paducah Gaseous Diffusion Plant,  
Paducah, Kentucky**

Date Issued—November 2024

U.S. DEPARTMENT OF ENERGY  
Office of Environmental Management

Prepared by  
FOUR RIVERS NUCLEAR PARTNERSHIP, LLC,  
managing the  
Deactivation and Remediation Project at the  
Paducah Gaseous Diffusion Plant  
under Contract DE-EM0004895

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# CONTENTS

FIGURES.....	v
TABLES .....	v
ACRONYMS.....	vii
1. INTRODUCTION.....	1
1.1 BACKGROUND.....	1
1.2 MONITORING PERIOD ACTIVITIES .....	1
1.2.1 Groundwater Monitoring.....	1
1.2.2 Methane Monitoring.....	3
1.2.3 Surface Water Monitoring.....	4
1.3 KEY RESULTS.....	4
2. DATA EVALUATION/STATISTICAL SYNOPSIS.....	9
2.1 STATISTICAL ANALYSIS OF GROUNDWATER DATA.....	10
2.1.1 Upper Continental Recharge System.....	10
2.1.2 Upper Regional Gravel Aquifer .....	10
2.1.3 Lower Regional Gravel Aquifer .....	10
2.2 DATA VERIFICATION AND VALIDATION.....	11
3. PROFESSIONAL GEOLOGIST AUTHORIZATION.....	13
4. REFERENCES.....	15
APPENDIX A: GROUNDWATER, SURFACE WATER, LEACHATE, AND METHANE MONITORING SAMPLE DATA REPORTING FORM.....	A-1
APPENDIX B: FACILITY INFORMATION SHEET.....	B-1
APPENDIX C: GROUNDWATER SAMPLE ANALYSES AND LABORATORY REPORTS.....	C-1
APPENDIX D: STATISTICAL ANALYSES AND QUALIFICATION STATEMENT.....	D-1
APPENDIX E: GROUNDWATER FLOW RATE AND DIRECTION .....	E-1
APPENDIX F: NOTIFICATIONS.....	F-1
APPENDIX G: CHART OF MCL AND UTL EXCEEDANCES.....	G-1
APPENDIX H: METHANE MONITORING DATA.....	H-1
APPENDIX I: SURFACE WATER ANALYSES AND LABORATORY REPORTS.....	I-1
APPENDIX J: ANALYTICAL LABORATORY CERTIFICATION .....	J-1

APPENDIX K: LABORATORY ANALYTICAL METHODS ..... K-1  
APPENDIX L: MICRO-PURGING STABILITY PARAMETERS ..... L-1

## FIGURES

1. C-746-U Landfill Groundwater Monitoring Well Network.....	2
2. C-746-U Landfill Surface Water Monitoring Locations .....	5

## TABLES

1. Summary of MCL Exceedances.....	4
2. Exceedances of Statistically Derived Historical Background Concentrations .....	6
3. Exceedances of Current Background UTL in Downgradient RGA Wells.....	6
4. C-746-U Landfills Downgradient Wells Trend Summary Utilizing the Previous Eight Quarters .....	7
5. Exceedances of Current Background UTL in Downgradient UCRS Wells .....	7
6. Monitoring Wells Included in Statistical Analysis.....	10

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## ACRONYMS

<i>CFR</i>	<i>Code of Federal Regulations</i>
CY	calendar year
<i>KAR</i>	<i>Kentucky Administrative Regulations</i>
KDWM	Kentucky Division of Waste Management
<i>KRS</i>	<i>Kentucky Revised Statutes</i>
LEL	lower explosive limit
LRGA	Lower Regional Gravel Aquifer
LTL	lower tolerance limit
MCL	maximum contaminant level
MW	monitoring well
RGA	Regional Gravel Aquifer
UCRS	Upper Continental Recharge System
URGA	Upper Regional Gravel Aquifer
UTL	upper tolerance limit

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# 1. INTRODUCTION

This report, *C-746-U Contained Landfill Third Quarter Calendar Year 2024 (July–September) Compliance Monitoring Report, Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, is being submitted in accordance with Solid Waste Permit No. SW07300014, SW07300015, SW07300045.

The Groundwater, Surface Water, Leachate, and Methane Monitoring Sample Data Reporting Form is provided in Appendix A. The facility information sheet is provided in Appendix B. Groundwater analytical results are presented in groundwater sample analyses tables and laboratory reports, which are presented in Appendix C. The statistical analyses and qualification statement are provided in Appendix D. The groundwater flow rate and direction determinations are provided in Appendix E. Appendix F contains the notifications for all permit required parameters whose concentrations exceed the maximum contaminant level (MCL) for Kentucky solid waste facilities provided in 401 KAR 47:030 § 6, *Maximum Groundwater Contaminant Levels*, and for all permit required parameters listed in 40 CFR § 302.4, Appendix A, *Sequential CAS Registry Number List of CERCLA Hazardous Substances*, that do not have an MCL and whose concentrations exceed the historical background concentrations [upper tolerance limit (UTL), or both UTL and lower tolerance limit (LTL) for pH, as established at a 95% confidence]. Appendix G provides a chart of MCL and historical background UTL exceedances that have occurred, beginning in the third quarter, calendar year 2002. Methane monitoring results are documented on the approved C-746-U Landfill Methane Monitoring Report form provided in Appendix H. The form includes pertinent remarks/observations as required by 401 KAR 48:090 § 5, *Explosive Gases Control*. Surface water analyses are provided in Appendix I. Analytical laboratory certification is provided in Appendix J. Laboratory analytical methods used to analyze the included data set are provided in Appendix K. Micro-purging stability parameter results are provided in Appendix L.

## 1.1 BACKGROUND

The C-746-U Contained Landfill is an operating solid waste landfill located north of the Paducah Gaseous Diffusion Plant and north of the C-746-S&T Landfills. Construction and operation of the C-746-U Contained Landfill were permitted in November 1996. The operation is regulated under Solid Waste Landfill Permit No. SW07300014, SW07300015, SW07300045. The permitted C-746-U Contained Landfill area covers about 60 acres and includes a liner and leachate collection system. The C-746-U Contained Landfill currently is operating in Phases 4, 5, 6, and 7. A minor permit modification that included upgrades to the leachate storage capacity for Phases 6 and 7 was approved by the Kentucky Division of Waste Management (KDWM) on May 21, 2021 (FRNP 2021). Phases 1, 2, and 3 have long-term cover. Phases 8 through 23 have not been constructed.

## 1.2 MONITORING PERIOD ACTIVITIES

### 1.2.1 Groundwater Monitoring

Three zones are monitored at the site: the Upper Continental Recharge System (UCRS), the Upper Regional Gravel Aquifer (URGA), and the Lower Regional Gravel Aquifer (LRGA). There are 21 monitoring wells (MWs) under permit for the C-746-U Contained Landfill: 9 UCRS wells, 6 URGA wells, and 6 LRGA wells. A map of the MW locations is presented in Figure 1. All MWs were sampled this quarter with the exception of MW376 and MW377 (screened in the UCRS), which had insufficient amounts of water to obtain samples; therefore, there are no laboratory analysis results for these locations.

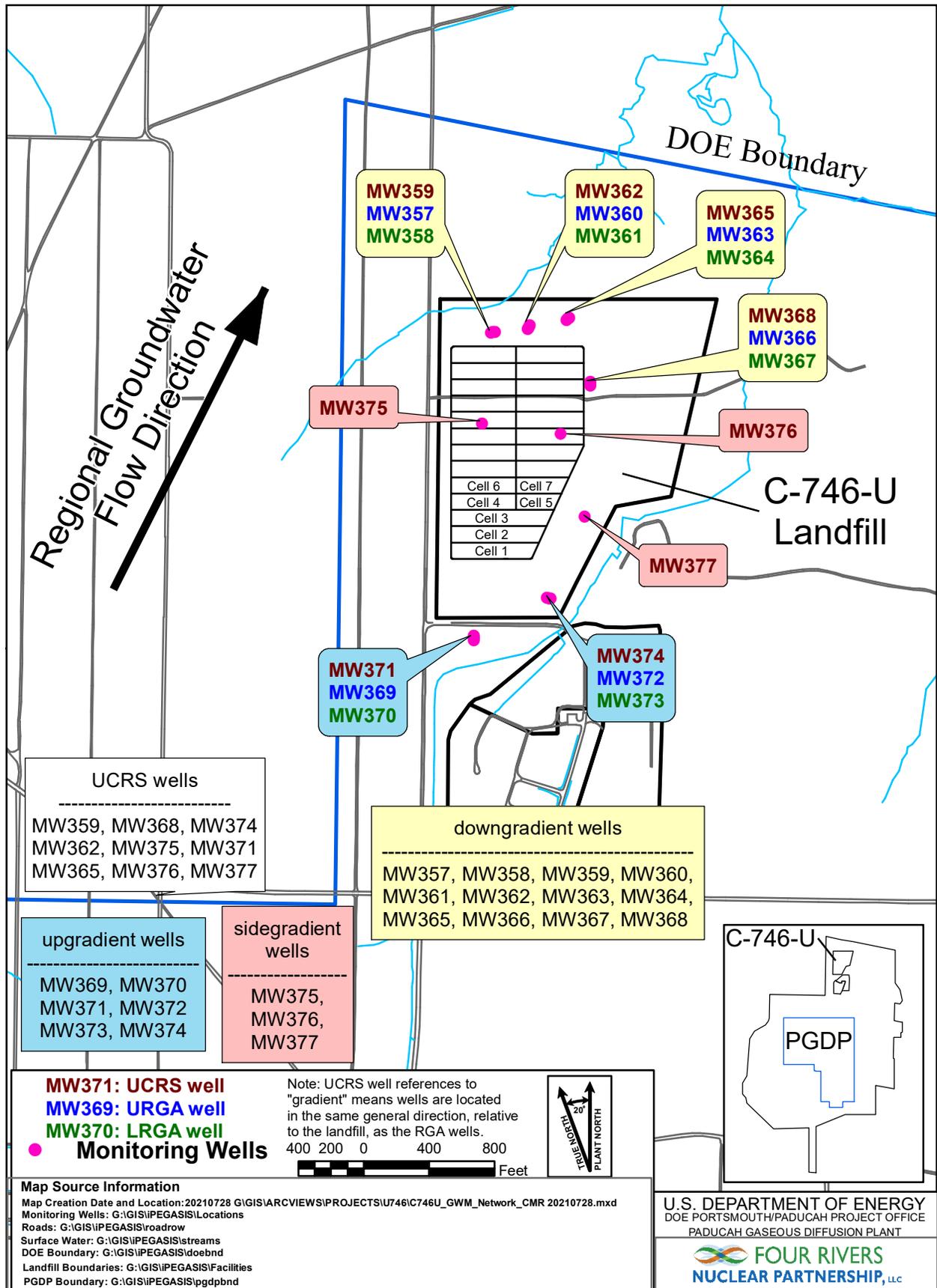


Figure 1. C-746-U Landfill Groundwater Monitoring Well Network

Consistent with the approved *Groundwater Monitoring Plan for the Solid Waste Permitted Landfills (C-746-S Residential Landfill, C-746-T Inert Landfill, and C-746-U Contained Landfill) at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, (Groundwater Monitoring Plan) UCRS wells are included in the monitoring program (LATA Kentucky 2014). Groundwater flow gradients are downward through the UCRS, but flow in the underlying Regional Gravel Aquifer (RGA) is lateral. Groundwater flow in the RGA typically is in a northeasterly direction in the vicinity of the C-746-U Contained Landfill. The Ohio River and lower reaches of Little Bayou Creek are the discharge areas for the RGA flow system from the vicinity of the landfills.

Consistent with the conceptual site model, the constituent concentrations in UCRS wells are considered to be representative only of the conditions local to the well or sourced from overlying soils; thus, no discussion of potential “upgradient” sources is relevant to the discussion for the UCRS. Nevertheless, a UTL for background also has been calculated for UCRS wells using concentrations from UCRS wells located in the same direction (relative to the landfill) as those RGA wells identified as upgradient. The results from these wells are considered to represent historical “background” for UCRS water quality. Similarly, other gradient references for UCRS wells are identified using the same gradient references (relative to the landfill) that are attributed to nearby RGA wells. Results from UCRS wells are compared to this UTL and exceedances of these values are reported in the quarterly report.

Groundwater sampling was conducted within the third quarter 2024 in accordance with the Groundwater Monitoring Plan (LATA Kentucky 2014) using the Deactivation and Remediation Contractor procedure CP4-ES-2101, *Groundwater Sampling*. Groundwater sampling for the third quarter 2024 was conducted on July 15–30, 2024. The analytical laboratory used U.S. Environmental Protection Agency-approved methods, as applicable. Appropriate sample containers and preservatives were used. The parameters specified in Permit Condition GSTR0001, Special Condition 1, were analyzed for all locations sampled.

The groundwater flow rate and direction determination are provided in Appendix E. Depth-to-water was measured on July 23, 2024, in MWs of the C-746-U Contained Landfill (see Appendix E, Table E.1), in MWs of the C-746-S&T Landfills, and in MWs of the surrounding region (shown on Appendix E, Figure E.4). Water level measurements in 39 vicinity wells define the potentiometric surface for the RGA. Typical regional flow in the RGA is northeastward, toward the Ohio River. During July 2024, RGA groundwater flow in the area of the landfill was oriented to the north. The hydraulic gradient for the RGA in the vicinity of the C-746-U Contained Landfill in July 2024 was  $3.13 \times 10^{-4}$  ft/ft (see Appendix E, Table E.2). The hydraulic gradients for the URGA and LRGA at the C-746-U Contained Landfill were  $4.44 \times 10^{-4}$  ft/ft and  $4.88 \times 10^{-4}$  ft/ft, respectively (see Appendix E, Table E.2). Calculated groundwater flow rates (average linear velocity) at the C-746-U Contained Landfill range from  $7.56 \times 10^{-1}$  to 1.29 ft/day for the URGA and  $8.29 \times 10^{-1}$  to 1.41 ft/day for the LRGA (see Appendix E, Table E.3).

### **1.2.2 Methane Monitoring**

Methane monitoring was conducted in accordance with 401 KAR 48:090 § 5 and the approved Explosive Gas Monitoring Program (KEEC 2011), which is Technical Application Attachment 12, of the Solid Waste Permit. Industrial Hygiene staff monitored for the occurrence of methane in four on-site building locations and four locations along the landfill boundary on August 20, 2024. Appendix H provides a map of the monitoring locations (Appendix H, Figure H.1). Monitoring results identified that all locations were compliant with the regulatory requirement of < 100% lower explosive limit (LEL) at boundary locations and < 25% LEL at all other locations. The results are documented on the C-746-U Contained Landfill Methane Monitoring Report provided in Appendix H.

### 1.2.3 Surface Water Monitoring

Surface water was monitored, as specified in 401 KAR 48:300 § 2, *Surface Water Monitoring Plan*, and the approved *Surface Water Monitoring Plan for C-746-U and C-746-S&T Landfills Permit Number SW07300014, SW07300015, SW07300045, Paducah Gaseous Diffusion Plant, Paducah, Kentucky, Agency Interest Number 3059* (FRNP 2021), which is Technical Application Attachment 24 of the Solid Waste Permit. Surface water sampling was performed on July 9, 2024, at three locations monitored for the C-746-U Contained Landfill: (1) instream location L154, (2) downstream location L351, and (3) instream location L150 (Figure 2). Surface water results are provided in Appendix I.

### 1.3 KEY RESULTS

Groundwater data were evaluated in accordance with the approved Groundwater Monitoring Plan (LATA Kentucky 2014), which is Technical Application Attachment 25, of the Solid Waste Permit. For the current reporting quarter, there were no parameters that exceeded their respective MCLs. If there had been any MCL exceedances, they would have been listed in Table 1. Those constituents that exceeded their respective MCL would have been evaluated further against their historical background UTL. Table 2 identifies parameters (that do not have MCLs) with concentrations that exceeded the statistically derived historical background UTL<sup>1</sup> during the third quarter 2024, as well as parameters that exceeded their MCL and also exceeded their historical background UTL. Those constituents (present in downgradient wells) that exceed their historical background UTL were evaluated against their current UTL-derived background using the most recent eight quarters of data from wells considered to be background. Constituents in downgradient wells that exceeded current background UTL are shown on Table 3.

**Table 1. Summary of MCL Exceedances**

UCRS	URGA	LRGA
None	None	None

A notification of MCL exceedances, or lack of exceedances, was submitted electronically to KDWM, in accordance with 401 KAR 48:300 § 7, *Sampling and Analysis*, prior to the submittal of this report. There were no MCL exceedances in the current reporting quarter.

Any constituent that exceeded the MCL in downgradient wells would be subjected to a comparison against the UTL concentration calculated using historical concentrations from wells identified as background (Table 2).

This report is the notification of parameters that had statistically significant increased concentrations relative to historical background concentrations, as required by Permit No. SW07300014, SW07300015, SW07300045, Condition GSTR0001, Standard Requirement 5, and 401 KAR 48:300 § 7.

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<sup>1</sup> The UTL comparison for pH uses a two-sided test for both UTLs and LTLs. For the purposes of this report, the reference to “UTL exceedances” also includes the LTL for pH.

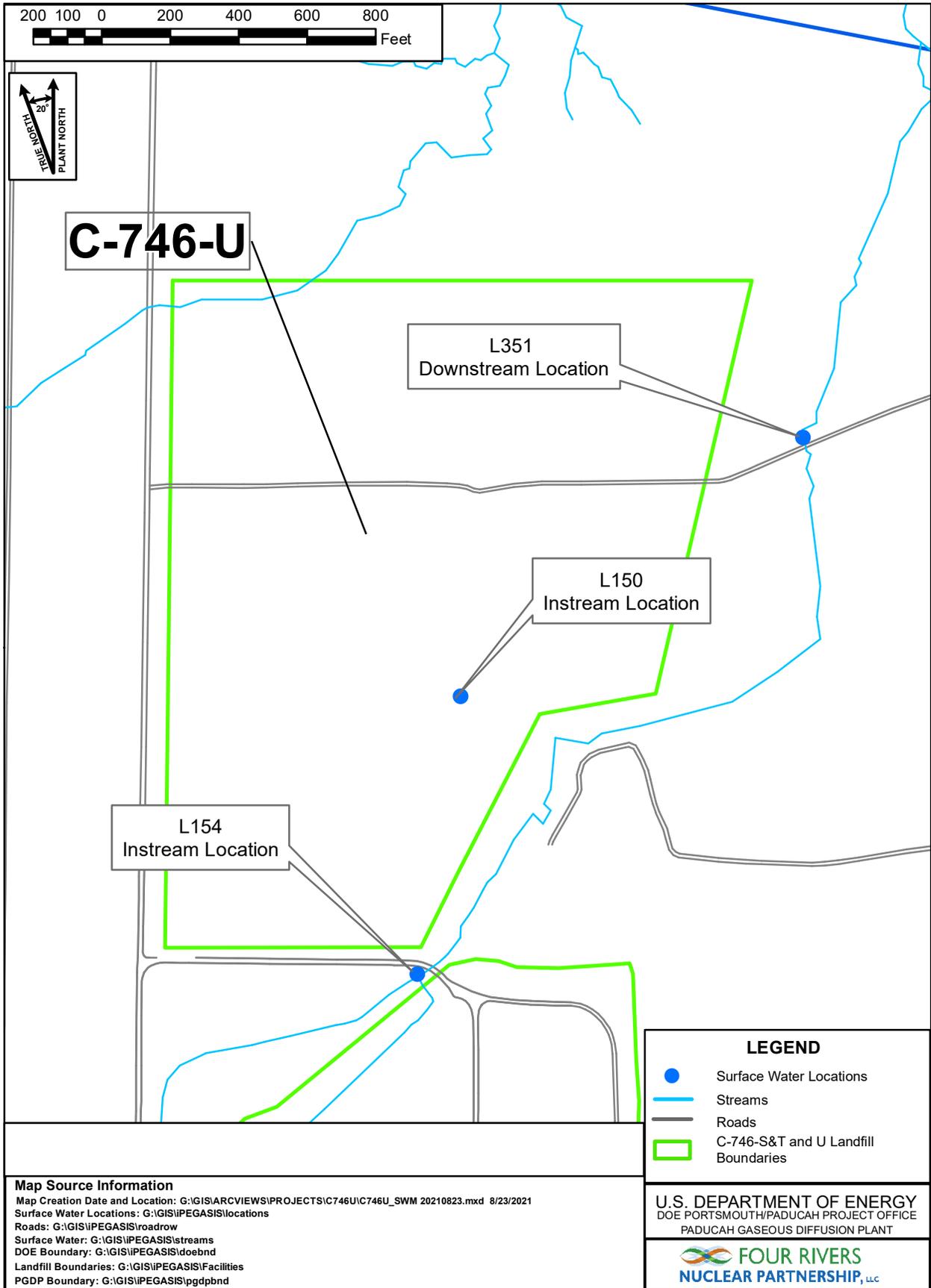


Figure 2. C-746-U Landfill Surface Water Monitoring Locations

**Table 2. Exceedances of Statistically Derived Historical Background Concentrations**

UCRS <sup>a</sup>	URGA	LRGA
MW359: Dissolved oxygen, oxidation-reduction potential, <sup>b</sup> and sulfate	MW357: Oxidation-reduction potential <sup>b</sup>	MW358: Oxidation-reduction potential <sup>b</sup>
MW362: Dissolved oxygen, oxidation-reduction potential, <sup>b</sup> and sulfate	MW360: Oxidation-reduction potential <sup>b</sup>	MW361: Dissolved oxygen and oxidation-reduction potential <sup>b</sup>
MW365: Dissolved oxygen, oxidation-reduction potential, <sup>b</sup> and sulfate	MW363: Oxidation-reduction potential <sup>b</sup>	MW364: Oxidation-reduction potential <sup>b</sup> and technetium-99
MW368: Dissolved oxygen, oxidation-reduction potential, <sup>b</sup> and sulfate	MW366: Oxidation-reduction potential <sup>b</sup> and technetium-99	MW367: Oxidation-reduction potential <sup>b</sup>
MW371: Dissolved oxygen and oxidation-reduction potential <sup>b</sup>	MW369: Oxidation-reduction potential <sup>b</sup>	MW370: Oxidation-reduction potential <sup>b</sup>
MW374: Oxidation-reduction potential <sup>b</sup> and sulfate	MW372: Calcium, conductivity, dissolved solids, magnesium, oxidation-reduction potential, <sup>b</sup> and sulfate	MW373: Calcium and oxidation-reduction potential <sup>b</sup>
MW375: Oxidation-reduction potential <sup>b</sup> and sulfate		

<sup>a</sup> Gradients in the UCRS are downward. UCRS gradient designations are identified using the same gradient reference (relative to the landfill) that is attributed to nearby RGA wells.

<sup>b</sup> Oxidation-reduction potential calibrated as Eh.

Sidegradient wells: MW375, MW376, MW377. Downgradient wells: MW357, MW358, MW359, MW360, MW361, MW362, MW363, MW364, MW365, MW366, MW367, MW368. Upgradient wells: MW369, MW370, MW371, MW372, MW373, MW374.

The constituents that had exceedances of the statistically derived historical background UTL underwent additional statistical evaluation. The current quarter concentrations were compared to the current background UTLs that were developed using the most recent eight quarters of data from wells identified as background in order to determine if the current downgradient (compliance) well concentrations are consistent with current background values. Table 3 summarizes the evaluation against current background UTL for those constituents present in downgradient RGA wells with historical UTL exceedances. In accordance with the approved Groundwater Monitoring Plan, constituents in downgradient wells that exceed the historical UTL, but do not exceed the current UTL, are considered not to have a C-746-U Landfill source; therefore, they are Type 1 exceedances—not attributable to the C-746-U Landfill. Except for oxidation-reduction potential in URGA wells MW363 and MW366 and technetium-99 in LRGA well MW364, all UTL exceedances reported for this quarter were evaluated and considered to be Type 1 exceedances—not attributable to the C-746-U Landfill.

**Table 3. Exceedances of Current Background UTL in Downgradient RGA Wells**

URGA	LRGA
MW363: Oxidation-reduction potential*	MW364: Technetium-99
MW366: Oxidation-reduction potential*	

\*Oxidation-reduction potential calibrated as Eh.

Technetium-99 in downgradient LRGA well MW364, and oxidation-reduction potential in downgradient URGA wells MW363 and MW366 exceeded both the historical background UTL and the current background UTL; therefore, these results are preliminarily considered to be Type 2 exceedances. To evaluate the preliminary Type 2 exceedances further, the parameters were subjected to the Mann-Kendall statistical test for trends using the most recent eight quarters of data. The results are summarized in Table 4.

No trend was indicated for any of the aforementioned preliminary Type 2 exceedances and; therefore, they are considered to be Type 1 exceedances—not attributable to the C-746-U Landfill.

**Table 4. C-746-U Landfills Downgradient Wells Trend Summary Utilizing the Previous Eight Quarters**

Location	Well ID	Parameter	Sample Size	Alpha <sup>a</sup>	P-value <sup>b</sup>	S <sup>c</sup>	Decision <sup>d</sup>
C-746-U Landfill	MW363	Oxidation-reduction potential	8	0.05	0.548	0	No trend
	MW364	Technetium-99	8	0.05	0.548	0	No trend
	MW366	Oxidation-reduction potential	8	0.05	0.306	6	No trend

<sup>a</sup> An alpha of 0.05 represents a 95% confidence interval.

<sup>b</sup> The p-value represents the risk of acceptance the H<sub>a</sub> hypothesis of a trend, in terms of a percentage.

<sup>c</sup> The initial value of the Mann-Kendall statistic, S, is assumed to be 0 (e.g., no trend). If a data value from a later time period is higher than a data value from an earlier time period, S is incremented by 1. On the other hand, if the data value from a later time period is lower than a data value sampled earlier, S is decremented by 1. The net result of all such increments and decrements yields the final value of S. A very high positive value of S is an indicator of an increasing trend, and a very low negative value indicates a decreasing trend.

<sup>d</sup> The Mann-Kendall decision operates on two hypotheses; the H<sub>0</sub> and H<sub>a</sub>. H<sub>0</sub> assumes there is no trend in the data, whereas H<sub>a</sub> assumes either a positive or negative trend.

Note: Statistics were generated using ProUCL.

The statistical evaluation of UCRS concentrations against the current UCRS background UTL identified exceedances of both the historical and current backgrounds for dissolved oxygen in MW362, dissolved oxygen, oxidation-reduction potential, and sulfate in MW365, and sulfate in MW368 (Table 5). Because gradients in the UCRS are downward (vertical), there are no hydrogeologically downgradient UCRS wells.

**Table 5. Exceedances of Current Background UTL in Downgradient UCRS Wells\***

<b>UCRS</b>
MW362: Dissolved oxygen
MW365: Dissolved oxygen, oxidation-reduction potential, and sulfate
MW368: Sulfate

\*In the same direction (relative to the landfill) as RGA wells.

All UTL exceedances reported for this quarter were evaluated and considered to be Type 1 exceedances—not attributable to the C-746-U Contained Landfill.

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## 2. DATA EVALUATION/STATISTICAL SYNOPSIS

The statistical analyses conducted on the third quarter 2024 groundwater data collected from the C-746-U Contained Landfill MWs were performed in accordance with the Groundwater Monitoring Plan (LATA Kentucky 2014). The statistical analyses for this report use data from the first eight quarters that were sampled for each parameter, beginning with the baseline sampling events in 2002, when available. The sampling dates associated with background data are listed next to the result in the statistical analysis sheets in Appendix D (Attachments D1 and D2).

If parameters that exceed the MCL for Kentucky solid waste facilities found in 401 *KAR* 47:030 § 6 were detected, they were documented and evaluated further. MCL exceedances, if found, were reviewed against historical background results (UTL). If the MCL exceedance was found not to exceed the historical UTL, the exceedance was noted as a Type 1 exceedance—an exceedance not attributable to the C-746-U Contained Landfill. If there was an exceedance of the MCL in a downgradient well and this constituent also exceeded the historical background, the quarterly result was compared to the current background UTL (developed using the most recent eight quarters of data from wells identified as background) to identify if this exceedance is attributable to upgradient/nonlandfill sources. If the downgradient concentration was less than the current background, the exceedance was noted as a Type 1 exceedance. If a constituent exceeds its Kentucky solid waste facility MCL, historical background UTL, and current background UTL, it was reported as a Type 2 exceedance—source undetermined. Type 2 exceedances (undetermined source) were evaluated further using the Mann-Kendall test for trend. If there was no statistically significant increasing trend for a constituent in a downgradient well, the exceedance was reclassified as a Type 1 exceedance (not attributable to the C-746-U Contained Landfill).

For those parameters that do not have a Kentucky solid waste facility MCL, the same process was used. If a constituent without an MCL exceeded its historical background UTL and its current background UTL, it was evaluated further to identify the source of the exceedance, if possible. If the source of the exceedance could not be identified, it was reported as a Type 2 exceedance—source undetermined. Type 2 exceedances (undetermined source) were evaluated further using the Mann-Kendall test for trend. If there was no statistically significant increasing trend for a constituent in a downgradient well, the exceedance was reclassified as a Type 1 exceedance (not attributable to the C-746-U Contained Landfill).

To calculate the UTL, the data were divided into censored (nondetects) and uncensored (detected) observations. The one-sided tolerance interval statistical test was conducted only on parameters that had at least one uncensored observation. Results of the one-sided tolerance interval statistical test were used to determine whether the data showed a statistical exceedance in concentrations with respect to historical background concentrations (UTL).

For the statistical analysis of pH, a two-sided tolerance interval statistical test was conducted. The test well results were compared to both a UTL and LTL to determine if statistically significant deviations in concentrations existed with respect to background well data.

A stepwise list of the one-sided tolerance interval statistical procedures applied to the data is provided in Appendix D under Statistical Analysis Process. The statistical analysis was conducted separately for each parameter in each well. The MWs included in the statistical analyses are listed in Table 6.

**Table 6. Monitoring Wells Included in Statistical Analysis<sup>a</sup>**

<b>UCRS</b>	<b>URGA</b>	<b>LRGA</b>
MW359	MW357	MW358
MW362	MW360	MW361
MW365	MW363	MW364
MW368	MW366	MW367
MW371 <sup>c</sup>	MW369 (background)	MW370 (background)
MW374 <sup>c</sup>	MW372 (background)	MW373 (background)
MW375		
MW376 <sup>b</sup>		
MW377 <sup>b</sup>		

<sup>a</sup> Map showing the MW locations is shown on Figure 1.

<sup>b</sup> Well had insufficient water to permit a water sample for laboratory analysis.

<sup>c</sup> In the same direction (relative to the landfill) as RGA wells considered to be upgradient.

## **2.1 STATISTICAL ANALYSIS OF GROUNDWATER DATA**

Parameters requiring statistical analysis are summarized in Appendix D for each hydrogeological unit. A stepwise list for determining exceedances of statistically derived historical background concentrations is provided in Appendix D under Statistical Analysis Process. A comparison of the current quarter's results to the statistically derived historical background was conducted for parameters that do not have MCLs and also for those parameters whose concentrations exceed MCLs. Appendix G summarizes the occurrences (by well and by quarter) of historical UTLs and MCL exceedances. The constituents that had exceedances of the statistically derived historical background UTL underwent additional statistical evaluation. The current quarter concentrations were compared to the current background UTL developed using the most recent eight quarters of data from wells identified as upgradient in order to determine if the current downgradient concentrations are consistent with current background values.

### **2.1.1 Upper Continental Recharge System**

In this quarter, 26 parameters, including those with MCLs, required statistical analysis in the UCRS. During the third quarter, dissolved oxygen, oxidation-reduction potential, and sulfate displayed concentrations that exceeded their respective historical UTL and are listed in Table 2. Dissolved oxygen, oxidation-reduction potential, and sulfate exceeded the current background UTL in downgradient UCRS wells.

### **2.1.2 Upper Regional Gravel Aquifer**

In this quarter, 25 parameters, including those with MCLs, required statistical analysis in the URGA. During the third quarter, calcium, conductivity, dissolved solids, magnesium, oxidation-reduction potential, sulfate, and technetium-99 displayed concentrations that exceeded their respective historical UTL and are listed in Table 2. Oxidation-reduction potential exceeded the current background UTLs in downgradient URGA wells.

### **2.1.3 Lower Regional Gravel Aquifer**

In this quarter, 25 parameters, including those with MCLs, required statistical analysis in the LRGA. During the third quarter, calcium, dissolved oxygen, oxidation-reduction potential, and technetium-99 displayed concentrations that exceeded their respective historical UTL and are listed in Table 2. Technetium-99 exceeded the current background UTL in downgradient LRGA well MW364.

## **2.2 DATA VERIFICATION AND VALIDATION**

Data verification is the process of comparing a data set against a set standard or contractual requirements. In accordance with the approved Groundwater Monitoring Plan (LATA Kentucky 2014), data are flagged as necessary.

Data validation was performed on 100% of the organic, inorganic, and radiochemical analytical data for groundwater by a qualified individual independent from sampling, laboratory, project management, or other decision-making personnel. Data validation evaluates the laboratory adherence to analytical method requirements. Validation qualifiers are added by the independent validator and not the laboratory.

Field quality control samples are collected each sampling event. Field blanks, rinseate blanks, and trip blanks are obtained to ensure quality of field and laboratory practices and data are reported in the Groundwater Sample Analysis forms in Appendix C. Laboratory quality control samples, such as matrix spikes, matrix spike duplicates, and method blanks, are performed by the laboratory. Both field and laboratory quality control sample results are reviewed as part of the data verification/validation process.

During the data assessment process it was noted that radium-226 results were higher than expected and reanalysis of the original samples was requested. The results of the reanalysis were used for reporting and in the statistical evaluation of radium-226. Data verification and validation results for this data set indicated that all data were considered usable.

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### 3. PROFESSIONAL GEOLOGIST AUTHORIZATION

**DOCUMENT IDENTIFICATION:** C-746-U Contained Landfill Third Quarter Calendar Year 2024  
(July–September) Compliance Monitoring Report, Paducah  
Gaseous Diffusion Plant, Paducah, Kentucky  
(FRNP-RPT-0350/V3)

Stamped and signed pursuant to my authority as a duly registered geologist under the provisions of KRS Chapter 322A.



PG113927  
KDavis 11-21-2024

Kenneth R. Davis  
Kenneth R. Davis

November 21, 2024  
Date

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## 4. REFERENCES

- FRNP (Four Rivers Nuclear Partnership, LLC) 2021. *Surface Water Monitoring Plan for C-746-U and C-746-S&T Landfills Permit Number SW07300014, SW07300015, SW07300045, Paducah Gaseous Diffusion Plant, Paducah, Kentucky, Agency Interest Number 3059*, Solid Waste Landfill Permit No. SW07300014, SW07300015, SW07300045, Technical Application Attachment 24, Four Rivers Nuclear Partnership, LLC, Paducah, KY, March.
- KEEC (Kentucky Energy and Environment Cabinet) 2011. Solid Waste Landfill Permit No. SW07300014, SW07300015, SW07300045, Division of Waste Management, Solid Waste Branch, Technical Application Attachment 12, “Explosive Gas Monitoring Program,” January 21.
- LATA Kentucky (LATA Environmental Services of Kentucky, LLC) 2014. *Groundwater Monitoring Plan for the Solid Waste Permitted Landfills (C-746-S Residential Landfill, C-746-T Inert Landfill, and C-746-U Contained Landfill) at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, PAD-PROJ-0139*, Solid Waste Landfill Permit No. SW07300014, SW07300015, SW07300045, Technical Application Attachment 25, LATA Environmental Services of Kentucky, LLC, Kevil, KY, June.

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**APPENDIX A**

**GROUNDWATER, SURFACE WATER,  
LEACHATE, AND METHANE MONITORING  
SAMPLE DATA REPORTING FORM**

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**GROUNDWATER, SURFACE WATER, LEACHATE,  
AND METHANE MONITORING  
SAMPLE DATA REPORTING FORM**

**NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
DEPARTMENT FOR ENVIRONMENTAL PROTECTION  
DIVISION OF WASTE MANAGEMENT  
SOLID WASTE BRANCH  
14 REILLY ROAD  
FRANKFORT, KY 40601**

Facility Name: U.S. DOE–Paducah Gaseous Diffusion Plant Activity: C-746-U Contained Landfill  
(As officially shown on DWM Permit Face)

Permit No: SW07300014, Finds/Unit No: \_\_\_\_\_ Quarter & Year 3rd Qtr. CY 2024  
SW07300015,  
SW07300045 \_\_\_\_\_

*Please check the following as applicable:*

\_\_\_\_\_ Characterization  Quarterly \_\_\_\_\_ Semiannual \_\_\_\_\_ Annual \_\_\_\_\_ Assessment

*Please check applicable submittal(s):*  Groundwater  Surface Water  
\_\_\_\_\_ Leachate  Methane Monitoring

This form is to be utilized by those sites required by regulation (Kentucky Waste Management Regulations-401 KAR 48:300 and 45:160) or by statute (Kentucky Revised Statues Chapter 224) to conduct groundwater and surface water monitoring under the jurisdiction of the Division of Waste Management. **You must report any indication of contamination within forty-eight (48) hours of making the determination using statistical analyses, direct comparison, or other similar techniques. Submitting the lab report is NOT considered notification.** Instructions for completing the form are attached. Do not submit the instruction pages.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for such violations.

---

Myrna E. Redfield, Program Manager/Date  
Four Rivers Nuclear Partnership, LLC

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April Ladd, Paducah Site Lead/Date  
U.S. Department of Energy

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**APPENDIX B**  
**FACILITY INFORMATION SHEET**

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# FACILITY INFORMATION SHEET

Groundwater: July 2024  
Surface water: July 2024  
Methane: August 2024

County: McCracken

Permit Nos. SW07300014,  
SW07300015,  
SW07300045

Sampling Date: \_\_\_\_\_

Facility Name: U.S. DOE—Paducah Gaseous Diffusion Plant  
(As officially shown on DWM Permit Face)

Site Address: 5600 Hobbs Road Kevil, Kentucky 42053  
Street City/State Zip

Phone No: (270) 441-6800 Latitude: N 37° 07' 45" Longitude: W 88° 47' 55"

## OWNER INFORMATION

Facility Owner: U.S. DOE, Joel Bradburne, Manager  
Portsmouth/Paducah Project Office Phone No: (859) 219-4000

Contact Person: Bruce Ford Phone No: (270) 441-5357  
Director, Environmental Services

Contact Person Title: Four Rivers Nuclear Partnership, LLC

Mailing Address: 5511 Hobbs Road Kevil, Kentucky 42053  
Street City/State Zip

## SAMPLING PERSONNEL (IF OTHER THAN LANDFILL OR LABORATORY)

Company: Four Rivers Nuclear Partnership, LLC

Contact Person: Chris Skinner Phone No: (270) 441-5675

Mailing Address: 5511 Hobbs Road Kevil, Kentucky 42053  
Street City/State Zip

## LABORATORY RECORD #1

Laboratory: GEL Laboratories, LLC Lab ID No: KY90129

Contact Person: Valerie Davis Phone No: (843) 769-7391

Mailing Address: 2040 Savage Road Charleston, South Carolina 29407  
Street City/State Zip

## LABORATORY RECORD #2

Laboratory: N/A Lab ID No: N/A

Contact Person: N/A Phone No: N/A

Mailing Address: N/A  
Street City/State Zip

## LABORATORY RECORD #3

Laboratory: N/A Lab ID No: N/A

Contact Person: N/A Phone No: N/A

Mailing Address: N/A  
Street City/State Zip

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**APPENDIX C**  
**GROUNDWATER SAMPLE ANALYSES**  
**AND LABORATORY REPORTS**

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**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** MW357      DOWN      **RGA Type:** URGA      **Period:** 3rd Quarter 2024  
**AKGWA Well Tag #:** 8004-4798      **SAMPLE ID:** MW357UG4-24      Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Barometric Pressure Reading		29.97	Inches/Hg		7/15/2024				X
Conductivity		397	µmhos/cm		7/15/2024				X
Depth to Water		45.36	ft		7/15/2024				X
Dissolved Oxygen		4.74	mg/L		7/15/2024				X
Eh (approx)		406	mV		7/15/2024				X
pH		6.04	Std Unit		7/15/2024				X
Temperature		64.5	deg F		7/15/2024				X
Turbidity		4.08	NTU		7/15/2024				X
Aluminum	J	0.0252	mg/L	0.05	7/15/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	7/15/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Barium		0.0701	mg/L	0.004	7/15/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	7/15/2024			SW846-6020B	=
Boron		0.3	mg/L	0.075	7/15/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Calcium		23.9	mg/L	0.2	7/15/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	7/15/2024			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Copper	J	0.00108	mg/L	0.002	7/15/2024			SW846-6020B	=
Iron	J	0.086	mg/L	0.1	7/15/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	7/15/2024			SW846-6020B	=
Magnesium		10.1	mg/L	0.03	7/15/2024			SW846-6020B	=
Manganese		0.0131	mg/L	0.005	7/15/2024			SW846-6020B	=
Molybdenum	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Nickel	U	0.002	mg/L	0.002	7/15/2024			SW846-6020B	=
Potassium		1.67	mg/L	0.3	7/15/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Sodium		38.7	mg/L	0.25	7/15/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	7/15/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	7/15/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	7/15/2024			SW846-6020B	=
Zinc	J	0.00504	mg/L	0.02	7/15/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	7/15/2024			SW846-7470A	=
Barium, Dissolved		0.0698	mg/L	0.004	7/15/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	7/15/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	7/15/2024			SW846-6020B	UJ
Radium-226	U	0.544	pCi/L	1.15	7/15/2024	0.849	0.85	AN-1418	=
Radium-228	U	3.36	pCi/L	3.79	7/15/2024	2.5	2.65	EPA-904.0-M	=
Strontium-90	U	0.135	pCi/L	5.54	7/15/2024	3	3	EPA-905.0-M	=
Tritium	U	-11.9	pCi/L	273	7/15/2024	152	152	EPA-906.0-M	=
Technetium-99		28.6	pCi/L	16	7/15/2024	10.7	11.2	HASL 300, Tc-02-RC M	=

Thorium-230	U	0.112	pCi/L	0.773	7/15/2024	0.413	0.415	HASL 300, Th-01-RC M	=
Thorium-232	U	0.112	pCi/L	0.467	7/15/2024	0.338	0.339	HASL 300, Th-01-RC M	=
Alpha activity	U	0.333	pCi/L	5.72	7/15/2024	2.42	2.42	SW846-9310	=
Beta activity		19.8	pCi/L	10.4	7/15/2024	7.67	8.34	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0191	ug/L	0.0191	7/15/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	7/15/2024			SW846-8260D	UJ
Acrylonitrile	U	5	ug/L	5	7/15/2024			SW846-8260D	UJ
Benzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Carbon disulfide	UY1	5	ug/L	5	7/15/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Iodomethane	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Methylene chloride	BJ	3.92	ug/L	5	7/15/2024			SW846-8260D	U
Styrene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Toluene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Total Xylene	U	3	ug/L	3	7/15/2024			SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	7/15/2024			SW846-8260D	UJ
Trichloroethene		2.36	ug/L	1	7/15/2024			SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	7/15/2024			SW846-8260D	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** MW357      DOWN      **RGA Type:** URGA      **Period:** 3rd Quarter 2024  
**AKGWA Well Tag #:** 8004-4798      **SAMPLE ID:** MW357UG4-24R      **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.319	mg/L	0.2	7/29/2024			SW846-9056A	=
Chloride	J	27.4	mg/L	250	7/29/2024			SW846-9056A	=
Fluoride	J	0.153	mg/L	4	7/29/2024			SW846-9056A	=
Nitrate as Nitrogen	J	1.18	mg/L	10	7/29/2024			SW846-9056A	=
Sulfate		33.9	mg/L	2	7/29/2024			SW846-9056A	=
Barometric Pressure Reading		29.94	Inches/Hg		7/29/2024				X
Conductivity		385	µmhos/cm		7/29/2024				X
Depth to Water		45.37	ft		7/29/2024				X
Dissolved Oxygen		4.49	mg/L		7/29/2024				X
Eh (approx)		513	mV		7/29/2024				X
pH		6.13	Std Unit		7/29/2024				X
Temperature		64.6	deg F		7/29/2024				X
Turbidity		0	NTU		7/29/2024				X
PCB-1016	U	0.1	ug/L	0.1	7/29/2024			SW846-8082A	=
PCB-1221	U	0.1	ug/L	0.1	7/29/2024			SW846-8082A	=
PCB-1232	U	0.1	ug/L	0.1	7/29/2024			SW846-8082A	=
PCB-1242	U	0.1	ug/L	0.1	7/29/2024			SW846-8082A	=
PCB-1248	U	0.1	ug/L	0.1	7/29/2024			SW846-8082A	=
PCB-1254	U	0.1	ug/L	0.1	7/29/2024			SW846-8082A	=
PCB-1260	U	0.1	ug/L	0.1	7/29/2024			SW846-8082A	UJ
PCB-1268	U	0.1	ug/L	0.1	7/29/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.1	ug/L	0.1	7/29/2024			SW846-8082A	UJ
Dissolved Solids		215	mg/L	10	7/29/2024			EPA-160.1	=
Iodide	U	0.5	mg/L	0.5	7/29/2024			EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20	mg/L	20	7/29/2024			EPA-410.4	=
Cyanide	U	0.2	mg/L	0.2	7/29/2024			SW846-9012B	=
Total Organic Halides (TOX)	*	26.8	ug/L	10	7/29/2024			SW846-9020B	=
Total Organic Carbon (TOC)	J	0.449	mg/L	2	7/29/2024			SW846-9060A	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045

**Sampling Point:** MW358      DOWN      **RGA Type:** LRGA      **Period:** 3rd Quarter 2024

**AKGWA Well Tag #:** 8004-4799      **SAMPLE ID:** MW358DUG4-24      Sample Type: FR

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Aluminum	J	0.0254	mg/L	0.05	7/15/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	7/15/2024			SW846-6020B	=
Arsenic	J	0.00372	mg/L	0.005	7/15/2024			SW846-6020B	=
Barium		0.0763	mg/L	0.004	7/15/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	7/15/2024			SW846-6020B	=
Boron		0.205	mg/L	0.075	7/15/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Calcium		31.9	mg/L	0.2	7/15/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	7/15/2024			SW846-6020B	=
Cobalt		0.0224	mg/L	0.001	7/15/2024			SW846-6020B	=
Copper	J	0.000841	mg/L	0.002	7/15/2024			SW846-6020B	=
Iron		7.77	mg/L	0.1	7/15/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	7/15/2024			SW846-6020B	=
Magnesium		15.6	mg/L	0.03	7/15/2024			SW846-6020B	=
Manganese		1.68	mg/L	0.025	7/15/2024			SW846-6020B	=
Molybdenum	J	0.000321	mg/L	0.001	7/15/2024			SW846-6020B	=
Nickel		0.061	mg/L	0.002	7/15/2024			SW846-6020B	=
Potassium		3.01	mg/L	0.3	7/15/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Sodium		32.1	mg/L	0.25	7/15/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	7/15/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	7/15/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	7/15/2024			SW846-6020B	=
Zinc	J	0.00911	mg/L	0.02	7/15/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	7/15/2024			SW846-7470A	=
Barium, Dissolved		0.0757	mg/L	0.004	7/15/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	7/15/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	7/15/2024			SW846-6020B	UJ
Radium-226	U	0.82	pCi/L	1.19	7/15/2024	0.879	0.881	AN-1418	=
Radium-228	U	1.8	pCi/L	3.64	7/15/2024	2.16	2.21	EPA-904.0-M	=
Strontium-90	U	-3.74	pCi/L	7.15	7/15/2024	3.5	3.5	EPA-905.0-M	UJ
Tritium	U	55.7	pCi/L	251	7/15/2024	144	145	EPA-906.0-M	=
Technetium-99		32.3	pCi/L	16.2	7/15/2024	11	11.6	HASL 300, Tc-02-RC M	=
Thorium-230	U	-0.126	pCi/L	0.804	7/15/2024	0.29	0.29	HASL 300, Th-01-RC M	=
Thorium-232	U	-0.102	pCi/L	0.656	7/15/2024	0.217	0.217	HASL 300, Th-01-RC M	=
Alpha activity	U	0.641	pCi/L	7.73	7/15/2024	3.65	3.65	SW846-9310	=
Beta activity		19.1	pCi/L	9.09	7/15/2024	7.01	7.69	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0193	ug/L	0.0193	7/15/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=

1,1,1-Trichloroethane	U	1 ug/L	1	7/15/2024	SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1 ug/L	1	7/15/2024	SW846-8260D	=
1,1,2-Trichloroethane	U	1 ug/L	1	7/15/2024	SW846-8260D	=
1,1-Dichloroethane	U	1 ug/L	1	7/15/2024	SW846-8260D	=
1,1-Dichloroethene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
1,2,3-Trichloropropane	U	1 ug/L	1	7/15/2024	SW846-8260D	=
1,2-Dibromoethane	U	1 ug/L	1	7/15/2024	SW846-8260D	=
1,2-Dichlorobenzene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
1,2-Dichloroethane	U	1 ug/L	1	7/15/2024	SW846-8260D	=
1,2-Dichloropropane	U	1 ug/L	1	7/15/2024	SW846-8260D	=
1,4-Dichlorobenzene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
2-Butanone	U	5 ug/L	5	7/15/2024	SW846-8260D	=
2-Hexanone	U	5 ug/L	5	7/15/2024	SW846-8260D	=
4-Methyl-2-pentanone	U	5 ug/L	5	7/15/2024	SW846-8260D	=
Acetone	U	5 ug/L	5	7/15/2024	SW846-8260D	=
Acrolein	U	5 ug/L	5	7/15/2024	SW846-8260D	UJ
Acrylonitrile	U	5 ug/L	5	7/15/2024	SW846-8260D	UJ
Benzene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Bromochloromethane	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Bromodichloromethane	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Bromoform	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Bromomethane	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Carbon disulfide	UY1	5 ug/L	5	7/15/2024	SW846-8260D	=
Carbon tetrachloride	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Chlorobenzene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Chloroethane	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Chloroform	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Chloromethane	U	1 ug/L	1	7/15/2024	SW846-8260D	=
cis-1,2-Dichloroethene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
cis-1,3-Dichloropropene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Dibromochloromethane	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Dibromomethane	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Ethylbenzene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Iodomethane	U	5 ug/L	5	7/15/2024	SW846-8260D	=
Methylene chloride	BJ	3.94 ug/L	5	7/15/2024	SW846-8260D	U
Styrene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Toluene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Total Xylene	U	3 ug/L	3	7/15/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5 ug/L	5	7/15/2024	SW846-8260D	UJ
Trichloroethene		1.19 ug/L	1	7/15/2024	SW846-8260D	J
Trichlorofluoromethane	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	7/15/2024	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	7/15/2024	SW846-8260D	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** MW358      DOWN      **RGA Type:** LRGA      **Period:** 3rd Quarter 2024  
**AKGWA Well Tag #:** 8004-4799      **SAMPLE ID:** MW358DUG4-24R      Sample Type: FR

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.428	mg/L	0.2	7/29/2024			SW846-9056A	=
Chloride	J	36.8	mg/L	250	7/29/2024			SW846-9056A	=
Fluoride	J	0.153	mg/L	4	7/29/2024			SW846-9056A	=
Nitrate as Nitrogen	J	1.29	mg/L	10	7/29/2024			SW846-9056A	=
Sulfate		54.7	mg/L	2	7/29/2024			SW846-9056A	=
PCB-1016	U	0.0995	ug/L	0.0995	7/29/2024			SW846-8082A	=
PCB-1221	U	0.0995	ug/L	0.0995	7/29/2024			SW846-8082A	=
PCB-1232	U	0.0995	ug/L	0.0995	7/29/2024			SW846-8082A	=
PCB-1242	U	0.0995	ug/L	0.0995	7/29/2024			SW846-8082A	=
PCB-1248	U	0.0995	ug/L	0.0995	7/29/2024			SW846-8082A	=
PCB-1254	U	0.0995	ug/L	0.0995	7/29/2024			SW846-8082A	=
PCB-1260	U	0.0995	ug/L	0.0995	7/29/2024			SW846-8082A	UJ
PCB-1268	U	0.0995	ug/L	0.0995	7/29/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.0995	ug/L	0.0995	7/29/2024			SW846-8082A	UJ
Dissolved Solids		252	mg/L	10	7/29/2024			EPA-160.1	=
Iodide	U	0.5	mg/L	0.5	7/29/2024			EPA-300.0	=
Chemical Oxygen Demand (COD)	J	14	mg/L	20	7/29/2024			EPA-410.4	=
Cyanide	U	0.2	mg/L	0.2	7/29/2024			SW846-9012B	=
Total Organic Halides (TOX)	*J	8.4	ug/L	10	7/29/2024			SW846-9020B	=
Total Organic Carbon (TOC)	J	0.657	mg/L	2	7/29/2024			SW846-9060A	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** MW358      DOWN      **RGA Type:** LRGA      **Period:** 3rd Quarter 2024  
**AKGWA Well Tag #:** 8004-4799      **SAMPLE ID:** MW358UG4-24      **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Barometric Pressure Reading		29.97	Inches/Hg		7/15/2024				X
Conductivity		480	µmhos/cm		7/15/2024				X
Depth to Water		45.5	ft		7/15/2024				X
Dissolved Oxygen		1.4	mg/L		7/15/2024				X
Eh (approx)		180	mV		7/15/2024				X
pH		6.23	Std Unit		7/15/2024				X
Temperature		68	deg F		7/15/2024				X
Turbidity		3.95	NTU		7/15/2024				X
Aluminum	J	0.0305	mg/L	0.05	7/15/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	7/15/2024			SW846-6020B	=
Arsenic	J	0.00433	mg/L	0.005	7/15/2024			SW846-6020B	=
Barium		0.0794	mg/L	0.004	7/15/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	7/15/2024			SW846-6020B	=
Boron		0.169	mg/L	0.015	7/15/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Calcium		31.5	mg/L	0.2	7/15/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	7/15/2024			SW846-6020B	=
Cobalt		0.0249	mg/L	0.001	7/15/2024			SW846-6020B	=
Copper	J	0.000903	mg/L	0.002	7/15/2024			SW846-6020B	=
Iron		8.85	mg/L	0.1	7/15/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	7/15/2024			SW846-6020B	=
Magnesium		15.9	mg/L	0.03	7/15/2024			SW846-6020B	=
Manganese		1.81	mg/L	0.025	7/15/2024			SW846-6020B	=
Molybdenum	J	0.000367	mg/L	0.001	7/15/2024			SW846-6020B	=
Nickel		0.0675	mg/L	0.002	7/15/2024			SW846-6020B	=
Potassium		3.1	mg/L	0.3	7/15/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Sodium		30.8	mg/L	0.25	7/15/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	7/15/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	7/15/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	7/15/2024			SW846-6020B	=
Zinc	J	0.0102	mg/L	0.02	7/15/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	7/15/2024			SW846-7470A	=
Barium, Dissolved		0.0739	mg/L	0.004	7/15/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	7/15/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	7/15/2024			SW846-6020B	UJ
Radium-226	U	0.346	pCi/L	0.784	7/15/2024	0.527	0.527	AN-1418	=
Radium-228	U	3.85	pCi/L	4.83	7/15/2024	2.98	3.14	EPA-904.0-M	=
Strontium-90	U	0.811	pCi/L	6.97	7/15/2024	3.86	3.87	EPA-905.0-M	=
Tritium	U	-3.9	pCi/L	252	7/15/2024	141	141	EPA-906.0-M	=
Technetium-99		42.6	pCi/L	15.9	7/15/2024	11.5	12.4	HASL 300, Tc-02-RC M	=

Thorium-230	U	0.34	pCi/L	0.841	7/15/2024	0.533	0.538	HASL 300, Th-01-RC M	=
Thorium-232	U	-0.00845	pCi/L	0.426	7/15/2024	0.219	0.22	HASL 300, Th-01-RC M	=
Alpha activity	U	0.232	pCi/L	6.67	7/15/2024	2.87	2.87	SW846-9310	=
Beta activity		28.7	pCi/L	9.06	7/15/2024	8	9.32	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0188	ug/L	0.0188	7/15/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	7/15/2024			SW846-8260D	UJ
Acrylonitrile	U	5	ug/L	5	7/15/2024			SW846-8260D	UJ
Benzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Carbon disulfide	UY1	5	ug/L	5	7/15/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Iodomethane	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Methylene chloride	BJ	3.72	ug/L	5	7/15/2024			SW846-8260D	U
Styrene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Toluene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Total Xylene	U	3	ug/L	3	7/15/2024			SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	7/15/2024			SW846-8260D	UJ
Trichloroethene		3.89	ug/L	1	7/15/2024			SW846-8260D	J
Trichlorofluoromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	7/15/2024			SW846-8260D	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** MW358      DOWN      **RGA Type:** LRGA      **Period:** 3rd Quarter 2024  
**AKGWA Well Tag #:** 8004-4799      **SAMPLE ID:** MW358UG4-24R      **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.371	mg/L	0.2	7/29/2024			SW846-9056A	=
Chloride	J	31.1	mg/L	250	7/29/2024			SW846-9056A	=
Fluoride	J	0.17	mg/L	4	7/29/2024			SW846-9056A	=
Nitrate as Nitrogen	J	1.02	mg/L	10	7/29/2024			SW846-9056A	=
Sulfate		47.8	mg/L	2	7/29/2024			SW846-9056A	=
Barometric Pressure Reading		29.94	Inches/Hg		7/29/2024				X
Conductivity		455	µmhos/cm		7/29/2024				X
Depth to Water		45.53	ft		7/29/2024				X
Dissolved Oxygen		1.43	mg/L		7/29/2024				X
Eh (approx)		238	mV		7/29/2024				X
pH		6.2	Std Unit		7/29/2024				X
Temperature		66.1	deg F		7/29/2024				X
Turbidity		0	NTU		7/29/2024				X
PCB-1016	U	0.0949	ug/L	0.0949	7/29/2024			SW846-8082A	=
PCB-1221	U	0.0949	ug/L	0.0949	7/29/2024			SW846-8082A	=
PCB-1232	U	0.0949	ug/L	0.0949	7/29/2024			SW846-8082A	=
PCB-1242	U	0.0949	ug/L	0.0949	7/29/2024			SW846-8082A	=
PCB-1248	U	0.0949	ug/L	0.0949	7/29/2024			SW846-8082A	=
PCB-1254	U	0.0949	ug/L	0.0949	7/29/2024			SW846-8082A	=
PCB-1260	U	0.0949	ug/L	0.0949	7/29/2024			SW846-8082A	UJ
PCB-1268	U	0.0949	ug/L	0.0949	7/29/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.0949	ug/L	0.0949	7/29/2024			SW846-8082A	UJ
Dissolved Solids		250	mg/L	10	7/29/2024			EPA-160.1	=
Iodide	U	0.5	mg/L	0.5	7/29/2024			EPA-300.0	=
Chemical Oxygen Demand (COD)	J	16.4	mg/L	20	7/29/2024			EPA-410.4	=
Cyanide	U	0.2	mg/L	0.2	7/29/2024			SW846-9012B	=
Total Organic Halides (TOX)	*U	10	ug/L	10	7/29/2024			SW846-9020B	=
Total Organic Carbon (TOC)	J	0.607	mg/L	2	7/29/2024			SW846-9060A	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045

**Sampling Point:** MW359      DOWN      **RGA Type:** UCRS      **Period:** 3rd Quarter 2024

**AKGWA Well Tag #:** 8004-0981      **SAMPLE ID:** MW359UG4-24      Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Barometric Pressure Reading		29.94	Inches/Hg		7/15/2024				X
Conductivity		208	µmhos/cm		7/15/2024				X
Depth to Water		36.13	ft		7/15/2024				X
Dissolved Oxygen		5.54	mg/L		7/15/2024				X
Eh (approx)		280	mV		7/15/2024				X
pH		5.97	Std Unit		7/15/2024				X
Temperature		67	deg F		7/15/2024				X
Turbidity		4.26	NTU		7/15/2024				X
Aluminum		0.0682	mg/L	0.05	7/15/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	7/15/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Barium		0.0231	mg/L	0.004	7/15/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	7/15/2024			SW846-6020B	=
Boron	U	0.015	mg/L	0.015	7/15/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Calcium		5.88	mg/L	0.2	7/15/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	7/15/2024			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Copper	J	0.00184	mg/L	0.002	7/15/2024			SW846-6020B	=
Iron		0.115	mg/L	0.1	7/15/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	7/15/2024			SW846-6020B	=
Magnesium		2.81	mg/L	0.03	7/15/2024			SW846-6020B	=
Manganese	J	0.00194	mg/L	0.005	7/15/2024			SW846-6020B	=
Molybdenum	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Nickel	J	0.00111	mg/L	0.002	7/15/2024			SW846-6020B	=
Potassium	J	0.184	mg/L	0.3	7/15/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Sodium		31.2	mg/L	0.25	7/15/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	7/15/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	7/15/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	7/15/2024			SW846-6020B	=
Zinc	U	0.02	mg/L	0.02	7/15/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	7/15/2024			SW846-7470A	=
Barium, Dissolved		0.0224	mg/L	0.004	7/15/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	7/15/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	7/15/2024			SW846-6020B	UJ
Radium-226	U	1.12	pCi/L	1.37	7/15/2024	1.04	1.04	AN-1418	=
Radium-228	U	1.05	pCi/L	4.51	7/15/2024	2.49	2.51	EPA-904.0-M	=
Strontium-90	U	2.19	pCi/L	7.02	7/15/2024	4.02	4.04	EPA-905.0-M	=
Tritium	U	17.5	pCi/L	253	7/15/2024	143	143	EPA-906.0-M	=
Technetium-99	U	8.16	pCi/L	16.3	7/15/2024	9.68	9.72	HASL 300, Tc-02-RC M	=

Thorium-230	U	0.316	pCi/L	0.717	7/15/2024	0.451	0.455	HASL 300, Th-01-RC M	=
Thorium-232	U	0.0328	pCi/L	0.455	7/15/2024	0.229	0.229	HASL 300, Th-01-RC M	=
Alpha activity	U	-0.0356	pCi/L	6.13	7/15/2024	2.44	2.44	SW846-9310	=
Beta activity	U	12.6	pCi/L	12.7	7/15/2024	8.1	8.35	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0192	ug/L	0.0192	7/15/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	7/15/2024			SW846-8260D	UJ
Acrylonitrile	U	5	ug/L	5	7/15/2024			SW846-8260D	UJ
Benzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Carbon disulfide	UY1	5	ug/L	5	7/15/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Iodomethane	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Methylene chloride	BJ	3.58	ug/L	5	7/15/2024			SW846-8260D	U
Styrene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Toluene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Total Xylene	U	3	ug/L	3	7/15/2024			SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	7/15/2024			SW846-8260D	UJ
Trichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	7/15/2024			SW846-8260D	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** MW359      DOWN      **RGA Type:** UCRS      **Period:** 3rd Quarter 2024  
**AKGWA Well Tag #:** 8004-0981      **SAMPLE ID:** MW359UG4-24R      **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide	U	0.2	mg/L	0.2	7/29/2024			SW846-9056A	=
Chloride	J	0.723	mg/L	250	7/29/2024			SW846-9056A	=
Fluoride	J	0.304	mg/L	4	7/29/2024			SW846-9056A	=
Nitrate as Nitrogen	J	0.583	mg/L	10	7/29/2024			SW846-9056A	=
Sulfate		36.7	mg/L	0.8	7/29/2024			SW846-9056A	=
Barometric Pressure Reading		29.95	Inches/Hg		7/29/2024				X
Conductivity		197	µmhos/cm		7/29/2024				X
Depth to Water		32.15	ft		7/29/2024				X
Dissolved Oxygen		4.6	mg/L		7/29/2024				X
Eh (approx)		363	mV		7/29/2024				X
pH		5.95	Std Unit		7/29/2024				X
Temperature		63.1	deg F		7/29/2024				X
Turbidity		0	NTU		7/29/2024				X
PCB-1016	U	0.0965	ug/L	0.0965	7/29/2024			SW846-8082A	=
PCB-1221	U	0.0965	ug/L	0.0965	7/29/2024			SW846-8082A	=
PCB-1232	U	0.0965	ug/L	0.0965	7/29/2024			SW846-8082A	=
PCB-1242	U	0.0965	ug/L	0.0965	7/29/2024			SW846-8082A	=
PCB-1248	U	0.0965	ug/L	0.0965	7/29/2024			SW846-8082A	=
PCB-1254	U	0.0965	ug/L	0.0965	7/29/2024			SW846-8082A	=
PCB-1260	U	0.0965	ug/L	0.0965	7/29/2024			SW846-8082A	UJ
PCB-1268	U	0.0965	ug/L	0.0965	7/29/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.0965	ug/L	0.0965	7/29/2024			SW846-8082A	UJ
Dissolved Solids		146	mg/L	10	7/29/2024			EPA-160.1	=
Iodide	U	0.5	mg/L	0.5	7/29/2024			EPA-300.0	=
Chemical Oxygen Demand (COD)	J	11.7	mg/L	20	7/29/2024			EPA-410.4	=
Cyanide	U	0.2	mg/L	0.2	7/29/2024			SW846-9012B	=
Total Organic Halides (TOX)	*J	4.56	ug/L	10	7/29/2024			SW846-9020B	=
Total Organic Carbon (TOC)	J	0.714	mg/L	2	7/29/2024			SW846-9060A	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** MW360      DOWN      **RGA Type:** URGA      **Period:** 3rd Quarter 2024  
**AKGWA Well Tag #:** 8004-4800      **SAMPLE ID:** MW360UG4-24      Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide	J	0.146	mg/L	0.2	7/15/2024			SW846-9056A	=
Chloride	J	5.29	mg/L	250	7/15/2024			SW846-9056A	=
Fluoride	J	0.287	mg/L	4	7/15/2024			SW846-9056A	=
Nitrate as Nitrogen	J	0.747	mg/L	10	7/15/2024			SW846-9056A	=
Sulfate		9.28	mg/L	0.4	7/15/2024			SW846-9056A	=
Barometric Pressure Reading		30.01	Inches/Hg		7/15/2024				X
Conductivity		395	µmhos/cm		7/15/2024				X
Depth to Water		38.73	ft		7/15/2024				X
Dissolved Oxygen		1.7	mg/L		7/15/2024				X
Eh (approx)		426	mV		7/15/2024				X
pH		6.12	Std Unit		7/15/2024				X
Temperature		66.2	deg F		7/15/2024				X
Turbidity		4.89	NTU		7/15/2024				X
Aluminum	J	0.0382	mg/L	0.05	7/15/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	7/15/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Barium		0.188	mg/L	0.004	7/15/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	7/15/2024			SW846-6020B	=
Boron		0.0171	mg/L	0.015	7/15/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Calcium		17.7	mg/L	0.2	7/15/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	7/15/2024			SW846-6020B	=
Cobalt	J	0.000781	mg/L	0.001	7/15/2024			SW846-6020B	=
Copper	J	0.00149	mg/L	0.002	7/15/2024			SW846-6020B	=
Iron	J	0.0695	mg/L	0.1	7/15/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	7/15/2024			SW846-6020B	=
Magnesium		7.6	mg/L	0.03	7/15/2024			SW846-6020B	=
Manganese		0.00966	mg/L	0.005	7/15/2024			SW846-6020B	=
Molybdenum	J	0.000219	mg/L	0.001	7/15/2024			SW846-6020B	U
Nickel	J	0.00117	mg/L	0.002	7/15/2024			SW846-6020B	=
Potassium		0.687	mg/L	0.3	7/15/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Selenium	J	0.00157	mg/L	0.005	7/15/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Sodium		54.6	mg/L	2.5	7/15/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	7/15/2024			SW846-6020B	=
Uranium	J	0.000069	mg/L	0.0002	7/15/2024			SW846-6020B	U
Vanadium	U	0.02	mg/L	0.02	7/15/2024			SW846-6020B	=
Zinc	J	0.00559	mg/L	0.02	7/15/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	7/15/2024			SW846-7470A	=
Barium, Dissolved		0.198	mg/L	0.004	7/15/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	7/15/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	7/15/2024			SW846-6020B	UJ
PCB-1016	U	0.0985	ug/L	0.0985	7/15/2024			SW846-8082A	=

PCB-1221	U	0.0985	ug/L	0.0985	7/15/2024			SW846-8082A	=
PCB-1232	U	0.0985	ug/L	0.0985	7/15/2024			SW846-8082A	=
PCB-1242	U	0.0985	ug/L	0.0985	7/15/2024			SW846-8082A	=
PCB-1248	U	0.0985	ug/L	0.0985	7/15/2024			SW846-8082A	=
PCB-1254	U	0.0985	ug/L	0.0985	7/15/2024			SW846-8082A	=
PCB-1260	U	0.0985	ug/L	0.0985	7/15/2024			SW846-8082A	UJ
PCB-1268	U	0.0985	ug/L	0.0985	7/15/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.0985	ug/L	0.0985	7/15/2024			SW846-8082A	UJ
Radium-226	U	0.245	pCi/L	0.77	7/15/2024	0.479	0.479	AN-1418	=
Radium-228	U	-0.828	pCi/L	4.83	7/15/2024	2.62	2.62	EPA-904.0-M	=
Strontium-90	U	-1.98	pCi/L	4.93	7/15/2024	2.04	2.04	EPA-905.0-M	=
Tritium	U	85.7	pCi/L	257	7/15/2024	150	150	EPA-906.0-M	=
Technetium-99	U	-0.111	pCi/L	16	7/15/2024	8.94	8.94	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.296	pCi/L	0.857	7/15/2024	0.531	0.535	HASL 300, Th-01-RC M	=
Thorium-232	U	0.082	pCi/L	0.593	7/15/2024	0.338	0.339	HASL 300, Th-01-RC M	=
Alpha activity	U	2.45	pCi/L	8.73	7/15/2024	4.7	4.72	SW846-9310	=
Beta activity	U	-0.307	pCi/L	13.9	7/15/2024	7.57	7.57	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0191	ug/L	0.0191	7/15/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	7/15/2024			SW846-8260D	UJ
Acrylonitrile	U	5	ug/L	5	7/15/2024			SW846-8260D	UJ
Benzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Carbon disulfide	UY1	5	ug/L	5	7/15/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=

Ethylbenzene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Iodomethane	U	5 ug/L	5	7/15/2024	SW846-8260D	=
Methylene chloride	BJ	3.79 ug/L	5	7/15/2024	SW846-8260D	U
Styrene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Toluene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Total Xylene	U	3 ug/L	3	7/15/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5 ug/L	5	7/15/2024	SW846-8260D	UJ
Trichloroethene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	7/15/2024	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Dissolved Solids		232 mg/L	10	7/15/2024	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	7/15/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20 mg/L	20	7/15/2024	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	7/15/2024	SW846-9012B	=
Total Organic Halides (TOX)	HJ	6.18 ug/L	10	7/15/2024	SW846-9020B	J
Total Organic Carbon (TOC)	J	0.983 mg/L	2	7/15/2024	SW846-9060A	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** MW361      DOWN      **RGA Type:** LRGA      **Period:** 3rd Quarter 2024  
**AKGWA Well Tag #:** 8004-4795      **SAMPLE ID:** MW361UG4-24      Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Barometric Pressure Reading		29.99	Inches/Hg		7/15/2024				X
Conductivity		440	µmhos/cm		7/15/2024				X
Depth to Water		37.93	ft		7/15/2024				X
Dissolved Oxygen		4.28	mg/L		7/15/2024				X
Eh (approx)		385	mV		7/15/2024				X
pH		5.91	Std Unit		7/15/2024				X
Temperature		64.3	deg F		7/15/2024				X
Turbidity		4.44	NTU		7/15/2024				X
Aluminum	U	0.05	mg/L	0.05	7/15/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	7/15/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Barium		0.0651	mg/L	0.004	7/15/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	7/15/2024			SW846-6020B	=
Boron		0.42	mg/L	0.075	7/15/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Calcium		29.2	mg/L	0.2	7/15/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	7/15/2024			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Copper	J	0.00124	mg/L	0.002	7/15/2024			SW846-6020B	=
Iron	U	0.1	mg/L	0.1	7/15/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	7/15/2024			SW846-6020B	=
Magnesium		12.7	mg/L	0.03	7/15/2024			SW846-6020B	=
Manganese		0.00629	mg/L	0.005	7/15/2024			SW846-6020B	=
Molybdenum	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Nickel	U	0.002	mg/L	0.002	7/15/2024			SW846-6020B	=
Potassium		1.82	mg/L	0.3	7/15/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Sodium		40.1	mg/L	0.25	7/15/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	7/15/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	7/15/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	7/15/2024			SW846-6020B	=
Zinc	J	0.00405	mg/L	0.02	7/15/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	7/15/2024			SW846-7470A	=
Barium, Dissolved		0.0667	mg/L	0.004	7/15/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	7/15/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	7/15/2024			SW846-6020B	UJ
Radium-226	U	0.156	pCi/L	0.727	7/15/2024	0.422	0.422	AN-1418	=
Radium-228	U	1.35	pCi/L	4.62	7/15/2024	2.64	2.67	EPA-904.0-M	=
Strontium-90	U	-1.3	pCi/L	6.83	7/15/2024	3.45	3.45	EPA-905.0-M	=
Tritium	U	-45.2	pCi/L	249	7/15/2024	136	136	EPA-906.0-M	=
Technetium-99		45.2	pCi/L	16	7/15/2024	11.7	12.7	HASL 300, Tc-02-RC M	=

Thorium-230	U	0.000123	pCi/L	0.799	7/15/2024	0.359	0.359	HASL 300, Th-01-RC M	=
Thorium-232	U	-0.0574	pCi/L	0.58	7/15/2024	0.215	0.216	HASL 300, Th-01-RC M	=
Alpha activity	U	1.61	pCi/L	6.55	7/15/2024	3.39	3.4	SW846-9310	=
Beta activity		13.4	pCi/L	9.71	7/15/2024	6.75	7.09	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0188	ug/L	0.0188	7/15/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	7/15/2024			SW846-8260D	UJ
Acrylonitrile	U	5	ug/L	5	7/15/2024			SW846-8260D	UJ
Benzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Carbon disulfide	UY1	5	ug/L	5	7/15/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Iodomethane	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Methylene chloride	BJ	3.61	ug/L	5	7/15/2024			SW846-8260D	U
Styrene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Toluene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Total Xylene	U	3	ug/L	3	7/15/2024			SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	7/15/2024			SW846-8260D	UJ
Trichloroethene	J	0.7	ug/L	1	7/15/2024			SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	7/15/2024			SW846-8260D	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** MW361      DOWN      **RGA Type:** LRGA      **Period:** 3rd Quarter 2024  
**AKGWA Well Tag #:** 8004-4795      **SAMPLE ID:** MW361UG4-24R      **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.451	mg/L	0.2	7/29/2024			SW846-9056A	=
Chloride	J	36.5	mg/L	250	7/29/2024			SW846-9056A	=
Fluoride	J	0.148	mg/L	4	7/29/2024			SW846-9056A	=
Nitrate as Nitrogen	J	1.34	mg/L	10	7/29/2024			SW846-9056A	=
Sulfate		70.8	mg/L	2	7/29/2024			SW846-9056A	=
Barometric Pressure Reading		29.92	Inches/Hg		7/29/2024				X
Conductivity		470	µmhos/cm		7/29/2024				X
Depth to Water		38	ft		7/29/2024				X
Dissolved Oxygen		6.03	mg/L		7/29/2024				X
Eh (approx)		550	mV		7/29/2024				X
pH		6.1	Std Unit		7/29/2024				X
Temperature		64.4	deg F		7/29/2024				X
Turbidity		0	NTU		7/29/2024				X
PCB-1016	U	0.0953	ug/L	0.0953	7/29/2024			SW846-8082A	=
PCB-1221	U	0.0953	ug/L	0.0953	7/29/2024			SW846-8082A	=
PCB-1232	U	0.0953	ug/L	0.0953	7/29/2024			SW846-8082A	=
PCB-1242	U	0.0953	ug/L	0.0953	7/29/2024			SW846-8082A	=
PCB-1248	U	0.0953	ug/L	0.0953	7/29/2024			SW846-8082A	=
PCB-1254	U	0.0953	ug/L	0.0953	7/29/2024			SW846-8082A	=
PCB-1260	U	0.0953	ug/L	0.0953	7/29/2024			SW846-8082A	UJ
PCB-1268	U	0.0953	ug/L	0.0953	7/29/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.0953	ug/L	0.0953	7/29/2024			SW846-8082A	UJ
Dissolved Solids		270	mg/L	10	7/29/2024			EPA-160.1	=
Iodide	U	0.5	mg/L	0.5	7/29/2024			EPA-300.0	=
Chemical Oxygen Demand (COD)	J	11.7	mg/L	20	7/29/2024			EPA-410.4	=
Cyanide	U	0.2	mg/L	0.2	7/29/2024			SW846-9012B	=
Total Organic Halides (TOX)	*U	10	ug/L	10	7/29/2024			SW846-9020B	=
Total Organic Carbon (TOC)	J	0.579	mg/L	2	7/29/2024			SW846-9060A	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** MW362      DOWN      **RGA Type:** UCRS      **Period:** 3rd Quarter 2024  
**AKGWA Well Tag #:** 8004-0986      **SAMPLE ID:** MW362UG4-24      **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide	U	0.2	mg/L	0.2	7/15/2024			SW846-9056A	=
Chloride	J	1.95	mg/L	250	7/15/2024			SW846-9056A	=
Fluoride	J	0.605	mg/L	4	7/15/2024			SW846-9056A	=
Nitrate as Nitrogen	J	0.56	mg/L	10	7/15/2024			SW846-9056A	=
Sulfate		27.8	mg/L	0.8	7/15/2024			SW846-9056A	=
Barometric Pressure Reading		29.98	Inches/Hg		7/15/2024				X
Conductivity		606	µmhos/cm		7/15/2024				X
Depth to Water		24.93	ft		7/15/2024				X
Dissolved Oxygen		8.16	mg/L		7/15/2024				X
Eh (approx)		358	mV		7/15/2024				X
pH		7.01	Std Unit		7/15/2024				X
Temperature		63	deg F		7/15/2024				X
Turbidity		11	NTU		7/15/2024				X
Aluminum		0.353	mg/L	0.05	7/15/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	7/15/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Barium		0.0808	mg/L	0.004	7/15/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	7/15/2024			SW846-6020B	=
Boron		0.0239	mg/L	0.015	7/15/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Calcium		17.9	mg/L	0.2	7/15/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	7/15/2024			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Copper	J	0.00173	mg/L	0.002	7/15/2024			SW846-6020B	=
Iron		0.232	mg/L	0.1	7/15/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	7/15/2024			SW846-6020B	=
Magnesium		7.53	mg/L	0.03	7/15/2024			SW846-6020B	=
Manganese	J	0.00393	mg/L	0.005	7/15/2024			SW846-6020B	=
Molybdenum		0.00144	mg/L	0.001	7/15/2024			SW846-6020B	=
Nickel	J	0.000939	mg/L	0.002	7/15/2024			SW846-6020B	=
Potassium		0.389	mg/L	0.3	7/15/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Sodium		123	mg/L	2.5	7/15/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	7/15/2024			SW846-6020B	=
Uranium		0.00312	mg/L	0.0002	7/15/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	7/15/2024			SW846-6020B	=
Zinc	U	0.02	mg/L	0.02	7/15/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	7/15/2024			SW846-7470A	=
Barium, Dissolved		0.0763	mg/L	0.004	7/15/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	7/15/2024			SW846-6020B	UJ
Uranium, Dissolved		0.00306	mg/L	0.0002	7/15/2024			SW846-6020B	J
PCB-1016	U	0.103	ug/L	0.103	7/15/2024			SW846-8082A	=

PCB-1221	U	0.103	ug/L	0.103	7/15/2024			SW846-8082A	=
PCB-1232	U	0.103	ug/L	0.103	7/15/2024			SW846-8082A	=
PCB-1242	U	0.103	ug/L	0.103	7/15/2024			SW846-8082A	=
PCB-1248	U	0.103	ug/L	0.103	7/15/2024			SW846-8082A	=
PCB-1254	U	0.103	ug/L	0.103	7/15/2024			SW846-8082A	=
PCB-1260	U	0.103	ug/L	0.103	7/15/2024			SW846-8082A	UJ
PCB-1268	U	0.103	ug/L	0.103	7/15/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.103	ug/L	0.103	7/15/2024			SW846-8082A	UJ
Radium-226	U	0.905	pCi/L	1.02	7/15/2024	0.829	0.831	AN-1418	=
Radium-228	U	1.81	pCi/L	4.71	7/15/2024	2.75	2.79	EPA-904.0-M	=
Strontium-90	U	0.877	pCi/L	4.39	7/15/2024	2.47	2.48	EPA-905.0-M	=
Tritium	U	80	pCi/L	248	7/15/2024	144	145	EPA-906.0-M	=
Technetium-99	U	6.11	pCi/L	16.5	7/15/2024	9.64	9.67	HASL 300, Tc-02-RC M	=
Thorium-230	U	-0.217	pCi/L	1.14	7/15/2024	0.4	0.401	HASL 300, Th-01-RC M	=
Thorium-232	U	-0.0709	pCi/L	0.737	7/15/2024	0.276	0.276	HASL 300, Th-01-RC M	=
Alpha activity	U	2.81	pCi/L	8	7/15/2024	4.45	4.48	SW846-9310	=
Beta activity	U	-0.251	pCi/L	9.44	7/15/2024	4.91	4.92	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0189	ug/L	0.0189	7/15/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	7/15/2024			SW846-8260D	UJ
Acrylonitrile	U	5	ug/L	5	7/15/2024			SW846-8260D	UJ
Benzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Carbon disulfide	UY1	5	ug/L	5	7/15/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=

Ethylbenzene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Iodomethane	U	5 ug/L	5	7/15/2024	SW846-8260D	=
Methylene chloride	BJ	3.77 ug/L	5	7/15/2024	SW846-8260D	U
Styrene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Toluene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Total Xylene	U	3 ug/L	3	7/15/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5 ug/L	5	7/15/2024	SW846-8260D	UJ
Trichloroethene	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	7/15/2024	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Dissolved Solids		373 mg/L	10	7/15/2024	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	7/15/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	J	10.1 mg/L	20	7/15/2024	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	7/15/2024	SW846-9012B	=
Total Organic Halides (TOX)	H	21.9 ug/L	10	7/15/2024	SW846-9020B	J
Total Organic Carbon (TOC)		2 mg/L	2	7/15/2024	SW846-9060A	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** MW363      DOWN      **RGA Type:** URGA      **Period:** 3rd Quarter 2024  
**AKGWA Well Tag #:** 8004-4796      **SAMPLE ID:** MW363UG4-24      **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide	U	0.2	mg/L	0.2	7/18/2024			SW846-9056A	=
Chloride	J	16.9	mg/L	250	7/18/2024			SW846-9056A	=
Fluoride	J	0.303	mg/L	4	7/18/2024			SW846-9056A	=
Nitrate as Nitrogen	J	2.79	mg/L	10	7/18/2024			SW846-9056A	=
Sulfate		29.2	mg/L	1.6	7/18/2024			SW846-9056A	=
Barometric Pressure Reading		30.07	Inches/Hg		7/18/2024				X
Conductivity		347	µmhos/cm		7/18/2024				X
Depth to Water		45.41	ft		7/18/2024				X
Dissolved Oxygen		0.79	mg/L		7/18/2024				X
Eh (approx)		526	mV		7/18/2024				X
pH		6.07	Std Unit		7/18/2024				X
Temperature		63.8	deg F		7/18/2024				X
Turbidity		0	NTU		7/18/2024				X
Aluminum	U	0.05	mg/L	0.05	7/18/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	7/18/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	7/18/2024			SW846-6020B	=
Barium		0.113	mg/L	0.004	7/18/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	7/18/2024			SW846-6020B	=
Boron		0.0194	mg/L	0.015	7/18/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	7/18/2024			SW846-6020B	=
Calcium		21.2	mg/L	0.2	7/18/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	7/18/2024			SW846-6020B	=
Cobalt	J	0.000963	mg/L	0.001	7/18/2024			SW846-6020B	=
Copper	J	0.0011	mg/L	0.002	7/18/2024			SW846-6020B	=
Iron	J	0.0341	mg/L	0.1	7/18/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	7/18/2024			SW846-6020B	=
Magnesium		8.13	mg/L	0.03	7/18/2024			SW846-6020B	=
Manganese		0.192	mg/L	0.005	7/18/2024			SW846-6020B	=
Molybdenum	U	0.001	mg/L	0.001	7/18/2024			SW846-6020B	=
Nickel		0.021	mg/L	0.002	7/18/2024			SW846-6020B	=
Potassium		1.86	mg/L	0.3	7/18/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	7/18/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	7/18/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	7/18/2024			SW846-6020B	=
Sodium		36.6	mg/L	0.25	7/18/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	7/18/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	7/18/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	7/18/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	7/18/2024			SW846-6020B	=
Zinc	J	0.00414	mg/L	0.02	7/18/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	7/18/2024			SW846-7470A	=
Barium, Dissolved		0.11	mg/L	0.004	7/18/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	7/18/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	7/18/2024			SW846-6020B	UJ
PCB-1016	U	0.107	ug/L	0.107	7/18/2024			SW846-8082A	=

PCB-1221	U	0.107	ug/L	0.107	7/18/2024			SW846-8082A	=
PCB-1232	U	0.107	ug/L	0.107	7/18/2024			SW846-8082A	=
PCB-1242	U	0.107	ug/L	0.107	7/18/2024			SW846-8082A	=
PCB-1248	U	0.107	ug/L	0.107	7/18/2024			SW846-8082A	=
PCB-1254	U	0.107	ug/L	0.107	7/18/2024			SW846-8082A	=
PCB-1260	U	0.107	ug/L	0.107	7/18/2024			SW846-8082A	UJ
PCB-1268	U	0.107	ug/L	0.107	7/18/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.107	ug/L	0.107	7/18/2024			SW846-8082A	UJ
Radium-226	U	0.728	pCi/L	0.732	7/18/2024	0.66	0.662	AN-1418	=
Radium-228	U	1.26	pCi/L	4.19	7/18/2024	2.35	2.37	EPA-904.0-M	=
Strontium-90	U	0.662	pCi/L	4.26	7/18/2024	2.3	2.3	EPA-905.0-M	=
Tritium	U	81.5	pCi/L	260	7/18/2024	151	152	EPA-906.0-M	=
Technetium-99	U	1.52	pCi/L	15.8	7/18/2024	8.94	8.95	HASL 300, Tc-02-RC M	=
Thorium-230	U	-0.0369	pCi/L	0.597	7/18/2024	0.251	0.251	HASL 300, Th-01-RC M	=
Thorium-232	U	0.116	pCi/L	0.364	7/18/2024	0.245	0.246	HASL 300, Th-01-RC M	=
Alpha activity	U	2.45	pCi/L	6.66	7/18/2024	3.76	3.78	SW846-9310	=
Beta activity	U	9.1	pCi/L	9.48	7/18/2024	6.18	6.36	SW846-9310	=
1,2-Dibromo-3-chloropropane	UY1	0.0189	ug/L	0.0189	7/18/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,1,1-Trichloroethane	J	0.37	ug/L	1	7/18/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,4-Dichlorobenzene	UY2	1	ug/L	1	7/18/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	7/18/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	7/18/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	7/18/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	7/18/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	7/18/2024			SW846-8260D	UJ
Acrylonitrile	U	5	ug/L	5	7/18/2024			SW846-8260D	UJ
Benzene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	7/18/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=

Ethylbenzene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Iodomethane	U	5 ug/L	5	7/18/2024	SW846-8260D	=
Methylene chloride	U	5 ug/L	5	7/18/2024	SW846-8260D	=
Styrene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Toluene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Total Xylene	U	3 ug/L	3	7/18/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5 ug/L	5	7/18/2024	SW846-8260D	UJ
Trichloroethene	J	0.56 ug/L	1	7/18/2024	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	7/18/2024	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Dissolved Solids		208 mg/L	10	7/18/2024	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	7/18/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20 mg/L	20	7/18/2024	EPA-410.4	=
Cyanide	UN	0.2 mg/L	0.2	7/18/2024	SW846-9012B	=
Total Organic Halides (TOX)		10.5 ug/L	10	7/18/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.773 mg/L	2	7/18/2024	SW846-9060A	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** MW364      DOWN      **RGA Type:** LRGA      **Period:** 3rd Quarter 2024  
**AKGWA Well Tag #:** 8004-4797      **SAMPLE ID:** MW364UG4-24      **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.469	mg/L	0.2	7/18/2024			SW846-9056A	=
Chloride	J	36.7	mg/L	250	7/18/2024			SW846-9056A	=
Fluoride	J	0.18	mg/L	4	7/18/2024			SW846-9056A	=
Nitrate as Nitrogen	J	1.14	mg/L	10	7/18/2024			SW846-9056A	=
Sulfate		68	mg/L	4	7/18/2024			SW846-9056A	=
Barometric Pressure Reading		30.07	Inches/Hg		7/18/2024				X
Conductivity		478	µmhos/cm		7/18/2024				X
Depth to Water		45.22	ft		7/18/2024				X
Dissolved Oxygen		3.3	mg/L		7/18/2024				X
Eh (approx)		526	mV		7/18/2024				X
pH		5.86	Std Unit		7/18/2024				X
Temperature		63.6	deg F		7/18/2024				X
Turbidity		0	NTU		7/18/2024				X
Aluminum	U	0.05	mg/L	0.05	7/18/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	7/18/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	7/18/2024			SW846-6020B	=
Barium		0.0547	mg/L	0.004	7/18/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	7/18/2024			SW846-6020B	=
Boron		0.169	mg/L	0.015	7/18/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	7/18/2024			SW846-6020B	=
Calcium		32.3	mg/L	0.2	7/18/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	7/18/2024			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	7/18/2024			SW846-6020B	=
Copper	J	0.000878	mg/L	0.002	7/18/2024			SW846-6020B	=
Iron	U	0.1	mg/L	0.1	7/18/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	7/18/2024			SW846-6020B	=
Magnesium		13.9	mg/L	0.03	7/18/2024			SW846-6020B	=
Manganese	J	0.00115	mg/L	0.005	7/18/2024			SW846-6020B	=
Molybdenum	U	0.001	mg/L	0.001	7/18/2024			SW846-6020B	=
Nickel	U	0.002	mg/L	0.002	7/18/2024			SW846-6020B	=
Potassium		1.92	mg/L	0.3	7/18/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	7/18/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	7/18/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	7/18/2024			SW846-6020B	=
Sodium		40.1	mg/L	0.25	7/18/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	7/18/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	7/18/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	7/18/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	7/18/2024			SW846-6020B	=
Zinc	J	0.0145	mg/L	0.02	7/18/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	7/18/2024			SW846-7470A	=
Barium, Dissolved		0.0553	mg/L	0.004	7/18/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	7/18/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	7/18/2024			SW846-6020B	UJ
PCB-1016	U	0.0965	ug/L	0.0965	7/18/2024			SW846-8082A	=

PCB-1221	U	0.0965	ug/L	0.0965	7/18/2024			SW846-8082A	=
PCB-1232	U	0.0965	ug/L	0.0965	7/18/2024			SW846-8082A	=
PCB-1242	U	0.0965	ug/L	0.0965	7/18/2024			SW846-8082A	=
PCB-1248	U	0.0965	ug/L	0.0965	7/18/2024			SW846-8082A	=
PCB-1254	U	0.0965	ug/L	0.0965	7/18/2024			SW846-8082A	=
PCB-1260	U	0.0965	ug/L	0.0965	7/18/2024			SW846-8082A	UJ
PCB-1268	U	0.0965	ug/L	0.0965	7/18/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.0965	ug/L	0.0965	7/18/2024			SW846-8082A	UJ
Radium-226	U	0.45	pCi/L	0.759	7/18/2024	0.557	0.558	AN-1418	=
Radium-228	U	3.24	pCi/L	4.46	7/18/2024	2.78	2.9	EPA-904.0-M	=
Strontium-90	U	2.97	pCi/L	4.36	7/18/2024	2.69	2.73	EPA-905.0-M	=
Tritium	U	112	pCi/L	257	7/18/2024	151	153	EPA-906.0-M	=
Technetium-99		54	pCi/L	15.6	7/18/2024	11.9	13.4	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.369	pCi/L	0.57	7/18/2024	0.396	0.4	HASL 300, Th-01-RC M	=
Thorium-232	U	-0.0206	pCi/L	0.449	7/18/2024	0.188	0.188	HASL 300, Th-01-RC M	=
Alpha activity	U	1.44	pCi/L	6.3	7/18/2024	3.26	3.27	SW846-9310	=
Beta activity		36.5	pCi/L	9.18	7/18/2024	8.71	10.6	SW846-9310	=
1,2-Dibromo-3-chloropropane	UY1	0.019	ug/L	0.019	7/18/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,4-Dichlorobenzene	UY2	1	ug/L	1	7/18/2024			SW846-8260D	UJ
2-Butanone	U	5	ug/L	5	7/18/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	7/18/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	7/18/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	7/18/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	7/18/2024			SW846-8260D	UJ
Acrylonitrile	U	5	ug/L	5	7/18/2024			SW846-8260D	UJ
Benzene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	7/18/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=

Ethylbenzene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Iodomethane	U	5 ug/L	5	7/18/2024	SW846-8260D	=
Methylene chloride	U	5 ug/L	5	7/18/2024	SW846-8260D	=
Styrene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Toluene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Total Xylene	U	3 ug/L	3	7/18/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5 ug/L	5	7/18/2024	SW846-8260D	UJ
Trichloroethene	J	0.96 ug/L	1	7/18/2024	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	7/18/2024	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Dissolved Solids		274 mg/L	10	7/18/2024	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	7/18/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20 mg/L	20	7/18/2024	EPA-410.4	=
Cyanide	UN	0.2 mg/L	0.2	7/18/2024	SW846-9012B	=
Total Organic Halides (TOX)	J	6.86 ug/L	10	7/18/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.425 mg/L	2	7/18/2024	SW846-9060A	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** MW365      DOWN      **RGA Type:** UCRS      **Period:** 3rd Quarter 2024  
**AKGWA Well Tag #:** 8004-0984      **SAMPLE ID:** MW365UG4-24      **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide	U	0.2	mg/L	0.2	7/18/2024			SW846-9056A	=
Chloride	J	2.05	mg/L	250	7/18/2024			SW846-9056A	=
Fluoride	J	0.44	mg/L	4	7/18/2024			SW846-9056A	=
Nitrate as Nitrogen	J	0.921	mg/L	10	7/18/2024			SW846-9056A	=
Sulfate		54.2	mg/L	2	7/18/2024			SW846-9056A	=
Barometric Pressure Reading		30.09	Inches/Hg		7/18/2024				X
Conductivity		394	µmhos/cm		7/18/2024				X
Depth to Water		38.24	ft		7/18/2024				X
Dissolved Oxygen		8.46	mg/L		7/18/2024				X
Eh (approx)		573	mV		7/18/2024				X
pH		6.3	Std Unit		7/18/2024				X
Temperature		63.1	deg F		7/18/2024				X
Turbidity		0	NTU		7/18/2024				X
Aluminum	J	0.0228	mg/L	0.05	7/18/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	7/18/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	7/18/2024			SW846-6020B	=
Barium		0.0802	mg/L	0.004	7/18/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	7/18/2024			SW846-6020B	=
Boron	J	0.00547	mg/L	0.015	7/18/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	7/18/2024			SW846-6020B	=
Calcium		19.4	mg/L	0.2	7/18/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	7/18/2024			SW846-6020B	=
Cobalt		0.00123	mg/L	0.001	7/18/2024			SW846-6020B	=
Copper		0.0034	mg/L	0.002	7/18/2024			SW846-6020B	=
Iron	U	0.1	mg/L	0.1	7/18/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	7/18/2024			SW846-6020B	=
Magnesium		9.05	mg/L	0.03	7/18/2024			SW846-6020B	=
Manganese		0.00701	mg/L	0.005	7/18/2024			SW846-6020B	=
Molybdenum	U	0.001	mg/L	0.001	7/18/2024			SW846-6020B	=
Nickel		0.00498	mg/L	0.002	7/18/2024			SW846-6020B	=
Potassium	J	0.227	mg/L	0.3	7/18/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	7/18/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	7/18/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	7/18/2024			SW846-6020B	=
Sodium		48.5	mg/L	2.5	7/18/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	7/18/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	7/18/2024			SW846-6020B	=
Uranium	J	0.000125	mg/L	0.0002	7/18/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	7/18/2024			SW846-6020B	=
Zinc	J	0.0033	mg/L	0.02	7/18/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	7/18/2024			SW846-7470A	=
Barium, Dissolved		0.0796	mg/L	0.004	7/18/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	7/18/2024			SW846-6020B	UJ
Uranium, Dissolved	J	0.000107	mg/L	0.0002	7/18/2024			SW846-6020B	J
PCB-1016	U	0.0976	ug/L	0.0976	7/18/2024			SW846-8082A	=

PCB-1221	U	0.0976	ug/L	0.0976	7/18/2024			SW846-8082A	=
PCB-1232	U	0.0976	ug/L	0.0976	7/18/2024			SW846-8082A	=
PCB-1242	U	0.0976	ug/L	0.0976	7/18/2024			SW846-8082A	=
PCB-1248	U	0.0976	ug/L	0.0976	7/18/2024			SW846-8082A	=
PCB-1254	U	0.0976	ug/L	0.0976	7/18/2024			SW846-8082A	=
PCB-1260	U	0.0976	ug/L	0.0976	7/18/2024			SW846-8082A	UJ
PCB-1268	U	0.0976	ug/L	0.0976	7/18/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.0976	ug/L	0.0976	7/18/2024			SW846-8082A	UJ
Radium-226	U	0.651	pCi/L	1.12	7/18/2024	0.746	0.747	AN-1418	=
Radium-228	U	1.34	pCi/L	4.28	7/18/2024	2.4	2.43	EPA-904.0-M	=
Strontium-90	U	2.3	pCi/L	5.23	7/18/2024	3.06	3.08	EPA-905.0-M	=
Tritium	U	99.2	pCi/L	260	7/18/2024	152	153	EPA-906.0-M	=
Technetium-99	U	-3.35	pCi/L	15.7	7/18/2024	8.55	8.55	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.312	pCi/L	0.732	7/18/2024	0.473	0.477	HASL 300, Th-01-RC M	=
Thorium-232	U	-0.0549	pCi/L	0.553	7/18/2024	0.205	0.206	HASL 300, Th-01-RC M	=
Alpha activity	U	-0.0454	pCi/L	8.61	7/18/2024	3.99	3.99	SW846-9310	=
Beta activity	U	7.05	pCi/L	8.96	7/18/2024	5.65	5.77	SW846-9310	=
1,2-Dibromo-3-chloropropane	UY1	0.0191	ug/L	0.0191	7/18/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,1,1-Trichloroethane	J	0.38	ug/L	1	7/18/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,4-Dichlorobenzene	UY2	1	ug/L	1	7/18/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	7/18/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	7/18/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	7/18/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	7/18/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	7/18/2024			SW846-8260D	UJ
Acrylonitrile	U	5	ug/L	5	7/18/2024			SW846-8260D	UJ
Benzene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	7/18/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=

Ethylbenzene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Iodomethane	U	5 ug/L	5	7/18/2024	SW846-8260D	=
Methylene chloride	U	5 ug/L	5	7/18/2024	SW846-8260D	=
Styrene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Toluene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Total Xylene	U	3 ug/L	3	7/18/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5 ug/L	5	7/18/2024	SW846-8260D	UJ
Trichloroethene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	7/18/2024	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Dissolved Solids		254 mg/L	10	7/18/2024	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	7/18/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	J	12.9 mg/L	20	7/18/2024	EPA-410.4	=
Cyanide	UN	0.2 mg/L	0.2	7/18/2024	SW846-9012B	=
Total Organic Halides (TOX)		19.2 ug/L	10	7/18/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	1.09 mg/L	2	7/18/2024	SW846-9060A	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** MW366      DOWN      **RGA Type:** URGA      **Period:** 3rd Quarter 2024  
**AKGWA Well Tag #:** 8004-0982      **SAMPLE ID:** MW366UG4-24      **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.507	mg/L	0.2	7/18/2024			SW846-9056A	=
Chloride	J	40.6	mg/L	250	7/18/2024			SW846-9056A	=
Fluoride	J	0.225	mg/L	4	7/18/2024			SW846-9056A	=
Nitrate as Nitrogen	J	0.964	mg/L	10	7/18/2024			SW846-9056A	=
Sulfate		50	mg/L	4	7/18/2024			SW846-9056A	=
Barometric Pressure Reading		30.09	Inches/Hg		7/18/2024				X
Conductivity		486	µmhos/cm		7/18/2024				X
Depth to Water		45.73	ft		7/18/2024				X
Dissolved Oxygen		4.63	mg/L		7/18/2024				X
Eh (approx)		592	mV		7/18/2024				X
pH		6.04	Std Unit		7/18/2024				X
Temperature		66.4	deg F		7/18/2024				X
Turbidity		0	NTU		7/18/2024				X
Aluminum	U	0.05	mg/L	0.05	7/18/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	7/18/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	7/18/2024			SW846-6020B	=
Barium		0.109	mg/L	0.004	7/18/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	7/18/2024			SW846-6020B	=
Boron		0.0796	mg/L	0.015	7/18/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	7/18/2024			SW846-6020B	=
Calcium		31.6	mg/L	0.2	7/18/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	7/18/2024			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	7/18/2024			SW846-6020B	=
Copper	J	0.000829	mg/L	0.002	7/18/2024			SW846-6020B	=
Iron	U	0.1	mg/L	0.1	7/18/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	7/18/2024			SW846-6020B	=
Magnesium		13	mg/L	0.03	7/18/2024			SW846-6020B	=
Manganese	J	0.003	mg/L	0.005	7/18/2024			SW846-6020B	=
Molybdenum	U	0.001	mg/L	0.001	7/18/2024			SW846-6020B	=
Nickel	J	0.000661	mg/L	0.002	7/18/2024			SW846-6020B	=
Potassium		1.86	mg/L	0.3	7/18/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	7/18/2024			SW846-6020B	=
Selenium	J	0.00219	mg/L	0.005	7/18/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	7/18/2024			SW846-6020B	=
Sodium		44.1	mg/L	0.25	7/18/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	7/18/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	7/18/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	7/18/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	7/18/2024			SW846-6020B	=
Zinc	U	0.02	mg/L	0.02	7/18/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	7/18/2024			SW846-7470A	=
Barium, Dissolved		0.11	mg/L	0.004	7/18/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	7/18/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	7/18/2024			SW846-6020B	UJ
PCB-1016	U	0.109	ug/L	0.109	7/18/2024			SW846-8082A	=

PCB-1221	U	0.109	ug/L	0.109	7/18/2024			SW846-8082A	=
PCB-1232	U	0.109	ug/L	0.109	7/18/2024			SW846-8082A	=
PCB-1242	U	0.109	ug/L	0.109	7/18/2024			SW846-8082A	=
PCB-1248	U	0.109	ug/L	0.109	7/18/2024			SW846-8082A	=
PCB-1254	U	0.109	ug/L	0.109	7/18/2024			SW846-8082A	=
PCB-1260	U	0.109	ug/L	0.109	7/18/2024			SW846-8082A	UJ
PCB-1268	U	0.109	ug/L	0.109	7/18/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.109	ug/L	0.109	7/18/2024			SW846-8082A	UJ
Radium-226	U	1.13	pCi/L	1.25	7/18/2024	0.907	0.909	AN-1418	=
Radium-228	U	0.752	pCi/L	4.7	7/18/2024	2.6	2.61	EPA-904.0-M	=
Strontium-90	U	0.286	pCi/L	3.22	7/18/2024	1.69	1.69	EPA-905.0-M	=
Tritium	U	225	pCi/L	259	7/18/2024	160	166	EPA-906.0-M	=
Technetium-99		68.5	pCi/L	15.9	7/18/2024	12.8	15	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.155	pCi/L	0.636	7/18/2024	0.36	0.362	HASL 300, Th-01-RC M	=
Thorium-232	U	0.214	pCi/L	0.41	7/18/2024	0.32	0.322	HASL 300, Th-01-RC M	=
Alpha activity	U	2.67	pCi/L	7.2	7/18/2024	4.11	4.13	SW846-9310	=
Beta activity		44.9	pCi/L	10.6	7/18/2024	9.9	12.3	SW846-9310	=
1,2-Dibromo-3-chloropropane	UY1	0.0194	ug/L	0.0194	7/18/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,1,1-Trichloroethane	J	0.4	ug/L	1	7/18/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,4-Dichlorobenzene	UY2	1	ug/L	1	7/18/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	7/18/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	7/18/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	7/18/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	7/18/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	7/18/2024			SW846-8260D	UJ
Acrylonitrile	U	5	ug/L	5	7/18/2024			SW846-8260D	UJ
Benzene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	7/18/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=

Ethylbenzene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Iodomethane	U	5 ug/L	5	7/18/2024	SW846-8260D	=
Methylene chloride	U	5 ug/L	5	7/18/2024	SW846-8260D	=
Styrene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Toluene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Total Xylene	U	3 ug/L	3	7/18/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5 ug/L	5	7/18/2024	SW846-8260D	UJ
Trichloroethene	J	0.54 ug/L	1	7/18/2024	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	7/18/2024	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Dissolved Solids		268 mg/L	10	7/18/2024	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	7/18/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	J	10.6 mg/L	20	7/18/2024	EPA-410.4	=
Cyanide	UN	0.2 mg/L	0.2	7/18/2024	SW846-9012B	=
Total Organic Halides (TOX)	J	3.9 ug/L	10	7/18/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.617 mg/L	2	7/18/2024	SW846-9060A	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** MW367      DOWN      **RGA Type:** LRGA      **Period:** 3rd Quarter 2024  
**AKGWA Well Tag #:** 8004-4793      **SAMPLE ID:** MW367UG4-24      **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide	J	0.128	mg/L	0.2	7/22/2024			SW846-9056A	=
Chloride	JW	8.06	mg/L	250	7/22/2024			SW846-9056A	J
Fluoride	*J	0.199	mg/L	4	7/22/2024			SW846-9056A	=
Nitrate as Nitrogen	J	0.083	mg/L	10	7/22/2024			SW846-9056A	=
Sulfate		20.8	mg/L	0.8	7/22/2024			SW846-9056A	=
Barometric Pressure Reading		30.01	Inches/Hg		7/22/2024				X
Conductivity		223	µmhos/cm		7/22/2024				X
Depth to Water		46.05	ft		7/22/2024				X
Dissolved Oxygen		1.21	mg/L		7/22/2024				X
Eh (approx)		259	mV		7/22/2024				X
pH		5.85	Std Unit		7/22/2024				X
Temperature		64.9	deg F		7/22/2024				X
Turbidity		4.65	NTU		7/22/2024				X
Aluminum	U	0.05	mg/L	0.05	7/22/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	7/22/2024			SW846-6020B	=
Arsenic	J	0.00275	mg/L	0.005	7/22/2024			SW846-6020B	=
Barium		0.132	mg/L	0.004	7/22/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	7/22/2024			SW846-6020B	=
Boron	J	0.0149	mg/L	0.015	7/22/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	7/22/2024			SW846-6020B	=
Calcium		13.3	mg/L	0.2	7/22/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	7/22/2024			SW846-6020B	=
Cobalt		0.00707	mg/L	0.001	7/22/2024			SW846-6020B	=
Copper	J	0.00118	mg/L	0.002	7/22/2024			SW846-6020B	=
Iron		7.72	mg/L	0.1	7/22/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	7/22/2024			SW846-6020B	=
Magnesium	N	6.82	mg/L	0.03	7/22/2024			SW846-6020B	J
Manganese		1.43	mg/L	0.05	7/22/2024			SW846-6020B	=
Molybdenum	U	0.001	mg/L	0.001	7/22/2024			SW846-6020B	=
Nickel		0.00297	mg/L	0.002	7/22/2024			SW846-6020B	=
Potassium		2.75	mg/L	0.3	7/22/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	7/22/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	7/22/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	7/22/2024			SW846-6020B	=
Sodium		14.9	mg/L	0.25	7/22/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	7/22/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	7/22/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	7/22/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	7/22/2024			SW846-6020B	=
Zinc		0.0221	mg/L	0.02	7/22/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	7/22/2024			SW846-7470A	=
Barium, Dissolved		0.126	mg/L	0.004	7/22/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	7/22/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	7/22/2024			SW846-6020B	UJ
PCB-1016	U	0.1	ug/L	0.1	7/22/2024			SW846-8082A	=

PCB-1221	U	0.1	ug/L	0.1	7/22/2024			SW846-8082A	=
PCB-1232	U	0.1	ug/L	0.1	7/22/2024			SW846-8082A	=
PCB-1242	U	0.1	ug/L	0.1	7/22/2024			SW846-8082A	=
PCB-1248	U	0.1	ug/L	0.1	7/22/2024			SW846-8082A	=
PCB-1254	U	0.1	ug/L	0.1	7/22/2024			SW846-8082A	=
PCB-1260	U	0.1	ug/L	0.1	7/22/2024			SW846-8082A	UJ
PCB-1268	U	0.1	ug/L	0.1	7/22/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.1	ug/L	0.1	7/22/2024			SW846-8082A	UJ
Radium-226	U	1.35	pCi/L	1.44	7/22/2024	1.13	1.13	AN-1418	=
Radium-228	U	-0.156	pCi/L	4.06	7/22/2024	2	2	EPA-904.0-M	=
Strontium-90	U	3.21	pCi/L	5.5	7/22/2024	3.32	3.37	EPA-905.0-M	=
Tritium	U	-10.4	pCi/L	235	7/22/2024	132	132	EPA-906.0-M	=
Technetium-99	U	-4.38	pCi/L	15.6	7/22/2024	8.36	8.36	HASL 300, Tc-02-RC M	=
Thorium-230	U	-0.136	pCi/L	0.989	7/22/2024	0.389	0.389	HASL 300, Th-01-RC M	=
Thorium-232	U	-0.00793	pCi/L	0.409	7/22/2024	0.211	0.212	HASL 300, Th-01-RC M	=
Alpha activity	U	2.01	pCi/L	5.68	7/22/2024	3.17	3.19	SW846-9310	=
Beta activity	U	5.71	pCi/L	8.74	7/22/2024	5.37	5.45	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0185	ug/L	0.0185	7/22/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	7/22/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	7/22/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	7/22/2024			SW846-8260D	=
Acetone	BJ	1.79	ug/L	5	7/22/2024			SW846-8260D	U
Acrolein	U	5	ug/L	5	7/22/2024			SW846-8260D	UJ
Acrylonitrile	U	5	ug/L	5	7/22/2024			SW846-8260D	UJ
Benzene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	7/22/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=

Ethylbenzene	U	1 ug/L	1	7/22/2024	SW846-8260D	=
Iodomethane	U	5 ug/L	5	7/22/2024	SW846-8260D	=
Methylene chloride	U	5 ug/L	5	7/22/2024	SW846-8260D	=
Styrene	U	1 ug/L	1	7/22/2024	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	7/22/2024	SW846-8260D	=
Toluene	U	1 ug/L	1	7/22/2024	SW846-8260D	=
Total Xylene	U	3 ug/L	3	7/22/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	7/22/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	7/22/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5 ug/L	5	7/22/2024	SW846-8260D	UJ
Trichloroethene	U	1 ug/L	1	7/22/2024	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	7/22/2024	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	7/22/2024	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	7/22/2024	SW846-8260D	=
Dissolved Solids		125 mg/L	10	7/22/2024	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	7/22/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20 mg/L	20	7/22/2024	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	7/22/2024	SW846-9012B	=
Total Organic Halides (TOX)	J	5.64 ug/L	10	7/22/2024	SW846-9020B	=
Total Organic Carbon (TOC)	U	2 mg/L	2	7/22/2024	SW846-9060A	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045

**Sampling Point:** MW368      DOWN      **RGA Type:** UCRS      **Period:** 3rd Quarter 2024

**AKGWA Well Tag #:** 8004-0983      **SAMPLE ID:** MW368UG4-24      **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide	U	0.2	mg/L	0.2	7/22/2024			SW846-9056A	=
Chloride	JW	2.87	mg/L	250	7/22/2024			SW846-9056A	=
Fluoride	*J	0.339	mg/L	4	7/22/2024			SW846-9056A	=
Nitrate as Nitrogen	J	0.114	mg/L	10	7/22/2024			SW846-9056A	=
Sulfate		125	mg/L	8	7/22/2024			SW846-9056A	=
Barometric Pressure Reading		30.02	Inches/Hg		7/22/2024				X
Conductivity		716	µmhos/cm		7/22/2024				X
Depth to Water		37.67	ft		7/22/2024				X
Dissolved Oxygen		3.26	mg/L		7/22/2024				X
Eh (approx)		246	mV		7/22/2024				X
pH		6.38	Std Unit		7/22/2024				X
Temperature		64.7	deg F		7/22/2024				X
Turbidity		-7.14	NTU		7/22/2024				X
Aluminum		1.01	mg/L	0.05	7/22/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	7/22/2024			SW846-6020B	=
Arsenic	J	0.00333	mg/L	0.005	7/22/2024			SW846-6020B	=
Barium		0.0682	mg/L	0.004	7/22/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	7/22/2024			SW846-6020B	=
Boron	J	0.00809	mg/L	0.015	7/22/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	7/22/2024			SW846-6020B	=
Calcium		57.6	mg/L	2	7/22/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	7/22/2024			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	7/22/2024			SW846-6020B	=
Copper	J	0.00101	mg/L	0.002	7/22/2024			SW846-6020B	=
Iron		0.598	mg/L	0.1	7/22/2024			SW846-6020B	=
Lead	J	0.000536	mg/L	0.002	7/22/2024			SW846-6020B	=
Magnesium	N	14.1	mg/L	0.03	7/22/2024			SW846-6020B	=
Manganese		0.0124	mg/L	0.005	7/22/2024			SW846-6020B	=
Molybdenum	J	0.000618	mg/L	0.001	7/22/2024			SW846-6020B	=
Nickel	J	0.000864	mg/L	0.002	7/22/2024			SW846-6020B	=
Potassium		0.786	mg/L	0.3	7/22/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	7/22/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	7/22/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	7/22/2024			SW846-6020B	=
Sodium		72.9	mg/L	2.5	7/22/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	7/22/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	7/22/2024			SW846-6020B	=
Uranium		0.000536	mg/L	0.0002	7/22/2024			SW846-6020B	=
Vanadium	J	0.00553	mg/L	0.02	7/22/2024			SW846-6020B	=
Zinc	J	0.00559	mg/L	0.02	7/22/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	7/22/2024			SW846-7470A	=
Barium, Dissolved		0.068	mg/L	0.004	7/22/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	7/22/2024			SW846-6020B	UJ
Uranium, Dissolved		0.00052	mg/L	0.0002	7/22/2024			SW846-6020B	J
PCB-1016	U	0.1	ug/L	0.1	7/22/2024			SW846-8082A	UJ

PCB-1221	U	0.1	ug/L	0.1	7/22/2024			SW846-8082A	=
PCB-1232	U	0.1	ug/L	0.1	7/22/2024			SW846-8082A	=
PCB-1242	U	0.1	ug/L	0.1	7/22/2024			SW846-8082A	=
PCB-1248	U	0.1	ug/L	0.1	7/22/2024			SW846-8082A	=
PCB-1254	U	0.1	ug/L	0.1	7/22/2024			SW846-8082A	=
PCB-1260	U	0.1	ug/L	0.1	7/22/2024			SW846-8082A	UJ
PCB-1268	U	0.1	ug/L	0.1	7/22/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.1	ug/L	0.1	7/22/2024			SW846-8082A	UJ
Radium-226	U	0.775	pCi/L	1.43	7/22/2024	0.93	0.931	AN-1418	=
Radium-228	U	2.98	pCi/L	4.75	7/22/2024	2.86	2.96	EPA-904.0-M	=
Strontium-90	U	-0.161	pCi/L	2.48	7/22/2024	1.24	1.24	EPA-905.0-M	=
Tritium	U	18.8	pCi/L	231	7/22/2024	132	132	EPA-906.0-M	=
Technetium-99	U	-2.63	pCi/L	15.9	7/22/2024	8.68	8.68	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.0967	pCi/L	0.615	7/22/2024	0.323	0.324	HASL 300, Th-01-RC M	=
Thorium-232	U	0.0833	pCi/L	0.45	7/22/2024	0.251	0.252	HASL 300, Th-01-RC M	=
Alpha activity	U	1.22	pCi/L	6.98	7/22/2024	3.44	3.45	SW846-9310	=
Beta activity	U	0.738	pCi/L	9.09	7/22/2024	4.87	4.87	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0191	ug/L	0.0191	7/22/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	7/22/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	7/22/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	7/22/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	7/22/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	7/22/2024			SW846-8260D	UJ
Acrylonitrile	U	5	ug/L	5	7/22/2024			SW846-8260D	UJ
Benzene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	7/22/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=

Ethylbenzene	U	1 ug/L	1	7/22/2024	SW846-8260D	=
Iodomethane	U	5 ug/L	5	7/22/2024	SW846-8260D	=
Methylene chloride	J	0.56 ug/L	5	7/22/2024	SW846-8260D	=
Styrene	U	1 ug/L	1	7/22/2024	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	7/22/2024	SW846-8260D	=
Toluene	U	1 ug/L	1	7/22/2024	SW846-8260D	=
Total Xylene	U	3 ug/L	3	7/22/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	7/22/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	7/22/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5 ug/L	5	7/22/2024	SW846-8260D	UJ
Trichloroethene	U	1 ug/L	1	7/22/2024	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	7/22/2024	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	7/22/2024	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	7/22/2024	SW846-8260D	=
Dissolved Solids		447 mg/L	10	7/22/2024	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	7/22/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	J	9.51 mg/L	20	7/22/2024	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	7/22/2024	SW846-9012B	=
Total Organic Halides (TOX)	J	7.72 ug/L	10	7/22/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	1.35 mg/L	2	7/22/2024	SW846-9060A	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** MW369      UP      **RGA Type:** URGA      **Period:** 3rd Quarter 2024  
**AKGWA Well Tag #:** 8004-4820      **SAMPLE ID:** MW369UG4-24      **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Barometric Pressure Reading		30.01	Inches/Hg		7/17/2024				X
Conductivity		342	µmhos/cm		7/17/2024				X
Depth to Water		40.07	ft		7/17/2024				X
Dissolved Oxygen		1.95	mg/L		7/17/2024				X
Eh (approx)		536	mV		7/17/2024				X
pH		6.09	Std Unit		7/17/2024				X
Temperature		68.3	deg F		7/17/2024				X
Turbidity		-3.6	NTU		7/17/2024				X
Aluminum	J	0.0269	mg/L	0.05	7/17/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	7/17/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	7/17/2024			SW846-6020B	=
Barium		0.359	mg/L	0.004	7/17/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	7/17/2024			SW846-6020B	=
Boron	J	0.0137	mg/L	0.015	7/17/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	7/17/2024			SW846-6020B	=
Calcium		15.1	mg/L	0.2	7/17/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	7/17/2024			SW846-6020B	=
Cobalt		0.00431	mg/L	0.001	7/17/2024			SW846-6020B	=
Copper		0.00295	mg/L	0.002	7/17/2024			SW846-6020B	=
Iron	J	0.0486	mg/L	0.1	7/17/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	7/17/2024			SW846-6020B	=
Magnesium		6.22	mg/L	0.03	7/17/2024			SW846-6020B	=
Manganese	J	0.00423	mg/L	0.005	7/17/2024			SW846-6020B	=
Molybdenum	U	0.001	mg/L	0.001	7/17/2024			SW846-6020B	=
Nickel		0.00432	mg/L	0.002	7/17/2024			SW846-6020B	=
Potassium		0.499	mg/L	0.3	7/17/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	7/17/2024			SW846-6020B	=
Selenium	J	0.002	mg/L	0.005	7/17/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	7/17/2024			SW846-6020B	=
Sodium		48.4	mg/L	0.25	7/17/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	7/17/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	7/17/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	7/17/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	7/17/2024			SW846-6020B	=
Zinc	J	0.00676	mg/L	0.02	7/17/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	7/17/2024			SW846-7470A	=
Barium, Dissolved		0.349	mg/L	0.004	7/17/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	7/17/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	7/17/2024			SW846-6020B	UJ
Radium-226	U	0.377	pCi/L	1.22	7/17/2024	0.749	0.75	AN-1418	=
Radium-228	U	4.57	pCi/L	4.61	7/17/2024	2.94	3.17	EPA-904.0-M	=
Strontium-90	U	0.861	pCi/L	6.81	7/17/2024	3.67	3.68	EPA-905.0-M	=
Technetium-99		42.7	pCi/L	17.7	7/17/2024	11.5	12.5	HASL 300, Tc-02-RC M	J

Thorium-230	U	0.139	pCi/L	0.649	7/17/2024	0.354	0.355	HASL 300, Th-01-RC M	=
Thorium-232	U	-0.0533	pCi/L	0.518	7/17/2024	0.202	0.202	HASL 300, Th-01-RC M	=
Alpha activity	U	-0.865	pCi/L	6.58	7/17/2024	2.38	2.39	SW846-9310	=
Beta activity		31.5	pCi/L	9.06	7/17/2024	8.17	9.7	SW846-9310	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** MW369      UP      **RGA Type:** URGA      **Period:** 3rd Quarter 2024  
**AKGWA Well Tag #:** 8004-4820      **SAMPLE ID:** MW369UG4-24R      **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.325	mg/L	0.2	7/30/2024			SW846-9056A	=
Chloride	JW	29.4	mg/L	250	7/30/2024			SW846-9056A	J
Fluoride	J	0.243	mg/L	4	7/30/2024			SW846-9056A	=
Nitrate as Nitrogen	J	0.946	mg/L	10	7/30/2024			SW846-9056A	=
Sulfate		7.92	mg/L	0.4	7/30/2024			SW846-9056A	=
Barometric Pressure Reading		29.93	Inches/Hg		7/30/2024				X
Conductivity		336	µmhos/cm		7/30/2024				X
Depth to Water		38.89	ft		7/30/2024				X
Dissolved Oxygen		3	mg/L		7/30/2024				X
Eh (approx)		462	mV		7/30/2024				X
pH		6.06	Std Unit		7/30/2024				X
Temperature		69.9	deg F		7/30/2024				X
Turbidity		0	NTU		7/30/2024				X
PCB-1016	U	0.0951	ug/L	0.0951	7/30/2024			SW846-8082A	UJ
PCB-1221	U	0.0951	ug/L	0.0951	7/30/2024			SW846-8082A	=
PCB-1232	U	0.0951	ug/L	0.0951	7/30/2024			SW846-8082A	=
PCB-1242	U	0.0951	ug/L	0.0951	7/30/2024			SW846-8082A	=
PCB-1248	U	0.0951	ug/L	0.0951	7/30/2024			SW846-8082A	=
PCB-1254	U	0.0951	ug/L	0.0951	7/30/2024			SW846-8082A	=
PCB-1260	U	0.0951	ug/L	0.0951	7/30/2024			SW846-8082A	UJ
PCB-1268	U	0.0951	ug/L	0.0951	7/30/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.0951	ug/L	0.0951	7/30/2024			SW846-8082A	UJ
Tritium	U	-48.7	pCi/L	287	7/30/2024	155	155	EPA-906.0-M	=
1,2-Dibromo-3-chloropropane	UY2	0.0273	ug/L	0.0273	7/30/2024			SW846-8011	UJ
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	7/30/2024			SW846-8260D	UJ
Acrylonitrile	U	5	ug/L	5	7/30/2024			SW846-8260D	UJ
Benzene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=

Bromoform	U	1 ug/L	1	7/30/2024	SW846-8260D	UJ
Bromomethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Carbon disulfide	U	5 ug/L	5	7/30/2024	SW846-8260D	=
Carbon tetrachloride	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Chlorobenzene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Chloroethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Chloroform	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Chloromethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
cis-1,2-Dichloroethene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
cis-1,3-Dichloropropene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Dibromochloromethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Dibromomethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Ethylbenzene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Iodomethane	U	5 ug/L	5	7/30/2024	SW846-8260D	=
Methylene chloride	U	5 ug/L	5	7/30/2024	SW846-8260D	=
Styrene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Toluene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Total Xylene	U	3 ug/L	3	7/30/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5 ug/L	5	7/30/2024	SW846-8260D	UJ
Trichloroethene		1.26 ug/L	1	7/30/2024	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	7/30/2024	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Dissolved Solids		213 mg/L	10	7/30/2024	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	7/30/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20 mg/L	20	7/30/2024	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	7/30/2024	SW846-9012B	=
Total Organic Halides (TOX)		18.3 ug/L	10	7/30/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.757 mg/L	2	7/30/2024	SW846-9060A	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** MW370      UP      **RGA Type:** LRGA      **Period:** 3rd Quarter 2024  
**AKGWA Well Tag #:** 8004-4818      **SAMPLE ID:** MW370UG4-24      **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Barometric Pressure Reading		29.99	Inches/Hg		7/17/2024				X
Conductivity		454	µmhos/cm		7/17/2024				X
Depth to Water		40.95	ft		7/17/2024				X
Dissolved Oxygen		3.66	mg/L		7/17/2024				X
Eh (approx)		556	mV		7/17/2024				X
pH		6.05	Std Unit		7/17/2024				X
Temperature		66.7	deg F		7/17/2024				X
Turbidity		-3.39	NTU		7/17/2024				X
Aluminum		0.814	mg/L	0.05	7/17/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	7/17/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	7/17/2024			SW846-6020B	=
Barium		0.212	mg/L	0.004	7/17/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	7/17/2024			SW846-6020B	=
Boron		0.0977	mg/L	0.015	7/17/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	7/17/2024			SW846-6020B	=
Calcium		29	mg/L	0.2	7/17/2024			SW846-6020B	=
Chromium	J	0.00371	mg/L	0.01	7/17/2024			SW846-6020B	=
Cobalt	J	0.000355	mg/L	0.001	7/17/2024			SW846-6020B	=
Copper	J	0.00111	mg/L	0.002	7/17/2024			SW846-6020B	=
Iron		1.7	mg/L	0.1	7/17/2024			SW846-6020B	=
Lead	J	0.000518	mg/L	0.002	7/17/2024			SW846-6020B	=
Magnesium		12.1	mg/L	0.03	7/17/2024			SW846-6020B	=
Manganese		0.0587	mg/L	0.005	7/17/2024			SW846-6020B	=
Molybdenum	J	0.000285	mg/L	0.001	7/17/2024			SW846-6020B	U
Nickel	J	0.000938	mg/L	0.002	7/17/2024			SW846-6020B	=
Potassium		2.36	mg/L	0.3	7/17/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	7/17/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	7/17/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	7/17/2024			SW846-6020B	=
Sodium		41.9	mg/L	0.25	7/17/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	7/17/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	7/17/2024			SW846-6020B	=
Uranium	J	0.000108	mg/L	0.0002	7/17/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	7/17/2024			SW846-6020B	=
Zinc	J	0.00377	mg/L	0.02	7/17/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	7/17/2024			SW846-7470A	=
Barium, Dissolved		0.207	mg/L	0.004	7/17/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	7/17/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	7/17/2024			SW846-6020B	UJ
Radium-226	U	0.683	pCi/L	1.26	7/17/2024	0.887	0.888	AN-1418	=
Radium-228	U	2.78	pCi/L	4.98	7/17/2024	2.98	3.07	EPA-904.0-M	=
Strontium-90	U	2.56	pCi/L	3.29	7/17/2024	2.06	2.1	EPA-905.0-M	=
Tritium	U	-40	pCi/L	290	7/17/2024	160	160	EPA-906.0-M	=
Technetium-99	U	-4.19	pCi/L	18.8	7/17/2024	10.4	10.4	HASL 300, Tc-02-RC M	UJ

Thorium-230	U	0.384	pCi/L	1.06	7/17/2024	0.627	0.632	HASL 300, Th-01-RC M	=
Thorium-232	U	0.0942	pCi/L	0.397	7/17/2024	0.286	0.287	HASL 300, Th-01-RC M	=
Alpha activity	U	0.184	pCi/L	6.29	7/17/2024	2.7	2.7	SW846-9310	=
Beta activity		14.1	pCi/L	8.83	7/17/2024	6.4	6.82	SW846-9310	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045

**Sampling Point:** MW370      UP      **RGA Type:** LRGA      **Period:** 3rd Quarter 2024

**AKGWA Well Tag #:** 8004-4818      **SAMPLE ID:** MW370UG4-24R      **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.546	mg/L	0.2	7/30/2024			SW846-9056A	=
Chloride	JW	42	mg/L	250	7/30/2024			SW846-9056A	=
Fluoride	J	0.205	mg/L	4	7/30/2024			SW846-9056A	=
Nitrate as Nitrogen	J	0.995	mg/L	10	7/30/2024			SW846-9056A	=
Sulfate		20.8	mg/L	0.8	7/30/2024			SW846-9056A	=
Barometric Pressure Reading		29.94	Inches/Hg		7/30/2024				X
Conductivity		439	µmhos/cm		7/30/2024				X
Depth to Water		40.78	ft		7/30/2024				X
Dissolved Oxygen		4.22	mg/L		7/30/2024				X
Eh (approx)		464	mV		7/30/2024				X
pH		6.06	Std Unit		7/30/2024				X
Temperature		69.6	deg F		7/30/2024				X
Turbidity		0	NTU		7/30/2024				X
PCB-1016	U	0.1	ug/L	0.1	7/30/2024			SW846-8082A	UJ
PCB-1221	U	0.1	ug/L	0.1	7/30/2024			SW846-8082A	=
PCB-1232	U	0.1	ug/L	0.1	7/30/2024			SW846-8082A	=
PCB-1242	U	0.1	ug/L	0.1	7/30/2024			SW846-8082A	=
PCB-1248	U	0.1	ug/L	0.1	7/30/2024			SW846-8082A	=
PCB-1254	U	0.1	ug/L	0.1	7/30/2024			SW846-8082A	=
PCB-1260	U	0.1	ug/L	0.1	7/30/2024			SW846-8082A	UJ
PCB-1268	U	0.1	ug/L	0.1	7/30/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.1	ug/L	0.1	7/30/2024			SW846-8082A	UJ
1,2-Dibromo-3-chloropropane	UY2	0.0192	ug/L	0.0192	7/30/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	7/30/2024			SW846-8260D	UJ
Acrylonitrile	U	5	ug/L	5	7/30/2024			SW846-8260D	UJ
Benzene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	7/30/2024			SW846-8260D	UJ

Bromomethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Carbon disulfide	U	5 ug/L	5	7/30/2024	SW846-8260D	=
Carbon tetrachloride	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Chlorobenzene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Chloroethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Chloroform	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Chloromethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
cis-1,2-Dichloroethene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
cis-1,3-Dichloropropene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Dibromochloromethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Dibromomethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Ethylbenzene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Iodomethane	U	5 ug/L	5	7/30/2024	SW846-8260D	=
Methylene chloride	U	5 ug/L	5	7/30/2024	SW846-8260D	=
Styrene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Toluene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Total Xylene	U	3 ug/L	3	7/30/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5 ug/L	5	7/30/2024	SW846-8260D	UJ
Trichloroethene		2.1 ug/L	1	7/30/2024	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	7/30/2024	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Dissolved Solids		247 mg/L	10	7/30/2024	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	7/30/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20 mg/L	20	7/30/2024	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	7/30/2024	SW846-9012B	=
Total Organic Halides (TOX)		11.1 ug/L	10	7/30/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.798 mg/L	2	7/30/2024	SW846-9060A	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045

**Sampling Point:** MW371      UP      **RGA Type:** UCRS      **Period:** 3rd Quarter 2024

**AKGWA Well Tag #:** 8004-4819      **SAMPLE ID:** MW371UG4-24      **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Barometric Pressure Reading		30	Inches/Hg		7/17/2024				X
Conductivity		650	µmhos/cm		7/17/2024				X
Depth to Water		25.72	ft		7/17/2024				X
Dissolved Oxygen		1.59	mg/L		7/17/2024				X
Eh (approx)		541	mV		7/17/2024				X
pH		6.51	Std Unit		7/17/2024				X
Temperature		63.6	deg F		7/17/2024				X
Turbidity		6.01	NTU		7/17/2024				X
Aluminum		0.104	mg/L	0.05	7/17/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	7/17/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	7/17/2024			SW846-6020B	=
Barium		0.157	mg/L	0.004	7/17/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	7/17/2024			SW846-6020B	=
Boron	U	0.015	mg/L	0.015	7/17/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	7/17/2024			SW846-6020B	=
Calcium		56.8	mg/L	2	7/17/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	7/17/2024			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	7/17/2024			SW846-6020B	=
Copper	J	0.000961	mg/L	0.002	7/17/2024			SW846-6020B	=
Iron	J	0.0921	mg/L	0.1	7/17/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	7/17/2024			SW846-6020B	=
Magnesium		16.2	mg/L	0.03	7/17/2024			SW846-6020B	=
Manganese		0.0057	mg/L	0.005	7/17/2024			SW846-6020B	=
Molybdenum	J	0.000438	mg/L	0.001	7/17/2024			SW846-6020B	U
Nickel	J	0.00147	mg/L	0.002	7/17/2024			SW846-6020B	=
Potassium		0.359	mg/L	0.3	7/17/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	7/17/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	7/17/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	7/17/2024			SW846-6020B	=
Sodium		74.2	mg/L	2.5	7/17/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	7/17/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	7/17/2024			SW846-6020B	=
Uranium		0.00194	mg/L	0.0002	7/17/2024			SW846-6020B	=
Vanadium	J	0.00526	mg/L	0.02	7/17/2024			SW846-6020B	=
Zinc	U	0.02	mg/L	0.02	7/17/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	7/17/2024			SW846-7470A	=
Barium, Dissolved		0.158	mg/L	0.004	7/17/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	7/17/2024			SW846-6020B	UJ
Uranium, Dissolved		0.00188	mg/L	0.0002	7/17/2024			SW846-6020B	J
Radium-226	U	1.31	pCi/L	1.8	7/17/2024	1.28	1.28	AN-1418	=
Radium-228	U	-2.37	pCi/L	4.85	7/17/2024	2.3	2.3	EPA-904.0-M	UJ
Strontium-90	U	-2.24	pCi/L	4.55	7/17/2024	2	2	EPA-905.0-M	UJ
Tritium	U	60.6	pCi/L	292	7/17/2024	168	168	EPA-906.0-M	=
Technetium-99	U	1.76	pCi/L	18.6	7/17/2024	10.8	10.8	HASL 300, Tc-02-RC M	UJ

Thorium-230	U	0.125	pCi/L	1.12	7/17/2024	0.57	0.572	HASL 300, Th-01-RC M	=
Thorium-232	U	-0.0482	pCi/L	0.804	7/17/2024	0.331	0.333	HASL 300, Th-01-RC M	=
Alpha activity	U	6.55	pCi/L	9.84	7/17/2024	6.26	6.37	SW846-9310	=
Beta activity	U	0.402	pCi/L	9.25	7/17/2024	4.92	4.93	SW846-9310	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** MW371      UP      **RGA Type:** UCRS      **Period:** 3rd Quarter 2024  
**AKGWA Well Tag #:** 8004-4819      **SAMPLE ID:** MW371UG4-24R      **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide	U	0.2	mg/L	0.2	7/30/2024			SW846-9056A	=
Chloride	JW	3.78	mg/L	250	7/30/2024			SW846-9056A	=
Fluoride	J	0.29	mg/L	4	7/30/2024			SW846-9056A	=
Nitrate as Nitrogen	J	0.114	mg/L	10	7/30/2024			SW846-9056A	=
Sulfate		10.4	mg/L	0.4	7/30/2024			SW846-9056A	=
Barometric Pressure Reading		29.94	Inches/Hg		7/30/2024				X
Conductivity		627	µmhos/cm		7/30/2024				X
Depth to Water		26	ft		7/30/2024				X
Dissolved Oxygen		4	mg/L		7/30/2024				X
Eh (approx)		447	mV		7/30/2024				X
pH		6.56	Std Unit		7/30/2024				X
Temperature		64.6	deg F		7/30/2024				X
Turbidity		0	NTU		7/30/2024				X
PCB-1016	U	0.0949	ug/L	0.0949	7/30/2024			SW846-8082A	UJ
PCB-1221	U	0.0949	ug/L	0.0949	7/30/2024			SW846-8082A	=
PCB-1232	U	0.0949	ug/L	0.0949	7/30/2024			SW846-8082A	=
PCB-1242	U	0.0949	ug/L	0.0949	7/30/2024			SW846-8082A	=
PCB-1248	U	0.0949	ug/L	0.0949	7/30/2024			SW846-8082A	=
PCB-1254	U	0.0949	ug/L	0.0949	7/30/2024			SW846-8082A	=
PCB-1260	U	0.0949	ug/L	0.0949	7/30/2024			SW846-8082A	UJ
PCB-1268	U	0.0949	ug/L	0.0949	7/30/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.0949	ug/L	0.0949	7/30/2024			SW846-8082A	UJ
1,2-Dibromo-3-chloropropane	UY2	0.0192	ug/L	0.0192	7/30/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	7/30/2024			SW846-8260D	UJ
Acrylonitrile	U	5	ug/L	5	7/30/2024			SW846-8260D	UJ
Benzene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	7/30/2024			SW846-8260D	UJ

Bromomethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Carbon disulfide	U	5 ug/L	5	7/30/2024	SW846-8260D	=
Carbon tetrachloride	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Chlorobenzene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Chloroethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Chloroform	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Chloromethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
cis-1,2-Dichloroethene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
cis-1,3-Dichloropropene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Dibromochloromethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Dibromomethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Ethylbenzene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Iodomethane	U	5 ug/L	5	7/30/2024	SW846-8260D	=
Methylene chloride	U	5 ug/L	5	7/30/2024	SW846-8260D	=
Styrene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Toluene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Total Xylene	U	3 ug/L	3	7/30/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5 ug/L	5	7/30/2024	SW846-8260D	UJ
Trichloroethene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	7/30/2024	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Dissolved Solids		407 mg/L	10	7/30/2024	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	7/30/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	J	16.4 mg/L	20	7/30/2024	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	7/30/2024	SW846-9012B	=
Total Organic Halides (TOX)	J	5.16 ug/L	10	7/30/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	1.8 mg/L	2	7/30/2024	SW846-9060A	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** MW372      UP      **RGA Type:** URGA      **Period:** 3rd Quarter 2024  
**AKGWA Well Tag #:** 8004-4808      **SAMPLE ID:** MW372UG4-24      **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Barometric Pressure Reading		29.98	Inches/Hg		7/17/2024				X
Conductivity		762	µmhos/cm		7/17/2024				X
Depth to Water		35.46	ft		7/17/2024				X
Dissolved Oxygen		0.68	mg/L		7/17/2024				X
Eh (approx)		533	mV		7/17/2024				X
pH		6.02	Std Unit		7/17/2024				X
Temperature		66.3	deg F		7/17/2024				X
Turbidity		-4.13	NTU		7/17/2024				X
Aluminum	U	0.05	mg/L	0.05	7/17/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	7/17/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	7/17/2024			SW846-6020B	=
Barium		0.0622	mg/L	0.004	7/17/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	7/17/2024			SW846-6020B	=
Boron		1.86	mg/L	0.3	7/17/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	7/17/2024			SW846-6020B	=
Calcium		65.9	mg/L	4	7/17/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	7/17/2024			SW846-6020B	=
Cobalt	J	0.000387	mg/L	0.001	7/17/2024			SW846-6020B	=
Copper	J	0.00135	mg/L	0.002	7/17/2024			SW846-6020B	=
Iron	J	0.068	mg/L	0.1	7/17/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	7/17/2024			SW846-6020B	=
Magnesium		22.6	mg/L	0.03	7/17/2024			SW846-6020B	=
Manganese	J	0.004	mg/L	0.005	7/17/2024			SW846-6020B	=
Molybdenum	J	0.000312	mg/L	0.001	7/17/2024			SW846-6020B	=
Nickel	J	0.000937	mg/L	0.002	7/17/2024			SW846-6020B	=
Potassium		2.26	mg/L	0.3	7/17/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	7/17/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	7/17/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	7/17/2024			SW846-6020B	=
Sodium		57.7	mg/L	5	7/17/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	7/17/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	7/17/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	7/17/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	7/17/2024			SW846-6020B	=
Zinc	U	0.02	mg/L	0.02	7/17/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	7/17/2024			SW846-7470A	=
Barium, Dissolved		0.0608	mg/L	0.004	7/17/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	7/17/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	7/17/2024			SW846-6020B	UJ
Radium-226	U	0.0157	pCi/L	1.58	7/17/2024	0.721	0.722	AN-1418	=
Radium-228	U	0.0188	pCi/L	4.25	7/17/2024	2.12	2.12	EPA-904.0-M	=
Strontium-90	U	-2.62	pCi/L	4.13	7/17/2024	1.73	1.73	EPA-905.0-M	UJ
Tritium	U	-87	pCi/L	287	7/17/2024	155	155	EPA-906.0-M	=
Technetium-99	U	17.5	pCi/L	18.2	7/17/2024	11.1	11.2	HASL 300, Tc-02-RC M	UJ

Thorium-230	U	0.309	pCi/L	0.588	7/17/2024	0.392	0.396	HASL 300, Th-01-RC M	=
Thorium-232	U	-0.0419	pCi/L	0.402	7/17/2024	0.147	0.148	HASL 300, Th-01-RC M	=
Alpha activity	U	0.0672	pCi/L	9.4	7/17/2024	3.91	3.92	SW846-9310	=
Beta activity	U	7.82	pCi/L	11.8	7/17/2024	7.21	7.33	SW846-9310	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045

**Sampling Point:** MW372      UP      **RGA Type:** URGA      **Period:** 3rd Quarter 2024

**AKGWA Well Tag #:** 8004-4808      **SAMPLE ID:** MW372UG4-24R      **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.486	mg/L	0.2	7/30/2024			SW846-9056A	=
Chloride	JW	35.2	mg/L	4	7/30/2024			SW846-9056A	=
Fluoride	J	0.224	mg/L	4	7/30/2024			SW846-9056A	=
Nitrate as Nitrogen	J	0.532	mg/L	10	7/30/2024			SW846-9056A	=
Sulfate		164	mg/L	8	7/30/2024			SW846-9056A	=
Barometric Pressure Reading		29.95	Inches/Hg		7/30/2024				X
Conductivity		749	µmhos/cm		7/30/2024				X
Depth to Water		35.07	ft		7/30/2024				X
Dissolved Oxygen		1.57	mg/L		7/30/2024				X
Eh (approx)		452	mV		7/30/2024				X
pH		6.06	Std Unit		7/30/2024				X
Temperature		66.5	deg F		7/30/2024				X
Turbidity		0	NTU		7/30/2024				X
PCB-1016	U	0.101	ug/L	0.101	7/30/2024			SW846-8082A	UJ
PCB-1221	U	0.101	ug/L	0.101	7/30/2024			SW846-8082A	=
PCB-1232	U	0.101	ug/L	0.101	7/30/2024			SW846-8082A	=
PCB-1242	U	0.101	ug/L	0.101	7/30/2024			SW846-8082A	=
PCB-1248	U	0.101	ug/L	0.101	7/30/2024			SW846-8082A	=
PCB-1254	U	0.101	ug/L	0.101	7/30/2024			SW846-8082A	=
PCB-1260	U	0.101	ug/L	0.101	7/30/2024			SW846-8082A	UJ
PCB-1268	U	0.101	ug/L	0.101	7/30/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.101	ug/L	0.101	7/30/2024			SW846-8082A	UJ
1,2-Dibromo-3-chloropropane	UY2	0.0188	ug/L	0.0188	7/30/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	7/30/2024			SW846-8260D	UJ
Acrylonitrile	U	5	ug/L	5	7/30/2024			SW846-8260D	UJ
Benzene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	7/30/2024			SW846-8260D	UJ

Bromomethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Carbon disulfide	U	5 ug/L	5	7/30/2024	SW846-8260D	=
Carbon tetrachloride	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Chlorobenzene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Chloroethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Chloroform	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Chloromethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
cis-1,2-Dichloroethene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
cis-1,3-Dichloropropene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Dibromochloromethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Dibromomethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Ethylbenzene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Iodomethane	U	5 ug/L	5	7/30/2024	SW846-8260D	=
Methylene chloride	U	5 ug/L	5	7/30/2024	SW846-8260D	=
Styrene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Toluene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Total Xylene	U	3 ug/L	3	7/30/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5 ug/L	5	7/30/2024	SW846-8260D	UJ
Trichloroethene		4.38 ug/L	1	7/30/2024	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	7/30/2024	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Dissolved Solids		496 mg/L	10	7/30/2024	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	7/30/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)		25.7 mg/L	20	7/30/2024	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	7/30/2024	SW846-9012B	=
Total Organic Halides (TOX)	J	6.46 ug/L	10	7/30/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.798 mg/L	2	7/30/2024	SW846-9060A	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045

**Sampling Point:** MW373      UP      **RGA Type:** LRGA      **Period:** 3rd Quarter 2024

**AKGWA Well Tag #:** 8004-4792      **SAMPLE ID:** MW373UG4-24      **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.464	mg/L	0.2	7/17/2024			SW846-9056A	=
Chloride	J	29.7	mg/L	4	7/17/2024			SW846-9056A	=
Fluoride	J	0.182	mg/L	4	7/17/2024			SW846-9056A	=
Nitrate as Nitrogen	HJ	0.81	mg/L	10	7/17/2024			SW846-9056A	J
Sulfate		213	mg/L	8	7/17/2024			SW846-9056A	=
Barometric Pressure Reading		29.95	Inches/Hg		7/17/2024				X
Conductivity		949	µmhos/cm		7/17/2024				X
Depth to Water		35.81	ft		7/17/2024				X
Dissolved Oxygen		0.81	mg/L		7/17/2024				X
Eh (approx)		528	mV		7/17/2024				X
pH		6.02	Std Unit		7/17/2024				X
Temperature		64.9	deg F		7/17/2024				X
Turbidity		-2.17	NTU		7/17/2024				X
Aluminum	J	0.0198	mg/L	0.05	7/17/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	7/17/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	7/17/2024			SW846-6020B	=
Barium		0.0356	mg/L	0.004	7/17/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	7/17/2024			SW846-6020B	=
Boron		2.81	mg/L	0.3	7/17/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	7/17/2024			SW846-6020B	=
Calcium		85.9	mg/L	4	7/17/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	7/17/2024			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	7/17/2024			SW846-6020B	=
Copper	J	0.00119	mg/L	0.002	7/17/2024			SW846-6020B	=
Iron	J	0.0849	mg/L	0.1	7/17/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	7/17/2024			SW846-6020B	=
Magnesium		29.1	mg/L	0.03	7/17/2024			SW846-6020B	=
Manganese		0.0356	mg/L	0.005	7/17/2024			SW846-6020B	=
Molybdenum	J	0.000383	mg/L	0.001	7/17/2024			SW846-6020B	=
Nickel	J	0.0014	mg/L	0.002	7/17/2024			SW846-6020B	=
Potassium		2.67	mg/L	0.3	7/17/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	7/17/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	7/17/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	7/17/2024			SW846-6020B	=
Sodium		71.4	mg/L	5	7/17/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	7/17/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	7/17/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	7/17/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	7/17/2024			SW846-6020B	=
Zinc	U	0.02	mg/L	0.02	7/17/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	7/17/2024			SW846-7470A	=
Barium, Dissolved		0.0341	mg/L	0.004	7/17/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	7/17/2024			SW846-6020B	UJ
Uranium, Dissolved	J	0.000074	mg/L	0.0002	7/17/2024			SW846-6020B	J
PCB-1016	U	0.1	ug/L	0.1	7/17/2024			SW846-8082A	=

PCB-1221	U	0.1	ug/L	0.1	7/17/2024			SW846-8082A	=
PCB-1232	U	0.1	ug/L	0.1	7/17/2024			SW846-8082A	=
PCB-1242	U	0.1	ug/L	0.1	7/17/2024			SW846-8082A	=
PCB-1248	U	0.1	ug/L	0.1	7/17/2024			SW846-8082A	=
PCB-1254	U	0.1	ug/L	0.1	7/17/2024			SW846-8082A	=
PCB-1260	U	0.1	ug/L	0.1	7/17/2024			SW846-8082A	UJ
PCB-1268	U	0.1	ug/L	0.1	7/17/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.1	ug/L	0.1	7/17/2024			SW846-8082A	UJ
Radium-226	U	0.529	pCi/L	1.56	7/17/2024	0.937	0.937	AN-1418	=
Radium-228	U	0.00453	pCi/L	4.59	7/17/2024	2.33	2.33	EPA-904.0-M	=
Strontium-90	U	4.11	pCi/L	6.42	7/17/2024	3.9	3.95	EPA-905.0-M	=
Tritium	U	136	pCi/L	285	7/17/2024	169	171	EPA-906.0-M	=
Technetium-99	U	-8.77	pCi/L	18.9	7/17/2024	10.1	10.1	HASL 300, Tc-02-RC M	UJ
Thorium-230	U	0.449	pCi/L	0.648	7/17/2024	0.462	0.468	HASL 300, Th-01-RC M	=
Thorium-232	U	-0.00523	pCi/L	0.494	7/17/2024	0.217	0.217	HASL 300, Th-01-RC M	=
Alpha activity	U	-0.776	pCi/L	8.15	7/17/2024	3.21	3.22	SW846-9310	=
Beta activity	U	7.68	pCi/L	9.88	7/17/2024	6.2	6.33	SW846-9310	=
Dissolved Solids		585	mg/L	10	7/17/2024			EPA-160.1	=
Iodide	U	0.5	mg/L	0.5	7/17/2024			EPA-300.0	=
Chemical Oxygen Demand (COD)	J	12.9	mg/L	20	7/17/2024			EPA-410.4	=
Cyanide	UN	0.2	mg/L	0.2	7/17/2024			SW846-9012B	UJ
Total Organic Halides (TOX)	H	36.6	ug/L	10	7/17/2024			SW846-9020B	J
Total Organic Carbon (TOC)	J	1.14	mg/L	2	7/17/2024			SW846-9060A	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** MW373      UP      **RGA Type:** LRGA      **Period:** 3rd Quarter 2024  
**AKGWA Well Tag #:** 8004-4792      **SAMPLE ID:** MW373UG4-24R      **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Barometric Pressure Reading		29.96	Inches/Hg		7/30/2024				X
Conductivity		943	µmhos/cm		7/30/2024				X
Depth to Water		35.4	ft		7/30/2024				X
Dissolved Oxygen		1.14	mg/L		7/30/2024				X
Eh (approx)		437	mV		7/30/2024				X
pH		6.04	Std Unit		7/30/2024				X
Temperature		65.9	deg F		7/30/2024				X
Turbidity		0	NTU		7/30/2024				X
1,2-Dibromo-3-chloropropane	UY2	0.0195	ug/L	0.0195	7/30/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	7/30/2024			SW846-8260D	UJ
Acrylonitrile	U	5	ug/L	5	7/30/2024			SW846-8260D	UJ
Benzene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	7/30/2024			SW846-8260D	UJ
Bromomethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	7/30/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Iodomethane	U	5	ug/L	5	7/30/2024			SW846-8260D	=
Methylene chloride	U	5	ug/L	5	7/30/2024			SW846-8260D	=

Styrene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Toluene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Total Xylene	U	3 ug/L	3	7/30/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5 ug/L	5	7/30/2024	SW846-8260D	UJ
Trichloroethene		2.54 ug/L	1	7/30/2024	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	7/30/2024	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	7/30/2024	SW846-8260D	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** MW374      UP      **RGA Type:** UCRS      **Period:** 3rd Quarter 2024  
**AKGWA Well Tag #:** 8004-0990      **SAMPLE ID:** MW374UG4-24      **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Barometric Pressure Reading		29.96	Inches/Hg		7/17/2024				X
Conductivity		663	µmhos/cm		7/17/2024				X
Depth to Water		22.27	ft		7/17/2024				X
Dissolved Oxygen		0.5	mg/L		7/17/2024				X
Eh (approx)		505	mV		7/17/2024				X
pH		6.7	Std Unit		7/17/2024				X
Temperature		65.3	deg F		7/17/2024				X
Turbidity		4.8	NTU		7/17/2024				X
Aluminum		0.127	mg/L	0.05	7/17/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	7/17/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	7/17/2024			SW846-6020B	=
Barium		0.138	mg/L	0.004	7/17/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	7/17/2024			SW846-6020B	=
Boron		0.0439	mg/L	0.015	7/17/2024			SW846-6020B	J
Cadmium	U	0.001	mg/L	0.001	7/17/2024			SW846-6020B	=
Calcium		21.9	mg/L	0.2	7/17/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	7/17/2024			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	7/17/2024			SW846-6020B	=
Copper	J	0.000922	mg/L	0.002	7/17/2024			SW846-6020B	=
Iron		1.13	mg/L	0.1	7/17/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	7/17/2024			SW846-6020B	=
Magnesium		5.49	mg/L	0.03	7/17/2024			SW846-6020B	=
Manganese		0.143	mg/L	0.005	7/17/2024			SW846-6020B	=
Molybdenum	J	0.000319	mg/L	0.001	7/17/2024			SW846-6020B	=
Nickel	J	0.000827	mg/L	0.002	7/17/2024			SW846-6020B	=
Potassium		0.365	mg/L	0.3	7/17/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	7/17/2024			SW846-6020B	=
Selenium		0.00923	mg/L	0.005	7/17/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	7/17/2024			SW846-6020B	=
Sodium		110	mg/L	2.5	7/17/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	7/17/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	7/17/2024			SW846-6020B	=
Uranium		0.000522	mg/L	0.0002	7/17/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	7/17/2024			SW846-6020B	=
Zinc	U	0.02	mg/L	0.02	7/17/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	7/17/2024			SW846-7470A	=
Barium, Dissolved		0.136	mg/L	0.004	7/17/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	7/17/2024			SW846-6020B	UJ
Uranium, Dissolved		0.000505	mg/L	0.0002	7/17/2024			SW846-6020B	J
Radium-226	U	0.272	pCi/L	2.04	7/17/2024	1.06	1.06	AN-1418	=
Radium-228	U	0.372	pCi/L	4.88	7/17/2024	2.7	2.7	EPA-904.0-M	=
Strontium-90	U	2.41	pCi/L	3.9	7/17/2024	2.38	2.41	EPA-905.0-M	=
Tritium	U	-111	pCi/L	293	7/17/2024	157	157	EPA-906.0-M	=
Technetium-99	U	-13.4	pCi/L	19.1	7/17/2024	9.94	9.94	HASL 300, Tc-02-RC M	UJ

Thorium-230	U	0.433	pCi/L	0.542	7/17/2024	0.403	0.409	HASL 300, Th-01-RC M	=
Thorium-232	U	0.161	pCi/L	0.315	7/17/2024	0.243	0.244	HASL 300, Th-01-RC M	=
Alpha activity	U	0.694	pCi/L	10.4	7/17/2024	5.06	5.06	SW846-9310	=
Beta activity	U	-1.61	pCi/L	10.4	7/17/2024	5.29	5.29	SW846-9310	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** MW374      UP      **RGA Type:** UCRS      **Period:** 3rd Quarter 2024  
**AKGWA Well Tag #:** 8004-0990      **SAMPLE ID:** MW374UG4-24R      **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.485	mg/L	0.2	7/30/2024			SW846-9056A	=
Chloride	JW	44.6	mg/L	250	7/30/2024			SW846-9056A	=
Fluoride	J	0.236	mg/L	4	7/30/2024			SW846-9056A	=
Nitrate as Nitrogen	J	0.727	mg/L	10	7/30/2024			SW846-9056A	=
Sulfate		17.1	mg/L	0.4	7/30/2024			SW846-9056A	=
Barometric Pressure Reading		29.96	Inches/Hg		7/30/2024				X
Conductivity		644	µmhos/cm		7/30/2024				X
Depth to Water		21.44	ft		7/30/2024				X
Dissolved Oxygen		1.1	mg/L		7/30/2024				X
Eh (approx)		411	mV		7/30/2024				X
pH		6.67	Std Unit		7/30/2024				X
Temperature		64.6	deg F		7/30/2024				X
Turbidity		1.06	NTU		7/30/2024				X
PCB-1016	U	0.102	ug/L	0.102	7/30/2024			SW846-8082A	UJ
PCB-1221	U	0.102	ug/L	0.102	7/30/2024			SW846-8082A	=
PCB-1232	U	0.102	ug/L	0.102	7/30/2024			SW846-8082A	=
PCB-1242	U	0.102	ug/L	0.102	7/30/2024			SW846-8082A	=
PCB-1248	U	0.102	ug/L	0.102	7/30/2024			SW846-8082A	=
PCB-1254	U	0.102	ug/L	0.102	7/30/2024			SW846-8082A	=
PCB-1260	U	0.102	ug/L	0.102	7/30/2024			SW846-8082A	UJ
PCB-1268	U	0.102	ug/L	0.102	7/30/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.102	ug/L	0.102	7/30/2024			SW846-8082A	UJ
1,2-Dibromo-3-chloropropane	UY2	0.019	ug/L	0.019	7/30/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	7/30/2024			SW846-8260D	UJ
Acrylonitrile	U	5	ug/L	5	7/30/2024			SW846-8260D	UJ
Benzene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	7/30/2024			SW846-8260D	UJ

Bromomethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Carbon disulfide	U	5 ug/L	5	7/30/2024	SW846-8260D	=
Carbon tetrachloride	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Chlorobenzene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Chloroethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Chloroform	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Chloromethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
cis-1,2-Dichloroethene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
cis-1,3-Dichloropropene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Dibromochloromethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Dibromomethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Ethylbenzene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Iodomethane	U	5 ug/L	5	7/30/2024	SW846-8260D	=
Methylene chloride	U	5 ug/L	5	7/30/2024	SW846-8260D	=
Styrene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Toluene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Total Xylene	U	3 ug/L	3	7/30/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5 ug/L	5	7/30/2024	SW846-8260D	UJ
Trichloroethene	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	7/30/2024	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Dissolved Solids		309 mg/L	10	7/30/2024	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	7/30/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	J	16.4 mg/L	20	7/30/2024	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	7/30/2024	SW846-9012B	=
Total Organic Halides (TOX)		22 ug/L	10	7/30/2024	SW846-9020B	=
Total Organic Carbon (TOC)		2.04 mg/L	2	7/30/2024	SW846-9060A	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** MW375      **SIDE:**      **RGA Type:** UCRS      **Period:** 3rd Quarter 2024  
**AKGWA Well Tag #:** 8004-0985      **SAMPLE ID:** MW375UG4-24      **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide	U	0.2	mg/L	0.2	7/18/2024			SW846-9056A	=
Chloride	J	3.33	mg/L	250	7/18/2024			SW846-9056A	=
Fluoride	J	0.384	mg/L	4	7/18/2024			SW846-9056A	=
Nitrate as Nitrogen	J	0.899	mg/L	10	7/18/2024			SW846-9056A	=
Sulfate		22.6	mg/L	0.8	7/18/2024			SW846-9056A	=
Barometric Pressure Reading		30.09	Inches/Hg		7/18/2024				X
Conductivity		329	µmhos/cm		7/18/2024				X
Depth to Water		36.85	ft		7/18/2024				X
Dissolved Oxygen		2.7	mg/L		7/18/2024				X
Eh (approx)		518	mV		7/18/2024				X
pH		6.36	Std Unit		7/18/2024				X
Temperature		68.1	deg F		7/18/2024				X
Turbidity		0	NTU		7/18/2024				X
Aluminum	J	0.046	mg/L	0.05	7/18/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	7/18/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	7/18/2024			SW846-6020B	=
Barium		0.172	mg/L	0.004	7/18/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	7/18/2024			SW846-6020B	=
Boron	J	0.00685	mg/L	0.015	7/18/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	7/18/2024			SW846-6020B	=
Calcium		13.3	mg/L	0.2	7/18/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	7/18/2024			SW846-6020B	=
Cobalt	J	0.000652	mg/L	0.001	7/18/2024			SW846-6020B	=
Copper	J	0.00109	mg/L	0.002	7/18/2024			SW846-6020B	=
Iron	J	0.097	mg/L	0.1	7/18/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	7/18/2024			SW846-6020B	=
Magnesium		5.4	mg/L	0.03	7/18/2024			SW846-6020B	=
Manganese		0.0106	mg/L	0.005	7/18/2024			SW846-6020B	=
Molybdenum	U	0.001	mg/L	0.001	7/18/2024			SW846-6020B	=
Nickel	J	0.000776	mg/L	0.002	7/18/2024			SW846-6020B	=
Potassium	J	0.265	mg/L	0.3	7/18/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	7/18/2024			SW846-6020B	=
Selenium	J	0.00236	mg/L	0.005	7/18/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	7/18/2024			SW846-6020B	=
Sodium		51.2	mg/L	2.5	7/18/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	7/18/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	7/18/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	7/18/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	7/18/2024			SW846-6020B	=
Zinc	J	0.00386	mg/L	0.02	7/18/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	7/18/2024			SW846-7470A	=
Barium, Dissolved		0.168	mg/L	0.004	7/18/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	7/18/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	7/18/2024			SW846-6020B	UJ
PCB-1016	U	0.117	ug/L	0.117	7/18/2024			SW846-8082A	=

PCB-1221	U	0.117	ug/L	0.117	7/18/2024			SW846-8082A	=
PCB-1232	U	0.117	ug/L	0.117	7/18/2024			SW846-8082A	=
PCB-1242	U	0.117	ug/L	0.117	7/18/2024			SW846-8082A	=
PCB-1248	U	0.117	ug/L	0.117	7/18/2024			SW846-8082A	=
PCB-1254	U	0.117	ug/L	0.117	7/18/2024			SW846-8082A	=
PCB-1260	U	0.117	ug/L	0.117	7/18/2024			SW846-8082A	UJ
PCB-1268	U	0.117	ug/L	0.117	7/18/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.117	ug/L	0.117	7/18/2024			SW846-8082A	UJ
Radium-226	U	0.449	pCi/L	0.627	7/18/2024	0.543	0.544	AN-1418	=
Radium-228	U	4.15	pCi/L	4.89	7/18/2024	3.16	3.33	EPA-904.0-M	=
Strontium-90	U	-2.11	pCi/L	3.68	7/18/2024	1.44	1.44	EPA-905.0-M	UJ
Tritium	U	140	pCi/L	264	7/18/2024	157	159	EPA-906.0-M	=
Technetium-99	U	-0.664	pCi/L	16.2	7/18/2024	8.99	8.99	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.113	pCi/L	0.755	7/18/2024	0.394	0.395	HASL 300, Th-01-RC M	=
Thorium-232	U	-0.00872	pCi/L	0.35	7/18/2024	0.175	0.175	HASL 300, Th-01-RC M	=
Alpha activity	U	2.65	pCi/L	7.01	7/18/2024	4	4.03	SW846-9310	=
Beta activity	U	4.02	pCi/L	9.58	7/18/2024	5.59	5.63	SW846-9310	=
1,2-Dibromo-3-chloropropane	UY1	0.019	ug/L	0.019	7/18/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,1,1-Trichloroethane	J	0.44	ug/L	1	7/18/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,4-Dichlorobenzene	UY2	1	ug/L	1	7/18/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	7/18/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	7/18/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	7/18/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	7/18/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	7/18/2024			SW846-8260D	UJ
Acrylonitrile	U	5	ug/L	5	7/18/2024			SW846-8260D	UJ
Benzene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	7/18/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=

Ethylbenzene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Iodomethane	U	5 ug/L	5	7/18/2024	SW846-8260D	=
Methylene chloride	U	5 ug/L	5	7/18/2024	SW846-8260D	=
Styrene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Toluene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Total Xylene	U	3 ug/L	3	7/18/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	7/18/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5 ug/L	5	7/18/2024	SW846-8260D	UJ
Trichloroethene	J	0.56 ug/L	1	7/18/2024	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	7/18/2024	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Dissolved Solids		205 mg/L	10	7/18/2024	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	7/18/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20 mg/L	20	7/18/2024	EPA-410.4	=
Cyanide	UN	0.2 mg/L	0.2	7/18/2024	SW846-9012B	=
Total Organic Halides (TOX)	J	7.04 ug/L	10	7/18/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.633 mg/L	2	7/18/2024	SW846-9060A	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045

**Sampling Point:** QC      **Period:** 3rd Quarter 2024

**AKGWA Well Tag #:** N/A      **SAMPLE ID:** FB1UG4-24      **Sample Type:** FB

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Aluminum	U	0.05	mg/L	0.05	7/15/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	7/15/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Barium	U	0.004	mg/L	0.004	7/15/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	7/15/2024			SW846-6020B	=
Boron	U	0.015	mg/L	0.015	7/15/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Calcium	U	0.2	mg/L	0.2	7/15/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	7/15/2024			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Copper	U	0.002	mg/L	0.002	7/15/2024			SW846-6020B	=
Iron	U	0.1	mg/L	0.1	7/15/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	7/15/2024			SW846-6020B	=
Magnesium	U	0.03	mg/L	0.03	7/15/2024			SW846-6020B	=
Manganese	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Molybdenum	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Nickel	U	0.002	mg/L	0.002	7/15/2024			SW846-6020B	=
Potassium	U	0.3	mg/L	0.3	7/15/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Sodium	U	0.25	mg/L	0.25	7/15/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	7/15/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	7/15/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	7/15/2024			SW846-6020B	=
Zinc	U	0.02	mg/L	0.02	7/15/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	7/15/2024			SW846-7470A	=
PCB-1016	U	0.102	ug/L	0.102	7/15/2024			SW846-8082A	=
PCB-1221	U	0.102	ug/L	0.102	7/15/2024			SW846-8082A	=
PCB-1232	U	0.102	ug/L	0.102	7/15/2024			SW846-8082A	=
PCB-1242	U	0.102	ug/L	0.102	7/15/2024			SW846-8082A	=
PCB-1248	U	0.102	ug/L	0.102	7/15/2024			SW846-8082A	=
PCB-1254	U	0.102	ug/L	0.102	7/15/2024			SW846-8082A	=
PCB-1260	U	0.102	ug/L	0.102	7/15/2024			SW846-8082A	UJ
PCB-1268	U	0.102	ug/L	0.102	7/15/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.102	ug/L	0.102	7/15/2024			SW846-8082A	UJ
Radium-226	U	0.782	pCi/L	1.14	7/15/2024	0.838	0.84	AN-1418	=
Radium-228	U	2.53	pCi/L	4.27	7/15/2024	2.6	2.68	EPA-904.0-M	=
Strontium-90	U	0.93	pCi/L	6.14	7/15/2024	3.36	3.37	EPA-905.0-M	=
Tritium	U	26.4	pCi/L	253	7/15/2024	143	143	EPA-906.0-M	=
Technetium-99	U	-2.1	pCi/L	16.2	7/15/2024	8.95	8.95	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.124	pCi/L	0.701	7/15/2024	0.374	0.376	HASL 300, Th-01-RC M	=
Thorium-232	U	0.0543	pCi/L	0.421	7/15/2024	0.236	0.236	HASL 300, Th-01-RC M	=
Alpha activity	U	-0.4	pCi/L	6.1	7/15/2024	2.31	2.31	SW846-9310	=

Beta activity	U	0.719	pCi/L	8.97	7/15/2024	4.79	4.79	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0191	ug/L	0.0191	7/15/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	7/15/2024			SW846-8260D	UJ
Acrylonitrile	U	5	ug/L	5	7/15/2024			SW846-8260D	UJ
Benzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Carbon disulfide	UY1	5	ug/L	5	7/15/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Iodomethane	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Methylene chloride	BJ	3.46	ug/L	5	7/15/2024			SW846-8260D	U
Styrene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Toluene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Total Xylene	U	3	ug/L	3	7/15/2024			SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	7/15/2024			SW846-8260D	UJ
Trichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Iodide	U	0.5	mg/L	0.5	7/15/2024			EPA-300.0	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045

**Sampling Point:** QC      **Period:** 3rd Quarter 2024

**AKGWA Well Tag #:** N/A      **SAMPLE ID:** RI1UG4-24      **Sample Type:** RI

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Aluminum	U	0.05	mg/L	0.05	7/15/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	7/15/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Barium	U	0.004	mg/L	0.004	7/15/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	7/15/2024			SW846-6020B	=
Boron	U	0.015	mg/L	0.015	7/15/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Calcium	U	0.2	mg/L	0.2	7/15/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	7/15/2024			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Copper	U	0.002	mg/L	0.002	7/15/2024			SW846-6020B	=
Iron	U	0.1	mg/L	0.1	7/15/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	7/15/2024			SW846-6020B	=
Magnesium	U	0.03	mg/L	0.03	7/15/2024			SW846-6020B	=
Manganese	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Molybdenum	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Nickel	U	0.002	mg/L	0.002	7/15/2024			SW846-6020B	=
Potassium	U	0.3	mg/L	0.3	7/15/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	7/15/2024			SW846-6020B	=
Sodium	U	0.25	mg/L	0.25	7/15/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	7/15/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	7/15/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	7/15/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	7/15/2024			SW846-6020B	=
Zinc	U	0.02	mg/L	0.02	7/15/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	7/15/2024			SW846-7470A	=
PCB-1016	U	0.0965	ug/L	0.0965	7/15/2024			SW846-8082A	=
PCB-1221	U	0.0965	ug/L	0.0965	7/15/2024			SW846-8082A	=
PCB-1232	U	0.0965	ug/L	0.0965	7/15/2024			SW846-8082A	=
PCB-1242	U	0.0965	ug/L	0.0965	7/15/2024			SW846-8082A	=
PCB-1248	U	0.0965	ug/L	0.0965	7/15/2024			SW846-8082A	=
PCB-1254	U	0.0965	ug/L	0.0965	7/15/2024			SW846-8082A	=
PCB-1260	U	0.0965	ug/L	0.0965	7/15/2024			SW846-8082A	UJ
PCB-1268	U	0.0965	ug/L	0.0965	7/15/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.0965	ug/L	0.0965	7/15/2024			SW846-8082A	UJ
Radium-226	U	0.932	pCi/L	1.28	7/15/2024	0.913	0.915	AN-1418	=
Radium-228	U	1.49	pCi/L	4.72	7/15/2024	2.72	2.74	EPA-904.0-M	=
Strontium-90	U	0.555	pCi/L	6.16	7/15/2024	3.33	3.33	EPA-905.0-M	=
Tritium	U	45.9	pCi/L	253	7/15/2024	145	145	EPA-906.0-M	=
Technetium-99	U	-3.29	pCi/L	16	7/15/2024	8.74	8.74	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.544	pCi/L	0.709	7/15/2024	0.555	0.564	HASL 300, Th-01-RC M	=
Thorium-232	U	0.0945	pCi/L	0.665	7/15/2024	0.352	0.352	HASL 300, Th-01-RC M	=
Alpha activity	U	1.11	pCi/L	7.69	7/15/2024	3.84	3.84	SW846-9310	=

Beta activity	U	1.54	pCi/L	8.99	7/15/2024	4.93	4.94	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.019	ug/L	0.019	7/15/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	7/15/2024			SW846-8260D	UJ
Acrylonitrile	U	5	ug/L	5	7/15/2024			SW846-8260D	UJ
Benzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Carbon disulfide	UY1	5	ug/L	5	7/15/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Iodomethane	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Methylene chloride	BJ	3.77	ug/L	5	7/15/2024			SW846-8260D	U
Styrene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Toluene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Total Xylene	U	3	ug/L	3	7/15/2024			SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	7/15/2024			SW846-8260D	UJ
Trichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Iodide	U	0.5	mg/L	0.5	7/15/2024			EPA-300.0	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

Facility: C-746-U Landfill

County: McCracken

Permit #: SW07300014,SW07300015,SW07300045

Sampling Point: QC

Period: 3rd Quarter 2024

AKGWA Well Tag #: N/A

SAMPLE ID: TB1UG4-24

Sample Type: TB

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
1,2-Dibromo-3-chloropropane	U	0.019	ug/L	0.019	7/15/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	7/15/2024			SW846-8260D	UJ
Acrylonitrile	U	5	ug/L	5	7/15/2024			SW846-8260D	UJ
Benzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Carbon disulfide	UY1	5	ug/L	5	7/15/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Iodomethane	U	5	ug/L	5	7/15/2024			SW846-8260D	=
Methylene chloride	BJ	3.93	ug/L	5	7/15/2024			SW846-8260D	U
Styrene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Toluene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
Total Xylene	U	3	ug/L	3	7/15/2024			SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	7/15/2024			SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	7/15/2024			SW846-8260D	UJ
Trichloroethene	U	1	ug/L	1	7/15/2024			SW846-8260D	=

Trichlorofluoromethane	U	1 ug/L	1	7/15/2024	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	7/15/2024	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	7/15/2024	SW846-8260D	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill

**County:** McCracken

**Permit #:** SW07300014,SW07300015,SW07300045

**Sampling Point:** QC

**Period:** 3rd Quarter 2024

**AKGWA Well Tag #:** N/A

**SAMPLE ID:** TB3UG4-24

**Sample Type:** TB

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
1,2-Dibromo-3-chloropropane	UY1	0.0191	ug/L	0.0191	7/18/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,1,1-Trichloroethane	J	0.42	ug/L	1	7/18/2024			SW846-8260D	J
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
1,4-Dichlorobenzene	UY2	1	ug/L	1	7/18/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	7/18/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	7/18/2024			SW846-8260D	=
4-Methyl-2-pentanone	US	5	ug/L	5	7/18/2024			SW846-8260D	=
Acetone	BJ	3.06	ug/L	5	7/18/2024			SW846-8260D	U
Acrolein	U	5	ug/L	5	7/18/2024			SW846-8260D	UJ
Acrylonitrile	U	5	ug/L	5	7/18/2024			SW846-8260D	UJ
Benzene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	7/18/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Chlorobenzene	US	1	ug/L	1	7/18/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Iodomethane	U	5	ug/L	5	7/18/2024			SW846-8260D	=
Methylene chloride	U	5	ug/L	5	7/18/2024			SW846-8260D	=
Styrene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Tetrachloroethene	US	1	ug/L	1	7/18/2024			SW846-8260D	=
Toluene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
Total Xylene	U	3	ug/L	3	7/18/2024			SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	7/18/2024			SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	7/18/2024			SW846-8260D	UJ
Trichloroethene	U	1	ug/L	1	7/18/2024			SW846-8260D	=

Trichlorofluoromethane	U	1 ug/L	1	7/18/2024	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	7/18/2024	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	7/18/2024	SW846-8260D	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

Facility: C-746-U Landfill

County: McCracken

Permit #: SW07300014,SW07300015,SW07300045

Sampling Point: QC

Period: 3rd Quarter 2024

AKGWA Well Tag #: N/A

SAMPLE ID: TB4UG4-24

Sample Type: TB

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
1,2-Dibromo-3-chloropropane	U	0.0191	ug/L	0.0191	7/22/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	7/22/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	7/22/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	7/22/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	7/22/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	7/22/2024			SW846-8260D	UJ
Acrylonitrile	U	5	ug/L	5	7/22/2024			SW846-8260D	UJ
Benzene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	7/22/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Iodomethane	U	5	ug/L	5	7/22/2024			SW846-8260D	=
Methylene chloride	J	0.77	ug/L	5	7/22/2024			SW846-8260D	=
Styrene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Toluene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
Total Xylene	U	3	ug/L	3	7/22/2024			SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	7/22/2024			SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	7/22/2024			SW846-8260D	UJ
Trichloroethene	U	1	ug/L	1	7/22/2024			SW846-8260D	=

Trichlorofluoromethane	U	1 ug/L	1	7/22/2024	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	7/22/2024	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	7/22/2024	SW846-8260D	=

**Paducah OREIS  
GROUNDWATER MONITORING REPORT**

**Facility:** C-746-U Landfill

**County:** McCracken

**Permit #:** SW07300014,SW07300015,SW07300045

**Sampling Point:** QC

**Period:** 3rd Quarter 2024

**AKGWA Well Tag #:** N/A

**SAMPLE ID:** TB5UG4-24

**Sample Type:** TB

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
1,2-Dibromo-3-chloropropane	UY2	0.0191	ug/L	0.0191	7/30/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	7/30/2024			SW846-8260D	=
Acetone	J	2.86	ug/L	5	7/30/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	7/30/2024			SW846-8260D	UJ
Acrylonitrile	U	5	ug/L	5	7/30/2024			SW846-8260D	UJ
Benzene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	7/30/2024			SW846-8260D	UJ
Bromomethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	7/30/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Iodomethane	U	5	ug/L	5	7/30/2024			SW846-8260D	=
Methylene chloride	U	5	ug/L	5	7/30/2024			SW846-8260D	=
Styrene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Toluene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
Total Xylene	U	3	ug/L	3	7/30/2024			SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	7/30/2024			SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	7/30/2024			SW846-8260D	UJ
Trichloroethene	U	1	ug/L	1	7/30/2024			SW846-8260D	=

Trichlorofluoromethane	U	1 ug/L	1	7/30/2024	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	7/30/2024	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	7/30/2024	SW846-8260D	=

<b>Qualifier Code Definitions</b>	
*	Duplicate analysis not within control limits.
B	Analyte was detected in the associated blank.
H	Analysis performed outside holding time requirement.
J	Estimated quantitation.
L	LCS and/or LCSD recovery outside of control limits.
L1	LCS/LCSD RPD outside acceptance criteria.
N	Sample spike (MS/MSD) recovery not within control limits
N1	MS/MSD or PS/PSD RPD outside acceptance criteria.
P	Difference between results from two GC columns outside control limits.
S	Sample surrogate recovery outside acceptance criteria.
T	Tracer recovery outside control limits of 30-110%.
U	Not detected.
W	Post-digestion spike recovery out of control limits.
W1	Post-digestion spike and post-digestion spike duplicate RPD out of control limits.
X	Other specific flags and footnotes may be required to properly define the results.
Y1	MS/MSD recovery outside acceptance criteria.
Y2	MS/MSD RPD outside acceptance criteria.

<b>RGA Type Code Definitions</b>	
LRGA	Lower Regional Gravel Aquifer
UCRS	Upper Continental Recharge System
URGA	Upper Regional Gravel Aquifer
NA	Not Applicable.

<b>Sample Type Code Definitions</b>	
REG	Regular
FR	Field Replicate (code used for Field Duplicate)
RI	Equipment Rinsate Blank
FB	Field Blank
TB	Trip Blank

<b>Validation Code Definitions</b>	
=	Validated result, no additional qualifier necessary
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
UJ	Analyte not detected above the reported detection limit, and the reported detection limit is approximated due to quality deficiency.
X	Not validated

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**ATTACHMENT C1**

**GEL LABORATORIES CERTIFICATE OF ANALYSIS**

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# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Four Rivers Nuclear Partnership,  
Address : LLC  
5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: November 3, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW357UG4-24  
Sample ID: 675825001  
Matrix: WG  
Collect Date: 15-JUL-24  
Receive Date: 17-JUL-24  
Collector: Client

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
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### Rad Alpha Spec Analysis

*AN-1418 AlphaSpec Ra226, Liquid "As Received"*

Radium-226	U	0.544	+/-0.849	1.15	+/-0.850	5.00	pCi/L			CM4	10/31/24	1435	2697002	1
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*Th-01-RC M, Th Isotopes, Liquid "As Received"*

Thorium-230	U	0.112	+/-0.413	0.773	+/-0.415	50.0	pCi/L			CM4	08/06/24	1327	2644883	2
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Thorium-232	U	0.112	+/-0.338	0.467	+/-0.339		pCi/L							
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### Rad Gas Flow Proportional Counting

*904.0Mod, Ra228, Liquid "As Received"*

Radium-228	U	3.36	+/-2.50	3.79	+/-2.65	4.99	pCi/L			KP1	08/03/24	1520	2643187	3
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*905.0Mod, Sr90, liquid "As Received"*

Strontium-90	U	0.135	+/-3.00	5.54	+/-3.00	8.00	pCi/L			JE1	08/01/24	0803	2643188	4
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*9310, Alpha/Beta Activity, liquid "As Received"*

Alpha	U	0.333	+/-2.42	5.72	+/-2.42	15.0	pCi/L			HH3	07/31/24	1250	2643189	5
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Beta		19.8	+/-7.67	10.4	+/-8.34	50.0	pCi/L							
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### Rad Liquid Scintillation Analysis

*906.0M, Tritium Dist, Liquid "As Received"*

Tritium	U	-11.9	+/-152	273	+/-152	300	pCi/L			HB2	08/06/24	2113	2644436	6
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*Tc-02-RC-MOD, Tc99, Liquid "As Received"*

Technetium-99		28.6	+/-10.7	16.0	+/-11.2	25.0	pCi/L			GS3	08/05/24	1323	2644467	7
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### The following Analytical Methods were performed

Method	Description
1	Eichrom Industries, AN-1418
2	DOE EML HASL-300, Th-01-RC Modified
3	EPA 904.0/SW846 9320 Modified
4	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
5	EPA 900.0/SW846 9310
6	EPA 906.0 Modified
7	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AN-1418 AlphaSpec Ra226, Liquid "As Received"	2697002	101	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2644883	58.8	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2643187	82.7	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2643188	92	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2644467	96.9	(30%-110%)

# GEL LABORATORIES LLC

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## *Certificate of Analysis*

Company : Four Rivers Nuclear Partnership,  
Address : LLC  
5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: November 3, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW357UG4-24

Project: FRNP00507

Sample ID: 675825001

Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test						Batch ID	Recovery%	Acceptable Limits				

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

*Column headers are defined as follows:*

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

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## Certificate of Analysis

Company : Four Rivers Nuclear Partnership,  
Address : LLC  
5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: November 3, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW358DUG4-24

Project: FRNP00507

Sample ID: 675825003

Client ID: FRNP005

Matrix: WG

Collect Date: 15-JUL-24

Receive Date: 17-JUL-24

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>														
<i>AN-1418 AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.820	+/-0.879	1.19	+/-0.881	5.00	pCi/L			CM4	08/03/24	0914	2644876	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	-0.126	+/-0.290	0.804	+/-0.290	50.0	pCi/L			CM4	08/06/24	1328	2644883	2
Thorium-232	U	-0.102	+/-0.217	0.656	+/-0.217		pCi/L							
<b>Rad Gas Flow Proportional Counting</b>														
<i>904.0Mod, Ra228, Liquid "As Received"</i>														
Radium-228	U	1.80	+/-2.16	3.64	+/-2.21	4.99	pCi/L			KP1	08/06/24	1318	2643187	3
<i>905.0Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	-3.74	+/-3.50	7.15	+/-3.50	8.00	pCi/L			JE1	08/01/24	0805	2643188	4
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	0.641	+/-3.65	7.73	+/-3.65	15.0	pCi/L			HH3	07/31/24	1250	2643189	5
Beta		19.1	+/-7.01	9.09	+/-7.69	50.0	pCi/L							
<b>Rad Liquid Scintillation Analysis</b>														
<i>906.0M, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	55.7	+/-144	251	+/-145	300	pCi/L			HB2	08/08/24	1523	2644433	6
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99		32.3	+/-11.0	16.2	+/-11.6	25.0	pCi/L			GS3	08/05/24	1339	2644467	7

**The following Analytical Methods were performed**

Method	Description
1	Eichrom Industries, AN-1418
2	DOE EML HASL-300, Th-01-RC Modified
3	EPA 904.0/SW846 9320 Modified
4	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
5	EPA 900.0/SW846 9310
6	EPA 906.0 Modified
7	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AN-1418 AlphaSpec Ra226, Liquid "As Received"	2644876	92.1	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2644883	74.6	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2643187	85.4	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2643188	77	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2644467	97.3	(30%-110%)

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## *Certificate of Analysis*

Company : Four Rivers Nuclear Partnership,  
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5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: November 3, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW358DUG4-24

Project: FRNP00507

Sample ID: 675825003

Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test						Batch ID	Recovery%	Acceptable Limits				

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

*Column headers are defined as follows:*

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

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## Certificate of Analysis

Company : Four Rivers Nuclear Partnership,  
Address : LLC  
5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: November 3, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW358UG4-24

Project: FRNP00507

Sample ID: 675825005

Client ID: FRNP005

Matrix: WG

Collect Date: 15-JUL-24

Receive Date: 17-JUL-24

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>														
<i>AN-1418 AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.346	+/-0.527	0.784	+/-0.527	5.00	pCi/L			CM4	10/24/24	0808	2691148	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.340	+/-0.533	0.841	+/-0.538	50.0	pCi/L			CM4	08/06/24	1328	2644883	2
Thorium-232	U	-0.00845	+/-0.219	0.426	+/-0.220		pCi/L							
<b>Rad Gas Flow Proportional Counting</b>														
<i>904.0Mod, Ra228, Liquid "As Received"</i>														
Radium-228	U	3.85	+/-2.98	4.83	+/-3.14	4.99	pCi/L			KP1	08/03/24	1520	2643187	3
<i>905.0Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	0.811	+/-3.86	6.97	+/-3.87	8.00	pCi/L			JE1	08/01/24	0805	2643188	4
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	0.232	+/-2.87	6.67	+/-2.87	15.0	pCi/L			HH3	07/31/24	1250	2643189	5
Beta		28.7	+/-8.00	9.06	+/-9.32	50.0	pCi/L							
<b>Rad Liquid Scintillation Analysis</b>														
<i>906.0M, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	-3.90	+/-141	252	+/-141	300	pCi/L			HB2	08/08/24	1600	2644433	6
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99		42.6	+/-11.5	15.9	+/-12.4	25.0	pCi/L			GS3	08/05/24	1356	2644467	7

**The following Analytical Methods were performed**

Method	Description
1	Eichrom Industries, AN-1418
2	DOE EML HASL-300, Th-01-RC Modified
3	EPA 904.0/SW846 9320 Modified
4	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
5	EPA 900.0/SW846 9310
6	EPA 906.0 Modified
7	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AN-1418 AlphaSpec Ra226, Liquid "As Received"	2691148	93.8	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2644883	65.8	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2643187	87.7	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2643188	81.3	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2644467	98.1	(30%-110%)

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## *Certificate of Analysis*

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5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: November 3, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW358UG4-24

Project: FRNP00507

Sample ID: 675825005

Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test						Batch ID	Recovery%	Acceptable Limits				

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

*Column headers are defined as follows:*

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

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## Certificate of Analysis

Company : Four Rivers Nuclear Partnership,  
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5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: November 3, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW359UG4-24

Project: FRNP00507

Sample ID: 675825007

Client ID: FRNP005

Matrix: WG

Collect Date: 15-JUL-24

Receive Date: 17-JUL-24

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>														
<i>AN-1418 AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	1.12	+/-1.04	1.37	+/-1.04	5.00	pCi/L			CM4	08/03/24	0914	2644876	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.316	+/-0.451	0.717	+/-0.455	50.0	pCi/L			CM4	08/06/24	1328	2644883	2
Thorium-232	U	0.0328	+/-0.229	0.455	+/-0.229		pCi/L							
<b>Rad Gas Flow Proportional Counting</b>														
<i>904.0Mod, Ra228, Liquid "As Received"</i>														
Radium-228	U	1.05	+/-2.49	4.51	+/-2.51	4.99	pCi/L			KP1	08/03/24	1520	2643187	3
<i>905.0Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	2.19	+/-4.02	7.02	+/-4.04	8.00	pCi/L			JE1	08/01/24	0803	2643188	4
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	-0.0356	+/-2.44	6.13	+/-2.44	15.0	pCi/L			HH3	07/31/24	1250	2643189	5
Beta	U	12.6	+/-8.10	12.7	+/-8.35	50.0	pCi/L							
<b>Rad Liquid Scintillation Analysis</b>														
<i>906.0M, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	17.5	+/-143	253	+/-143	300	pCi/L			HB2	08/08/24	1636	2644433	6
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	8.16	+/-9.68	16.3	+/-9.72	25.0	pCi/L			GS3	08/05/24	1412	2644467	7

**The following Analytical Methods were performed**

Method	Description
1	Eichrom Industries, AN-1418
2	DOE EML HASL-300, Th-01-RC Modified
3	EPA 904.0/SW846 9320 Modified
4	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
5	EPA 900.0/SW846 9310
6	EPA 906.0 Modified
7	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AN-1418 AlphaSpec Ra226, Liquid "As Received"	2644876	92.6	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2644883	85	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2643187	84.3	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2643188	72.7	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2644467	96.9	(30%-110%)

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## *Certificate of Analysis*

Company : Four Rivers Nuclear Partnership,  
Address : LLC  
5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: November 3, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW359UG4-24

Project: FRNP00507

Sample ID: 675825007

Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test						Batch ID	Recovery%	Acceptable Limits				

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

*Column headers are defined as follows:*

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

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## Certificate of Analysis

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Address : LLC  
5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: November 3, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW360UG4-24

Project: FRNP00507

Sample ID: 675825009

Client ID: FRNP005

Matrix: WG

Collect Date: 15-JUL-24

Receive Date: 16-JUL-24

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>														
<i>AN-1418 AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.245	+/-0.479	0.770	+/-0.479	5.00	pCi/L			CM4	10/24/24	0808	2691148	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.296	+/-0.531	0.857	+/-0.535	50.0	pCi/L			CM4	08/06/24	1328	2644883	2
Thorium-232	U	0.0820	+/-0.338	0.593	+/-0.339		pCi/L							
<b>Rad Gas Flow Proportional Counting</b>														
<i>904.0Mod, Ra228, Liquid "As Received"</i>														
Radium-228	U	-0.828	+/-2.62	4.83	+/-2.62	4.99	pCi/L			KP1	08/03/24	1520	2643187	3
<i>905.0Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	-1.98	+/-2.04	4.93	+/-2.04	8.00	pCi/L			JE1	08/01/24	0804	2643188	4
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	2.45	+/-4.70	8.73	+/-4.72	15.0	pCi/L			HH3	07/31/24	1250	2643189	5
Beta	U	-0.307	+/-7.57	13.9	+/-7.57	50.0	pCi/L							
<b>Rad Liquid Scintillation Analysis</b>														
<i>906.0M, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	85.7	+/-150	257	+/-150	300	pCi/L			HB2	08/08/24	1713	2644433	6
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	-0.111	+/-8.94	16.0	+/-8.94	25.0	pCi/L			GS3	08/05/24	1429	2644467	7

**The following Analytical Methods were performed**

Method	Description
1	Eichrom Industries, AN-1418
2	DOE EML HASL-300, Th-01-RC Modified
3	EPA 904.0/SW846 9320 Modified
4	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
5	EPA 900.0/SW846 9310
6	EPA 906.0 Modified
7	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AN-1418 AlphaSpec Ra226, Liquid "As Received"	2691148	98.5	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2644883	56.1	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2643187	85.7	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2643188	64.2	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2644467	97.3	(30%-110%)

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Kevil, Kentucky 42053

Report Date: November 3, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW360UG4-24

Project: FRNP00507

Sample ID: 675825009

Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test						Batch ID	Recovery%	Acceptable Limits				

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

*Column headers are defined as follows:*

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

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## Certificate of Analysis

Company : Four Rivers Nuclear Partnership,  
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Report Date: November 3, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW361UG4-24

Project: FRNP00507

Sample ID: 675825011

Client ID: FRNP005

Matrix: WG

Collect Date: 15-JUL-24

Receive Date: 17-JUL-24

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>														
<i>AN-1418 AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.156	+/-0.422	0.727	+/-0.422	5.00	pCi/L			CM4	10/24/24	0808	2691148	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.000123	+/-0.359	0.799	+/-0.359	50.0	pCi/L			CM4	08/06/24	1328	2644883	2
Thorium-232	U	-0.0574	+/-0.215	0.580	+/-0.216		pCi/L							
<b>Rad Gas Flow Proportional Counting</b>														
<i>904.0Mod, Ra228, Liquid "As Received"</i>														
Radium-228	U	1.35	+/-2.64	4.62	+/-2.67	4.99	pCi/L			KP1	08/03/24	1520	2643187	3
<i>905.0Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	-1.30	+/-3.45	6.83	+/-3.45	8.00	pCi/L			JE1	08/01/24	0804	2643188	4
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	1.61	+/-3.39	6.55	+/-3.40	15.0	pCi/L			HH3	07/31/24	1250	2643189	5
Beta		13.4	+/-6.75	9.71	+/-7.09	50.0	pCi/L							
<b>Rad Liquid Scintillation Analysis</b>														
<i>906.0M, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	-45.2	+/-136	249	+/-136	300	pCi/L			HB2	08/08/24	1750	2644433	6
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99		45.2	+/-11.7	16.0	+/-12.7	25.0	pCi/L			GS3	08/05/24	1446	2644467	7

**The following Analytical Methods were performed**

Method	Description
1	Eichrom Industries, AN-1418
2	DOE EML HASL-300, Th-01-RC Modified
3	EPA 904.0/SW846 9320 Modified
4	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
5	EPA 900.0/SW846 9310
6	EPA 906.0 Modified
7	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AN-1418 AlphaSpec Ra226, Liquid "As Received"	2691148	98.8	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2644883	69.2	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2643187	87.1	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2643188	66.3	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2644467	98.4	(30%-110%)

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Kevil, Kentucky 42053

Report Date: November 3, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW361UG4-24

Project: FRNP00507

Sample ID: 675825011

Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test						Batch ID	Recovery%	Acceptable Limits				

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

*Column headers are defined as follows:*

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

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Kevil, Kentucky 42053

Report Date: November 3, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW362UG4-24

Project: FRNP00507

Sample ID: 675825013

Client ID: FRNP005

Matrix: WG

Collect Date: 15-JUL-24

Receive Date: 16-JUL-24

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>														
<i>AN-1418 AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.905	+/-0.829	1.02	+/-0.831	5.00	pCi/L			CM4	08/03/24	0914	2644876	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	-0.217	+/-0.400	1.14	+/-0.401	50.0	pCi/L			CM4	08/06/24	1328	2644883	2
Thorium-232	U	-0.0709	+/-0.276	0.737	+/-0.276		pCi/L							
<b>Rad Gas Flow Proportional Counting</b>														
<i>904.0Mod, Ra228, Liquid "As Received"</i>														
Radium-228	U	1.81	+/-2.75	4.71	+/-2.79	4.99	pCi/L			KP1	08/03/24	1520	2643187	3
<i>905.0Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	0.877	+/-2.47	4.39	+/-2.48	8.00	pCi/L			JE1	08/05/24	1850	2643188	4
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	2.81	+/-4.45	8.00	+/-4.48	15.0	pCi/L			HH3	07/31/24	1250	2643189	5
Beta	U	-0.251	+/-4.91	9.44	+/-4.92	50.0	pCi/L							
<b>Rad Liquid Scintillation Analysis</b>														
<i>906.0M, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	80.0	+/-144	248	+/-145	300	pCi/L			HB2	08/08/24	1827	2644433	6
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	6.11	+/-9.64	16.5	+/-9.67	25.0	pCi/L			GS3	08/05/24	1502	2644467	7

**The following Analytical Methods were performed**

Method	Description
1	Eichrom Industries, AN-1418
2	DOE EML HASL-300, Th-01-RC Modified
3	EPA 904.0/SW846 9320 Modified
4	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
5	EPA 900.0/SW846 9310
6	EPA 906.0 Modified
7	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AN-1418 AlphaSpec Ra226, Liquid "As Received"	2644876	94.8	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2644883	54	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2643187	88.3	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2643188	70.6	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2644467	96.2	(30%-110%)

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Kevil, Kentucky 42053

Report Date: November 3, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW362UG4-24

Project: FRNP00507

Sample ID: 675825013

Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test						Batch ID	Recovery%	Acceptable Limits				

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

*Column headers are defined as follows:*

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

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Kevil, Kentucky 42053

Report Date: November 3, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: FB1UG4-24

Project: FRNP00507

Sample ID: 675825015

Client ID: FRNP005

Matrix: WATER

Collect Date: 15-JUL-24

Receive Date: 17-JUL-24

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>														
<i>AN-1418 AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.782	+/-0.838	1.14	+/-0.840	5.00	pCi/L			CM4	08/03/24	0914	2644876	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.124	+/-0.374	0.701	+/-0.376	50.0	pCi/L			CM4	08/06/24	1328	2644883	2
Thorium-232	U	0.0543	+/-0.236	0.421	+/-0.236		pCi/L							
<b>Rad Gas Flow Proportional Counting</b>														
<i>904.0Mod, Ra228, Liquid "As Received"</i>														
Radium-228	U	2.53	+/-2.60	4.27	+/-2.68	4.99	pCi/L			KP1	08/03/24	1520	2643187	3
<i>905.0Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	0.930	+/-3.36	6.14	+/-3.37	8.00	pCi/L			JE1	08/01/24	0805	2643188	4
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	-0.400	+/-2.31	6.10	+/-2.31	15.0	pCi/L			HH3	07/31/24	1250	2643189	5
Beta	U	0.719	+/-4.79	8.97	+/-4.79	50.0	pCi/L							
<b>Rad Liquid Scintillation Analysis</b>														
<i>906.0M, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	26.4	+/-143	253	+/-143	300	pCi/L			HB2	08/08/24	1904	2644433	6
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	-2.10	+/-8.95	16.2	+/-8.95	25.0	pCi/L			GS3	08/05/24	1519	2644467	7

**The following Analytical Methods were performed**

Method	Description
1	Eichrom Industries, AN-1418
2	DOE EML HASL-300, Th-01-RC Modified
3	EPA 904.0/SW846 9320 Modified
4	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
5	EPA 900.0/SW846 9310
6	EPA 906.0 Modified
7	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AN-1418 AlphaSpec Ra226, Liquid "As Received"	2644876	92.6	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2644883	84.5	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2643187	82.6	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2643188	70.6	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2644467	97.9	(30%-110%)

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Report Date: November 3, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: FB1UG4-24

Sample ID: 675825015

Project: FRNP00507

Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test						Batch ID	Recovery%	Acceptable Limits				

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

*Column headers are defined as follows:*

DF: Dilution Factor

DL: Detection Limit

Lc/LC: Critical Level

MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Mtd.: Method

PF: Prep Factor

RL: Reporting Limit

TPU: Total Propagated Uncertainty

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Report Date: November 3, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: RI1UG4-24

Project: FRNP00507

Sample ID: 675825016

Client ID: FRNP005

Matrix: WATER

Collect Date: 15-JUL-24

Receive Date: 17-JUL-24

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>														
<i>AN-1418 AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.932	+/-0.913	1.28	+/-0.915	5.00	pCi/L			CM4	08/03/24	0914	2644876	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.544	+/-0.555	0.709	+/-0.564	50.0	pCi/L			CM4	08/06/24	1328	2644883	2
Thorium-232	U	0.0945	+/-0.352	0.665	+/-0.352		pCi/L							
<b>Rad Gas Flow Proportional Counting</b>														
<i>904.0Mod, Ra228, Liquid "As Received"</i>														
Radium-228	U	1.49	+/-2.72	4.72	+/-2.74	4.99	pCi/L			KP1	08/03/24	1520	2643187	3
<i>905.0Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	0.555	+/-3.33	6.16	+/-3.33	8.00	pCi/L			JE1	08/01/24	0803	2643188	4
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	1.11	+/-3.84	7.69	+/-3.84	15.0	pCi/L			HH3	07/31/24	1250	2643189	5
Beta	U	1.54	+/-4.93	8.99	+/-4.94	50.0	pCi/L							
<b>Rad Liquid Scintillation Analysis</b>														
<i>906.0M, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	45.9	+/-145	253	+/-145	300	pCi/L			HB2	08/08/24	1940	2644433	6
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	-3.29	+/-8.74	16.0	+/-8.74	25.0	pCi/L			GS3	08/05/24	1536	2644467	7

**The following Analytical Methods were performed**

Method	Description
1	Eichrom Industries, AN-1418
2	DOE EML HASL-300, Th-01-RC Modified
3	EPA 904.0/SW846 9320 Modified
4	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
5	EPA 900.0/SW846 9310
6	EPA 906.0 Modified
7	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AN-1418 AlphaSpec Ra226, Liquid "As Received"	2644876	94.3	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2644883	70.7	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2643187	86.7	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2643188	70.6	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2644467	94.7	(30%-110%)

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## *Certificate of Analysis*

Company : Four Rivers Nuclear Partnership,  
Address : LLC  
5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: November 3, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: RI1UG4-24

Project: FRNP00507

Sample ID: 675825016

Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test						Batch ID	Recovery%	Acceptable Limits				

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

*Column headers are defined as follows:*

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
 Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
 Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW357UG4-24	Project: FRNP00507
Sample ID: 675825001	Client ID: FRNP005
Matrix: WG	
Collect Date: 15-JUL-24 12:32	
Receive Date: 17-JUL-24	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0191	0.00861	0.0191	ug/L	0.957	1	BM1	07/22/24	2243	2641606	1
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	07/24/24	1035	2644397	2
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Aluminum	J	0.0252	0.0193	0.0500	mg/L	1.00	1	PRB	08/09/24	1442	2644735	3
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	U	0.00500	0.00200	0.00500	mg/L	1.00	1					
Barium		0.0701	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		23.9	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Cobalt	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Copper	J	0.00108	0.000300	0.00200	mg/L	1.00	1					
Iron	J	0.0860	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		10.1	0.0100	0.0300	mg/L	1.00	1					
Manganese		0.0131	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	U	0.00100	0.000200	0.00100	mg/L	1.00	1					
Nickel	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Potassium		1.67	0.0800	0.300	mg/L	1.00	1					
Selenium	U	0.00500	0.00150	0.00500	mg/L	1.00	1					
Silver	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Sodium		38.7	0.0800	0.250	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					
Vanadium	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Zinc	J	0.00504	0.00330	0.0200	mg/L	1.00	1					
Boron		0.300	0.0260	0.0750	mg/L	1.00	5	PRB	08/09/24	1617	2644735	4
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	08/09/24	1717	2644735	5
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					

**Volatile Organics**

8260D, Volatiles- full suite "As Received"



# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW357UG4-24  
Sample ID: 675825001

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
Toluene	U	1.00	0.333	1.00	ug/L		1					
Trichloroethylene		2.36	0.333	1.00	ug/L		1					
Trichlorofluoromethane	U	1.00	0.333	1.00	ug/L		1					
Vinyl acetate	U	5.00	1.67	5.00	ug/L		1					
Vinyl chloride	U	1.00	0.333	1.00	ug/L		1					
Xylenes (total)	U	3.00	1.00	3.00	ug/L		1					
cis-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
cis-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,4-Dichloro-2-butene	U	5.00	1.67	5.00	ug/L		1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 8011 PREP	8011 Prep	LOF	07/22/24	1404	2641605
SW846 3005A	ICP-MS 3005A PREP	BB2	07/25/24	1450	2644733
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	07/23/24	1110	2644396

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 8011	
2	SW846 7470A	
3	SW846 3005A/6020B	
4	SW846 3005A/6020B	
5	SW846 3005A/6020B	
6	SW846 8260D	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	4.99 ug/L	6.84	73	(56%-149%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	47.8 ug/L	50.0	96	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	50.0 ug/L	50.0	100	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	54.0 ug/L	50.0	108	(77%-121%)

Notes:

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW357UG4-24  
Sample ID: 675825001

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time Batch	Method
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Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW357UG4-24      Project: FRNP00507  
Sample ID: 675825002      Client ID: FRNP005  
Matrix: WG  
Collect Date: 15-JUL-24 12:32  
Receive Date: 17-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Dissolved Metals (3 Elements) "As Received"												
Barium		0.0698	0.000670	0.00400	mg/L	1.00	1	PRB	08/09/24	1445	2644735	1
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 160	Laboratory Filtration	SD	07/23/24	1004	2644654
SW846 3005A	ICP-MS 3005A PREP	BB2	07/25/24	1450	2644733

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

### Notes:

Column headers are defined as follows:

DF: Dilution Factor      Lc/LC: Critical Level  
DL: Detection Limit      PF: Prep Factor  
MDA: Minimum Detectable Activity      RL: Reporting Limit  
MDC: Minimum Detectable Concentration      SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW358DUG4-24      Project: FRNP00507  
Sample ID: 675825003      Client ID: FRNP005  
Matrix: WG  
Collect Date: 15-JUL-24 13:20  
Receive Date: 17-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0193	0.00868	0.0193	ug/L	0.965	1	BM1	07/22/24	2313	2641606	1
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	07/24/24	1037	2644397	2
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Boron		0.205	0.0260	0.0750	mg/L	1.00	5	PRB	08/09/24	1620	2644735	3
Manganese		1.68	0.00500	0.0250	mg/L	1.00	5					
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	08/09/24	1719	2644735	4
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					
Aluminum	J	0.0254	0.0193	0.0500	mg/L	1.00	1	PRB	08/09/24	1449	2644735	5
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	J	0.00372	0.00200	0.00500	mg/L	1.00	1					
Barium		0.0763	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		31.9	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Cobalt		0.0224	0.000300	0.00100	mg/L	1.00	1					
Copper	J	0.000841	0.000300	0.00200	mg/L	1.00	1					
Iron		7.77	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		15.6	0.0100	0.0300	mg/L	1.00	1					
Molybdenum	J	0.000321	0.000200	0.00100	mg/L	1.00	1					
Nickel		0.0610	0.000600	0.00200	mg/L	1.00	1					
Potassium		3.01	0.0800	0.300	mg/L	1.00	1					
Selenium	U	0.00500	0.00150	0.00500	mg/L	1.00	1					
Silver	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Sodium		32.1	0.0800	0.250	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					
Vanadium	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Zinc	J	0.00911	0.00330	0.0200	mg/L	1.00	1					

### Volatile Organics

8260D, Volatiles- full suite "As Received"



# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW358DUG4-24 Project: FRNP00507  
Sample ID: 675825003 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
Toluene	U	1.00	0.333	1.00	ug/L		1					
Trichloroethylene		1.19	0.333	1.00	ug/L		1					
Trichlorofluoromethane	U	1.00	0.333	1.00	ug/L		1					
Vinyl acetate	U	5.00	1.67	5.00	ug/L		1					
Vinyl chloride	U	1.00	0.333	1.00	ug/L		1					
Xylenes (total)	U	3.00	1.00	3.00	ug/L		1					
cis-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
cis-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,4-Dichloro-2-butene	U	5.00	1.67	5.00	ug/L		1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 8011 PREP	8011 Prep	LOF	07/22/24	1404	2641605
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	07/23/24	1110	2644396
SW846 3005A	ICP-MS 3005A PREP	BB2	07/25/24	1450	2644733

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 8011	
2	SW846 7470A	
3	SW846 3005A/6020B	
4	SW846 3005A/6020B	
5	SW846 3005A/6020B	
6	SW846 8260D	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	6.83 ug/L	6.89	99	(56%-149%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	48.3 ug/L	50.0	97	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	50.5 ug/L	50.0	101	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	53.7 ug/L	50.0	107	(77%-121%)

Notes:

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW358DUG4-24  
Sample ID: 675825003

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time Batch	Method
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Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW358DUG4-24      Project: FRNP00507  
Sample ID: 675825004      Client ID: FRNP005  
Matrix: WG  
Collect Date: 15-JUL-24 13:20  
Receive Date: 17-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Dissolved Metals (3 Elements) "As Received"												
Barium		0.0757	0.000670	0.00400	mg/L	1.00	1	PRB	08/09/24	1453	2644735	1
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 160	Laboratory Filtration	SD	07/23/24	1004	2644654
SW846 3005A	ICP-MS 3005A PREP	BB2	07/25/24	1450	2644733

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

### Notes:

Column headers are defined as follows:

DF: Dilution Factor      Lc/LC: Critical Level  
DL: Detection Limit      PF: Prep Factor  
MDA: Minimum Detectable Activity      RL: Reporting Limit  
MDC: Minimum Detectable Concentration      SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW358UG4-24      Project: FRNP00507  
Sample ID: 675825005      Client ID: FRNP005  
Matrix: WG  
Collect Date: 15-JUL-24 13:20  
Receive Date: 17-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0188	0.00847	0.0188	ug/L	0.942	1	BM1	07/22/24	2343	2641606	1
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	07/24/24	1038	2644397	2
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Manganese		1.81	0.00500	0.0250	mg/L	1.00	5	PRB	08/09/24	1624	2644735	3
Aluminum	J	0.0305	0.0193	0.0500	mg/L	1.00	1	PRB	08/09/24	1503	2644735	4
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	J	0.00433	0.00200	0.00500	mg/L	1.00	1					
Barium		0.0794	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron		0.169	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		31.5	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Cobalt		0.0249	0.000300	0.00100	mg/L	1.00	1					
Copper	J	0.000903	0.000300	0.00200	mg/L	1.00	1					
Iron		8.85	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		15.9	0.0100	0.0300	mg/L	1.00	1					
Molybdenum	J	0.000367	0.000200	0.00100	mg/L	1.00	1					
Nickel		0.0675	0.000600	0.00200	mg/L	1.00	1					
Potassium		3.10	0.0800	0.300	mg/L	1.00	1					
Selenium	U	0.00500	0.00150	0.00500	mg/L	1.00	1					
Silver	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Sodium		30.8	0.0800	0.250	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					
Vanadium	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Zinc	J	0.0102	0.00330	0.0200	mg/L	1.00	1					
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	08/09/24	1721	2644735	5
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					

### Volatile Organics

8260D, Volatiles- full suite "As Received"

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW358UG4-24  
Sample ID: 675825005

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	JM6	07/18/24	1329	2642613	6
1,1,1-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
1,2,3-Trichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dibromoethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,4-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
2-Butanone	U	5.00	1.67	5.00	ug/L		1					
2-Hexanone	U	5.00	1.67	5.00	ug/L		1					
4-Methyl-2-pentanone	U	5.00	1.67	5.00	ug/L		1					
Acetone	U	5.00	1.74	5.00	ug/L		1					
Acrolein	U	5.00	1.67	5.00	ug/L		1					
Acrylonitrile	U	5.00	1.67	5.00	ug/L		1					
Benzene	U	1.00	0.333	1.00	ug/L		1					
Bromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromodichloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromoform	U	1.00	0.333	1.00	ug/L		1					
Bromomethane	U	1.00	0.337	1.00	ug/L		1					
Carbon disulfide	UY1	5.00	1.67	5.00	ug/L		1					
Carbon tetrachloride	U	1.00	0.333	1.00	ug/L		1					
Chlorobenzene	U	1.00	0.333	1.00	ug/L		1					
Chloroethane	U	1.00	0.333	1.00	ug/L		1					
Chloroform	U	1.00	0.333	1.00	ug/L		1					
Chloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromomethane	U	1.00	0.333	1.00	ug/L		1					
Ethylbenzene	U	1.00	0.333	1.00	ug/L		1					
Iodomethane	U	5.00	1.67	5.00	ug/L		1					
Methylene chloride	BJ	3.72	0.500	5.00	ug/L		1					
Styrene	U	1.00	0.333	1.00	ug/L		1					
Tetrachloroethylene	U	1.00	0.333	1.00	ug/L		1					

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW358UG4-24 Project: FRNP00507  
Sample ID: 675825005 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
Toluene	U	1.00	0.333	1.00	ug/L		1					
Trichloroethylene		3.89	0.333	1.00	ug/L		1					
Trichlorofluoromethane	U	1.00	0.333	1.00	ug/L		1					
Vinyl acetate	U	5.00	1.67	5.00	ug/L		1					
Vinyl chloride	U	1.00	0.333	1.00	ug/L		1					
Xylenes (total)	U	3.00	1.00	3.00	ug/L		1					
cis-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
cis-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,4-Dichloro-2-butene	U	5.00	1.67	5.00	ug/L		1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	BB2	07/25/24	1450	2644733
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	07/23/24	1110	2644396
SW846 8011 PREP	8011 Prep	LOF	07/22/24	1404	2641605

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 8011	
2	SW846 7470A	
3	SW846 3005A/6020B	
4	SW846 3005A/6020B	
5	SW846 3005A/6020B	
6	SW846 8260D	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	6.54 ug/L	6.73	97	(56%-149%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	46.4 ug/L	50.0	93	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	50.8 ug/L	50.0	102	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	52.5 ug/L	50.0	105	(77%-121%)

Notes:

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW358UG4-24  
Sample ID: 675825005

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time Batch	Method
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Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW358UG4-24

Project: FRNP00507

Sample ID: 675825006

Client ID: FRNP005

Matrix: WG

Collect Date: 15-JUL-24 13:20

Receive Date: 17-JUL-24

Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Dissolved Metals (3 Elements) "As Received"												
Barium		0.0739	0.000670	0.00400	mg/L	1.00	1	PRB	08/09/24	1507	2644735	1
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 160	Laboratory Filtration	SD	07/23/24	1004	2644654
SW846 3005A	ICP-MS 3005A PREP	BB2	07/25/24	1450	2644733

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

### Notes:

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW359UG4-24 Project: FRNP00507  
Sample ID: 675825007 Client ID: FRNP005  
Matrix: WG  
Collect Date: 15-JUL-24 14:22  
Receive Date: 17-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0192	0.00863	0.0192	ug/L	0.958	1	BM1	07/23/24	0013	2641606	1
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	07/24/24	1043	2644397	2
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Aluminum		0.0682	0.0193	0.0500	mg/L	1.00	1	PRB	08/09/24	1511	2644735	3
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	U	0.00500	0.00200	0.00500	mg/L	1.00	1					
Barium		0.0231	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron	U	0.0150	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		5.88	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Cobalt	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Copper	J	0.00184	0.000300	0.00200	mg/L	1.00	1					
Iron		0.115	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		2.81	0.0100	0.0300	mg/L	1.00	1					
Manganese	J	0.00194	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	U	0.00100	0.000200	0.00100	mg/L	1.00	1					
Nickel	J	0.00111	0.000600	0.00200	mg/L	1.00	1					
Potassium	J	0.184	0.0800	0.300	mg/L	1.00	1					
Selenium	U	0.00500	0.00150	0.00500	mg/L	1.00	1					
Silver	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Sodium		31.2	0.0800	0.250	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					
Vanadium	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Zinc	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	08/09/24	1723	2644735	4
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					

### Volatile Organics

8260D, Volatiles- full suite "As Received"

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW359UG4-24  
Sample ID: 675825007

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	JM6	07/18/24	1357	2642613	5
1,1,1-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
1,2,3-Trichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dibromoethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,4-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
2-Butanone	U	5.00	1.67	5.00	ug/L		1					
2-Hexanone	U	5.00	1.67	5.00	ug/L		1					
4-Methyl-2-pentanone	U	5.00	1.67	5.00	ug/L		1					
Acetone	U	5.00	1.74	5.00	ug/L		1					
Acrolein	U	5.00	1.67	5.00	ug/L		1					
Acrylonitrile	U	5.00	1.67	5.00	ug/L		1					
Benzene	U	1.00	0.333	1.00	ug/L		1					
Bromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromodichloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromoform	U	1.00	0.333	1.00	ug/L		1					
Bromomethane	U	1.00	0.337	1.00	ug/L		1					
Carbon disulfide	UY1	5.00	1.67	5.00	ug/L		1					
Carbon tetrachloride	U	1.00	0.333	1.00	ug/L		1					
Chlorobenzene	U	1.00	0.333	1.00	ug/L		1					
Chloroethane	U	1.00	0.333	1.00	ug/L		1					
Chloroform	U	1.00	0.333	1.00	ug/L		1					
Chloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromomethane	U	1.00	0.333	1.00	ug/L		1					
Ethylbenzene	U	1.00	0.333	1.00	ug/L		1					
Iodomethane	U	5.00	1.67	5.00	ug/L		1					
Methylene chloride	BJ	3.58	0.500	5.00	ug/L		1					
Styrene	U	1.00	0.333	1.00	ug/L		1					
Tetrachloroethylene	U	1.00	0.333	1.00	ug/L		1					

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Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW359UG4-24 Project: FRNP00507  
Sample ID: 675825007 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
Toluene	U	1.00	0.333	1.00	ug/L		1					
Trichloroethylene	U	1.00	0.333	1.00	ug/L		1					
Trichlorofluoromethane	U	1.00	0.333	1.00	ug/L		1					
Vinyl acetate	U	5.00	1.67	5.00	ug/L		1					
Vinyl chloride	U	1.00	0.333	1.00	ug/L		1					
Xylenes (total)	U	3.00	1.00	3.00	ug/L		1					
cis-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
cis-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,4-Dichloro-2-butene	U	5.00	1.67	5.00	ug/L		1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	BB2	07/25/24	1450	2644733
SW846 8011 PREP	8011 Prep	LOF	07/22/24	1404	2641605
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	07/23/24	1110	2644396

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 8011	
2	SW846 7470A	
3	SW846 3005A/6020B	
4	SW846 3005A/6020B	
5	SW846 8260D	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	6.74 ug/L	6.85	98	(56%-149%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	48.7 ug/L	50.0	97	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	50.3 ug/L	50.0	101	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	52.8 ug/L	50.0	106	(77%-121%)

Notes:

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Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW359UG4-24  
Sample ID: 675825007

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
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Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW359UG4-24

Project: FRNP00507

Sample ID: 675825008

Client ID: FRNP005

Matrix: WG

Collect Date: 15-JUL-24 14:22

Receive Date: 17-JUL-24

Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Dissolved Metals (3 Elements) "As Received"												
Barium		0.0224	0.000670	0.00400	mg/L	1.00	1	PRB	08/09/24	1514	2644735	1
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	BB2	07/25/24	1450	2644733
EPA 160	Laboratory Filtration	SD	07/23/24	1004	2644654

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

### Notes:

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW360UG4-24

Project: FRNP00507

Sample ID: 675825009

Client ID: FRNP005

Matrix: WG

Collect Date: 15-JUL-24 08:25

Receive Date: 16-JUL-24

Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0191	0.00861	0.0191	ug/L	0.956	1	BM1	07/23/24	0044	2641606	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.983	0.330	2.00	mg/L		1	KB3	08/11/24	0318	2653001	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	07/19/24	0905	2643110	3
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	08/08/24	1202	2653275	4
SW846 9056A Anions (5 elements) "As Received"												
Sulfate		9.28	0.133	0.400	mg/L		1	CH6	08/12/24	1650	2641098	5
Nitrate-N	J	0.747	0.0660	10.0	mg/L		2	CH6	07/16/24	1311	2641098	6
Bromide	J	0.146	0.0670	0.200	mg/L		1	CH6	07/16/24	1108	2641098	7
Chloride	J	5.29	0.0670	250	mg/L		1					
Fluoride	J	0.287	0.0330	4.00	mg/L		1					
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	07/24/24	1137	2643934	8
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	08/09/24	1845	2642497	9
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					
Aluminum	J	0.0382	0.0193	0.0500	mg/L	1.00	1	PRB	08/09/24	2005	2642497	10
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	U	0.00500	0.00200	0.00500	mg/L	1.00	1					
Barium		0.188	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron		0.0171	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		17.7	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Cobalt	J	0.000781	0.000300	0.00100	mg/L	1.00	1					





# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW360UG4-24  
Sample ID: 675825009

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
Toluene	U	1.00	0.333	1.00	ug/L		1					
Trichloroethylene	U	1.00	0.333	1.00	ug/L		1					
Trichlorofluoromethane	U	1.00	0.333	1.00	ug/L		1					
Vinyl acetate	U	5.00	1.67	5.00	ug/L		1					
Vinyl chloride	U	1.00	0.333	1.00	ug/L		1					
Xylenes (total)	U	3.00	1.00	3.00	ug/L		1					
cis-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
cis-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,4-Dichloro-2-butene	U	5.00	1.67	5.00	ug/L		1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	AB5	07/24/24	0830	2642496
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	07/23/24	1110	2643933
SW846 3535A	SW3535A PCB SPE Extraction	DXF4	08/10/24	0531	2654123
SW846 9010C Distillation	SW846 9010C Prep	ES2	07/19/24	0837	2643109
SW846 8011 PREP	8011 Prep	LOF	07/22/24	1404	2641605

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW360UG4-24	Project: FRNP00507
Sample ID: 675825009	Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
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The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 8011	
2	SW846 9060A	
3	SW846 9012B	
4	EPA 300.0	
5	SW846 9056A	
6	SW846 9056A	
7	SW846 9056A	
8	SW846 7470A	
9	SW846 3005A/6020B	
10	SW846 3005A/6020B	
11	SW846 3005A/6020B	
12	SW846 3535A/8082A	
13	EPA 160.1	
14	EPA 410.4	
15	SW846 8260D	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	7.64 ug/L	6.83	112	(56%-149%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.133 ug/L	0.197	67	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.131 ug/L	0.197	67	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	47.4 ug/L	50.0	95	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	50.8 ug/L	50.0	102	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	53.3 ug/L	50.0	107	(77%-121%)

**Notes:**

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW360UG4-24      Project: FRNP00507  
Sample ID: 675825010      Client ID: FRNP005  
Matrix: WG  
Collect Date: 15-JUL-24 08:25  
Receive Date: 16-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Dissolved Metals (3 Elements) "As Received"												
Barium		0.198	0.000670	0.00400	mg/L	1.00	1	PRB	08/09/24	2030	2642497	1
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 160	Laboratory Filtration	EXF1	07/18/24	0732	2642117
SW846 3005A	ICP-MS 3005A PREP	AB5	07/24/24	0830	2642496

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

### Notes:

Column headers are defined as follows:

DF: Dilution Factor      Lc/LC: Critical Level  
DL: Detection Limit      PF: Prep Factor  
MDA: Minimum Detectable Activity      RL: Reporting Limit  
MDC: Minimum Detectable Concentration      SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW361UG4-24      Project: FRNP00507  
Sample ID: 675825011      Client ID: FRNP005  
Matrix: WG  
Collect Date: 15-JUL-24 09:11  
Receive Date: 17-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0188	0.00847	0.0188	ug/L	0.942	1	BM1	07/23/24	0114	2641606	1
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	07/24/24	1045	2644397	2
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Boron		0.420	0.0260	0.0750	mg/L	1.00	5	PRB	08/09/24	1627	2644735	3
Aluminum	U	0.0500	0.0193	0.0500	mg/L	1.00	1	PRB	08/09/24	1518	2644735	4
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	U	0.00500	0.00200	0.00500	mg/L	1.00	1					
Barium		0.0651	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		29.2	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Cobalt	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Copper	J	0.00124	0.000300	0.00200	mg/L	1.00	1					
Iron	U	0.100	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		12.7	0.0100	0.0300	mg/L	1.00	1					
Manganese		0.00629	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	U	0.00100	0.000200	0.00100	mg/L	1.00	1					
Nickel	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Potassium		1.82	0.0800	0.300	mg/L	1.00	1					
Selenium	U	0.00500	0.00150	0.00500	mg/L	1.00	1					
Silver	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Sodium		40.1	0.0800	0.250	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					
Vanadium	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Zinc	J	0.00405	0.00330	0.0200	mg/L	1.00	1					
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	08/09/24	1729	2644735	5
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					

### Volatile Organics

8260D, Volatiles- full suite "As Received"

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW361UG4-24  
Sample ID: 675825011

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	JM6	07/18/24	1455	2642613	6
1,1,1-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
1,2,3-Trichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dibromoethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,4-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
2-Butanone	U	5.00	1.67	5.00	ug/L		1					
2-Hexanone	U	5.00	1.67	5.00	ug/L		1					
4-Methyl-2-pentanone	U	5.00	1.67	5.00	ug/L		1					
Acetone	U	5.00	1.74	5.00	ug/L		1					
Acrolein	U	5.00	1.67	5.00	ug/L		1					
Acrylonitrile	U	5.00	1.67	5.00	ug/L		1					
Benzene	U	1.00	0.333	1.00	ug/L		1					
Bromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromodichloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromoform	U	1.00	0.333	1.00	ug/L		1					
Bromomethane	U	1.00	0.337	1.00	ug/L		1					
Carbon disulfide	UY1	5.00	1.67	5.00	ug/L		1					
Carbon tetrachloride	U	1.00	0.333	1.00	ug/L		1					
Chlorobenzene	U	1.00	0.333	1.00	ug/L		1					
Chloroethane	U	1.00	0.333	1.00	ug/L		1					
Chloroform	U	1.00	0.333	1.00	ug/L		1					
Chloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromomethane	U	1.00	0.333	1.00	ug/L		1					
Ethylbenzene	U	1.00	0.333	1.00	ug/L		1					
Iodomethane	U	5.00	1.67	5.00	ug/L		1					
Methylene chloride	BJ	3.61	0.500	5.00	ug/L		1					
Styrene	U	1.00	0.333	1.00	ug/L		1					
Tetrachloroethylene	U	1.00	0.333	1.00	ug/L		1					

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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW361UG4-24  
Sample ID: 675825011

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
Toluene	U	1.00	0.333	1.00	ug/L		1					
Trichloroethylene	J	0.700	0.333	1.00	ug/L		1					
Trichlorofluoromethane	U	1.00	0.333	1.00	ug/L		1					
Vinyl acetate	U	5.00	1.67	5.00	ug/L		1					
Vinyl chloride	U	1.00	0.333	1.00	ug/L		1					
Xylenes (total)	U	3.00	1.00	3.00	ug/L		1					
cis-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
cis-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,4-Dichloro-2-butene	U	5.00	1.67	5.00	ug/L		1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	BB2	07/25/24	1450	2644733
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	07/23/24	1110	2644396
SW846 8011 PREP	8011 Prep	LOF	07/22/24	1404	2641605

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 8011	
2	SW846 7470A	
3	SW846 3005A/6020B	
4	SW846 3005A/6020B	
5	SW846 3005A/6020B	
6	SW846 8260D	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	6.53 ug/L	6.73	97	(56%-149%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	47.7 ug/L	50.0	95	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	50.0 ug/L	50.0	100	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	52.3 ug/L	50.0	105	(77%-121%)

Notes:



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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW361UG4-24

Project: FRNP00507

Sample ID: 675825012

Client ID: FRNP005

Matrix: WG

Collect Date: 15-JUL-24 09:11

Receive Date: 17-JUL-24

Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Dissolved Metals (3 Elements) "As Received"												
Barium		0.0667	0.000670	0.00400	mg/L	1.00	1	PRB	08/09/24	1544	2644735	1
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	BB2	07/25/24	1450	2644733
EPA 160	Laboratory Filtration	SD	07/23/24	1004	2644654

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	SW846 3005A/6020B		

### Notes:

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW362UG4-24

Project: FRNP00507

Sample ID: 675825013

Client ID: FRNP005

Matrix: WG

Collect Date: 15-JUL-24 10:14

Receive Date: 16-JUL-24

Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0189	0.00852	0.0189	ug/L	0.946	1	BM1	07/23/24	0333	2641606	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average		2.00	0.330	2.00	mg/L		1	KB3	08/11/24	0514	2653001	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	07/19/24	0908	2643110	3
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	08/08/24	1214	2653275	4
SW846 9056A Anions (5 elements) "As Received"												
Bromide	U	0.200	0.0670	0.200	mg/L		1	CH6	07/16/24	1138	2641098	5
Chloride	J	1.95	0.0670	250	mg/L		1					
Fluoride	J	0.605	0.0330	4.00	mg/L		1					
Nitrate-N	J	0.560	0.0660	10.0	mg/L		2	CH6	07/16/24	1443	2641098	6
Sulfate		27.8	0.266	0.800	mg/L		2	CH6	08/12/24	1955	2641098	7
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	07/24/24	1142	2643934	8
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	08/09/24	1854	2642497	9
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					
Aluminum		0.353	0.0193	0.0500	mg/L	1.00	1	PRB	08/09/24	2034	2642497	10
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	U	0.00500	0.00200	0.00500	mg/L	1.00	1					
Barium		0.0808	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron		0.0239	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		17.9	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Cobalt	U	0.00100	0.000300	0.00100	mg/L	1.00	1					



# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW362UG4-24  
Sample ID: 675825013

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	JM6	07/18/24	1524	2642613	15
1,1,1-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
1,2,3-Trichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dibromoethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,4-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
2-Butanone	U	5.00	1.67	5.00	ug/L		1					
2-Hexanone	U	5.00	1.67	5.00	ug/L		1					
4-Methyl-2-pentanone	U	5.00	1.67	5.00	ug/L		1					
Acetone	U	5.00	1.74	5.00	ug/L		1					
Acrolein	U	5.00	1.67	5.00	ug/L		1					
Acrylonitrile	U	5.00	1.67	5.00	ug/L		1					
Benzene	U	1.00	0.333	1.00	ug/L		1					
Bromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromodichloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromoform	U	1.00	0.333	1.00	ug/L		1					
Bromomethane	U	1.00	0.337	1.00	ug/L		1					
Carbon disulfide	UY1	5.00	1.67	5.00	ug/L		1					
Carbon tetrachloride	U	1.00	0.333	1.00	ug/L		1					
Chlorobenzene	U	1.00	0.333	1.00	ug/L		1					
Chloroethane	U	1.00	0.333	1.00	ug/L		1					
Chloroform	U	1.00	0.333	1.00	ug/L		1					
Chloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromomethane	U	1.00	0.333	1.00	ug/L		1					
Ethylbenzene	U	1.00	0.333	1.00	ug/L		1					
Iodomethane	U	5.00	1.67	5.00	ug/L		1					
Methylene chloride	BJ	3.77	0.500	5.00	ug/L		1					
Styrene	U	1.00	0.333	1.00	ug/L		1					
Tetrachloroethylene	U	1.00	0.333	1.00	ug/L		1					





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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW362UG4-24      Project: FRNP00507  
Sample ID: 675825014      Client ID: FRNP005  
Matrix: WG  
Collect Date: 15-JUL-24 10:14  
Receive Date: 16-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Dissolved Metals (3 Elements) "As Received"												
Barium		0.0763	0.000670	0.00400	mg/L	1.00	1	PRB	08/09/24	2038	2642497	1
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Uranium		0.00306	0.0000670	0.000200	mg/L	1.00	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 160	Laboratory Filtration	EXF1	07/18/24	0732	2642117
SW846 3005A	ICP-MS 3005A PREP	AB5	07/24/24	0830	2642496

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

### Notes:

Column headers are defined as follows:

DF: Dilution Factor      Lc/LC: Critical Level  
DL: Detection Limit      PF: Prep Factor  
MDA: Minimum Detectable Activity      RL: Reporting Limit  
MDC: Minimum Detectable Concentration      SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: FB1UG4-24 Project: FRNP00507  
Sample ID: 675825015 Client ID: FRNP005  
Matrix: WATER  
Collect Date: 15-JUL-24 13:25  
Receive Date: 17-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0191	0.00859	0.0191	ug/L	0.954	1	BM1	07/23/24	0403	2641606	1
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	08/08/24	1227	2653275	2
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	07/24/24	1144	2643934	3
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	08/09/24	1738	2644735	4
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					
Aluminum	U	0.0500	0.0193	0.0500	mg/L	1.00	1	PRB	08/09/24	1602	2644735	5
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	U	0.00500	0.00200	0.00500	mg/L	1.00	1					
Barium	U	0.00400	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron	U	0.0150	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium	U	0.200	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Cobalt	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Copper	U	0.00200	0.000300	0.00200	mg/L	1.00	1					
Iron	U	0.100	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium	U	0.0300	0.0100	0.0300	mg/L	1.00	1					
Manganese	U	0.00500	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	U	0.00100	0.000200	0.00100	mg/L	1.00	1					
Nickel	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Potassium	U	0.300	0.0800	0.300	mg/L	1.00	1					
Selenium	U	0.00500	0.00150	0.00500	mg/L	1.00	1					
Silver	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Sodium	U	0.250	0.0800	0.250	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: FB1UG4-24 Project: FRNP00507  
Sample ID: 675825015 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Vanadium	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Zinc	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.102	0.0338	0.102	ug/L	0.00102	1	LOF	08/11/24	0053	2654126	6
Aroclor-1221	U	0.102	0.0338	0.102	ug/L	0.00102	1					
Aroclor-1232	U	0.102	0.0338	0.102	ug/L	0.00102	1					
Aroclor-1242	U	0.102	0.0338	0.102	ug/L	0.00102	1					
Aroclor-1248	U	0.102	0.0338	0.102	ug/L	0.00102	1					
Aroclor-1254	U	0.102	0.0338	0.102	ug/L	0.00102	1					
Aroclor-1260	U	0.102	0.0338	0.102	ug/L	0.00102	1					
Aroclor-1268	U	0.102	0.0338	0.102	ug/L	0.00102	1					
Aroclor-Total	U	0.102	0.0338	0.102	ug/L	0.00102	1					
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	JM6	07/18/24	1554	2642613	7
1,1,1-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
1,2,3-Trichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dibromoethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,4-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
2-Butanone	U	5.00	1.67	5.00	ug/L		1					
2-Hexanone	U	5.00	1.67	5.00	ug/L		1					
4-Methyl-2-pentanone	U	5.00	1.67	5.00	ug/L		1					
Acetone	U	5.00	1.74	5.00	ug/L		1					
Acrolein	U	5.00	1.67	5.00	ug/L		1					
Acrylonitrile	U	5.00	1.67	5.00	ug/L		1					
Benzene	U	1.00	0.333	1.00	ug/L		1					
Bromochloromethane	U	1.00	0.333	1.00	ug/L		1					





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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: R11UG4-24 Project: FRNP00507  
Sample ID: 675825016 Client ID: FRNP005  
Matrix: WATER  
Collect Date: 15-JUL-24 07:05  
Receive Date: 17-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0190	0.00853	0.0190	ug/L	0.948	1	BM1	07/23/24	0433	2641606	1
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	08/08/24	1240	2653275	2
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	07/24/24	1146	2643934	3
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	08/10/24	1109	2644735	4
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					
Aluminum	U	0.0500	0.0193	0.0500	mg/L	1.00	1	PRB	08/09/24	1605	2644735	5
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	U	0.00500	0.00200	0.00500	mg/L	1.00	1					
Barium	U	0.00400	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron	U	0.0150	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium	U	0.200	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Cobalt	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Copper	U	0.00200	0.000300	0.00200	mg/L	1.00	1					
Iron	U	0.100	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium	U	0.0300	0.0100	0.0300	mg/L	1.00	1					
Manganese	U	0.00500	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	U	0.00100	0.000200	0.00100	mg/L	1.00	1					
Nickel	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Potassium	U	0.300	0.0800	0.300	mg/L	1.00	1					
Selenium	U	0.00500	0.00150	0.00500	mg/L	1.00	1					
Silver	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Sodium	U	0.250	0.0800	0.250	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					

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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: RI1UG4-24 Project: FRNP00507  
Sample ID: 675825016 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Vanadium	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Zinc	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.0965	0.0321	0.0965	ug/L	0.000965	1	LOF	08/11/24	0112	2654126	6
Aroclor-1221	U	0.0965	0.0321	0.0965	ug/L	0.000965	1					
Aroclor-1232	U	0.0965	0.0321	0.0965	ug/L	0.000965	1					
Aroclor-1242	U	0.0965	0.0321	0.0965	ug/L	0.000965	1					
Aroclor-1248	U	0.0965	0.0321	0.0965	ug/L	0.000965	1					
Aroclor-1254	U	0.0965	0.0321	0.0965	ug/L	0.000965	1					
Aroclor-1260	U	0.0965	0.0321	0.0965	ug/L	0.000965	1					
Aroclor-1268	U	0.0965	0.0321	0.0965	ug/L	0.000965	1					
Aroclor-Total	U	0.0965	0.0321	0.0965	ug/L	0.000965	1					
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	JM6	07/18/24	1623	2642613	7
1,1,1-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
1,2,3-Trichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dibromoethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,4-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
2-Butanone	U	5.00	1.67	5.00	ug/L		1					
2-Hexanone	U	5.00	1.67	5.00	ug/L		1					
4-Methyl-2-pentanone	U	5.00	1.67	5.00	ug/L		1					
Acetone	U	5.00	1.74	5.00	ug/L		1					
Acrolein	U	5.00	1.67	5.00	ug/L		1					
Acrylonitrile	U	5.00	1.67	5.00	ug/L		1					
Benzene	U	1.00	0.333	1.00	ug/L		1					
Bromochloromethane	U	1.00	0.333	1.00	ug/L		1					



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Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: RI1UG4-24 Project: FRNP00507  
Sample ID: 675825016 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time Batch	Method
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The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	SW846 8011		
2	EPA 300.0		
3	SW846 7470A		
4	SW846 3005A/6020B		
5	SW846 3005A/6020B		
6	SW846 3535A/8082A		
7	SW846 8260D		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	7.09 ug/L	6.77	105	(56%-149%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.162 ug/L	0.193	84	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.144 ug/L	0.193	75	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	48.2 ug/L	50.0	96	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	49.5 ug/L	50.0	99	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	53.1 ug/L	50.0	106	(77%-121%)

### Notes:

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level  
DL: Detection Limit PF: Prep Factor  
MDA: Minimum Detectable Activity RL: Reporting Limit  
MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: TB1UG4-24 Project: FRNP00507  
Sample ID: 675825017 Client ID: FRNP005  
Matrix: WATER  
Collect Date: 15-JUL-24 07:00  
Receive Date: 16-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0190	0.00857	0.0190	ug/L	0.952	1	BM1	07/23/24	0503	2641606	1
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	JM6	07/18/24	1651	2642613	2
1,1,1-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
1,2,3-Trichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dibromoethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,4-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
2-Butanone	U	5.00	1.67	5.00	ug/L		1					
2-Hexanone	U	5.00	1.67	5.00	ug/L		1					
4-Methyl-2-pentanone	U	5.00	1.67	5.00	ug/L		1					
Acetone	U	5.00	1.74	5.00	ug/L		1					
Acrolein	U	5.00	1.67	5.00	ug/L		1					
Acrylonitrile	U	5.00	1.67	5.00	ug/L		1					
Benzene	U	1.00	0.333	1.00	ug/L		1					
Bromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromodichloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromoform	U	1.00	0.333	1.00	ug/L		1					
Bromomethane	U	1.00	0.337	1.00	ug/L		1					
Carbon disulfide	UY1	5.00	1.67	5.00	ug/L		1					
Carbon tetrachloride	U	1.00	0.333	1.00	ug/L		1					
Chlorobenzene	U	1.00	0.333	1.00	ug/L		1					
Chloroethane	U	1.00	0.333	1.00	ug/L		1					
Chloroform	U	1.00	0.333	1.00	ug/L		1					
Chloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromomethane	U	1.00	0.333	1.00	ug/L		1					
Ethylbenzene	U	1.00	0.333	1.00	ug/L		1					
Iodomethane	U	5.00	1.67	5.00	ug/L		1					

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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: TB1UG4-24  
Sample ID: 675825017

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
Methylene chloride	BJ	3.93	0.500	5.00	ug/L		1					
Styrene	U	1.00	0.333	1.00	ug/L		1					
Tetrachloroethylene	U	1.00	0.333	1.00	ug/L		1					
Toluene	U	1.00	0.333	1.00	ug/L		1					
Trichloroethylene	U	1.00	0.333	1.00	ug/L		1					
Trichlorofluoromethane	U	1.00	0.333	1.00	ug/L		1					
Vinyl acetate	U	5.00	1.67	5.00	ug/L		1					
Vinyl chloride	U	1.00	0.333	1.00	ug/L		1					
Xylenes (total)	U	3.00	1.00	3.00	ug/L		1					
cis-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
cis-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,4-Dichloro-2-butene	U	5.00	1.67	5.00	ug/L		1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 8011 PREP	8011 Prep	LOF	07/22/24	1404	2641605

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 8011	
2	SW846 8260D	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	6.89 ug/L	6.80	101	(56%-149%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	48.7 ug/L	50.0	97	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	50.5 ug/L	50.0	101	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	53.5 ug/L	50.0	107	(77%-121%)

Notes:

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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: TB1UG4-24  
Sample ID: 675825017

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
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Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

**ATTACHMENT C2**

**GEL LABORATORIES CERTIFICATE OF ANALYSIS**

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## Certificate of Analysis

Company : Four Rivers Nuclear Partnership,  
Address : LLC  
5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: October 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW369UG4-24  
Sample ID: 676265001  
Matrix: WG  
Collect Date: 17-JUL-24  
Receive Date: 19-JUL-24  
Collector: Client

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
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**Rad Alpha Spec Analysis**

*AN-1418 AlphaSpec Ra226, Liquid "As Received"*

Radium-226	U	0.377	+/-0.749	1.22	+/-0.750	5.00	pCi/L			CM4	08/04/24	1300	2646943	1
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*Th-01-RC M, Th Isotopes, Liquid "As Received"*

Thorium-230	U	0.139	+/-0.354	0.649	+/-0.355	50.0	pCi/L			MB3	08/01/24	1340	2646941	2
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Thorium-232	U	-0.0533	+/-0.202	0.518	+/-0.202		pCi/L							
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**Rad Gas Flow Proportional Counting**

*904.0Mod, Ra228, Liquid "As Received"*

Radium-228	U	4.57	+/-2.94	4.61	+/-3.17	4.99	pCi/L			KP1	08/05/24	1615	2643862	3
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*905.0Mod, Sr90, liquid "As Received"*

Strontium-90	U	0.861	+/-3.67	6.81	+/-3.68	8.00	pCi/L			JE1	08/01/24	0833	2645055	4
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*9310, Alpha/Beta Activity, liquid "As Received"*

Alpha	U	-0.865	+/-2.38	6.58	+/-2.39	15.0	pCi/L			HH3	08/01/24	1351	2643718	5
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Beta		31.5	+/-8.17	9.06	+/-9.70	50.0	pCi/L							
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**Rad Liquid Scintillation Analysis**

*Tc-02-RC-MOD, Tc99, Liquid "As Received"*

Technetium-99		42.7	+/-11.5	17.7	+/-12.5	25.0	pCi/L			GS3	08/11/24	1454	2645965	6
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**The following Analytical Methods were performed**

Method	Description
1	Eichrom Industries, AN-1418
2	DOE EML HASL-300, Th-01-RC Modified
3	EPA 904.0/SW846 9320 Modified
4	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
5	EPA 900.0/SW846 9310
6	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AN-1418 AlphaSpec Ra226, Liquid "As Received"	2646943	93.4	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2646941	83.1	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2643862	80.2	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2645055	59.9	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2645965	102	(30%-110%)

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## *Certificate of Analysis*

Company : Four Rivers Nuclear Partnership,  
Address : LLC  
5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: October 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW369UG4-24

Project: FRNP00507

Sample ID: 676265001

Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test						Batch ID	Recovery%	Acceptable Limits				

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

*Column headers are defined as follows:*

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

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## Certificate of Analysis

Company : Four Rivers Nuclear Partnership,  
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Kevil, Kentucky 42053

Report Date: October 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW370UG4-24

Project: FRNP00507

Sample ID: 676265003

Client ID: FRNP005

Matrix: WG

Collect Date: 17-JUL-24

Receive Date: 19-JUL-24

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>														
<i>AN-1418 AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.683	+/-0.887	1.26	+/-0.888	5.00	pCi/L			CM4	08/04/24	1300	2646943	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.384	+/-0.627	1.06	+/-0.632	50.0	pCi/L			MB3	08/01/24	1340	2646941	2
Thorium-232	U	0.0942	+/-0.286	0.397	+/-0.287		pCi/L							
<b>Rad Gas Flow Proportional Counting</b>														
<i>904.0Mod, Ra228, Liquid "As Received"</i>														
Radium-228	U	2.78	+/-2.98	4.98	+/-3.07	4.99	pCi/L			KP1	08/05/24	1314	2643862	3
<i>905.0Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	2.56	+/-2.06	3.29	+/-2.10	8.00	pCi/L			JE1	08/08/24	1258	2645055	4
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	0.184	+/-2.70	6.29	+/-2.70	15.0	pCi/L			HH3	08/01/24	1351	2643718	5
Beta		14.1	+/-6.40	8.83	+/-6.82	50.0	pCi/L							
<b>Rad Liquid Scintillation Analysis</b>														
<i>906.0M, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	-40.0	+/-160	290	+/-160	300	pCi/L			HB2	08/06/24	2150	2644436	6
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	-4.19	+/-10.4	18.8	+/-10.4	25.0	pCi/L			GS3	08/05/24	2018	2645965	7

**The following Analytical Methods were performed**

Method	Description
1	Eichrom Industries, AN-1418
2	DOE EML HASL-300, Th-01-RC Modified
3	EPA 904.0/SW846 9320 Modified
4	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
5	EPA 900.0/SW846 9310
6	EPA 906.0 Modified
7	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AN-1418 AlphaSpec Ra226, Liquid "As Received"	2646943	94.6	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2646941	55.1	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2643862	80.1	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2645055	70.6	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2645965	96.8	(30%-110%)

# GEL LABORATORIES LLC

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## *Certificate of Analysis*

Company : Four Rivers Nuclear Partnership,  
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5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: October 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW370UG4-24

Project: FRNP00507

Sample ID: 676265003

Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test						Batch ID	Recovery%	Acceptable Limits				

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

*Column headers are defined as follows:*

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

# GEL LABORATORIES LLC

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## Certificate of Analysis

Company : Four Rivers Nuclear Partnership,  
Address : LLC  
5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: October 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW371UG4-24

Project: FRNP00507

Sample ID: 676265005

Client ID: FRNP005

Matrix: WG

Collect Date: 17-JUL-24

Receive Date: 19-JUL-24

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>														
<i>AN-1418 AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	1.31	+/-1.28	1.80	+/-1.28	5.00	pCi/L			CM4	08/04/24	1300	2646943	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.125	+/-0.570	1.12	+/-0.572	50.0	pCi/L			MB3	08/05/24	1247	2646941	2
Thorium-232	U	-0.0482	+/-0.331	0.804	+/-0.333		pCi/L							
<b>Rad Gas Flow Proportional Counting</b>														
<i>904.0Mod, Ra228, Liquid "As Received"</i>														
Radium-228	U	-2.37	+/-2.30	4.85	+/-2.30	4.99	pCi/L			KP1	08/05/24	1314	2643862	3
<i>905.0Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	-2.24	+/-2.00	4.55	+/-2.00	8.00	pCi/L			JE1	08/01/24	0833	2645055	4
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	6.55	+/-6.26	9.84	+/-6.37	15.0	pCi/L			HH3	08/01/24	1351	2643718	5
Beta	U	0.402	+/-4.92	9.25	+/-4.93	50.0	pCi/L							
<b>Rad Liquid Scintillation Analysis</b>														
<i>906.0M, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	60.6	+/-168	292	+/-168	300	pCi/L			HB2	08/06/24	2227	2644436	6
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	1.76	+/-10.8	18.6	+/-10.8	25.0	pCi/L			GS3	08/11/24	1531	2645965	7

**The following Analytical Methods were performed**

Method	Description
1	Eichrom Industries, AN-1418
2	DOE EML HASL-300, Th-01-RC Modified
3	EPA 904.0/SW846 9320 Modified
4	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
5	EPA 900.0/SW846 9310
6	EPA 906.0 Modified
7	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AN-1418 AlphaSpec Ra226, Liquid "As Received"	2646943	92.6	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2646941	85.3	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2643862	81.3	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2645055	85.6	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2645965	98.4	(30%-110%)

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## *Certificate of Analysis*

Company : Four Rivers Nuclear Partnership,  
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5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: October 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW371UG4-24

Project: FRNP00507

Sample ID: 676265005

Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test						Batch ID	Recovery%	Acceptable Limits				

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

*Column headers are defined as follows:*

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

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## Certificate of Analysis

Company : Four Rivers Nuclear Partnership,  
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Kevil, Kentucky 42053

Report Date: October 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW372UG4-24

Project: FRNP00507

Sample ID: 676265007

Client ID: FRNP005

Matrix: WG

Collect Date: 17-JUL-24

Receive Date: 19-JUL-24

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>														
<i>AN-1418 AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.0157	+/-0.721	1.58	+/-0.722	5.00	pCi/L			CM4	08/04/24	1300	2646943	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.309	+/-0.392	0.588	+/-0.396	50.0	pCi/L			MB3	08/01/24	1340	2646941	2
Thorium-232	U	-0.0419	+/-0.147	0.402	+/-0.148		pCi/L							
<b>Rad Gas Flow Proportional Counting</b>														
<i>904.0Mod, Ra228, Liquid "As Received"</i>														
Radium-228	U	0.0188	+/-2.12	4.25	+/-2.12	4.99	pCi/L			KP1	08/05/24	1314	2643862	3
<i>905.0Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	-2.62	+/-1.73	4.13	+/-1.73	8.00	pCi/L			JE1	08/01/24	0833	2645055	4
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	0.0672	+/-3.91	9.40	+/-3.92	15.0	pCi/L			HH3	08/08/24	1154	2643718	5
Beta	U	7.82	+/-7.21	11.8	+/-7.33	50.0	pCi/L							
<b>Rad Liquid Scintillation Analysis</b>														
<i>906.0M, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	-87.0	+/-155	287	+/-155	300	pCi/L			HB2	08/06/24	2303	2644436	6
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	17.5	+/-11.1	18.2	+/-11.2	25.0	pCi/L			GS3	08/11/24	1608	2645965	7

**The following Analytical Methods were performed**

Method	Description
1	Eichrom Industries, AN-1418
2	DOE EML HASL-300, Th-01-RC Modified
3	EPA 904.0/SW846 9320 Modified
4	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
5	EPA 900.0/SW846 9310
6	EPA 906.0 Modified
7	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AN-1418 AlphaSpec Ra226, Liquid "As Received"	2646943	93.8	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2646941	71.4	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2643862	73.7	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2645055	96.3	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2645965	99.5	(30%-110%)

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## *Certificate of Analysis*

Company : Four Rivers Nuclear Partnership,  
Address : LLC  
5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: October 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW372UG4-24

Project: FRNP00507

Sample ID: 676265007

Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test						Batch ID	Recovery%	Acceptable Limits				

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

*Column headers are defined as follows:*

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

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## Certificate of Analysis

Company : Four Rivers Nuclear Partnership,  
Address : LLC  
5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: October 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW373UG4-24

Project: FRNP00507

Sample ID: 676265009

Client ID: FRNP005

Matrix: WG

Collect Date: 17-JUL-24

Receive Date: 19-JUL-24

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>														
<i>AN-1418 AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.529	+/-0.937	1.56	+/-0.937	5.00	pCi/L			CM4	08/04/24	1300	2646943	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.449	+/-0.462	0.648	+/-0.468	50.0	pCi/L			MB3	08/01/24	1340	2646941	2
Thorium-232	U	-0.00523	+/-0.217	0.494	+/-0.217		pCi/L							
<b>Rad Gas Flow Proportional Counting</b>														
<i>904.0Mod, Ra228, Liquid "As Received"</i>														
Radium-228	U	0.00453	+/-2.33	4.59	+/-2.33	4.99	pCi/L			KP1	08/05/24	1314	2643862	3
<i>905.0Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	4.11	+/-3.90	6.42	+/-3.95	8.00	pCi/L			JE1	08/01/24	0833	2645055	4
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	-0.776	+/-3.21	8.15	+/-3.22	15.0	pCi/L			HH3	08/01/24	1351	2643718	5
Beta	U	7.68	+/-6.20	9.88	+/-6.33	50.0	pCi/L							
<b>Rad Liquid Scintillation Analysis</b>														
<i>906.0M, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	136	+/-169	285	+/-171	300	pCi/L			HB2	08/06/24	2340	2644436	6
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	-8.77	+/-10.1	18.9	+/-10.1	25.0	pCi/L			GS3	08/05/24	2108	2645965	7

**The following Analytical Methods were performed**

Method	Description
1	Eichrom Industries, AN-1418
2	DOE EML HASL-300, Th-01-RC Modified
3	EPA 904.0/SW846 9320 Modified
4	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
5	EPA 900.0/SW846 9310
6	EPA 906.0 Modified
7	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AN-1418 AlphaSpec Ra226, Liquid "As Received"	2646943	94.3	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2646941	64.4	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2643862	77.2	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2645055	87.7	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2645965	96.3	(30%-110%)

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Company : Four Rivers Nuclear Partnership,  
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Kevil, Kentucky 42053

Report Date: October 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW373UG4-24

Project: FRNP00507

Sample ID: 676265009

Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test						Batch ID	Recovery%	Acceptable Limits				

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

*Column headers are defined as follows:*

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

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## Certificate of Analysis

Company : Four Rivers Nuclear Partnership,  
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5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: October 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW374UG4-24

Project: FRNP00507

Sample ID: 676265011

Client ID: FRNP005

Matrix: WG

Collect Date: 17-JUL-24

Receive Date: 19-JUL-24

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>														
<i>AN-1418 AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.272	+/-1.06	2.04	+/-1.06	5.00	pCi/L			CM4	08/04/24	1300	2646943	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.433	+/-0.403	0.542	+/-0.409	50.0	pCi/L			MB3	08/01/24	1340	2646941	2
Thorium-232	U	0.161	+/-0.243	0.315	+/-0.244		pCi/L							
<b>Rad Gas Flow Proportional Counting</b>														
<i>904.0Mod, Ra228, Liquid "As Received"</i>														
Radium-228	U	0.372	+/-2.70	4.88	+/-2.70	4.99	pCi/L			KP1	08/05/24	1314	2643862	3
<i>905.0Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	2.41	+/-2.38	3.90	+/-2.41	8.00	pCi/L			JE1	08/01/24	0833	2645055	4
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	0.694	+/-5.06	10.4	+/-5.06	15.0	pCi/L			HH3	08/01/24	1351	2643718	5
Beta	U	-1.61	+/-5.29	10.4	+/-5.29	50.0	pCi/L							
<b>Rad Liquid Scintillation Analysis</b>														
<i>906.0M, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	-111	+/-157	293	+/-157	300	pCi/L			HB2	08/07/24	0017	2644436	6
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	-13.4	+/-9.94	19.1	+/-9.94	25.0	pCi/L			GS3	08/05/24	2125	2645965	7

**The following Analytical Methods were performed**

Method	Description
1	Eichrom Industries, AN-1418
2	DOE EML HASL-300, Th-01-RC Modified
3	EPA 904.0/SW846 9320 Modified
4	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
5	EPA 900.0/SW846 9310
6	EPA 906.0 Modified
7	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AN-1418 AlphaSpec Ra226, Liquid "As Received"	2646943	96.1	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2646941	85.5	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2643862	82.1	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2645055	92	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2645965	95.4	(30%-110%)

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## *Certificate of Analysis*

Company : Four Rivers Nuclear Partnership,  
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Kevil, Kentucky 42053

Report Date: October 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW374UG4-24

Project: FRNP00507

Sample ID: 676265011

Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test						Batch ID	Recovery%	Acceptable Limits				

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

*Column headers are defined as follows:*

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

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## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
 Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
 Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW369UG4-24	Project: FRNP00507
Sample ID: 676265001	Client ID: FRNP005
Matrix: WG	
Collect Date: 17-JUL-24 12:41	
Receive Date: 19-JUL-24	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
<b>Mercury Analysis-CVAA</b>												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	07/24/24	1104	2644397	1
<b>Metals Analysis-ICP-MS</b>												
6020, Metals (15+ elements) "As Received"												
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	PRB	07/31/24	1713	2643653	2
Aluminum	J	0.0269	0.0193	0.0500	mg/L	1.00	1	PRB	07/30/24	2105	2643653	3
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	U	0.00500	0.00200	0.00500	mg/L	1.00	1					
Barium		0.359	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron	J	0.0137	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		15.1	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Cobalt		0.00431	0.000300	0.00100	mg/L	1.00	1					
Copper		0.00295	0.000300	0.00200	mg/L	1.00	1					
Iron	J	0.0486	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		6.22	0.0100	0.0300	mg/L	1.00	1					
Manganese	J	0.00423	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	U	0.00100	0.000200	0.00100	mg/L	1.00	1					
Nickel		0.00432	0.000600	0.00200	mg/L	1.00	1					
Potassium		0.499	0.0800	0.300	mg/L	1.00	1					
Selenium	J	0.00200	0.00150	0.00500	mg/L	1.00	1					
Silver	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Sodium		48.4	0.0800	0.250	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Vanadium	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Zinc	J	0.00676	0.00330	0.0200	mg/L	1.00	1					
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	07/30/24	1824	2643653	4
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	07/23/24	1110	2644396
SW846 3005A	ICP-MS 3005A PREP	BB2	07/23/24	1445	2643652



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## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW369UG4-24      Project: FRNP00507  
Sample ID: 676265002      Client ID: FRNP005  
Matrix: WG  
Collect Date: 17-JUL-24 12:41  
Receive Date: 19-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Dissolved Metals (3 Elements) "As Received"												
Barium		0.349	0.000670	0.00400	mg/L	1.00	1	PRB	07/30/24	2109	2643653	1
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	PRB	07/31/24	1714	2643653	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	BB2	07/23/24	1445	2643652
EPA 160	Laboratory Filtration	JP2	07/19/24	1435	2643642

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	
2	SW846 3005A/6020B	

### Notes:

Column headers are defined as follows:

DF: Dilution Factor      Lc/LC: Critical Level  
DL: Detection Limit      PF: Prep Factor  
MDA: Minimum Detectable Activity      RL: Reporting Limit  
MDC: Minimum Detectable Concentration      SQL: Sample Quantitation Limit

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## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW370UG4-24 Project: FRNP00507  
Sample ID: 676265003 Client ID: FRNP005  
Matrix: WG  
Collect Date: 17-JUL-24 14:54  
Receive Date: 19-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	07/24/24	1106	2644397	1
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Aluminum		0.814	0.0193	0.0500	mg/L	1.00	1	PRB	07/30/24	2113	2643653	2
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	U	0.00500	0.00200	0.00500	mg/L	1.00	1					
Barium		0.212	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron		0.0977	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		29.0	0.0800	0.200	mg/L	1.00	1					
Chromium	J	0.00371	0.00300	0.0100	mg/L	1.00	1					
Cobalt	J	0.000355	0.000300	0.00100	mg/L	1.00	1					
Copper	J	0.00111	0.000300	0.00200	mg/L	1.00	1					
Iron		1.70	0.0330	0.100	mg/L	1.00	1					
Lead	J	0.000518	0.000500	0.00200	mg/L	1.00	1					
Magnesium		12.1	0.0100	0.0300	mg/L	1.00	1					
Manganese		0.0587	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	J	0.000285	0.000200	0.00100	mg/L	1.00	1					
Nickel	J	0.000938	0.000600	0.00200	mg/L	1.00	1					
Potassium		2.36	0.0800	0.300	mg/L	1.00	1					
Selenium	U	0.00500	0.00150	0.00500	mg/L	1.00	1					
Silver	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Sodium		41.9	0.0800	0.250	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Vanadium	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Zinc	J	0.00377	0.00330	0.0200	mg/L	1.00	1					
Uranium	J	0.000108	0.0000670	0.000200	mg/L	1.00	1	PRB	07/31/24	1716	2643653	3
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	07/30/24	1826	2643653	4
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	07/23/24	1110	2644396
SW846 3005A	ICP-MS 3005A PREP	BB2	07/23/24	1445	2643652









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## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW371UG4-24      Project: FRNP00507  
Sample ID: 676265006      Client ID: FRNP005  
Matrix: WG  
Collect Date: 17-JUL-24 13:59  
Receive Date: 19-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Dissolved Metals (3 Elements) "As Received"												
Uranium		0.00188	0.0000670	0.000200	mg/L	1.00	1	PRB	07/31/24	1722	2643653	1
Barium		0.158	0.000670	0.00400	mg/L	1.00	1	PRB	07/30/24	2135	2643653	2
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 160	Laboratory Filtration	JP2	07/19/24	1435	2643642
SW846 3005A	ICP-MS 3005A PREP	BB2	07/23/24	1445	2643652

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	
2	SW846 3005A/6020B	

### Notes:

Column headers are defined as follows:

DF: Dilution Factor      Lc/LC: Critical Level  
DL: Detection Limit      PF: Prep Factor  
MDA: Minimum Detectable Activity      RL: Reporting Limit  
MDC: Minimum Detectable Concentration      SQL: Sample Quantitation Limit







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## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW373UG4-24      Project: FRNP00507  
Sample ID: 676265009      Client ID: FRNP005  
Matrix: WG  
Collect Date: 17-JUL-24 08:38  
Receive Date: 19-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	1.14	0.330	2.00	mg/L		1	KB3	08/12/24	0921	2653004	1
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	UN	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	07/24/24	0645	2644044	2
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	H	36.6	3.33	10.0	ug/L		1	JS13	08/27/24	1313	2663174	3
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	08/08/24	1253	2653275	4
SW846 9056A Anions (5 elements) "As Received"												
Chloride	J	29.7	1.34	250	mg/L		20	CH6	07/19/24	2205	2643498	5
Sulfate		213	2.66	8.00	mg/L		20					
Bromide		0.464	0.0670	0.200	mg/L		1	CH6	07/19/24	1554	2643498	6
Fluoride	J	0.182	0.0330	4.00	mg/L		1					
Nitrate-N	HJ	0.810	0.0330	10.0	mg/L		1					
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	07/24/24	1147	2643934	7
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	07/30/24	1836	2643653	8
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					
Boron		2.81	0.104	0.300	mg/L	1.00	20	PRB	07/30/24	2215	2643653	9
Calcium		85.9	1.60	4.00	mg/L	1.00	20					
Sodium		71.4	1.60	5.00	mg/L	1.00	20					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	PRB	07/31/24	1730	2643653	10
Aluminum	J	0.0198	0.0193	0.0500	mg/L	1.00	1	PRB	07/30/24	2157	2643653	11
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	U	0.00500	0.00200	0.00500	mg/L	1.00	1					
Barium		0.0356	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW373UG4-24  
Sample ID: 676265009

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
<b>Metals Analysis-ICP-MS</b>												
6020, Metals (15+ elements) "As Received"												
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Cobalt	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Copper	J	0.00119	0.000300	0.00200	mg/L	1.00	1					
Iron	J	0.0849	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		29.1	0.0100	0.0300	mg/L	1.00	1					
Manganese		0.0356	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	J	0.000383	0.000200	0.00100	mg/L	1.00	1					
Nickel	J	0.00140	0.000600	0.00200	mg/L	1.00	1					
Potassium		2.67	0.0800	0.300	mg/L	1.00	1					
Selenium	U	0.00500	0.00150	0.00500	mg/L	1.00	1					
Silver	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Vanadium	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Zinc	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
<b>Semi-Volatiles-PCB</b>												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.100	0.0333	0.100	ug/L	0.00100	1	LOF	08/11/24	0131	2654126	12
Aroclor-1221	U	0.100	0.0333	0.100	ug/L	0.00100	1					
Aroclor-1232	U	0.100	0.0333	0.100	ug/L	0.00100	1					
Aroclor-1242	U	0.100	0.0333	0.100	ug/L	0.00100	1					
Aroclor-1248	U	0.100	0.0333	0.100	ug/L	0.00100	1					
Aroclor-1254	U	0.100	0.0333	0.100	ug/L	0.00100	1					
Aroclor-1260	U	0.100	0.0333	0.100	ug/L	0.00100	1					
Aroclor-1268	U	0.100	0.0333	0.100	ug/L	0.00100	1					
Aroclor-Total	U	0.100	0.0333	0.100	ug/L	0.00100	1					
<b>Solids Analysis</b>												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		585	2.38	10.0	mg/L			KLP1	07/23/24	1133	2644678	13
<b>Spectrometric Analysis</b>												
410.4, Chem. Oxygen Demand "As Received"												
COD	J	12.9	8.95	20.0	mg/L		1	HH2	07/22/24	1401	2644120	14

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
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## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
 Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
 Project: C-746-U Landfill Quarterly(UG24-04)

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Client Sample ID: MW373UG4-24	Project: FRNP00507
Sample ID: 676265009	Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time Batch	Method
SW846 9010C Distillation	SW846 9010C Prep			ES2	07/23/24		1018		2644036		
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid			JM13	07/23/24		1110		2643933		
SW846 3005A	ICP-MS 3005A PREP			BB2	07/23/24		1445		2643652		
SW846 3535A	SW3535A PCB SPE Extraction			DXF4	08/10/24		0531		2654123		

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	SW846 9060A		
2	SW846 9012B		
3	SW846 9020B		
4	EPA 300.0		
5	SW846 9056A		
6	SW846 9056A		
7	SW846 7470A		
8	SW846 3005A/6020B		
9	SW846 3005A/6020B		
10	SW846 3005A/6020B		
11	SW846 3005A/6020B		
12	SW846 3535A/8082A		
13	EPA 160.1		
14	EPA 410.4		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.150 ug/L	0.200	75	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.149 ug/L	0.200	74	(26%-108%)

**Notes:**

Column headers are defined as follows:

- |                                       |                                |
|---------------------------------------|--------------------------------|
| DF: Dilution Factor                   | Lc/LC: Critical Level          |
| DL: Detection Limit                   | PF: Prep Factor                |
| MDA: Minimum Detectable Activity      | RL: Reporting Limit            |
| MDC: Minimum Detectable Concentration | SQL: Sample Quantitation Limit |

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## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

---

Client Sample ID:	MW373UG4-24	Project:	FRNP00507
Sample ID:	676265010	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	17-JUL-24 08:38		
Receive Date:	19-JUL-24		
Collector:	Client		

---

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Dissolved Metals (3 Elements) "As Received"												
Barium		0.0341	0.000670	0.00400	mg/L	1.00	1	PRB	07/30/24	2237	2643653	1
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Uranium	J	0.0000740	0.0000670	0.000200	mg/L	1.00	1	PRB	07/31/24	1743	2643653	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	BB2	07/23/24	1445	2643652
EPA 160	Laboratory Filtration	JP2	07/19/24	1435	2643642

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	
2	SW846 3005A/6020B	

### Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit







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**ATTACHMENT C3**

**GEL LABORATORIES CERTIFICATE OF ANALYSIS**

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# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Four Rivers Nuclear Partnership,  
Address : LLC  
5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: October 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW363UG4-24  
Sample ID: 676477001  
Matrix: WG  
Collect Date: 18-JUL-24  
Receive Date: 19-JUL-24  
Collector: Client

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>														
<i>AN-1418 AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.728	+/-0.660	0.732	+/-0.662	5.00	pCi/L			CM4	10/24/24	0808	2691148	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	-0.0369	+/-0.251	0.597	+/-0.251	50.0	pCi/L			MB3	08/01/24	1340	2646941	2
Thorium-232	U	0.116	+/-0.245	0.364	+/-0.246		pCi/L							
<b>Rad Gas Flow Proportional Counting</b>														
<i>904.0Mod, Ra228, Liquid "As Received"</i>														
Radium-228	U	1.26	+/-2.35	4.19	+/-2.37	4.99	pCi/L			KP1	08/08/24	1143	2643867	3
<i>905.0Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	0.662	+/-2.30	4.26	+/-2.30	8.00	pCi/L			JE1	08/07/24	1516	2645921	4
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	2.45	+/-3.76	6.66	+/-3.78	15.0	pCi/L			HH3	07/31/24	1406	2645067	5
Beta	U	9.10	+/-6.18	9.48	+/-6.36	50.0	pCi/L							
<b>Rad Liquid Scintillation Analysis</b>														
<i>906.0M, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	81.5	+/-151	260	+/-152	300	pCi/L			HB2	08/13/24	1544	2644438	6
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	1.52	+/-8.94	15.8	+/-8.95	25.0	pCi/L			GS3	08/06/24	0101	2645969	7

**The following Analytical Methods were performed**

Method	Description
1	Eichrom Industries, AN-1418
2	DOE EML HASL-300, Th-01-RC Modified
3	EPA 904.0/SW846 9320 Modified
4	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
5	EPA 900.0/SW846 9310
6	EPA 906.0 Modified
7	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AN-1418 AlphaSpec Ra226, Liquid "As Received"	2691148	98.2	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2646941	76.1	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2643867	81.5	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2645921	79.1	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2645969	98.4	(30%-110%)

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## *Certificate of Analysis*

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5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: October 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW363UG4-24

Project: FRNP00507

Sample ID: 676477001

Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test						Batch ID	Recovery%	Acceptable Limits				

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

*Column headers are defined as follows:*

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

# GEL LABORATORIES LLC

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## Certificate of Analysis

Company : Four Rivers Nuclear Partnership,  
Address : LLC  
5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: October 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW364UG4-24

Project: FRNP00507

Sample ID: 676477003

Client ID: FRNP005

Matrix: WG

Collect Date: 18-JUL-24

Receive Date: 19-JUL-24

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>														
<i>AN-1418 AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.450	+/-0.557	0.759	+/-0.558	5.00	pCi/L			CM4	10/24/24	0808	2691148	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.369	+/-0.396	0.570	+/-0.400	50.0	pCi/L			MB3	08/01/24	1340	2646941	2
Thorium-232	U	-0.0206	+/-0.188	0.449	+/-0.188		pCi/L							
<b>Rad Gas Flow Proportional Counting</b>														
<i>904.0Mod, Ra228, Liquid "As Received"</i>														
Radium-228	U	3.24	+/-2.78	4.46	+/-2.90	4.99	pCi/L			KP1	08/02/24	1255	2643867	3
<i>905.0Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	2.97	+/-2.69	4.36	+/-2.73	8.00	pCi/L			JE1	08/07/24	1516	2645921	4
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	1.44	+/-3.26	6.30	+/-3.27	15.0	pCi/L			HH3	07/31/24	1406	2645067	5
Beta		36.5	+/-8.71	9.18	+/-10.6	50.0	pCi/L							
<b>Rad Liquid Scintillation Analysis</b>														
<i>906.0M, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	112	+/-151	257	+/-153	300	pCi/L			HB2	08/13/24	1621	2644438	6
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99		54.0	+/-11.9	15.6	+/-13.4	25.0	pCi/L			GS3	08/06/24	0118	2645969	7

**The following Analytical Methods were performed**

Method	Description
1	Eichrom Industries, AN-1418
2	DOE EML HASL-300, Th-01-RC Modified
3	EPA 904.0/SW846 9320 Modified
4	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
5	EPA 900.0/SW846 9310
6	EPA 906.0 Modified
7	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AN-1418 AlphaSpec Ra226, Liquid "As Received"	2691148	98	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2646941	80.7	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2643867	80.9	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2645921	87.7	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2645969	99.7	(30%-110%)

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## *Certificate of Analysis*

Company : Four Rivers Nuclear Partnership,  
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5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: October 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW364UG4-24

Project: FRNP00507

Sample ID: 676477003

Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test						Batch ID	Recovery%	Acceptable Limits				

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

*Column headers are defined as follows:*

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

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## Certificate of Analysis

Company : Four Rivers Nuclear Partnership,  
Address : LLC  
5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: October 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW365UG4-24

Project: FRNP00507

Sample ID: 676477005

Client ID: FRNP005

Matrix: WG

Collect Date: 18-JUL-24

Receive Date: 19-JUL-24

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>														
<i>AN-1418 AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.651	+/-0.746	1.12	+/-0.747	5.00	pCi/L			CM4	08/04/24	1300	2646943	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.312	+/-0.473	0.732	+/-0.477	50.0	pCi/L			MB3	08/01/24	1351	2646941	2
Thorium-232	U	-0.0549	+/-0.205	0.553	+/-0.206		pCi/L							
<b>Rad Gas Flow Proportional Counting</b>														
<i>904.0Mod, Ra228, Liquid "As Received"</i>														
Radium-228	U	1.34	+/-2.40	4.28	+/-2.43	4.99	pCi/L			KP1	08/02/24	1255	2643867	3
<i>905.0Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	2.30	+/-3.06	5.23	+/-3.08	8.00	pCi/L			JE1	08/07/24	1516	2645921	4
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	-0.0454	+/-3.99	8.61	+/-3.99	15.0	pCi/L			HH3	07/31/24	1406	2645067	5
Beta	U	7.05	+/-5.65	8.96	+/-5.77	50.0	pCi/L							
<b>Rad Liquid Scintillation Analysis</b>														
<i>906.0M, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	99.2	+/-152	260	+/-153	300	pCi/L			HB2	08/13/24	1657	2644438	6
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	-3.35	+/-8.55	15.7	+/-8.55	25.0	pCi/L			GS3	08/06/24	0135	2645969	7

**The following Analytical Methods were performed**

Method	Description
1	Eichrom Industries, AN-1418
2	DOE EML HASL-300, Th-01-RC Modified
3	EPA 904.0/SW846 9320 Modified
4	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
5	EPA 900.0/SW846 9310
6	EPA 906.0 Modified
7	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AN-1418 AlphaSpec Ra226, Liquid "As Received"	2646943	94.8	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2646941	73.9	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2643867	77.5	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2645921	81.3	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2645969	97.9	(30%-110%)

# GEL LABORATORIES LLC

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## *Certificate of Analysis*

Company : Four Rivers Nuclear Partnership,  
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5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: October 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW365UG4-24

Project: FRNP00507

Sample ID: 676477005

Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test						Batch ID	Recovery%	Acceptable Limits				

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

*Column headers are defined as follows:*

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Four Rivers Nuclear Partnership,  
Address : LLC  
5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: October 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW366UG4-24

Project: FRNP00507

Sample ID: 676477007

Client ID: FRNP005

Matrix: WG

Collect Date: 18-JUL-24

Receive Date: 19-JUL-24

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>														
<i>AN-1418 AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	1.13	+/-0.907	1.25	+/-0.909	5.00	pCi/L			CM4	08/04/24	1300	2646943	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.155	+/-0.360	0.636	+/-0.362	50.0	pCi/L			MB3	08/01/24	1351	2646941	2
Thorium-232	U	0.214	+/-0.320	0.410	+/-0.322		pCi/L							
<b>Rad Gas Flow Proportional Counting</b>														
<i>904.0Mod, Ra228, Liquid "As Received"</i>														
Radium-228	U	0.752	+/-2.60	4.70	+/-2.61	4.99	pCi/L			KP1	08/02/24	1255	2643867	3
<i>905.0Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	0.286	+/-1.69	3.22	+/-1.69	8.00	pCi/L			JE1	08/07/24	1516	2645921	4
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	2.67	+/-4.11	7.20	+/-4.13	15.0	pCi/L			HH3	07/31/24	1406	2645067	5
Beta		44.9	+/-9.90	10.6	+/-12.3	50.0	pCi/L							
<b>Rad Liquid Scintillation Analysis</b>														
<i>906.0M, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	225	+/-160	259	+/-166	300	pCi/L			HB2	08/13/24	1734	2644438	6
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99		68.5	+/-12.8	15.9	+/-15.0	25.0	pCi/L			GS3	08/06/24	0151	2645969	7

**The following Analytical Methods were performed**

Method	Description
1	Eichrom Industries, AN-1418
2	DOE EML HASL-300, Th-01-RC Modified
3	EPA 904.0/SW846 9320 Modified
4	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
5	EPA 900.0/SW846 9310
6	EPA 906.0 Modified
7	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AN-1418 AlphaSpec Ra226, Liquid "As Received"	2646943	97.4	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2646941	89.4	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2643867	84.9	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2645921	94.1	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2645969	97.6	(30%-110%)

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Kevil, Kentucky 42053

Report Date: October 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW366UG4-24

Project: FRNP00507

Sample ID: 676477007

Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test						Batch ID	Recovery%	Acceptable Limits				

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

*Column headers are defined as follows:*

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

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## Certificate of Analysis

Company : Four Rivers Nuclear Partnership,  
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5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: October 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW375UG4-24

Project: FRNP00507

Sample ID: 676477009

Client ID: FRNP005

Matrix: WG

Collect Date: 18-JUL-24

Receive Date: 19-JUL-24

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>														
<i>AN-1418 AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.449	+/-0.543	0.627	+/-0.544	5.00	pCi/L			CM4	10/24/24	0808	2691148	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.113	+/-0.394	0.755	+/-0.395	50.0	pCi/L			MB3	08/01/24	1351	2646941	2
Thorium-232	U	-0.00872	+/-0.175	0.350	+/-0.175		pCi/L							
<b>Rad Gas Flow Proportional Counting</b>														
<i>904.0Mod, Ra228, Liquid "As Received"</i>														
Radium-228	U	4.15	+/-3.16	4.89	+/-3.33	4.99	pCi/L			KP1	08/08/24	1143	2643867	3
<i>905.0Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	-2.11	+/-1.44	3.68	+/-1.44	8.00	pCi/L			JE1	08/07/24	1516	2645921	4
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	2.65	+/-4.00	7.01	+/-4.03	15.0	pCi/L			HH3	07/31/24	1406	2645067	5
Beta	U	4.02	+/-5.59	9.58	+/-5.63	50.0	pCi/L							
<b>Rad Liquid Scintillation Analysis</b>														
<i>906.0M, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	140	+/-157	264	+/-159	300	pCi/L			HB2	08/13/24	1811	2644438	6
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	-0.664	+/-8.99	16.2	+/-8.99	25.0	pCi/L			GS3	08/06/24	0208	2645969	7

**The following Analytical Methods were performed**

Method	Description
1	Eichrom Industries, AN-1418
2	DOE EML HASL-300, Th-01-RC Modified
3	EPA 904.0/SW846 9320 Modified
4	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
5	EPA 900.0/SW846 9310
6	EPA 906.0 Modified
7	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AN-1418 AlphaSpec Ra226, Liquid "As Received"	2691148	97.9	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2646941	80.6	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2643867	74.7	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2645921	85.6	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2645969	95.6	(30%-110%)

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## *Certificate of Analysis*

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5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: October 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW375UG4-24

Project: FRNP00507

Sample ID: 676477009

Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test						Batch ID	Recovery%	Acceptable Limits				

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

*Column headers are defined as follows:*

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

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## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW363UG4-24      Project: FRNP00507  
Sample ID: 676477001      Client ID: FRNP005  
Matrix: WG  
Collect Date: 18-JUL-24 07:55  
Receive Date: 19-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	UY1	0.0189	0.00851	0.0189	ug/L	0.945	1	LL2	07/23/24	1655	2643834	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.773	0.330	2.00	mg/L		1	KB3	08/14/24	1130	2655737	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	UN	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	07/24/24	0648	2644044	3
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens		10.5	3.33	10.0	ug/L		1	JS13	08/07/24	1257	2652304	4
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	08/08/24	1331	2653275	5
SW846 9056A Anions (5 elements) "As Received"												
Chloride	J	16.9	0.268	250	mg/L		4	CWW	07/20/24	0150	2643406	6
Sulfate		29.2	0.532	1.60	mg/L		4					
Bromide	U	0.200	0.0670	0.200	mg/L		1	CWW	07/19/24	1928	2643406	7
Fluoride	J	0.303	0.0330	4.00	mg/L		1					
Nitrate-N	J	2.79	0.0330	10.0	mg/L		1					
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	07/23/24	1151	2643939	8
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Boron		0.0194	0.00520	0.0150	mg/L	1.00	1	PRB	08/15/24	0433	2649853	9
Aluminum	U	0.0500	0.0193	0.0500	mg/L	1.00	1	PRB	07/30/24	1614	2644181	10
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	U	0.00500	0.00200	0.00500	mg/L	1.00	1					
Barium		0.113	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		21.2	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					

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Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW363UG4-24 Project: FRNP00507  
Sample ID: 676477001 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Cobalt	J	0.000963	0.000300	0.00100	mg/L	1.00	1					
Copper	J	0.00110	0.000300	0.00200	mg/L	1.00	1					
Iron	J	0.0341	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		8.13	0.0100	0.0300	mg/L	1.00	1					
Manganese		0.192	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	U	0.00100	0.000200	0.00100	mg/L	1.00	1					
Nickel		0.0210	0.000600	0.00200	mg/L	1.00	1					
Potassium		1.86	0.0800	0.300	mg/L	1.00	1					
Selenium	U	0.00500	0.00150	0.00500	mg/L	1.00	1					
Silver	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Sodium		36.6	0.0800	0.250	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					
Vanadium	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Zinc	J	0.00414	0.00330	0.0200	mg/L	1.00	1					
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	07/30/24	1857	2644181	11
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.107	0.0355	0.107	ug/L	0.00107	1	LOF	08/11/24	1528	2654136	12
Aroclor-1221	U	0.107	0.0355	0.107	ug/L	0.00107	1					
Aroclor-1232	U	0.107	0.0355	0.107	ug/L	0.00107	1					
Aroclor-1242	U	0.107	0.0355	0.107	ug/L	0.00107	1					
Aroclor-1248	U	0.107	0.0355	0.107	ug/L	0.00107	1					
Aroclor-1254	U	0.107	0.0355	0.107	ug/L	0.00107	1					
Aroclor-1260	U	0.107	0.0355	0.107	ug/L	0.00107	1					
Aroclor-1268	U	0.107	0.0355	0.107	ug/L	0.00107	1					
Aroclor-Total	U	0.107	0.0355	0.107	ug/L	0.00107	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		208	2.38	10.0	mg/L			KLP1	07/25/24	1511	2646230	13
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

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Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
 Project: C-746-U Landfill Quarterly(UG24-04)

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Client Sample ID: MW363UG4-24	Project: FRNP00507
Sample ID: 676477001	Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												
COD	U	20.0	8.95	20.0	mg/L		1	HH2	07/22/24	1401	2644120	14
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	PXY1	07/24/24	1547	2645646	15
1,1,1-Trichloroethane	J	0.370	0.333	1.00	ug/L		1					
1,1,2,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
1,2,3-Trichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dibromoethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,4-Dichlorobenzene	UY2	1.00	0.333	1.00	ug/L		1					
2-Butanone	U	5.00	1.67	5.00	ug/L		1					
2-Hexanone	U	5.00	1.67	5.00	ug/L		1					
4-Methyl-2-pentanone	U	5.00	1.67	5.00	ug/L		1					
Acetone	U	5.00	1.74	5.00	ug/L		1					
Acrolein	U	5.00	1.67	5.00	ug/L		1					
Acrylonitrile	U	5.00	1.67	5.00	ug/L		1					
Benzene	U	1.00	0.333	1.00	ug/L		1					
Bromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromodichloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromoform	U	1.00	0.333	1.00	ug/L		1					
Bromomethane	U	1.00	0.337	1.00	ug/L		1					
Carbon disulfide	U	5.00	1.67	5.00	ug/L		1					
Carbon tetrachloride	U	1.00	0.333	1.00	ug/L		1					
Chlorobenzene	U	1.00	0.333	1.00	ug/L		1					
Chloroethane	U	1.00	0.333	1.00	ug/L		1					
Chloroform	U	1.00	0.333	1.00	ug/L		1					
Chloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromomethane	U	1.00	0.333	1.00	ug/L		1					
Ethylbenzene	U	1.00	0.333	1.00	ug/L		1					
Iodomethane	U	5.00	1.67	5.00	ug/L		1					



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Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW363UG4-24  
Sample ID: 676477001

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time Batch	Method
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The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	SW846 8011		
2	SW846 9060A		
3	SW846 9012B		
4	SW846 9020B		
5	EPA 300.0		
6	SW846 9056A		
7	SW846 9056A		
8	SW846 7470A		
9	SW846 3005A/6020B		
10	SW846 3005A/6020B		
11	SW846 3005A/6020B		
12	SW846 3535A/8082A		
13	EPA 160.1		
14	EPA 410.4		
15	SW846 8260D		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	7.51 ug/L	6.75	111	(56%-149%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.163 ug/L	0.213	77	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.156 ug/L	0.213	73	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	53.0 ug/L	50.0	106	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	58.6 ug/L	50.0	117	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	56.0 ug/L	50.0	112	(77%-121%)

### Notes:

Column headers are defined as follows:

DF: Dilution Factor                      Lc/LC: Critical Level  
DL: Detection Limit                      PF: Prep Factor  
MDA: Minimum Detectable Activity      RL: Reporting Limit  
MDC: Minimum Detectable Concentration      SQL: Sample Quantitation Limit

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## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW363UG4-24      Project: FRNP00507  
Sample ID: 676477002      Client ID: FRNP005  
Matrix: WG  
Collect Date: 18-JUL-24 07:55  
Receive Date: 19-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Dissolved Metals (3 Elements) "As Received"												
Barium		0.110	0.000670	0.00400	mg/L	1.00	1	PRB	07/30/24	1618	2644181	1
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 160	Laboratory Filtration	SD	07/22/24	1008	2643954
SW846 3005A	ICP-MS 3005A PREP	AB5	07/24/24	0830	2644180

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

### Notes:

Column headers are defined as follows:

DF: Dilution Factor      Lc/LC: Critical Level  
DL: Detection Limit      PF: Prep Factor  
MDA: Minimum Detectable Activity      RL: Reporting Limit  
MDC: Minimum Detectable Concentration      SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW364UG4-24      Project: FRNP00507  
Sample ID: 676477003      Client ID: FRNP005  
Matrix: WG  
Collect Date: 18-JUL-24 08:44  
Receive Date: 19-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	UY1	0.0190	0.00855	0.0190	ug/L	0.950	1	LL2	07/23/24	1720	2643834	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.425	0.330	2.00	mg/L		1	KB3	08/14/24	1201	2655737	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	UN	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	07/24/24	0649	2644044	3
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	6.86	3.33	10.0	ug/L		1	JS13	08/07/24	1332	2652304	4
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	08/08/24	1410	2653275	5
SW846 9056A Anions (5 elements) "As Received"												
Chloride	J	36.7	0.670	250	mg/L		10	CWW	07/20/24	0222	2643406	6
Sulfate		68.0	1.33	4.00	mg/L		10					
Bromide		0.469	0.0670	0.200	mg/L		1	CWW	07/19/24	2000	2643406	7
Fluoride	J	0.180	0.0330	4.00	mg/L		1					
Nitrate-N	J	1.14	0.0330	10.0	mg/L		1					
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	07/23/24	1153	2643939	8
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	07/30/24	1859	2644181	9
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					
Boron		0.169	0.00520	0.0150	mg/L	1.00	1	PRB	08/15/24	0437	2649853	10
Aluminum	U	0.0500	0.0193	0.0500	mg/L	1.00	1	PRB	07/30/24	1622	2644181	11
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	U	0.00500	0.00200	0.00500	mg/L	1.00	1					
Barium		0.0547	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					







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## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
 Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
 Ms. Jaime Morrow  
 Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW364UG4-24	Project: FRNP00507
Sample ID: 676477003	Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time Batch	Method
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The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	SW846 8011		
2	SW846 9060A		
3	SW846 9012B		
4	SW846 9020B		
5	EPA 300.0		
6	SW846 9056A		
7	SW846 9056A		
8	SW846 7470A		
9	SW846 3005A/6020B		
10	SW846 3005A/6020B		
11	SW846 3005A/6020B		
12	SW846 3535A/8082A		
13	EPA 160.1		
14	EPA 410.4		
15	SW846 8260D		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	7.36 ug/L	6.79	108	(56%-149%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.185 ug/L	0.193	96	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.153 ug/L	0.193	79	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	54.3 ug/L	50.0	109	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	58.0 ug/L	50.0	116	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	56.2 ug/L	50.0	112	(77%-121%)

**Notes:**

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW364UG4-24

Project: FRNP00507

Sample ID: 676477004

Client ID: FRNP005

Matrix: WG

Collect Date: 18-JUL-24 08:44

Receive Date: 19-JUL-24

Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Dissolved Metals (3 Elements) "As Received"												
Barium		0.0553	0.000670	0.00400	mg/L	1.00	1	PRB	07/30/24	1647	2644181	1
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 160	Laboratory Filtration	SD	07/22/24	1008	2643954
SW846 3005A	ICP-MS 3005A PREP	AB5	07/24/24	0830	2644180

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

### Notes:

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW365UG4-24      Project: FRNP00507  
Sample ID: 676477005      Client ID: FRNP005  
Matrix: WG  
Collect Date: 18-JUL-24 09:44  
Receive Date: 19-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	UY1	0.0191	0.00859	0.0191	ug/L	0.955	1	LL2	07/23/24	1834	2643834	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	1.09	0.330	2.00	mg/L		1	KB3	08/14/24	1333	2655737	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	UN	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	07/24/24	0652	2644044	3
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens		19.2	3.33	10.0	ug/L		1	JS13	08/07/24	1503	2652304	4
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	08/08/24	1448	2653275	5
SW846 9056A Anions (5 elements) "As Received"												
Sulfate		54.2	0.665	2.00	mg/L		5	CWW	07/20/24	0358	2643406	6
Bromide	U	0.200	0.0670	0.200	mg/L		1	CWW	07/19/24	2032	2643406	7
Chloride	J	2.05	0.0670	250	mg/L		1					
Fluoride	J	0.440	0.0330	4.00	mg/L		1					
Nitrate-N	J	0.921	0.0330	10.0	mg/L		1					
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	07/23/24	1204	2643939	8
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Aluminum	J	0.0228	0.0193	0.0500	mg/L	1.00	1	PRB	07/30/24	1713	2644181	9
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	U	0.00500	0.00200	0.00500	mg/L	1.00	1					
Barium		0.0802	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		19.4	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Cobalt		0.00123	0.000300	0.00100	mg/L	1.00	1					





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Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW365UG4-24 Project: FRNP00507  
Sample ID: 676477005 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
Methylene chloride	U	5.00	0.500	5.00	ug/L		1					
Styrene	U	1.00	0.333	1.00	ug/L		1					
Tetrachloroethylene	U	1.00	0.333	1.00	ug/L		1					
Toluene	U	1.00	0.333	1.00	ug/L		1					
Trichloroethylene	U	1.00	0.333	1.00	ug/L		1					
Trichlorofluoromethane	U	1.00	0.333	1.00	ug/L		1					
Vinyl acetate	U	5.00	1.67	5.00	ug/L		1					
Vinyl chloride	U	1.00	0.333	1.00	ug/L		1					
Xylenes (total)	U	3.00	1.00	3.00	ug/L		1					
cis-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
cis-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,4-Dichloro-2-butene	U	5.00	1.67	5.00	ug/L		1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	BB2	08/01/24	1500	2649852
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	07/22/24	1055	2643938
SW846 3535A	SW3535A PCB SPE Extraction	LW1	08/10/24	0526	2654134
SW846 8011 PREP	8011 Prep	LL2	07/23/24	1325	2643831
SW846 3005A	ICP-MS 3005A PREP	AB5	07/24/24	0830	2644180
SW846 9010C Distillation	SW846 9010C Prep	ES2	07/23/24	1018	2644036

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## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW365UG4-24  
Sample ID: 676477005

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time Batch	Method
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The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	SW846 8011		
2	SW846 9060A		
3	SW846 9012B		
4	SW846 9020B		
5	EPA 300.0		
6	SW846 9056A		
7	SW846 9056A		
8	SW846 7470A		
9	SW846 3005A/6020B		
10	SW846 3005A/6020B		
11	SW846 3005A/6020B		
12	SW846 3005A/6020B		
13	SW846 3535A/8082A		
14	EPA 160.1		
15	EPA 410.4		
16	SW846 8260D		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	6.65 ug/L	6.82	98	(56%-149%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.154 ug/L	0.195	79	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.154 ug/L	0.195	79	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	53.6 ug/L	50.0	107	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	58.7 ug/L	50.0	117	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	55.5 ug/L	50.0	111	(77%-121%)

### Notes:

Column headers are defined as follows:

DF: Dilution Factor                      Lc/LC: Critical Level  
DL: Detection Limit                      PF: Prep Factor  
MDA: Minimum Detectable Activity      RL: Reporting Limit  
MDC: Minimum Detectable Concentration      SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW365UG4-24      Project: FRNP00507  
Sample ID: 676477006      Client ID: FRNP005  
Matrix: WG  
Collect Date: 18-JUL-24 09:44  
Receive Date: 19-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Dissolved Metals (3 Elements) "As Received"												
Barium		0.0796	0.000670	0.00400	mg/L	1.00	1	PRB	07/30/24	1716	2644181	1
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Uranium	J	0.000107	0.0000670	0.000200	mg/L	1.00	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	AB5	07/24/24	0830	2644180
EPA 160	Laboratory Filtration	SD	07/22/24	1008	2643954

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

### Notes:

Column headers are defined as follows:

DF: Dilution Factor      Lc/LC: Critical Level  
DL: Detection Limit      PF: Prep Factor  
MDA: Minimum Detectable Activity      RL: Reporting Limit  
MDC: Minimum Detectable Concentration      SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW366UG4-24	Project: FRNP00507
Sample ID: 676477007	Client ID: FRNP005
Matrix: WG	
Collect Date: 18-JUL-24 10:30	
Receive Date: 19-JUL-24	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
<b>504.1/8011 Analysis of EDB/DBCP</b>												
<b>8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"</b>												
1,2-Dibromo-3-chloropropane	UY1	0.0194	0.00873	0.0194	ug/L	0.970	1	LL2	07/23/24	1858	2643834	1
<b>Carbon Analysis</b>												
<b>9060A, Total Organic Carbon "As Received"</b>												
Total Organic Carbon Average	J	0.617	0.330	2.00	mg/L		1	KB3	08/14/24	1404	2655737	2
<b>Flow Injection Analysis</b>												
<b>9012B, Cyanide, Total "As Received"</b>												
Cyanide, Total	UN	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	07/24/24	0659	2644044	3
<b>Halogen Analysis</b>												
<b>9020B, TOX (Organic Halogen) "As Received"</b>												
Total Organic Halogens	J	3.90	3.33	10.0	ug/L		1	JS13	08/07/24	1540	2652304	4
<b>Ion Chromatography</b>												
<b>300.0, Iodide in Liquid "As Received"</b>												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	08/08/24	1501	2653275	5
<b>SW846 9056A Anions (5 elements) "As Received"</b>												
Chloride	J	40.6	0.670	250	mg/L		10	CWW	07/20/24	0429	2643406	6
Sulfate		50.0	1.33	4.00	mg/L		10					
Bromide		0.507	0.0670	0.200	mg/L		1	CWW	07/19/24	2104	2643406	7
Fluoride	J	0.225	0.0330	4.00	mg/L		1					
Nitrate-N	J	0.964	0.0330	10.0	mg/L		1					
<b>Mercury Analysis-CVAA</b>												
<b>7470, Mercury Liquid "As Received"</b>												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	07/23/24	1206	2643939	8
<b>Metals Analysis-ICP-MS</b>												
<b>6020, Metals (15+ elements) "As Received"</b>												
Aluminum	U	0.0500	0.0193	0.0500	mg/L	1.00	1	PRB	07/30/24	1720	2644181	9
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	U	0.00500	0.00200	0.00500	mg/L	1.00	1					
Barium		0.109	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		31.6	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Cobalt	U	0.00100	0.000300	0.00100	mg/L	1.00	1					

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW366UG4-24  
Sample ID: 676477007

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
<b>Metals Analysis-ICP-MS</b>												
<b>6020, Metals (15+ elements) "As Received"</b>												
Copper	J	0.000829	0.000300	0.00200	mg/L	1.00	1					
Iron	U	0.100	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		13.0	0.0100	0.0300	mg/L	1.00	1					
Manganese	J	0.00300	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	U	0.00100	0.000200	0.00100	mg/L	1.00	1					
Nickel	J	0.000661	0.000600	0.00200	mg/L	1.00	1					
Potassium		1.86	0.0800	0.300	mg/L	1.00	1					
Selenium	J	0.00219	0.00150	0.00500	mg/L	1.00	1					
Silver	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Sodium		44.1	0.0800	0.250	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					
Vanadium	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Zinc	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Boron		0.0796	0.00520	0.0150	mg/L	1.00	1	PRB	08/15/24	0506	2649853	10
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	07/30/24	1915	2644181	11
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					
<b>Semi-Volatiles-PCB</b>												
<b>8082A, PCB Liquids "As Received"</b>												
Aroclor-1016	U	0.109	0.0361	0.109	ug/L	0.00109	1	LOF	08/11/24	1627	2654136	12
Aroclor-1221	U	0.109	0.0361	0.109	ug/L	0.00109	1					
Aroclor-1232	U	0.109	0.0361	0.109	ug/L	0.00109	1					
Aroclor-1242	U	0.109	0.0361	0.109	ug/L	0.00109	1					
Aroclor-1248	U	0.109	0.0361	0.109	ug/L	0.00109	1					
Aroclor-1254	U	0.109	0.0361	0.109	ug/L	0.00109	1					
Aroclor-1260	U	0.109	0.0361	0.109	ug/L	0.00109	1					
Aroclor-1268	U	0.109	0.0361	0.109	ug/L	0.00109	1					
Aroclor-Total	U	0.109	0.0361	0.109	ug/L	0.00109	1					
<b>Solids Analysis</b>												
<b>160.1, Dissolved Solids "As Received"</b>												
Total Dissolved Solids		268	2.38	10.0	mg/L			KLP1	07/25/24	1511	2646230	13
<b>Spectrometric Analysis</b>												
<b>410.4, Chem. Oxygen Demand "As Received"</b>												

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW366UG4-24  
Sample ID: 676477007

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												
COD	J	10.6	8.95	20.0	mg/L		1	HH2	07/22/24	1401	2644120	14
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	PXY1	07/24/24	1705	2645646	15
1,1,1-Trichloroethane	J	0.400	0.333	1.00	ug/L		1					
1,1,2,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
1,2,3-Trichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dibromoethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,4-Dichlorobenzene	UY2	1.00	0.333	1.00	ug/L		1					
2-Butanone	U	5.00	1.67	5.00	ug/L		1					
2-Hexanone	U	5.00	1.67	5.00	ug/L		1					
4-Methyl-2-pentanone	U	5.00	1.67	5.00	ug/L		1					
Acetone	U	5.00	1.74	5.00	ug/L		1					
Acrolein	U	5.00	1.67	5.00	ug/L		1					
Acrylonitrile	U	5.00	1.67	5.00	ug/L		1					
Benzene	U	1.00	0.333	1.00	ug/L		1					
Bromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromodichloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromoform	U	1.00	0.333	1.00	ug/L		1					
Bromomethane	U	1.00	0.337	1.00	ug/L		1					
Carbon disulfide	U	5.00	1.67	5.00	ug/L		1					
Carbon tetrachloride	U	1.00	0.333	1.00	ug/L		1					
Chlorobenzene	U	1.00	0.333	1.00	ug/L		1					
Chloroethane	U	1.00	0.333	1.00	ug/L		1					
Chloroform	U	1.00	0.333	1.00	ug/L		1					
Chloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromomethane	U	1.00	0.333	1.00	ug/L		1					
Ethylbenzene	U	1.00	0.333	1.00	ug/L		1					
Iodomethane	U	5.00	1.67	5.00	ug/L		1					



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## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW366UG4-24  
Sample ID: 676477007

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time Batch	Method
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The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	SW846 8011		
2	SW846 9060A		
3	SW846 9012B		
4	SW846 9020B		
5	EPA 300.0		
6	SW846 9056A		
7	SW846 9056A		
8	SW846 7470A		
9	SW846 3005A/6020B		
10	SW846 3005A/6020B		
11	SW846 3005A/6020B		
12	SW846 3535A/8082A		
13	EPA 160.1		
14	EPA 410.4		
15	SW846 8260D		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	6.99 ug/L	6.93	101	(56%-149%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.205 ug/L	0.217	94	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.175 ug/L	0.217	80	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	53.5 ug/L	50.0	107	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	60.4 ug/L	50.0	121	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	57.0 ug/L	50.0	114	(77%-121%)

### Notes:

Column headers are defined as follows:

DF: Dilution Factor                      Lc/LC: Critical Level  
DL: Detection Limit                      PF: Prep Factor  
MDA: Minimum Detectable Activity      RL: Reporting Limit  
MDC: Minimum Detectable Concentration      SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW366UG4-24      Project: FRNP00507  
Sample ID: 676477008      Client ID: FRNP005  
Matrix: WG  
Collect Date: 18-JUL-24 10:30  
Receive Date: 19-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Dissolved Metals (3 Elements) "As Received"												
Barium		0.110	0.000670	0.00400	mg/L	1.00	1	PRB	07/30/24	1724	2644181	1
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	AB5	07/24/24	0830	2644180
EPA 160	Laboratory Filtration	SD	07/22/24	1008	2643954

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

### Notes:

Column headers are defined as follows:

DF: Dilution Factor      Lc/LC: Critical Level  
DL: Detection Limit      PF: Prep Factor  
MDA: Minimum Detectable Activity      RL: Reporting Limit  
MDC: Minimum Detectable Concentration      SQL: Sample Quantitation Limit

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## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW375UG4-24      Project: FRNP00507  
Sample ID: 676477009      Client ID: FRNP005  
Matrix: WG  
Collect Date: 18-JUL-24 12:49  
Receive Date: 19-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	UY1	0.0190	0.00856	0.0190	ug/L	0.951	1	LL2	07/23/24	1923	2643834	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.633	0.330	2.00	mg/L		1	KB3	08/14/24	1435	2655737	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	UN	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	07/24/24	0700	2644044	3
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	7.04	3.33	10.0	ug/L		1	JS13	08/07/24	1632	2652304	4
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	08/08/24	1514	2653275	5
SW846 9056A Anions (5 elements) "As Received"												
Sulfate		22.6	0.266	0.800	mg/L		2	CWW	07/20/24	0501	2643406	6
Bromide	U	0.200	0.0670	0.200	mg/L		1	CWW	07/19/24	2136	2643406	7
Chloride	J	3.33	0.0670	250	mg/L		1					
Fluoride	J	0.384	0.0330	4.00	mg/L		1					
Nitrate-N	J	0.899	0.0330	10.0	mg/L		1					
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	07/23/24	1208	2643939	8
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Boron	J	0.00685	0.00520	0.0150	mg/L	1.00	1	PRB	08/15/24	0510	2649853	9
Aluminum	J	0.0460	0.0193	0.0500	mg/L	1.00	1	PRB	07/30/24	1727	2644181	10
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	U	0.00500	0.00200	0.00500	mg/L	1.00	1					
Barium		0.172	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		13.3	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					

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## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW375UG4-24  
Sample ID: 676477009

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
<b>Metals Analysis-ICP-MS</b>												
<b>6020, Metals (15+ elements) "As Received"</b>												
Cobalt	J	0.000652	0.000300	0.00100	mg/L	1.00	1					
Copper	J	0.00109	0.000300	0.00200	mg/L	1.00	1					
Iron	J	0.0970	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		5.40	0.0100	0.0300	mg/L	1.00	1					
Manganese		0.0106	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	U	0.00100	0.000200	0.00100	mg/L	1.00	1					
Nickel	J	0.000776	0.000600	0.00200	mg/L	1.00	1					
Potassium	J	0.265	0.0800	0.300	mg/L	1.00	1					
Selenium	J	0.00236	0.00150	0.00500	mg/L	1.00	1					
Silver	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					
Vanadium	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Zinc	J	0.00386	0.00330	0.0200	mg/L	1.00	1					
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	07/30/24	1917	2644181	11
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					
Sodium		51.2	0.800	2.50	mg/L	1.00	10	PRB	07/30/24	1747	2644181	12
<b>Semi-Volatiles-PCB</b>												
<b>8082A, PCB Liquids "As Received"</b>												
Aroclor-1016	U	0.117	0.0390	0.117	ug/L	0.00117	1	LOF	08/11/24	1646	2654136	13
Aroclor-1221	U	0.117	0.0390	0.117	ug/L	0.00117	1					
Aroclor-1232	U	0.117	0.0390	0.117	ug/L	0.00117	1					
Aroclor-1242	U	0.117	0.0390	0.117	ug/L	0.00117	1					
Aroclor-1248	U	0.117	0.0390	0.117	ug/L	0.00117	1					
Aroclor-1254	U	0.117	0.0390	0.117	ug/L	0.00117	1					
Aroclor-1260	U	0.117	0.0390	0.117	ug/L	0.00117	1					
Aroclor-1268	U	0.117	0.0390	0.117	ug/L	0.00117	1					
Aroclor-Total	U	0.117	0.0390	0.117	ug/L	0.00117	1					
<b>Solids Analysis</b>												
<b>160.1, Dissolved Solids "As Received"</b>												
Total Dissolved Solids		205	2.38	10.0	mg/L			KLP1	07/25/24	1511	2646230	14
<b>Spectrometric Analysis</b>												
<b>410.4, Chem. Oxygen Demand "As Received"</b>												

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW375UG4-24	Project: FRNP00507
Sample ID: 676477009	Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												
COD	U	20.0	8.95	20.0	mg/L		1	HH2	07/22/24	1401	2644120	15
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	PXY1	07/24/24	1731	2645646	16
1,1,1-Trichloroethane	J	0.440	0.333	1.00	ug/L		1					
1,1,2,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
1,2,3-Trichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dibromoethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,4-Dichlorobenzene	UY2	1.00	0.333	1.00	ug/L		1					
2-Butanone	U	5.00	1.67	5.00	ug/L		1					
2-Hexanone	U	5.00	1.67	5.00	ug/L		1					
4-Methyl-2-pentanone	U	5.00	1.67	5.00	ug/L		1					
Acetone	U	5.00	1.74	5.00	ug/L		1					
Acrolein	U	5.00	1.67	5.00	ug/L		1					
Acrylonitrile	U	5.00	1.67	5.00	ug/L		1					
Benzene	U	1.00	0.333	1.00	ug/L		1					
Bromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromodichloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromoform	U	1.00	0.333	1.00	ug/L		1					
Bromomethane	U	1.00	0.337	1.00	ug/L		1					
Carbon disulfide	U	5.00	1.67	5.00	ug/L		1					
Carbon tetrachloride	U	1.00	0.333	1.00	ug/L		1					
Chlorobenzene	U	1.00	0.333	1.00	ug/L		1					
Chloroethane	U	1.00	0.333	1.00	ug/L		1					
Chloroform	U	1.00	0.333	1.00	ug/L		1					
Chloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromomethane	U	1.00	0.333	1.00	ug/L		1					
Ethylbenzene	U	1.00	0.333	1.00	ug/L		1					
Iodomethane	U	5.00	1.67	5.00	ug/L		1					



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## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW375UG4-24  
Sample ID: 676477009

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time Batch	Method
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The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	SW846 8011		
2	SW846 9060A		
3	SW846 9012B		
4	SW846 9020B		
5	EPA 300.0		
6	SW846 9056A		
7	SW846 9056A		
8	SW846 7470A		
9	SW846 3005A/6020B		
10	SW846 3005A/6020B		
11	SW846 3005A/6020B		
12	SW846 3005A/6020B		
13	SW846 3535A/8082A		
14	EPA 160.1		
15	EPA 410.4		
16	SW846 8260D		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	6.90 ug/L	6.79	102	(56%-149%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.189 ug/L	0.234	81	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.186 ug/L	0.234	79	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	53.8 ug/L	50.0	108	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	62.2 ug/L	50.0	124	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	54.6 ug/L	50.0	109	(77%-121%)

### Notes:

Column headers are defined as follows:

DF: Dilution Factor                      Lc/LC: Critical Level  
DL: Detection Limit                      PF: Prep Factor  
MDA: Minimum Detectable Activity      RL: Reporting Limit  
MDC: Minimum Detectable Concentration      SQL: Sample Quantitation Limit

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## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW375UG4-24      Project: FRNP00507  
Sample ID: 676477010      Client ID: FRNP005  
Matrix: WG  
Collect Date: 18-JUL-24 12:49  
Receive Date: 19-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Dissolved Metals (3 Elements) "As Received"												
Barium		0.168	0.000670	0.00400	mg/L	1.00	1	PRB	07/30/24	1731	2644181	1
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 160	Laboratory Filtration	SD	07/22/24	1008	2643954
SW846 3005A	ICP-MS 3005A PREP	AB5	07/24/24	0830	2644180

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

### Notes:

Column headers are defined as follows:

DF: Dilution Factor      Lc/LC: Critical Level  
DL: Detection Limit      PF: Prep Factor  
MDA: Minimum Detectable Activity      RL: Reporting Limit  
MDC: Minimum Detectable Concentration      SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: TB3UG4-24 Project: FRNP00507  
Sample ID: 676477011 Client ID: FRNP005  
Matrix: WATER  
Collect Date: 18-JUL-24 06:55  
Receive Date: 19-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	UY1	0.0191	0.00858	0.0191	ug/L	0.953	1	LL2	07/23/24	1948	2643834	1
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	PXY1	07/24/24	1757	2645646	2
1,1,1-Trichloroethane	J	0.420	0.333	1.00	ug/L		1					
1,1,2,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
1,2,3-Trichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dibromoethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,4-Dichlorobenzene	UY2	1.00	0.333	1.00	ug/L		1					
2-Butanone	U	5.00	1.67	5.00	ug/L		1					
2-Hexanone	U	5.00	1.67	5.00	ug/L		1					
4-Methyl-2-pentanone	US	5.00	1.67	5.00	ug/L		1					
Acetone	BJ	3.06	1.74	5.00	ug/L		1					
Acrolein	U	5.00	1.67	5.00	ug/L		1					
Acrylonitrile	U	5.00	1.67	5.00	ug/L		1					
Benzene	U	1.00	0.333	1.00	ug/L		1					
Bromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromodichloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromoform	U	1.00	0.333	1.00	ug/L		1					
Bromomethane	U	1.00	0.337	1.00	ug/L		1					
Carbon disulfide	U	5.00	1.67	5.00	ug/L		1					
Carbon tetrachloride	U	1.00	0.333	1.00	ug/L		1					
Chlorobenzene	US	1.00	0.333	1.00	ug/L		1					
Chloroethane	U	1.00	0.333	1.00	ug/L		1					
Chloroform	U	1.00	0.333	1.00	ug/L		1					
Chloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromomethane	U	1.00	0.333	1.00	ug/L		1					
Ethylbenzene	U	1.00	0.333	1.00	ug/L		1					
Iodomethane	U	5.00	1.67	5.00	ug/L		1					

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: TB3UG4-24	Project: FRNP00507
Sample ID: 676477011	Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
<b>Volatile Organics</b>												
<b>8260D, Volatiles- full suite "As Received"</b>												
Methylene chloride	U	5.00	0.500	5.00	ug/L		1					
Styrene	U	1.00	0.333	1.00	ug/L		1					
Tetrachloroethylene	US	1.00	0.333	1.00	ug/L		1					
Toluene	U	1.00	0.333	1.00	ug/L		1					
Trichloroethylene	U	1.00	0.333	1.00	ug/L		1					
Trichlorofluoromethane	U	1.00	0.333	1.00	ug/L		1					
Vinyl acetate	U	5.00	1.67	5.00	ug/L		1					
Vinyl chloride	U	1.00	0.333	1.00	ug/L		1					
Xylenes (total)	U	3.00	1.00	3.00	ug/L		1					
cis-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
cis-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,4-Dichloro-2-butene	U	5.00	1.67	5.00	ug/L		1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 8011 PREP	8011 Prep	LL2	07/23/24	1325	2643831

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 8011	
2	SW846 8260D	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	6.77 ug/L	6.81	99	(56%-149%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	52.9 ug/L	50.0	106	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	57.4 ug/L	50.0	115	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	61.5 ug/L	50.0	123*	(77%-121%)

**Notes:**

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: October 31, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: TB3UG4-24  
Sample ID: 676477011

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time Batch	Method
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Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

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**ATTACHMENT C4**

**GEL LABORATORIES CERTIFICATE OF ANALYSIS**

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# GEL LABORATORIES LLC

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## Certificate of Analysis

Company : Four Rivers Nuclear Partnership,  
Address : LLC  
5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: November 3, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW367UG4-24  
Sample ID: 676870001  
Matrix: WG  
Collect Date: 22-JUL-24  
Receive Date: 23-JUL-24  
Collector: Client

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
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### Rad Alpha Spec Analysis

*AN-1418 AlphaSpec Ra226, Liquid "As Received"*

Radium-226	U	1.35	+/-1.13	1.44	+/-1.13	5.00	pCi/L			CM4	08/03/24	0914	2644876	1
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*Th-01-RC M, Th Isotopes, Liquid "As Received"*

Thorium-230	U	-0.136	+/-0.389	0.989	+/-0.389	50.0	pCi/L			CM4	08/06/24	1328	2644883	2
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Thorium-232	U	-0.00793	+/-0.211	0.409	+/-0.212		pCi/L							
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### Rad Gas Flow Proportional Counting

*904.0Mod, Ra228, Liquid "As Received"*

Radium-228	U	-0.156	+/-2.00	4.06	+/-2.00	4.99	pCi/L			KP1	08/09/24	1335	2645051	3
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*905.0Mod, Sr90, liquid "As Received"*

Strontium-90	U	3.21	+/-3.32	5.50	+/-3.37	8.00	pCi/L			JE1	08/07/24	1515	2645923	4
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*9310, Alpha/Beta Activity, liquid "As Received"*

Alpha	U	2.01	+/-3.17	5.68	+/-3.19	15.0	pCi/L			HH3	08/10/24	1315	2645902	5
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Beta	U	5.71	+/-5.37	8.74	+/-5.45	50.0	pCi/L							
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### Rad Liquid Scintillation Analysis

*906.0M, Tritium Dist, Liquid "As Received"*

Tritium	U	-10.4	+/-132	235	+/-132	300	pCi/L			HB2	08/18/24	0033	2649578	6
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*Tc-02-RC-MOD, Tc99, Liquid "As Received"*

Technetium-99	U	-4.38	+/-8.36	15.6	+/-8.36	25.0	pCi/L			GS3	08/14/24	2006	2647381	7
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### The following Analytical Methods were performed

Method	Description
1	Eichrom Industries, AN-1418
2	DOE EML HASL-300, Th-01-RC Modified
3	EPA 904.0/SW846 9320 Modified
4	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
5	EPA 900.0/SW846 9310
6	EPA 906.0 Modified
7	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AN-1418 AlphaSpec Ra226, Liquid "As Received"	2644876	94.4	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2644883	64.1	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2645051	79.8	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2645923	74.9	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2647381	97.8	(30%-110%)

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## *Certificate of Analysis*

Company : Four Rivers Nuclear Partnership,  
Address : LLC  
5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: November 3, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW367UG4-24

Project: FRNP00507

Sample ID: 676870001

Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test						Batch ID	Recovery%	Acceptable Limits				

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

*Column headers are defined as follows:*

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Four Rivers Nuclear Partnership,  
Address : LLC  
5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: November 3, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW368UG4-24

Project: FRNP00507

Sample ID: 676870003

Client ID: FRNP005

Matrix: WG

Collect Date: 22-JUL-24

Receive Date: 23-JUL-24

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>														
<i>AN-1418 AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.775	+/-0.930	1.43	+/-0.931	5.00	pCi/L			CM4	08/03/24	0914	2644876	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.0967	+/-0.323	0.615	+/-0.324	50.0	pCi/L			CM4	08/07/24	0937	2644883	2
Thorium-232	U	0.0833	+/-0.251	0.450	+/-0.252		pCi/L							
<b>Rad Gas Flow Proportional Counting</b>														
<i>904.0Mod, Ra228, Liquid "As Received"</i>														
Radium-228	U	2.98	+/-2.86	4.75	+/-2.96	4.99	pCi/L			KP1	11/01/24	0917	2696576	3
<i>905.0Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	-0.161	+/-1.24	2.48	+/-1.24	8.00	pCi/L			JE1	08/12/24	1310	2645923	4
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	1.22	+/-3.44	6.98	+/-3.45	15.0	pCi/L			HH3	08/10/24	1315	2645902	5
Beta	U	0.738	+/-4.87	9.09	+/-4.87	50.0	pCi/L							
<b>Rad Liquid Scintillation Analysis</b>														
<i>906.0M, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	18.8	+/-132	231	+/-132	300	pCi/L			HB2	08/18/24	0120	2649578	6
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	-2.63	+/-8.68	15.9	+/-8.68	25.0	pCi/L			GS3	08/14/24	2023	2647381	7

**The following Analytical Methods were performed**

Method	Description
1	Eichrom Industries, AN-1418
2	DOE EML HASL-300, Th-01-RC Modified
3	EPA 904.0/SW846 9320 Modified
4	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
5	EPA 900.0/SW846 9310
6	EPA 906.0 Modified
7	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AN-1418 AlphaSpec Ra226, Liquid "As Received"	2644876	93.3	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2644883	69.5	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2696576	89.4	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2645923	74.9	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2647381	96.6	(30%-110%)

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## *Certificate of Analysis*

Company : Four Rivers Nuclear Partnership,  
Address : LLC  
5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: November 3, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW368UG4-24

Project: FRNP00507

Sample ID: 676870003

Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test						Batch ID	Recovery%	Acceptable Limits				

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

*Column headers are defined as follows:*

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID:	MW367UG4-24	Project:	FRNP00507
Sample ID:	676870001	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	22-JUL-24 09:00		
Receive Date:	23-JUL-24		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0185	0.00834	0.0185	ug/L	0.927	1	LOF	07/26/24	1951	2645909	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	U	2.00	0.330	2.00	mg/L		1	KB3	08/15/24	1612	2656541	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	07/25/24	0831	2645248	3
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	5.64	3.33	10.0	ug/L		1	JS13	08/09/24	1325	2653933	4
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	08/08/24	1606	2653275	5
SW846 9056A Anions (5 elements) "As Received"												
Bromide	J	0.128	0.0670	0.200	mg/L		1	CH6	07/23/24	1325	2644782	6
Chloride	JW	8.06	0.0670	250	mg/L		1					
Fluoride	*J	0.199	0.0330	4.00	mg/L		1					
Nitrate-N	J	0.0830	0.0660	10.0	mg/L		2	CH6	07/23/24	1935	2644782	7
Sulfate		20.8	0.266	0.800	mg/L		2					
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	07/25/24	1203	2645310	8
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Aluminum	U	0.0500	0.0193	0.0500	mg/L	1.00	1	PRB	08/10/24	2145	2644907	9
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	J	0.00275	0.00200	0.00500	mg/L	1.00	1					
Barium		0.132	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron	J	0.0149	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		13.3	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					







# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW367UG4-24  
Sample ID: 676870001

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time Batch	Method
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The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	SW846 8011		
2	SW846 9060A		
3	SW846 9012B		
4	SW846 9020B		
5	EPA 300.0		
6	SW846 9056A		
7	SW846 9056A		
8	SW846 7470A		
9	SW846 3005A/6020B		
10	SW846 3005A/6020B		
11	SW846 3005A/6020B		
12	SW846 3535A/8082A		
13	EPA 160.1		
14	EPA 410.4		
15	SW846 8260D		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	5.57 ug/L	6.62	84	(56%-149%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.125 ug/L	0.200	62	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.0960 ug/L	0.200	48	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	53.0 ug/L	50.0	106	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	57.2 ug/L	50.0	114	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	56.3 ug/L	50.0	113	(77%-121%)

### Notes:

Column headers are defined as follows:

DF: Dilution Factor                      Lc/LC: Critical Level  
DL: Detection Limit                      PF: Prep Factor  
MDA: Minimum Detectable Activity      RL: Reporting Limit  
MDC: Minimum Detectable Concentration      SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW367UG4-24

Project: FRNP00507

Sample ID: 676870002

Client ID: FRNP005

Matrix: WG

Collect Date: 22-JUL-24 09:00

Receive Date: 23-JUL-24

Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Dissolved Metals (3 Elements) "As Received"												
Barium		0.126	0.000670	0.00400	mg/L	1.00	1	PRB	08/10/24	2211	2644907	1
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 160	Laboratory Filtration	SD	07/23/24	1208	2644811
SW846 3005A	ICP-MS 3005A PREP	AB5	07/29/24	0820	2644906

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

### Notes:

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW368UG4-24      Project: FRNP00507  
Sample ID: 676870003      Client ID: FRNP005  
Matrix: WG  
Collect Date: 22-JUL-24 09:50  
Receive Date: 23-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0191	0.00861	0.0191	ug/L	0.957	1	LOF	07/26/24	2122	2645909	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	1.35	0.330	2.00	mg/L		1	KB3	08/15/24	1750	2656541	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	07/25/24	0834	2645248	3
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	7.72	3.33	10.0	ug/L		1	JS13	08/09/24	1508	2653933	4
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	08/08/24	1710	2653275	5
SW846 9056A Anions (5 elements) "As Received"												
Bromide	U	0.200	0.0670	0.200	mg/L		1	CH6	07/23/24	1356	2644782	6
Chloride	JW	2.87	0.0670	250	mg/L		1					
Fluoride	*J	0.339	0.0330	4.00	mg/L		1					
Nitrate-N	J	0.114	0.0660	10.0	mg/L		2	CH6	07/23/24	2108	2644782	7
Sulfate		125	2.66	8.00	mg/L		20	CH6	07/23/24	2241	2644782	8
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	07/25/24	1215	2645310	9
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Aluminum		1.01	0.0193	0.0500	mg/L	1.00	1	PRB	08/10/24	2214	2644907	10
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	J	0.00333	0.00200	0.00500	mg/L	1.00	1					
Barium		0.0682	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron	J	0.00809	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Cobalt	U	0.00100	0.000300	0.00100	mg/L	1.00	1					







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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
 Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
 Ms. Jaime Morrow  
 Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW368UG4-24	Project: FRNP00507
Sample ID: 676870003	Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time Batch	Method
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The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	SW846 8011		
2	SW846 9060A		
3	SW846 9012B		
4	SW846 9020B		
5	EPA 300.0		
6	SW846 9056A		
7	SW846 9056A		
8	SW846 9056A		
9	SW846 7470A		
10	SW846 3005A/6020B		
11	SW846 3005A/6020B		
12	SW846 3005A/6020B		
13	SW846 3535A/8082A		
14	EPA 160.1		
15	EPA 410.4		
16	SW846 8260D		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	6.89 ug/L	6.84	101	(56%-149%)
4cmx	8082A, PCB Liquids "As Received"	0.128 ug/L	0.200	64	(26%-108%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.142 ug/L	0.200	71	(30%-135%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	54.6 ug/L	50.0	109	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	59.1 ug/L	50.0	118	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	58.1 ug/L	50.0	116	(77%-121%)

**Notes:**

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW368UG4-24      Project: FRNP00507  
Sample ID: 676870004      Client ID: FRNP005  
Matrix: WG  
Collect Date: 22-JUL-24 09:50  
Receive Date: 23-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Dissolved Metals (3 Elements) "As Received"												
Barium		0.0680	0.000670	0.00400	mg/L	1.00	1	PRB	08/10/24	2218	2644907	1
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Uranium		0.000520	0.0000670	0.000200	mg/L	1.00	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 160	Laboratory Filtration	SD	07/23/24	1208	2644811
SW846 3005A	ICP-MS 3005A PREP	AB5	07/29/24	0820	2644906

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

### Notes:

Column headers are defined as follows:

DF: Dilution Factor      Lc/LC: Critical Level  
DL: Detection Limit      PF: Prep Factor  
MDA: Minimum Detectable Activity      RL: Reporting Limit  
MDC: Minimum Detectable Concentration      SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: TB4UG4-24

Project: FRNP00507

Sample ID: 676870005

Client ID: FRNP005

Matrix: WATER

Collect Date: 22-JUL-24 07:30

Receive Date: 23-JUL-24

Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0191	0.00861	0.0191	ug/L	0.956	1	LOF	07/26/24	2241	2645909	1
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	PXY1	07/25/24	1759	2646434	2
1,1,1-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
1,2,3-Trichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dibromoethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,4-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
2-Butanone	U	5.00	1.67	5.00	ug/L		1					
2-Hexanone	U	5.00	1.67	5.00	ug/L		1					
4-Methyl-2-pentanone	U	5.00	1.67	5.00	ug/L		1					
Acetone	U	5.00	1.74	5.00	ug/L		1					
Acrolein	U	5.00	1.67	5.00	ug/L		1					
Acrylonitrile	U	5.00	1.67	5.00	ug/L		1					
Benzene	U	1.00	0.333	1.00	ug/L		1					
Bromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromodichloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromoform	U	1.00	0.333	1.00	ug/L		1					
Bromomethane	U	1.00	0.337	1.00	ug/L		1					
Carbon disulfide	U	5.00	1.67	5.00	ug/L		1					
Carbon tetrachloride	U	1.00	0.333	1.00	ug/L		1					
Chlorobenzene	U	1.00	0.333	1.00	ug/L		1					
Chloroethane	U	1.00	0.333	1.00	ug/L		1					
Chloroform	U	1.00	0.333	1.00	ug/L		1					
Chloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromomethane	U	1.00	0.333	1.00	ug/L		1					
Ethylbenzene	U	1.00	0.333	1.00	ug/L		1					
Iodomethane	U	5.00	1.67	5.00	ug/L		1					

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: TB4UG4-24	Project: FRNP00507
Sample ID: 676870005	Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
<b>Volatile Organics</b>												
<b>8260D, Volatiles- full suite "As Received"</b>												
Methylene chloride	J	0.770	0.500	5.00	ug/L		1					
Styrene	U	1.00	0.333	1.00	ug/L		1					
Tetrachloroethylene	U	1.00	0.333	1.00	ug/L		1					
Toluene	U	1.00	0.333	1.00	ug/L		1					
Trichloroethylene	U	1.00	0.333	1.00	ug/L		1					
Trichlorofluoromethane	U	1.00	0.333	1.00	ug/L		1					
Vinyl acetate	U	5.00	1.67	5.00	ug/L		1					
Vinyl chloride	U	1.00	0.333	1.00	ug/L		1					
Xylenes (total)	U	3.00	1.00	3.00	ug/L		1					
cis-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
cis-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,4-Dichloro-2-butene	U	5.00	1.67	5.00	ug/L		1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 8011 PREP	8011 Prep	LOF	07/26/24	1451	2645907

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 8011	
2	SW846 8260D	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	6.81 ug/L	6.83	100	(56%-149%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	54.4 ug/L	50.0	109	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	59.4 ug/L	50.0	119	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	56.5 ug/L	50.0	113	(77%-121%)

**Notes:**

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: TB4UG4-24  
Sample ID: 676870005

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time Batch	Method
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Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

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**ATTACHMENT C5**

**GEL LABORATORIES CERTIFICATE OF ANALYSIS**

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# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 4, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW357UG4-24R

Project: FRNP00507

Sample ID: 678040001

Client ID: FRNP005

Matrix: WG

Collect Date: 29-JUL-24 08:13

Receive Date: 30-JUL-24

Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.449	0.330	2.00	mg/L		1	KB3	08/21/24	1240	2659959	1
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	08/05/24	0855	2648824	2
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	*	26.8	3.33	10.0	ug/L		1	JS13	08/22/24	1512	2661156	3
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	08/12/24	1737	2654906	4
SW846 9056A Anions (5 elements) "As Received"												
Chloride	J	27.4	0.335	250	mg/L		5	CH6	07/30/24	1720	2648612	5
Nitrate-N	J	1.18	0.165	10.0	mg/L		5					
Sulfate		33.9	0.665	2.00	mg/L		5					
Bromide		0.319	0.0670	0.200	mg/L		1	CH6	07/30/24	1345	2648612	6
Fluoride	J	0.153	0.0330	4.00	mg/L		1					
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.100	0.0333	0.100	ug/L	0.00100	1	NS2	08/22/24	0207	2659965	7
Aroclor-1221	U	0.100	0.0333	0.100	ug/L	0.00100	1					
Aroclor-1232	U	0.100	0.0333	0.100	ug/L	0.00100	1					
Aroclor-1242	U	0.100	0.0333	0.100	ug/L	0.00100	1					
Aroclor-1248	U	0.100	0.0333	0.100	ug/L	0.00100	1					
Aroclor-1254	U	0.100	0.0333	0.100	ug/L	0.00100	1					
Aroclor-1260	U	0.100	0.0333	0.100	ug/L	0.00100	1					
Aroclor-1268	U	0.100	0.0333	0.100	ug/L	0.00100	1					
Aroclor-Total	U	0.100	0.0333	0.100	ug/L	0.00100	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		215	2.38	10.0	mg/L			KLP1	08/01/24	1450	2649877	8
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												
COD	U	20.0	8.95	20.0	mg/L		1	HH2	08/01/24	1720	2649741	9



# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: November 4, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW358DUG4-24R Project: FRNP00507  
Sample ID: 678040002 Client ID: FRNP005  
Matrix: WG  
Collect Date: 29-JUL-24 08:48  
Receive Date: 30-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.657	0.330	2.00	mg/L		1	KB3	08/21/24	1413	2659959	1
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	08/05/24	0858	2648824	2
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	*J	8.40	3.33	10.0	ug/L		1	JS13	08/22/24	1248	2661156	3
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	08/12/24	1750	2654906	4
SW846 9056A Anions (5 elements) "As Received"												
Chloride	J	36.8	0.335	250	mg/L		5	CH6	07/30/24	1955	2648612	5
Sulfate		54.7	0.665	2.00	mg/L		5					
Bromide		0.428	0.0670	0.200	mg/L		1	CH6	07/30/24	1416	2648612	6
Fluoride	J	0.153	0.0330	4.00	mg/L		1					
Nitrate-N	J	1.29	0.0330	10.0	mg/L		1					
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.0995	0.0331	0.0995	ug/L	0.000995	1	NS2	08/22/24	0306	2659965	7
Aroclor-1221	U	0.0995	0.0331	0.0995	ug/L	0.000995	1					
Aroclor-1232	U	0.0995	0.0331	0.0995	ug/L	0.000995	1					
Aroclor-1242	U	0.0995	0.0331	0.0995	ug/L	0.000995	1					
Aroclor-1248	U	0.0995	0.0331	0.0995	ug/L	0.000995	1					
Aroclor-1254	U	0.0995	0.0331	0.0995	ug/L	0.000995	1					
Aroclor-1260	U	0.0995	0.0331	0.0995	ug/L	0.000995	1					
Aroclor-1268	U	0.0995	0.0331	0.0995	ug/L	0.000995	1					
Aroclor-Total	U	0.0995	0.0331	0.0995	ug/L	0.000995	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		252	2.38	10.0	mg/L			KLP1	08/01/24	1450	2649877	8
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												
COD	J	14.0	8.95	20.0	mg/L		1	HH2	08/01/24	1720	2649741	9



# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 4, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW358UG4-24R Project: FRNP00507  
Sample ID: 678040003 Client ID: FRNP005  
Matrix: WG  
Collect Date: 29-JUL-24 08:48  
Receive Date: 30-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.607	0.330	2.00	mg/L		1	KB3	08/21/24	1444	2659959	1
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	08/05/24	0859	2648824	2
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	*U	10.0	3.33	10.0	ug/L		1	JS13	08/22/24	1617	2661156	3
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	08/12/24	1803	2654906	4
SW846 9056A Anions (5 elements) "As Received"												
Chloride	J	31.1	0.335	250	mg/L		5	CH6	07/30/24	2026	2648612	5
Sulfate		47.8	0.665	2.00	mg/L		5					
Bromide		0.371	0.0670	0.200	mg/L		1	CH6	07/30/24	1447	2648612	6
Fluoride	J	0.170	0.0330	4.00	mg/L		1					
Nitrate-N	J	1.02	0.0330	10.0	mg/L		1					
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.0949	0.0316	0.0949	ug/L	0.000949	1	NS2	08/22/24	0350	2659965	7
Aroclor-1221	U	0.0949	0.0316	0.0949	ug/L	0.000949	1					
Aroclor-1232	U	0.0949	0.0316	0.0949	ug/L	0.000949	1					
Aroclor-1242	U	0.0949	0.0316	0.0949	ug/L	0.000949	1					
Aroclor-1248	U	0.0949	0.0316	0.0949	ug/L	0.000949	1					
Aroclor-1254	U	0.0949	0.0316	0.0949	ug/L	0.000949	1					
Aroclor-1260	U	0.0949	0.0316	0.0949	ug/L	0.000949	1					
Aroclor-1268	U	0.0949	0.0316	0.0949	ug/L	0.000949	1					
Aroclor-Total	U	0.0949	0.0316	0.0949	ug/L	0.000949	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		250	2.38	10.0	mg/L			KLP1	08/01/24	1450	2649877	8
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												
COD	J	16.4	8.95	20.0	mg/L		1	HH2	08/01/24	1720	2649741	9



# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: November 4, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW361UG4-24R Project: FRNP00507  
Sample ID: 678040004 Client ID: FRNP005  
Matrix: WG  
Collect Date: 29-JUL-24 07:38  
Receive Date: 30-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.579	0.330	2.00	mg/L		1	KB3	08/21/24	1515	2659959	1
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	08/05/24	0906	2648824	2
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	*U	10.0	3.33	10.0	ug/L		1	JS13	08/22/24	1658	2661156	3
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	08/12/24	1816	2654906	4
SW846 9056A Anions (5 elements) "As Received"												
Chloride	J	36.5	0.335	250	mg/L		5	CH6	07/30/24	2057	2648612	5
Sulfate		70.8	0.665	2.00	mg/L		5					
Bromide		0.451	0.0670	0.200	mg/L		1	CH6	07/30/24	1517	2648612	6
Fluoride	J	0.148	0.0330	4.00	mg/L		1					
Nitrate-N	J	1.34	0.0330	10.0	mg/L		1					
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.0953	0.0317	0.0953	ug/L	0.000953	1	NS2	08/22/24	0410	2659965	7
Aroclor-1221	U	0.0953	0.0317	0.0953	ug/L	0.000953	1					
Aroclor-1232	U	0.0953	0.0317	0.0953	ug/L	0.000953	1					
Aroclor-1242	U	0.0953	0.0317	0.0953	ug/L	0.000953	1					
Aroclor-1248	U	0.0953	0.0317	0.0953	ug/L	0.000953	1					
Aroclor-1254	U	0.0953	0.0317	0.0953	ug/L	0.000953	1					
Aroclor-1260	U	0.0953	0.0317	0.0953	ug/L	0.000953	1					
Aroclor-1268	U	0.0953	0.0317	0.0953	ug/L	0.000953	1					
Aroclor-Total	U	0.0953	0.0317	0.0953	ug/L	0.000953	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		270	2.38	10.0	mg/L			KLP1	08/01/24	1450	2649877	8
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												
COD	J	11.7	8.95	20.0	mg/L		1	HH2	08/01/24	1720	2649741	9



# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 4, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW359UG4-24R Project: FRNP00507  
Sample ID: 678040005 Client ID: FRNP005  
Matrix: WG  
Collect Date: 29-JUL-24 09:31  
Receive Date: 30-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.714	0.330	2.00	mg/L		1	KB3	08/21/24	1546	2659959	1
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	08/05/24	0907	2648824	2
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	*J	4.56	3.33	10.0	ug/L		1	JS13	08/22/24	1801	2661156	3
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	08/12/24	1829	2654906	4
SW846 9056A Anions (5 elements) "As Received"												
Sulfate		36.7	0.266	0.800	mg/L		2	CH6	07/30/24	2127	2648612	5
Bromide	U	0.200	0.0670	0.200	mg/L		1	CH6	07/30/24	1548	2648612	6
Chloride	J	0.723	0.0670	250	mg/L		1					
Fluoride	J	0.304	0.0330	4.00	mg/L		1					
Nitrate-N	J	0.583	0.0330	10.0	mg/L		1					
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.0965	0.0321	0.0965	ug/L	0.000965	1	NS2	08/22/24	0429	2659965	7
Aroclor-1221	U	0.0965	0.0321	0.0965	ug/L	0.000965	1					
Aroclor-1232	U	0.0965	0.0321	0.0965	ug/L	0.000965	1					
Aroclor-1242	U	0.0965	0.0321	0.0965	ug/L	0.000965	1					
Aroclor-1248	U	0.0965	0.0321	0.0965	ug/L	0.000965	1					
Aroclor-1254	U	0.0965	0.0321	0.0965	ug/L	0.000965	1					
Aroclor-1260	U	0.0965	0.0321	0.0965	ug/L	0.000965	1					
Aroclor-1268	U	0.0965	0.0321	0.0965	ug/L	0.000965	1					
Aroclor-Total	U	0.0965	0.0321	0.0965	ug/L	0.000965	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		146	2.38	10.0	mg/L			KLP1	08/01/24	1450	2649877	8
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												
COD	J	11.7	8.95	20.0	mg/L		1	HH2	08/01/24	1720	2649741	9



**ATTACHMENT C6**

**GEL LABORATORIES CERTIFICATE OF ANALYSIS**

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# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Four Rivers Nuclear Partnership,  
Address : LLC  
5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: November 4, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW369UG4-24R  
Sample ID: 678290001  
Matrix: WG  
Collect Date: 30-JUL-24  
Receive Date: 31-JUL-24  
Collector: Client

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
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### Rad Liquid Scintillation Analysis

906.0M, Tritium Dist, Liquid "As Received"

Tritium	U	-48.7	+/-155	287	+/-155	300	pCi/L			KXA1	08/21/24	0539	2652460	1
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### The following Analytical Methods were performed

Method	Description
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1	EPA 906.0 Modified
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Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

Lc/LC: Critical Level

MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Mtd.: Method

PF: Prep Factor

RL: Reporting Limit

TPU: Total Propagated Uncertainty

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 4, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW369UG4-24R Project: FRNP00507  
Sample ID: 678290001 Client ID: FRNP005  
Matrix: WG  
Collect Date: 30-JUL-24 07:32  
Receive Date: 31-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	UY2	0.0273	0.0123	0.0273	ug/L	1.36	1	LOF	08/05/24	1501	2650874	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.757	0.330	2.00	mg/L		1	KB3	08/16/24	2236	2656554	3
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	08/05/24	0706	2649652	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens		18.3	3.33	10.0	ug/L		1	JS13	08/20/24	1617	2659943	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	08/12/24	1842	2654906	6
SW846 9056A Anions (5 elements) "As Received"												
Bromide		0.325	0.0670	0.200	mg/L		1	CWW	07/31/24	1449	2649148	7
Fluoride	J	0.243	0.0330	4.00	mg/L		1					
Nitrate-N	J	0.946	0.0330	10.0	mg/L		1					
Sulfate		7.92	0.133	0.400	mg/L		1					
Chloride	JW	29.4	0.268	250	mg/L		4	CWW	08/01/24	0301	2649148	8
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.0951	0.0317	0.0951	ug/L	0.000951	1	YS1	08/15/24	1756	2655716	9
Aroclor-1221	U	0.0951	0.0317	0.0951	ug/L	0.000951	1					
Aroclor-1232	U	0.0951	0.0317	0.0951	ug/L	0.000951	1					
Aroclor-1242	U	0.0951	0.0317	0.0951	ug/L	0.000951	1					
Aroclor-1248	U	0.0951	0.0317	0.0951	ug/L	0.000951	1					
Aroclor-1254	U	0.0951	0.0317	0.0951	ug/L	0.000951	1					
Aroclor-1260	U	0.0951	0.0317	0.0951	ug/L	0.000951	1					
Aroclor-1268	U	0.0951	0.0317	0.0951	ug/L	0.000951	1					
Aroclor-Total	U	0.0951	0.0317	0.0951	ug/L	0.000951	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		213	2.38	10.0	mg/L			KLP1	08/05/24	1349	2651532	10





# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 4, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW369UG4-24R  
Sample ID: 678290001

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time Batch	Method
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The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 8011	
2	SW846 8011	
3	SW846 9060A	
4	SW846 9012B	
5	SW846 9020B	
6	EPA 300.0	
7	SW846 9056A	
8	SW846 9056A	
9	SW846 3535A/8082A	
10	EPA 160.1	
11	EPA 410.4	
12	SW846 8260D	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	8.30 ug/L	9.74	85	(56%-149%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.0962 ug/L	0.190	51	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.122 ug/L	0.190	64	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	50.3 ug/L	50.0	101	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	52.0 ug/L	50.0	104	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	52.4 ug/L	50.0	105	(77%-121%)

### Notes:

Column headers are defined as follows:

DF: Dilution Factor                      Lc/LC: Critical Level  
DL: Detection Limit                      PF: Prep Factor  
MDA: Minimum Detectable Activity      RL: Reporting Limit  
MDC: Minimum Detectable Concentration      SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 4, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW370UG4-24R	Project: FRNP00507
Sample ID: 678290002	Client ID: FRNP005
Matrix: WG	
Collect Date: 30-JUL-24 08:10	
Receive Date: 31-JUL-24	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
<b>504.1/8011 Analysis of EDB/DBCP</b>												
<b>8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"</b>												
1,2-Dibromo-3-chloropropane	UY2	0.0192	0.00864	0.0192	ug/L	0.960	1	LOF	08/05/24	1632	2650874	1
<b>Carbon Analysis</b>												
<b>9060A, Total Organic Carbon "As Received"</b>												
Total Organic Carbon Average	J	0.798	0.330	2.00	mg/L		1	KB3	08/19/24	0248	2656558	3
<b>Flow Injection Analysis</b>												
<b>9012B, Cyanide, Total "As Received"</b>												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	08/05/24	0715	2649652	4
<b>Halogen Analysis</b>												
<b>9020B, TOX (Organic Halogen) "As Received"</b>												
Total Organic Halogens		11.1	3.33	10.0	ug/L		1	JS13	08/20/24	1759	2659943	5
<b>Ion Chromatography</b>												
<b>300.0, Iodide in Liquid "As Received"</b>												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	08/12/24	1854	2654906	6
<b>SW846 9056A Anions (5 elements) "As Received"</b>												
Bromide		0.546	0.0670	0.200	mg/L		1	CWW	07/31/24	1624	2649148	7
Fluoride	J	0.205	0.0330	4.00	mg/L		1					
Nitrate-N	J	0.995	0.0660	10.0	mg/L		2	CWW	07/31/24	2143	2649148	8
Sulfate		20.8	0.266	0.800	mg/L		2					
Chloride	JW	42.0	0.670	250	mg/L		10	CWW	08/01/24	0437	2649148	9
<b>Semi-Volatiles-PCB</b>												
<b>8082A, PCB Liquids "As Received"</b>												
Aroclor-1016	U	0.100	0.0333	0.100	ug/L	0.00100	1	YS1	08/15/24	1809	2655716	10
Aroclor-1221	U	0.100	0.0333	0.100	ug/L	0.00100	1					
Aroclor-1232	U	0.100	0.0333	0.100	ug/L	0.00100	1					
Aroclor-1242	U	0.100	0.0333	0.100	ug/L	0.00100	1					
Aroclor-1248	U	0.100	0.0333	0.100	ug/L	0.00100	1					
Aroclor-1254	U	0.100	0.0333	0.100	ug/L	0.00100	1					
Aroclor-1260	U	0.100	0.0333	0.100	ug/L	0.00100	1					
Aroclor-1268	U	0.100	0.0333	0.100	ug/L	0.00100	1					
Aroclor-Total	U	0.100	0.0333	0.100	ug/L	0.00100	1					
<b>Solids Analysis</b>												
<b>160.1, Dissolved Solids "As Received"</b>												
Total Dissolved Solids		247	2.38	10.0	mg/L			KLP1	08/05/24	1349	2651532	11





# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 4, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW370UG4-24R  
Sample ID: 678290002

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time Batch	Method
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The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	SW846 8011		
2	SW846 8011		
3	SW846 9060A		
4	SW846 9012B		
5	SW846 9020B		
6	EPA 300.0		
7	SW846 9056A		
8	SW846 9056A		
9	SW846 9056A		
10	SW846 3535A/8082A		
11	EPA 160.1		
12	EPA 410.4		
13	SW846 8260D		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	6.70 ug/L	6.86	98	(56%-149%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.192 ug/L	0.200	96	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.139 ug/L	0.200	69	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	49.6 ug/L	50.0	99	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	51.7 ug/L	50.0	103	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	51.5 ug/L	50.0	103	(77%-121%)

### Notes:

Column headers are defined as follows:

DF: Dilution Factor  
DL: Detection Limit  
MDA: Minimum Detectable Activity  
MDC: Minimum Detectable Concentration  
Lc/LC: Critical Level  
PF: Prep Factor  
RL: Reporting Limit  
SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 4, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW371UG4-24R Project: FRNP00507  
Sample ID: 678290003 Client ID: FRNP005  
Matrix: WG  
Collect Date: 30-JUL-24 08:43  
Receive Date: 31-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	UY2	0.0192	0.00863	0.0192	ug/L	0.958	1	LOF	08/05/24	1703	2650874	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	1.80	0.330	2.00	mg/L		1	KB3	08/19/24	0425	2656558	3
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	08/05/24	0716	2649652	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	5.16	3.33	10.0	ug/L		1	JS13	08/20/24	1900	2659943	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	08/12/24	1907	2654906	6
SW846 9056A Anions (5 elements) "As Received"												
Nitrate-N	J	0.114	0.0660	10.0	mg/L		2	CWW	07/31/24	2214	2649148	7
Bromide	U	0.200	0.0670	0.200	mg/L		1	CWW	07/31/24	1656	2649148	8
Chloride	JW	3.78	0.0670	250	mg/L		1					
Fluoride	J	0.290	0.0330	4.00	mg/L		1					
Sulfate		10.4	0.133	0.400	mg/L		1					
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.0949	0.0316	0.0949	ug/L 0.000949		1	YS1	08/15/24	1848	2655716	9
Aroclor-1221	U	0.0949	0.0316	0.0949	ug/L 0.000949		1					
Aroclor-1232	U	0.0949	0.0316	0.0949	ug/L 0.000949		1					
Aroclor-1242	U	0.0949	0.0316	0.0949	ug/L 0.000949		1					
Aroclor-1248	U	0.0949	0.0316	0.0949	ug/L 0.000949		1					
Aroclor-1254	U	0.0949	0.0316	0.0949	ug/L 0.000949		1					
Aroclor-1260	U	0.0949	0.0316	0.0949	ug/L 0.000949		1					
Aroclor-1268	U	0.0949	0.0316	0.0949	ug/L 0.000949		1					
Aroclor-Total	U	0.0949	0.0316	0.0949	ug/L 0.000949		1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		407	2.38	10.0	mg/L			KLP1	08/05/24	1349	2651532	10



# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: November 4, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW371UG4-24R  
Sample ID: 678290003

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
Methylene chloride	U	5.00	0.500	5.00	ug/L		1					
Styrene	U	1.00	0.333	1.00	ug/L		1					
Tetrachloroethylene	U	1.00	0.333	1.00	ug/L		1					
Toluene	U	1.00	0.333	1.00	ug/L		1					
Trichloroethylene	U	1.00	0.333	1.00	ug/L		1					
Trichlorofluoromethane	U	1.00	0.333	1.00	ug/L		1					
Vinyl acetate	U	5.00	1.67	5.00	ug/L		1					
Vinyl chloride	U	1.00	0.333	1.00	ug/L		1					
Xylenes (total)	U	3.00	1.00	3.00	ug/L		1					
cis-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
cis-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,4-Dichloro-2-butene	U	5.00	1.67	5.00	ug/L		1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3535A	SW3535A PCB SPE Extraction	DXF4	08/14/24	0530	2655708
SW846 9010C Distillation	SW846 9010C Prep	ES2	08/01/24	1201	2649651
SW846 8011 PREP	8011 Prep	LOF	08/05/24	1206	2650873



# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: November 4, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW372UG4-24R Project: FRNP00507  
Sample ID: 678290004 Client ID: FRNP005  
Matrix: WG  
Collect Date: 30-JUL-24 09:21  
Receive Date: 31-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	UY2	0.0188	0.00845	0.0188	ug/L	0.938	1	LOF	08/05/24	1733	2650874	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.798	0.330	2.00	mg/L		1	KB3	08/19/24	0513	2656558	3
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	08/05/24	0717	2649652	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	6.46	3.33	10.0	ug/L		1	JS13	08/20/24	1935	2659943	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	08/12/24	1920	2654906	6
SW846 9056A Anions (5 elements) "As Received"												
Nitrate-N	J	0.532	0.0660	10.0	mg/L		2	CWW	07/31/24	2246	2649148	7
Bromide		0.486	0.0670	0.200	mg/L		1	CWW	07/31/24	1728	2649148	8
Fluoride	J	0.224	0.0330	4.00	mg/L		1					
Chloride	JW	35.2	1.34	250	mg/L		20	CWW	08/01/24	0508	2649148	9
Sulfate		164	2.66	8.00	mg/L		20					
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.101	0.0335	0.101	ug/L	0.00101	1	YS1	08/15/24	1901	2655716	10
Aroclor-1221	U	0.101	0.0335	0.101	ug/L	0.00101	1					
Aroclor-1232	U	0.101	0.0335	0.101	ug/L	0.00101	1					
Aroclor-1242	U	0.101	0.0335	0.101	ug/L	0.00101	1					
Aroclor-1248	U	0.101	0.0335	0.101	ug/L	0.00101	1					
Aroclor-1254	U	0.101	0.0335	0.101	ug/L	0.00101	1					
Aroclor-1260	U	0.101	0.0335	0.101	ug/L	0.00101	1					
Aroclor-1268	U	0.101	0.0335	0.101	ug/L	0.00101	1					
Aroclor-Total	U	0.101	0.0335	0.101	ug/L	0.00101	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		496	2.38	10.0	mg/L			KLP1	08/05/24	1349	2651532	11





# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 4, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW372UG4-24R  
Sample ID: 678290004

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time Batch	Method
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The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	SW846 8011		
2	SW846 8011		
3	SW846 9060A		
4	SW846 9012B		
5	SW846 9020B		
6	EPA 300.0		
7	SW846 9056A		
8	SW846 9056A		
9	SW846 9056A		
10	SW846 3535A/8082A		
11	EPA 160.1		
12	EPA 410.4		
13	SW846 8260D		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	6.67 ug/L	6.70	100	(56%-149%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.132 ug/L	0.201	65	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.130 ug/L	0.201	64	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	48.8 ug/L	50.0	98	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	51.9 ug/L	50.0	104	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	50.7 ug/L	50.0	101	(77%-121%)

### Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 4, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW373UG4-24R Project: FRNP00507  
Sample ID: 678290005 Client ID: FRNP005  
Matrix: WG  
Collect Date: 30-JUL-24 10:00  
Receive Date: 31-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	UY2	0.0195	0.00878	0.0195	ug/L	0.975	1	LOF	08/05/24	1803	2650874	1
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	JB6	08/06/24	1500	2651855	3
1,1,1-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
1,2,3-Trichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dibromoethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,4-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
2-Butanone	U	5.00	1.67	5.00	ug/L		1					
2-Hexanone	U	5.00	1.67	5.00	ug/L		1					
4-Methyl-2-pentanone	U	5.00	1.67	5.00	ug/L		1					
Acetone	U	5.00	1.74	5.00	ug/L		1					
Acrolein	U	5.00	1.67	5.00	ug/L		1					
Acrylonitrile	U	5.00	1.67	5.00	ug/L		1					
Benzene	U	1.00	0.333	1.00	ug/L		1					
Bromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromodichloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromoform	U	1.00	0.333	1.00	ug/L		1					
Bromomethane	U	1.00	0.337	1.00	ug/L		1					
Carbon disulfide	U	5.00	1.67	5.00	ug/L		1					
Carbon tetrachloride	U	1.00	0.333	1.00	ug/L		1					
Chlorobenzene	U	1.00	0.333	1.00	ug/L		1					
Chloroethane	U	1.00	0.333	1.00	ug/L		1					
Chloroform	U	1.00	0.333	1.00	ug/L		1					
Chloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromomethane	U	1.00	0.333	1.00	ug/L		1					
Ethylbenzene	U	1.00	0.333	1.00	ug/L		1					
Iodomethane	U	5.00	1.67	5.00	ug/L		1					

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: November 4, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW373UG4-24R  
Sample ID: 678290005

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
Methylene chloride	U	5.00	0.500	5.00	ug/L		1					
Styrene	U	1.00	0.333	1.00	ug/L		1					
Tetrachloroethylene	U	1.00	0.333	1.00	ug/L		1					
Toluene	U	1.00	0.333	1.00	ug/L		1					
Trichloroethylene		2.54	0.333	1.00	ug/L		1					
Trichlorofluoromethane	U	1.00	0.333	1.00	ug/L		1					
Vinyl acetate	U	5.00	1.67	5.00	ug/L		1					
Vinyl chloride	U	1.00	0.333	1.00	ug/L		1					
Xylenes (total)	U	3.00	1.00	3.00	ug/L		1					
cis-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
cis-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,4-Dichloro-2-butene	U	5.00	1.67	5.00	ug/L		1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 8011 PREP	8011 Prep	LOF	08/05/24	1206	2650873

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 8011	
2	SW846 8011	
3	SW846 8260D	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	6.69 ug/L	6.97	96	(56%-149%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	51.2 ug/L	50.0	102	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	51.2 ug/L	50.0	102	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	51.2 ug/L	50.0	102	(77%-121%)

Notes:

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: November 4, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW373UG4-24R  
Sample ID: 678290005

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time Batch	Method
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Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 4, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW374UG4-24R Project: FRNP00507  
Sample ID: 678290006 Client ID: FRNP005  
Matrix: WG  
Collect Date: 30-JUL-24 10:26  
Receive Date: 31-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	UY2	0.0190	0.00855	0.0190	ug/L	0.950	1	LOF	08/05/24	1834	2650874	2
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average		2.04	0.330	2.00	mg/L		1	KB3	08/19/24	0546	2656558	3
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	08/05/24	0718	2649652	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens		22.0	3.33	10.0	ug/L		1	JS13	08/20/24	2039	2659943	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	08/12/24	2024	2654906	6
SW846 9056A Anions (5 elements) "As Received"												
Bromide		0.485	0.0670	0.200	mg/L		1	CWW	07/31/24	1800	2649148	7
Fluoride	J	0.236	0.0330	4.00	mg/L		1					
Nitrate-N	J	0.727	0.0330	10.0	mg/L		1					
Sulfate		17.1	0.133	0.400	mg/L		1					
Chloride	JW	44.6	0.670	250	mg/L		10	CWW	08/01/24	0540	2649148	8
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.102	0.0341	0.102	ug/L	0.00102	1	YS1	08/15/24	1914	2655716	9
Aroclor-1221	U	0.102	0.0341	0.102	ug/L	0.00102	1					
Aroclor-1232	U	0.102	0.0341	0.102	ug/L	0.00102	1					
Aroclor-1242	U	0.102	0.0341	0.102	ug/L	0.00102	1					
Aroclor-1248	U	0.102	0.0341	0.102	ug/L	0.00102	1					
Aroclor-1254	U	0.102	0.0341	0.102	ug/L	0.00102	1					
Aroclor-1260	U	0.102	0.0341	0.102	ug/L	0.00102	1					
Aroclor-1268	U	0.102	0.0341	0.102	ug/L	0.00102	1					
Aroclor-Total	U	0.102	0.0341	0.102	ug/L	0.00102	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		309	2.38	10.0	mg/L			KLP1	08/05/24	1349	2651532	10



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## Certificate of Analysis

Report Date: November 4, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW374UG4-24R

Project: FRNP00507

Sample ID: 678290006

Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
Methylene chloride	U	5.00	0.500	5.00	ug/L		1					
Styrene	U	1.00	0.333	1.00	ug/L		1					
Tetrachloroethylene	U	1.00	0.333	1.00	ug/L		1					
Toluene	U	1.00	0.333	1.00	ug/L		1					
Trichloroethylene	U	1.00	0.333	1.00	ug/L		1					
Trichlorofluoromethane	U	1.00	0.333	1.00	ug/L		1					
Vinyl acetate	U	5.00	1.67	5.00	ug/L		1					
Vinyl chloride	U	1.00	0.333	1.00	ug/L		1					
Xylenes (total)	U	3.00	1.00	3.00	ug/L		1					
cis-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
cis-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,4-Dichloro-2-butene	U	5.00	1.67	5.00	ug/L		1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 8011 PREP	8011 Prep	LOF	08/05/24	1206	2650873
SW846 3535A	SW3535A PCB SPE Extraction	DXF4	08/14/24	0530	2655708
SW846 9010C Distillation	SW846 9010C Prep	ES2	08/01/24	1201	2649651



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Report Date: November 4, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: TB5UG4-24      Project: FRNP00507  
Sample ID: 678290007      Client ID: FRNP005  
Matrix: WATER  
Collect Date: 30-JUL-24 06:30  
Receive Date: 31-JUL-24  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	UY2	0.0191	0.00861	0.0191	ug/L	0.957	1	LOF	08/05/24	1904	2650874	2
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	JB6	08/06/24	1551	2651855	3
1,1,1-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
1,2,3-Trichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dibromoethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,4-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
2-Butanone	U	5.00	1.67	5.00	ug/L		1					
2-Hexanone	U	5.00	1.67	5.00	ug/L		1					
4-Methyl-2-pentanone	U	5.00	1.67	5.00	ug/L		1					
Acetone	J	2.86	1.74	5.00	ug/L		1					
Acrolein	U	5.00	1.67	5.00	ug/L		1					
Acrylonitrile	U	5.00	1.67	5.00	ug/L		1					
Benzene	U	1.00	0.333	1.00	ug/L		1					
Bromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromodichloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromoform	U	1.00	0.333	1.00	ug/L		1					
Bromomethane	U	1.00	0.337	1.00	ug/L		1					
Carbon disulfide	U	5.00	1.67	5.00	ug/L		1					
Carbon tetrachloride	U	1.00	0.333	1.00	ug/L		1					
Chlorobenzene	U	1.00	0.333	1.00	ug/L		1					
Chloroethane	U	1.00	0.333	1.00	ug/L		1					
Chloroform	U	1.00	0.333	1.00	ug/L		1					
Chloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromomethane	U	1.00	0.333	1.00	ug/L		1					
Ethylbenzene	U	1.00	0.333	1.00	ug/L		1					
Iodomethane	U	5.00	1.67	5.00	ug/L		1					

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## Certificate of Analysis

Report Date: November 4, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: TB5UG4-24

Project: FRNP00507

Sample ID: 678290007

Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
Methylene chloride	U	5.00	0.500	5.00	ug/L		1					
Styrene	U	1.00	0.333	1.00	ug/L		1					
Tetrachloroethylene	U	1.00	0.333	1.00	ug/L		1					
Toluene	U	1.00	0.333	1.00	ug/L		1					
Trichloroethylene	U	1.00	0.333	1.00	ug/L		1					
Trichlorofluoromethane	U	1.00	0.333	1.00	ug/L		1					
Vinyl acetate	U	5.00	1.67	5.00	ug/L		1					
Vinyl chloride	U	1.00	0.333	1.00	ug/L		1					
Xylenes (total)	U	3.00	1.00	3.00	ug/L		1					
cis-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
cis-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,2-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,3-Dichloropropylene	U	1.00	0.333	1.00	ug/L		1					
trans-1,4-Dichloro-2-butene	U	5.00	1.67	5.00	ug/L		1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 8011 PREP	8011 Prep	LOF	08/05/24	1206	2650873

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 8011	
2	SW846 8011	
3	SW846 8260D	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	6.36 ug/L	6.84	93	(56%-149%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	48.8 ug/L	50.0	98	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	51.1 ug/L	50.0	102	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	50.0 ug/L	50.0	100	(77%-121%)

Notes:

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## Certificate of Analysis

Report Date: November 4, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Contact: Kevil, Kentucky 42053  
Ms. Jaime Morrow  
Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: TB5UG4-24  
Sample ID: 678290007

Project: FRNP00507  
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time Batch	Method
-----------	-----------	--------	----	----	-------	----	----	---------	------	------------	--------

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

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**ATTACHMENT C7**

**GEL LABORATORIES CERTIFICATE OF ANALYSIS**

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# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW360UG4-24

Project: FRNP00507

Sample ID: 683634001

Client ID: FRNP005

Matrix: WG

Collect Date: 15-JUL-24 08:25

Receive Date: 16-JUL-24

Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	HJ	6.18	3.33	10.0	ug/L		1	JS13	09/03/24	1259	2665460	1

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	SW846 9020B		

### Notes:

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: November 3, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-04)

Client Sample ID: MW362UG4-24

Project: FRNP00507

Sample ID: 683634002

Client ID: FRNP005

Matrix: WG

Collect Date: 15-JUL-24 10:14

Receive Date: 16-JUL-24

Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	H	21.9	3.33	10.0	ug/L		1	JS13	09/03/24	1744	2665460	1

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	SW846 9020B		

### Notes:

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

SQL: Sample Quantitation Limit

**APPENDIX D**  
**STATISTICAL ANALYSES AND**  
**QUALIFICATION STATEMENT**

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# GROUNDWATER STATISTICAL COMMENTS

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## Introduction

The statistical analyses conducted on the third quarter 2024 groundwater data collected from the C-746-U Contained Landfill monitoring wells (MWs) were performed in accordance with Permit GSTR0001, Standard Requirement 3, using the U.S. Environmental Protection Agency (EPA) guidance document, *EPA Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Interim Final Guidance* (1989). A statistician qualification statement has been provided for this analysis.

The statistical evaluation was conducted separately for the three groundwater systems: the Upper Continental Recharge System (UCRS), the Upper Regional Gravel Aquifer (URGA), and the Lower Regional Gravel Aquifer (LRGA). For each groundwater system, data from wells considered to represent background conditions were compared with test wells (downgradient or sidegradient wells) (Exhibit D.1). The third quarter 2024 data used to conduct the statistical analyses were collected in July 2024. The statistical analyses for this report first used data from the first eight quarters that had been sampled for each parameter to develop the historical background value, beginning with the first two baseline sampling events in 2002, when available. Then a second set of statistical analyses, using the last eight quarters, was run on analytes that had at least one downgradient well that had exceeded the historical background. The sampling dates associated with both the historical and the current background data are listed next to the result in the statistical analysis sheets of this appendix.

## Statistical Analysis Process

Constituents of concern that have Kentucky maximum contaminant levels (MCLs) and results that do not exceed their respective MCL are not included in the statistical evaluation. Parameters that have MCLs can be found in 401 KAR 47:030 § 6, *Maximum Groundwater Contaminant Levels*. For parameters with no established MCL and those parameters that exceed their MCLs, the most recent results are compared to historical background concentrations, as follows: the data are divided into censored and uncensored observations. The one-sided tolerance interval statistical test is conducted only on parameters that have at least one uncensored (detected) observation. The current result is compared to the results of the one-sided tolerance interval statistical test to determine if the current data exceed the historical background concentration calculated using the first eight quarters of data. The tolerance interval statistical analysis is conducted separately for each parameter in each well (no pooling of downgradient data).

For the statistical analysis of pH, a two-sided tolerance interval statistical test is conducted. The test well results are compared to both an upper and lower tolerance limit (TL) to determine if statistically significant deviations in concentrations exist with respect to upgradient (background) well data from the first eight quarters.

Statistical analyses are performed on the first eight quarters of historical background data, not on the data for the current quarter. Once a statistical result is obtained using the background data, the result for the current quarter is compared to that value. If the value is exceeded, the well is considered to have an exceedance of the statistically derived historical background concentration.

**Exhibit D.1. Station Identification for Monitoring Wells Analyzed**

<b>Station</b>	<b>Type</b>	<b>Groundwater Unit</b>
MW357	TW	URGA
MW358	TW	LRGA
MW359 <sup>a</sup>	TW	UCRS
MW360	TW	URGA
MW361	TW	LRGA
MW362 <sup>a</sup>	TW	UCRS
MW363	TW	URGA
MW364	TW	LRGA
MW365 <sup>a</sup>	TW	UCRS
MW366	TW	URGA
MW367	TW	LRGA
MW368 <sup>a</sup>	TW	UCRS
MW369	BG	URGA
MW370	BG	LRGA
MW371 <sup>a</sup>	BG	UCRS
MW372	BG	URGA
MW373	BG	LRGA
MW374 <sup>a</sup>	BG	UCRS
MW375 <sup>a</sup>	SG	UCRS
MW376 <sup>a,b</sup>	SG	UCRS
MW377 <sup>a,b</sup>	SG	UCRS

<sup>a</sup> The gradients in UCRS wells are downward and, hydrogeologically, UCRS wells are not considered upgradient, downgradient, or sidegradient from the C-746-U Contained Landfill. The UCRS wells identified as upgradient, sidegradient, or downgradient are those wells located in the same general direction as the LRGA and URGA wells considered to be upgradient, sidegradient, or downgradient.

<sup>b</sup> Well was dry this quarter, and a groundwater sample could not be collected.

BG: upgradient or background wells

TW: downgradient or test wells

SG: sidegradient wells

For those parameters that are determined to exceed the historical background concentration, a second one-sided tolerance interval statistical test, or a two-sided tolerance interval statistical test in the case of pH, is conducted. The second one-sided tolerance interval statistical test is conducted to determine whether the current concentration in downgradient wells exceeds the current background, as determined by a comparison against the statistically derived upper TL using the most recent eight quarters of data for the relevant background wells. For the statistical analysis of pH, a two-sided tolerance interval statistical test is conducted, if required. The test well pH results are compared to both an upper and lower TL to determine if the current pH is different from the current background level to a statistically significant level. The tolerance interval statistical analysis is conducted separately for each parameter in each well (no pooling of downgradient data).

Statistical analyses are performed on the last eight quarters of current background data, not on the data for the current quarter. Once a statistical result is obtained using the background data, the result for the current quarter is compared to that value. If the value is exceeded, the well has an exceedance of the statistically derived current background concentration.

A stepwise list of the one-sided tolerance interval statistical procedure applied to the data is summarized below.<sup>1</sup>

1. The TL is calculated for the background data (first using the first eight quarters, then using the last eight quarters, if required).
  - For each parameter, the background data are used to establish a baseline. On this data set, the mean (X) and the standard deviation (S) are computed.
  - The data set is checked for normality using coefficient of variation (CV). If  $CV \leq 1.0$ , then the data are assumed to be normally distributed. Data sets with  $CV > 1.0$  are assumed to be log-normally distributed; for data sets with  $CV > 1.0$ , the data are log-transformed and analyzed.
  - The factor (K) for one-sided upper TL with 95% minimum coverage is determined (Table 5, Appendix B, *EPA Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Interim Final Guidance*, 1989) based on the number of background data points.
  - The one-sided upper TL is calculated using the following equation:  
$$TL = X + (K \times S)$$
2. Each observation from downgradient wells is compared to the calculated one-sided upper TL in Step 1. If an observation value exceeds the TL, then there is statistically significant evidence that the well concentration exceeds the historical background.

### Type of Data Used

Exhibit D.1 presents the upgradient or background wells (identified as “BG”), the downgradient or test wells (identified as “TW”), and the sidegradient wells (identified as “SG”) for the C-746-U Contained Landfill. Exhibit D.2 presents the parameters from the available data set for which a statistical test was performed using the one-sided tolerance interval.

Exhibits D.3, D.4, and D.5 list the number of analyses (observations), nondetects (censored observations), and detects (uncensored observations), by parameter in the UCRS, the URGA, and the LRGA, respectively. Those parameters displayed with bold-face type indicate the one-sided tolerance interval statistical test was performed. The data presented in Exhibits D.3, D.4, and D.5 were collected during the current quarter, third quarter 2024. The observations are representative of the current quarter data. Background data are presented in Attachments D1 and D2. The sampling dates associated with background data are listed next to the result in Attachments D1 and D2. When field duplicate data are available, the higher of the two readings is retained for further evaluation. When a data point has been rejected following data validation or data assessment, this result is not used, and the next available data point is used for the background or current quarter data.

---

<sup>1</sup> For pH, two-sided TLs (upper and lower) were calculated with an adjusted K factor using the following equations:

$$\begin{aligned} \text{upper TL} &= X + (K \times S) \\ \text{lower TL} &= X - (K \times S) \end{aligned}$$

**Exhibit D.2. List of Parameters Tested Using the One-Sided Upper Tolerance Level Test with Historical Background**

---

<b>Parameters</b>
Aluminum
Boron
Bromide
Calcium
Chemical Oxygen Demand (COD)
Chloride
Cobalt
Conductivity
Copper
Dissolved Oxygen
Dissolved Solids
Iron
Magnesium
Manganese
Methylene Chloride
Molybdenum
Nickel
Oxidation-Reduction Potential <sup>a</sup>
pH <sup>b</sup>
Potassium
Sodium
Sulfate
Technetium-99
Total Organic Carbon (TOC)
Total Organic Halides (TOX)
Vanadium
Zinc

---

<sup>a</sup> Oxidation-Reduction Potential calibrated as Eh.

<sup>b</sup> For pH, the test well results were compared to both an upper and lower TL to determine if the current result differs to a statistically significant degree from the historical background values.

**Exhibit D.3. Summary of Censored, and Uncensored Data—UCRS**

<b>Parameters</b>	<b>Observations</b>	<b>Censored Observation</b>	<b>Uncensored Observation</b>	<b>Statistical Analysis?</b>
1,1,1,2-Tetrachloroethane	7	7	0	No
1,1,2,2-Tetrachloroethane	7	7	0	No
1,1,2-Trichloroethane	7	7	0	No
1,1-Dichloroethane	7	7	0	No
1,2,3-Trichloropropane	7	7	0	No
1,2-Dibromo-3-chloropropane	7	7	0	No
1,2-Dibromoethane	7	7	0	No
1,2-Dichlorobenzene	7	7	0	No
1,2-Dichloropropane	7	7	0	No
2-Butanone	7	7	0	No
2-Hexanone	7	7	0	No
4-Methyl-2-pentanone	7	7	0	No
Acetone	7	7	0	No
Acrolein	7	7	0	No
Acrylonitrile	7	7	0	No
<b>Aluminum</b>	<b>7</b>	<b>0</b>	<b>7</b>	<b>Yes</b>
Antimony	7	7	0	No
Beryllium	7	7	0	No
<b>Boron</b>	<b>7</b>	<b>2</b>	<b>5</b>	<b>Yes</b>
<b>Bromide</b>	<b>7</b>	<b>6</b>	<b>1</b>	<b>Yes</b>
Bromochloromethane	7	7	0	No
Bromodichloromethane	7	7	0	No
Bromoform	7	7	0	No
Bromomethane	7	7	0	No
<b>Calcium</b>	<b>7</b>	<b>0</b>	<b>7</b>	<b>Yes</b>
Carbon disulfide	7	7	0	No
<b>Chemical Oxygen Demand (COD)</b>	<b>7</b>	<b>1</b>	<b>6</b>	<b>Yes</b>
<b>Chloride</b>	<b>7</b>	<b>0</b>	<b>7</b>	<b>Yes</b>
Chlorobenzene	7	7	0	No
Chloroethane	7	7	0	No
Chloroform	7	7	0	No
Chloromethane	7	7	0	No
<i>cis</i> -1,2-Dichloroethene	7	7	0	No
<i>cis</i> -1,3-Dichloropropene	7	7	0	No
<b>Cobalt</b>	<b>7</b>	<b>5</b>	<b>2</b>	<b>Yes</b>
<b>Conductivity</b>	<b>7</b>	<b>0</b>	<b>7</b>	<b>Yes</b>
<b>Copper</b>	<b>7</b>	<b>0</b>	<b>7</b>	<b>Yes</b>
Cyanide	7	7	0	No
Dibromochloromethane	7	7	0	No
Dibromomethane	7	7	0	No
Dimethylbenzene, Total	7	7	0	No
<b>Dissolved Oxygen</b>	<b>7</b>	<b>0</b>	<b>7</b>	<b>Yes</b>
<b>Dissolved Solids</b>	<b>7</b>	<b>0</b>	<b>7</b>	<b>Yes</b>
Ethylbenzene	7	7	0	No
Iodide	7	7	0	No
Iodomethane	7	7	0	No
<b>Iron</b>	<b>7</b>	<b>1</b>	<b>6</b>	<b>Yes</b>
<b>Magnesium</b>	<b>7</b>	<b>0</b>	<b>7</b>	<b>Yes</b>
<b>Manganese</b>	<b>7</b>	<b>0</b>	<b>7</b>	<b>Yes</b>
<b>Methylene chloride</b>	<b>7</b>	<b>6</b>	<b>1</b>	<b>Yes</b>
<b>Molybdenum</b>	<b>7</b>	<b>4</b>	<b>3</b>	<b>Yes</b>
<b>Nickel</b>	<b>7</b>	<b>0</b>	<b>7</b>	<b>Yes</b>
<b>Oxidation-Reduction Potential</b>	<b>7</b>	<b>0</b>	<b>7</b>	<b>Yes</b>

Exhibit D.3. Summary of Censored, and Uncensored Data—UCRS (Continued)

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
PCB, Total	7	7	0	No
PCB-1016	7	7	0	No
PCB-1221	7	7	0	No
PCB-1232	7	7	0	No
PCB-1242	7	7	0	No
PCB-1248	7	7	0	No
PCB-1254	7	7	0	No
PCB-1260	7	7	0	No
PCB-1268	7	7	0	No
<b>pH</b>	<b>7</b>	<b>0</b>	<b>7</b>	<b>Yes</b>
<b>Potassium</b>	<b>7</b>	<b>0</b>	<b>7</b>	<b>Yes</b>
Radium-226	7	7	0	No
Rhodium	7	7	0	No
<b>Sodium</b>	<b>7</b>	<b>0</b>	<b>7</b>	<b>Yes</b>
Styrene	7	7	0	No
<b>Sulfate</b>	<b>7</b>	<b>0</b>	<b>7</b>	<b>Yes</b>
Tantalum	7	7	0	No
Technetium-99	7	7	0	No
Tetrachloroethene	7	7	0	No
Thallium	7	7	0	No
Thorium-230	7	7	0	No
Toluene	7	7	0	No
<b>Total Organic Carbon (TOC)</b>	<b>7</b>	<b>0</b>	<b>7</b>	<b>Yes</b>
<b>Total Organic Halides (TOX)</b>	<b>7</b>	<b>0</b>	<b>7</b>	<b>Yes</b>
<i>trans</i> -1,2-Dichloroethene	7	7	0	No
<i>trans</i> -1,3-Dichloropropene	7	7	0	No
<i>trans</i> -1,4-Dichloro-2-Butene	7	7	0	No
Trichlorofluoromethane	7	7	0	No
<b>Vanadium</b>	<b>7</b>	<b>5</b>	<b>2</b>	<b>Yes</b>
Vinyl Acetate	7	7	0	No
<b>Zinc</b>	<b>7</b>	<b>4</b>	<b>3</b>	<b>Yes</b>

**Bold** denotes parameters with at least one uncensored observation.

**Exhibit D.4. Summary of Censored, and Uncensored Data—URGA**

<b>Parameters</b>	<b>Observations</b>	<b>Censored Observation</b>	<b>Uncensored Observation</b>	<b>Statistical Analysis?</b>
1,1,1,2-Tetrachloroethane	6	6	0	No
1,1,2,2-Tetrachloroethane	6	6	0	No
1,1,2-Trichloroethane	6	6	0	No
1,1-Dichloroethane	6	6	0	No
1,2,3-Trichloropropane	6	6	0	No
1,2-Dibromo-3-chloropropane	6	6	0	No
1,2-Dibromoethane	6	6	0	No
1,2-Dichlorobenzene	6	6	0	No
1,2-Dichloropropane	6	6	0	No
2-Butanone	6	6	0	No
2-Hexanone	6	6	0	No
4-Methyl-2-pentanone	6	6	0	No
Acetone	6	6	0	No
Acrolein	6	6	0	No
Acrylonitrile	6	6	0	No
<b>Aluminum</b>	<b>6</b>	<b>3</b>	<b>3</b>	<b>Yes</b>
Antimony	6	6	0	No
Beryllium	6	6	0	No
<b>Boron</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
<b>Bromide</b>	<b>6</b>	<b>1</b>	<b>5</b>	<b>Yes</b>
Bromochloromethane	6	6	0	No
Bromodichloromethane	6	6	0	No
Bromoform	6	6	0	No
Bromomethane	6	6	0	No
<b>Calcium</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
Carbon disulfide	6	6	0	No
<b>Chemical Oxygen Demand (COD)</b>	<b>6</b>	<b>4</b>	<b>2</b>	<b>Yes</b>
<b>Chloride</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
Chlorobenzene	6	6	0	No
Chloroethane	6	6	0	No
Chloroform	6	6	0	No
Chloromethane	6	6	0	No
<i>cis</i> -1,2-Dichloroethene	6	6	0	No
<i>cis</i> -1,3-Dichloropropene	6	6	0	No
<b>Cobalt</b>	<b>6</b>	<b>2</b>	<b>4</b>	<b>Yes</b>
<b>Conductivity</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
<b>Copper</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
Cyanide	6	6	0	No
Dibromochloromethane	6	6	0	No
Dibromomethane	6	6	0	No
Dimethylbenzene, Total	6	6	0	No
<b>Dissolved Oxygen</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
<b>Dissolved Solids</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
Ethylbenzene	6	6	0	No
Iodide	6	6	0	No
Iodomethane	6	6	0	No
<b>Iron</b>	<b>6</b>	<b>1</b>	<b>5</b>	<b>Yes</b>
<b>Magnesium</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
<b>Manganese</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
Methylene chloride	6	6	0	No
<b>Molybdenum</b>	<b>6</b>	<b>5</b>	<b>1</b>	<b>Yes</b>
<b>Nickel</b>	<b>6</b>	<b>1</b>	<b>5</b>	<b>Yes</b>
<b>Oxidation-Reduction Potential</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>

**Exhibit D.4. Summary of Censored, and Uncensored Data—URGA (Continued)**

<b>Parameters</b>	<b>Observations</b>	<b>Censored Observation</b>	<b>Uncensored Observation</b>	<b>Statistical Analysis?</b>
PCB, Total	6	6	0	No
PCB-1016	6	6	0	No
PCB-1221	6	6	0	No
PCB-1232	6	6	0	No
PCB-1242	6	6	0	No
PCB-1248	6	6	0	No
PCB-1254	6	6	0	No
PCB-1260	6	6	0	No
PCB-1268	6	6	0	No
<b>pH</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
<b>Potassium</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
Radium-226	6	6	0	No
Rhodium	6	6	0	No
<b>Sodium</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
Styrene	6	6	0	No
<b>Sulfate</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
Tantalum	6	6	0	No
<b>Technetium-99</b>	<b>6</b>	<b>3</b>	<b>3</b>	<b>Yes</b>
Tetrachloroethene	6	6	0	No
Thallium	6	6	0	No
Thorium-230	6	6	0	No
Toluene	6	6	0	No
<b>Total Organic Carbon (TOC)</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
<b>Total Organic Halides (TOX)</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
<i>trans</i> -1,2-Dichloroethene	6	6	0	No
<i>trans</i> -1,3-Dichloropropene	6	6	0	No
<i>trans</i> -1,4-Dichloro-2-Butene	6	6	0	No
Trichlorofluoromethane	6	6	0	No
Vanadium	6	6	0	No
Vinyl Acetate	6	6	0	No
<b>Zinc</b>	<b>6</b>	<b>2</b>	<b>4</b>	<b>Yes</b>

**Bold** denotes parameters with at least one uncensored observation.

Exhibit D.5. Summary of Censored, and Uncensored Data—LRGA

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
1,1,1,2-Tetrachloroethane	6	6	0	No
1,1,2,2-Tetrachloroethane	6	6	0	No
1,1,2-Trichloroethane	6	6	0	No
1,1-Dichloroethane	6	6	0	No
1,2,3-Trichloropropane	6	6	0	No
1,2-Dibromo-3-chloropropane	6	6	0	No
1,2-Dibromoethane	6	6	0	No
1,2-Dichlorobenzene	6	6	0	No
1,2-Dichloropropane	6	6	0	No
2-Butanone	6	6	0	No
2-Hexanone	6	6	0	No
4-Methyl-2-pentanone	6	6	0	No
Acetone	6	6	0	No
Acrolein	6	6	0	No
Acrylonitrile	6	6	0	No
<b>Aluminum</b>	<b>6</b>	<b>3</b>	<b>3</b>	<b>Yes</b>
Antimony	6	6	0	No
Beryllium	6	6	0	No
<b>Boron</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
<b>Bromide</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
Bromochloromethane	6	6	0	No
Bromodichloromethane	6	6	0	No
Bromoform	6	6	0	No
Bromomethane	6	6	0	No
<b>Calcium</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
Carbon disulfide	6	6	0	No
<b>Chemical Oxygen Demand (COD)</b>	<b>6</b>	<b>3</b>	<b>3</b>	<b>Yes</b>
<b>Chloride</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
Chlorobenzene	6	6	0	No
Chloroethane	6	6	0	No
Chloroform	6	6	0	No
Chloromethane	6	6	0	No
<i>cis</i> -1,2-Dichloroethene	6	6	0	No
<i>cis</i> -1,3-Dichloropropene	6	6	0	No
<b>Cobalt</b>	<b>6</b>	<b>3</b>	<b>3</b>	<b>Yes</b>
<b>Conductivity</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
<b>Copper</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
Cyanide	6	6	0	No
Dibromochloromethane	6	6	0	No
Dibromomethane	6	6	0	No
Dimethylbenzene, Total	6	6	0	No
<b>Dissolved Oxygen</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
<b>Dissolved Solids</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
Ethylbenzene	6	6	0	No
Iodide	6	6	0	No
Iodomethane	6	6	0	No
<b>Iron</b>	<b>6</b>	<b>2</b>	<b>4</b>	<b>Yes</b>
<b>Magnesium</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
<b>Manganese</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
Methylene chloride	6	6	0	No
<b>Molybdenum</b>	<b>6</b>	<b>4</b>	<b>2</b>	<b>Yes</b>

**Exhibit D.5. Summary of Censored, and Uncensored Data—LRGA (Continued)**

<b>Parameters</b>	<b>Observations</b>	<b>Censored Observation</b>	<b>Uncensored Observation</b>	<b>Statistical Analysis?</b>
<b>Nickel</b>	<b>6</b>	<b>2</b>	<b>4</b>	<b>Yes</b>
<b>Oxidation-Reduction Potential</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
PCB, Total	6	6	0	No
PCB-1016	6	6	0	No
PCB-1221	6	6	0	No
PCB-1232	6	6	0	No
PCB-1242	6	6	0	No
PCB-1248	6	6	0	No
PCB-1254	6	6	0	No
PCB-1260	6	6	0	No
PCB-1268	6	6	0	No
<b>pH</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
<b>Potassium</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
Radium-226	6	6	0	No
Rhodium	6	6	0	No
<b>Sodium</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
Styrene	6	6	0	No
<b>Sulfate</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>Yes</b>
Tantalum	6	6	0	No
<b>Technetium-99</b>	<b>6</b>	<b>3</b>	<b>3</b>	<b>Yes</b>
Tetrachloroethene	6	6	0	No
Thallium	6	6	0	No
Thorium-230	6	6	0	No
Toluene	6	6	0	No
<b>Total Organic Carbon (TOC)</b>	<b>6</b>	<b>1</b>	<b>5</b>	<b>Yes</b>
<b>Total Organic Halides (TOX)</b>	<b>6</b>	<b>1</b>	<b>5</b>	<b>Yes</b>
<i>trans</i> -1,2-Dichloroethene	6	6	0	No
<i>trans</i> -1,3-Dichloropropene	6	6	0	No
<i>trans</i> -1,4-Dichloro-2-Butene	6	6	0	No
Trichlorofluoromethane	6	6	0	No
Vanadium	6	6	0	No
Vinyl Acetate	6	6	0	No
<b>Zinc</b>	<b>6</b>	<b>1</b>	<b>5</b>	<b>Yes</b>

**Bold** denotes parameters with at least one uncensored observation.

## **Discussion of Results from Historical Background Comparison**

For the UCRS, URGA, and LRGA, the concentrations of this quarter were compared to the results of the one-sided tolerance interval test calculated using historical background and are presented in Attachment D1. The statistician qualification statement is presented in Attachment D3. For the UCRS, URGA, and LRGA, the test was applied to 26, 25, and 25 parameters, respectively, including those listed in bold print in Exhibits D.3, D.4, and D.5, which includes those constituents that exceeded their MCL. A summary of exceedances when compared to statistically derive historical upgradient background by well number is shown in Exhibit D.6.

### **UCRS**

This quarter's results identified historical background exceedances for dissolved oxygen, oxidation-reduction potential, and sulfate.

### **URGA**

This quarter's results identified historical background exceedances for calcium, conductivity, dissolved solids, magnesium, oxidation-reduction potential, sulfate, and technetium-99.

### **LRGA**

This quarter's results identified historical background exceedances for calcium, dissolved oxygen, oxidation-reduction potential, and technetium-99.

## **Statistical Summary**

Summaries of the results of the statistical tests conducted on data obtained from wells in the UCRS, the URGA, and in the LRGA in comparison to historical data are presented in Exhibit D.7, Exhibit D.8, and Exhibit D.9, respectively.

**Exhibit D.6. Summary of Exceedances of Statistically Derived Historical Background Concentrations**

UCRS	URGA	LRGA
<b>MW359:</b> Dissolved Oxygen, Oxidation-Reduction Potential,* and Sulfate	<b>MW357:</b> Oxidation-Reduction Potential*	<b>MW358:</b> Oxidation-Reduction Potential*
<b>MW362:</b> Dissolved Oxygen, Oxidation-Reduction Potential,* and Sulfate	<b>MW360:</b> Oxidation-Reduction Potential*	<b>MW361:</b> Dissolved Oxygen and Oxidation-Reduction Potential*
<b>MW365:</b> Dissolved Oxygen, Oxidation-Reduction Potential,* and Sulfate	<b>MW363:</b> Oxidation-Reduction Potential*	<b>MW364:</b> Oxidation-Reduction Potential* and Technetium-99
<b>MW368:</b> Dissolved Oxygen, Oxidation-Reduction Potential,* and Sulfate	<b>MW366:</b> Oxidation-Reduction Potential* and Technetium-99	<b>MW367:</b> Oxidation-Reduction Potential*
<b>MW371:</b> Dissolved Oxygen and Oxidation-Reduction Potential*	<b>MW369:</b> Oxidation-Reduction Potential*	<b>MW370:</b> Oxidation-Reduction Potential*
<b>MW374:</b> Oxidation-Reduction Potential* and Sulfate	<b>MW372:</b> Calcium, Conductivity, Dissolved Solids, Magnesium, Oxidation-Reduction Potential,* and Sulfate	<b>MW373:</b> Calcium and Oxidation-Reduction Potential*
<b>MW375:</b> Oxidation-Reduction Potential* and Sulfate		

\*Oxidation-Reduction Potential calibrated as Eh.

**Exhibit D.7. Test Summaries for Qualified Parameters for Historical Background—UCRS**

<b>Parameter</b>	<b>Performed Test</b>	<b>CV Normality Test<sup>a</sup></b>	<b>Results of Tolerance Interval Test Conducted</b>
Aluminum	Tolerance Interval	2.08	No exceedance of statistically derived historical background concentration.
Boron	Tolerance Interval	1.24	No exceedance of statistically derived historical background concentration.
Bromide	Tolerance Interval	0.34	No exceedance of statistically derived historical background concentration.
Calcium	Tolerance Interval	0.40	No exceedance of statistically derived historical background concentration.
COD	Tolerance Interval	0.97	No exceedance of statistically derived historical background concentration.
Chloride	Tolerance Interval	0.95	No exceedance of statistically derived historical background concentration.
Cobalt	Tolerance Interval	1.31	No exceedance of statistically derived historical background concentration.
Conductivity	Tolerance Interval	0.45	No exceedance of statistically derived historical background concentration.
Copper	Tolerance Interval	1.27	No exceedance of statistically derived historical background concentration.
Dissolved Oxygen	Tolerance Interval	0.55	Current results exceed statistically derived historical background concentration in MW359, MW362, MW365, MW368, and MW371.
Dissolved Solids	Tolerance Interval	0.42	No exceedance of statistically derived historical background concentration.
Iron	Tolerance Interval	0.98	No exceedance of statistically derived historical background concentration.
Magnesium	Tolerance Interval	0.27	No exceedance of statistically derived historical background concentration.
Manganese	Tolerance Interval	0.89	No exceedance of statistically derived historical background concentration.
Methylene Chloride	Tolerance Interval	0.29	No exceedance of statistically derived historical background concentration.
Molybdenum	Tolerance Interval	1.65	No exceedance of statistically derived historical background concentration.
Nickel	Tolerance Interval	0.98	No exceedance of statistically derived historical background concentration.
Oxidation-Reduction Potential <sup>b</sup>	Tolerance Interval	3.54	Current results exceed statistically derived historical background concentration in MW359, MW362, MW365, MW368, MW371, MW374, and MW375.
pH	Tolerance Interval	0.04	No exceedance of statistically derived historical background concentration.
Potassium	Tolerance Interval	0.72	No exceedance of statistically derived historical background concentration.
Sodium	Tolerance Interval	0.40	No exceedance of statistically derived historical background concentration.
Sulfate	Tolerance Interval	0.49	Current results exceed statistically derived historical background concentration in MW359, MW362, MW365, MW368, MW374, and MW375.
TOC	Tolerance Interval	1.38	No exceedance of statistically derived historical background concentration.

**Exhibit D.7. Test Summaries for Qualified Parameters for Historical Background—UCRS (Continued)**

<b>Parameter</b>	<b>Performed Test</b>	<b>CV Normality Test<sup>a</sup></b>	<b>Results of Tolerance Interval Test Conducted</b>
TOX	Tolerance Interval	1.08	No exceedance of statistically derived historical background concentration.
Vanadium	Tolerance Interval	1.32	No exceedance of statistically derived historical background concentration.
Zinc	Tolerance Interval	1.38	No exceedance of statistically derived historical background concentration.

CV: coefficient of variation

<sup>a</sup> If CV > 1.0, used log-transformed data.

<sup>b</sup> Oxidation-Reduction Potential calibrated as Eh.

**Exhibit D.8. Test Summaries for Qualified Parameters for Historical Background—URGA**

<b>Parameter</b>	<b>Performed Test</b>	<b>CV Normality Test<sup>a</sup></b>	<b>Results of Tolerance Interval Test Conducted</b>
Aluminum	Tolerance Interval	1.24	No exceedance of statistically derived historical background concentration.
Boron	Tolerance Interval	0.84	No exceedance of statistically derived historical background concentration.
Bromide	Tolerance Interval	0.00	No exceedance of statistically derived historical background concentration.
Calcium	Tolerance Interval	0.29	Current results exceed statistically derived historical background concentration in MW372.
COD	Tolerance Interval	0.10	No exceedance of statistically derived historical background concentration.
Chloride	Tolerance Interval	0.10	No exceedance of statistically derived historical background concentration.
Cobalt	Tolerance Interval	0.84	No exceedance of statistically derived historical background concentration.
Conductivity	Tolerance Interval	0.12	Current results exceed statistically derived historical background concentration in MW372.
Copper	Tolerance Interval	0.40	No exceedance of statistically derived historical background concentration.
Dissolved Oxygen	Tolerance Interval	0.76	No exceedance of statistically derived historical background concentration.
Dissolved Solids	Tolerance Interval	0.16	Current results exceed statistically derived historical background concentration in MW372.
Iron	Tolerance Interval	0.95	No exceedance of statistically derived historical background concentration.
Magnesium	Tolerance Interval	0.27	Current results exceed statistically derived historical background concentration in MW372.
Manganese	Tolerance Interval	0.66	No exceedance of statistically derived historical background concentration.
Molybdenum	Tolerance Interval	1.20	No exceedance of statistically derived historical background concentration.
Nickel	Tolerance Interval	0.91	No exceedance of statistically derived historical background concentration.
Oxidation-Reduction Potential <sup>b</sup>	Tolerance Interval	1.26	Current results exceed statistically derived historical background concentration in MW357, MW360, MW363, MW366, MW369, and MW372.
pH	Tolerance Interval	0.03	No exceedance of statistically derived historical background concentration.
Potassium	Tolerance Interval	0.29	No exceedance of statistically derived historical background concentration.
Sodium	Tolerance Interval	0.26	No exceedance of statistically derived historical background concentration.

**Exhibit D.8. Test Summaries for Qualified Parameters for Historical Background—URGA (Continued)**

<b>Parameter</b>	<b>Performed Test</b>	<b>CV Normality Test<sup>a</sup></b>	<b>Results of Tolerance Interval Test Conducted</b>
Sulfate	Tolerance Interval	0.75	Current results exceed statistically derived historical background concentration in MW372.
Technetium-99	Tolerance Interval	0.87	Current results exceed statistically derived historical background concentration in MW366.
TOC	Tolerance Interval	1.23	No exceedance of statistically derived historical background concentration.
TOX	Tolerance Interval	0.95	No exceedance of statistically derived historical background concentration.
Zinc	Tolerance Interval	1.49	No exceedance of statistically derived historical background concentration.

CV: coefficient of variation

<sup>a</sup> If CV > 1.0, used log-transformed data.

<sup>b</sup> Oxidation-Reduction Potential calibrated as Eh.

**Exhibit D.9. Test Summaries for Qualified Parameters for Historical Background—LRGA**

<b>Parameter</b>	<b>Performed Test</b>	<b>CV Normality Test<sup>a</sup></b>	<b>Results of Tolerance Interval Test Conducted</b>
Aluminum	Tolerance Interval	2.78	No exceedance of statistically derived historical background concentration.
Boron	Tolerance Interval	0.68	No exceedance of statistically derived historical background concentration.
Bromide	Tolerance Interval	0.00	No exceedance of statistically derived historical background concentration.
Calcium	Tolerance Interval	0.31	Current results exceed statistically derived historical background concentration in MW373.
COD	Tolerance Interval	0.59	No exceedance of statistically derived historical background concentration.
Chloride	Tolerance Interval	0.16	No exceedance of statistically derived historical background concentration.
Cobalt	Tolerance Interval	1.16	No exceedance of statistically derived historical background concentration.
Conductivity	Tolerance Interval	0.26	No exceedance of statistically derived historical background concentration.
Copper	Tolerance Interval	0.40	No exceedance of statistically derived historical background concentration.
Dissolved Oxygen	Tolerance Interval	0.83	Current results exceed statistically derived historical background concentration in MW361.
Dissolved Solids	Tolerance Interval	0.30	No exceedance of statistically derived historical background concentration.
Iron	Tolerance Interval	0.96	No exceedance of statistically derived historical background concentration.
Magnesium	Tolerance Interval	0.34	No exceedance of statistically derived historical background concentration.
Manganese	Tolerance Interval	0.62	No exceedance of statistically derived historical background concentration.
Molybdenum	Tolerance Interval	1.20	No exceedance of statistically derived historical background concentration.
Nickel	Tolerance Interval	0.90	No exceedance of statistically derived historical background concentration.
Oxidation-Reduction Potential <sup>b</sup>	Tolerance Interval	1.31	Current results exceed statistically derived historical background concentration in MW358, MW361, MW364, MW367, MW370, and MW373.
pH	Tolerance Interval	0.03	No exceedance of statistically derived historical background concentration.
Potassium	Tolerance Interval	0.18	No exceedance of statistically derived historical background concentration.
Sodium	Tolerance Interval	0.30	No exceedance of statistically derived historical background concentration.
Sulfate	Tolerance Interval	1.59	No exceedance of statistically derived historical background concentration.
Technetium-99	Tolerance Interval	1.73	No exceedance of statistically derived historical background concentration.
TOC	Tolerance Interval	1.96	No exceedance of statistically derived historical background concentration.
TOX	Tolerance Interval	0.98	No exceedance of statistically derived historical background concentration.

**Exhibit D.9. Test Summaries for Qualified Parameters for Historical Background—LRGA (Continued)**

Parameter	Performed Test	CV Normality Test <sup>a</sup>	Results of Tolerance Interval Test Conducted
Zinc	Tolerance Interval	0.67	No exceedance of statistically derived historical background concentration.

CV: coefficient of variation

<sup>a</sup> If CV > 1.0, used log-transformed data.

<sup>b</sup> Oxidation-Reduction Potential calibrated as Eh.

## Discussion of Results from Current Background Comparison

For concentrations in wells in the UCRS, URGA, and LRGA that exceeded the TL test using historical background, the concentrations were compared to the results of the one-sided tolerance interval test compared to current background, and are presented in Attachment D2. The statistician qualification statement is presented in Attachment D3. For the UCRS, URGA, and LRGA, the test was applied to 3, 7, and 4 parameters, respectively, because these parameter concentrations exceeded the historical background TL.

### UCRS

Because gradients in the UCRS are downward (vertical), there are no hydrogeologically downgradient UCRS wells. It should be noted; however, that this quarter's results identified current background upper tolerance limit (UTL) exceedances in downgradient wells for dissolved oxygen, oxidation-reduction potential, and sulfate.

### URGA

This quarter's results identified current background UTL exceedances in downgradient wells for oxygen-reduction potential.

### LRGA

This quarter's results identified current background UTL exceedances in downgradient wells for technetium-99.

## Statistical Summary

Summaries of the statistical tests conducted on data obtained from wells in the UCRS, the URGA, and the LRGA are presented in Exhibit D.10, Exhibit D.11, and Exhibit D.12, respectively.

**Exhibit D.10. Test Summaries for Qualified Parameters for Current Background—UCRS**

Parameter	Performed Test	CV Normality Test	Results of Tolerance Interval Test Conducted
Dissolved Oxygen	Tolerance Interval	0.69	MW362 and MW365 exceeded the upper TL, which is evidence of elevated concentration with respect to current background data.
Oxidation-Reduction Potential*	Tolerance Interval	0.17	MW365 exceeded the upper TL, which is evidence of elevated concentration with respect to current background data.
Sulfate	Tolerance Interval	0.63	MW365 and MW368 exceeded the upper TL, which is evidence of elevated concentration with respect to current background data.

CV: coefficient of variation

\*Oxidation-Reduction Potential calibrated as Eh.

**Exhibit D.11. Test Summaries for Qualified Parameters for Current Background—URGA**

<b>Parameter</b>	<b>Performed Test</b>	<b>CV Normality Test</b>	<b>Results of Tolerance Interval Test Conducted</b>
Calcium	Tolerance Interval	0.62	None of the test wells exceeded the upper TL, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically significant level.
Conductivity	Tolerance Interval	0.37	None of the test wells exceeded the upper TL, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically significant level.
Dissolved Solids	Tolerance Interval	0.41	None of the test wells exceeded the upper TL, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically significant level.
Magnesium	Tolerance Interval	0.56	None of the test wells exceeded the upper TL, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically significant level.
Oxidation-Reduction Potential*	Tolerance Interval	0.11	MW363 and MW366 exceeded the upper TL, which is evidence of elevated concentration with respect to current background data.
Sulfate	Tolerance Interval	0.92	None of the test wells exceeded the upper TL, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically significant level.
Technetium-99	Tolerance Interval	0.35	None of the test wells exceeded the upper TL, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically significant level.

CV: coefficient of variation

\*Oxidation-Reduction Potential calibrated as Eh.

**Exhibit D.12. Test Summaries for Qualified Parameters for Current Background—LRGA**

<b>Parameter</b>	<b>Performed Test</b>	<b>CV Normality Test</b>	<b>Results of Tolerance Interval Test Conducted</b>
Calcium	Tolerance Interval	0.46	None of the test wells exceeded the upper TL, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically significant level.
Dissolved Oxygen	Tolerance Interval	0.39	None of the test wells exceeded the upper TL, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically significant level.
Oxidation-Reduction Potential*	Tolerance Interval	0.13	None of the test wells exceeded the upper TL, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically significant level.
Technetium-99	Tolerance Interval	0.58	MW364 exceeded the upper TL, which is evidence of elevated concentration with respect to current background data.

CV: coefficient of variation

\*Oxidation-Reduction Potential calibrated as Eh.

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**ATTACHMENT D1**

**COMPARISON OF CURRENT DATA TO  
ONE-SIDED UPPER TOLERANCE INTERVAL TEST  
CALCULATED USING  
HISTORICAL BACKGROUND DATA**

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# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Aluminum**

**UNITS: mg/L**

**UCRS**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 3.300      S= 6.859      CV(1)=2.078      K factor\*\*\*= 2.523      TL(1)= 2.06E+01      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -0.371      S= 1.678      CV(2)=-4.521      K factor\*\*\*= 2.523      TL(2)= 3.86E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

Well Number: MW371		
Date Collected	Result	LN(Result)
3/18/2002	2.24E+00	8.06E-01
4/22/2002	2.00E-01	-1.61E+00
7/15/2002	2.00E-01	-1.61E+00
10/8/2002	2.00E-01	-1.61E+00
1/8/2003	2.00E-01	-1.61E+00
4/3/2003	2.00E-01	-1.61E+00
7/9/2003	2.00E-01	-1.61E+00
10/6/2003	2.00E-01	-1.61E+00
Well Number: MW374		
Date Collected	Result	LN(Result)
10/8/2002	2.13E+01	3.06E+00
1/7/2003	2.00E+01	3.00E+00
4/2/2003	4.11E+00	1.41E+00
7/9/2003	1.41E+00	3.44E-01
10/7/2003	1.09E+00	8.62E-02
1/6/2004	8.54E-01	-1.58E-01
4/7/2004	2.00E-01	-1.61E+00
7/14/2004	2.00E-01	-1.61E+00

**Dry/Partially Dry Wells**

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

**Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.**

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	6.82E-02	N/A	-2.69E+00	NO
MW362	Downgradient	Yes	3.53E-01	N/A	-1.04E+00	NO
MW365	Downgradient	Yes	2.28E-02	N/A	-3.78E+00	NO
MW368	Downgradient	Yes	1.01E+00	N/A	9.95E-03	NO
MW371	Upgradient	Yes	1.04E-01	N/A	-2.26E+00	NO
MW374	Upgradient	Yes	1.27E-01	N/A	-2.06E+00	NO
MW375	Sidegradient	Yes	4.60E-02	N/A	-3.08E+00	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Boron**

**UNITS: mg/L**

**UCRS**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 0.650      S= 0.805      CV(1)=1.238      K factor\*\*\*= 2.523      TL(1)= 2.68E+00      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -1.034      S= 1.030      CV(2)=-0.996      K factor\*\*\*= 2.523      TL(2)= 1.56E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

Well Number:	MW371	
Date Collected	Result	LN(Result)
3/18/2002	2.00E+00	6.93E-01
4/22/2002	2.00E+00	6.93E-01
7/15/2002	2.00E+00	6.93E-01
10/8/2002	2.00E-01	-1.61E+00
1/8/2003	2.00E-01	-1.61E+00
4/3/2003	2.00E-01	-1.61E+00
7/9/2003	2.00E-01	-1.61E+00
10/6/2003	2.00E-01	-1.61E+00
Well Number:	MW374	
Date Collected	Result	LN(Result)
10/8/2002	2.00E+00	6.93E-01
1/7/2003	2.00E-01	-1.61E+00
4/2/2003	2.00E-01	-1.61E+00
7/9/2003	2.00E-01	-1.61E+00
10/7/2003	2.00E-01	-1.61E+00
1/6/2004	2.00E-01	-1.61E+00
4/7/2004	2.00E-01	-1.61E+00
7/14/2004	2.00E-01	-1.61E+00

**Dry/Partially Dry Wells**

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

**Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.**

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	No	1.50E-02	N/A	-4.20E+00	N/A
MW362	Downgradient	Yes	2.39E-02	N/A	-3.73E+00	NO
MW365	Downgradient	Yes	5.47E-03	N/A	-5.21E+00	NO
MW368	Downgradient	Yes	8.09E-03	N/A	-4.82E+00	NO
MW371	Upgradient	No	1.50E-02	N/A	-4.20E+00	N/A
MW374	Upgradient	Yes	4.39E-02	N/A	-3.13E+00	NO
MW375	Sidegradient	Yes	6.85E-03	N/A	-4.98E+00	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Bromide**

**UNITS: mg/L**

**UCRS**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 1.394      S= 0.474      CV(1)=0.340      K factor\*\*\*= 2.523      TL(1)= 2.59E+00      LL(1)=N/A

**Statistics-Transformed Background Data**      X= 0.279      S= 0.332      CV(2)=1.190      K factor\*\*\*= 2.523      TL(2)= 1.12E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	1.00E+00	0.00E+00
4/22/2002	1.00E+00	0.00E+00
7/15/2002	1.00E+00	0.00E+00
10/8/2002	1.00E+00	0.00E+00
1/8/2003	1.00E+00	0.00E+00
4/3/2003	1.00E+00	0.00E+00
7/9/2003	1.00E+00	0.00E+00
10/6/2003	1.00E+00	0.00E+00

Well Number: MW374

Date Collected	Result	LN(Result)
10/8/2002	2.10E+00	7.42E-01
1/7/2003	2.10E+00	7.42E-01
4/2/2003	1.90E+00	6.42E-01
7/9/2003	1.00E+00	0.00E+00
10/7/2003	1.90E+00	6.42E-01
1/6/2004	1.90E+00	6.42E-01
4/7/2004	1.80E+00	5.88E-01
7/14/2004	1.60E+00	4.70E-01

**Dry/Partially Dry Wells**

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	No	2.00E-01	N/A	-1.61E+00	N/A
MW362	Downgradient	No	2.00E-01	N/A	-1.61E+00	N/A
MW365	Downgradient	No	2.00E-01	N/A	-1.61E+00	N/A
MW368	Downgradient	No	2.00E-01	N/A	-1.61E+00	N/A
MW371	Upgradient	No	2.00E-01	N/A	-1.61E+00	N/A
MW374	Upgradient	Yes	4.85E-01	NO	-7.24E-01	N/A
MW375	Sidegradient	No	2.00E-01	N/A	-1.61E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Calcium**

**UNITS: mg/L**

**UCRS**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 34.100    S= 13.637    CV(1)=0.400    K factor\*\*\*= 2.523    TL(1)= 6.85E+01    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 3.466    S= 0.356    CV(2)=0.103    K factor\*\*\*= 2.523    TL(2)= 4.36E+00    LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

Well Number:	MW371	
Date Collected	Result	LN(Result)
3/18/2002	1.72E+01	2.84E+00
4/22/2002	2.24E+01	3.11E+00
7/15/2002	2.55E+01	3.24E+00
10/8/2002	2.64E+01	3.27E+00
1/8/2003	2.72E+01	3.30E+00
4/3/2003	3.03E+01	3.41E+00
7/9/2003	2.59E+01	3.25E+00
10/6/2003	2.70E+01	3.30E+00
Well Number:	MW374	
Date Collected	Result	LN(Result)
10/8/2002	6.73E+01	4.21E+00
1/7/2003	6.06E+01	4.10E+00
4/2/2003	4.72E+01	3.85E+00
7/9/2003	3.47E+01	3.55E+00
10/7/2003	3.71E+01	3.61E+00
1/6/2004	3.77E+01	3.63E+00
4/7/2004	3.22E+01	3.47E+00
7/14/2004	2.69E+01	3.29E+00

**Dry/Partially Dry Wells**

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	5.88E+00	NO	1.77E+00	N/A
MW362	Downgradient	Yes	1.79E+01	NO	2.88E+00	N/A
MW365	Downgradient	Yes	1.94E+01	NO	2.97E+00	N/A
MW368	Downgradient	Yes	5.76E+01	NO	4.05E+00	N/A
MW371	Upgradient	Yes	5.68E+01	NO	4.04E+00	N/A
MW374	Upgradient	Yes	2.19E+01	NO	3.09E+00	N/A
MW375	Sidegradient	Yes	1.33E+01	NO	2.59E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.



# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Chloride**

**UNITS: mg/L**

**UCRS**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 91.300    S= 86.959    CV(1)=0.952    K factor\*\*\*= 2.523    TL(1)= 3.11E+02    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 3.620    S= 1.590    CV(2)=0.439    K factor\*\*\*= 2.523    TL(2)= 7.63E+00    LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

Well Number:	MW371	
Date Collected	Result	LN(Result)
7/15/2002	8.30E+00	2.12E+00
10/8/2002	7.60E+00	2.03E+00
1/8/2003	7.70E+00	2.04E+00
4/3/2003	8.80E+00	2.17E+00
7/9/2003	8.10E+00	2.09E+00
10/6/2003	8.60E+00	2.15E+00
1/7/2004	7.60E+00	2.03E+00
4/6/2004	7.60E+00	2.03E+00

Well Number:	MW374	
Date Collected	Result	LN(Result)
10/8/2002	1.99E+02	5.29E+00
1/7/2003	2.00E+02	5.30E+00
4/2/2003	1.72E+02	5.15E+00
7/9/2003	1.79E+02	5.19E+00
10/7/2003	1.76E+02	5.17E+00
1/6/2004	1.70E+02	5.14E+00
4/7/2004	1.56E+02	5.05E+00
7/14/2004	1.45E+02	4.97E+00

**Dry/Partially Dry Wells**

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	7.23E-01	NO	-3.24E-01	N/A
MW362	Downgradient	Yes	1.95E+00	NO	6.68E-01	N/A
MW365	Downgradient	Yes	2.05E+00	NO	7.18E-01	N/A
MW368	Downgradient	Yes	2.87E+00	NO	1.05E+00	N/A
MW371	Upgradient	Yes	3.78E+00	NO	1.33E+00	N/A
MW374	Upgradient	Yes	4.46E+01	NO	3.80E+00	N/A
MW375	Sidegradient	Yes	3.33E+00	NO	1.20E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Cobalt**

**UNITS: mg/L**

**UCRS**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 0.007      S= 0.009      CV(1)=1.314      K factor\*\*\*= 2.523      TL(1)= 3.12E-02      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -5.843      S= 1.392      CV(2)=-0.238      K factor\*\*\*= 2.523      TL(2)= -2.33E+00      LL(2)=N/A

### Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	2.50E-02	-3.69E+00
4/22/2002	2.50E-02	-3.69E+00
7/15/2002	2.50E-02	-3.69E+00
10/8/2002	1.00E-03	-6.91E+00
1/8/2003	1.00E-03	-6.91E+00
4/3/2003	1.00E-03	-6.91E+00
7/9/2003	1.00E-03	-6.91E+00
10/6/2003	1.00E-03	-6.91E+00

Well Number: MW374

Date Collected	Result	LN(Result)
10/8/2002	1.00E-02	-4.61E+00
1/7/2003	1.00E-02	-4.61E+00
4/2/2003	1.00E-02	-4.61E+00
7/9/2003	1.61E-03	-6.43E+00
10/7/2003	1.00E-03	-6.91E+00
1/6/2004	1.00E-03	-6.91E+00
4/7/2004	1.00E-03	-6.91E+00
7/14/2004	1.00E-03	-6.91E+00

### Dry/Partially Dry Wells

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

**Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.**

### Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW362	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW365	Downgradient	Yes	1.23E-03	N/A	-6.70E+00	NO
MW368	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW371	Upgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW374	Upgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW375	Sidegradient	Yes	6.52E-04	N/A	-7.34E+00	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

### Conclusion of Statistical Analysis on Historical Data

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.



# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Copper**

**UNITS: mg/L**

**UCRS**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 0.056      S= 0.072      CV(1)=1.275      K factor\*\*\*= 2.523      TL(1)= 2.37E-01      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -3.395      S= 0.915      CV(2)=-0.270      K factor\*\*\*= 2.523      TL(2)= -1.09E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

Well Number:	MW371	
Date Collected	Result	LN(Result)
3/18/2002	2.50E-02	-3.69E+00
4/22/2002	2.50E-02	-3.69E+00
7/15/2002	5.00E-02	-3.00E+00
10/8/2002	2.00E-02	-3.91E+00
1/8/2003	2.00E-02	-3.91E+00
4/3/2003	2.00E-02	-3.91E+00
7/9/2003	2.00E-02	-3.91E+00
10/6/2003	2.00E-02	-3.91E+00
Well Number:	MW374	
Date Collected	Result	LN(Result)
10/8/2002	2.00E-01	-1.61E+00
1/7/2003	2.00E-01	-1.61E+00
4/2/2003	2.00E-01	-1.61E+00
7/9/2003	2.00E-02	-3.91E+00
10/7/2003	2.00E-02	-3.91E+00
1/6/2004	2.00E-02	-3.91E+00
4/7/2004	2.00E-02	-3.91E+00
7/14/2004	2.00E-02	-3.91E+00

**Dry/Partially Dry Wells**

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

**Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.**

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	1.84E-03	N/A	-6.30E+00	NO
MW362	Downgradient	Yes	1.73E-03	N/A	-6.36E+00	NO
MW365	Downgradient	Yes	3.40E-03	N/A	-5.68E+00	NO
MW368	Downgradient	Yes	1.01E-03	N/A	-6.90E+00	NO
MW371	Upgradient	Yes	9.61E-04	N/A	-6.95E+00	NO
MW374	Upgradient	Yes	9.22E-04	N/A	-6.99E+00	NO
MW375	Sidegradient	Yes	1.09E-03	N/A	-6.82E+00	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

## Dissolved Oxygen

UNITS: mg/L

UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 1.138      S= 0.621      CV(1)=0.546      K factor\*\*\*= 2.523      TL(1)= 2.70E+00      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -0.013      S= 0.577      CV(2)=-43.069      K factor\*\*\*= 2.523      TL(2)= 1.44E+00      LL(2)=N/A

### Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	2.26E+00	8.15E-01
4/22/2002	1.15E+00	1.40E-01
7/15/2002	9.40E-01	-6.19E-02
10/8/2002	7.40E-01	-3.01E-01
1/8/2003	2.62E+00	9.63E-01
4/3/2003	1.50E+00	4.05E-01
7/9/2003	1.66E+00	5.07E-01
10/6/2003	1.28E+00	2.47E-01

Well Number: MW374

Date Collected	Result	LN(Result)
3/18/2002	6.00E-01	-5.11E-01
10/8/2002	6.70E-01	-4.00E-01
1/7/2003	2.30E-01	-1.47E+00
4/2/2003	6.50E-01	-4.31E-01
7/9/2003	9.20E-01	-8.34E-02
10/7/2003	9.90E-01	-1.01E-02
1/6/2004	1.11E+00	1.04E-01
4/7/2004	8.80E-01	-1.28E-01

### Dry/Partially Dry Wells

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

### Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	4.60E+00	YES	1.53E+00	N/A
MW362	Downgradient	Yes	8.16E+00	YES	2.10E+00	N/A
MW365	Downgradient	Yes	8.46E+00	YES	2.14E+00	N/A
MW368	Downgradient	Yes	3.26E+00	YES	1.18E+00	N/A
MW371	Upgradient	Yes	4.00E+00	YES	1.39E+00	N/A
MW374	Upgradient	Yes	1.10E+00	NO	9.53E-02	N/A
MW375	Sidegradient	Yes	2.70E+00	NO	9.93E-01	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

### Conclusion of Statistical Analysis on Historical Data

**The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.**

### Wells with Exceedances

MW359  
MW362  
MW365  
MW368  
MW371

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

## Dissolved Solids

UNITS: mg/L

UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 590.000    S= 248.068    CV(1)=0.420    K factor\*\*\*= 2.523    TL(1)= 1.22E+03    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 6.308      S= 0.383      CV(2)=0.061    K factor\*\*\*= 2.523    TL(2)= 7.27E+00    LL(2)=N/A

### Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW371		
Date Collected	Result	LN(Result)
3/18/2002	2.74E+02	5.61E+00
4/22/2002	4.09E+02	6.01E+00
7/15/2002	4.18E+02	6.04E+00
10/8/2002	4.24E+02	6.05E+00
1/8/2003	4.31E+02	6.07E+00
4/3/2003	4.44E+02	6.10E+00
7/9/2003	4.45E+02	6.10E+00
10/6/2003	4.38E+02	6.08E+00
Well Number: MW374		
Date Collected	Result	LN(Result)
10/8/2002	1.14E+03	7.04E+00
1/7/2003	1.10E+03	7.00E+00
4/2/2003	8.63E+02	6.76E+00
7/9/2003	6.82E+02	6.53E+00
10/7/2003	5.89E+02	6.38E+00
1/6/2004	6.03E+02	6.40E+00
4/7/2004	6.01E+02	6.40E+00
7/14/2004	5.82E+02	6.37E+00

### Dry/Partially Dry Wells

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

### Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	1.46E+02	NO	4.98E+00	N/A
MW362	Downgradient	Yes	3.73E+02	NO	5.92E+00	N/A
MW365	Downgradient	Yes	2.54E+02	NO	5.54E+00	N/A
MW368	Downgradient	Yes	4.47E+02	NO	6.10E+00	N/A
MW371	Upgradient	Yes	4.07E+02	NO	6.01E+00	N/A
MW374	Upgradient	Yes	3.09E+02	NO	5.73E+00	N/A
MW375	Sidegradient	Yes	2.05E+02	NO	5.32E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

### Conclusion of Statistical Analysis on Historical Data

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S      Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X      Mean, X = (sum of background results)/(count of background results)

\*\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Iron**

**UNITS: mg/L**

**UCRS**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 6.612      S= 6.487      CV(1)=0.981      K factor\*\*\*= 2.523      TL(1)= 2.30E+01      LL(1)=N/A

**Statistics-Transformed Background Data**      X= 1.363      S= 1.147      CV(2)=0.841      K factor\*\*\*= 2.523      TL(2)= 4.26E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

Well Number:	MW371	
Date Collected	Result	LN(Result)
3/18/2002	1.31E+00	2.70E-01
4/22/2002	9.13E-01	-9.10E-02
7/15/2002	8.81E-01	-1.27E-01
10/8/2002	3.86E+00	1.35E+00
1/8/2003	1.88E+00	6.31E-01
4/3/2003	3.18E+00	1.16E+00
7/9/2003	4.84E-01	-7.26E-01
10/6/2003	2.72E+00	1.00E+00

Well Number:	MW374	
Date Collected	Result	LN(Result)
10/8/2002	2.30E+01	3.14E+00
1/7/2003	1.39E+01	2.63E+00
4/2/2003	1.40E+01	2.64E+00
7/9/2003	1.42E+01	2.65E+00
10/7/2003	7.92E+00	2.07E+00
1/6/2004	7.86E+00	2.06E+00
4/7/2004	4.82E+00	1.57E+00
7/14/2004	4.87E+00	1.58E+00

**Dry/Partially Dry Wells**

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	1.15E-01	NO	-2.16E+00	N/A
MW362	Downgradient	Yes	2.32E-01	NO	-1.46E+00	N/A
MW365	Downgradient	No	1.00E-01	N/A	-2.30E+00	N/A
MW368	Downgradient	Yes	5.98E-01	NO	-5.14E-01	N/A
MW371	Upgradient	Yes	9.21E-02	NO	-2.38E+00	N/A
MW374	Upgradient	Yes	1.13E+00	NO	1.22E-01	N/A
MW375	Sidegradient	Yes	9.70E-02	NO	-2.33E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Magnesium**

**UNITS: mg/L**

**UCRS**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 11.347    S= 3.019    CV(1)=0.266    K factor\*\*\*= 2.523    TL(1)= 1.90E+01    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 2.401    S= 0.237    CV(2)=0.099    K factor\*\*\*= 2.523    TL(2)= 3.00E+00    LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	7.10E+00	1.96E+00
4/22/2002	9.77E+00	2.28E+00
7/15/2002	1.04E+01	2.34E+00
10/8/2002	1.02E+01	2.32E+00
1/8/2003	1.07E+01	2.37E+00
4/3/2003	1.19E+01	2.48E+00
7/9/2003	1.08E+01	2.38E+00
10/6/2003	1.09E+01	2.39E+00

Well Number: MW374

Date Collected	Result	LN(Result)
10/8/2002	2.00E+01	3.00E+00
1/7/2003	1.61E+01	2.78E+00
4/2/2003	1.31E+01	2.57E+00
7/9/2003	1.03E+01	2.33E+00
10/7/2003	1.11E+01	2.41E+00
1/6/2004	1.10E+01	2.40E+00
4/7/2004	9.69E+00	2.27E+00
7/14/2004	8.49E+00	2.14E+00

**Dry/Partially Dry Wells**

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	2.81E+00	NO	1.03E+00	N/A
MW362	Downgradient	Yes	7.53E+00	NO	2.02E+00	N/A
MW365	Downgradient	Yes	9.05E+00	NO	2.20E+00	N/A
MW368	Downgradient	Yes	1.41E+01	NO	2.65E+00	N/A
MW371	Upgradient	Yes	1.62E+01	NO	2.79E+00	N/A
MW374	Upgradient	Yes	5.49E+00	NO	1.70E+00	N/A
MW375	Sidegradient	Yes	5.40E+00	NO	1.69E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Manganese**

**UNITS: mg/L**

**UCRS**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 0.248      S= 0.222      CV(1)=0.894      K factor\*\*\*= 2.523      TL(1)= 8.09E-01      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -1.873      S= 1.068      CV(2)=-0.570      K factor\*\*\*= 2.523      TL(2)= 8.21E-01      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

Well Number: MW371		
Date Collected	Result	LN(Result)
3/18/2002	6.30E-02	-2.76E+00
4/22/2002	6.70E-02	-2.70E+00
7/15/2002	7.40E-02	-2.60E+00
10/8/2002	5.21E-02	-2.95E+00
1/8/2003	3.85E-02	-3.26E+00
4/3/2003	5.51E-02	-2.90E+00
7/9/2003	5.46E-02	-2.91E+00
10/6/2003	5.43E-02	-2.91E+00
Well Number: MW374		
Date Collected	Result	LN(Result)
10/8/2002	5.96E-01	-5.18E-01
1/7/2003	5.65E-01	-5.71E-01
4/2/2003	6.75E-01	-3.93E-01
7/9/2003	3.97E-01	-9.24E-01
10/7/2003	3.12E-01	-1.16E+00
1/6/2004	2.99E-01	-1.21E+00
4/7/2004	3.29E-01	-1.11E+00
7/14/2004	3.42E-01	-1.07E+00

**Dry/Partially Dry Wells**

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	1.94E-03	NO	-6.25E+00	N/A
MW362	Downgradient	Yes	3.93E-03	NO	-5.54E+00	N/A
MW365	Downgradient	Yes	7.01E-03	NO	-4.96E+00	N/A
MW368	Downgradient	Yes	1.24E-02	NO	-4.39E+00	N/A
MW371	Upgradient	Yes	5.70E-03	NO	-5.17E+00	N/A
MW374	Upgradient	Yes	1.43E-01	NO	-1.94E+00	N/A
MW375	Sidegradient	Yes	1.06E-02	NO	-4.55E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Methylene chloride**

**UNITS: ug/L**

**UCRS**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 5.125      S= 1.500      CV(1)=0.293      K factor\*\*\*= 2.523      TL(1)= 8.91E+00      LL(1)=N/A

**Statistics-Transformed Background Data**      X= 1.595      S= 0.296      CV(2)=0.186      K factor\*\*\*= 2.523      TL(2)= 2.34E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

Well Number: MW371		
Date Collected	Result	LN(Result)
3/18/2002	2.00E+00	6.93E-01
4/22/2002	5.00E+00	1.61E+00
7/15/2002	1.00E+01	2.30E+00
10/8/2002	5.00E+00	1.61E+00
1/8/2003	5.00E+00	1.61E+00
4/3/2003	5.00E+00	1.61E+00
7/9/2003	5.00E+00	1.61E+00
10/6/2003	5.00E+00	1.61E+00
Well Number: MW374		
Date Collected	Result	LN(Result)
10/8/2002	5.00E+00	1.61E+00
1/7/2003	5.00E+00	1.61E+00
4/2/2003	5.00E+00	1.61E+00
7/9/2003	5.00E+00	1.61E+00
10/7/2003	5.00E+00	1.61E+00
1/6/2004	5.00E+00	1.61E+00
4/7/2004	5.00E+00	1.61E+00
7/14/2004	5.00E+00	1.61E+00

**Dry/Partially Dry Wells**

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	No	3.58E+00	N/A	1.28E+00	N/A
MW362	Downgradient	No	3.77E+00	N/A	1.33E+00	N/A
MW365	Downgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW368	Downgradient	Yes	5.60E-01	NO	-5.80E-01	N/A
MW371	Upgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW374	Upgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW375	Sidegradient	No	5.00E+00	N/A	1.61E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Molybdenum**

**UNITS: mg/L**

**UCRS**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 0.006      S= 0.010      CV(1)= 1.650      K factor\*\*\*= 2.523      TL(1)= 2.99E-02      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -6.108      S= 1.239      CV(2)= -0.203      K factor\*\*\*= 2.523      TL(2)= -2.98E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

Well Number:	MW371	
Date Collected	Result	LN(Result)
3/18/2002	2.50E-02	-3.69E+00
4/22/2002	2.50E-02	-3.69E+00
7/15/2002	2.50E-02	-3.69E+00
10/8/2002	1.00E-03	-6.91E+00
1/8/2003	1.21E-03	-6.72E+00
4/3/2003	1.00E-03	-6.91E+00
7/9/2003	1.11E-03	-6.80E+00
10/6/2003	1.00E-03	-6.91E+00

Well Number:	MW374	
Date Collected	Result	LN(Result)
10/8/2002	2.22E-03	-6.11E+00
1/7/2003	2.01E-03	-6.21E+00
4/2/2003	1.59E-03	-6.44E+00
7/9/2003	2.42E-03	-6.02E+00
10/7/2003	1.00E-03	-6.91E+00
1/6/2004	1.00E-03	-6.91E+00
4/7/2004	1.00E-03	-6.91E+00
7/14/2004	1.00E-03	-6.91E+00

**Dry/Partially Dry Wells**

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

**Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.**

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW362	Downgradient	Yes	1.44E-03	N/A	-6.54E+00	NO
MW365	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW368	Downgradient	Yes	6.18E-04	N/A	-7.39E+00	NO
MW371	Upgradient	No	4.38E-04	N/A	-7.73E+00	N/A
MW374	Upgradient	Yes	3.19E-04	N/A	-8.05E+00	NO
MW375	Sidegradient	No	1.00E-03	N/A	-6.91E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Nickel**

**UNITS: mg/L**

**UCRS**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 0.023      S= 0.022      CV(1)=0.980      K factor\*\*\*= 2.523      TL(1)= 7.82E-02      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -4.349      S= 1.109      CV(2)=-0.255      K factor\*\*\*= 2.523      TL(2)= -1.55E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

Well Number:	MW371	
Date Collected	Result	LN(Result)
3/18/2002	5.00E-02	-3.00E+00
4/22/2002	5.00E-02	-3.00E+00
7/15/2002	5.00E-02	-3.00E+00
10/8/2002	1.24E-02	-4.39E+00
1/8/2003	5.00E-03	-5.30E+00
4/3/2003	5.00E-03	-5.30E+00
7/9/2003	5.00E-03	-5.30E+00
10/6/2003	5.00E-03	-5.30E+00

Well Number:	MW374	
Date Collected	Result	LN(Result)
10/8/2002	5.00E-02	-3.00E+00
1/7/2003	5.00E-02	-3.00E+00
4/2/2003	5.00E-02	-3.00E+00
7/9/2003	7.94E-03	-4.84E+00
10/7/2003	5.00E-03	-5.30E+00
1/6/2004	5.00E-03	-5.30E+00
4/7/2004	5.00E-03	-5.30E+00
7/14/2004	5.00E-03	-5.30E+00

**Dry/Partially Dry Wells**

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	1.11E-03	NO	-6.80E+00	N/A
MW362	Downgradient	Yes	9.39E-04	NO	-6.97E+00	N/A
MW365	Downgradient	Yes	4.98E-03	NO	-5.30E+00	N/A
MW368	Downgradient	Yes	8.64E-04	NO	-7.05E+00	N/A
MW371	Upgradient	Yes	1.47E-03	NO	-6.52E+00	N/A
MW374	Upgradient	Yes	8.27E-04	NO	-7.10E+00	N/A
MW375	Sidegradient	Yes	7.76E-04	NO	-7.16E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

## Oxidation-Reduction Potential

UNITS: mV

UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 22.281    S= 78.889    CV(1)=3.541    K factor\*\*\*= 2.523    TL(1)= 2.21E+02    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 3.642    S= 1.729    CV(2)=0.475    K factor\*\*\*= 2.523    TL(2)= 5.11E+00    LL(2)=N/A

### Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW371	
Date Collected	Result	LN(Result)
3/18/2002	7.50E+01	4.32E+00
4/22/2002	1.65E+02	5.11E+00
7/15/2002	6.50E+01	4.17E+00
4/3/2003	-1.90E+01	#Func!
7/9/2003	1.14E+02	4.74E+00
10/6/2003	-2.20E+01	#Func!
1/7/2004	2.05E+01	3.02E+00
4/6/2004	1.13E+02	4.73E+00

Well Number:	MW374	
Date Collected	Result	LN(Result)
3/18/2002	1.35E+02	4.91E+00
4/2/2003	-5.60E+01	#Func!
7/9/2003	-6.80E+01	#Func!
10/7/2003	-5.00E+01	#Func!
1/6/2004	-8.50E+01	#Func!
4/7/2004	6.00E+00	1.79E+00
7/14/2004	-3.80E+01	#Func!
10/7/2004	1.00E+00	0.00E+00

### Dry/Partially Dry Wells

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

**Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.**

**#Because the natural log was not possible for all background values, the TL was considered equal to the maximum background value.**

### Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	3.63E+02	N/A	5.89E+00	YES
MW362	Downgradient	Yes	3.58E+02	N/A	5.88E+00	YES
MW365	Downgradient	Yes	5.73E+02	N/A	6.35E+00	YES
MW368	Downgradient	Yes	2.46E+02	N/A	5.51E+00	YES
MW371	Upgradient	Yes	4.47E+02	N/A	6.10E+00	YES
MW374	Upgradient	Yes	4.11E+02	N/A	6.02E+00	YES
MW375	Sidegradient	Yes	5.18E+02	N/A	6.25E+00	YES

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

### Conclusion of Statistical Analysis on Historical Data

**The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.**

### Wells with Exceedances

- MW359
- MW362
- MW365
- MW368
- MW371
- MW374
- MW375

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**pH**

**UNITS: Std Unit**

**UCRS**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 6.619      S= 0.295      CV(1)=0.045      K factor\*\*\*= 2.904      TL(1)= 7.48E+00      LL(1)=5.76E+00

**Statistics-Transformed Background Data**      X= 1.889      S= 0.046      CV(2)=0.024      K factor\*\*\*= 2.904      TL(2)= 2.02E+00      LL(2)=1.75E+00

**Historical Background Data from Upgradient Wells with Transformed Result**

Well Number:	MW371	
Date Collected	Result	LN(Result)
3/18/2002	6.30E+00	1.84E+00
4/22/2002	6.50E+00	1.87E+00
7/15/2002	6.50E+00	1.87E+00
10/8/2002	6.60E+00	1.89E+00
1/8/2003	6.60E+00	1.89E+00
4/3/2003	6.90E+00	1.93E+00
7/9/2003	6.70E+00	1.90E+00
10/6/2003	7.00E+00	1.95E+00

Well Number:	MW374	
Date Collected	Result	LN(Result)
3/18/2002	5.75E+00	1.75E+00
10/8/2002	6.60E+00	1.89E+00
1/7/2003	6.82E+00	1.92E+00
4/2/2003	6.86E+00	1.93E+00
7/9/2003	6.70E+00	1.90E+00
10/7/2003	6.60E+00	1.89E+00
1/6/2004	6.90E+00	1.93E+00
4/7/2004	6.58E+00	1.88E+00

**Dry/Partially Dry Wells**

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)? Result <LL(1)?	LN(Result)	LN(Result) >TL(2)? LN(Result) <LL(2)?
MW359	Downgradient	Yes	5.95E+00	NO	1.78E+00	N/A
MW362	Downgradient	Yes	7.01E+00	NO	1.95E+00	N/A
MW365	Downgradient	Yes	6.30E+00	NO	1.84E+00	N/A
MW368	Downgradient	Yes	6.38E+00	NO	1.85E+00	N/A
MW371	Upgradient	Yes	6.56E+00	NO	1.88E+00	N/A
MW374	Upgradient	Yes	6.67E+00	NO	1.90E+00	N/A
MW375	Sidegradient	Yes	6.36E+00	NO	1.85E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Potassium**

**UNITS: mg/L**

**UCRS**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 1.262      S= 0.907      CV(1)=0.718      K factor\*\*\*= 2.523      TL(1)= 3.55E+00      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -0.023      S= 0.752      CV(2)=-32.218      K factor\*\*\*= 2.523      TL(2)= 1.87E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

Well Number: MW371		
Date Collected	Result	LN(Result)
3/18/2002	2.00E+00	6.93E-01
4/22/2002	2.00E+00	6.93E-01
7/15/2002	2.00E+00	6.93E-01
10/8/2002	4.08E-01	-8.96E-01
1/8/2003	3.84E-01	-9.57E-01
4/3/2003	3.68E-01	-1.00E+00
7/9/2003	5.87E-01	-5.33E-01
10/6/2003	3.82E-01	-9.62E-01
Well Number: MW374		
Date Collected	Result	LN(Result)
10/8/2002	3.04E+00	1.11E+00
1/7/2003	2.83E+00	1.04E+00
4/2/2003	2.00E+00	6.93E-01
7/9/2003	1.09E+00	8.62E-02
10/7/2003	8.02E-01	-2.21E-01
1/6/2004	8.97E-01	-1.09E-01
4/7/2004	6.89E-01	-3.73E-01
7/14/2004	7.16E-01	-3.34E-01

**Dry/Partially Dry Wells**

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	1.84E-01	NO	-1.69E+00	N/A
MW362	Downgradient	Yes	3.89E-01	NO	-9.44E-01	N/A
MW365	Downgradient	Yes	2.27E-01	NO	-1.48E+00	N/A
MW368	Downgradient	Yes	7.86E-01	NO	-2.41E-01	N/A
MW371	Upgradient	Yes	3.59E-01	NO	-1.02E+00	N/A
MW374	Upgradient	Yes	3.65E-01	NO	-1.01E+00	N/A
MW375	Sidegradient	Yes	2.65E-01	NO	-1.33E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results - 1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Sodium**

**UNITS: mg/L**

**UCRS**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 183.063    S= 73.222    CV(1)=0.400    K factor\*\*\*= 2.523    TL(1)= 3.68E+02    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 5.146    S= 0.356    CV(2)=0.069    K factor\*\*\*= 2.523    TL(2)= 6.04E+00    LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

Well Number:	MW371	
Date Collected	Result	LN(Result)
3/18/2002	1.29E+02	4.86E+00
4/22/2002	1.31E+02	4.88E+00
7/15/2002	1.27E+02	4.84E+00
10/8/2002	1.23E+02	4.81E+00
1/8/2003	1.28E+02	4.85E+00
4/3/2003	1.44E+02	4.97E+00
7/9/2003	1.26E+02	4.84E+00
10/6/2003	1.20E+02	4.79E+00

Well Number:	MW374	
Date Collected	Result	LN(Result)
10/8/2002	3.36E+02	5.82E+00
1/7/2003	3.29E+02	5.80E+00
4/2/2003	2.87E+02	5.66E+00
7/9/2003	1.81E+02	5.20E+00
10/7/2003	1.82E+02	5.20E+00
1/6/2004	2.06E+02	5.33E+00
4/7/2004	1.82E+02	5.20E+00
7/14/2004	1.98E+02	5.29E+00

**Dry/Partially Dry Wells**

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	3.12E+01	NO	3.44E+00	N/A
MW362	Downgradient	Yes	1.23E+02	NO	4.81E+00	N/A
MW365	Downgradient	Yes	4.85E+01	NO	3.88E+00	N/A
MW368	Downgradient	Yes	7.29E+01	NO	4.29E+00	N/A
MW371	Upgradient	Yes	7.42E+01	NO	4.31E+00	N/A
MW374	Upgradient	Yes	1.10E+02	NO	4.70E+00	N/A
MW375	Sidegradient	Yes	5.12E+01	NO	3.94E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Sulfate**

**UNITS: mg/L**

**UCRS**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 6.469      S= 3.153      CV(1)=0.487      K factor\*\*\*= 2.523      TL(1)= 1.44E+01      LL(1)=N/A

**Statistics-Transformed Background Data**      X= 1.794      S= 0.357      CV(2)=0.199      K factor\*\*\*= 2.523      TL(2)= 2.69E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

Well Number:	MW371	
Date Collected	Result	LN(Result)
3/18/2002	1.63E+01	2.79E+00
4/22/2002	8.60E+00	2.15E+00
7/15/2002	6.70E+00	1.90E+00
10/8/2002	5.00E+00	1.61E+00
1/8/2003	5.00E+00	1.61E+00
4/3/2003	5.00E+00	1.61E+00
7/9/2003	5.00E+00	1.61E+00
10/6/2003	5.00E+00	1.61E+00

Well Number:	MW374	
Date Collected	Result	LN(Result)
10/8/2002	5.00E+00	1.61E+00
1/7/2003	5.00E+00	1.61E+00
4/2/2003	5.00E+00	1.61E+00
7/9/2003	5.60E+00	1.72E+00
10/7/2003	5.00E+00	1.61E+00
1/6/2004	5.00E+00	1.61E+00
4/7/2004	1.13E+01	2.42E+00
7/14/2004	5.00E+00	1.61E+00

**Dry/Partially Dry Wells**

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	3.67E+01	YES	3.60E+00	N/A
MW362	Downgradient	Yes	2.78E+01	YES	3.33E+00	N/A
MW365	Downgradient	Yes	5.42E+01	YES	3.99E+00	N/A
MW368	Downgradient	Yes	1.25E+02	YES	4.83E+00	N/A
MW371	Upgradient	Yes	1.04E+01	NO	2.34E+00	N/A
MW374	Upgradient	Yes	1.71E+01	YES	2.84E+00	N/A
MW375	Sidegradient	Yes	2.26E+01	YES	3.12E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.**

**Wells with Exceedances**

- MW359
- MW362
- MW365
- MW368
- MW374
- MW375

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Total Organic Carbon (TOC)**

**UNITS: mg/L**

**UCRS**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 17.631    S= 24.314    CV(1)=1.379    K factor\*\*\*= 2.523    TL(1)= 7.90E+01    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 2.318    S= 0.979    CV(2)=0.422    K factor\*\*\*= 2.523    TL(2)= 4.79E+00    LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

Well Number:	MW371	
Date Collected	Result	LN(Result)
3/18/2002	1.11E+01	2.41E+00
4/22/2002	7.00E+00	1.95E+00
7/15/2002	4.10E+00	1.41E+00
10/8/2002	6.00E+00	1.79E+00
1/8/2003	5.30E+00	1.67E+00
4/3/2003	5.30E+00	1.67E+00
7/9/2003	2.90E+00	1.06E+00
10/6/2003	3.20E+00	1.16E+00
Well Number:	MW374	
Date Collected	Result	LN(Result)
10/8/2002	9.00E+01	4.50E+00
1/7/2003	6.40E+01	4.16E+00
4/2/2003	2.50E+01	3.22E+00
7/9/2003	1.60E+01	2.77E+00
10/7/2003	1.30E+01	2.56E+00
1/6/2004	1.00E+01	2.30E+00
4/7/2004	7.20E+00	1.97E+00
7/14/2004	1.20E+01	2.48E+00

**Dry/Partially Dry Wells**

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

**Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.**

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	7.14E-01	N/A	-3.37E-01	NO
MW362	Downgradient	Yes	2.00E+00	N/A	6.93E-01	NO
MW365	Downgradient	Yes	1.09E+00	N/A	8.62E-02	NO
MW368	Downgradient	Yes	1.35E+00	N/A	3.00E-01	NO
MW371	Upgradient	Yes	1.80E+00	N/A	5.88E-01	NO
MW374	Upgradient	Yes	2.04E+00	N/A	7.13E-01	NO
MW375	Sidegradient	Yes	6.33E-01	N/A	-4.57E-01	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Total Organic Halides (TOX)**

**UNITS: ug/L**

**UCRS**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 214.094    S= 231.089    CV(1)=1.079    K factor\*\*\*= 2.523    TL(1)= 7.97E+02    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 4.867      S= 1.065      CV(2)=0.219    K factor\*\*\*= 2.523    TL(2)= 7.55E+00    LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

Well Number:	MW371	
Date Collected	Result	LN(Result)
3/18/2002	5.00E+01	3.91E+00
4/22/2002	1.05E+02	4.65E+00
7/15/2002	7.00E+01	4.25E+00
10/8/2002	5.20E+01	3.95E+00
1/8/2003	2.02E+01	3.01E+00
4/3/2003	1.04E+02	4.64E+00
7/9/2003	3.42E+01	3.53E+00
10/6/2003	4.61E+01	3.83E+00
Well Number:	MW374	
Date Collected	Result	LN(Result)
10/8/2002	9.03E+02	6.81E+00
1/7/2003	5.39E+02	6.29E+00
4/2/2003	2.95E+02	5.69E+00
7/9/2003	2.72E+02	5.61E+00
10/7/2003	1.97E+02	5.28E+00
1/6/2004	3.30E+02	5.80E+00
4/7/2004	1.83E+02	5.21E+00
7/14/2004	2.25E+02	5.42E+00

**Dry/Partially Dry Wells**

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

**Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.**

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	4.56E+00	N/A	1.52E+00	NO
MW362	Downgradient	Yes	2.19E+01	N/A	3.09E+00	NO
MW365	Downgradient	Yes	1.92E+01	N/A	2.95E+00	NO
MW368	Downgradient	Yes	7.72E+00	N/A	2.04E+00	NO
MW371	Upgradient	Yes	5.16E+00	N/A	1.64E+00	NO
MW374	Upgradient	Yes	2.20E+01	N/A	3.09E+00	NO
MW375	Sidegradient	Yes	7.04E+00	N/A	1.95E+00	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S      Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X      Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Vanadium**

**UNITS: mg/L**

**UCRS**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 0.055      S= 0.072      CV(1)=1.319      K factor\*\*\*= 2.523      TL(1)= 2.37E-01      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -3.438      S= 0.912      CV(2)=-0.265      K factor\*\*\*= 2.523      TL(2)= -1.14E+00      LL(2)=N/A

### Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	2.50E-02	-3.69E+00
4/22/2002	2.50E-02	-3.69E+00
7/15/2002	2.50E-02	-3.69E+00
10/8/2002	2.00E-02	-3.91E+00
1/8/2003	2.00E-02	-3.91E+00
4/3/2003	2.00E-02	-3.91E+00
7/9/2003	2.00E-02	-3.91E+00
10/6/2003	2.00E-02	-3.91E+00

Well Number: MW374

Date Collected	Result	LN(Result)
10/8/2002	2.00E-01	-1.61E+00
1/7/2003	2.00E-01	-1.61E+00
4/2/2003	2.00E-01	-1.61E+00
7/9/2003	2.00E-02	-3.91E+00
10/7/2003	2.00E-02	-3.91E+00
1/6/2004	2.00E-02	-3.91E+00
4/7/2004	2.00E-02	-3.91E+00
7/14/2004	2.00E-02	-3.91E+00

### Dry/Partially Dry Wells

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

**Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.**

### Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	No	2.00E-02	N/A	-3.91E+00	N/A
MW362	Downgradient	No	2.00E-02	N/A	-3.91E+00	N/A
MW365	Downgradient	No	2.00E-02	N/A	-3.91E+00	N/A
MW368	Downgradient	Yes	5.53E-03	N/A	-5.20E+00	NO
MW371	Upgradient	Yes	5.26E-03	N/A	-5.25E+00	NO
MW374	Upgradient	No	2.00E-02	N/A	-3.91E+00	N/A
MW375	Sidegradient	No	2.00E-02	N/A	-3.91E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

### Conclusion of Statistical Analysis on Historical Data

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Zinc**

**UNITS: mg/L**

**UCRS**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 0.060      S= 0.083      CV(1)=1.380      K factor\*\*\*= 2.523      TL(1)= 2.70E-01      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -3.259      S= 0.840      CV(2)=-0.258      K factor\*\*\*= 2.523      TL(2)= -1.14E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

Well Number:	MW371	
Date Collected	Result	LN(Result)
3/18/2002	1.00E-01	-2.30E+00
4/22/2002	1.00E-01	-2.30E+00
7/15/2002	1.00E-01	-2.30E+00
10/8/2002	2.50E-02	-3.69E+00
1/8/2003	3.50E-02	-3.35E+00
4/3/2003	3.50E-02	-3.35E+00
7/9/2003	3.76E-02	-3.28E+00
10/6/2003	2.00E-02	-3.91E+00
Well Number:	MW374	
Date Collected	Result	LN(Result)
10/8/2002	2.50E-02	-3.69E+00
1/7/2003	3.50E-01	-1.05E+00
4/2/2003	3.50E-02	-3.35E+00
7/9/2003	2.00E-02	-3.91E+00
10/7/2003	2.00E-02	-3.91E+00
1/6/2004	2.00E-02	-3.91E+00
4/7/2004	2.00E-02	-3.91E+00
7/14/2004	2.00E-02	-3.91E+00

**Dry/Partially Dry Wells**

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

**Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.**

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	No	2.00E-02	N/A	-3.91E+00	N/A
MW362	Downgradient	No	2.00E-02	N/A	-3.91E+00	N/A
MW365	Downgradient	Yes	3.30E-03	N/A	-5.71E+00	NO
MW368	Downgradient	Yes	5.59E-03	N/A	-5.19E+00	NO
MW371	Upgradient	No	2.00E-02	N/A	-3.91E+00	N/A
MW374	Upgradient	No	2.00E-02	N/A	-3.91E+00	N/A
MW375	Sidegradient	Yes	3.86E-03	N/A	-5.56E+00	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Aluminum**

**UNITS: mg/L**

**URGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 0.625      S= 0.774      CV(1)=1.239      K factor\*\*\*= 2.523      TL(1)= 2.58E+00      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -0.973      S= 0.935      CV(2)=-0.961      K factor\*\*\*= 2.523      TL(2)= 1.39E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.**

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	2.55E-01	-1.37E+00
4/22/2002	2.00E-01	-1.61E+00
7/15/2002	3.22E-01	-1.13E+00
10/8/2002	2.00E-01	-1.61E+00
1/8/2003	2.00E-01	-1.61E+00
4/3/2003	2.00E-01	-1.61E+00
7/8/2003	2.00E-01	-1.61E+00
10/6/2003	6.89E-01	-3.73E-01

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	2.52E-02	N/A	-3.68E+00	NO
MW360	Downgradient	Yes	3.82E-02	N/A	-3.26E+00	NO
MW363	Downgradient	No	5.00E-02	N/A	-3.00E+00	N/A
MW366	Downgradient	No	5.00E-02	N/A	-3.00E+00	N/A
MW369	Upgradient	Yes	2.69E-02	N/A	-3.62E+00	NO
MW372	Upgradient	No	5.00E-02	N/A	-3.00E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	2.61E+00	9.59E-01
4/23/2002	2.00E-01	-1.61E+00
7/16/2002	1.14E+00	1.31E-01
10/8/2002	8.62E-01	-1.49E-01
1/7/2003	2.32E+00	8.42E-01
4/2/2003	2.00E-01	-1.61E+00
7/9/2003	2.00E-01	-1.61E+00
10/7/2003	2.00E-01	-1.61E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Boron**

**UNITS: mg/L**

**URGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 0.985      S= 0.825      CV(1)=0.838      K factor\*\*\*= 2.523      TL(1)= 3.07E+00      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -0.430      S= 0.990      CV(2)=-2.302      K factor\*\*\*= 2.523      TL(2)= 2.07E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	2.00E+00	6.93E-01
4/22/2002	2.00E+00	6.93E-01
7/15/2002	2.00E+00	6.93E-01
10/8/2002	2.00E-01	-1.61E+00
1/8/2003	2.00E-01	-1.61E+00
4/3/2003	2.00E-01	-1.61E+00
7/8/2003	2.00E-01	-1.61E+00
10/6/2003	2.00E-01	-1.61E+00

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	2.00E+00	6.93E-01
4/23/2002	2.00E+00	6.93E-01
7/16/2002	2.00E+00	6.93E-01
10/8/2002	4.92E-01	-7.09E-01
1/7/2003	4.92E-01	-7.09E-01
4/2/2003	6.00E-01	-5.11E-01
7/9/2003	5.70E-01	-5.62E-01
10/7/2003	6.04E-01	-5.04E-01

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	3.00E-01	NO	-1.20E+00	N/A
MW360	Downgradient	Yes	1.71E-02	NO	-4.07E+00	N/A
MW363	Downgradient	Yes	1.94E-02	NO	-3.94E+00	N/A
MW366	Downgradient	Yes	7.96E-02	NO	-2.53E+00	N/A
MW369	Upgradient	Yes	1.37E-02	NO	-4.29E+00	N/A
MW372	Upgradient	Yes	1.86E+00	NO	6.21E-01	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Bromide**

**UNITS: mg/L**

**URGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 1.000      S= 0.000      CV(1)=0.000      K factor\*\*\*= 2.523      TL(1)= 1.00E+00      LL(1)=N/A

**Statistics-Transformed Background Data**      X= 0.000      S= 0.000      CV(2)=#Num!      K factor\*\*\*= 2.523      TL(2)= 0.00E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	1.00E+00	0.00E+00
4/22/2002	1.00E+00	0.00E+00
7/15/2002	1.00E+00	0.00E+00
10/8/2002	1.00E+00	0.00E+00
1/8/2003	1.00E+00	0.00E+00
4/3/2003	1.00E+00	0.00E+00
7/8/2003	1.00E+00	0.00E+00
10/6/2003	1.00E+00	0.00E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	3.19E-01	NO	-1.14E+00	N/A
MW360	Downgradient	Yes	1.46E-01	NO	-1.92E+00	N/A
MW363	Downgradient	No	2.00E-01	N/A	-1.61E+00	N/A
MW366	Downgradient	Yes	5.07E-01	NO	-6.79E-01	N/A
MW369	Upgradient	Yes	3.25E-01	NO	-1.12E+00	N/A
MW372	Upgradient	Yes	4.86E-01	NO	-7.22E-01	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	1.00E+00	0.00E+00
4/23/2002	1.00E+00	0.00E+00
7/16/2002	1.00E+00	0.00E+00
10/8/2002	1.00E+00	0.00E+00
1/7/2003	1.00E+00	0.00E+00
4/2/2003	1.00E+00	0.00E+00
7/9/2003	1.00E+00	0.00E+00
10/7/2003	1.00E+00	0.00E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Calcium**

**UNITS: mg/L**

**URGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 32.763    S= 9.391    CV(1)=0.287    K factor\*\*\*= 2.523    TL(1)= 5.65E+01    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 3.449    S= 0.299    CV(2)=0.087    K factor\*\*\*= 2.523    TL(2)= 4.20E+00    LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	2.95E+01	3.38E+00
4/22/2002	2.98E+01	3.39E+00
7/15/2002	2.53E+01	3.23E+00
10/8/2002	2.19E+01	3.09E+00
1/8/2003	2.09E+01	3.04E+00
4/3/2003	2.22E+01	3.10E+00
7/8/2003	2.29E+01	3.13E+00
10/6/2003	2.17E+01	3.08E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	2.39E+01	NO	3.17E+00	N/A
MW360	Downgradient	Yes	1.77E+01	NO	2.87E+00	N/A
MW363	Downgradient	Yes	2.12E+01	NO	3.05E+00	N/A
MW366	Downgradient	Yes	3.16E+01	NO	3.45E+00	N/A
MW369	Upgradient	Yes	1.51E+01	NO	2.71E+00	N/A
MW372	Upgradient	Yes	6.59E+01	YES	4.19E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	4.15E+01	3.73E+00
4/23/2002	4.36E+01	3.78E+00
7/16/2002	4.04E+01	3.70E+00
10/8/2002	3.88E+01	3.66E+00
1/7/2003	4.11E+01	3.72E+00
4/2/2003	4.29E+01	3.76E+00
7/9/2003	3.51E+01	3.56E+00
10/7/2003	4.66E+01	3.84E+00

**Conclusion of Statistical Analysis on Historical Data**

**Wells with Exceedances**

**The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.**

MW372

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

**C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison**  
**Chemical Oxygen Demand (COD)                      UNITS: mg/L    URG**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 35.938    S= 3.750    CV(1)=0.104    K factor\*\*\*= 2.523    TL(1)= 4.54E+01    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 3.578    S= 0.089    CV(2)=0.025    K factor\*\*\*= 2.523    TL(2)= 3.80E+00    LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	3.50E+01	3.56E+00
4/22/2002	3.50E+01	3.56E+00
7/15/2002	3.50E+01	3.56E+00
10/8/2002	5.00E+01	3.91E+00
1/8/2003	3.50E+01	3.56E+00
4/3/2003	3.50E+01	3.56E+00
7/8/2003	3.50E+01	3.56E+00
10/6/2003	3.50E+01	3.56E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	No	2.00E+01	N/A	3.00E+00	N/A
MW360	Downgradient	No	2.00E+01	N/A	3.00E+00	N/A
MW363	Downgradient	No	2.00E+01	N/A	3.00E+00	N/A
MW366	Downgradient	Yes	1.06E+01	NO	2.36E+00	N/A
MW369	Upgradient	No	2.00E+01	N/A	3.00E+00	N/A
MW372	Upgradient	Yes	2.57E+01	NO	3.25E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	3.50E+01	3.56E+00
4/23/2002	3.50E+01	3.56E+00
7/16/2002	3.50E+01	3.56E+00
10/8/2002	3.50E+01	3.56E+00
1/7/2003	3.50E+01	3.56E+00
4/2/2003	3.50E+01	3.56E+00
7/9/2003	3.50E+01	3.56E+00
10/7/2003	3.50E+01	3.56E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Chloride**

**UNITS: mg/L**

**URGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 44.119    S= 4.554    CV(1)=0.103    K factor\*\*\*= 2.523    TL(1)= 5.56E+01    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 3.782    S= 0.099    CV(2)=0.026    K factor\*\*\*= 2.523    TL(2)= 4.03E+00    LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW369

Date Collected	Result	LN(Result)
7/15/2002	4.83E+01	3.88E+00
10/8/2002	4.77E+01	3.86E+00
1/8/2003	4.57E+01	3.82E+00
4/3/2003	4.74E+01	3.86E+00
7/8/2003	5.59E+01	4.02E+00
10/6/2003	4.74E+01	3.86E+00
1/7/2004	4.55E+01	3.82E+00
4/7/2004	4.34E+01	3.77E+00

Well Number: MW372

Date Collected	Result	LN(Result)
7/16/2002	3.98E+01	3.68E+00
10/8/2002	4.10E+01	3.71E+00
1/7/2003	3.94E+01	3.67E+00
4/2/2003	3.92E+01	3.67E+00
7/9/2003	3.98E+01	3.68E+00
10/7/2003	4.00E+01	3.69E+00
1/5/2004	4.34E+01	3.77E+00
4/5/2004	4.20E+01	3.74E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	2.74E+01	NO	3.31E+00	N/A
MW360	Downgradient	Yes	5.29E+00	NO	1.67E+00	N/A
MW363	Downgradient	Yes	1.69E+01	NO	2.83E+00	N/A
MW366	Downgradient	Yes	4.06E+01	NO	3.70E+00	N/A
MW369	Upgradient	Yes	2.94E+01	NO	3.38E+00	N/A
MW372	Upgradient	Yes	3.52E+01	NO	3.56E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

**C-746-U Third Quarter 2024 Statistical Analysis Historical Background Comparison**

**Cobalt**

**UNITS: mg/L**

**URGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data** X= 0.025 S= 0.021 CV(1)=0.845 K factor\*\*\*= 2.523 TL(1)= 7.73E-02 LL(1)=N/A

**Statistics-Transformed Background Data** X= -4.090 S= 1.006 CV(2)=-0.246 K factor\*\*\*= 2.523 TL(2)= -1.55E+00 LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	2.50E-02	-3.69E+00
4/22/2002	2.50E-02	-3.69E+00
7/15/2002	2.50E-02	-3.69E+00
10/8/2002	9.38E-03	-4.67E+00
1/8/2003	5.48E-03	-5.21E+00
4/3/2003	5.87E-03	-5.14E+00
7/8/2003	5.41E-02	-2.92E+00
10/6/2003	6.89E-02	-2.68E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW360	Downgradient	Yes	7.81E-04	NO	-7.15E+00	N/A
MW363	Downgradient	Yes	9.63E-04	NO	-6.95E+00	N/A
MW366	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW369	Upgradient	Yes	4.31E-03	NO	-5.45E+00	N/A
MW372	Upgradient	Yes	3.87E-04	NO	-7.86E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	2.50E-02	-3.69E+00
4/23/2002	2.50E-02	-3.69E+00
7/16/2002	2.50E-02	-3.69E+00
10/8/2002	1.58E-03	-6.45E+00
1/7/2003	1.47E-02	-4.22E+00
4/2/2003	1.16E-02	-4.46E+00
7/9/2003	6.53E-02	-2.73E+00
10/7/2003	7.88E-03	-4.84E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.



# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Copper**

**UNITS: mg/L**

**URGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 0.025      S= 0.010      CV(1)=0.400      K factor\*\*\*= 2.523      TL(1)= 5.02E-02      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -3.742      S= 0.307      CV(2)=-0.082      K factor\*\*\*= 2.523      TL(2)= -2.97E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	2.50E-02	-3.69E+00
4/22/2002	2.50E-02	-3.69E+00
7/15/2002	5.00E-02	-3.00E+00
10/8/2002	2.00E-02	-3.91E+00
1/8/2003	2.00E-02	-3.91E+00
4/3/2003	2.00E-02	-3.91E+00
7/8/2003	2.00E-02	-3.91E+00
10/6/2003	2.00E-02	-3.91E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	1.08E-03	NO	-6.83E+00	N/A
MW360	Downgradient	Yes	1.49E-03	NO	-6.51E+00	N/A
MW363	Downgradient	Yes	1.10E-03	NO	-6.81E+00	N/A
MW366	Downgradient	Yes	8.29E-04	NO	-7.10E+00	N/A
MW369	Upgradient	Yes	2.95E-03	NO	-5.83E+00	N/A
MW372	Upgradient	Yes	1.35E-03	NO	-6.61E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	2.50E-02	-3.69E+00
4/23/2002	2.50E-02	-3.69E+00
7/16/2002	5.00E-02	-3.00E+00
10/8/2002	2.00E-02	-3.91E+00
1/7/2003	2.00E-02	-3.91E+00
4/2/2003	2.00E-02	-3.91E+00
7/9/2003	2.00E-02	-3.91E+00
10/7/2003	2.00E-02	-3.91E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Dissolved Oxygen**

**UNITS: mg/L**

**URGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 1.781      S= 1.351      CV(1)=0.759      K factor\*\*\*= 2.523      TL(1)= 5.19E+00      LL(1)=N/A

**Statistics-Transformed Background Data**      X= 0.228      S= 1.065      CV(2)=4.665      K factor\*\*\*= 2.523      TL(2)= 2.92E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	5.41E+00	1.69E+00
4/22/2002	1.57E+00	4.51E-01
7/15/2002	8.00E-01	-2.23E-01
10/8/2002	1.09E+00	8.62E-02
1/8/2003	2.69E+00	9.90E-01
4/3/2003	2.04E+00	7.13E-01
7/8/2003	1.19E+00	1.74E-01
10/6/2003	1.78E+00	5.77E-01

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	4.49E+00	NO	1.50E+00	N/A
MW360	Downgradient	Yes	1.70E+00	NO	5.31E-01	N/A
MW363	Downgradient	Yes	7.90E-01	NO	-2.36E-01	N/A
MW366	Downgradient	Yes	4.63E+00	NO	1.53E+00	N/A
MW369	Upgradient	Yes	3.00E+00	NO	1.10E+00	N/A
MW372	Upgradient	Yes	1.57E+00	NO	4.51E-01	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	3.89E+00	1.36E+00
4/23/2002	5.00E-02	-3.00E+00
7/16/2002	1.33E+00	2.85E-01
10/8/2002	2.66E+00	9.78E-01
1/7/2003	4.00E-01	-9.16E-01
4/2/2003	9.10E-01	-9.43E-02
7/9/2003	1.42E+00	3.51E-01
10/7/2003	1.26E+00	2.31E-01

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Dissolved Solids**

**UNITS: mg/L**

**URGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 285.188    S= 44.908    CV(1)=0.157    K factor\*\*\*= 2.523    TL(1)= 3.98E+02    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 5.640    S= 0.175    CV(2)=0.031    K factor\*\*\*= 2.523    TL(2)= 6.08E+00    LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	1.73E+02	5.15E+00
4/22/2002	2.46E+02	5.51E+00
7/15/2002	2.32E+02	5.45E+00
10/8/2002	2.75E+02	5.62E+00
1/8/2003	2.69E+02	5.59E+00
4/3/2003	2.50E+02	5.52E+00
7/8/2003	2.95E+02	5.69E+00
10/6/2003	2.76E+02	5.62E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	2.15E+02	NO	5.37E+00	N/A
MW360	Downgradient	Yes	2.32E+02	NO	5.45E+00	N/A
MW363	Downgradient	Yes	2.08E+02	NO	5.34E+00	N/A
MW366	Downgradient	Yes	2.68E+02	NO	5.59E+00	N/A
MW369	Upgradient	Yes	2.13E+02	NO	5.36E+00	N/A
MW372	Upgradient	Yes	4.96E+02	YES	6.21E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	2.95E+02	5.69E+00
4/23/2002	3.22E+02	5.77E+00
7/16/2002	3.29E+02	5.80E+00
10/8/2002	2.90E+02	5.67E+00
1/7/2003	3.16E+02	5.76E+00
4/2/2003	3.11E+02	5.74E+00
7/9/2003	3.47E+02	5.85E+00
10/7/2003	3.37E+02	5.82E+00

**Conclusion of Statistical Analysis on Historical Data**

**The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.**

**Wells with Exceedances**

MW372

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Iron**

**UNITS: mg/L**

**URGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 7.385      S= 6.991      CV(1)=0.947      K factor\*\*\*= 2.523      TL(1)= 2.50E+01      LL(1)=N/A

**Statistics-Transformed Background Data**      X= 1.358      S= 1.323      CV(2)=0.974      K factor\*\*\*= 2.523      TL(2)= 4.70E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	6.56E-01	-4.22E-01
4/22/2002	6.95E-01	-3.64E-01
7/15/2002	7.10E+00	1.96E+00
10/8/2002	2.15E+01	3.07E+00
1/8/2003	1.85E+01	2.92E+00
4/3/2003	1.49E+01	2.70E+00
7/8/2003	1.13E+01	2.42E+00
10/6/2003	1.49E+01	2.70E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	8.60E-02	NO	-2.45E+00	N/A
MW360	Downgradient	Yes	6.95E-02	NO	-2.67E+00	N/A
MW363	Downgradient	Yes	3.41E-02	NO	-3.38E+00	N/A
MW366	Downgradient	No	1.00E-01	N/A	-2.30E+00	N/A
MW369	Upgradient	Yes	4.86E-02	NO	-3.02E+00	N/A
MW372	Upgradient	Yes	6.80E-02	NO	-2.69E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	5.95E+00	1.78E+00
4/23/2002	7.92E-01	-2.33E-01
7/16/2002	1.78E+00	5.77E-01
10/8/2002	7.76E-01	-2.54E-01
1/7/2003	3.55E+00	1.27E+00
4/2/2003	5.02E+00	1.61E+00
7/9/2003	1.00E+01	2.30E+00
10/7/2003	7.33E-01	-3.11E-01

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Magnesium**

**UNITS: mg/L**

**URGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 12.864    S= 3.505    CV(1)=0.272    K factor\*\*\*= 2.523    TL(1)= 2.17E+01    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 2.517    S= 0.290    CV(2)=0.115    K factor\*\*\*= 2.523    TL(2)= 3.25E+00    LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	1.14E+01	2.43E+00
4/22/2002	1.20E+01	2.48E+00
7/15/2002	1.00E+01	2.30E+00
10/8/2002	8.62E+00	2.15E+00
1/8/2003	7.89E+00	2.07E+00
4/3/2003	7.97E+00	2.08E+00
7/8/2003	1.03E+01	2.33E+00
10/6/2003	9.14E+00	2.21E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	1.01E+01	NO	2.31E+00	N/A
MW360	Downgradient	Yes	7.60E+00	NO	2.03E+00	N/A
MW363	Downgradient	Yes	8.13E+00	NO	2.10E+00	N/A
MW366	Downgradient	Yes	1.30E+01	NO	2.56E+00	N/A
MW369	Upgradient	Yes	6.22E+00	NO	1.83E+00	N/A
MW372	Upgradient	Yes	2.26E+01	YES	3.12E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	1.57E+01	2.75E+00
4/23/2002	1.66E+01	2.81E+00
7/16/2002	1.54E+01	2.73E+00
10/8/2002	1.58E+01	2.76E+00
1/7/2003	1.58E+01	2.76E+00
4/2/2003	1.64E+01	2.80E+00
7/9/2003	1.52E+01	2.72E+00
10/7/2003	1.76E+01	2.87E+00

**Conclusion of Statistical Analysis on Historical Data**

**The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.**

**Wells with Exceedances**

MW372

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Manganese**

**UNITS: mg/L**

**URGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 0.413      S= 0.274      CV(1)=0.664      K factor\*\*\*= 2.523      TL(1)= 1.11E+00      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -1.226      S= 1.008      CV(2)=-0.822      K factor\*\*\*= 2.523      TL(2)= 1.32E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	3.40E-02	-3.38E+00
4/22/2002	6.20E-02	-2.78E+00
7/15/2002	4.36E-01	-8.30E-01
10/8/2002	8.67E-01	-1.43E-01
1/8/2003	8.28E-01	-1.89E-01
4/3/2003	6.72E-01	-3.97E-01
7/8/2003	3.21E-01	-1.14E+00
10/6/2003	7.14E-01	-3.37E-01

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	1.31E-02	NO	-4.34E+00	N/A
MW360	Downgradient	Yes	9.66E-03	NO	-4.64E+00	N/A
MW363	Downgradient	Yes	1.92E-01	NO	-1.65E+00	N/A
MW366	Downgradient	Yes	3.00E-03	NO	-5.81E+00	N/A
MW369	Upgradient	Yes	4.23E-03	NO	-5.47E+00	N/A
MW372	Upgradient	Yes	4.00E-03	NO	-5.52E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	2.05E-01	-1.58E+00
4/23/2002	3.45E-01	-1.06E+00
7/16/2002	2.10E-01	-1.56E+00
10/8/2002	5.39E-02	-2.92E+00
1/7/2003	5.37E-01	-6.22E-01
4/2/2003	4.15E-01	-8.79E-01
7/9/2003	6.54E-01	-4.25E-01
10/7/2003	2.54E-01	-1.37E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Molybdenum**

**UNITS: mg/L**

**URGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 0.010      S= 0.012      CV(1)=1.199      K factor\*\*\*= 2.523      TL(1)= 4.03E-02      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -5.698      S= 1.607      CV(2)=-0.282      K factor\*\*\*= 2.523      TL(2)= -1.64E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.**

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	2.50E-02	-3.69E+00
4/22/2002	2.50E-02	-3.69E+00
7/15/2002	2.50E-02	-3.69E+00
10/8/2002	1.00E-03	-6.91E+00
1/8/2003	1.00E-03	-6.91E+00
4/3/2003	1.00E-03	-6.91E+00
7/8/2003	1.00E-03	-6.91E+00
10/6/2003	1.00E-03	-6.91E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW360	Downgradient	No	2.19E-04	N/A	-8.43E+00	N/A
MW363	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW366	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW369	Upgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW372	Upgradient	Yes	3.12E-04	N/A	-8.07E+00	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	2.50E-02	-3.69E+00
4/23/2002	2.50E-02	-3.69E+00
7/16/2002	2.50E-02	-3.69E+00
10/8/2002	1.00E-03	-6.91E+00
1/7/2003	1.00E-03	-6.91E+00
4/2/2003	1.00E-03	-6.91E+00
7/9/2003	1.05E-03	-6.86E+00
10/7/2003	1.00E-03	-6.91E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Nickel**

**UNITS: mg/L**

**URGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 0.024      S= 0.021      CV(1)=0.910      K factor\*\*\*= 2.523      TL(1)= 7.77E-02      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -4.246      S= 1.075      CV(2)=-0.253      K factor\*\*\*= 2.523      TL(2)= -1.53E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	5.00E-02	-3.00E+00
4/22/2002	5.00E-02	-3.00E+00
7/15/2002	5.00E-02	-3.00E+00
10/8/2002	5.00E-03	-5.30E+00
1/8/2003	5.00E-03	-5.30E+00
4/3/2003	5.00E-03	-5.30E+00
7/8/2003	1.30E-02	-4.34E+00
10/6/2003	1.04E-02	-4.57E+00

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	5.00E-02	-3.00E+00
4/23/2002	5.00E-02	-3.00E+00
7/16/2002	5.00E-02	-3.00E+00
10/8/2002	5.00E-03	-5.30E+00
1/7/2003	5.00E-03	-5.30E+00
4/2/2003	5.00E-03	-5.30E+00
7/9/2003	1.90E-02	-3.96E+00
10/7/2003	5.00E-03	-5.30E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	No	2.00E-03	N/A	-6.21E+00	N/A
MW360	Downgradient	Yes	1.17E-03	NO	-6.75E+00	N/A
MW363	Downgradient	Yes	2.10E-02	NO	-3.86E+00	N/A
MW366	Downgradient	Yes	6.61E-04	NO	-7.32E+00	N/A
MW369	Upgradient	Yes	4.32E-03	NO	-5.44E+00	N/A
MW372	Upgradient	Yes	9.37E-04	NO	-6.97E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

## Oxidation-Reduction Potential

UNITS: mV

URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 74.563    S= 94.243    CV(1)=1.264    K factor\*\*\*= 2.523    TL(1)= 3.12E+02    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 4.554    S= 0.784    CV(2)=0.172    K factor\*\*\*= 2.523    TL(2)= 5.37E+00    LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	2.15E+02	5.37E+00
4/22/2002	1.10E+02	4.70E+00
7/15/2002	2.00E+01	3.00E+00
1/8/2003	-5.00E+00	#Func!
4/3/2003	-1.80E+01	#Func!
7/8/2003	-6.70E+01	#Func!
10/6/2003	-1.00E+00	#Func!
1/7/2004	5.50E+01	4.01E+00

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	2.10E+02	5.35E+00
4/23/2002	6.50E+01	4.17E+00
7/16/2002	2.15E+02	5.37E+00
10/8/2002	1.85E+02	5.22E+00
1/7/2003	4.50E+01	3.81E+00
4/2/2003	6.50E+01	4.17E+00
7/9/2003	-3.90E+01	#Func!
10/7/2003	1.38E+02	4.93E+00

**Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.**

**#Because the natural log was not possible for all background values, the TL was considered equal to the maximum background value.**

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	5.13E+02	N/A	6.24E+00	YES
MW360	Downgradient	Yes	4.26E+02	N/A	6.05E+00	YES
MW363	Downgradient	Yes	5.26E+02	N/A	6.27E+00	YES
MW366	Downgradient	Yes	5.92E+02	N/A	6.38E+00	YES
MW369	Upgradient	Yes	4.62E+02	N/A	6.14E+00	YES
MW372	Upgradient	Yes	4.52E+02	N/A	6.11E+00	YES

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.**

**Wells with Exceedances**

- MW357
- MW360
- MW363
- MW366
- MW369
- MW372

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**pH**

**UNITS: Std Unit**

**URGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 6.274      S= 0.194      CV(1)=0.031      K factor\*\*\*= 2.904      TL(1)= 6.84E+00      LL(1)=5.71E+00

**Statistics-Transformed Background Data**      X= 1.836      S= 0.031      CV(2)=0.017      K factor\*\*\*= 2.904      TL(2)= 1.93E+00      LL(2)=1.75E+00

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	6.10E+00	1.81E+00
4/22/2002	6.10E+00	1.81E+00
7/15/2002	6.10E+00	1.81E+00
10/8/2002	6.50E+00	1.87E+00
1/8/2003	6.50E+00	1.87E+00
4/3/2003	6.60E+00	1.89E+00
7/8/2003	6.50E+00	1.87E+00
10/6/2003	6.50E+00	1.87E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)? Result <LL(1)?	LN(Result)	LN(Result) >TL(2)? LN(Result) <LL(2)?
MW357	Downgradient	Yes	6.13E+00	NO	1.81E+00	N/A
MW360	Downgradient	Yes	6.12E+00	NO	1.81E+00	N/A
MW363	Downgradient	Yes	6.07E+00	NO	1.80E+00	N/A
MW366	Downgradient	Yes	6.04E+00	NO	1.80E+00	N/A
MW369	Upgradient	Yes	6.06E+00	NO	1.80E+00	N/A
MW372	Upgradient	Yes	6.06E+00	NO	1.80E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	6.10E+00	1.81E+00
4/23/2002	6.12E+00	1.81E+00
7/16/2002	6.10E+00	1.81E+00
10/8/2002	6.06E+00	1.80E+00
1/7/2003	6.26E+00	1.83E+00
4/2/2003	6.15E+00	1.82E+00
7/9/2003	6.30E+00	1.84E+00
10/7/2003	6.40E+00	1.86E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Potassium**

**UNITS: mg/L**

**URGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 1.663      S= 0.488      CV(1)=0.293      K factor\*\*\*= 2.523      TL(1)= 2.89E+00      LL(1)=N/A

**Statistics-Transformed Background Data**      X= 0.456      S= 0.362      CV(2)=0.794      K factor\*\*\*= 2.523      TL(2)= 1.37E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	2.00E+00	6.93E-01
4/22/2002	2.21E+00	7.93E-01
7/15/2002	2.00E+00	6.93E-01
10/8/2002	9.66E-01	-3.46E-02
1/8/2003	7.27E-01	-3.19E-01
4/3/2003	8.00E-01	-2.23E-01
7/8/2003	1.62E+00	4.82E-01
10/6/2003	1.14E+00	1.31E-01

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	1.67E+00	NO	5.13E-01	N/A
MW360	Downgradient	Yes	6.87E-01	NO	-3.75E-01	N/A
MW363	Downgradient	Yes	1.86E+00	NO	6.21E-01	N/A
MW366	Downgradient	Yes	1.86E+00	NO	6.21E-01	N/A
MW369	Upgradient	Yes	4.99E-01	NO	-6.95E-01	N/A
MW372	Upgradient	Yes	2.26E+00	NO	8.15E-01	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	2.04E+00	7.13E-01
4/23/2002	2.03E+00	7.08E-01
7/16/2002	2.00E+00	6.93E-01
10/8/2002	1.54E+00	4.32E-01
1/7/2003	1.88E+00	6.31E-01
4/2/2003	2.09E+00	7.37E-01
7/9/2003	1.78E+00	5.77E-01
10/7/2003	1.79E+00	5.82E-01

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Sodium**

**UNITS: mg/L**

**URGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 45.100    S= 11.875    CV(1)=0.263    K factor\*\*\*= 2.523    TL(1)= 7.51E+01    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 3.780    S= 0.242    CV(2)=0.064    K factor\*\*\*= 2.523    TL(2)= 4.39E+00    LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	3.57E+01	3.58E+00
4/22/2002	3.76E+01	3.63E+00
7/15/2002	4.24E+01	3.75E+00
10/8/2002	6.69E+01	4.20E+00
1/8/2003	6.79E+01	4.22E+00
4/3/2003	6.18E+01	4.12E+00
7/8/2003	4.56E+01	3.82E+00
10/6/2003	5.91E+01	4.08E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	3.87E+01	NO	3.66E+00	N/A
MW360	Downgradient	Yes	5.46E+01	NO	4.00E+00	N/A
MW363	Downgradient	Yes	3.66E+01	NO	3.60E+00	N/A
MW366	Downgradient	Yes	4.41E+01	NO	3.79E+00	N/A
MW369	Upgradient	Yes	4.84E+01	NO	3.88E+00	N/A
MW372	Upgradient	Yes	5.77E+01	NO	4.06E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	3.72E+01	3.62E+00
4/23/2002	3.86E+01	3.65E+00
7/16/2002	3.56E+01	3.57E+00
10/8/2002	3.75E+01	3.62E+00
1/7/2003	3.41E+01	3.53E+00
4/2/2003	3.44E+01	3.54E+00
7/9/2003	4.41E+01	3.79E+00
10/7/2003	4.31E+01	3.76E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Sulfate**

**UNITS: mg/L**

**URGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 45.031    S= 33.919    CV(1)=0.753    K factor\*\*\*= 2.523    TL(1)= 1.31E+02    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 3.420    S= 0.981    CV(2)=0.287    K factor\*\*\*= 2.523    TL(2)= 5.89E+00    LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	1.55E+01	2.74E+00
4/22/2002	1.58E+01	2.76E+00
7/15/2002	1.38E+01	2.62E+00
10/8/2002	6.90E+00	1.93E+00
1/8/2003	1.05E+01	2.35E+00
4/3/2003	1.05E+01	2.35E+00
7/8/2003	1.09E+01	2.39E+00
10/6/2003	1.63E+01	2.79E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	3.39E+01	NO	3.52E+00	N/A
MW360	Downgradient	Yes	9.28E+00	NO	2.23E+00	N/A
MW363	Downgradient	Yes	2.92E+01	NO	3.37E+00	N/A
MW366	Downgradient	Yes	5.00E+01	NO	3.91E+00	N/A
MW369	Upgradient	Yes	7.92E+00	NO	2.07E+00	N/A
MW372	Upgradient	Yes	1.64E+02	YES	5.10E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	7.17E+01	4.27E+00
4/23/2002	7.47E+01	4.31E+00
7/16/2002	7.41E+01	4.31E+00
10/8/2002	7.05E+01	4.26E+00
1/7/2003	7.58E+01	4.33E+00
4/2/2003	8.18E+01	4.40E+00
7/9/2003	8.36E+01	4.43E+00
10/7/2003	8.81E+01	4.48E+00

**Conclusion of Statistical Analysis on Historical Data**

**The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.**

**Wells with Exceedances**

MW372

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Technetium-99**

**UNITS: pCi/L**

**URGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 20.821    S= 18.044    CV(1)=0.867    K factor\*\*\*= 2.523    TL(1)= 6.63E+01    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 2.770    S= 1.150    CV(2)=0.415    K factor\*\*\*= 2.523    TL(2)= 3.97E+00    LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	4.17E+01	3.73E+00
4/22/2002	5.31E+01	3.97E+00
7/15/2002	1.81E+01	2.90E+00
10/8/2002	1.64E+01	2.80E+00
1/8/2003	3.49E+00	1.25E+00
4/3/2003	9.34E+00	2.23E+00
7/8/2003	1.75E+01	2.86E+00
10/6/2003	1.70E+01	2.83E+00

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	4.48E+01	3.80E+00
4/23/2002	8.02E-01	-2.21E-01
7/16/2002	1.98E+01	2.99E+00
10/8/2002	4.61E+01	3.83E+00
1/7/2003	-9.73E-01	#Func!
4/2/2003	9.07E+00	2.20E+00
7/9/2003	0.00E+00	#Func!
10/7/2003	3.69E+01	3.61E+00

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

**#Because the natural log was not possible for all background values, the TL was considered equal to the maximum background value.**

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	2.86E+01	NO	3.35E+00	N/A
MW360	Downgradient	No	-1.11E-01	N/A	#Error	N/A
MW363	Downgradient	No	1.52E+00	N/A	4.19E-01	N/A
MW366	Downgradient	Yes	6.85E+01	YES	4.23E+00	N/A
MW369	Upgradient	Yes	4.27E+01	NO	3.75E+00	N/A
MW372	Upgradient	No	1.75E+01	N/A	2.86E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.**

**Wells with Exceedances**

MW366

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results - 1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Total Organic Carbon (TOC)**

**UNITS: mg/L**

**URGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 3.513      S= 4.307      CV(1)=1.226      K factor\*\*\*= 2.523      TL(1)= 1.44E+01      LL(1)=N/A

**Statistics-Transformed Background Data**      X= 0.851      S= 0.828      CV(2)=0.973      K factor\*\*\*= 2.523      TL(2)= 2.94E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.**

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	1.70E+00	5.31E-01
4/22/2002	1.60E+00	4.70E-01
7/15/2002	3.10E+00	1.13E+00
10/8/2002	1.77E+01	2.87E+00
1/8/2003	9.00E+00	2.20E+00
4/3/2003	4.00E+00	1.39E+00
7/8/2003	4.90E+00	1.59E+00
10/6/2003	2.40E+00	8.75E-01

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	4.49E-01	N/A	-8.01E-01	NO
MW360	Downgradient	Yes	9.83E-01	N/A	-1.71E-02	NO
MW363	Downgradient	Yes	7.73E-01	N/A	-2.57E-01	NO
MW366	Downgradient	Yes	6.17E-01	N/A	-4.83E-01	NO
MW369	Upgradient	Yes	7.57E-01	N/A	-2.78E-01	NO
MW372	Upgradient	Yes	7.98E-01	N/A	-2.26E-01	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	1.00E+00	0.00E+00
4/23/2002	1.20E+00	1.82E-01
7/16/2002	1.00E+00	0.00E+00
10/8/2002	1.00E+00	0.00E+00
1/7/2003	1.60E+00	4.70E-01
4/2/2003	1.50E+00	4.05E-01
7/9/2003	3.00E+00	1.10E+00
10/7/2003	1.50E+00	4.05E-01

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Total Organic Halides (TOX)**

**UNITS: ug/L**

**URGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 67.963    S= 64.316    CV(1)=0.946    K factor\*\*\*= 2.523    TL(1)= 2.30E+02    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 3.772    S= 1.023    CV(2)=0.271    K factor\*\*\*= 2.523    TL(2)= 6.35E+00    LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	5.00E+01	3.91E+00
4/22/2002	5.00E+01	3.91E+00
7/15/2002	8.10E+01	4.39E+00
10/8/2002	2.02E+02	5.31E+00
1/8/2003	1.77E+02	5.18E+00
4/3/2003	9.31E+01	4.53E+00
7/8/2003	1.75E+01	2.86E+00
10/6/2003	3.75E+01	3.62E+00

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	1.84E+02	5.21E+00
4/23/2002	5.00E+01	3.91E+00
7/16/2002	5.00E+01	3.91E+00
10/8/2002	5.00E+01	3.91E+00
1/7/2003	1.00E+01	2.30E+00
4/2/2003	1.27E+01	2.54E+00
7/9/2003	1.00E+01	2.30E+00
10/7/2003	1.26E+01	2.53E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	2.68E+01	NO	3.29E+00	N/A
MW360	Downgradient	Yes	6.18E+00	NO	1.82E+00	N/A
MW363	Downgradient	Yes	1.05E+01	NO	2.35E+00	N/A
MW366	Downgradient	Yes	3.90E+00	NO	1.36E+00	N/A
MW369	Upgradient	Yes	1.83E+01	NO	2.91E+00	N/A
MW372	Upgradient	Yes	6.46E+00	NO	1.87E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Zinc**

**UNITS: mg/L**

**URGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 0.116      S= 0.173      CV(1)=1.490      K factor\*\*\*= 2.523      TL(1)= 5.52E-01      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -2.729      S= 1.014      CV(2)=-0.371      K factor\*\*\*= 2.523      TL(2)= -1.72E-01      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.**

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	1.00E-01	-2.30E+00
4/22/2002	1.00E-01	-2.30E+00
7/15/2002	1.00E-01	-2.30E+00
10/8/2002	2.50E-02	-3.69E+00
1/8/2003	3.50E-02	-3.35E+00
4/3/2003	3.50E-02	-3.35E+00
7/8/2003	2.00E-02	-3.91E+00
10/6/2003	2.00E-02	-3.91E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	5.04E-03	N/A	-5.29E+00	NO
MW360	Downgradient	Yes	5.59E-03	N/A	-5.19E+00	NO
MW363	Downgradient	Yes	4.14E-03	N/A	-5.49E+00	NO
MW366	Downgradient	No	2.00E-02	N/A	-3.91E+00	N/A
MW369	Upgradient	Yes	6.76E-03	N/A	-5.00E+00	NO
MW372	Upgradient	No	2.00E-02	N/A	-3.91E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	7.25E-01	-3.22E-01
4/23/2002	1.00E-01	-2.30E+00
7/16/2002	1.00E-01	-2.30E+00
10/8/2002	2.50E-02	-3.69E+00
1/7/2003	3.50E-02	-3.35E+00
4/2/2003	3.50E-02	-3.35E+00
7/9/2003	2.00E-01	-1.61E+00
10/7/2003	2.00E-01	-1.61E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Aluminum**

**UNITS: mg/L**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 2.026      S= 5.626      CV(1)=2.777      K factor\*\*\*= 2.523      TL(1)= 1.62E+01      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -0.803      S= 1.380      CV(2)=-1.718      K factor\*\*\*= 2.523      TL(2)= 2.68E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.**

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	4.66E+00	1.54E+00
4/23/2002	2.00E-01	-1.61E+00
7/15/2002	2.00E-01	-1.61E+00
10/8/2002	2.00E-01	-1.61E+00
1/8/2003	2.00E-01	-1.61E+00
4/3/2003	2.00E-01	-1.61E+00
7/9/2003	2.00E-01	-1.61E+00
10/6/2003	2.00E-01	-1.61E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	3.05E-02	N/A	-3.49E+00	NO
MW361	Downgradient	No	5.00E-02	N/A	-3.00E+00	N/A
MW364	Downgradient	No	5.00E-02	N/A	-3.00E+00	N/A
MW367	Downgradient	No	5.00E-02	N/A	-3.00E+00	N/A
MW370	Upgradient	Yes	8.14E-01	N/A	-2.06E-01	NO
MW373	Upgradient	Yes	1.98E-02	N/A	-3.92E+00	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	2.27E+01	3.12E+00
4/23/2002	1.46E+00	3.78E-01
7/16/2002	2.53E-01	-1.37E+00
10/8/2002	4.82E-01	-7.30E-01
1/7/2003	6.08E-01	-4.98E-01
4/2/2003	4.46E-01	-8.07E-01
7/9/2003	2.00E-01	-1.61E+00
10/7/2003	2.00E-01	-1.61E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Boron**

**UNITS: mg/L**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 1.140      S= 0.780      CV(1)=0.684      K factor\*\*\*= 2.523      TL(1)= 3.11E+00      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -0.235      S= 1.006      CV(2)=-4.287      K factor\*\*\*= 2.523      TL(2)= 2.30E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	2.00E+00	6.93E-01
4/23/2002	2.00E+00	6.93E-01
7/15/2002	2.00E+00	6.93E-01
10/8/2002	2.00E-01	-1.61E+00
1/8/2003	2.00E-01	-1.61E+00
4/3/2003	2.00E-01	-1.61E+00
7/9/2003	2.00E-01	-1.61E+00
10/6/2003	2.00E-01	-1.61E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	2.05E-01	NO	-1.58E+00	N/A
MW361	Downgradient	Yes	4.20E-01	NO	-8.68E-01	N/A
MW364	Downgradient	Yes	1.69E-01	NO	-1.78E+00	N/A
MW367	Downgradient	Yes	1.49E-02	NO	-4.21E+00	N/A
MW370	Upgradient	Yes	9.77E-02	NO	-2.33E+00	N/A
MW373	Upgradient	Yes	2.81E+00	NO	1.03E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	2.00E+00	6.93E-01
4/23/2002	2.00E+00	6.93E-01
7/16/2002	2.00E+00	6.93E-01
10/8/2002	7.90E-01	-2.36E-01
1/7/2003	8.07E-01	-2.14E-01
4/2/2003	1.13E+00	1.22E-01
7/9/2003	1.28E+00	2.47E-01
10/7/2003	1.24E+00	2.15E-01

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Bromide**

**UNITS: mg/L**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 1.000      S= 0.000      CV(1)=0.000      K factor\*\*\*= 2.523      TL(1)= 1.00E+00      LL(1)=N/A

**Statistics-Transformed Background Data**      X= 0.000      S= 0.000      CV(2)=#Num!      K factor\*\*\*= 2.523      TL(2)= 0.00E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	1.00E+00	0.00E+00
4/23/2002	1.00E+00	0.00E+00
7/15/2002	1.00E+00	0.00E+00
10/8/2002	1.00E+00	0.00E+00
1/8/2003	1.00E+00	0.00E+00
4/3/2003	1.00E+00	0.00E+00
7/9/2003	1.00E+00	0.00E+00
10/6/2003	1.00E+00	0.00E+00

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	1.00E+00	0.00E+00
4/23/2002	1.00E+00	0.00E+00
7/16/2002	1.00E+00	0.00E+00
10/8/2002	1.00E+00	0.00E+00
1/7/2003	1.00E+00	0.00E+00
4/2/2003	1.00E+00	0.00E+00
7/9/2003	1.00E+00	0.00E+00
10/7/2003	1.00E+00	0.00E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	4.28E-01	NO	-8.49E-01	N/A
MW361	Downgradient	Yes	4.51E-01	NO	-7.96E-01	N/A
MW364	Downgradient	Yes	4.69E-01	NO	-7.57E-01	N/A
MW367	Downgradient	Yes	1.28E-01	NO	-2.06E+00	N/A
MW370	Upgradient	Yes	5.46E-01	NO	-6.05E-01	N/A
MW373	Upgradient	Yes	4.64E-01	NO	-7.68E-01	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Calcium**

**UNITS: mg/L**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 43.413      S= 13.444      CV(1)=0.310      K factor\*\*\*= 2.523      TL(1)= 7.73E+01      LL(1)=N/A

**Statistics-Transformed Background Data**      X= 3.723      S= 0.323      CV(2)=0.087      K factor\*\*\*= 2.523      TL(2)= 4.54E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	3.48E+01	3.55E+00
4/23/2002	4.34E+01	3.77E+00
7/15/2002	3.32E+01	3.50E+00
10/8/2002	2.92E+01	3.37E+00
1/8/2003	3.13E+01	3.44E+00
4/3/2003	3.24E+01	3.48E+00
7/9/2003	2.29E+01	3.13E+00
10/6/2003	2.80E+01	3.33E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	3.19E+01	NO	3.46E+00	N/A
MW361	Downgradient	Yes	2.92E+01	NO	3.37E+00	N/A
MW364	Downgradient	Yes	3.23E+01	NO	3.48E+00	N/A
MW367	Downgradient	Yes	1.33E+01	NO	2.59E+00	N/A
MW370	Upgradient	Yes	2.90E+01	NO	3.37E+00	N/A
MW373	Upgradient	Yes	8.59E+01	YES	4.45E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	6.19E+01	4.13E+00
4/23/2002	5.92E+01	4.08E+00
7/16/2002	4.76E+01	3.86E+00
10/8/2002	4.61E+01	3.83E+00
1/7/2003	4.92E+01	3.90E+00
4/2/2003	5.78E+01	4.06E+00
7/9/2003	5.27E+01	3.96E+00
10/7/2003	6.49E+01	4.17E+00

**Conclusion of Statistical Analysis on Historical Data**

**Wells with Exceedances**

**The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.**

MW373

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.



# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Chloride**

**UNITS: mg/L**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 45.919    S= 7.524    CV(1)=0.164    K factor\*\*\*= 2.523    TL(1)= 6.49E+01    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 3.814    S= 0.165    CV(2)=0.043    K factor\*\*\*= 2.523    TL(2)= 4.23E+00    LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW370

Date Collected	Result	LN(Result)
7/15/2002	5.55E+01	4.02E+00
10/8/2002	5.36E+01	3.98E+00
1/8/2003	5.29E+01	3.97E+00
4/3/2003	5.36E+01	3.98E+00
7/9/2003	5.19E+01	3.95E+00
10/6/2003	5.30E+01	3.97E+00
1/7/2004	5.30E+01	3.97E+00
4/7/2004	5.16E+01	3.94E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	3.68E+01	NO	3.61E+00	N/A
MW361	Downgradient	Yes	3.65E+01	NO	3.60E+00	N/A
MW364	Downgradient	Yes	3.67E+01	NO	3.60E+00	N/A
MW367	Downgradient	Yes	8.06E+00	NO	2.09E+00	N/A
MW370	Upgradient	Yes	4.20E+01	NO	3.74E+00	N/A
MW373	Upgradient	Yes	2.97E+01	NO	3.39E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW373

Date Collected	Result	LN(Result)
7/16/2002	4.06E+01	3.70E+00
10/8/2002	3.88E+01	3.66E+00
1/7/2003	3.90E+01	3.66E+00
4/2/2003	3.84E+01	3.65E+00
7/9/2003	3.81E+01	3.64E+00
10/7/2003	3.80E+01	3.64E+00
1/6/2004	3.79E+01	3.63E+00
4/7/2004	3.88E+01	3.66E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Cobalt**

**UNITS: mg/L**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 0.027      S= 0.032      CV(1)=1.165      K factor\*\*\*= 2.523      TL(1)= 1.08E-01      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -4.058      S= 1.011      CV(2)=-0.249      K factor\*\*\*= 2.523      TL(2)= -1.51E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.**

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	2.50E-02	-3.69E+00
4/23/2002	2.50E-02	-3.69E+00
7/15/2002	2.50E-02	-3.69E+00
10/8/2002	1.74E-02	-4.05E+00
1/8/2003	1.05E-02	-4.56E+00
4/3/2003	9.31E-03	-4.68E+00
7/9/2003	1.37E-01	-1.99E+00
10/6/2003	4.63E-02	-3.07E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	2.49E-02	N/A	-3.69E+00	NO
MW361	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW364	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW367	Downgradient	Yes	7.07E-03	N/A	-4.95E+00	NO
MW370	Upgradient	Yes	3.55E-04	N/A	-7.94E+00	NO
MW373	Upgradient	No	1.00E-03	N/A	-6.91E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	2.50E-02	-3.69E+00
4/23/2002	3.40E-02	-3.38E+00
7/16/2002	2.50E-02	-3.69E+00
10/8/2002	4.11E-03	-5.49E+00
1/7/2003	3.44E-03	-5.67E+00
4/2/2003	3.68E-03	-5.60E+00
7/9/2003	4.05E-02	-3.21E+00
10/7/2003	8.43E-03	-4.78E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Conductivity**

**UNITS: umho/cm**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 608.719    S= 156.157    CV(1)=0.257    K factor\*\*\*= 2.523    TL(1)= 1.00E+03    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 6.380      S= 0.260      CV(2)=0.041    K factor\*\*\*= 2.523    TL(2)= 7.04E+00    LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	4.06E+02	6.01E+00
4/23/2002	5.43E+02	6.30E+00
7/15/2002	4.76E+02	6.17E+00
10/8/2002	4.41E+02	6.09E+00
1/8/2003	4.86E+02	6.19E+00
4/3/2003	4.66E+02	6.14E+00
7/9/2003	4.79E+02	6.17E+00
10/6/2003	4.35E+02	6.08E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	4.55E+02	NO	6.12E+00	N/A
MW361	Downgradient	Yes	4.70E+02	NO	6.15E+00	N/A
MW364	Downgradient	Yes	4.78E+02	NO	6.17E+00	N/A
MW367	Downgradient	Yes	2.23E+02	NO	5.41E+00	N/A
MW370	Upgradient	Yes	4.39E+02	NO	6.08E+00	N/A
MW373	Upgradient	Yes	9.43E+02	NO	6.85E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	6.61E+02	6.49E+00
4/23/2002	8.01E+02	6.69E+00
7/16/2002	7.74E+02	6.65E+00
10/8/2002	6.80E+02	6.52E+00
1/7/2003	6.87E+02	6.53E+00
4/2/2003	7.63E+02	6.64E+00
7/9/2003	8.28E+02	6.72E+00
10/7/2003	8.14E+02	6.70E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S      Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X      Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Copper**

**UNITS: mg/L**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 0.025      S= 0.010      CV(1)=0.399      K factor\*\*\*= 2.523      TL(1)= 5.03E-02      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -3.739      S= 0.308      CV(2)=-0.082      K factor\*\*\*= 2.523      TL(2)= -2.96E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	2.50E-02	-3.69E+00
4/23/2002	2.50E-02	-3.69E+00
7/15/2002	5.00E-02	-3.00E+00
10/8/2002	2.00E-02	-3.91E+00
1/8/2003	2.00E-02	-3.91E+00
4/3/2003	2.00E-02	-3.91E+00
7/9/2003	2.00E-02	-3.91E+00
10/6/2003	2.00E-02	-3.91E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	9.03E-04	NO	-7.01E+00	N/A
MW361	Downgradient	Yes	1.24E-03	NO	-6.69E+00	N/A
MW364	Downgradient	Yes	8.78E-04	NO	-7.04E+00	N/A
MW367	Downgradient	Yes	1.18E-03	NO	-6.74E+00	N/A
MW370	Upgradient	Yes	1.11E-03	NO	-6.80E+00	N/A
MW373	Upgradient	Yes	1.19E-03	NO	-6.73E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	2.60E-02	-3.65E+00
4/23/2002	2.50E-02	-3.69E+00
7/16/2002	5.00E-02	-3.00E+00
10/8/2002	2.00E-02	-3.91E+00
1/7/2003	2.00E-02	-3.91E+00
4/2/2003	2.00E-02	-3.91E+00
7/9/2003	2.00E-02	-3.91E+00
10/7/2003	2.00E-02	-3.91E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Dissolved Oxygen**

**UNITS: mg/L**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 1.387      S= 1.153      CV(1)=0.831      K factor\*\*\*= 2.523      TL(1)= 4.30E+00      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -0.115      S= 1.207      CV(2)=-10.514      K factor\*\*\*= 2.523      TL(2)= 2.93E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	4.32E+00	1.46E+00
4/23/2002	1.24E+00	2.15E-01
7/15/2002	7.50E-01	-2.88E-01
10/8/2002	9.40E-01	-6.19E-02
1/8/2003	3.08E+00	1.12E+00
4/3/2003	1.45E+00	3.72E-01
7/9/2003	1.22E+00	1.99E-01
10/6/2003	1.07E+00	6.77E-02

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	1.43E+00	NO	3.58E-01	N/A
MW361	Downgradient	Yes	6.03E+00	YES	1.80E+00	N/A
MW364	Downgradient	Yes	3.30E+00	NO	1.19E+00	N/A
MW367	Downgradient	Yes	1.21E+00	NO	1.91E-01	N/A
MW370	Upgradient	Yes	4.22E+00	NO	1.44E+00	N/A
MW373	Upgradient	Yes	1.14E+00	NO	1.31E-01	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	3.04E+00	1.11E+00
4/23/2002	3.00E-02	-3.51E+00
7/16/2002	2.30E-01	-1.47E+00
10/8/2002	8.60E-01	-1.51E-01
1/7/2003	2.10E-01	-1.56E+00
4/2/2003	1.19E+00	1.74E-01
7/9/2003	1.10E+00	9.53E-02
10/7/2003	1.46E+00	3.78E-01

**Conclusion of Statistical Analysis on Historical Data**

**Wells with Exceedances**

**The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.**

MW361

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Dissolved Solids**

**UNITS: mg/L**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 356.188    S= 106.752    CV(1)=0.300    K factor\*\*\*= 2.523    TL(1)= 6.26E+02    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 5.831      S= 0.311      CV(2)=0.053    K factor\*\*\*= 2.523    TL(2)= 6.62E+00    LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	2.36E+02	5.46E+00
4/23/2002	3.37E+02	5.82E+00
7/15/2002	2.66E+02	5.58E+00
10/8/2002	2.40E+02	5.48E+00
1/8/2003	2.82E+02	5.64E+00
4/3/2003	2.38E+02	5.47E+00
7/9/2003	2.48E+02	5.51E+00
10/6/2003	2.24E+02	5.41E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	2.52E+02	NO	5.53E+00	N/A
MW361	Downgradient	Yes	2.70E+02	NO	5.60E+00	N/A
MW364	Downgradient	Yes	2.74E+02	NO	5.61E+00	N/A
MW367	Downgradient	Yes	1.25E+02	NO	4.83E+00	N/A
MW370	Upgradient	Yes	2.47E+02	NO	5.51E+00	N/A
MW373	Upgradient	Yes	5.85E+02	NO	6.37E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	4.27E+02	6.06E+00
4/23/2002	5.07E+02	6.23E+00
7/16/2002	4.64E+02	6.14E+00
10/8/2002	4.08E+02	6.01E+00
1/7/2003	4.04E+02	6.00E+00
4/2/2003	4.50E+02	6.11E+00
7/9/2003	4.87E+02	6.19E+00
10/7/2003	4.81E+02	6.18E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S      Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X      Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Iron**

**UNITS: mg/L**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 9.230      S= 8.841      CV(1)=0.958      K factor\*\*\*= 2.523      TL(1)= 3.15E+01      LL(1)=N/A

**Statistics-Transformed Background Data**      X= 1.942      S= 0.713      CV(2)=0.367      K factor\*\*\*= 2.523      TL(2)= 3.74E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	9.34E+00	2.23E+00
4/23/2002	4.33E+00	1.47E+00
7/15/2002	3.52E+00	1.26E+00
10/8/2002	7.45E+00	2.01E+00
1/8/2003	7.04E+00	1.95E+00
4/3/2003	4.64E+00	1.53E+00
7/9/2003	1.58E+01	2.76E+00
10/6/2003	6.49E+00	1.87E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	8.85E+00	NO	2.18E+00	N/A
MW361	Downgradient	No	1.00E-01	N/A	-2.30E+00	N/A
MW364	Downgradient	No	1.00E-01	N/A	-2.30E+00	N/A
MW367	Downgradient	Yes	7.72E+00	NO	2.04E+00	N/A
MW370	Upgradient	Yes	1.70E+00	NO	5.31E-01	N/A
MW373	Upgradient	Yes	8.49E-02	NO	-2.47E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	3.76E+01	3.63E+00
4/23/2002	1.90E+01	2.94E+00
7/16/2002	1.07E+01	2.37E+00
10/8/2002	3.75E+00	1.32E+00
1/7/2003	3.87E+00	1.35E+00
4/2/2003	3.50E+00	1.25E+00
7/9/2003	7.72E+00	2.04E+00
10/7/2003	2.93E+00	1.08E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Magnesium**

**UNITS: mg/L**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 17.544    S= 5.911    CV(1)=0.337    K factor\*\*\*= 2.523    TL(1)= 3.25E+01    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 2.810    S= 0.343    CV(2)=0.122    K factor\*\*\*= 2.523    TL(2)= 3.68E+00    LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	1.21E+01	2.49E+00
4/23/2002	1.51E+01	2.71E+00
7/15/2002	1.24E+01	2.52E+00
10/8/2002	1.22E+01	2.50E+00
1/8/2003	1.15E+01	2.44E+00
4/3/2003	1.23E+01	2.51E+00
7/9/2003	1.00E+01	2.30E+00
10/6/2003	1.21E+01	2.49E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	1.59E+01	NO	2.77E+00	N/A
MW361	Downgradient	Yes	1.27E+01	NO	2.54E+00	N/A
MW364	Downgradient	Yes	1.39E+01	NO	2.63E+00	N/A
MW367	Downgradient	Yes	6.82E+00	NO	1.92E+00	N/A
MW370	Upgradient	Yes	1.21E+01	NO	2.49E+00	N/A
MW373	Upgradient	Yes	2.91E+01	NO	3.37E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	2.48E+01	3.21E+00
4/23/2002	2.27E+01	3.12E+00
7/16/2002	1.88E+01	2.93E+00
10/8/2002	2.11E+01	3.05E+00
1/7/2003	1.99E+01	2.99E+00
4/2/2003	2.55E+01	3.24E+00
7/9/2003	2.33E+01	3.15E+00
10/7/2003	2.69E+01	3.29E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum ((background result-X)^2)/[count of background results -1]]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Manganese**

**UNITS: mg/L**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 1.080      S= 0.674      CV(1)=0.624      K factor\*\*\*= 2.523      TL(1)= 2.78E+00      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -0.114      S= 0.658      CV(2)=-5.762      K factor\*\*\*= 2.523      TL(2)= 1.55E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	2.44E-01	-1.41E+00
4/23/2002	1.82E+00	5.99E-01
7/15/2002	1.22E+00	1.99E-01
10/8/2002	9.88E-01	-1.21E-02
1/8/2003	7.29E-01	-3.16E-01
4/3/2003	6.37E-01	-4.51E-01
7/9/2003	2.51E+00	9.20E-01
10/6/2003	1.05E+00	4.88E-02

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	1.81E+00	NO	5.93E-01	N/A
MW361	Downgradient	Yes	6.29E-03	NO	-5.07E+00	N/A
MW364	Downgradient	Yes	1.15E-03	NO	-6.77E+00	N/A
MW367	Downgradient	Yes	1.43E+00	NO	3.58E-01	N/A
MW370	Upgradient	Yes	5.87E-02	NO	-2.84E+00	N/A
MW373	Upgradient	Yes	3.56E-02	NO	-3.34E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	3.55E-01	-1.04E+00
4/23/2002	2.16E+00	7.70E-01
7/16/2002	1.39E+00	3.29E-01
10/8/2002	7.17E-01	-3.33E-01
1/7/2003	5.87E-01	-5.33E-01
4/2/2003	5.45E-01	-6.07E-01
7/9/2003	1.76E+00	5.65E-01
10/7/2003	5.70E-01	-5.62E-01

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Molybdenum**

**UNITS: mg/L**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 0.010      S= 0.012      CV(1)=1.198      K factor\*\*\*= 2.523      TL(1)= 4.03E-02      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -5.693      S= 1.604      CV(2)=-0.282      K factor\*\*\*= 2.523      TL(2)= -1.65E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.**

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	2.50E-02	-3.69E+00
4/23/2002	2.50E-02	-3.69E+00
7/15/2002	2.50E-02	-3.69E+00
10/8/2002	1.13E-03	-6.79E+00
1/8/2003	1.00E-03	-6.91E+00
4/3/2003	1.00E-03	-6.91E+00
7/9/2003	1.00E-03	-6.91E+00
10/6/2003	1.00E-03	-6.91E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	3.67E-04	N/A	-7.91E+00	NO
MW361	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW364	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW367	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW370	Upgradient	No	2.85E-04	N/A	-8.16E+00	N/A
MW373	Upgradient	Yes	3.83E-04	N/A	-7.87E+00	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	2.50E-02	-3.69E+00
4/23/2002	2.50E-02	-3.69E+00
7/16/2002	2.50E-02	-3.69E+00
10/8/2002	1.00E-03	-6.91E+00
1/7/2003	1.00E-03	-6.91E+00
4/2/2003	1.00E-03	-6.91E+00
7/9/2003	1.00E-03	-6.91E+00
10/7/2003	1.00E-03	-6.91E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Nickel**

**UNITS: mg/L**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 0.024      S= 0.022      CV(1)=0.901      K factor\*\*\*= 2.523      TL(1)= 7.82E-02      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -4.239      S= 1.087      CV(2)=-0.256      K factor\*\*\*= 2.523      TL(2)= -1.50E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	5.00E-02	-3.00E+00
4/23/2002	5.00E-02	-3.00E+00
7/15/2002	5.00E-02	-3.00E+00
10/8/2002	5.00E-03	-5.30E+00
1/8/2003	5.00E-03	-5.30E+00
4/3/2003	5.00E-03	-5.30E+00
7/9/2003	2.64E-02	-3.63E+00
10/6/2003	9.71E-03	-4.63E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	6.75E-02	NO	-2.70E+00	N/A
MW361	Downgradient	No	2.00E-03	N/A	-6.21E+00	N/A
MW364	Downgradient	No	2.00E-03	N/A	-6.21E+00	N/A
MW367	Downgradient	Yes	2.97E-03	NO	-5.82E+00	N/A
MW370	Upgradient	Yes	9.38E-04	NO	-6.97E+00	N/A
MW373	Upgradient	Yes	1.40E-03	NO	-6.57E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	5.00E-02	-3.00E+00
4/23/2002	5.00E-02	-3.00E+00
7/16/2002	5.00E-02	-3.00E+00
10/8/2002	5.00E-03	-5.30E+00
1/7/2003	5.00E-03	-5.30E+00
4/2/2003	5.00E-03	-5.30E+00
7/9/2003	1.12E-02	-4.49E+00
10/7/2003	5.00E-03	-5.30E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

## Oxidation-Reduction Potential

UNITS: mV

LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 46.688    S= 60.986    CV(1)=1.306    K factor\*\*\*= 2.523    TL(1)= 2.01E+02    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 3.829    S= 1.151    CV(2)=0.301    K factor\*\*\*= 2.523    TL(2)= 4.94E+00    LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	1.40E+02	4.94E+00
4/23/2002	-1.50E+01	#Func!
7/15/2002	5.00E+00	1.61E+00
4/3/2003	4.90E+01	3.89E+00
7/9/2003	-3.50E+01	#Func!
10/6/2003	4.00E+01	3.69E+00
1/7/2004	1.01E+02	4.62E+00
4/7/2004	1.05E+02	4.65E+00

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	1.40E+02	4.94E+00
4/23/2002	-2.00E+01	#Func!
10/8/2002	1.00E+01	2.30E+00
1/7/2003	1.00E+01	2.30E+00
4/2/2003	6.70E+01	4.20E+00
7/9/2003	-2.90E+01	#Func!
10/7/2003	1.27E+02	4.84E+00
1/6/2004	5.20E+01	3.95E+00

**Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.**

**#Because the natural log was not possible for all background values, the TL was considered equal to the maximum background value.**

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	2.38E+02	N/A	5.47E+00	YES
MW361	Downgradient	Yes	5.50E+02	N/A	6.31E+00	YES
MW364	Downgradient	Yes	5.26E+02	N/A	6.27E+00	YES
MW367	Downgradient	Yes	2.59E+02	N/A	5.56E+00	YES
MW370	Upgradient	Yes	4.64E+02	N/A	6.14E+00	YES
MW373	Upgradient	Yes	4.37E+02	N/A	6.08E+00	YES

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.**

**Wells with Exceedances**

MW358  
MW361  
MW364  
MW367  
MW370  
MW373

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**pH**

**UNITS: Std Unit**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 6.283      S= 0.159      CV(1)=0.025      K factor\*\*\*= 2.904      TL(1)= 6.74E+00      LL(1)=5.82E+00

**Statistics-Transformed Background Data**      X= 1.837      S= 0.025      CV(2)=0.014      K factor\*\*\*= 2.904      TL(2)= 1.91E+00      LL(2)=1.76E+00

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	6.30E+00	1.84E+00
4/23/2002	6.40E+00	1.86E+00
7/15/2002	6.30E+00	1.84E+00
10/8/2002	6.30E+00	1.84E+00
1/8/2003	6.40E+00	1.86E+00
4/3/2003	6.50E+00	1.87E+00
7/9/2003	6.30E+00	1.84E+00
10/6/2003	6.50E+00	1.87E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)? Result <LL(1)?	LN(Result)	LN(Result) >TL(2)? LN(Result) <LL(2)?
MW358	Downgradient	Yes	6.20E+00	NO	1.82E+00	N/A
MW361	Downgradient	Yes	6.10E+00	NO	1.81E+00	N/A
MW364	Downgradient	Yes	5.86E+00	NO	1.77E+00	N/A
MW367	Downgradient	Yes	5.85E+00	NO	1.77E+00	N/A
MW370	Upgradient	Yes	6.06E+00	NO	1.80E+00	N/A
MW373	Upgradient	Yes	6.04E+00	NO	1.80E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	6.00E+00	1.79E+00
4/23/2002	6.30E+00	1.84E+00
7/16/2002	6.45E+00	1.86E+00
10/8/2002	6.18E+00	1.82E+00
1/7/2003	6.35E+00	1.85E+00
4/2/2003	6.14E+00	1.81E+00
7/9/2003	6.10E+00	1.81E+00
10/7/2003	6.00E+00	1.79E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Potassium**

**UNITS: mg/L**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 2.823      S= 0.522      CV(1)=0.185      K factor\*\*\*= 2.523      TL(1)= 4.14E+00      LL(1)=N/A

**Statistics-Transformed Background Data**      X= 1.024      S= 0.167      CV(2)=0.163      K factor\*\*\*= 2.523      TL(2)= 1.45E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	3.22E+00	1.17E+00
4/23/2002	3.43E+00	1.23E+00
7/15/2002	2.98E+00	1.09E+00
10/8/2002	2.46E+00	9.00E-01
1/8/2003	2.41E+00	8.80E-01
4/3/2003	2.43E+00	8.88E-01
7/9/2003	2.44E+00	8.92E-01
10/6/2003	2.48E+00	9.08E-01

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	3.10E+00	NO	1.13E+00	N/A
MW361	Downgradient	Yes	1.82E+00	NO	5.99E-01	N/A
MW364	Downgradient	Yes	1.92E+00	NO	6.52E-01	N/A
MW367	Downgradient	Yes	2.75E+00	NO	1.01E+00	N/A
MW370	Upgradient	Yes	2.36E+00	NO	8.59E-01	N/A
MW373	Upgradient	Yes	2.67E+00	NO	9.82E-01	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	4.34E+00	1.47E+00
4/23/2002	3.04E+00	1.11E+00
7/16/2002	2.93E+00	1.08E+00
10/8/2002	2.30E+00	8.33E-01
1/7/2003	2.45E+00	8.96E-01
4/2/2003	2.70E+00	9.93E-01
7/9/2003	2.68E+00	9.86E-01
10/7/2003	2.88E+00	1.06E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Sodium**

**UNITS: mg/L**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 51.544    S= 15.227    CV(1)=0.295    K factor\*\*\*= 2.523    TL(1)= 9.00E+01    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 3.906    S= 0.272    CV(2)=0.070    K factor\*\*\*= 2.523    TL(2)= 4.59E+00    LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	3.18E+01	3.46E+00
4/23/2002	5.00E+01	3.91E+00
7/15/2002	4.47E+01	3.80E+00
10/8/2002	4.00E+01	3.69E+00
1/8/2003	4.46E+01	3.80E+00
4/3/2003	4.19E+01	3.74E+00
7/9/2003	4.00E+01	3.69E+00
10/6/2003	3.81E+01	3.64E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	3.21E+01	NO	3.47E+00	N/A
MW361	Downgradient	Yes	4.01E+01	NO	3.69E+00	N/A
MW364	Downgradient	Yes	4.01E+01	NO	3.69E+00	N/A
MW367	Downgradient	Yes	1.49E+01	NO	2.70E+00	N/A
MW370	Upgradient	Yes	4.19E+01	NO	3.74E+00	N/A
MW373	Upgradient	Yes	7.14E+01	NO	4.27E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	4.34E+01	3.77E+00
4/23/2002	7.98E+01	4.38E+00
7/16/2002	8.77E+01	4.47E+00
10/8/2002	6.16E+01	4.12E+00
1/7/2003	5.93E+01	4.08E+00
4/2/2003	6.21E+01	4.13E+00
7/9/2003	5.01E+01	3.91E+00
10/7/2003	4.96E+01	3.90E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Sulfate**

**UNITS: mg/L**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 122.381    S= 195.095    CV(1)=1.594    K factor\*\*\*= 2.523    TL(1)= 6.15E+02    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 3.985      S= 1.323      CV(2)=0.332    K factor\*\*\*= 2.523    TL(2)= 7.32E+00    LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.**

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	1.74E+01	2.86E+00
4/23/2002	3.79E+01	3.63E+00
7/15/2002	1.57E+01	2.75E+00
10/8/2002	1.34E+01	2.60E+00
1/8/2003	1.44E+01	2.67E+00
4/3/2003	1.81E+01	2.90E+00
7/9/2003	9.60E+00	2.26E+00
10/6/2003	1.65E+01	2.80E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	5.47E+01	N/A	4.00E+00	NO
MW361	Downgradient	Yes	7.08E+01	N/A	4.26E+00	NO
MW364	Downgradient	Yes	6.80E+01	N/A	4.22E+00	NO
MW367	Downgradient	Yes	2.08E+01	N/A	3.03E+00	NO
MW370	Upgradient	Yes	2.08E+01	N/A	3.03E+00	NO
MW373	Upgradient	Yes	2.13E+02	N/A	5.36E+00	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	1.63E+02	5.10E+00
4/23/2002	8.10E+02	6.70E+00
7/16/2002	1.09E+02	4.70E+00
10/8/2002	1.11E+02	4.71E+00
1/7/2003	1.14E+02	4.73E+00
4/2/2003	1.33E+02	4.89E+00
7/9/2003	1.82E+02	5.20E+00
10/7/2003	1.93E+02	5.26E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S      Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X      Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Technetium-99**

**UNITS: pCi/L**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 7.655      S= 13.274      CV(1)=1.734      K factor\*\*\*= 2.523      TL(1)= 4.11E+01      LL(1)=N/A

**Statistics-Transformed Background Data**      X= 1.946      S= 0.939      CV(2)=0.483      K factor\*\*\*= 2.523      TL(2)= 3.83E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

Well Number: MW370		
Date Collected	Result	LN(Result)
3/17/2002	1.08E+01	2.38E+00
4/23/2002	8.53E+00	2.14E+00
7/15/2002	5.09E+00	1.63E+00
10/8/2002	4.78E+00	1.56E+00
1/8/2003	-5.12E+00	#Func!
4/3/2003	5.11E+00	1.63E+00
7/9/2003	4.25E+00	1.45E+00
10/6/2003	6.54E+00	1.88E+00
Well Number: MW373		
Date Collected	Result	LN(Result)
3/18/2002	1.65E+01	2.80E+00
4/23/2002	3.49E+00	1.25E+00
7/16/2002	1.42E+00	3.51E-01
10/8/2002	-6.06E+00	#Func!
1/7/2003	-8.41E+00	#Func!
4/2/2003	2.63E+01	3.27E+00
7/9/2003	3.06E+00	1.12E+00
10/7/2003	4.62E+01	3.83E+00

**Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.**

**#Because the natural log was not possible for all background values, the TL was considered equal to the maximum background value.**

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	4.26E+01	N/A	3.75E+00	NO
MW361	Downgradient	Yes	4.52E+01	N/A	3.81E+00	NO
MW364	Downgradient	Yes	5.40E+01	N/A	3.99E+00	YES
MW367	Downgradient	No	-4.38E+00	N/A	#Error	N/A
MW370	Upgradient	No	-4.19E+00	N/A	#Error	N/A
MW373	Upgradient	No	-8.77E+00	N/A	#Error	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

**Conclusion of Statistical Analysis on Historical Data**

**The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.**

**Wells with Exceedances**

MW364

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ((background result-X)^2)/[count of background results -1]]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Total Organic Carbon (TOC)**

**UNITS: mg/L**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 6.169      S= 12.072      CV(1)=1.957      K factor\*\*\*= 2.523      TL(1)= 3.66E+01      LL(1)=N/A

**Statistics-Transformed Background Data**      X= 1.069      S= 1.014      CV(2)=0.948      K factor\*\*\*= 2.523      TL(2)= 3.63E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.**

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	1.20E+00	1.82E-01
4/23/2002	4.30E+00	1.46E+00
7/15/2002	2.60E+00	9.56E-01
10/8/2002	2.30E+00	8.33E-01
1/8/2003	3.00E+00	1.10E+00
4/3/2003	1.20E+00	1.82E-01
7/9/2003	2.60E+00	9.56E-01
10/6/2003	1.70E+00	5.31E-01

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	6.57E-01	N/A	-4.20E-01	NO
MW361	Downgradient	Yes	5.79E-01	N/A	-5.46E-01	NO
MW364	Downgradient	Yes	4.25E-01	N/A	-8.56E-01	NO
MW367	Downgradient	No	2.00E+00	N/A	6.93E-01	N/A
MW370	Upgradient	Yes	7.98E-01	N/A	-2.26E-01	NO
MW373	Upgradient	Yes	1.14E+00	N/A	1.31E-01	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	1.10E+00	9.53E-02
4/23/2002	1.75E+01	2.86E+00
7/16/2002	4.90E+01	3.89E+00
10/8/2002	2.90E+00	1.06E+00
1/7/2003	3.90E+00	1.36E+00
4/2/2003	2.50E+00	9.16E-01
7/9/2003	1.70E+00	5.31E-01
10/7/2003	1.20E+00	1.82E-01

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Total Organic Halides (TOX)**

**UNITS: ug/L**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 79.819    S= 78.470    CV(1)=0.983    K factor\*\*\*= 2.523    TL(1)= 2.78E+02    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 3.971    S= 0.950    CV(2)=0.239    K factor\*\*\*= 2.523    TL(2)= 6.37E+00    LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	5.00E+01	3.91E+00
4/23/2002	2.28E+02	5.43E+00
7/15/2002	8.80E+01	4.48E+00
10/8/2002	5.80E+01	4.06E+00
1/8/2003	7.24E+01	4.28E+00
4/3/2003	2.66E+01	3.28E+00
7/9/2003	1.64E+01	2.80E+00
10/6/2003	3.11E+01	3.44E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	8.40E+00	NO	2.13E+00	N/A
MW361	Downgradient	No	1.00E+01	N/A	2.30E+00	N/A
MW364	Downgradient	Yes	6.86E+00	NO	1.93E+00	N/A
MW367	Downgradient	Yes	5.64E+00	NO	1.73E+00	N/A
MW370	Upgradient	Yes	1.11E+01	NO	2.41E+00	N/A
MW373	Upgradient	Yes	3.66E+01	NO	3.60E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	5.00E+01	3.91E+00
4/23/2002	2.76E+02	5.62E+00
7/16/2002	1.77E+02	5.18E+00
10/8/2002	7.60E+01	4.33E+00
1/7/2003	4.59E+01	3.83E+00
4/2/2003	5.78E+01	4.06E+00
7/9/2003	1.00E+01	2.30E+00
10/7/2003	1.39E+01	2.63E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis      Historical Background Comparison

**Zinc**

**UNITS: mg/L**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 0.055      S= 0.037      CV(1)=0.673      K factor\*\*\*= 2.523      TL(1)= 1.47E-01      LL(1)=N/A

**Statistics-Transformed Background Data**      X= -3.131      S= 0.691      CV(2)=-0.221      K factor\*\*\*= 2.523      TL(2)= -1.39E+00      LL(2)=N/A

**Historical Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	1.00E-01	-2.30E+00
4/23/2002	1.00E-01	-2.30E+00
7/15/2002	1.00E-01	-2.30E+00
10/8/2002	2.50E-02	-3.69E+00
1/8/2003	3.50E-02	-3.35E+00
4/3/2003	3.50E-02	-3.35E+00
7/9/2003	2.00E-02	-3.91E+00
10/6/2003	2.00E-02	-3.91E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	1.02E-02	NO	-4.59E+00	N/A
MW361	Downgradient	Yes	4.05E-03	NO	-5.51E+00	N/A
MW364	Downgradient	Yes	1.45E-02	NO	-4.23E+00	N/A
MW367	Downgradient	Yes	2.21E-02	NO	-3.81E+00	N/A
MW370	Upgradient	Yes	3.77E-03	NO	-5.58E+00	N/A
MW373	Upgradient	No	2.00E-02	N/A	-3.91E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	1.00E-01	-2.30E+00
4/23/2002	1.00E-01	-2.30E+00
7/16/2002	1.00E-01	-2.30E+00
10/8/2002	2.50E-02	-3.69E+00
1/7/2003	3.50E-02	-3.35E+00
4/2/2003	3.50E-02	-3.35E+00
7/9/2003	2.34E-02	-3.76E+00
10/7/2003	2.00E-02	-3.91E+00

**Conclusion of Statistical Analysis on Historical Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV    Coefficient-of-Variation, CV = S/X    If CV is less than or equal to 1 assume normal distribution.

S    Standard Deviation, S = [Sum (((background result-X)^2)/[count of background results -1])]^0.5

TL    Upper Tolerance Limit, TL = X + (K \* S),      LL    Lower Tolerance Limit, LL = X - (K \* S)

X    Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

**ATTACHMENT D2**

**COMPARISON OF CURRENT DATA TO  
ONE-SIDED UPPER TOLERANCE INTERVAL TEST  
CALCULATED USING  
CURRENT BACKGROUND DATA**

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# C-746-U Third Quarter 2024 Statistical Analysis

# Current Background Comparison

## Dissolved Oxygen

UNITS: mg/L

UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 2.436    S= 1.683    CV(1)=0.691    K factor\*\*= 2.523    TL(1)= 6.68E+00    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 0.729    S= 0.557    CV(2)=0.765    K factor\*\*= 2.523    TL(2)= 2.13E+00    LL(2)=N/A

### Current Background Data from Upgradient Wells with Transformed Result

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW371

Date Collected	Result	LN(Result)
7/14/2022	4.25E+00	1.45E+00
10/11/2022	2.87E+00	1.05E+00
1/19/2023	1.24E+00	2.15E-01
4/25/2023	7.75E+00	2.05E+00
7/25/2023	3.30E+00	1.19E+00
10/11/2023	1.33E+00	2.85E-01
1/24/2024	1.97E+00	6.78E-01
4/10/2024	3.03E+00	1.11E+00

### Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	4.60E+00	NO	1.53E+00	N/A
MW362	Downgradient	Yes	8.16E+00	YES	2.10E+00	N/A
MW365	Downgradient	Yes	8.46E+00	YES	2.14E+00	N/A
MW368	Downgradient	Yes	3.26E+00	NO	1.18E+00	N/A
MW371	Upgradient	Yes	4.00E+00	NO	1.39E+00	N/A

Well Number: MW374

Date Collected	Result	LN(Result)
7/14/2022	1.74E+00	5.54E-01
10/11/2022	1.92E+00	6.52E-01
1/19/2023	9.00E-01	-1.05E-01
4/25/2023	2.30E+00	8.33E-01
7/25/2023	1.01E+00	9.95E-03
10/11/2023	1.84E+00	6.10E-01
1/25/2024	2.20E+00	7.88E-01
4/10/2024	1.33E+00	2.85E-01

### Conclusion of Statistical Analysis on Current Data

**The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.**

### Wells with Exceedances

MW362  
MW365

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ((background result-X)^2)/[count of background results -1]]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis

# Current Background Comparison

## Oxidation-Reduction Potential

UNITS: mV

UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 375.750   S= 65.308   CV(1)=0.174      **K factor\*\*= 2.523**      TL(1)= 5.41E+02   LL(1)=N/A

**Statistics-Transformed Background Data**      X= 5.909      S= 0.223      CV(2)=0.038      **K factor\*\*= 2.523**      TL(2)= 6.47E+00   LL(2)=N/A

### Current Background Data from Upgradient Wells with Transformed Result

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW371

Date Collected	Result	LN(Result)
7/14/2022	3.78E+02	5.93E+00
10/11/2022	4.09E+02	6.01E+00
1/19/2023	4.20E+02	6.04E+00
4/25/2023	4.04E+02	6.00E+00
7/25/2023	3.72E+02	5.92E+00
10/11/2023	3.76E+02	5.93E+00
1/24/2024	4.52E+02	6.11E+00
4/10/2024	3.60E+02	5.89E+00

Well Number: MW374

Date Collected	Result	LN(Result)
7/14/2022	3.45E+02	5.84E+00
10/11/2022	3.30E+02	5.80E+00
1/19/2023	1.72E+02	5.15E+00
4/25/2023	4.21E+02	6.04E+00
7/25/2023	3.51E+02	5.86E+00
10/11/2023	3.98E+02	5.99E+00
1/25/2024	4.55E+02	6.12E+00
4/10/2024	3.69E+02	5.91E+00

### Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	3.63E+02	NO	5.89E+00	N/A
MW362	Downgradient	Yes	3.58E+02	NO	5.88E+00	N/A
MW365	Downgradient	Yes	5.73E+02	YES	6.35E+00	N/A
MW368	Downgradient	Yes	2.46E+02	NO	5.51E+00	N/A
MW371	Upgradient	Yes	4.47E+02	NO	6.10E+00	N/A
MW374	Upgradient	Yes	4.11E+02	NO	6.02E+00	N/A
MW375	Sidegradient	Yes	5.18E+02	NO	6.25E+00	N/A

### Conclusion of Statistical Analysis on Current Data

**The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.**

### Wells with Exceedances

MW365

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation,  $CV = S/X$  If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation,  $S = \sqrt{[\text{Sum} ((\text{background result}-X)^2)/(\text{count of background results} -1)]}^{0.5}$

TL Upper Tolerance Limit,  $TL = X + (K * S)$ , LL Lower Tolerance Limit,  $LL = X - (K * S)$

X Mean,  $X = (\text{sum of background results})/(\text{count of background results})$

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis

# Current Background Comparison

**Sulfate**

**UNITS: mg/L**

**UCRS**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 18.541   S= 11.597   CV(1)=0.625      **K factor\*\*= 2.523**      TL(1)= 4.78E+01   LL(1)=N/A

**Statistics-Transformed Background Data**      X= 2.805   S= 0.447   CV(2)=0.159      **K factor\*\*= 2.523**      TL(2)= 3.93E+00   LL(2)=N/A

**Current Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW371

Date Collected	Result	LN(Result)
7/14/2022	2.87E+01	3.36E+00
10/11/2022	1.18E+01	2.47E+00
1/19/2023	1.20E+01	2.48E+00
4/25/2023	5.69E+01	4.04E+00
7/25/2023	2.86E+01	3.35E+00
10/11/2023	1.58E+01	2.76E+00
1/24/2024	9.84E+00	2.29E+00
4/10/2024	9.92E+00	2.29E+00

Well Number: MW374

Date Collected	Result	LN(Result)
7/14/2022	1.67E+01	2.82E+00
10/11/2022	1.32E+01	2.58E+00
1/19/2023	1.39E+01	2.63E+00
4/25/2023	1.65E+01	2.80E+00
7/25/2023	1.56E+01	2.75E+00
10/11/2023	1.42E+01	2.65E+00
1/25/2024	1.54E+01	2.73E+00
4/10/2024	1.76E+01	2.87E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	3.67E+01	NO	3.60E+00	N/A
MW362	Downgradient	Yes	2.78E+01	NO	3.33E+00	N/A
MW365	Downgradient	Yes	5.42E+01	YES	3.99E+00	N/A
MW368	Downgradient	Yes	1.25E+02	YES	4.83E+00	N/A
MW374	Upgradient	Yes	1.71E+01	NO	2.84E+00	N/A
MW375	Sidegradient	Yes	2.26E+01	NO	3.12E+00	N/A

**Conclusion of Statistical Analysis on Current Data**

**The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.**

**Wells with Exceedances**

MW365  
MW368

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ((background result-X)^2)/[count of background results -1]]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

**C-746-U Third Quarter 2024 Statistical Analysis**

**Current Background Comparison**

**Calcium**

**UNITS: mg/L**

**URGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 39.775   S= 24.840   CV(1)=0.625      **K factor\*\*= 2.523**      TL(1)= 1.02E+02   LL(1)=N/A

**Statistics-Transformed Background Data**      X= 3.458   S= 0.720   CV(2)=0.208      **K factor\*\*= 2.523**      TL(2)= 5.27E+00   LL(2)=N/A

**Current Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW369

Date Collected	Result	LN(Result)
7/14/2022	1.57E+01	2.75E+00
10/11/2022	1.60E+01	2.77E+00
1/19/2023	1.60E+01	2.77E+00
4/24/2023	1.60E+01	2.77E+00
7/25/2023	1.57E+01	2.75E+00
10/11/2023	1.60E+01	2.77E+00
1/24/2024	1.64E+01	2.80E+00
4/10/2024	1.49E+01	2.70E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Upgradient	Yes	6.59E+01	NO	4.19E+00	N/A

Well Number: MW372

Date Collected	Result	LN(Result)
7/14/2022	6.26E+01	4.14E+00
10/11/2022	6.22E+01	4.13E+00
1/19/2023	6.06E+01	4.10E+00
4/25/2023	6.20E+01	4.13E+00
7/25/2023	6.10E+01	4.11E+00
10/11/2023	6.46E+01	4.17E+00
1/25/2024	7.14E+01	4.27E+00
4/11/2024	6.53E+01	4.18E+00

**Conclusion of Statistical Analysis on Current Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ((background result-X)^2)/[count of background results -1]]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis

# Current Background Comparison

## Conductivity

UNITS: umho/cm

URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 567.500   S= 209.332   CV(1)=0.369      **K factor\*\*= 2.523**      TL(1)= 1.10E+03   LL(1)=N/A

**Statistics-Transformed Background Data**      X= 6.273      S= 0.385      CV(2)=0.061      **K factor\*\*= 2.523**      TL(2)= 7.25E+00   LL(2)=N/A

### Current Background Data from Upgradient Wells with Transformed Result

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW369

Date Collected	Result	LN(Result)
7/14/2022	3.71E+02	5.92E+00
10/11/2022	4.85E+02	6.18E+00
1/19/2023	3.59E+02	5.88E+00
4/24/2023	3.75E+02	5.93E+00
7/25/2023	3.50E+02	5.86E+00
10/11/2023	3.45E+02	5.84E+00
1/24/2024	3.41E+02	5.83E+00
4/10/2024	3.47E+02	5.85E+00

### Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Upgradient	Yes	7.49E+02	NO	6.62E+00	N/A

Well Number: MW372

Date Collected	Result	LN(Result)
7/14/2022	7.15E+02	6.57E+00
10/11/2022	9.14E+02	6.82E+00
1/19/2023	7.54E+02	6.63E+00
4/25/2023	7.33E+02	6.60E+00
7/25/2023	7.59E+02	6.63E+00
10/11/2023	7.47E+02	6.62E+00
1/25/2024	7.27E+02	6.59E+00
4/11/2024	7.58E+02	6.63E+00

### Conclusion of Statistical Analysis on Current Data

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation,  $CV = S/X$  If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation,  $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

TL Upper Tolerance Limit,  $TL = X + (K * S)$ ,      LL Lower Tolerance Limit,  $LL = X - (K * S)$

X Mean,  $X = (\text{sum of background results})/(\text{count of background results})$

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis

# Current Background Comparison

## Dissolved Solids

UNITS: mg/L

URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 316.750   S= 130.358   CV(1)=0.412      **K factor\*\*= 2.523**      TL(1)= 6.46E+02   LL(1)=N/A

**Statistics-Transformed Background Data**      X= 5.672      S= 0.436      CV(2)=0.077      **K factor\*\*= 2.523**      TL(2)= 6.77E+00   LL(2)=N/A

### Current Background Data from Upgradient Wells with Transformed Result

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW369

Date Collected	Result	LN(Result)
7/14/2022	1.96E+02	5.28E+00
10/11/2022	2.12E+02	5.36E+00
1/19/2023	1.86E+02	5.23E+00
4/24/2023	1.93E+02	5.26E+00
7/25/2023	1.75E+02	5.16E+00
10/11/2023	1.92E+02	5.26E+00
1/24/2024	1.89E+02	5.24E+00
4/10/2024	1.86E+02	5.23E+00

### Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Upgradient	Yes	4.96E+02	NO	6.21E+00	N/A

Well Number: MW372

Date Collected	Result	LN(Result)
7/14/2022	4.61E+02	6.13E+00
10/11/2022	4.55E+02	6.12E+00
1/19/2023	4.28E+02	6.06E+00
4/25/2023	4.28E+02	6.06E+00
7/25/2023	4.23E+02	6.05E+00
10/11/2023	4.47E+02	6.10E+00
1/25/2024	4.38E+02	6.08E+00
4/11/2024	4.59E+02	6.13E+00

### Conclusion of Statistical Analysis on Current Data

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ((background result-X)^2)/[count of background results -1]]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis

# Current Background Comparison

## Magnesium

UNITS: mg/L

URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 14.584    S= 8.239    CV(1)=0.565    K factor\*\*= 2.523    TL(1)= 3.54E+01    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 2.504    S= 0.631    CV(2)=0.252    K factor\*\*= 2.523    TL(2)= 4.10E+00    LL(2)=N/A

### Current Background Data from Upgradient Wells with Transformed Result

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW369

Date Collected	Result	LN(Result)
7/14/2022	6.84E+00	1.92E+00
10/11/2022	6.84E+00	1.92E+00
1/19/2023	6.56E+00	1.88E+00
4/24/2023	6.87E+00	1.93E+00
7/25/2023	6.17E+00	1.82E+00
10/11/2023	6.42E+00	1.86E+00
1/24/2024	7.13E+00	1.96E+00
4/10/2024	6.41E+00	1.86E+00

### Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Upgradient	Yes	2.26E+01	NO	3.12E+00	N/A

Well Number: MW372

Date Collected	Result	LN(Result)
7/14/2022	2.27E+01	3.12E+00
10/11/2022	2.17E+01	3.08E+00
1/19/2023	2.19E+01	3.09E+00
4/25/2023	2.35E+01	3.16E+00
7/25/2023	2.11E+01	3.05E+00
10/11/2023	2.16E+01	3.07E+00
1/25/2024	2.51E+01	3.22E+00
4/11/2024	2.25E+01	3.11E+00

### Conclusion of Statistical Analysis on Current Data

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation,  $CV = S/X$  If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation,  $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

TL Upper Tolerance Limit,  $TL = X + (K * S)$ , LL Lower Tolerance Limit,  $LL = X - (K * S)$

X Mean,  $X = (\text{sum of background results})/(\text{count of background results})$

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis

# Current Background Comparison

## Oxidation-Reduction Potential

UNITS: mV

URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 409.563   S= 45.910   CV(1)=0.112      **K factor\*\*= 2.523**      TL(1)= 5.25E+02   LL(1)=N/A

**Statistics-Transformed Background Data**      X= 6.009   S= 0.115   CV(2)=0.019      **K factor\*\*= 2.523**      TL(2)= 6.30E+00   LL(2)=N/A

### Current Background Data from Upgradient Wells with Transformed Result

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW369

Date Collected	Result	LN(Result)
7/14/2022	4.20E+02	6.04E+00
10/11/2022	4.06E+02	6.01E+00
1/19/2023	4.80E+02	6.17E+00
4/24/2023	4.39E+02	6.08E+00
7/25/2023	4.06E+02	6.01E+00
10/11/2023	3.85E+02	5.95E+00
1/24/2024	4.23E+02	6.05E+00
4/10/2024	3.12E+02	5.74E+00

### Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	5.13E+02	NO	6.24E+00	N/A
MW360	Downgradient	Yes	4.26E+02	NO	6.05E+00	N/A
MW363	Downgradient	Yes	5.26E+02	YES	6.27E+00	N/A
MW366	Downgradient	Yes	5.92E+02	YES	6.38E+00	N/A
MW369	Upgradient	Yes	4.62E+02	NO	6.14E+00	N/A
MW372	Upgradient	Yes	4.52E+02	NO	6.11E+00	N/A

Well Number: MW372

Date Collected	Result	LN(Result)
7/14/2022	4.02E+02	6.00E+00
10/11/2022	4.16E+02	6.03E+00
1/19/2023	4.03E+02	6.00E+00
4/25/2023	4.70E+02	6.15E+00
7/25/2023	3.87E+02	5.96E+00
10/11/2023	3.40E+02	5.83E+00
1/25/2024	4.83E+02	6.18E+00
4/11/2024	3.81E+02	5.94E+00

### Conclusion of Statistical Analysis on Current Data

**The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.**

### Wells with Exceedances

MW363  
MW366

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation,  $CV = S/X$  If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation,  $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

TL Upper Tolerance Limit,  $TL = X + (K * S)$ , LL Lower Tolerance Limit,  $LL = X - (K * S)$

X Mean,  $X = (\text{sum of background results})/(\text{count of background results})$

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis

# Current Background Comparison

**Sulfate**

**UNITS: mg/L**

**URGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 75.131    S= 69.470    CV(1)=0.925      **K factor\*\*= 2.523**    TL(1)= 2.50E+02    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 3.518    S= 1.487    CV(2)=0.423      **K factor\*\*= 2.523**    TL(2)= 7.27E+00    LL(2)=N/A

**Current Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW369

Date Collected	Result	LN(Result)
7/14/2022	8.16E+00	2.10E+00
10/11/2022	8.07E+00	2.09E+00
1/19/2023	7.93E+00	2.07E+00
4/24/2023	7.00E+00	1.95E+00
7/25/2023	7.91E+00	2.07E+00
10/11/2023	8.72E+00	2.17E+00
1/24/2024	8.49E+00	2.14E+00
4/10/2024	7.81E+00	2.06E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Upgradient	Yes	1.64E+02	NO	5.10E+00	N/A

Well Number: MW372

Date Collected	Result	LN(Result)
7/14/2022	1.45E+02	4.98E+00
10/11/2022	1.31E+02	4.88E+00
1/19/2023	1.35E+02	4.91E+00
4/25/2023	1.51E+02	5.02E+00
7/25/2023	1.45E+02	4.98E+00
10/11/2023	1.43E+02	4.96E+00
1/25/2024	1.48E+02	5.00E+00
4/11/2024	1.40E+02	4.94E+00

**Conclusion of Statistical Analysis on Current Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ((background result-X)^2)/[count of background results -1]]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

**C-746-U Third Quarter 2024 Statistical Analysis**

**Current Background Comparison**

**Technetium-99**

**UNITS: pCi/L**

**URGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 55.175   S= 19.220   CV(1)=0.348      **K factor\*\*= 2.523**    TL(1)= 1.04E+02   LL(1)=N/A

**Statistics-Transformed Background Data**      X= 3.937   S= 0.426   CV(2)=0.108      **K factor\*\*= 2.523**    TL(2)= 5.01E+00   LL(2)=N/A

**Current Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW369

Date Collected	Result	LN(Result)
7/14/2022	5.08E+01	3.93E+00
10/11/2022	5.64E+01	4.03E+00
1/19/2023	6.16E+01	4.12E+00
4/24/2023	3.91E+01	3.67E+00
7/25/2023	5.61E+01	4.03E+00
10/11/2023	7.67E+01	4.34E+00
1/24/2024	6.27E+01	4.14E+00
4/10/2024	7.09E+01	4.26E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW366	Downgradient	Yes	6.85E+01	NO	4.23E+00	N/A

Well Number: MW372

Date Collected	Result	LN(Result)
7/14/2022	7.42E+01	4.31E+00
10/11/2022	6.97E+01	4.24E+00
1/19/2023	8.54E+01	4.45E+00
4/25/2023	3.63E+01	3.59E+00
7/25/2023	2.00E+01	3.00E+00
10/11/2023	2.25E+01	3.11E+00
1/25/2024	3.89E+01	3.66E+00
4/11/2024	6.15E+01	4.12E+00

**Conclusion of Statistical Analysis on Current Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ((background result-X)^2)/[count of background results -1]]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

**C-746-U Third Quarter 2024 Statistical Analysis**

**Current Background Comparison**

**Calcium**

**UNITS: mg/L**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 51.594   S= 23.561   CV(1)=0.457      **K factor\*\*= 2.523**      TL(1)= 1.11E+02   LL(1)=N/A

**Statistics-Transformed Background Data**      X= 3.839   S= 0.477   CV(2)=0.124      **K factor\*\*= 2.523**      TL(2)= 5.04E+00   LL(2)=N/A

**Current Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW370

Date Collected	Result	LN(Result)
7/14/2022	2.92E+01	3.37E+00
10/11/2022	2.89E+01	3.36E+00
1/19/2023	3.05E+01	3.42E+00
4/24/2023	3.09E+01	3.43E+00
7/25/2023	2.93E+01	3.38E+00
10/11/2023	2.90E+01	3.37E+00
1/24/2024	3.00E+01	3.40E+00
4/10/2024	2.84E+01	3.35E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW373	Upgradient	Yes	8.59E+01	NO	4.45E+00	N/A

Well Number: MW373

Date Collected	Result	LN(Result)
7/14/2022	6.28E+01	4.14E+00
10/11/2022	6.56E+01	4.18E+00
1/19/2023	6.46E+01	4.17E+00
4/25/2023	7.11E+01	4.26E+00
7/25/2023	7.87E+01	4.37E+00
10/11/2023	7.90E+01	4.37E+00
1/25/2024	8.40E+01	4.43E+00
4/10/2024	8.35E+01	4.42E+00

**Conclusion of Statistical Analysis on Current Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ((background result-X)^2)/[count of background results -1]]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis

# Current Background Comparison

**Dissolved Oxygen**

**UNITS: mg/L**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 3.164    S= 1.244    CV(1)=0.393    K factor\*\*= 2.523    TL(1)= 6.30E+00    LL(1)=N/A

**Statistics-Transformed Background Data**      X= 1.072    S= 0.425    CV(2)=0.396    K factor\*\*= 2.523    TL(2)= 2.14E+00    LL(2)=N/A

**Current Background Data from Upgradient Wells with Transformed Result**

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW370

Date Collected	Result	LN(Result)
7/14/2022	4.73E+00	1.55E+00
10/11/2022	4.80E+00	1.57E+00
1/19/2023	4.00E+00	1.39E+00
4/24/2023	4.26E+00	1.45E+00
7/25/2023	4.01E+00	1.39E+00
10/11/2023	4.64E+00	1.53E+00
1/24/2024	4.65E+00	1.54E+00
4/10/2024	3.09E+00	1.13E+00

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW361	Downgradient	Yes	6.03E+00	NO	1.80E+00	N/A

Well Number: MW373

Date Collected	Result	LN(Result)
7/14/2022	2.42E+00	8.84E-01
10/11/2022	2.31E+00	8.37E-01
1/19/2023	2.11E+00	7.47E-01
4/25/2023	2.00E+00	6.93E-01
7/25/2023	1.69E+00	5.25E-01
10/11/2023	2.00E+00	6.93E-01
1/25/2024	1.30E+00	2.62E-01
4/10/2024	2.61E+00	9.59E-01

**Conclusion of Statistical Analysis on Current Data**

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ((background result-X)^2)/[count of background results -1]]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

# C-746-U Third Quarter 2024 Statistical Analysis

# Current Background Comparison

## Oxidation-Reduction Potential

UNITS: mV

LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 413.500   S= 55.545   CV(1)=0.134      **K factor\*\*= 2.523**      TL(1)= 5.54E+02   LL(1)=N/A

**Statistics-Transformed Background Data**      X= 6.016   S= 0.132   CV(2)=0.022      **K factor\*\*= 2.523**      TL(2)= 6.35E+00   LL(2)=N/A

### Current Background Data from Upgradient Wells with Transformed Result

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

Well Number: MW370

Date Collected	Result	LN(Result)
7/14/2022	4.15E+02	6.03E+00
10/11/2022	4.27E+02	6.06E+00
1/19/2023	4.68E+02	6.15E+00
4/24/2023	4.60E+02	6.13E+00
7/25/2023	3.88E+02	5.96E+00
10/11/2023	3.27E+02	5.79E+00
1/24/2024	5.30E+02	6.27E+00
4/10/2024	3.45E+02	5.84E+00

Well Number: MW373

Date Collected	Result	LN(Result)
7/14/2022	3.82E+02	5.95E+00
10/11/2022	4.01E+02	5.99E+00
1/19/2023	3.99E+02	5.99E+00
4/25/2023	4.57E+02	6.12E+00
7/25/2023	3.84E+02	5.95E+00
10/11/2023	3.57E+02	5.88E+00
1/25/2024	4.93E+02	6.20E+00
4/10/2024	3.83E+02	5.95E+00

### Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	2.38E+02	NO	5.47E+00	N/A
MW361	Downgradient	Yes	5.50E+02	NO	6.31E+00	N/A
MW364	Downgradient	Yes	5.26E+02	NO	6.27E+00	N/A
MW367	Downgradient	Yes	2.59E+02	NO	5.56E+00	N/A
MW370	Upgradient	Yes	4.64E+02	NO	6.14E+00	N/A
MW373	Upgradient	Yes	4.37E+02	NO	6.08E+00	N/A

### Conclusion of Statistical Analysis on Current Data

**None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically-significant level.**

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ((background result-X)^2)/[count of background results -1]]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

**C-746-U Third Quarter 2024 Statistical Analysis**

**Current Background Comparison**

**Technetium-99**

**UNITS: pCi/L**

**LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

**Statistics-Background Data**      X= 15.452   S= 9.005   CV(1)=0.583      **K factor\*\*= 2.523**      TL(1)= 3.82E+01   LL(1)=N/A

**Statistics-Transformed Background Data**      X= 2.650   S= 0.675   CV(2)=0.255      **K factor\*\*= 2.523**      TL(2)= 3.42E+00   LL(2)=N/A

**Current Background Data from Upgradient Wells with Transformed Result**

Well Number: MW370

Date Collected	Result	LN(Result)
7/14/2022	2.40E+01	3.18E+00
10/11/2022	2.09E+01	3.04E+00
1/19/2023	3.07E+01	3.42E+00
4/24/2023	2.83E+01	3.34E+00
7/25/2023	2.03E+01	3.01E+00
10/11/2023	1.86E+01	2.92E+00
1/24/2024	1.03E+01	2.33E+00
4/10/2024	2.29E+01	3.13E+00

Well Number: MW373

Date Collected	Result	LN(Result)
7/14/2022	9.69E+00	2.27E+00
10/11/2022	-1.78E+00	#Func!
1/19/2023	1.25E+01	2.53E+00
4/25/2023	1.40E+01	2.64E+00
7/25/2023	1.33E+01	2.59E+00
10/11/2023	1.47E+01	2.69E+00
1/25/2024	6.70E+00	1.90E+00
4/10/2024	2.12E+00	7.51E-01

**Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).**

**#Because the natural log was not possible for all background values, the TL was considered equal to the maximum background value.**

**Current Quarter Data**

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW364	Downgradient	Yes	5.40E+01	YES	3.99E+00	N/A

**Conclusion of Statistical Analysis on Current Data**

**The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.**

**Wells with Exceedances**

MW364

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ((background result-X)^2)/[count of background results -1]]^0.5

TL Upper Tolerance Limit, TL = X + (K \* S), LL Lower Tolerance Limit, LL = X - (K \* S)

X Mean, X = (sum of background results)/(count of background results)

\*\* Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

**ATTACHMENT D3**

**STATISTICIAN QUALIFICATION STATEMENT**

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October 28, 2024

Mr. Dennis Greene  
Four Rivers Nuclear Partnership, LLC  
5511 Hobbs Road  
Kevil, KY 42053

Dear Mr. Greene:

As an Environmental Scientist, with a bachelor's degree in Earth Sciences/Geology, I have over 30 years of experience in reviewing and assessing laboratory analytical results associated with environmental sampling and investigation activities. For the generation of these statistical analyses, my work was reviewed by a qualified independent technical reviewer with Four Rivers Nuclear Partnership, LLC.

For this project, the statistical analyses conducted on the third quarter 2024 monitoring well data collected from the C-746-S&T and C-746-U Landfills were performed in accordance with guidance provided in the U.S. Environmental Protection Agency guidance document, *EPA Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Interim Final Guidance* (1989).

Sincerely,



Bryan Smith

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**APPENDIX E**  
**GROUNDWATER FLOW RATE AND DIRECTION**

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## GROUNDWATER FLOW RATE AND DIRECTION

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Determination of groundwater flow rate and direction of flow in the uppermost aquifer whenever the monitoring wells (MWs) are sampled is a requirement of 401 KAR 48.300, Section 11. The uppermost aquifer below the C-746-U Landfill is the Regional Gravel Aquifer (RGA). Water level measurements currently are recorded in several wells at the landfill on a quarterly basis. These measurements were used to plot the potentiometric surface of the RGA for the third quarter 2024 and determine groundwater flow rate and direction.

Water levels during this reporting period were measured on July 23, 2024. As shown on Figure E.1, all Upper Continental Recharge System (UCRS) wells had sufficient water to permit water level measurement during this reporting period.

The UCRS has a strong vertical hydraulic gradient; therefore, the available UCRS wells screened over different elevations are not sufficient for mapping the potentiometric surface. As shown in Table E.1, the RGA data were converted to elevations to plot the potentiometric surfaces within the Upper Regional Gravel Aquifer (URGA) and Lower Regional Gravel Aquifer (LRGA). (At the request of the Commonwealth of Kentucky, the RGA is differentiated into two zones, the URGA and LRGA.) Based on the potentiometric maps (Figures E.2 and E.3), the hydraulic gradients for the URGA and LRGA at the C-746-U Landfill, as measured along the defined groundwater flow directions, were  $4.44 \times 10^{-4}$  ft/ft and  $4.88 \times 10^{-4}$  ft/ft, respectively. Water level measurements in wells at the C-746-U Landfill and in wells of the surrounding region (MW98, MW100, MW125, MW139, MW165A, MW173, MW193, MW197, and MW200), along with the C-746-S&T Landfill wells, were used to contour the general RGA potentiometric surface (Figure E.4). The hydraulic gradient for the RGA, as a whole, in the vicinity of the C-746-U Landfill was  $3.13 \times 10^{-4}$  ft/ft. The hydraulic gradients are shown in Table E.2.

The average linear groundwater flow velocity ( $v$ ) is determined by multiplying the hydraulic gradient ( $i$ ) by the hydraulic conductivity ( $K$ ) [resulting in the specific discharge ( $q$ )] and dividing by the effective porosity ( $n_e$ ). The RGA hydraulic conductivity values used are reported in the Administrative Application for the New Solid Waste Landfill Permit No. SW07300045NWC1 and range from  $4.25 \times 10^2$  to  $7.25 \times 10^2$  ft/day ( $1.50 \times 10^{-1}$  to  $2.56 \times 10^{-1}$  cm/s). RGA (both URGA and LRGA) effective porosity is assumed to be 25%. Flow velocities were calculated for the URGA and LRGA using the low and high values for hydraulic conductivity, as shown in the Table E.3.

Groundwater flow beneath the C-746-U Landfill typically trends northeastward toward the Ohio River. As demonstrated on the potentiometric maps for July 2024, the groundwater flow direction in the immediate area of the landfill was to the north.

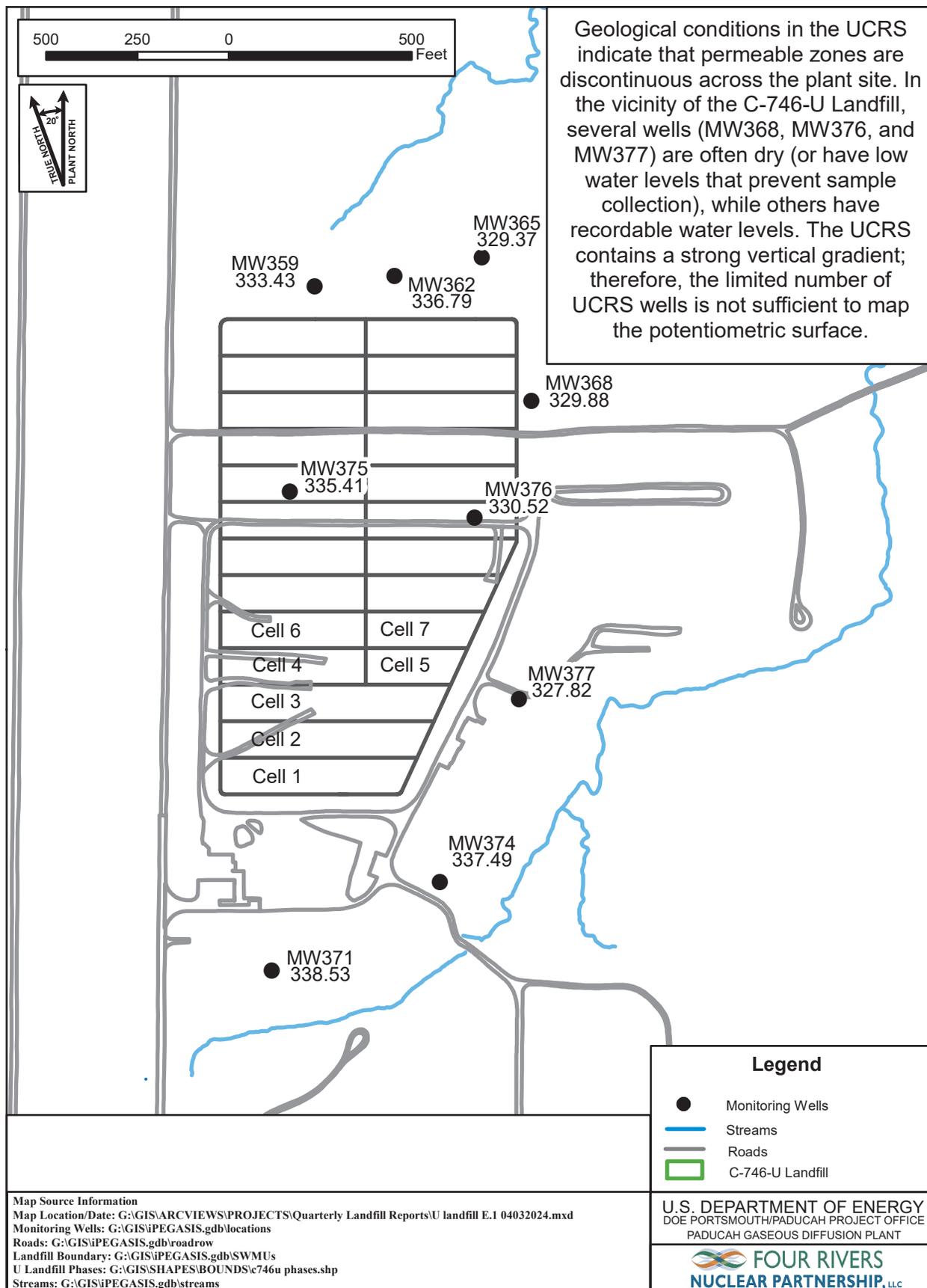


Figure E.1. Potentiometric Measurements of the Upper Continental Recharge System at the C-746-U Landfill, July 23, 2024

**Table E.1. C-746-U Landfill Third Quarter 2024 (July) Water Levels**

<b>C-746-U Landfill (July 2024) Water Levels</b>										
<b>Date</b>	<b>Time</b>	<b>Well</b>	<b>Aquifer</b>	<b>Datum Elev (ft amsl)</b>	<b>BP (in Hg)</b>	<b>Delta BP (ft H2O)</b>	<b>Raw Data</b>		<b>*Corrected Data</b>	
							<b>DTW (ft)</b>	<b>Elev (ft amsl)</b>	<b>DTW (ft)</b>	<b>Elev (ft amsl)</b>
7/23/2024	13:04	MW357	URGA	368.77	30.07	-0.02	45.47	323.30	45.45	323.32
7/23/2024	13:07	MW358	LRGA	368.92	30.07	-0.02	45.62	323.30	45.60	323.32
7/23/2024	13:06	MW359	UCRS	368.91	30.07	-0.02	35.50	333.41	35.48	333.43
7/23/2024	12:57	MW360	URGA	362.07	30.07	-0.02	39.79	322.28	39.77	322.30**
7/23/2024	12:55	MW361	LRGA	361.32	30.07	-0.02	38.06	323.26	38.04	323.28
7/23/2024	12:56	MW362	UCRS	361.85	30.07	-0.02	25.08	336.77	25.06	336.79
7/23/2024	12:38	MW363	URGA	368.56	30.08	-0.03	45.37	323.19	45.34	323.22
7/23/2024	12:41	MW364	LRGA	368.17	30.08	-0.03	45.10	323.07	45.07	323.10
7/23/2024	12:39	MW365	UCRS	368.14	30.08	-0.03	38.80	329.34	38.77	329.37
7/23/2024	12:46	MW366	URGA	368.95	30.08	-0.03	45.69	323.26	45.66	323.29
7/23/2024	12:43	MW367	LRGA	369.37	30.08	-0.03	46.11	323.26	46.08	323.29
7/23/2024	12:45	MW368	UCRS	368.98	30.08	-0.03	39.13	329.85	39.10	329.88
7/23/2024	7:55	MW369	URGA	364.23	30.05	0.00	40.06	324.17	40.06	324.17
7/23/2024	7:57	MW370	LRGA	365.12	30.05	0.00	40.95	324.17	40.95	324.17
7/23/2024	7:56	MW371	UCRS	364.64	30.05	0.00	26.11	338.53	26.11	338.53
7/23/2024	7:43	MW372	URGA	359.42	30.04	0.01	35.26	324.16	35.27	324.15
7/23/2024	7:41	MW373	LRGA	359.73	30.04	0.01	35.58	324.15	35.59	324.14
7/23/2024	7:42	MW374	UCRS	359.44	30.04	0.01	21.94	337.50	21.95	337.49
7/23/2024	7:29	MW375	UCRS	370.36	30.04	0.01	34.94	335.42	34.95	335.41
7/23/2024	7:33	MW376	UCRS	370.39	30.04	0.01	39.86	330.53	39.87	330.52
7/23/2024	7:35	MW377	UCRS	365.74	30.04	0.01	37.91	327.83	37.92	327.82
Reference Barometric Pressure					<b>30.05</b>					
Elev = elevation										
amsl = above mean sea level										
BP = barometric pressure										
DTW = depth to water in feet below datum										
URGA = Upper Regional Gravel Aquifer										
LRGA = Lower Regional Gravel Aquifer										
UCRS = Upper Continental Recharge System										
*Assumes a barometric efficiency of 1.0										
**Elevation used for MW360 is the elevation for MW361. The measurement reported for MW360 has been rejected.										

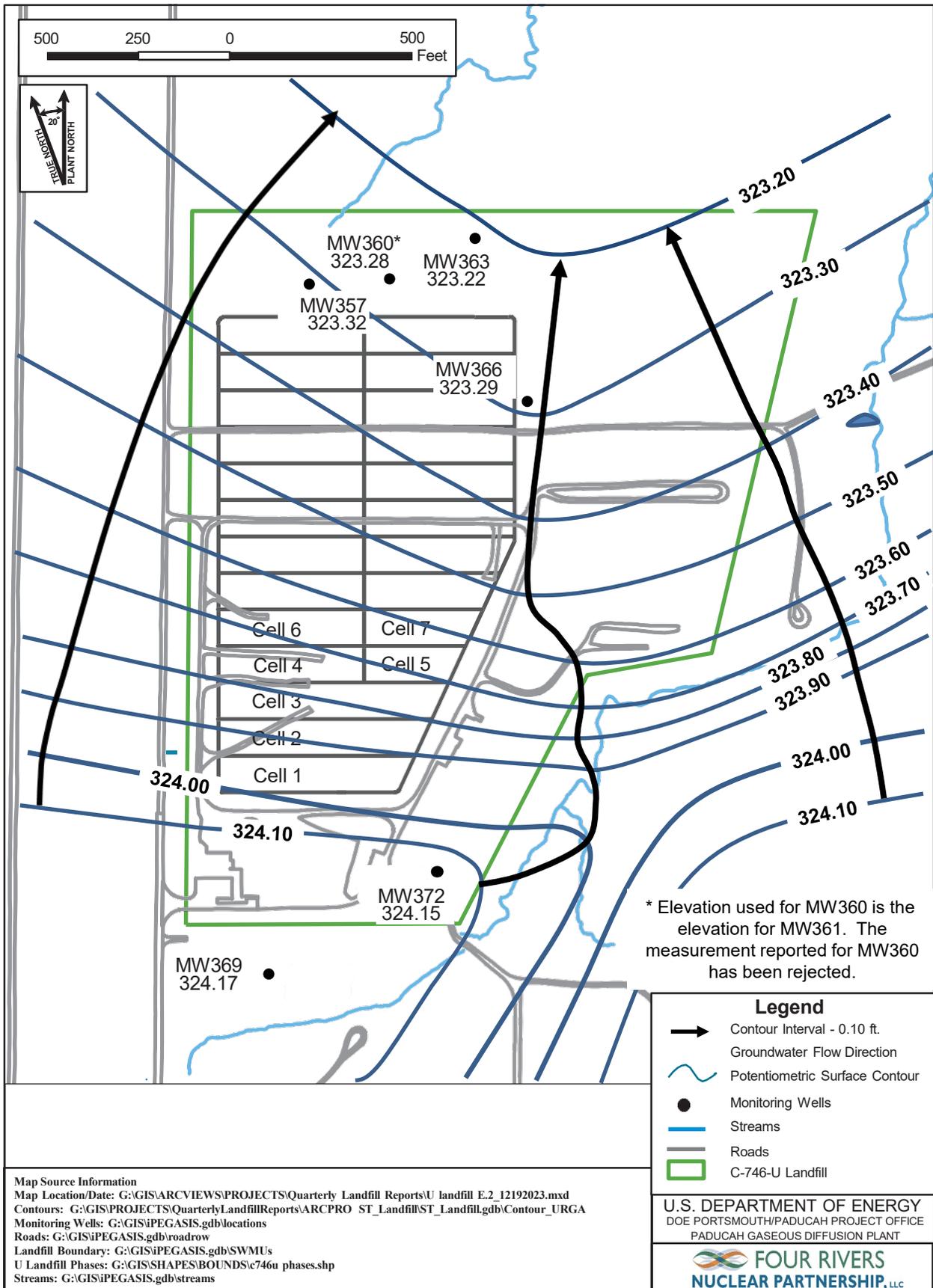


Figure E.2. Potentiometric Surface of the Upper Regional Gravel Aquifer at the C-746-U Landfill, July 23, 2024

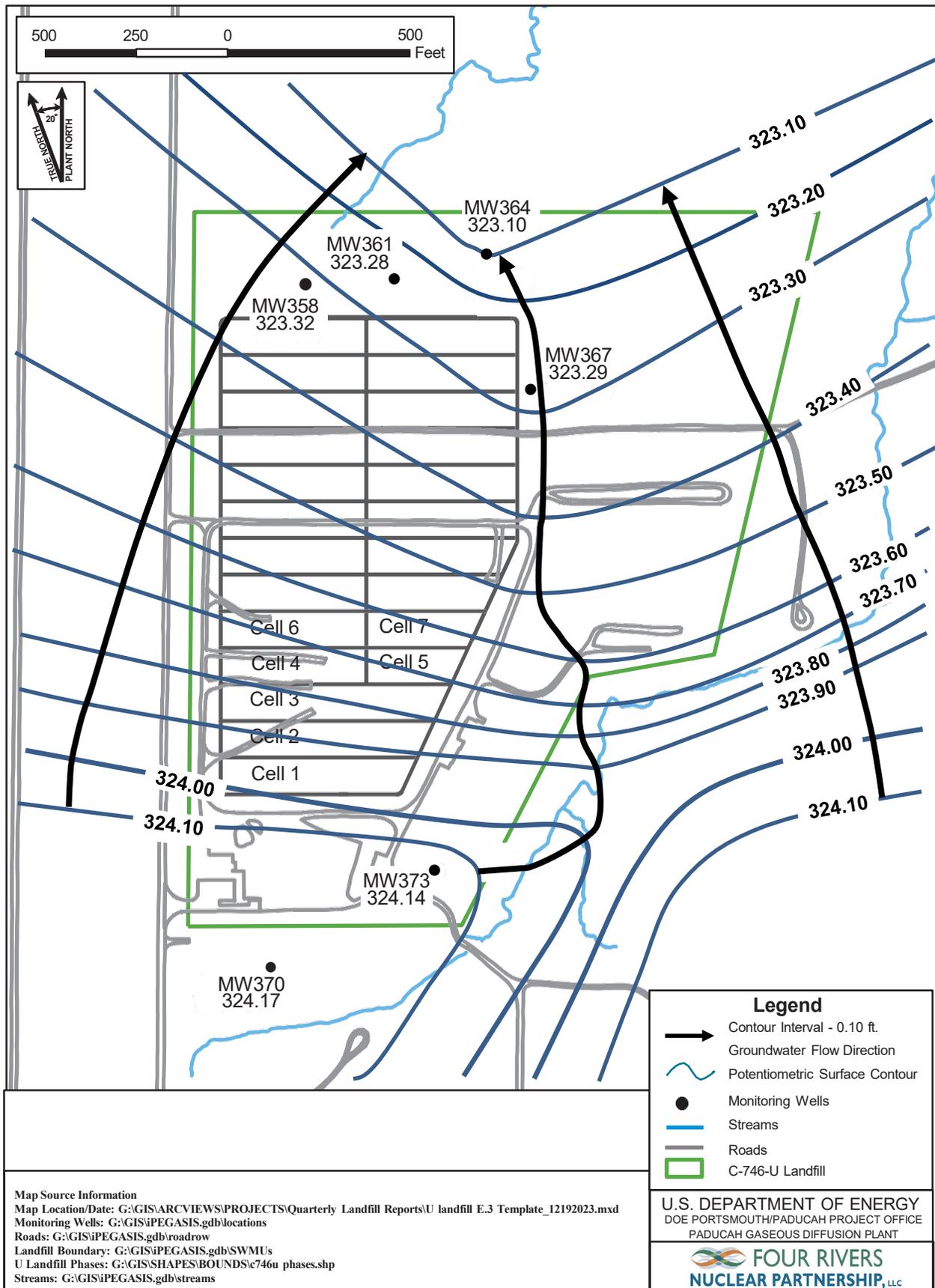


Figure E.3. Potentiometric Surface of the Lower Regional Gravel Aquifer at the C-746-U Landfill, July 23, 2024

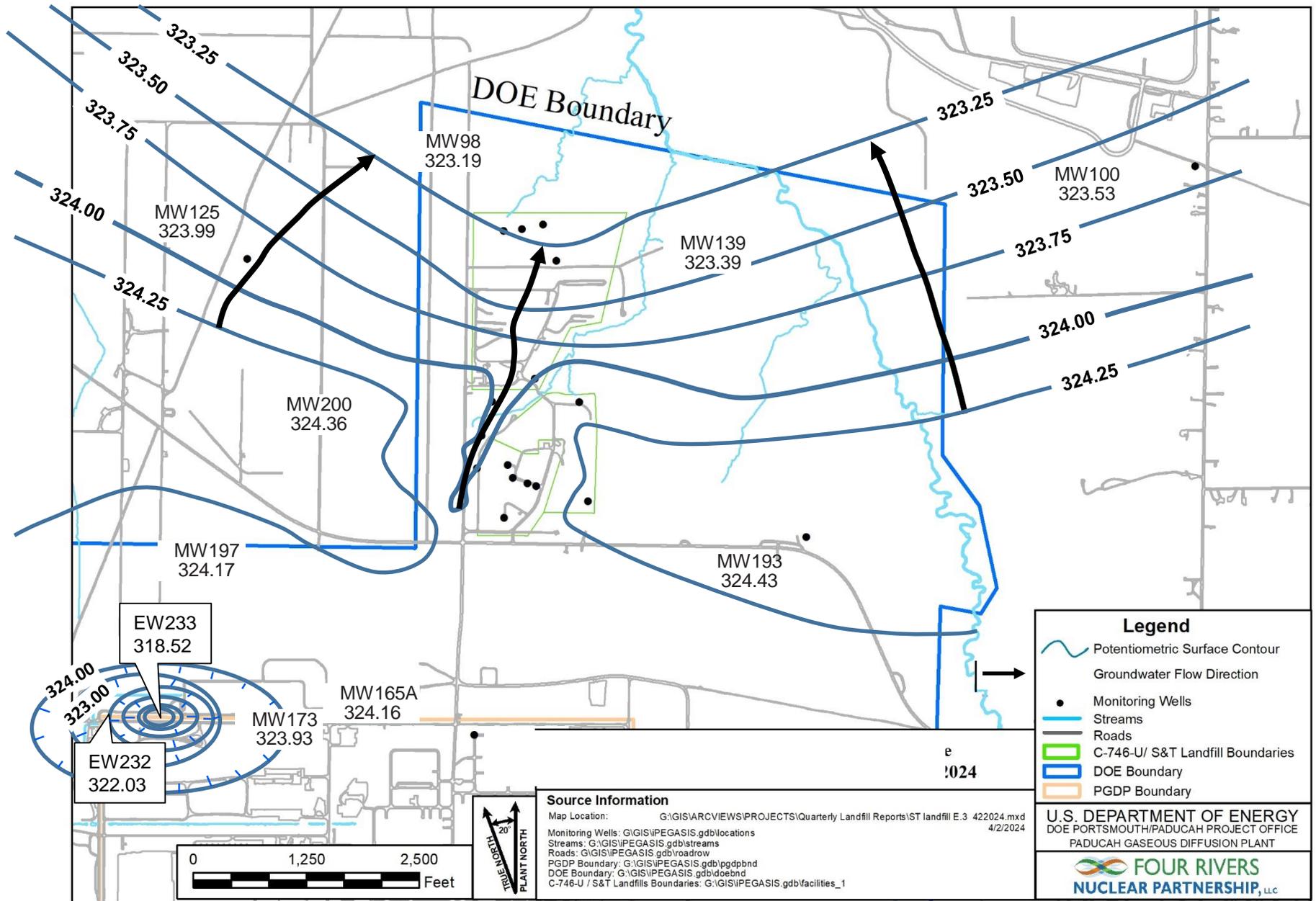


Figure E.4. Vicinity Potentiometric Surface of the Regional Gravel Aquifer, July 23, 2024

**Table E.2. C-746-U Landfill Hydraulic Gradients**

	ft/ft
Beneath Landfill—Upper RGA	$4.44 \times 10^{-4}$
Beneath Landfill—Lower RGA	$4.88 \times 10^{-4}$
Vicinity	$3.13 \times 10^{-4}$

**Table E.3. C-746-U Landfill Groundwater Flow Rate**

Hydraulic Conductivity (K)		Specific Discharge (q)		Average Linear Velocity (v)	
ft/day	cm/s	ft/day	cm/s	ft/day	cm/s
<u>Upper RGA</u>					
$7.25 \times 10^2$	$2.56 \times 10^{-1}$	$3.22 \times 10^{-1}$	$1.14 \times 10^{-4}$	1.29	$4.55 \times 10^{-4}$
$4.25 \times 10^2$	$1.50 \times 10^{-1}$	$1.89 \times 10^{-1}$	$6.67 \times 10^{-5}$	$7.56 \times 10^{-1}$	$2.67 \times 10^{-4}$
<u>Lower RGA</u>					
$7.25 \times 10^2$	$2.56 \times 10^{-1}$	$3.53 \times 10^{-1}$	$1.25 \times 10^{-4}$	1.41	$4.99 \times 10^{-4}$
$4.25 \times 10^2$	$1.50 \times 10^{-1}$	$2.07 \times 10^{-1}$	$7.31 \times 10^{-5}$	$8.29 \times 10^{-1}$	$2.93 \times 10^{-4}$
<u>Vicinity</u>					
$7.25 \times 10^2$	$2.56 \times 10^{-1}$	$2.27 \times 10^{-1}$	$8.01 \times 10^{-5}$	$9.07 \times 10^{-1}$	$3.20 \times 10^{-4}$
$4.25 \times 10^2$	$1.50 \times 10^{-1}$	$1.33 \times 10^{-1}$	$4.69 \times 10^{-5}$	$5.32 \times 10^{-1}$	$1.88 \times 10^{-4}$

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**APPENDIX F**  
**NOTIFICATIONS**

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## NOTIFICATIONS

In accordance with 401 *KAR* 48:300 § 7, *Sampling and Analysis*, the notification for parameters that exceed (or did not exceed) the maximum contaminant level (MCL) has been submitted to the Kentucky Division of Waste Management. There were no MCL exceedances in the current reporting period. The parameters submitted are listed on page F-4. The notification for parameters that do not have MCLs, but had statistically significant increased concentrations relative to historical background concentrations, is provided below.

### Statistical Analysis of Parameters Notification

The statistical analyses conducted on the third quarter 2024 groundwater data collected from the C-746-U Landfill monitoring wells were performed in accordance with *Groundwater Monitoring Plan for the Solid Waste Permitted Landfills (C-746-S Residential Landfill, C-746-T Inert Landfill, and C-746-U Contained Landfill) at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky (LATA Kentucky 2014)*.

The following are the permit required parameters in 40 *CFR* § 302.4, Appendix A, which had statistically significant, increased concentrations relative to historical background concentrations.

	<u>Parameter</u>	<u>Monitoring Well</u>
<b>Upper Continental Recharge System</b>	None	
<b>Upper Regional Gravel Aquifer</b>	Technetium-99	MW366
<b>Lower Regional Gravel Aquifer</b>	Technetium-99	MW364

NOTE: Although technetium-99 is not cited in 40 *CFR* § 302.4, Appendix A, *Sequential CAS Registry Number List of CERCLA Hazardous Substances*, this radionuclide is being reported along with the parameters of this regulation.

8/28/2024

**Four Rivers Nuclear Partnership, LLC  
PROJECT ENVIRONMENTAL MEASUREMENTS SYSTEM  
C-746-U LANDFILL  
SOLID WASTE PERMIT NUMBER SW07300014, SW07300015, SW07300045  
MAXIMUM CONTAMINANT LEVEL (MCL) EXCEEDANCE REPORT  
Quarterly Groundwater Sampling**

<b>AKGWA</b>	<b>Station</b>	<b>Analysis</b>	<b>Method</b>	<b>Results</b>	<b>Units</b>	<b>MCL</b>
--------------	----------------	-----------------	---------------	----------------	--------------	------------

No exceedances reported.

NOTE 1: MCLs are defined in 401 KAR 47:030.

NOTE 2: MW369, MW370, MW372, and MW373 are down-gradient wells for the C-746-S and C-746-T Landfills and upgradient for the C-746-U Landfill. These wells are sampled with the C-746-U Landfill monitoring well network. These wells are reported on the exceedance reports for C-746-S, C-746-T, and C-746-U.

**APPENDIX G**  
**CHART OF MCL AND UTL EXCEEDANCES**

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### Chart of MCL and Historical UTL Exceedances for the C-746-U Contained Landfill

Groundwater Flow System	UCRS										URGA					LRGA					
	D	S	S	S	D	D	D	U	U	U	D	D	D	D	U	U	D	D	D	D	U
Monitoring Well	368	375	376	377	359	362	365	371	374	366	360	363	357	369	372	367	361	364	358	370	373
<b>ACETONE</b>																					
Quarter 3, 2002											*	*	*								
Quarter 4, 2002											*	*	*								
Quarter 1, 2003											*	*	*								
Quarter 2, 2003											*	*	*								
Quarter 3, 2003	*						*				*	*	*		*			*			
Quarter 4, 2003						*	*				*	*	*		*						
Quarter 3, 2004						*											*				
Quarter 3, 2005						*															
Quarter 4, 2005						*															
<b>ALPHA ACTIVITY</b>																					
Quarter 1, 2004																					■
Quarter 2, 2004						■															■
Quarter 3, 2009						■															■
<b>ALUMINUM</b>																					
Quarter 3, 2003											*										
<b>BETA ACTIVITY</b>																					
Quarter 1, 2004																					■
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Quarter 3, 2020											■				■						■
Quarter 4, 2020											■				■						■
<b>BROMIDE</b>																					
Quarter 2, 2004													*								

**Chart of MCL and Historical UTL Exceedances  
for the C-746-U Contained Landfill (Continued)**

Groundwater Flow System	UCRS										URGA					LRGA					
	D	S	S	S	D	D	U	U	D	D	D	U	U	D	D	D	U	U			
Monitoring Well	368	375	376	377	359	362	365	371	374	366	360	363	357	369	372	367	361	364	358	370	373
<b>CALCIUM</b>																					
Quarter 3, 2003										*											
Quarter 2, 2005																					*
Quarter 3, 2006															*						
Quarter 2, 2008															*						
Quarter 3, 2009															*						
Quarter 4, 2009															*						
Quarter 1, 2010															*						
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Quarter 3, 2020	*								*						*						*
Quarter 4, 2020									*						*						*
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Quarter 3, 2021									*						*						*
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Quarter 1, 2022									*						*						*
Quarter 2, 2022									*						*						*
Quarter 3, 2022									*						*						*
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Quarter 1, 2023									*						*						*
Quarter 2, 2023									*						*						*
Quarter 3, 2023									*						*						*
Quarter 4, 2023									*						*						*
Quarter 1, 2024									*						*						*
Quarter 2, 2024									*						*						*
Quarter 3, 2024									*						*						*
<b>CARBON DISULFIDE</b>																					
Quarter 3, 2003														*							
Quarter 2, 2005							*							*							
Quarter 3, 2005						*								*							
Quarter 4, 2005						*								*							
Quarter 1, 2006						*								*							
Quarter 2, 2006						*								*							
Quarter 3, 2010	*									*				*							
Quarter 4, 2010														*							
Quarter 1, 2011														*							
<b>CHEMICAL OXYGEN DEMAND</b>																					
Quarter 3, 2002										*	*	*	*	*	*						
Quarter 4, 2002										*	*	*	*	*	*						
Quarter 1, 2003										*	*	*	*	*	*						
Quarter 2, 2003										*	*	*	*	*	*						
Quarter 3, 2003	*									*	*	*	*	*	*						
Quarter 4, 2003						*				*	*	*	*	*	*						
Quarter 3, 2004						*				*	*	*	*	*	*						
Quarter 3, 2005						*				*	*	*	*	*	*				*	*	*
Quarter 4, 2005					*					*	*	*	*	*	*				*	*	*
Quarter 1, 2006						*				*	*	*	*	*	*				*	*	*
Quarter 4, 2016															*						*
Quarter 1, 2017										*					*						*
Quarter 2, 2019										*	*			*	*						*
Quarter 3, 2019										*	*			*	*						*
Quarter 4, 2019										*	*			*	*						*
<b>CHLORIDE</b>																					
Quarter 1, 2006															*						*
Quarter 2, 2014															*						*
<b>COBALT</b>																					
Quarter 3, 2003	*					*				*	*	*	*	*	*	*	*	*	*	*	*
Quarter 1, 2004															*						*
Quarter 2, 2016															*						*

### Chart of MCL and Historical UTL Exceedances for the C-746-U Contained Landfill (Continued)

Groundwater Flow System	UCRS										URGA					LRGA						
	D	S	S	S	D	D	D	U	U		D	D	D	D	U	U	D	D	D	D	U	U
Gradient	368	375	376	377	359	362	365	371	374		366	360	363	357	369	372	367	361	364	358	370	373
<b>CONDUCTIVITY</b>																						
Quarter 4, 2002											*											
Quarter 1, 2003											*											
Quarter 2, 2003											*	*										
Quarter 4, 2003											*											
Quarter 1, 2004											*											
Quarter 2, 2004											*											
Quarter 3, 2004											*											
Quarter 1, 2005																*						
Quarter 2, 2005																*						
Quarter 3, 2005						*												*				
Quarter 4, 2005																*		*				
Quarter 1, 2006																*						
Quarter 2, 2006																*						
Quarter 3, 2006																*						
Quarter 1, 2007																*						
Quarter 2, 2007																*						
Quarter 3, 2007																*						
Quarter 4, 2007																*						
Quarter 1, 2008																*						
Quarter 2, 2008																*						
Quarter 3, 2008																*						
Quarter 4, 2008																*						
Quarter 1, 2009																*						
Quarter 2, 2009																*						
Quarter 3, 2009																*						
Quarter 4, 2009																*						
Quarter 1, 2010																*						
Quarter 2, 2010																*						
Quarter 3, 2010																*						
Quarter 4, 2010																*						
Quarter 1, 2011																*						
Quarter 2, 2011																*						
Quarter 3, 2011																*						
Quarter 4, 2011																*						
Quarter 1, 2012															*	*						
Quarter 2, 2012															*	*						
Quarter 3, 2012															*	*						
Quarter 4, 2012															*	*						
Quarter 1, 2013															*	*						
Quarter 2, 2013															*	*						
Quarter 3, 2013															*	*						
Quarter 4, 2013															*	*						
Quarter 1, 2014															*	*						
Quarter 2, 2014															*	*						
Quarter 3, 2014															*	*						
Quarter 4, 2014															*	*						
Quarter 1, 2015															*	*						
Quarter 2, 2015															*	*						
Quarter 3, 2015															*	*						
Quarter 4, 2015															*	*						
Quarter 1, 2016															*	*						
Quarter 2, 2016															*	*						
Quarter 3, 2016															*	*						
Quarter 2, 2019															*	*						
Quarter 3, 2019															*	*						
Quarter 4, 2019															*	*						
Quarter 1, 2020															*	*						
Quarter 2, 2020															*	*						
Quarter 3, 2020															*	*						
Quarter 4, 2020															*	*						
Quarter 1, 2021															*	*						
Quarter 2, 2021															*	*						
Quarter 3, 2021															*	*						
Quarter 1, 2022															*	*						
Quarter 2, 2022															*	*						
Quarter 3, 2022															*	*						
Quarter 4, 2022															*	*						
Quarter 1, 2023															*	*						
Quarter 2, 2023															*	*						
Quarter 3, 2023															*	*						
Quarter 4, 2023															*	*						
Quarter 1, 2024															*	*						
Quarter 2, 2024															*	*						
Quarter 3, 2024															*	*						
<b>DISSOLVED OXYGEN</b>																						
Quarter 1, 2003					*	*					*											
Quarter 3, 2003					*						*											
Quarter 4, 2003					*						*											
Quarter 1, 2004					*						*											
Quarter 2, 2004					*			*			*					*						
Quarter 1, 2005					*			*			*					*						
Quarter 2, 2005					*			*			*					*						
Quarter 1, 2006					*			*			*					*						
Quarter 2, 2006					*			*			*					*						
Quarter 3, 2006					*			*			*					*						
Quarter 4, 2006					*			*	*		*					*						
Quarter 2, 2007					*			*	*		*					*						
Quarter 3, 2007					*			*	*		*					*						
Quarter 1, 2008					*			*	*		*					*				*		
Quarter 2, 2008					*			*	*		*					*						
Quarter 3, 2008					*			*	*		*					*						

### Chart of MCL and Historical UTL Exceedances for the C-746-U Contained Landfill (Continued)

Groundwater Flow System	UCRS								URGA					LRGA								
	D	S	S	S	D	D	U	U	D	D	D	U	U	D	D	D	U	U				
Gradient	368	375	376	377	359	362	365	371	374	366	360	363	357	369	372	367	361	364	358	370	373	
<b>DISSOLVED OXYGEN</b>																						
Quarter 1, 2009							*															
Quarter 2, 2009							*	*	*													
Quarter 3, 2009							*	*	*													
Quarter 1, 2010							*	*	*													
Quarter 2, 2010							*	*	*											*	*	
Quarter 3, 2010							*	*	*													
Quarter 4, 2010							*	*	*		*										*	
Quarter 1, 2011							*	*	*		*											
Quarter 2, 2011							*	*	*	*	*		*									
Quarter 3, 2011							*	*	*	*	*		*									
Quarter 1, 2012							*	*	*	*	*		*									
Quarter 2, 2012	*			*	*	*	*	*	*	*	*		*									
Quarter 3, 2012	*			*	*	*	*	*	*	*	*		*									
Quarter 4, 2012	*			*	*	*	*	*	*	*	*		*									
Quarter 1, 2013	*			*	*	*	*	*	*	*	*		*									
Quarter 2, 2013	*			*	*	*	*	*	*	*	*		*									
Quarter 3, 2013	*			*	*	*	*	*	*	*	*		*									
Quarter 4, 2013	*			*	*	*	*	*	*	*	*		*								*	
Quarter 2, 2014	*			*	*	*	*	*	*	*	*		*				*					
Quarter 3, 2014	*			*	*	*	*	*	*	*	*		*				*					
Quarter 4, 2014	*			*	*	*	*	*	*	*	*		*				*					
Quarter 2, 2015	*			*	*	*	*	*	*	*	*		*				*					
Quarter 3, 2015	*			*	*	*	*	*	*	*	*		*				*					
Quarter 4, 2015	*			*	*	*	*	*	*	*	*		*				*					
Quarter 1, 2016	*			*	*	*	*	*	*	*	*		*				*					
Quarter 2, 2016	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 3, 2016	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 4, 2016	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 1, 2017	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 2, 2017	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 3, 2017	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 4, 2017	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 1, 2018	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 2, 2018	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 3, 2018	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 4, 2018	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 1, 2019	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 2, 2019	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 3, 2019	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 4, 2019	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 1, 2020	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 2, 2020	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 3, 2020	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 4, 2020	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 1, 2021	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 2, 2021	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 3, 2021	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 4, 2021	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 1, 2022	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 2, 2022	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 3, 2022	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 4, 2022	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 2, 2023	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 3, 2023	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 4, 2023	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 1, 2024	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 2, 2024	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
Quarter 3, 2024	*	*		*	*	*	*	*	*	*	*		*				*			*	*	
<b>DISSOLVED SOLIDS</b>																						
Quarter 4, 2002																					*	
Quarter 1, 2003																					*	
Quarter 2, 2003																					*	
Quarter 3, 2003							*				*										*	
Quarter 4, 2003							*				*										*	
Quarter 3, 2005							*				*										*	
Quarter 4, 2006							*				*										*	
Quarter 1, 2007							*				*										*	
Quarter 2, 2007							*				*										*	
Quarter 4, 2008							*				*										*	
Quarter 1, 2009							*				*										*	
Quarter 2, 2009							*				*										*	
Quarter 3, 2009							*				*										*	
Quarter 4, 2009							*				*										*	
Quarter 1, 2010							*				*										*	
Quarter 2, 2010							*				*										*	
Quarter 3, 2010							*				*										*	
Quarter 4, 2010							*				*										*	
Quarter 1, 2011							*				*										*	
Quarter 2, 2011							*				*										*	
Quarter 3, 2011							*				*										*	
Quarter 4, 2011							*				*										*	
Quarter 1, 2012							*				*										*	
Quarter 2, 2012							*				*										*	
Quarter 3, 2012							*				*										*	
Quarter 4, 2012							*				*										*	
Quarter 1, 2013							*				*										*	
Quarter 2, 2013							*				*										*	
Quarter 3, 2013							*				*										*	
Quarter 4, 2013							*				*										*	

### Chart of MCL and Historical UTL Exceedances for the C-746-U Contained Landfill (Continued)

Groundwater Flow System	UCRS								URGA					LRGA							
	D	S	S	D	D	U	U		D	D	D	U	U	D	D	D	U	U			
Monitoring Well	368	375	376	377	359	362	365	371	374	366	360	363	357	369	372	367	361	364	358	370	373
<b>DISSOLVED SOLIDS</b>																					
Quarter 1, 2014																					*
Quarter 2, 2014																					*
Quarter 4, 2014																					*
Quarter 2, 2015																					*
Quarter 3, 2015																					*
Quarter 4, 2015																					*
Quarter 1, 2016																					*
Quarter 3, 2019																					*
Quarter 4, 2019																					*
Quarter 1, 2020																					*
Quarter 2, 2020																					*
Quarter 3, 2020																					*
Quarter 4, 2020																					*
Quarter 1, 2021																					*
Quarter 2, 2021																					*
Quarter 3, 2021																					*
Quarter 4, 2021																					*
Quarter 1, 2022																					*
Quarter 2, 2022																					*
Quarter 3, 2022																					*
Quarter 4, 2022																					*
Quarter 1, 2023																					*
Quarter 2, 2023																					*
Quarter 3, 2023																					*
Quarter 1, 2024																					*
Quarter 2, 2024																					*
Quarter 3, 2024																					*
<b>IODIDE</b>																					
Quarter 2, 2003																					
Quarter 3, 2003	*									*										*	
Quarter 4, 2003																					
Quarter 3, 2010						*	*	*				*						*			
<b>IODINE-131</b>																					
Quarter 3, 2010																					■
<b>IODOMETHANE</b>																					
Quarter 4, 2003						*															
<b>IRON</b>																					
Quarter 4, 2002						*															
Quarter 3, 2003																					*
Quarter 4, 2003										*										*	*
Quarter 1, 2004										*										*	
Quarter 2, 2004										*											
Quarter 3, 2004										*											
Quarter 3, 2005																				*	
<b>MAGNESIUM</b>																					
Quarter 2, 2005																				*	*
Quarter 3, 2005							*													*	*
Quarter 2, 2006																				*	*
Quarter 3, 2006																				*	
Quarter 1, 2007																				*	
Quarter 2, 2008																				*	
Quarter 2, 2009																				*	
Quarter 3, 2009																				*	
Quarter 4, 2009																				*	
Quarter 1, 2010																				*	
Quarter 2, 2010																				*	
Quarter 3, 2010																				*	
Quarter 1, 2011																				*	
Quarter 2, 2011																				*	
Quarter 3, 2011																				*	
Quarter 4, 2011																				*	
Quarter 1, 2012																				*	
Quarter 2, 2012																				*	
Quarter 3, 2012																				*	
Quarter 4, 2012																				*	
Quarter 1, 2013																				*	
Quarter 2, 2013																				*	
Quarter 3, 2013																				*	
Quarter 4, 2013																				*	
Quarter 2, 2014																				*	
Quarter 4, 2014																				*	
Quarter 2, 2015																				*	
Quarter 3, 2015																				*	
Quarter 4, 2015																				*	
Quarter 1, 2016																				*	
Quarter 2, 2016																				*	
Quarter 3, 2016	*																			*	*
Quarter 4, 2016	*																			*	*
Quarter 2, 2017	*																			*	*
Quarter 3, 2017	*																			*	*
Quarter 1, 2018	*																			*	*
Quarter 3, 2018	*																			*	*
Quarter 3, 2019	*																			*	*
Quarter 4, 2019																				*	*
Quarter 2, 2020																				*	*
Quarter 4, 2020																				*	*
Quarter 1, 2021																				*	*
Quarter 2, 2021																				*	*
Quarter 3, 2021																				*	*
Quarter 4, 2021																				*	*
Quarter 1, 2022																				*	*
Quarter 2, 2022																				*	*
Quarter 3, 2022																				*	*
Quarter 1, 2023																				*	*
Quarter 2, 2023																				*	*
Quarter 1, 2024																				*	*
Quarter 2, 2024																				*	*
Quarter 3, 2024																				*	*

### Chart of MCL and Historical UTL Exceedances for the C-746-U Contained Landfill (Continued)

Groundwater Flow System	UCRS										URGA						LRGA					
	D	S	S	S	D	D	U	U	D	D	D	U	U	D	D	D	U	U				
Monitoring Well	368	375	376	377	359	362	365	371	374	366	360	363	357	369	372	367	361	364	358	370	373	
<b>MANGANESE</b>																						
Quarter 3, 2002										*		*										
Quarter 4, 2002		*				*	*			*		*		*								
Quarter 2, 2003										*		*										
Quarter 3, 2003										*		*	*			*	*	*	*			
Quarter 4, 2003										*	*	*	*			*	*	*	*			
Quarter 1, 2004										*	*	*	*			*	*	*	*			
Quarter 2, 2004							*			*	*	*				*	*	*	*			
Quarter 3, 2004							*			*	*	*				*	*	*	*			
Quarter 4, 2004										*	*	*				*	*	*	*			
Quarter 1, 2005										*	*	*				*	*	*	*			
Quarter 2, 2005										*	*	*				*	*	*	*			
Quarter 3, 2005										*	*	*				*	*	*	*			
Quarter 4, 2005										*	*	*				*	*	*	*			
Quarter 1, 2006										*	*	*				*	*	*	*			
Quarter 2, 2006							*			*	*	*				*	*	*	*			
Quarter 3, 2006										*	*	*				*	*	*	*			
Quarter 4, 2006										*	*	*				*	*	*	*			
Quarter 1, 2007										*	*	*				*	*	*	*			
Quarter 2, 2007							*			*	*	*				*	*	*	*			
Quarter 3, 2007							*			*	*	*				*	*	*	*			
Quarter 4, 2007							*			*	*	*				*	*	*	*			
Quarter 1, 2008							*			*	*	*				*	*	*	*			
Quarter 2, 2008							*	*	*	*	*	*				*	*	*	*			
Quarter 3, 2008							*	*	*	*	*	*				*	*	*	*			
Quarter 4, 2008							*	*	*	*	*	*				*	*	*	*			
Quarter 1, 2009							*	*	*	*	*	*				*	*	*	*			
Quarter 2, 2009							*	*	*	*	*	*				*	*	*	*			
Quarter 3, 2009		*			*	*	*	*	*	*	*	*				*	*	*	*			
Quarter 4, 2009		*			*	*	*	*	*	*	*	*				*	*	*	*			
Quarter 1, 2010		*			*	*	*	*	*	*	*	*				*	*	*	*			
Quarter 2, 2010		*			*	*	*	*	*	*	*	*				*	*	*	*			
Quarter 3, 2010		*			*	*	*	*	*	*	*	*			*	*	*	*				
Quarter 4, 2010		*			*	*	*	*	*	*	*	*			*	*	*	*				
Quarter 1, 2011		*			*	*	*	*	*	*	*	*			*	*	*	*				
Quarter 2, 2011		*			*	*	*	*	*	*	*	*			*	*	*	*				
Quarter 3, 2011		*			*	*	*	*	*	*	*	*			*	*	*	*				
Quarter 4, 2011		*			*	*	*	*	*	*	*	*			*	*	*	*				
Quarter 1, 2012		*			*	*	*	*	*	*	*	*			*	*	*	*				
Quarter 2, 2012	*	*		*	*	*	*	*	*	*	*	*			*	*	*	*				
Quarter 3, 2012	*	*		*	*	*	*	*	*	*	*	*			*	*	*	*				
Quarter 4, 2012	*	*		*	*	*	*	*	*	*	*	*			*	*	*	*				
Quarter 1, 2013	*	*		*	*	*	*	*	*	*	*	*			*	*	*	*				
Quarter 2, 2013	*	*		*	*	*	*	*	*	*	*	*			*	*	*	*				
Quarter 3, 2013	*	*		*	*	*	*	*	*	*	*	*			*	*	*	*				
Quarter 4, 2013	*	*		*	*	*	*	*	*	*	*	*			*	*	*	*				
Quarter 1, 2014	*	*		*	*	*	*	*	*	*	*	*			*	*	*	*				
Quarter 2, 2014	*	*		*	*	*	*	*	*	*	*	*			*	*	*	*				
Quarter 3, 2014	*	*		*	*	*	*	*	*	*	*	*			*	*	*	*				
Quarter 4, 2014	*	*		*	*	*	*	*	*	*	*	*			*	*	*	*				
Quarter 1, 2015	*	*		*	*	*	*	*	*	*	*	*			*	*	*	*				
Quarter 2, 2015	*	*		*	*	*	*	*	*	*	*	*			*	*	*	*				
Quarter 3, 2015	*	*		*	*	*	*	*	*	*	*	*			*	*	*	*				
Quarter 4, 2015	*	*		*	*	*	*	*	*	*	*	*			*	*	*	*				
<b>NICKEL</b>																						
Quarter 3, 2003										*												
Quarter 1, 2022																			*	*	*	
Quarter 4, 2022																			*	*	*	
Quarter 1, 2023																			*	*	*	
Quarter 2, 2023																			*	*	*	
Quarter 4, 2023													*						*	*	*	
Quarter 1, 2024													*						*	*	*	
<b>NITRATE AS NITROGEN</b>																						
Quarter 4, 2021																						
<b>OXIDATION-REDUCTION POTENTIAL</b>																						
Quarter 4, 2002																			*	*	*	
Quarter 1, 2003																			*	*	*	
Quarter 2, 2003																			*	*	*	
Quarter 3, 2003	*																					
Quarter 4, 2003					*																	
Quarter 2, 2004												*				*		*	*		*	
Quarter 3, 2004					*		*				*	*	*		*	*	*	*	*	*	*	
Quarter 4, 2004											*				*		*	*	*	*	*	
Quarter 1, 2005											*				*		*	*	*	*	*	
Quarter 2, 2005							*				*	*	*		*		*	*	*	*	*	
Quarter 3, 2005					*	*	*			*	*	*		*		*	*	*	*	*	*	
Quarter 4, 2005	*				*	*	*			*	*	*		*		*	*	*	*	*	*	
Quarter 1, 2006					*	*	*	*		*	*	*		*		*	*	*	*	*	*	
Quarter 2, 2006					*	*	*	*		*	*	*		*		*	*	*	*	*	*	
Quarter 3, 2006					*	*	*	*		*	*	*		*		*	*	*	*	*	*	
Quarter 4, 2006					*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 1, 2007	*				*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 2, 2007					*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 3, 2007					*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 4, 2007					*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 1, 2008					*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 2, 2008					*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 3, 2008					*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 4, 2008					*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 1, 2009					*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 2, 2009					*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 3, 2009	*				*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 4, 2009	*				*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 1, 2010	*				*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 2, 2010	*				*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 3, 2010	*				*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 4, 2010	*				*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 1, 2011	*				*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 2, 2011	*				*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 3, 2011	*				*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 4, 2011	*				*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 1, 2012	*				*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 2, 2012	*	*		*	*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 3, 2012	*	*		*	*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 4, 2012	*	*		*	*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 1, 2013	*	*		*	*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 2, 2013	*	*		*	*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 3, 2013	*	*		*	*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 4, 2013	*	*		*	*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 1, 2014	*	*		*	*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 2, 2014	*	*		*	*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 3, 2014	*	*		*	*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 4, 2014	*	*		*	*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 1, 2015	*	*		*	*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 2, 2015	*	*		*	*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 3, 2015	*	*		*	*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	
Quarter 4, 2015	*	*		*	*	*	*	*	*	*	*	*		*		*	*	*	*	*	*	

**Chart of MCL and Historical UTL Exceedances  
for the C-746-U Contained Landfill (Continued)**

Groundwater Flow System	UCRS												URGA					LRGA				
	D	S	S	S	D	D	U	U	D	D	D	U	U	D	D	D	U	U				
Gradient	368	375	376	377	359	362	365	371	374	366	360	363	357	369	372	367	361	364	358	370	373	
<b>OXIDATION-REDUCTION POTENTIAL</b>																						
Quarter 1, 2016	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 2, 2016	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 3, 2016	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 4, 2016	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 1, 2017	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 2, 2017	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 3, 2017	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 4, 2017	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 1, 2018	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 2, 2018	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 3, 2018	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 4, 2018	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 1, 2019	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 2, 2019	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 3, 2019	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 4, 2019	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 1, 2020	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 2, 2020	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 3, 2020	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 4, 2020	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 1, 2021	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 2, 2021	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 3, 2021	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 4, 2021	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 1, 2022	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 2, 2022	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 3, 2022	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 4, 2022	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 1, 2023	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 2, 2023	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 3, 2023	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 4, 2023	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 1, 2024	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 2, 2024	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 3, 2024	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Quarter 4, 2024	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
<b>PCB-TOTAL</b>																						
Quarter 4, 2003																	*					
Quarter 3, 2004											*											
Quarter 3, 2005							*															
Quarter 2, 2006							*															
Quarter 3, 2006							*															
Quarter 1, 2007							*															
Quarter 2, 2007							*															
Quarter 3, 2007							*															
Quarter 1, 2008							*															
Quarter 2, 2008							*															
Quarter 4, 2008							*															
Quarter 3, 2009							*															
Quarter 1, 2010							*															
Quarter 2, 2010							*															
Quarter 4, 2010							*															
<b>PCB-1016</b>																						
Quarter 3, 2004											*											
Quarter 2, 2006							*				*											
Quarter 1, 2007							*															
Quarter 2, 2007							*															
Quarter 3, 2007							*															
Quarter 2, 2008							*															
Quarter 4, 2008							*															
Quarter 3, 2009							*															
Quarter 1, 2010							*															
Quarter 2, 2010							*															
Quarter 4, 2010							*															
<b>PCB-1242</b>																						
Quarter 3, 2006						*				*												
Quarter 4, 2006										*												
Quarter 1, 2008							*															
Quarter 2, 2012							*															
<b>PCB-1248</b>																						
Quarter 2, 2008						*																
<b>PCB-1260</b>																						
Quarter 2, 2006						*																
<b>pH</b>																						
Quarter 3, 2002										*												
Quarter 4, 2002										*												
Quarter 1, 2003										*												
Quarter 2, 2003										*												
Quarter 3, 2003	*						*			*												
Quarter 4, 2003							*								*							
Quarter 1, 2004							*								*							
Quarter 3, 2005						*										*		*				
Quarter 4, 2005						*										*		*				
Quarter 3, 2006													*		*							
Quarter 2, 2011												*		*								
Quarter 3, 2011											*		*									
Quarter 4, 2011											*		*									
Quarter 1, 2012											*		*		*	*						
Quarter 2, 2012											*		*		*	*						
Quarter 1, 2013									*	*				*	*							
Quarter 3, 2015														*	*							
Quarter 2, 2016																		*	*	*		
Quarter 3, 2016																		*	*	*		
Quarter 2, 2017															*							

### Chart of MCL and Historical UTL Exceedances for the C-746-U Contained Landfill (Continued)

Groundwater Flow System	UCRS									URGA					LRGA						
	D 368	S 375	S 376	S 377	S 359	D 362	D 365	U 371	U 374	D 366	D 360	D 363	D 357	U 369	U 372	D 367	D 361	D 364	D 358	U 370	U 373
<b>Gradient</b>																					
<b>Monitoring Well</b>																					
<b>pH</b>																					
Quarter 3, 2018					*					*	*						*	*	*		
Quarter 4, 2018																	*	*	*		
Quarter 3, 2019																	*	*	*		
Quarter 1, 2021																	*	*	*		
Quarter 3, 2021																	*	*	*		*
Quarter 4, 2021																	*	*	*		*
<b>POTASSIUM</b>																					
Quarter 1, 2014																	*	*	*		
<b>RADIUM-228</b>																					
Quarter 2, 2005																					
Quarter 4, 2005																					
<b>SELENIUM</b>																					
Quarter 4, 2003																					
<b>SODIUM</b>																					
Quarter 3, 2002											*	*	*								
Quarter 4, 2002											*	*	*								
Quarter 1, 2003											*	*	*		*						
Quarter 2, 2003											*	*	*								
Quarter 3, 2003											*	*	*								
Quarter 1, 2007											*	*	*								
Quarter 1, 2012															*						
Quarter 1, 2014																*					
Quarter 3, 2014											*	*	*								
Quarter 4, 2014											*	*	*								
Quarter 4, 2015											*	*	*								
Quarter 1, 2016											*	*	*								
Quarter 2, 2016											*	*	*								
Quarter 3, 2016											*	*	*								
Quarter 4, 2016											*	*	*								
Quarter 1, 2017											*	*	*								
Quarter 2, 2017											*	*	*								
Quarter 3, 2017											*	*	*								
Quarter 4, 2017											*	*	*								
Quarter 1, 2018											*	*	*								
Quarter 3, 2018											*	*	*								
<b>STRONTIUM-90</b>																					
Quarter 4, 2008																					
<b>SULFATE</b>																					
Quarter 1, 2003																					
Quarter 2, 2003																					
Quarter 3, 2003	*																				
Quarter 4, 2003	*																				
Quarter 1, 2004																					
Quarter 2, 2004																					
Quarter 3, 2004																					
Quarter 1, 2005														*							
Quarter 2, 2005														*							*
Quarter 3, 2005														*							*
Quarter 4, 2005														*							*
Quarter 1, 2006														*							*
Quarter 2, 2006														*							*
Quarter 3, 2006														*							*
Quarter 1, 2007														*							*
Quarter 2, 2007														*							*
Quarter 3, 2007														*							*
Quarter 4, 2007		*												*							*
Quarter 1, 2008		*											*								*
Quarter 2, 2008		*											*								*
Quarter 3, 2008		*											*								*
Quarter 4, 2008		*											*								*
Quarter 1, 2009		*											*								*
Quarter 2, 2009		*											*								*
Quarter 3, 2009		*											*								*
Quarter 4, 2009		*											*								*
Quarter 1, 2010		*											*								*
Quarter 2, 2010		*											*								*
Quarter 3, 2010		*											*								*
Quarter 4, 2010		*											*								*
Quarter 1, 2011		*											*								*
Quarter 2, 2011		*											*								*
Quarter 3, 2011		*											*								*
Quarter 4, 2011		*											*								*
Quarter 1, 2012		*											*								*
Quarter 2, 2012	*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 3, 2012	*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 4, 2012	*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 1, 2013	*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 2, 2013	*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 3, 2013	*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 4, 2013	*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 1, 2014	*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 2, 2014	*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 3, 2014	*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 4, 2014	*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 1, 2015	*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

**Chart of MCL and Historical UTL Exceedances  
for the C-746-U Contained Landfill (Continued)**

Groundwater Flow System	UCRS								URGA					LRGA							
	D	S	S	S	D	D	U	U	D	D	D	U	U	D	D	D	U	U			
<b>Monitoring Well</b>	368	375	376	377	359	362	365	371	374	366	360	363	357	369	372	367	361	364	358	370	373
<b>SULFATE</b>																					
Quarter 2, 2015	*	*			*		*								*						
Quarter 3, 2015	*	*			*	*	*	*							*						
Quarter 4, 2015	*	*			*	*	*	*													
Quarter 1, 2016	*	*			*	*	*	*													
Quarter 2, 2016	*	*			*	*	*	*													
Quarter 3, 2016	*	*			*	*	*	*													
Quarter 4, 2016	*	*			*	*	*	*													
Quarter 1, 2017	*	*			*	*	*	*													
Quarter 2, 2017	*	*			*	*	*	*													
Quarter 3, 2017	*	*			*	*	*	*													
Quarter 4, 2017	*	*			*	*	*	*													
Quarter 1, 2018	*	*			*	*	*	*													
Quarter 2, 2018	*	*			*	*	*	*													
Quarter 3, 2018	*	*			*	*	*	*													
Quarter 4, 2018	*	*			*	*	*	*													
Quarter 1, 2019	*	*			*	*	*	*													
Quarter 2, 2019	*	*			*	*	*	*													
Quarter 3, 2019	*	*			*	*	*	*													
Quarter 4, 2019	*	*			*	*	*	*													
Quarter 1, 2020	*	*			*	*	*	*													
Quarter 2, 2020	*	*			*	*	*	*													
Quarter 3, 2020	*	*			*	*	*	*													
Quarter 4, 2020	*	*			*	*	*	*													
Quarter 1, 2021	*	*			*	*	*	*							*						
Quarter 2, 2021	*	*			*	*	*	*							*						
Quarter 3, 2021	*	*			*	*	*	*							*						
Quarter 4, 2021	*	*			*	*	*	*							*						
Quarter 1, 2022	*	*			*	*	*	*							*						
Quarter 2, 2022	*	*			*	*	*	*					*	*	*						
Quarter 3, 2022	*	*			*	*	*	*					*	*	*						
Quarter 4, 2022	*	*			*	*	*	*					*	*	*						
Quarter 1, 2023	*	*			*	*	*	*					*	*	*						
Quarter 2, 2023	*	*			*	*	*	*					*	*	*						
Quarter 3, 2023	*	*			*	*	*	*					*	*	*						
Quarter 4, 2023	*	*			*	*	*	*					*	*	*						
Quarter 1, 2024	*	*			*	*	*	*					*	*	*						
Quarter 2, 2024	*	*			*	*	*	*					*	*	*						
Quarter 3, 2024	*	*			*	*	*	*					*	*	*						
<b>TECHNETIUM-99</b>																					
Quarter 4, 2002																	*	*	*	*	*
Quarter 2, 2003						*						*			*	*	*	*	*	*	*
Quarter 3, 2003															*	*	*	*	*	*	*
Quarter 4, 2003															*	*	*	*	*	*	*
Quarter 1, 2004															*	*	*	*	*	*	*
Quarter 2, 2004															*	*	*	*	*	*	*
Quarter 3, 2004															*	*	*	*	*	*	*
Quarter 4, 2004															*	*	*	*	*	*	*
Quarter 3, 2005															*	*	*	*	*	*	*
Quarter 1, 2006															*	*	*	*	*	*	*
Quarter 2, 2006		*						*							*	*	*	*	*	*	*
Quarter 3, 2006															*	*	*	*	*	*	*
Quarter 4, 2006															*	*	*	*	*	*	*
Quarter 1, 2007															*	*	*	*	*	*	*
Quarter 2, 2007												*	*	*	*	*	*	*	*	*	*
Quarter 3, 2007												*	*	*	*	*	*	*	*	*	*
Quarter 4, 2007								*				*	*	*	*	*	*	*	*	*	*
Quarter 1, 2008												*	*	*	*	*	*	*	*	*	*
Quarter 2, 2008						*	*					*	*	*	*	*	*	*	*	*	*
Quarter 3, 2008												*	*	*	*	*	*	*	*	*	*
Quarter 4, 2008												*	*	*	*	*	*	*	*	*	*
Quarter 1, 2009												*	*	*	*	*	*	*	*	*	*
Quarter 2, 2009												*	*	*	*	*	*	*	*	*	*
Quarter 3, 2009						*	*					*	*	*	*	*	*	*	*	*	*
Quarter 4, 2009												*	*	*	*	*	*	*	*	*	*
Quarter 2, 2010												*	*	*	*	*	*	*	*	*	*
Quarter 3, 2010												*	*	*	*	*	*	*	*	*	*
Quarter 4, 2010												*	*	*	*	*	*	*	*	*	*
Quarter 1, 2011		*						*				*	*	*	*	*	*	*	*	*	*
Quarter 2, 2011												*	*	*	*	*	*	*	*	*	*
Quarter 1, 2012								*				*	*	*	*	*	*	*	*	*	*
Quarter 2, 2012												*	*	*	*	*	*	*	*	*	*
Quarter 3, 2012												*	*	*	*	*	*	*	*	*	*
Quarter 4, 2012												*	*	*	*	*	*	*	*	*	*
Quarter 1, 2013												*	*	*	*	*	*	*	*	*	*
Quarter 2, 2013												*	*	*	*	*	*	*	*	*	*
Quarter 3, 2013											*	*	*	*	*	*	*	*	*	*	*
Quarter 4, 2013											*	*	*	*	*	*	*	*	*	*	*
Quarter 1, 2014												*	*	*	*	*	*	*	*	*	*
Quarter 2, 2014												*	*	*	*	*	*	*	*	*	*
Quarter 3, 2014												*	*	*	*	*	*	*	*	*	*
Quarter 4, 2014												*	*	*	*	*	*	*	*	*	*
Quarter 1, 2015												*	*	*	*	*	*	*	*	*	*
Quarter 2, 2015												*	*	*	*	*	*	*	*	*	*
Quarter 3, 2015												*	*	*	*	*	*	*	*	*	*
Quarter 4, 2015												*	*	*	*	*	*	*	*	*	*
Quarter 1, 2016												*	*	*	*	*	*	*	*	*	*
Quarter 2, 2016												*	*	*	*	*	*	*	*	*	*
Quarter 3, 2016												*	*	*	*	*	*	*	*	*	*
Quarter 4, 2016											*	*	*	*	*	*	*	*	*	*	*
Quarter 1, 2017												*	*	*	*	*	*	*	*	*	*
Quarter 2, 2017												*	*	*	*	*	*	*	*	*	*
Quarter 3, 2017												*	*	*	*	*	*	*	*	*	*
Quarter 4, 2017												*	*	*	*	*	*	*	*	*	*
Quarter 1, 2018												*	*	*	*	*	*	*	*	*	*

### Chart of MCL and Historical UTL Exceedances for the C-746-U Contained Landfill (Continued)

Groundwater Flow System	UCRS								URGA					LRGA							
	D	S	S	S	D	D	U	U	D	D	D	U	U	D	D	D	U	U			
Gradient	368	375	376	377	359	362	365	371	374	366	360	363	357	369	372	367	361	364	358	370	373
<b>TECHNETIUM-99</b>																					
Quarter 2, 2018													*		*				*		
Quarter 3, 2018														*					*		
Quarter 4, 2018														*		*	*	*	*		
Quarter 1, 2019														*					*		
Quarter 2, 2019														*					*		
Quarter 3, 2019														*		*	*	*	*		
Quarter 4, 2019														*		*	*	*	*		
Quarter 1, 2020														*		*	*	*	*		
Quarter 2, 2020														*		*	*	*	*		
Quarter 3, 2020														*		*	*	*	*		
Quarter 4, 2020														*		*	*	*	*		
Quarter 1, 2021														*		*	*	*	*		
Quarter 2, 2021										*				*		*	*	*	*		
Quarter 3, 2021														*	*		*	*	*		
Quarter 4, 2021														*		*	*	*	*		
Quarter 1, 2022										*				*		*	*	*	*		
Quarter 2, 2022										*				*		*	*	*	*		
Quarter 3, 2022														*		*	*	*	*		
Quarter 4, 2022														*		*	*	*	*		
Quarter 1, 2023										*				*		*	*	*	*		
Quarter 2, 2023										*				*		*	*	*	*		
Quarter 3, 2023														*		*	*	*	*		
Quarter 4, 2023														*		*	*	*	*		
Quarter 1, 2024														*		*	*	*	*		
Quarter 2, 2024														*		*	*	*	*		
Quarter 3, 2024										*				*		*	*	*	*		
<b>THORIUM-230</b>																					
Quarter 4, 2015																*					
Quarter 2, 2016										*						*					
Quarter 4, 2016	*									*		*			*			*			
Quarter 4, 2017											*	*									
Quarter 2, 2018										*		*									
Quarter 2, 2021										*											
<b>TOLUENE</b>																					
Quarter 2, 2014										*				*							
<b>TOTAL ORGANIC CARBON</b>																					
Quarter 3, 2002										*	*	*	*	*						*	
Quarter 4, 2002										*	*	*	*	*						*	
Quarter 1, 2003										*	*	*	*	*						*	
Quarter 3, 2003	*									*	*	*	*	*		*				*	
Quarter 4, 2003										*	*	*	*	*						*	
Quarter 1, 2004										*	*	*	*	*						*	
Quarter 3, 2005						*				*	*	*	*	*	*	*	*	*	*	*	
Quarter 4, 2005						*				*	*	*	*	*	*	*	*	*	*	*	
Quarter 1, 2006										*	*	*	*	*	*	*	*	*	*	*	
<b>TOTAL ORGANIC HALIDES</b>																					
Quarter 4, 2002										*	*	*	*	*						*	
Quarter 1, 2003										*	*	*	*	*						*	
Quarter 2, 2003										*	*	*	*	*						*	
Quarter 1, 2004										*	*	*	*	*		*				*	
<b>TRICHLOROETHENE</b>																					
Quarter 3, 2002														■						■	
Quarter 4, 2002															■					■	
Quarter 1, 2003																■				■	
Quarter 2, 2003																■				■	
Quarter 3, 2003																	■			■	
Quarter 4, 2003																	■			■	
Quarter 1, 2004																	■			■	
Quarter 2, 2004																	■			■	
Quarter 3, 2004																	■			■	
Quarter 4, 2004																	■			■	
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Quarter 2, 2008																		■		■	
Quarter 3, 2008																	■			■	
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Quarter 1, 2009																	■			■	
Quarter 2, 2009																	■			■	
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Quarter 4, 2009																	■			■	
Quarter 1, 2010																	■			■	
Quarter 2, 2010																	■			■	
Quarter 3, 2010																	■			■	
Quarter 4, 2010																	■			■	
Quarter 2, 2011																		■		■	
Quarter 3, 2011																		■		■	
Quarter 4, 2011																		■		■	
Quarter 1, 2012																		■		■	
Quarter 2, 2012																		■		■	

### Chart of MCL and Historical UTL Exceedances for the C-746-U Contained Landfill (Continued)

Groundwater Flow System	UCRS								URGA					LRGA							
	D	S	S	S	D	D	D	U	U	D	D	D	D	U	U	D	D	D	D	U	U
Gradient	368	375	376	377	359	362	365	371	374	366	360	363	357	369	372	367	361	364	358	370	373
<b>TRICHLOROETHENE</b>																					
Quarter 3, 2012																					
Quarter 4, 2012																					
Quarter 1, 2013																					
Quarter 2, 2013																					
Quarter 3, 2013																					
Quarter 3, 2013																					
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Quarter 2, 2022																					
Quarter 3, 2022																					
Quarter 1, 2023																					
Quarter 2, 2023																					
Quarter 3, 2023																					
<b>TURBIDITY</b>																					
Quarter 1, 2003																					
<b>URANIUM</b>																					
Quarter 4, 2002		*			*	*	*				*	*	*	*	*	*	*	*	*	*	*
Quarter 4, 2006																					*
<b>ZINC</b>																					
Quarter 3, 2005																					*

\* Statistical test results indicate an elevated concentration (i.e., a statistical exceedance).  
 ■ MCL Exceedance  
 ■ Previously reported as an MCL exceedance; however, result was equal to MCL.  
 UCRS Upper Continental Recharge System  
 URGA Upper Regional Gravel Aquifer  
 LRGA Lower Regional Gravel Aquifer

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**APPENDIX H**  
**METHANE MONITORING DATA**

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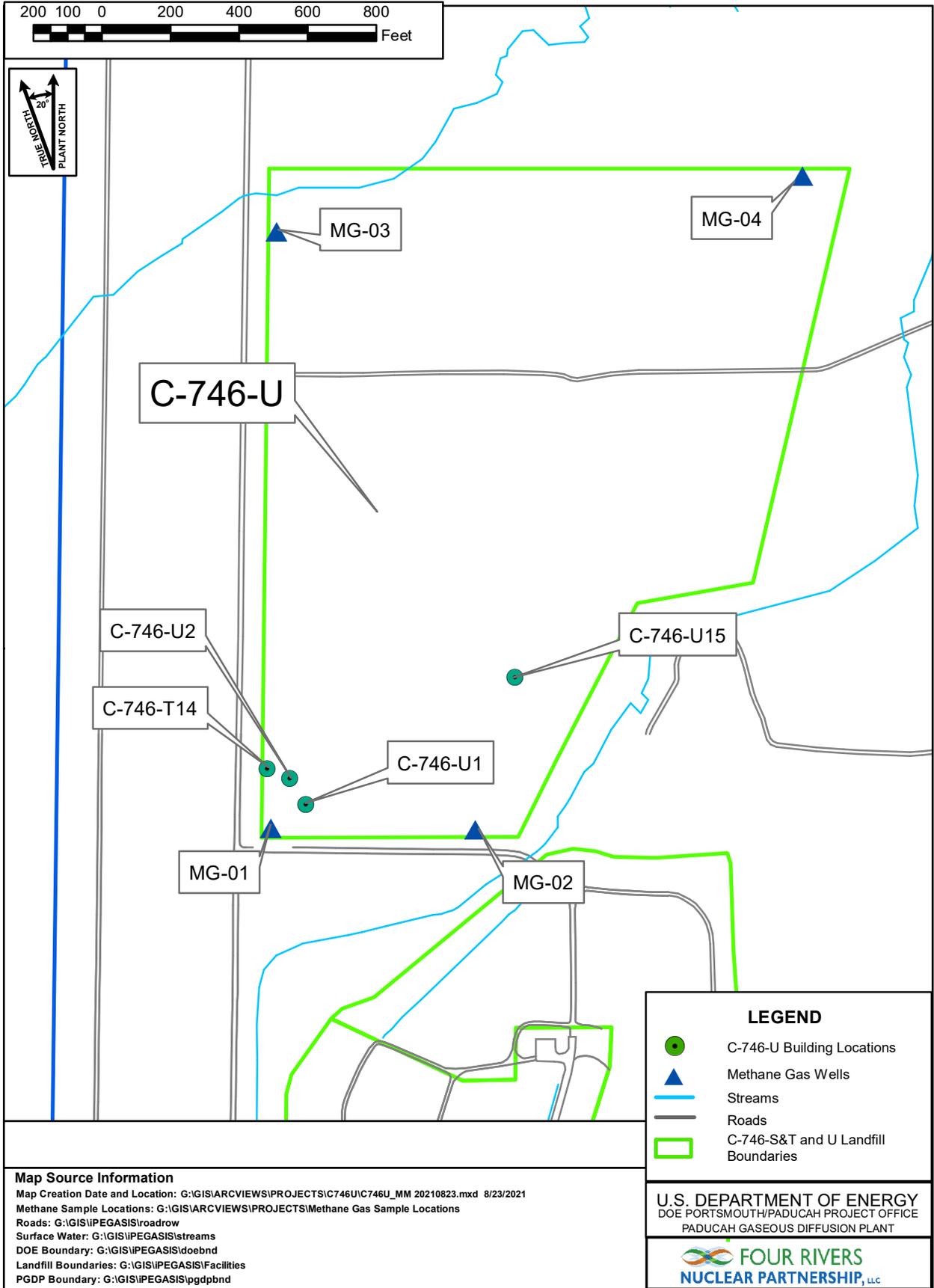


Figure H.1. C-746-U Landfill Methane Monitoring Locations

CP3-WM-0017-F04 - C-746-U LANDFILL METHANE MONITORING REPORT

PADUCAH GASEOUS DIFFUSION PLANT

Permit #: 073-00045

McCracken County, Kentucky

Date:	August 20, 2024	Time:	0830	Monitor:	Michael Hideg
Weather Conditions: Mostly sunny, Approximately 69°, humidity: 68%					
Monitoring Equipment: Multi RAE – Serial # 11881					
Monitoring Location					Reading (% LEL)
C-746-U1	Checked at close to ground level				0
C-746-U2	Checked at close to ground level				0
C-746-U-T-14	Checked at close to ground level				0
C-746-U15	Checked at close to ground level				0
MG1	Checked inside casing				0
MG2	Checked inside casing				0
MG3	Checked inside casing				0
MG4	Checked inside casing				0
Suspect or Problem Areas	No problems noted				None
Remarks:	N/A				
Performed by:				8-29-24	
	Signature			Date	

**APPENDIX I**

**SURFACE WATER ANALYSES AND LABORATORY REPORTS**

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**Paducah OREIS  
SURFACE WATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** L150      INSTREAM      **Period:** 3rd Quarter 2024  
**SAMPLE ID:** L150US4-24      Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Chloride		36.9	mg/L	1	7/9/2024			EPA-300.0	X
Sulfate		8.05	mg/L	2	7/9/2024			EPA-300.0	X
Conductivity		266	µmhos/cm		7/9/2024				X
pH		7.58	Std Unit		7/9/2024				X
Iron		3.95	mg/L	0.1	7/9/2024			EPA-200.8	X
Sodium		23.3	mg/L	0.25	7/9/2024			EPA-200.8	X
Uranium		0.000319	mg/L	0.0002	7/9/2024			EPA-200.8	X
Alpha activity	U	2.28	pCi/L	6.17	7/9/2024	3.47	3.49	SW846-9310	X
Beta activity	U	8.46	pCi/L	10.7	7/9/2024	6.66	6.8	SW846-9310	X
Dissolved Solids		200	mg/L	10	7/9/2024			EPA-160.1	X
Suspended Solids		63.4	mg/L	7.81	7/9/2024			EPA-160.2	X
Chemical Oxygen Demand (COD)		45.5	mg/L	20	7/9/2024			EPA-410.4	X
Total Solids		273	mg/L	10	7/9/2024			SM-2540B	X
Total Organic Carbon (TOC)		13.5	mg/L	1	7/9/2024			SW846-9060A	X

**Paducah OREIS  
SURFACE WATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** L154      INSTREAM      **Period:** 3rd Quarter 2024  
**SAMPLE ID:** L154US4-24      Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Chloride		1.93	mg/L	0.2	7/9/2024			EPA-300.0	X
Sulfate		3.22	mg/L	0.4	7/9/2024			EPA-300.0	X
Conductivity		121	µmhos/cm		7/9/2024				X
pH		7.3	Std Unit		7/9/2024				X
Iron		1.14	mg/L	0.1	7/9/2024			EPA-200.8	X
Sodium		1.79	mg/L	0.25	7/9/2024			EPA-200.8	X
Uranium		0.00152	mg/L	0.0002	7/9/2024			EPA-200.8	X
Alpha activity	U	3	pCi/L	7.37	7/9/2024	4.25	4.29	SW846-9310	X
Beta activity		23.6	pCi/L	8.96	7/9/2024	7.39	8.35	SW846-9310	X
Dissolved Solids		132	mg/L	10	7/9/2024			EPA-160.1	X
Suspended Solids		28.7	mg/L	5.56	7/9/2024			EPA-160.2	X
Chemical Oxygen Demand (COD)		78	mg/L	20	7/9/2024			EPA-410.4	X
Total Solids		159	mg/L	10	7/9/2024			SM-2540B	X
Total Organic Carbon (TOC)		22.6	mg/L	2	7/9/2024			SW846-9060A	X

**Paducah OREIS  
SURFACE WATER MONITORING REPORT**

**Facility:** C-746-U Landfill      **County:** McCracken      **Permit #:** SW07300014,SW07300015,SW07300045  
**Sampling Point:** L351      DOWNSTREAM      **Period:** 3rd Quarter 2024  
**SAMPLE ID:** L351US4-24      Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Chloride		2.14	mg/L	0.2	7/9/2024			EPA-300.0	X
Sulfate		3.55	mg/L	0.4	7/9/2024			EPA-300.0	X
Conductivity		105	µmhos/cm		7/9/2024				X
pH		7.16	Std Unit		7/9/2024				X
Iron		1.33	mg/L	0.1	7/9/2024			EPA-200.8	X
Sodium		2.1	mg/L	0.25	7/9/2024			EPA-200.8	X
Uranium		0.000987	mg/L	0.0002	7/9/2024			EPA-200.8	X
Alpha activity	U	5.1	pCi/L	6.58	7/9/2024	4.49	4.59	SW846-9310	X
Beta activity		20.4	pCi/L	8.83	7/9/2024	7.03	7.84	SW846-9310	X
Dissolved Solids		118	mg/L	10	7/9/2024			EPA-160.1	X
Suspended Solids		45.5	mg/L	6.58	7/9/2024			EPA-160.2	X
Chemical Oxygen Demand (COD)		92	mg/L	20	7/9/2024			EPA-410.4	X
Total Solids		179	mg/L	10	7/9/2024			SM-2540B	X
Total Organic Carbon (TOC)	H	27.8	mg/L	2	7/9/2024			SW846-9060A	X

<b>Qualifier Code Definitions</b>	
*	Duplicate analysis not within control limits.
B	Analyte was detected in the associated blank.
H	Analysis performed outside holding time requirement.
J	Estimated quantitation.
L	LCS and/or LCSD recovery outside of control limits.
L1	LCS/LCSD RPD outside acceptance criteria.
N	Sample spike (MS/MSD) recovery not within control limits
N1	MS/MSD or PS/PSD RPD outside acceptance criteria.
P	Difference between results from two GC columns outside control limits.
S	Sample surrogate recovery outside acceptance criteria.
T	Tracer recovery outside control limits of 30-110%.
U	Not detected.
W	Post-digestion spike recovery out of control limits.
W1	Post-digestion spike and post-digestion spike duplicate RPD out of control limits.
X	Other specific flags and footnotes may be required to properly define the results.
Y1	MS/MSD recovery outside acceptance criteria.
Y2	MS/MSD RPD outside acceptance criteria.

<b>RGA Type Code Definitions</b>	
LRGA	Lower Regional Gravel Aquifer
UCRS	Upper Continental Recharge System
URGA	Upper Regional Gravel Aquifer
NA	Not Applicable.

<b>Sample Type Code Definitions</b>	
REG	Regular
FR	Field Replicate (code used for Field Duplicate)
RI	Equipment Rinsate Blank
FB	Field Blank
TB	Trip Blank

<b>Validation Code Definitions</b>	
=	Validated result, no additional qualifier necessary
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
UJ	Analyte not detected above the reported detection limit, and the reported detection limit is approximated due to quality deficiency.
X	Not validated

**ATTACHMENT I1**

**GEL LABORATORIES CERTIFICATE OF ANALYSIS**

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# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Four Rivers Nuclear Partnership,  
Address : LLC  
5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: October 30, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Surface Water Quarterly(US24-04)

Client Sample ID: L150US4-24  
Sample ID: 674868001  
Matrix: WS  
Collect Date: 09-JUL-24  
Receive Date: 10-JUL-24  
Collector: Client

Project: FRNP00514  
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Gross A/B, liquid "As Received"</i>														
Alpha	U	2.28	+/-3.47	6.17	+/-3.49	15.0	pCi/L			HH3	07/25/24	1806	2638857	1
Beta	U	8.46	+/-6.66	10.7	+/-6.80	50.0	pCi/L							

### The following Analytical Methods were performed

Method	Description
1	EPA 900.0/SW846 9310

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
---------------------------	------	----------	-----------	-------------------

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

Lc/LC: Critical Level

MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Mtd.: Method

PF: Prep Factor

RL: Reporting Limit

TPU: Total Propagated Uncertainty

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## *Certificate of Analysis*

Company : Four Rivers Nuclear Partnership,  
Address : LLC  
5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: October 30, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Surface Water Quarterly(US24-04)

Client Sample ID: L154US4-24

Project: FRNP00514

Sample ID: 674868002

Client ID: FRNP005

Matrix: WS

Collect Date: 09-JUL-24

Receive Date: 10-JUL-24

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Gross A/B, liquid "As Received"</i>														
Alpha	U	3.00	+/-4.25	7.37	+/-4.29	15.0	pCi/L			HH3	07/16/24	1206	2638857	1
Beta		23.6	+/-7.39	8.96	+/-8.35	50.0	pCi/L							

**The following Analytical Methods were performed**

Method	Description
1	EPA 900.0/SW846 9310

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
---------------------------	------	----------	-----------	-------------------

**Notes:**

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

*Column headers are defined as follows:*

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Four Rivers Nuclear Partnership,  
Address : LLC  
5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: October 30, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Surface Water Quarterly(US24-04)

Client Sample ID: L351US4-24

Project: FRNP00514

Sample ID: 674868003

Client ID: FRNP005

Matrix: WS

Collect Date: 09-JUL-24

Receive Date: 10-JUL-24

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Gross A/B, liquid "As Received"</i>														
Alpha	U	5.10	+/-4.49	6.58	+/-4.59	15.0	pCi/L			HH3	07/16/24	1206	2638857	1
Beta		20.4	+/-7.03	8.83	+/-7.84	50.0	pCi/L							

### The following Analytical Methods were performed

Method	Description
1	EPA 900.0/SW846 9310

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
---------------------------	------	----------	-----------	-------------------

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: October 30, 2024

Company : Four Rivers Nuclear Partnership, LLC  
 Address : 5600 Hobbs Road  
 Kevil, Kentucky 42053  
 Contact: Ms. Jaime Morrow  
 Project: C-746-U Landfill Surface Water Quarterly(US24-04)

Client Sample ID: L150US4-24	Project: FRNP00514
Sample ID: 674868001	Client ID: FRNP005
Matrix: WS	
Collect Date: 09-JUL-24 09:06	
Receive Date: 10-JUL-24	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
<b>Carbon Analysis</b>												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average		13.5	0.330	1.00	mg/L		1	KB3	08/06/24	0427	2641337	1
<b>Ion Chromatography</b>												
EPA 300.0 Anions (Chloride and Sulfate) "As Received"												
Chloride		36.9	0.335	1.00	mg/L		5	TXT1	07/13/24	1442	2640093	2
Sulfate		8.05	0.665	2.00	mg/L		5					
<b>Metals Analysis-ICP-MS</b>												
200.8/200.2 MIMICP Metals- Fe Na U "As Received"												
Iron		3.95	0.0330	0.100	mg/L	1.00	1	BAJ	07/26/24	1751	2638503	3
Sodium		23.3	0.0800	0.250	mg/L	1.00	1					
Uranium		0.000319	0.0000670	0.000200	mg/L	1.00	1					
<b>Solids Analysis</b>												
EPA 160.1 Solids, Dissolved "As Received"												
Total Dissolved Solids		200	2.38	10.0	mg/L			KLP1	07/15/24	1557	2640404	4
EPA 160.2 Total Suspended Liq "As Received"												
Total Suspended Solids		63.4	1.78	7.81	mg/L			AXH3	07/11/24	0759	2638784	5
SM 2540 B Solids, Total "As Received"												
Total Solids		273	6.29	10.0	mg/L			KLP1	07/15/24	1341	2640407	6
<b>Spectrometric Analysis</b>												
EPA 410.4 Chem. Oxygen Demand "As Received"												
COD		45.5	8.95	20.0	mg/L		1	JW2	07/10/24	1549	2638268	7

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 200.2	ICP-MS 200.2 PREP	BB2	07/16/24	1545	2638502

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: October 30, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road  
Kevil, Kentucky 42053  
Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Surface Water Quarterly(US24-04)

Client Sample ID: L150US4-24 Project: FRNP00514  
Sample ID: 674868001 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time Batch	Method
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The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	SW846 9060A		
2	EPA 300.0		
3	EPA 200.8		
4	EPA 160.1		
5	EPA 160.2		
6	SM 2540B		
7	EPA 410.4		

### Notes:

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: October 30, 2024

Company : Four Rivers Nuclear Partnership, LLC  
 Address : 5600 Hobbs Road  
 Kevil, Kentucky 42053  
 Contact: Ms. Jaime Morrow  
 Project: C-746-U Landfill Surface Water Quarterly(US24-04)

Client Sample ID: L154US4-24	Project: FRNP00514
Sample ID: 674868002	Client ID: FRNP005
Matrix: WS	
Collect Date: 09-JUL-24 09:17	
Receive Date: 10-JUL-24	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
<b>Carbon Analysis</b>												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average		22.6	0.660	2.00	mg/L		2	KB3	08/06/24	1054	2641337	1
<b>Ion Chromatography</b>												
EPA 300.0 Anions (Chloride and Sulfate) "As Received"												
Chloride		1.93	0.0670	0.200	mg/L		1	TXT1	07/14/24	0418	2640093	2
Sulfate		3.22	0.133	0.400	mg/L		1					
<b>Metals Analysis-ICP-MS</b>												
200.8/200.2 MIMICP Metals- Fe Na U "As Received"												
Iron		1.14	0.0330	0.100	mg/L	1.00	1	BAJ	07/26/24	1754	2638503	3
Sodium		1.79	0.0800	0.250	mg/L	1.00	1					
Uranium		0.00152	0.0000670	0.000200	mg/L	1.00	1					
<b>Solids Analysis</b>												
EPA 160.1 Solids, Dissolved "As Received"												
Total Dissolved Solids		132	2.38	10.0	mg/L			KLP1	07/15/24	1557	2640404	4
EPA 160.2 Total Suspended Liq "As Received"												
Total Suspended Solids		28.7	1.27	5.56	mg/L			AXH3	07/11/24	0759	2638784	5
SM 2540 B Solids, Total "As Received"												
Total Solids		159	6.29	10.0	mg/L			KLP1	07/15/24	1341	2640407	6
<b>Spectrometric Analysis</b>												
EPA 410.4 Chem. Oxygen Demand "As Received"												
COD		78.0	8.95	20.0	mg/L		1	JW2	07/10/24	1549	2638268	7

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 200.2	ICP-MS 200.2 PREP	BB2	07/16/24	1545	2638502

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: October 30, 2024

Company : Four Rivers Nuclear Partnership, LLC  
Address : 5600 Hobbs Road  
Kevil, Kentucky 42053  
Contact: Ms. Jaime Morrow  
Project: C-746-U Landfill Surface Water Quarterly(US24-04)

Client Sample ID: L154US4-24 Project: FRNP00514  
Sample ID: 674868002 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time Batch	Method
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The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	SW846 9060A		
2	EPA 300.0		
3	EPA 200.8		
4	EPA 160.1		
5	EPA 160.2		
6	SM 2540B		
7	EPA 410.4		

### Notes:

Column headers are defined as follows:

DF: Dilution Factor  
DL: Detection Limit  
MDA: Minimum Detectable Activity  
MDC: Minimum Detectable Concentration  
Lc/LC: Critical Level  
PF: Prep Factor  
RL: Reporting Limit  
SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: October 30, 2024

Company : Four Rivers Nuclear Partnership, LLC  
 Address : 5600 Hobbs Road  
 Kevil, Kentucky 42053  
 Contact: Ms. Jaime Morrow  
 Project: C-746-U Landfill Surface Water Quarterly(US24-04)

Client Sample ID: L351US4-24	Project: FRNP00514
Sample ID: 674868003	Client ID: FRNP005
Matrix: WS	
Collect Date: 09-JUL-24 08:54	
Receive Date: 10-JUL-24	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
<b>Carbon Analysis</b>												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	H	27.8	0.660	2.00	mg/L		2	KB3	08/07/24	2020	2641341	1
<b>Ion Chromatography</b>												
EPA 300.0 Anions (Chloride and Sulfate) "As Received"												
Chloride		2.14	0.0670	0.200	mg/L		1	TXT1	07/14/24	0450	2640093	2
Sulfate		3.55	0.133	0.400	mg/L		1					
<b>Metals Analysis-ICP-MS</b>												
200.8/200.2 MIMICP Metals- Fe Na U "As Received"												
Iron		1.33	0.0330	0.100	mg/L	1.00	1	BAJ	07/26/24	1756	2638503	3
Sodium		2.10	0.0800	0.250	mg/L	1.00	1					
Uranium		0.000987	0.0000670	0.000200	mg/L	1.00	1					
<b>Solids Analysis</b>												
EPA 160.1 Solids, Dissolved "As Received"												
Total Dissolved Solids		118	2.38	10.0	mg/L			KLP1	07/15/24	1557	2640404	4
EPA 160.2 Total Suspended Liq "As Received"												
Total Suspended Solids		45.5	1.50	6.58	mg/L			AXH3	07/11/24	0759	2638784	5
SM 2540 B Solids, Total "As Received"												
Total Solids		179	6.29	10.0	mg/L			KLP1	07/15/24	1341	2640407	6
<b>Spectrometric Analysis</b>												
EPA 410.4 Chem. Oxygen Demand "As Received"												
COD		92.0	8.95	20.0	mg/L		1	JW2	07/10/24	1549	2638268	7

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 200.2	ICP-MS 200.2 PREP	BB2	07/16/24	1545	2638502



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**APPENDIX J**

**ANALYTICAL LABORATORY CERTIFICATION**

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# Accredited Laboratory

A2LA has accredited

**GEL LABORATORIES, LLC**

*Charleston, SC*

for technical competence in the field of

**Environmental Testing**

In recognition of the successful completion of the A2LA evaluation process that includes an assessment of the laboratory's compliance with ISO/IEC 17025:2017, the 2009 and 2016 TNI Environmental Testing Laboratory Standard, the requirements of the Department of Defense Environmental Laboratory Accreditation Program (DoD ELAP), and the requirements of the Department of Energy Consolidated Audit Program (DOECAP) as detailed in Version 5.4 of the DoD/DOE Quality System Manual for Environmental Laboratories (QSM), accreditation is granted to this laboratory to perform recognized EPA methods as defined on the associated A2LA Environmental Scope of Accreditation. This accreditation demonstrates technical competence for this defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).



Presented this 26<sup>th</sup> day of June 2023.

A blue ink signature of Mr. Trace McInturff, written in a cursive style.

Mr. Trace McInturff, Vice President, Accreditation Services  
For the Accreditation Council  
Certificate Number 2567.01  
Valid to June 30, 2025

*For the tests to which this accreditation applies, please refer to the laboratory's Environmental Scope of Accreditation.*

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**APPENDIX K**

**LABORATORY ANALYTICAL METHODS**

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**LABORATORY ANALYTICAL METHODS**

<b>Analytical Method</b>	<b>Preparation Method</b>	<b>Product</b>
SM 2540B		Solids, Total
SW846 8260D		Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer
SW846 8011	SW846 8011 PREP	Analysis of 1,2-Dibromoethane (EDB), 1,2-Dibromo-3-Chloropropane (DBCP) and 1,2,3-Trichloropropane in Water by GC/ECD Using Methods 504.1 or 8011
SW846 8082A	SW846 3535A	Analysis of Polychlorinated Biphenyls by GC/ECD by ECD
SW846 6020B	SW846 3005A	Determination of Metals by ICP-MS
SW846 7470A	SW846 7470A Prep	Mercury Analysis Using the Perkin Elmer Automated Mercury Analyzer
SW846 9060A		Carbon, Total Organic
SW846 9012B	SW846 9010C Distillation	Cyanide, Total
EPA 300.0		Ion Chromatography Iodide
SW846 9056A		Ion Chromatography
EPA 160.1		Solids, Total Dissolved
EPA 160.2		Solids, Total Suspended
EPA 200.8	EPA 200.2	Determination of Metals by ICP-MS
EPA 410.4		COD
Eichrom Industries, AN-1418		AlphaSpec Ra226, Liquid
DOE EML HASL-300, Th-01-RC Modified		Th-01-RC M, Th Isotopes, Liquid
EPA 904.0 Modified		904.0Mod, Ra228, Liquid
SW846 9310		9310, Alpha/Beta Activity, liquid
EPA 905.0 Modified		905.0 Mod, Sr90, liquid
DOE EML HASL-300, Tc-02-RC Modified		Tc-02-RC-MOD, Tc99, Liquid
EPA 906.0 Modified		906.0M, Tritium Dist, Liquid
SW846 9020B		Total Organic Halogens (TOX)

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## **APPENDIX L**

### **MICRO-PURGING STABILITY PARAMETERS**

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**Micro-Purge Stability Parameters  
for the C-746-U Contained Landfill**

	Temperature (°F)	Conductivity (µmhos/cm)	pH (Std Unit)	Dissolved oxygen (mg/L)	Turbidity (NTU)		Temperature (°F)	Conductivity (µmhos/cm)	pH (Std Unit)	Dissolved oxygen (mg/L)	Turbidity (NTU)
<b>MW357</b>						<b>MW358</b>					
Date Collected: 7/15/24						Date Collected: 7/15/24					
1225	65.8	401	6.09	5.51	4.82	1313	66.7	477	6.22	1.96	3.81
1228	64.9	397	6.05	4.84	4.04	1316	68.4	479	6.23	1.45	3.98
1231	64.5	397	6.04	4.74	4.08	1319	68.0	480	6.23	1.40	3.95
<b>MW359</b>						<b>MW360</b>					
Date Collected: 7/15/24						Date Collected: 7/15/24					
1415	68.8	226	6.17	4.78	4.80	0818	65.5	392	6.09	2.00	5.14
1418	67.4	216	6.00	5.44	4.42	0821	66.0	395	6.12	1.76	4.81
1421	67.0	208	5.97	5.54	4.26	0824	66.2	395	6.12	1.70	4.89
<b>MW361</b>						<b>MW362</b>					
Date Collected: 7/15/24						Date Collected: 7/15/24					
0904	64.7	424	6.05	3.20	4.74	1007	62.9	597	6.93	7.38	10.58
0907	64.5	430	5.94	4.25	4.58	1010	63.0	600	7.00	8.08	10.38
0910	64.3	440	5.91	4.28	4.44	1013	63.0	606	7.01	8.16	11.00
<b>MW363</b>						<b>MW364</b>					
Date Collected: 7/18/24						Date Collected: 7/18/24					
0748	63.8	346	6.16	1.99	0.00	0837	62.2	469	5.86	3.61	0.00
0751	63.5	346	6.06	0.71	0.00	0840	63.0	470	5.85	3.33	0.00
0754	63.8	347	6.07	0.79	0.00	0843	63.6	478	5.86	3.30	0.00
<b>MW365</b>						<b>MW366</b>					
Date Collected: 7/18/24						Date Collected: 7/18/24					
0937	62.3	391	6.32	8.48	0.00	1023	69.6	472	6.22	8.26	0.00
0940	62.7	393	6.31	8.40	0.00	1026	66.7	480	6.08	4.74	0.00
0943	63.1	394	6.30	8.46	0.00	1029	66.4	486	6.04	4.63	0.00
<b>MW367</b>						<b>MW368</b>					
Date Collected: 7/22/24						Date Collected: 7/22/24					
0853	63.7	225	5.86	1.37	3.63	0943	64.2	651	6.32	3.84	-5.13
0856	64.4	224	5.85	1.22	3.86	0946	64.0	706	6.36	3.14	-6.52
0859	64.9	223	5.85	1.21	4.65	0949	64.7	716	6.38	3.26	-7.14
<b>MW369</b>						<b>MW370</b>					
Date Collected: 7/17/24						Date Collected: 7/17/24					
1234	70.9	375	6.26	7.01	-2.73	1447	65.7	463	6.06	3.88	-3.45
1237	68.6	341	6.11	2.01	-3.52	1450	66.3	457	6.05	3.71	-3.41
1240	68.3	342	6.09	1.95	-3.60	1453	66.7	454	6.05	3.66	-3.39
<b>MW371</b>						<b>MW372</b>					
Date Collected: 7/17/24						Date Collected: 7/17/24					
1352	63.5	647	6.50	1.79	6.72	1020	64.5	761	6.03	0.69	-4.06
1355	63.5	649	6.51	1.63	6.83	1023	65.9	761	6.02	0.69	-4.11
1358	63.6	650	6.51	1.59	6.01	1026	66.3	762	6.02	0.68	-4.13
<b>MW373</b>						<b>MW374</b>					
Date Collected: 7/17/24						Date Collected: 7/17/24					
0831	64.1	945	6.03	1.32	-2.18	0927	65.3	663	6.70	0.52	4.86
0834	64.7	951	6.02	0.82	-2.16	0930	65.3	663	6.70	0.51	4.99
0837	64.9	949	6.02	0.81	-2.17	0933	65.3	663	6.70	0.50	4.80
<b>MW375</b>						<b>MW357 Resample</b>					
Date Collected: 7/18/24						Date Collected 7-29-24					
1242	67.9	330	6.34	2.99	0.00	0806	64.1	386	6.12	4.64	0.0
1245	67.9	330	6.35	2.76	0.00	0809	64.2	385	6.13	4.43	0.0
1248	68.1	329	6.36	2.70	0.00	0812	64.6	385	6.13	4.49	0.0
<b>MW358 Resample</b>						<b>MW359 Resample</b>					
Date Collected: 7-29-24						Date Collected: 7-29-24					
0841	65.5	449	6.29	4.88	0.00	0924	62.7	207	6.00	4.80	0.0
0844	66.0	450	6.22	1.50	0.00	0927	63.0	200	5.97	4.64	0.0
0847	66.1	455	6.20	1.43	0.00	0930	63.1	197	5.95	4.60	0.0
<b>MW361 Resample</b>						<b>MW369 Resample</b>					
Date Collected: 7-29-24						Date Collected: 7-30-24					
0731	66.3	470	6.12	5.41	0.00	0725	71.0	321	6.09	6.83	0.0
0734	64.5	469	6.11	6.00	0.00	0728	69.7	330	6.06	3.06	0.0
0737	64.4	470	6.10	6.03	0.00	0731	69.9	336	6.06	3.00	0.0
<b>MW370 Resample</b>						<b>MW371 Resample</b>					
Date Collected: 7-30-24						Date Collected: 7-30-24					
0803	66.7	434	6.06	4.78	0.00	0836	66.0	590	6.53	5.21	0.0
0806	69.5	438	6.07	4.20	0.00	0839	64.4	620	6.55	4.09	0.0
0809	69.6	439	6.06	4.22	0.00	0842	64.6	627	6.56	4.00	0.0
<b>MW372 Resample</b>						<b>MW373 Resample</b>					
Date Collected: 7-30-24						Date Collected: 7-30-24					
0914	65.6	745	6.17	3.13	0.00	0953	65.6	943	6.09	1.46	0.0
0917	66.0	748	6.09	1.64	0.00	0956	65.4	944	6.05	1.24	0.0
0920	66.5	749	6.06	1.57	0.00	0959	65.9	943	6.04	1.14	0.0
<b>MW374 Resample</b>											
Date Collected: 7-30-24											
1019	64.4	681	6.56	1.96	1.70						
1022	64.6	650	6.60	1.18	1.10						
1025	64.6	644	6.67	1.10	1.06						

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