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August 28, 2024

Mr. Todd Hendricks
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PPPO-02-10028914-24

Ms. Jamie Nielsen
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Kentucky Department for Environmental Protection
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Dear Mr. Hendricks and Ms. Nielsen:

C-746-U CONTAINED LANDFILL SECOND QUARTER CALENDAR YEAR 2024 (APRIL–JUNE) COMPLIANCE MONITORING REPORT, PADUCAH GASEOUS DIFFUSION PLANT, PADUCAH, KENTUCKY, FRNP-RPT-0350/V2, PERMIT NUMBER SW07300014, SW07300015, SW07300045, AGENCY INTEREST ID NO. 3059

The subject report for the second 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 second 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 second 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,

APRIL LADD

Digitally signed by APRIL LADD
Date: 2024.08.28 11:21:46 -05'00'

April Ladd
Paducah Site Lead
Portsmouth/Paducah Project Office

Enclosure:
C-746-U Contained Landfill Second Quarter Calendar Year 2024 (April–June) Compliance Monitoring Report, Paducah Gaseous Diffusion Plant, Paducah, Kentucky, FRNP-RPT-0350/V2

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FRNP-RPT-0350/V2

C-746-U Contained Landfill
Second Quarter Calendar Year 2024
(April–June)
Compliance Monitoring Report,
Paducah Gaseous Diffusion Plant,
Paducah, Kentucky

FOUR RIVERS
NUCLEAR PARTNERSHIP, LLC

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FRNP-RPT-0350/V2

C-746-U Contained Landfill
Second Quarter Calendar Year 2024
(April–June)
Compliance Monitoring Report,
Paducah Gaseous Diffusion Plant,
Paducah, Kentucky

Date Issued—August 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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ACRONYMS

CFR	*Code of Federal Regulations*
CY	calendar year
KAR	*Kentucky Administrative Regulations*
KDWM	Kentucky Division of Waste Management
KRS	*Kentucky Revised Statutes*
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 Second Quarter Calendar Year 2024 (April–June) 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 MW359, 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.

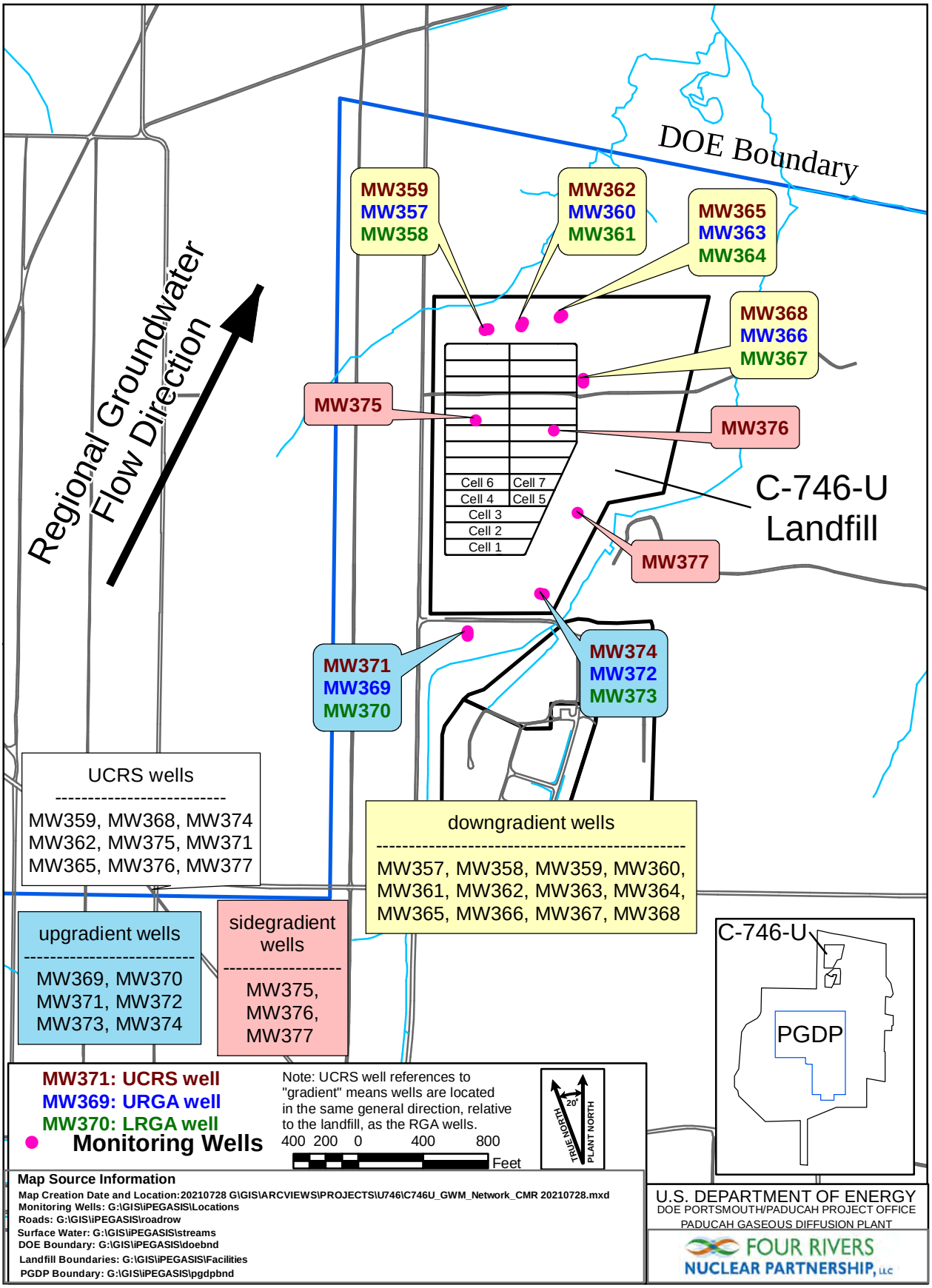

Figure 1. C-746-U Landfill Groundwater Monitoring Well Network

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 second 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 second quarter 2024 was conducted on April 8–11, 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 April 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 April 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 April 2024 was 2.05×10^{-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 4.01×10^{-4} ft/ft and 3.98×10^{-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 6.81×10^{-1} to 1.16 ft/day for the URGA and 6.77×10^{-1} to 1.15 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 May 13, 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 April 10, 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[1] during the second 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

[1] 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.

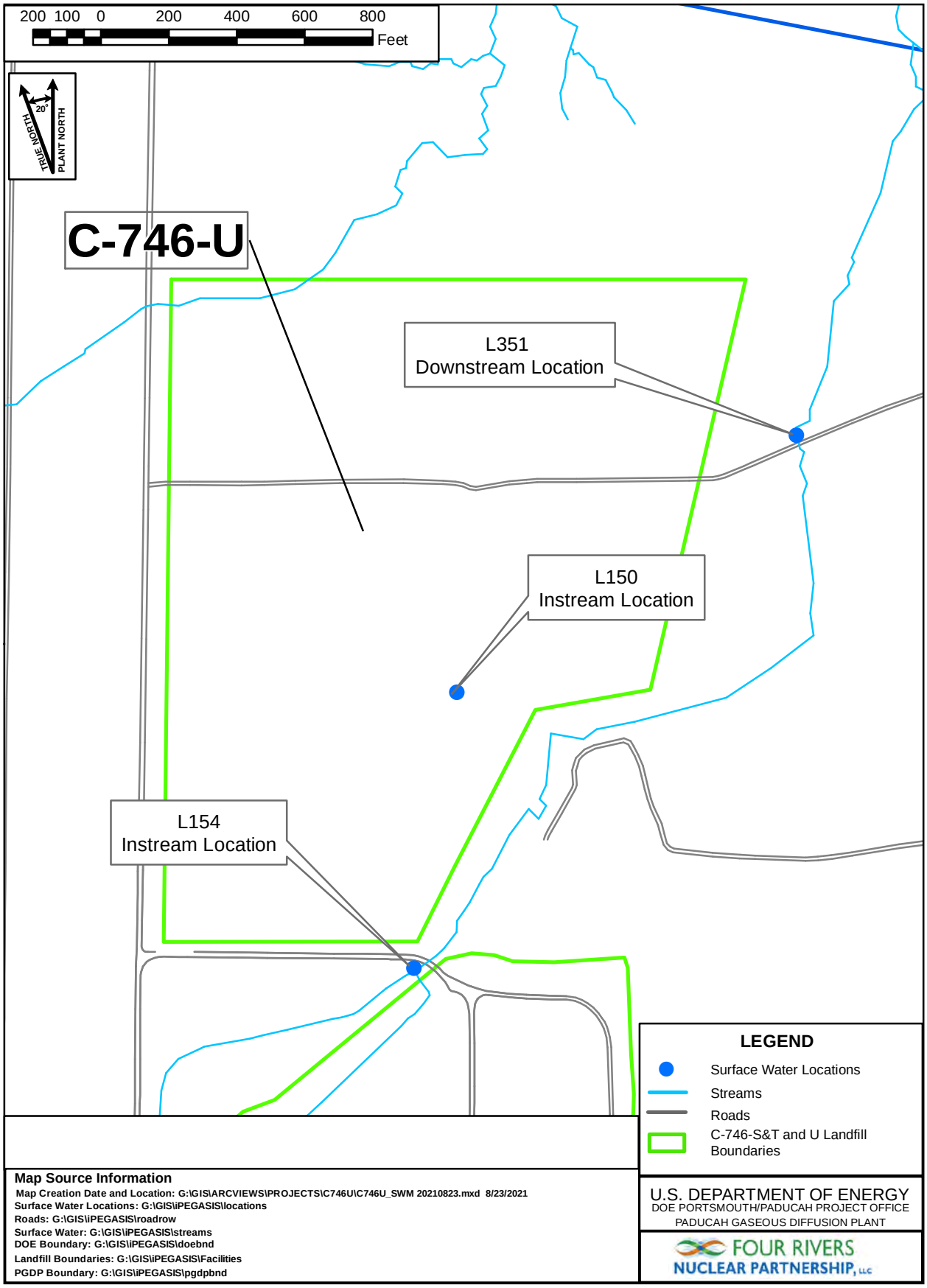

Figure 2. C-746-U Landfill Surface Water Monitoring Locations

Table 2. Exceedances of Statistically Derived Historical Background Concentrations

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

[a] 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.
[b] 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.

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

URGA	LRGA
None	None

A notification of MCL exceedances, or lack of exceedances, was submitted electronically to the 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.

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.

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 Contained Landfill source; therefore, they are Type 1 exceedances—not attributable to the C-746-U Contained Landfill.

The statistical evaluation of UCRS concentrations against the current UCRS background UTL identified an exceedance of both the historical and current backgrounds for sulfate in MW368 (Table 4). Because gradients in the UCRS are downward (vertical), there are no hydrogeologically downgradient UCRS wells.

Table 4. Exceedances of Current Background UTL in Downgradient UCRS Wells*

UCRS
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 second 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 5.

Table 5. Monitoring Wells Included in Statistical Analysis[a]

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

[a] Map showing the MW locations is shown on Figure 1.
[b] Well had insufficient water to permit a water sample for laboratory analysis.
[c] 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 second quarter, dissolved oxygen, oxidation-reduction potential, and sulfate displayed concentrations that exceeded their respective historical UTL and are listed in Table 2. Sulfate exceeded the current background UTL in downgradient UCRS well MW368.

2.1.2 Upper Regional Gravel Aquifer

In this quarter, 26 parameters, including those with MCLs, required statistical analysis in the URGA. During the second 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. None of the parameters in downgradient URGA wells exceeded the current background UTLs.

2.1.3 Lower Regional Gravel Aquifer

In this quarter, 28 parameters, including those with MCLs, required statistical analysis in the LRGA. During the second quarter, calcium and oxidation-reduction potential displayed concentrations that exceeded their respective historical UTL and are listed in Table 2. None of the parameters in downgradient LRGA wells exceeded the current background UTLs.

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 verification is performed for 100% of the data. Data are flagged as necessary.

Data validation was performed on 100% of the organic, inorganic, and radiochemical analytical data 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.

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 Second Quarter Calendar Year 2024 (April–June) Compliance Monitoring Report, Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (FRNP-RPT-0350/V2)

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

PG113927
KDavis 8-21-2024

Kenneth R. Davis
Kenneth R. Davis

PG113927

August 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 (As officially shown on DWM Permit Face)

Activity: C-746-U Contained Landfill

Permit No: SW07300014, SW07300015, SW07300045

Finds/Unit No:

Quarter & Year: 2nd Qtr. CY 2024

Please check the following as applicable:

___ Characterization X Quarterly ___ Semiannual ___ Annual ___ Assessment

Please check applicable submittal(s): X Groundwater X Surface Water

___ Leachate X 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

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

Sampling Date: Groundwater: April 2024; Surface water: April 2024; Methane: May 2024 | County: McCracken | Permit Nos. SW07300014, SW07300015, SW07300045

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

Site Address: 5600 Hobbs Road (Street) | Kevil, Kentucky (City/State) | 42053 (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

Contact Person Title: Director, Environmental Services, Four Rivers Nuclear Partnership, LLC

Mailing Address: 5511 Hobbs Road (Street) | Kevil, Kentucky (City/State) | 42053 (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 (Street) | Kevil, Kentucky (City/State) | 42053 (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 (Street) | Charleston, South Carolina (City/State) | 29407 (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:** 2nd Quarter 2024

AKGWA Well Tag #: 8004-4798 **SAMPLE ID:** MW357UG3-24 Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide	W	0.336	mg/L	0.2	4/8/2024			SW846-9056A	=
Chloride	J	30.5	mg/L	250	4/8/2024			SW846-9056A	=
Fluoride	J	0.201	mg/L	4	4/8/2024			SW846-9056A	=
Nitrate as Nitrogen	HJ	1.07	mg/L	10	4/8/2024			SW846-9056A	J
Sulfate		36.1	mg/L	2	4/8/2024			SW846-9056A	=
Barometric Pressure Reading		29.99	Inches/Hg		4/8/2024				X
Conductivity		416	µmhos/cm		4/8/2024				X
Depth to Water		46.9	ft		4/8/2024				X
Dissolved Oxygen		4.6	mg/L		4/8/2024				X
Eh (approx)		380	mV		4/8/2024				X
pH		6.14	Std Unit		4/8/2024				X
Temperature		61.7	deg F		4/8/2024				X
Turbidity		2.11	NTU		4/8/2024				X
Aluminum	U	0.05	mg/L	0.05	4/8/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	4/8/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Barium		0.0665	mg/L	0.004	4/8/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	4/8/2024			SW846-6020B	=
Boron		0.32	mg/L	0.075	4/8/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Calcium		23.4	mg/L	0.2	4/8/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	4/8/2024			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Copper	J	0.000509	mg/L	0.002	4/8/2024			SW846-6020B	J
Iron	J	0.0406	mg/L	0.1	4/8/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	4/8/2024			SW846-6020B	=
Magnesium		10.1	mg/L	0.03	4/8/2024			SW846-6020B	=
Manganese		0.00693	mg/L	0.005	4/8/2024			SW846-6020B	J
Molybdenum	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Nickel	U	0.002	mg/L	0.002	4/8/2024			SW846-6020B	=
Potassium		1.44	mg/L	0.3	4/8/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Sodium		38	mg/L	0.25	4/8/2024			SW846-6020B	=
Tantalum	UN	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	4/8/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	4/8/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	4/8/2024			SW846-6020B	=
Zinc	U	0.02	mg/L	0.02	4/8/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	4/8/2024			SW846-7470A	=
Barium, Dissolved		0.0697	mg/L	0.004	4/8/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	4/8/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	4/8/2024			SW846-6020B	UJ
PCB-1016	U	0.106	ug/L	0.106	4/8/2024			SW846-8082A	=

PCB-1221	U	0.106	ug/L	0.106	4/8/2024			SW846-8082A	=
PCB-1232	U	0.106	ug/L	0.106	4/8/2024			SW846-8082A	=
PCB-1242	U	0.106	ug/L	0.106	4/8/2024			SW846-8082A	=
PCB-1248	U	0.106	ug/L	0.106	4/8/2024			SW846-8082A	=
PCB-1254	U	0.106	ug/L	0.106	4/8/2024			SW846-8082A	=
PCB-1260	U	0.106	ug/L	0.106	4/8/2024			SW846-8082A	=
PCB-1268	U	0.106	ug/L	0.106	4/8/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.106	ug/L	0.106	4/8/2024			SW846-8082A	=
Radium-226	U	0.303	pCi/L	0.304	4/8/2024	0.288	0.289	AN-1418	=
Radium-228	U	0.147	pCi/L	3.9	4/8/2024	2.01	2.01	EPA-904.0-M	=
Strontium-90	U	0.666	pCi/L	2.57	4/8/2024	1.44	1.44	EPA-905.0-M	=
Tritium	U	15.9	pCi/L	222	4/8/2024	125	125	EPA-906.0-M	=
Technetium-99		32.3	pCi/L	21.9	4/8/2024	14.4	14.8	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.675	pCi/L	1.72	4/8/2024	1.04	1.05	HASL 300, Th-01-RC M	=
Thorium-232	U	-0.0148	pCi/L	1.16	4/8/2024	0.506	0.506	HASL 300, Th-01-RC M	=
Alpha activity	U	3.26	pCi/L	5.95	4/8/2024	3.73	3.78	SW846-9310	UJ
Beta activity		18.8	pCi/L	9.49	4/8/2024	7.21	7.87	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0188	ug/L	0.0188	4/8/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1-Dichloroethane	UY1	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Benzene	UY1	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	4/8/2024			SW846-8260D	UJ
Bromomethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=

Ethylbenzene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Iodomethane	U	5	ug/L	5	4/8/2024	SW846-8260D	=
Methylene chloride	U	5	ug/L	5	4/8/2024	SW846-8260D	=
Styrene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Toluene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Total Xylene	U	3	ug/L	3	4/8/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	4/8/2024	SW846-8260D	=
Trichloroethene		1.84	ug/L	1	4/8/2024	SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	4/8/2024	SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Dissolved Solids		204	mg/L	10	4/8/2024	EPA-160.1	=
Iodide	U	0.5	mg/L	0.5	4/8/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20	mg/L	20	4/8/2024	EPA-410.4	=
Cyanide	U	0.2	mg/L	0.2	4/8/2024	SW846-9012B	=
Total Organic Halides (TOX)	J	3.92	ug/L	10	4/8/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.472	mg/L	2	4/8/2024	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:** 2nd Quarter 2024

AKGWA Well Tag #: 8004-4799 **SAMPLE ID:** MW358UG3-24 Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide	W	0.358	mg/L	0.2	4/8/2024			SW846-9056A	=
Chloride	J	28.8	mg/L	250	4/8/2024			SW846-9056A	=
Fluoride	J	0.226	mg/L	4	4/8/2024			SW846-9056A	=
Nitrate as Nitrogen	HJ	0.707	mg/L	10	4/8/2024			SW846-9056A	J
Sulfate		44.5	mg/L	2	4/8/2024			SW846-9056A	=
Barometric Pressure Reading		29.99	Inches/Hg		4/8/2024				X
Conductivity		477	µmhos/cm		4/8/2024				X
Depth to Water		47.06	ft		4/8/2024				X
Dissolved Oxygen		1.55	mg/L		4/8/2024				X
Eh (approx)		145	mV		4/8/2024				X
pH		6.17	Std Unit		4/8/2024				X
Temperature		61	deg F		4/8/2024				X
Turbidity		3.71	NTU		4/8/2024				X
Aluminum	J	0.025	mg/L	0.05	4/8/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	4/8/2024			SW846-6020B	=
Arsenic	J	0.00228	mg/L	0.005	4/8/2024			SW846-6020B	=
Barium		0.0663	mg/L	0.004	4/8/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	4/8/2024			SW846-6020B	=
Boron		0.296	mg/L	0.075	4/8/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Calcium		32	mg/L	0.2	4/8/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	4/8/2024			SW846-6020B	=
Cobalt		0.0164	mg/L	0.001	4/8/2024			SW846-6020B	J
Copper	J	0.000777	mg/L	0.002	4/8/2024			SW846-6020B	J
Iron		4	mg/L	0.1	4/8/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	4/8/2024			SW846-6020B	=
Magnesium		15	mg/L	0.03	4/8/2024			SW846-6020B	=
Manganese		1.11	mg/L	0.025	4/8/2024			SW846-6020B	=
Molybdenum	J	0.000285	mg/L	0.001	4/8/2024			SW846-6020B	=
Nickel		0.039	mg/L	0.002	4/8/2024			SW846-6020B	=
Potassium		2.56	mg/L	0.3	4/8/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Sodium		34.7	mg/L	0.25	4/8/2024			SW846-6020B	=
Tantalum	UN	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	4/8/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	4/8/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	4/8/2024			SW846-6020B	=
Zinc	J	0.00675	mg/L	0.02	4/8/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	4/8/2024			SW846-7470A	=
Barium, Dissolved		0.0523	mg/L	0.004	4/8/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	4/8/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	4/8/2024			SW846-6020B	UJ
PCB-1016	U	0.116	ug/L	0.116	4/8/2024			SW846-8082A	=

PCB-1221	U	0.116	ug/L	0.116	4/8/2024			SW846-8082A	=
PCB-1232	U	0.116	ug/L	0.116	4/8/2024			SW846-8082A	=
PCB-1242	U	0.116	ug/L	0.116	4/8/2024			SW846-8082A	=
PCB-1248	U	0.116	ug/L	0.116	4/8/2024			SW846-8082A	=
PCB-1254	U	0.116	ug/L	0.116	4/8/2024			SW846-8082A	=
PCB-1260	U	0.116	ug/L	0.116	4/8/2024			SW846-8082A	=
PCB-1268	U	0.116	ug/L	0.116	4/8/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.116	ug/L	0.116	4/8/2024			SW846-8082A	=
Radium-226		1.1	pCi/L	0.939	4/8/2024	1.08	1.08	AN-1418	=
Radium-228	U	1.38	pCi/L	3.36	4/8/2024	1.94	1.98	EPA-904.0-M	=
Strontium-90	UT	-0.0435	pCi/L	1.78	4/8/2024	0.876	0.876	EPA-905.0-M	=
Tritium	U	76.5	pCi/L	223	4/8/2024	130	130	EPA-906.0-M	=
Technetium-99		32.7	pCi/L	21.6	4/8/2024	14.2	14.7	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.69	pCi/L	1.59	4/8/2024	1.03	1.04	HASL 300, Th-01-RC M	=
Thorium-232	U	-0.226	pCi/L	1.43	4/8/2024	0.473	0.474	HASL 300, Th-01-RC M	=
Alpha activity	U	1.51	pCi/L	6.3	4/8/2024	3.26	3.27	SW846-9310	UJ
Beta activity		16.8	pCi/L	9.54	4/8/2024	7.01	7.55	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0193	ug/L	0.0193	4/8/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1-Dichloroethane	UY1	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Benzene	UY1	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	4/8/2024			SW846-8260D	UJ
Bromomethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=

Ethylbenzene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Iodomethane	U	5	ug/L	5	4/8/2024	SW846-8260D	=
Methylene chloride	U	5	ug/L	5	4/8/2024	SW846-8260D	=
Styrene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Toluene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Total Xylene	U	3	ug/L	3	4/8/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	4/8/2024	SW846-8260D	=
Trichloroethene	J	0.83	ug/L	1	4/8/2024	SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	4/8/2024	SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Dissolved Solids		237	mg/L	10	4/8/2024	EPA-160.1	=
Iodide	U	0.5	mg/L	0.5	4/8/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	J	11.8	mg/L	20	4/8/2024	EPA-410.4	=
Cyanide	U	0.2	mg/L	0.2	4/8/2024	SW846-9012B	=
Total Organic Halides (TOX)	J	6.46	ug/L	10	4/8/2024	SW846-9020B	=
Total Organic Carbon (TOC)		2.05	mg/L	2	4/8/2024	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:** 2nd Quarter 2024

AKGWA Well Tag #: 8004-4800 **SAMPLE ID:** MW360UG3-24 Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide	J	0.139	mg/L	0.2	4/8/2024			SW846-9056A	=
Chloride	J	7.51	mg/L	250	4/8/2024			SW846-9056A	=
Fluoride	J	0.259	mg/L	4	4/8/2024			SW846-9056A	=
Nitrate as Nitrogen	J	0.6	mg/L	10	4/8/2024			SW846-9056A	=
Sulfate		12.1	mg/L	0.4	4/8/2024			SW846-9056A	=
Barometric Pressure Reading		29.96	Inches/Hg		4/8/2024				X
Conductivity		388	µmhos/cm		4/8/2024				X
Depth to Water		40.23	ft		4/8/2024				X
Dissolved Oxygen		5.02	mg/L		4/8/2024				X
Eh (approx)		379	mV		4/8/2024				X
pH		6.08	Std Unit		4/8/2024				X
Temperature		59.7	deg F		4/8/2024				X
Turbidity		4.16	NTU		4/8/2024				X
Aluminum	J	0.0331	mg/L	0.05	4/8/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	4/8/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Barium		0.199	mg/L	0.004	4/8/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	4/8/2024			SW846-6020B	=
Boron		0.0435	mg/L	0.015	4/8/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Calcium		19.1	mg/L	0.2	4/8/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	4/8/2024			SW846-6020B	=
Cobalt	J	0.000735	mg/L	0.001	4/8/2024			SW846-6020B	J
Copper	J	0.00147	mg/L	0.002	4/8/2024			SW846-6020B	J
Iron	J	0.0728	mg/L	0.1	4/8/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	4/8/2024			SW846-6020B	=
Magnesium		8.14	mg/L	0.03	4/8/2024			SW846-6020B	=
Manganese		0.00611	mg/L	0.005	4/8/2024			SW846-6020B	J
Molybdenum	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Nickel	J	0.001	mg/L	0.002	4/8/2024			SW846-6020B	J
Potassium		0.694	mg/L	0.3	4/8/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Selenium	J	0.00205	mg/L	0.005	4/8/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Sodium		58.3	mg/L	1.25	4/8/2024			SW846-6020B	=
Tantalum	UN	0.005	mg/L	0.005	4/8/2024			SW846-6020B	UJ
Thallium	U	0.002	mg/L	0.002	4/8/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	4/8/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	4/8/2024			SW846-6020B	=
Zinc	J	0.00471	mg/L	0.02	4/8/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	4/8/2024			SW846-7470A	=
Barium, Dissolved		0.198	mg/L	0.004	4/8/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	4/8/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	4/8/2024			SW846-6020B	UJ
PCB-1016	U	0.1	ug/L	0.1	4/8/2024			SW846-8082A	=

PCB-1221	U	0.1	ug/L	0.1	4/8/2024			SW846-8082A	=
PCB-1232	U	0.1	ug/L	0.1	4/8/2024			SW846-8082A	=
PCB-1242	U	0.1	ug/L	0.1	4/8/2024			SW846-8082A	=
PCB-1248	U	0.1	ug/L	0.1	4/8/2024			SW846-8082A	=
PCB-1254	U	0.1	ug/L	0.1	4/8/2024			SW846-8082A	=
PCB-1260	U	0.1	ug/L	0.1	4/8/2024			SW846-8082A	=
PCB-1268	U	0.1	ug/L	0.1	4/8/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.1	ug/L	0.1	4/8/2024			SW846-8082A	=
Radium-226	U	0.338	pCi/L	0.408	4/8/2024	0.33	0.33	AN-1418	=
Radium-228	U	0.00888	pCi/L	4.53	4/8/2024	2.3	2.3	EPA-904.0-M	=
Strontium-90	UT	-0.143	pCi/L	1.82	4/8/2024	0.894	0.894	EPA-905.0-M	=
Tritium	U	7.58	pCi/L	234	4/8/2024	130	130	EPA-906.0-M	=
Technetium-99	U	9.74	pCi/L	22.3	4/8/2024	13.1	13.2	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.587	pCi/L	1.57	4/8/2024	0.956	0.964	HASL 300, Th-01-RC M	=
Thorium-232	U	0.0288	pCi/L	1.14	4/8/2024	0.527	0.528	HASL 300, Th-01-RC M	=
Alpha activity	U	2.08	pCi/L	8.32	4/8/2024	4.43	4.44	SW846-9310	UJ
Beta activity	U	5.07	pCi/L	9.07	4/8/2024	5.46	5.53	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0196	ug/L	0.0196	4/8/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1-Dichloroethane	UY1	1	ug/L	1	4/8/2024			SW846-8260D	UJ
1,1-Dichloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Benzene	UY1	1	ug/L	1	4/8/2024			SW846-8260D	UJ
Bromochloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	4/8/2024			SW846-8260D	UJ
Bromomethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=

Ethylbenzene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Iodomethane	U	5	ug/L	5	4/8/2024	SW846-8260D	=
Methylene chloride	U	5	ug/L	5	4/8/2024	SW846-8260D	=
Styrene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Toluene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Total Xylene	U	3	ug/L	3	4/8/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	4/8/2024	SW846-8260D	=
Trichloroethene	J	0.57	ug/L	1	4/8/2024	SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	4/8/2024	SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Dissolved Solids		208	mg/L	10	4/8/2024	EPA-160.1	=
Iodide	U	0.5	mg/L	0.5	4/8/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20	mg/L	20	4/8/2024	EPA-410.4	=
Cyanide	U	0.2	mg/L	0.2	4/8/2024	SW846-9012B	=
Total Organic Halides (TOX)	U	10	ug/L	10	4/8/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.816	mg/L	2	4/8/2024	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:** 2nd Quarter 2024

AKGWA Well Tag #: 8004-4795 **SAMPLE ID:** MW361DUG3-24 Sample Type: FR

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.457	mg/L	0.2	4/8/2024			SW846-9056A	=
Chloride	J	35.8	mg/L	250	4/8/2024			SW846-9056A	=
Fluoride	J	0.201	mg/L	4	4/8/2024			SW846-9056A	=
Nitrate as Nitrogen	J	1.1	mg/L	10	4/8/2024			SW846-9056A	=
Sulfate		69	mg/L	4	4/8/2024			SW846-9056A	=
Aluminum	U	0.05	mg/L	0.05	4/8/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	4/8/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Barium		0.0566	mg/L	0.004	4/8/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	4/8/2024			SW846-6020B	=
Boron		0.284	mg/L	0.075	4/8/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Calcium		32.4	mg/L	0.2	4/8/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	4/8/2024			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Copper	J	0.0012	mg/L	0.002	4/8/2024			SW846-6020B	J
Iron	U	0.1	mg/L	0.1	4/8/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	4/8/2024			SW846-6020B	=
Magnesium		14.2	mg/L	0.03	4/8/2024			SW846-6020B	=
Manganese		0.00716	mg/L	0.005	4/8/2024			SW846-6020B	J
Molybdenum	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Nickel	U	0.002	mg/L	0.002	4/8/2024			SW846-6020B	=
Potassium		2.05	mg/L	0.3	4/8/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Sodium		41.8	mg/L	0.25	4/8/2024			SW846-6020B	=
Tantalum	UN	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	4/8/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	4/8/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	4/8/2024			SW846-6020B	=
Zinc	U	0.02	mg/L	0.02	4/8/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	4/8/2024			SW846-7470A	=
Barium, Dissolved		0.0555	mg/L	0.004	4/8/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	4/8/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	4/8/2024			SW846-6020B	UJ
PCB-1016	U	0.102	ug/L	0.102	4/8/2024			SW846-8082A	=
PCB-1221	U	0.102	ug/L	0.102	4/8/2024			SW846-8082A	=
PCB-1232	U	0.102	ug/L	0.102	4/8/2024			SW846-8082A	=
PCB-1242	U	0.102	ug/L	0.102	4/8/2024			SW846-8082A	=
PCB-1248	U	0.102	ug/L	0.102	4/8/2024			SW846-8082A	=
PCB-1254	U	0.102	ug/L	0.102	4/8/2024			SW846-8082A	=
PCB-1260	U	0.102	ug/L	0.102	4/8/2024			SW846-8082A	=
PCB-1268	U	0.102	ug/L	0.102	4/8/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.102	ug/L	0.102	4/8/2024			SW846-8082A	=

Radium-226	U	0.139	pCi/L	0.402	4/8/2024	0.248	0.248	AN-1418	=
Radium-228	U	4.05	pCi/L	4.59	4/8/2024	2.99	3.17	EPA-904.0-M	=
Strontium-90	U	0.306	pCi/L	2.66	4/8/2024	1.39	1.4	EPA-905.0-M	=
Tritium	U	-4.38	pCi/L	237	4/8/2024	131	131	EPA-906.0-M	=
Technetium-99		41.1	pCi/L	21.9	4/8/2024	14.9	15.6	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.467	pCi/L	1.4	4/8/2024	0.831	0.837	HASL 300, Th-01-RC M	=
Thorium-232	U	0.0598	pCi/L	0.911	4/8/2024	0.452	0.453	HASL 300, Th-01-RC M	=
Alpha activity	U	1.13	pCi/L	6.63	4/8/2024	3.27	3.28	SW846-9310	UJ
Beta activity		33.8	pCi/L	9.3	4/8/2024	8.46	10.2	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0193	ug/L	0.0193	4/8/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1-Dichloroethane	UY1	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Benzene	UY1	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	4/8/2024			SW846-8260D	UJ
Bromomethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Iodomethane	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Methylene chloride	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Styrene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Toluene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Total Xylene	U	3	ug/L	3	4/8/2024			SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=

trans-1,3-Dichloropropene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	4/8/2024	SW846-8260D	=
Trichloroethene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	4/8/2024	SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Dissolved Solids		260	mg/L	10	4/8/2024	EPA-160.1	=
Iodide	U	0.5	mg/L	0.5	4/8/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20	mg/L	20	4/8/2024	EPA-410.4	=
Cyanide	U	0.2	mg/L	0.2	4/8/2024	SW846-9012B	=
Total Organic Halides (TOX)	J	6.12	ug/L	10	4/8/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.511	mg/L	2	4/8/2024	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:** 2nd Quarter 2024

AKGWA Well Tag #: 8004-4795 **SAMPLE ID:** MW361UG3-24 Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.425	mg/L	0.2	4/8/2024			SW846-9056A	=
Chloride	J	35.2	mg/L	250	4/8/2024			SW846-9056A	=
Fluoride	J	0.197	mg/L	4	4/8/2024			SW846-9056A	=
Nitrate as Nitrogen	J	1.11	mg/L	10	4/8/2024			SW846-9056A	=
Sulfate		68.5	mg/L	4	4/8/2024			SW846-9056A	=
Barometric Pressure Reading		29.98	Inches/Hg		4/8/2024				X
Conductivity		512	µmhos/cm		4/8/2024				X
Depth to Water		39.43	ft		4/8/2024				X
Dissolved Oxygen		3.67	mg/L		4/8/2024				X
Eh (approx)		393	mV		4/8/2024				X
pH		5.91	Std Unit		4/8/2024				X
Temperature		59.9	deg F		4/8/2024				X
Turbidity		1.51	NTU		4/8/2024				X
Aluminum	U	0.05	mg/L	0.05	4/8/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	4/8/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Barium		0.0555	mg/L	0.004	4/8/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	4/8/2024			SW846-6020B	=
Boron		0.273	mg/L	0.075	4/8/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Calcium		32.2	mg/L	0.2	4/8/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	4/8/2024			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Copper	J	0.000869	mg/L	0.002	4/8/2024			SW846-6020B	J
Iron	U	0.1	mg/L	0.1	4/8/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	4/8/2024			SW846-6020B	=
Magnesium		14	mg/L	0.03	4/8/2024			SW846-6020B	=
Manganese		0.00637	mg/L	0.005	4/8/2024			SW846-6020B	J
Molybdenum	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Nickel	U	0.002	mg/L	0.002	4/8/2024			SW846-6020B	=
Potassium		2.03	mg/L	0.3	4/8/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Sodium		41.5	mg/L	0.25	4/8/2024			SW846-6020B	=
Tantalum	UN	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	4/8/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	4/8/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	4/8/2024			SW846-6020B	=
Zinc	U	0.02	mg/L	0.02	4/8/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	4/8/2024			SW846-7470A	=
Barium, Dissolved		0.0542	mg/L	0.004	4/8/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	4/8/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	4/8/2024			SW846-6020B	UJ
PCB-1016	U	0.109	ug/L	0.109	4/8/2024			SW846-8082A	=

PCB-1221	U	0.109	ug/L	0.109	4/8/2024			SW846-8082A	=
PCB-1232	U	0.109	ug/L	0.109	4/8/2024			SW846-8082A	=
PCB-1242	U	0.109	ug/L	0.109	4/8/2024			SW846-8082A	=
PCB-1248	U	0.109	ug/L	0.109	4/8/2024			SW846-8082A	=
PCB-1254	U	0.109	ug/L	0.109	4/8/2024			SW846-8082A	=
PCB-1260	U	0.109	ug/L	0.109	4/8/2024			SW846-8082A	=
PCB-1268	U	0.109	ug/L	0.109	4/8/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.109	ug/L	0.109	4/8/2024			SW846-8082A	=
Radium-226	U	0.18	pCi/L	0.421	4/8/2024	0.271	0.271	AN-1418	=
Radium-228	U	1.81	pCi/L	4.71	4/8/2024	2.72	2.76	EPA-904.0-M	=
Strontium-90	U	0.145	pCi/L	3.72	4/8/2024	1.95	1.95	EPA-905.0-M	=
Tritium	U	22	pCi/L	234	4/8/2024	131	131	EPA-906.0-M	=
Technetium-99		38.7	pCi/L	21.3	4/8/2024	14.4	15	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.827	pCi/L	1.54	4/8/2024	1.02	1.03	HASL 300, Th-01-RC M	=
Thorium-232	U	0.0662	pCi/L	0.98	4/8/2024	0.488	0.489	HASL 300, Th-01-RC M	=
Alpha activity	U	-0.713	pCi/L	6.1	4/8/2024	2.03	2.04	SW846-9310	UJ
Beta activity		28.5	pCi/L	9.22	4/8/2024	7.97	9.21	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0196	ug/L	0.0196	4/8/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1-Dichloroethane	UY1	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Benzene	UY1	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	4/8/2024			SW846-8260D	UJ
Bromomethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=

Ethylbenzene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Iodomethane	U	5	ug/L	5	4/8/2024	SW846-8260D	=
Methylene chloride	U	5	ug/L	5	4/8/2024	SW846-8260D	=
Styrene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Toluene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Total Xylene	U	3	ug/L	3	4/8/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	4/8/2024	SW846-8260D	=
Trichloroethene	J	0.34	ug/L	1	4/8/2024	SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	4/8/2024	SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Dissolved Solids		269	mg/L	10	4/8/2024	EPA-160.1	=
Iodide	U	0.5	mg/L	0.5	4/8/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20	mg/L	20	4/8/2024	EPA-410.4	=
Cyanide	U	0.2	mg/L	0.2	4/8/2024	SW846-9012B	=
Total Organic Halides (TOX)	J	6.38	ug/L	10	4/8/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.5	mg/L	2	4/8/2024	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:** 2nd Quarter 2024

AKGWA Well Tag #: 8004-0986 **SAMPLE ID:** MW362UG3-24 Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide	U	0.2	mg/L	0.2	4/8/2024			SW846-9056A	=
Chloride	J	2.63	mg/L	250	4/8/2024			SW846-9056A	=
Fluoride	J	0.603	mg/L	4	4/8/2024			SW846-9056A	=
Nitrate as Nitrogen	J	0.456	mg/L	10	4/8/2024			SW846-9056A	=
Sulfate		19.7	mg/L	0.8	4/8/2024			SW846-9056A	=
Barometric Pressure Reading		29.98	Inches/Hg		4/8/2024				X
Conductivity		564	µmhos/cm		4/8/2024				X
Depth to Water		26.19	ft		4/8/2024				X
Dissolved Oxygen		7.16	mg/L		4/8/2024				X
Eh (approx)		357	mV		4/8/2024				X
pH		7.01	Std Unit		4/8/2024				X
Temperature		59.7	deg F		4/8/2024				X
Turbidity		11.17	NTU		4/8/2024				X
Aluminum		1.07	mg/L	0.05	4/8/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	4/8/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Barium		0.0757	mg/L	0.004	4/8/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	4/8/2024			SW846-6020B	=
Boron		0.024	mg/L	0.015	4/8/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Calcium		14.8	mg/L	0.2	4/8/2024			SW846-6020B	=
Chromium	J	0.00307	mg/L	0.01	4/8/2024			SW846-6020B	=
Cobalt	J	0.000327	mg/L	0.001	4/8/2024			SW846-6020B	J
Copper	J	0.0019	mg/L	0.002	4/8/2024			SW846-6020B	J
Iron		0.476	mg/L	0.1	4/8/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	4/8/2024			SW846-6020B	=
Magnesium		6.5	mg/L	0.03	4/8/2024			SW846-6020B	=
Manganese	J	0.00372	mg/L	0.005	4/8/2024			SW846-6020B	J
Molybdenum		0.00173	mg/L	0.001	4/8/2024			SW846-6020B	=
Nickel	J	0.00162	mg/L	0.002	4/8/2024			SW846-6020B	J
Potassium		0.374	mg/L	0.3	4/8/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Sodium		119	mg/L	1.25	4/8/2024			SW846-6020B	=
Tantalum	UN	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	4/8/2024			SW846-6020B	=
Uranium		0.0035	mg/L	0.0002	4/8/2024			SW846-6020B	=
Vanadium	J	0.00462	mg/L	0.02	4/8/2024			SW846-6020B	=
Zinc	U	0.02	mg/L	0.02	4/8/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	4/8/2024			SW846-7470A	=
Barium, Dissolved		0.0739	mg/L	0.004	4/8/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	4/8/2024			SW846-6020B	UJ
Uranium, Dissolved		0.0036	mg/L	0.0002	4/8/2024			SW846-6020B	J
PCB-1016	U	0.105	ug/L	0.105	4/8/2024			SW846-8082A	=

PCB-1221	U	0.105	ug/L	0.105	4/8/2024			SW846-8082A	=
PCB-1232	U	0.105	ug/L	0.105	4/8/2024			SW846-8082A	=
PCB-1242	U	0.105	ug/L	0.105	4/8/2024			SW846-8082A	=
PCB-1248	U	0.105	ug/L	0.105	4/8/2024			SW846-8082A	=
PCB-1254	U	0.105	ug/L	0.105	4/8/2024			SW846-8082A	=
PCB-1260	U	0.105	ug/L	0.105	4/8/2024			SW846-8082A	=
PCB-1268	U	0.105	ug/L	0.105	4/8/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.105	ug/L	0.105	4/8/2024			SW846-8082A	=
Radium-226	U	0.332	pCi/L	0.442	4/8/2024	0.339	0.34	AN-1418	=
Radium-228	U	1.19	pCi/L	3.32	4/8/2024	1.89	1.91	EPA-904.0-M	=
Strontium-90	U	-1.2	pCi/L	4.04	4/8/2024	2.06	2.06	EPA-905.0-M	=
Tritium	U	91.1	pCi/L	233	4/8/2024	136	137	EPA-906.0-M	=
Technetium-99	U	-0.309	pCi/L	22.2	4/8/2024	12.4	12.4	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.705	pCi/L	1.32	4/8/2024	0.886	0.895	HASL 300, Th-01-RC M	=
Thorium-232	U	0.256	pCi/L	0.815	4/8/2024	0.545	0.547	HASL 300, Th-01-RC M	=
Alpha activity	U	5.68	pCi/L	10	4/8/2024	6.13	6.21	SW846-9310	UJ
Beta activity	U	3.57	pCi/L	8.89	4/8/2024	5.19	5.23	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0193	ug/L	0.0193	4/8/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1-Dichloroethane	UY1	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Benzene	UY1	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	4/8/2024			SW846-8260D	UJ
Bromomethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=

Ethylbenzene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Iodomethane	U	5	ug/L	5	4/8/2024	SW846-8260D	=
Methylene chloride	U	5	ug/L	5	4/8/2024	SW846-8260D	=
Styrene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Toluene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Total Xylene	U	3	ug/L	3	4/8/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	4/8/2024	SW846-8260D	=
Trichloroethene	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	4/8/2024	SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Dissolved Solids		325	mg/L	10	4/8/2024	EPA-160.1	=
Iodide	U	0.5	mg/L	0.5	4/8/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20	mg/L	20	4/8/2024	EPA-410.4	=
Cyanide	U	0.2	mg/L	0.2	4/8/2024	SW846-9012B	=
Total Organic Halides (TOX)		17.3	ug/L	10	4/8/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	1.86	mg/L	2	4/8/2024	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:** 2nd Quarter 2024

AKGWA Well Tag #: 8004-4796 **SAMPLE ID:** MW363UG3-24 Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide	UW	0.2	mg/L	0.2	4/9/2024			SW846-9056A	=
Chloride	J	19.3	mg/L	250	4/9/2024			SW846-9056A	=
Fluoride	J	0.309	mg/L	4	4/9/2024			SW846-9056A	=
Nitrate as Nitrogen	J	2.31	mg/L	10	4/9/2024			SW846-9056A	=
Sulfate		26.3	mg/L	2	4/9/2024			SW846-9056A	=
Barometric Pressure Reading		30.02	Inches/Hg		4/9/2024				X
Conductivity		351	µmhos/cm		4/9/2024				X
Depth to Water		46.81	ft		4/9/2024				X
Dissolved Oxygen		2.09	mg/L		4/9/2024				X
Eh (approx)		389	mV		4/9/2024				X
pH		6.07	Std Unit		4/9/2024				X
Temperature		61.4	deg F		4/9/2024				X
Turbidity		0	NTU		4/9/2024				X
Aluminum	U	0.05	mg/L	0.05	4/9/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	4/9/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	4/9/2024			SW846-6020B	=
Barium		0.106	mg/L	0.004	4/9/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	4/9/2024			SW846-6020B	=
Boron		0.019	mg/L	0.015	4/9/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	4/9/2024			SW846-6020B	=
Calcium		20.4	mg/L	0.2	4/9/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	4/9/2024			SW846-6020B	=
Cobalt	J	0.000715	mg/L	0.001	4/9/2024			SW846-6020B	J
Copper	J	0.000929	mg/L	0.002	4/9/2024			SW846-6020B	J
Iron	J	0.0408	mg/L	0.1	4/9/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	4/9/2024			SW846-6020B	=
Magnesium		7.86	mg/L	0.03	4/9/2024			SW846-6020B	=
Manganese		0.127	mg/L	0.005	4/9/2024			SW846-6020B	=
Molybdenum	U	0.001	mg/L	0.001	4/9/2024			SW846-6020B	=
Nickel		0.0335	mg/L	0.002	4/9/2024			SW846-6020B	=
Potassium		1.87	mg/L	0.3	4/9/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	4/9/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	4/9/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	4/9/2024			SW846-6020B	=
Sodium		34.9	mg/L	0.25	4/9/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	4/9/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	4/9/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	4/9/2024			SW846-6020B	UJ
Vanadium	U	0.02	mg/L	0.02	4/9/2024			SW846-6020B	=
Zinc	J	0.00422	mg/L	0.02	4/9/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	4/9/2024			SW846-7470A	=
Barium, Dissolved		0.112	mg/L	0.004	4/9/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	4/9/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	4/9/2024			SW846-6020B	UJ
PCB-1016	U	0.1	ug/L	0.1	4/9/2024			SW846-8082A	=

PCB-1221	U	0.1	ug/L	0.1	4/9/2024			SW846-8082A	=
PCB-1232	U	0.1	ug/L	0.1	4/9/2024			SW846-8082A	=
PCB-1242	U	0.1	ug/L	0.1	4/9/2024			SW846-8082A	=
PCB-1248	U	0.1	ug/L	0.1	4/9/2024			SW846-8082A	=
PCB-1254	U	0.1	ug/L	0.1	4/9/2024			SW846-8082A	=
PCB-1260	U	0.1	ug/L	0.1	4/9/2024			SW846-8082A	=
PCB-1268	U	0.1	ug/L	0.1	4/9/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.1	ug/L	0.1	4/9/2024			SW846-8082A	=
Radium-226	U	-0.0698	pCi/L	1.13	4/9/2024	0.461	0.461	AN-1418	=
Radium-228	U	-1.57	pCi/L	4.74	4/9/2024	2.34	2.34	EPA-904.0-M	=
Strontium-90	U	0.534	pCi/L	3.28	4/9/2024	1.75	1.75	EPA-905.0-M	=
Tritium	U	13.3	pCi/L	232	4/9/2024	130	130	EPA-906.0-M	=
Technetium-99	U	6.2	pCi/L	22.4	4/9/2024	12.9	13	HASL 300, Tc-02-RC M	=
Thorium-230	U	1.25	pCi/L	1.4	4/9/2024	1.12	1.14	HASL 300, Th-01-RC M	=
Thorium-232	U	0.294	pCi/L	0.921	4/9/2024	0.621	0.623	HASL 300, Th-01-RC M	=
Alpha activity	U	2.75	pCi/L	9.74	4/9/2024	5.25	5.27	SW846-9310	=
Beta activity	U	6.64	pCi/L	13.9	4/9/2024	8.25	8.33	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0192	ug/L	0.0192	4/9/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1-Dichloroethane	UY1	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	4/9/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	4/9/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Acetone	J	1.81	ug/L	5	4/9/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Benzene	UY1	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=

Ethylbenzene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Iodomethane	U	5	ug/L	5	4/9/2024	SW846-8260D	=
Methylene chloride	J	0.64	ug/L	5	4/9/2024	SW846-8260D	=
Styrene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Toluene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Total Xylene	U	3	ug/L	3	4/9/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	4/9/2024	SW846-8260D	=
Trichloroethene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	4/9/2024	SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Dissolved Solids		201	mg/L	10	4/9/2024	EPA-160.1	=
Iodide	U	0.5	mg/L	0.5	4/9/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	J	9.44	mg/L	20	4/9/2024	EPA-410.4	=
Cyanide	U	0.2	mg/L	0.2	4/9/2024	SW846-9012B	=
Total Organic Halides (TOX)	J	7.28	ug/L	10	4/9/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.841	mg/L	2	4/9/2024	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:** 2nd Quarter 2024

AKGWA Well Tag #: 8004-4797 **SAMPLE ID:** MW364UG3-24 Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide	W	0.45	mg/L	0.2	4/9/2024			SW846-9056A	=
Chloride	J	39.2	mg/L	250	4/9/2024			SW846-9056A	=
Fluoride	J	0.182	mg/L	4	4/9/2024			SW846-9056A	=
Nitrate as Nitrogen	J	1.08	mg/L	10	4/9/2024			SW846-9056A	=
Sulfate		68.4	mg/L	2	4/9/2024			SW846-9056A	=
Barometric Pressure Reading		30.02	Inches/Hg		4/9/2024				X
Conductivity		471	µmhos/cm		4/9/2024				X
Depth to Water		46.51	ft		4/9/2024				X
Dissolved Oxygen		3.4	mg/L		4/9/2024				X
Eh (approx)		396	mV		4/9/2024				X
pH		6.01	Std Unit		4/9/2024				X
Temperature		61.3	deg F		4/9/2024				X
Turbidity		0	NTU		4/9/2024				X
Aluminum	U	0.05	mg/L	0.05	4/9/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	4/9/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	4/9/2024			SW846-6020B	=
Barium		0.0527	mg/L	0.004	4/9/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	4/9/2024			SW846-6020B	=
Boron		0.151	mg/L	0.015	4/9/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	4/9/2024			SW846-6020B	=
Calcium		31.3	mg/L	0.2	4/9/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	4/9/2024			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	4/9/2024			SW846-6020B	=
Copper	J	0.000946	mg/L	0.002	4/9/2024			SW846-6020B	J
Iron	U	0.1	mg/L	0.1	4/9/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	4/9/2024			SW846-6020B	=
Magnesium		14	mg/L	0.03	4/9/2024			SW846-6020B	=
Manganese	U	0.005	mg/L	0.005	4/9/2024			SW846-6020B	=
Molybdenum	U	0.001	mg/L	0.001	4/9/2024			SW846-6020B	=
Nickel	U	0.002	mg/L	0.002	4/9/2024			SW846-6020B	=
Potassium		1.95	mg/L	0.3	4/9/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	4/9/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	4/9/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	4/9/2024			SW846-6020B	=
Sodium		39.3	mg/L	0.25	4/9/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	4/9/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	4/9/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	4/9/2024			SW846-6020B	UJ
Vanadium	U	0.02	mg/L	0.02	4/9/2024			SW846-6020B	=
Zinc	J	0.0174	mg/L	0.02	4/9/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	4/9/2024			SW846-7470A	=
Barium, Dissolved		0.0568	mg/L	0.004	4/9/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	4/9/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	4/9/2024			SW846-6020B	UJ
PCB-1016	U	0.106	ug/L	0.106	4/9/2024			SW846-8082A	=

PCB-1221	U	0.106	ug/L	0.106	4/9/2024			SW846-8082A	=
PCB-1232	U	0.106	ug/L	0.106	4/9/2024			SW846-8082A	=
PCB-1242	U	0.106	ug/L	0.106	4/9/2024			SW846-8082A	=
PCB-1248	U	0.106	ug/L	0.106	4/9/2024			SW846-8082A	=
PCB-1254	U	0.106	ug/L	0.106	4/9/2024			SW846-8082A	=
PCB-1260	U	0.106	ug/L	0.106	4/9/2024			SW846-8082A	=
PCB-1268	U	0.106	ug/L	0.106	4/9/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.106	ug/L	0.106	4/9/2024			SW846-8082A	=
Radium-226	U	0.307	pCi/L	0.441	4/9/2024	0.319	0.32	AN-1418	=
Radium-228	U	1.56	pCi/L	4.67	4/9/2024	2.68	2.71	EPA-904.0-M	=
Strontium-90	U	2.3	pCi/L	4.51	4/9/2024	2.68	2.7	EPA-905.0-M	=
Tritium	U	37.8	pCi/L	232	4/9/2024	132	132	EPA-906.0-M	=
Technetium-99		44.2	pCi/L	21.7	4/9/2024	14.9	15.7	HASL 300, Tc-02-RC M	=
Thorium-230	U	1.26	pCi/L	1.48	4/9/2024	1.12	1.13	HASL 300, Th-01-RC M	=
Thorium-232	U	-0.0217	pCi/L	0.679	4/9/2024	0.326	0.326	HASL 300, Th-01-RC M	=
Alpha activity	U	4.01	pCi/L	7.26	4/9/2024	4.56	4.6	SW846-9310	=
Beta activity		17.7	pCi/L	7.87	4/9/2024	6.47	7.09	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0192	ug/L	0.0192	4/9/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1-Dichloroethane	UY1	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	4/9/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	4/9/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Acetone	J	1.89	ug/L	5	4/9/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Benzene	UY1	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=

Ethylbenzene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Iodomethane	U	5	ug/L	5	4/9/2024	SW846-8260D	=
Methylene chloride	J	0.66	ug/L	5	4/9/2024	SW846-8260D	=
Styrene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Toluene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Total Xylene	U	3	ug/L	3	4/9/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	4/9/2024	SW846-8260D	=
Trichloroethene	J	0.65	ug/L	1	4/9/2024	SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	4/9/2024	SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Dissolved Solids		274	mg/L	10	4/9/2024	EPA-160.1	=
Iodide	U	0.5	mg/L	0.5	4/9/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20	mg/L	20	4/9/2024	EPA-410.4	=
Cyanide	U	0.2	mg/L	0.2	4/9/2024	SW846-9012B	=
Total Organic Halides (TOX)	J	4.38	ug/L	10	4/9/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.526	mg/L	2	4/9/2024	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:** 2nd Quarter 2024

AKGWA Well Tag #: 8004-0984 **SAMPLE ID:** MW365UG3-24 Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide	UW	0.2	mg/L	0.2	4/9/2024			SW846-9056A	=
Chloride	J	1.97	mg/L	250	4/9/2024			SW846-9056A	=
Fluoride	J	0.406	mg/L	4	4/9/2024			SW846-9056A	=
Nitrate as Nitrogen	J	1.11	mg/L	10	4/9/2024			SW846-9056A	=
Sulfate		53.5	mg/L	2	4/9/2024			SW846-9056A	=
Barometric Pressure Reading		30.03	Inches/Hg		4/9/2024				X
Conductivity		363	µmhos/cm		4/9/2024				X
Depth to Water		40.46	ft		4/9/2024				X
Dissolved Oxygen		6.4	mg/L		4/9/2024				X
Eh (approx)		353	mV		4/9/2024				X
pH		6.27	Std Unit		4/9/2024				X
Temperature		60.8	deg F		4/9/2024				X
Turbidity		0	NTU		4/9/2024				X
Aluminum	J	0.0452	mg/L	0.05	4/9/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	4/9/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	4/9/2024			SW846-6020B	=
Barium		0.0851	mg/L	0.004	4/9/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	4/9/2024			SW846-6020B	=
Boron	J	0.00685	mg/L	0.015	4/9/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	4/9/2024			SW846-6020B	=
Calcium		16.3	mg/L	0.2	4/9/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	4/9/2024			SW846-6020B	=
Cobalt		0.00126	mg/L	0.001	4/9/2024			SW846-6020B	J
Copper		0.00287	mg/L	0.002	4/9/2024			SW846-6020B	J
Iron	J	0.0459	mg/L	0.1	4/9/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	4/9/2024			SW846-6020B	=
Magnesium		7.58	mg/L	0.03	4/9/2024			SW846-6020B	=
Manganese		0.0159	mg/L	0.005	4/9/2024			SW846-6020B	J
Molybdenum	U	0.001	mg/L	0.001	4/9/2024			SW846-6020B	=
Nickel		0.00518	mg/L	0.002	4/9/2024			SW846-6020B	J
Potassium	J	0.212	mg/L	0.3	4/9/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	4/9/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	4/9/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	4/9/2024			SW846-6020B	=
Sodium		41.3	mg/L	0.25	4/9/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	4/9/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	4/9/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	4/9/2024			SW846-6020B	UJ
Vanadium	J	0.00342	mg/L	0.02	4/9/2024			SW846-6020B	=
Zinc	J	0.00549	mg/L	0.02	4/9/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	4/9/2024			SW846-7470A	=
Barium, Dissolved		0.0887	mg/L	0.004	4/9/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	4/9/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	4/9/2024			SW846-6020B	UJ
PCB-1016	U	0.105	ug/L	0.105	4/9/2024			SW846-8082A	=

PCB-1221	U	0.105	ug/L	0.105	4/9/2024			SW846-8082A	=
PCB-1232	U	0.105	ug/L	0.105	4/9/2024			SW846-8082A	=
PCB-1242	U	0.105	ug/L	0.105	4/9/2024			SW846-8082A	=
PCB-1248	U	0.105	ug/L	0.105	4/9/2024			SW846-8082A	=
PCB-1254	U	0.105	ug/L	0.105	4/9/2024			SW846-8082A	=
PCB-1260	U	0.105	ug/L	0.105	4/9/2024			SW846-8082A	=
PCB-1268	U	0.105	ug/L	0.105	4/9/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.105	ug/L	0.105	4/9/2024			SW846-8082A	=
Radium-226	U	0.338	pCi/L	0.369	4/9/2024	0.316	0.317	AN-1418	=
Radium-228	U	2.5	pCi/L	4.36	4/9/2024	2.62	2.7	EPA-904.0-M	=
Strontium-90	U	-0.669	pCi/L	5.99	4/9/2024	3.17	3.17	EPA-905.0-M	=
Tritium	U	62.1	pCi/L	231	4/9/2024	133	134	EPA-906.0-M	=
Technetium-99	U	1.18	pCi/L	21.5	4/9/2024	12.1	12.1	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.759	pCi/L	1.56	4/9/2024	1.03	1.04	HASL 300, Th-01-RC M	=
Thorium-232	U	-0.163	pCi/L	1.23	4/9/2024	0.426	0.427	HASL 300, Th-01-RC M	=
Alpha activity	U	0.224	pCi/L	8.18	4/9/2024	3.48	3.48	SW846-9310	=
Beta activity		13.5	pCi/L	7.24	4/9/2024	5.8	6.21	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0193	ug/L	0.0193	4/9/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1-Dichloroethane	UY1	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	4/9/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	4/9/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Benzene	UY1	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=

Ethylbenzene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Iodomethane	U	5	ug/L	5	4/9/2024	SW846-8260D	=
Methylene chloride	J	0.67	ug/L	5	4/9/2024	SW846-8260D	=
Styrene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Toluene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Total Xylene	U	3	ug/L	3	4/9/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	4/9/2024	SW846-8260D	=
Trichloroethene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	4/9/2024	SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Dissolved Solids		219	mg/L	10	4/9/2024	EPA-160.1	=
Iodide	U	0.5	mg/L	0.5	4/9/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20	mg/L	20	4/9/2024	EPA-410.4	=
Cyanide	U	0.2	mg/L	0.2	4/9/2024	SW846-9012B	=
Total Organic Halides (TOX)		16.7	ug/L	10	4/9/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	1.13	mg/L	2	4/9/2024	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:** 2nd Quarter 2024

AKGWA Well Tag #: 8004-0982 **SAMPLE ID:** MW366UG3-24 Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide	W	0.507	mg/L	0.2	4/9/2024			SW846-9056A	=
Chloride	J	43.9	mg/L	250	4/9/2024			SW846-9056A	=
Fluoride	J	0.209	mg/L	4	4/9/2024			SW846-9056A	=
Nitrate as Nitrogen	J	0.895	mg/L	10	4/9/2024			SW846-9056A	=
Sulfate		49.1	mg/L	2	4/9/2024			SW846-9056A	=
Barometric Pressure Reading		30.03	Inches/Hg		4/9/2024				X
Conductivity		491	µmhos/cm		4/9/2024				X
Depth to Water		47.33	ft		4/9/2024				X
Dissolved Oxygen		3.18	mg/L		4/9/2024				X
Eh (approx)		407	mV		4/9/2024				X
pH		6.07	Std Unit		4/9/2024				X
Temperature		62.5	deg F		4/9/2024				X
Turbidity		1.31	NTU		4/9/2024				X
Aluminum	U	0.05	mg/L	0.05	4/9/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	4/9/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	4/9/2024			SW846-6020B	=
Barium		0.0998	mg/L	0.004	4/9/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	4/9/2024			SW846-6020B	=
Boron		0.0688	mg/L	0.015	4/9/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	4/9/2024			SW846-6020B	=
Calcium		31	mg/L	0.2	4/9/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	4/9/2024			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	4/9/2024			SW846-6020B	=
Copper	J	0.000528	mg/L	0.002	4/9/2024			SW846-6020B	J
Iron	U	0.1	mg/L	0.1	4/9/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	4/9/2024			SW846-6020B	=
Magnesium		13.5	mg/L	0.03	4/9/2024			SW846-6020B	=
Manganese	J	0.00321	mg/L	0.005	4/9/2024			SW846-6020B	J
Molybdenum	U	0.001	mg/L	0.001	4/9/2024			SW846-6020B	=
Nickel	U	0.002	mg/L	0.002	4/9/2024			SW846-6020B	=
Potassium		1.91	mg/L	0.3	4/9/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	4/9/2024			SW846-6020B	=
Selenium	J	0.00227	mg/L	0.005	4/9/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	4/9/2024			SW846-6020B	=
Sodium		43.1	mg/L	0.25	4/9/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	4/9/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	4/9/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	4/9/2024			SW846-6020B	UJ
Vanadium	U	0.02	mg/L	0.02	4/9/2024			SW846-6020B	=
Zinc	U	0.02	mg/L	0.02	4/9/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	4/9/2024			SW846-7470A	=
Barium, Dissolved		0.106	mg/L	0.004	4/9/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	4/9/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	4/9/2024			SW846-6020B	UJ
PCB-1016	U	0.107	ug/L	0.107	4/9/2024			SW846-8082A	=

PCB-1221	U	0.107	ug/L	0.107	4/9/2024			SW846-8082A	=
PCB-1232	U	0.107	ug/L	0.107	4/9/2024			SW846-8082A	=
PCB-1242	U	0.107	ug/L	0.107	4/9/2024			SW846-8082A	=
PCB-1248	U	0.107	ug/L	0.107	4/9/2024			SW846-8082A	=
PCB-1254	U	0.107	ug/L	0.107	4/9/2024			SW846-8082A	=
PCB-1260	U	0.107	ug/L	0.107	4/9/2024			SW846-8082A	=
PCB-1268	U	0.107	ug/L	0.107	4/9/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.107	ug/L	0.107	4/9/2024			SW846-8082A	=
Radium-226	U	0.374	pCi/L	0.422	4/9/2024	0.343	0.344	AN-1418	=
Radium-228	U	1.58	pCi/L	4.37	4/9/2024	2.51	2.55	EPA-904.0-M	=
Strontium-90	U	-0.626	pCi/L	5.28	4/9/2024	2.73	2.73	EPA-905.0-M	=
Tritium	U	-96.9	pCi/L	231	4/9/2024	122	122	EPA-906.0-M	=
Technetium-99		55	pCi/L	21.9	4/9/2024	15.7	16.8	HASL 300, Tc-02-RC M	=
Thorium-230	U	1.52	pCi/L	1.78	4/9/2024	1.32	1.34	HASL 300, Th-01-RC M	=
Thorium-232	U	0.117	pCi/L	0.936	4/9/2024	0.521	0.522	HASL 300, Th-01-RC M	=
Alpha activity	U	2.96	pCi/L	8.03	4/9/2024	4.52	4.54	SW846-9310	=
Beta activity		30.3	pCi/L	7.81	4/9/2024	7.85	9.28	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0193	ug/L	0.0193	4/9/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1-Dichloroethane	UY1	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	4/9/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	4/9/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Benzene	UY1	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=

Ethylbenzene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Iodomethane	U	5	ug/L	5	4/9/2024	SW846-8260D	=
Methylene chloride	J	0.62	ug/L	5	4/9/2024	SW846-8260D	=
Styrene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Toluene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Total Xylene	U	3	ug/L	3	4/9/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	4/9/2024	SW846-8260D	=
Trichloroethene	J	0.87	ug/L	1	4/9/2024	SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	4/9/2024	SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Dissolved Solids		273	mg/L	10	4/9/2024	EPA-160.1	=
Iodide	U	0.5	mg/L	0.5	4/9/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20	mg/L	20	4/9/2024	EPA-410.4	=
Cyanide	U	0.2	mg/L	0.2	4/9/2024	SW846-9012B	=
Total Organic Halides (TOX)	U	10	ug/L	10	4/9/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.6	mg/L	2	4/9/2024	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:** 2nd Quarter 2024

AKGWA Well Tag #: 8004-4793 **SAMPLE ID:** MW367UG3-24 Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide	UW	0.2	mg/L	0.2	4/9/2024			SW846-9056A	=
Chloride	J	7.78	mg/L	250	4/9/2024			SW846-9056A	=
Fluoride	J	0.131	mg/L	4	4/9/2024			SW846-9056A	=
Nitrate as Nitrogen	J	0.224	mg/L	10	4/9/2024			SW846-9056A	=
Sulfate		20.4	mg/L	0.8	4/9/2024			SW846-9056A	=
Barometric Pressure Reading		30.02	Inches/Hg		4/9/2024				X
Conductivity		259	µmhos/cm		4/9/2024				X
Depth to Water		47.51	ft		4/9/2024				X
Dissolved Oxygen		1.36	mg/L		4/9/2024				X
Eh (approx)		240	mV		4/9/2024				X
pH		5.82	Std Unit		4/9/2024				X
Temperature		61.9	deg F		4/9/2024				X
Turbidity		6.34	NTU		4/9/2024				X
Aluminum	U	0.05	mg/L	0.05	4/9/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	4/9/2024			SW846-6020B	=
Arsenic	J	0.00273	mg/L	0.005	4/9/2024			SW846-6020B	=
Barium		0.127	mg/L	0.004	4/9/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	4/9/2024			SW846-6020B	=
Boron	J	0.0147	mg/L	0.015	4/9/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	4/9/2024			SW846-6020B	=
Calcium		12.7	mg/L	0.2	4/9/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	4/9/2024			SW846-6020B	=
Cobalt		0.00623	mg/L	0.001	4/9/2024			SW846-6020B	J
Copper	J	0.000558	mg/L	0.002	4/9/2024			SW846-6020B	J
Iron		5.98	mg/L	0.1	4/9/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	4/9/2024			SW846-6020B	=
Magnesium		6.66	mg/L	0.03	4/9/2024			SW846-6020B	=
Manganese		1.31	mg/L	0.05	4/9/2024			SW846-6020B	=
Molybdenum	U	0.001	mg/L	0.001	4/9/2024			SW846-6020B	=
Nickel		0.00237	mg/L	0.002	4/9/2024			SW846-6020B	J
Potassium		2.71	mg/L	0.3	4/9/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	4/9/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	4/9/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	4/9/2024			SW846-6020B	=
Sodium		14.6	mg/L	0.25	4/9/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	4/9/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	4/9/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	4/9/2024			SW846-6020B	UJ
Vanadium	U	0.02	mg/L	0.02	4/9/2024			SW846-6020B	=
Zinc	J	0.0109	mg/L	0.02	4/9/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	4/9/2024			SW846-7470A	=
Barium, Dissolved		0.133	mg/L	0.004	4/9/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	4/9/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	4/9/2024			SW846-6020B	UJ
PCB-1016	U	0.104	ug/L	0.104	4/9/2024			SW846-8082A	=

PCB-1221	U	0.104	ug/L	0.104	4/9/2024			SW846-8082A	=
PCB-1232	U	0.104	ug/L	0.104	4/9/2024			SW846-8082A	=
PCB-1242	U	0.104	ug/L	0.104	4/9/2024			SW846-8082A	=
PCB-1248	U	0.104	ug/L	0.104	4/9/2024			SW846-8082A	=
PCB-1254	U	0.104	ug/L	0.104	4/9/2024			SW846-8082A	=
PCB-1260	U	0.104	ug/L	0.104	4/9/2024			SW846-8082A	=
PCB-1268	U	0.104	ug/L	0.104	4/9/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.104	ug/L	0.104	4/9/2024			SW846-8082A	=
Radium-226	U	0.582	pCi/L	1.11	4/9/2024	0.867	0.868	AN-1418	=
Radium-228	U	3.08	pCi/L	3.26	4/9/2024	2.15	2.29	EPA-904.0-M	=
Strontium-90	U	-0.91	pCi/L	4.12	4/9/2024	1.95	1.95	EPA-905.0-M	=
Tritium	U	48.1	pCi/L	232	4/9/2024	133	133	EPA-906.0-M	=
Technetium-99	U	2.28	pCi/L	21.9	4/9/2024	12.4	12.4	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.233	pCi/L	1.48	4/9/2024	0.776	0.779	HASL 300, Th-01-RC M	=
Thorium-232	U	-0.171	pCi/L	1.06	4/9/2024	0.347	0.347	HASL 300, Th-01-RC M	=
Alpha activity	U	0.465	pCi/L	6.67	4/9/2024	2.82	2.83	SW846-9310	=
Beta activity	U	3.45	pCi/L	10.4	4/9/2024	5.97	6	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0193	ug/L	0.0193	4/9/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1-Dichloroethane	UY1	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	4/9/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	4/9/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Benzene	UY1	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=

Ethylbenzene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Iodomethane	U	5	ug/L	5	4/9/2024	SW846-8260D	=
Methylene chloride	J	0.76	ug/L	5	4/9/2024	SW846-8260D	=
Styrene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Toluene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Total Xylene	U	3	ug/L	3	4/9/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	4/9/2024	SW846-8260D	=
Trichloroethene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	4/9/2024	SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Dissolved Solids		112	mg/L	10	4/9/2024	EPA-160.1	=
Iodide	U	0.5	mg/L	0.5	4/9/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20	mg/L	20	4/9/2024	EPA-410.4	=
Cyanide	U	0.2	mg/L	0.2	4/9/2024	SW846-9012B	=
Total Organic Halides (TOX)	U	10	ug/L	10	4/9/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.357	mg/L	2	4/9/2024	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:** 2nd Quarter 2024

AKGWA Well Tag #: 8004-0983 **SAMPLE ID:** MW368UG3-24 Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide	UW	0.2	mg/L	0.2	4/9/2024			SW846-9056A	=
Chloride	J	4.39	mg/L	250	4/9/2024			SW846-9056A	=
Fluoride	J	0.307	mg/L	4	4/9/2024			SW846-9056A	=
Nitrate as Nitrogen	J	0.271	mg/L	10	4/9/2024			SW846-9056A	=
Sulfate		169	mg/L	8	4/9/2024			SW846-9056A	=
Barometric Pressure Reading		29.98	Inches/Hg		4/9/2024				X
Conductivity		769	µmhos/cm		4/9/2024				X
Depth to Water		32.73	ft		4/9/2024				X
Dissolved Oxygen		6.96	mg/L		4/9/2024				X
Eh (approx)		224	mV		4/9/2024				X
pH		6.36	Std Unit		4/9/2024				X
Temperature		61.7	deg F		4/9/2024				X
Turbidity		0	NTU		4/9/2024				X
Aluminum		0.427	mg/L	0.05	4/9/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	4/9/2024			SW846-6020B	=
Arsenic	J	0.00252	mg/L	0.005	4/9/2024			SW846-6020B	=
Barium		0.0646	mg/L	0.004	4/9/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	4/9/2024			SW846-6020B	=
Boron	U	0.015	mg/L	0.015	4/9/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	4/9/2024			SW846-6020B	=
Calcium		67	mg/L	2	4/9/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	4/9/2024			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	4/9/2024			SW846-6020B	=
Copper	J	0.00068	mg/L	0.002	4/9/2024			SW846-6020B	J
Iron		0.193	mg/L	0.1	4/9/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	4/9/2024			SW846-6020B	=
Magnesium		17.8	mg/L	0.03	4/9/2024			SW846-6020B	=
Manganese		0.00744	mg/L	0.005	4/9/2024			SW846-6020B	J
Molybdenum	J	0.000803	mg/L	0.001	4/9/2024			SW846-6020B	=
Nickel	J	0.0012	mg/L	0.002	4/9/2024			SW846-6020B	J
Potassium		0.706	mg/L	0.3	4/9/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	4/9/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	4/9/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	4/9/2024			SW846-6020B	=
Sodium		82.2	mg/L	2.5	4/9/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	4/9/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	4/9/2024			SW846-6020B	=
Uranium		0.000256	mg/L	0.0002	4/9/2024			SW846-6020B	J
Vanadium	J	0.00672	mg/L	0.02	4/9/2024			SW846-6020B	=
Zinc	J	0.00427	mg/L	0.02	4/9/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	4/9/2024			SW846-7470A	=
Barium, Dissolved		0.0674	mg/L	0.004	4/9/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	4/9/2024			SW846-6020B	UJ
Uranium, Dissolved		0.000397	mg/L	0.0002	4/9/2024			SW846-6020B	J
PCB-1016	U	0.0988	ug/L	0.0988	4/9/2024			SW846-8082A	=

PCB-1221	U	0.0988	ug/L	0.0988	4/9/2024			SW846-8082A	=
PCB-1232	U	0.0988	ug/L	0.0988	4/9/2024			SW846-8082A	=
PCB-1242	U	0.0988	ug/L	0.0988	4/9/2024			SW846-8082A	=
PCB-1248	U	0.0988	ug/L	0.0988	4/9/2024			SW846-8082A	=
PCB-1254	U	0.0988	ug/L	0.0988	4/9/2024			SW846-8082A	=
PCB-1260	U	0.0988	ug/L	0.0988	4/9/2024			SW846-8082A	=
PCB-1268	U	0.0988	ug/L	0.0988	4/9/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.0988	ug/L	0.0988	4/9/2024			SW846-8082A	=
Radium-226	U	0.99	pCi/L	1.12	4/9/2024	1.04	1.04	AN-1418	=
Radium-228	U	1.97	pCi/L	3.18	4/9/2024	1.95	2.01	EPA-904.0-M	=
Strontium-90	U	0.0662	pCi/L	4.47	4/9/2024	2.32	2.32	EPA-905.0-M	=
Tritium	U	115	pCi/L	232	4/9/2024	137	139	EPA-906.0-M	=
Technetium-99	U	6.41	pCi/L	22.2	4/9/2024	12.8	12.9	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.681	pCi/L	1.24	4/9/2024	0.824	0.833	HASL 300, Th-01-RC M	=
Thorium-232	U	0.293	pCi/L	0.879	4/9/2024	0.556	0.558	HASL 300, Th-01-RC M	=
Alpha activity	U	4.23	pCi/L	8.79	4/9/2024	5.31	5.36	SW846-9310	=
Beta activity	U	3.41	pCi/L	8.71	4/9/2024	5.07	5.11	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0188	ug/L	0.0188	4/9/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1-Dichloroethane	UY1	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	4/9/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	4/9/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Benzene	UY1	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=

Ethylbenzene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Iodomethane	U	5	ug/L	5	4/9/2024	SW846-8260D	=
Methylene chloride	J	0.71	ug/L	5	4/9/2024	SW846-8260D	=
Styrene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Toluene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Total Xylene	U	3	ug/L	3	4/9/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	4/9/2024	SW846-8260D	=
Trichloroethene	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	4/9/2024	SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Dissolved Solids		526	mg/L	10	4/9/2024	EPA-160.1	=
Iodide	U	0.5	mg/L	0.5	4/9/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20	mg/L	20	4/9/2024	EPA-410.4	=
Cyanide	U	0.2	mg/L	0.2	4/9/2024	SW846-9012B	=
Total Organic Halides (TOX)	J	4.34	ug/L	10	4/9/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	1.17	mg/L	2	4/9/2024	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:** 2nd Quarter 2024

AKGWA Well Tag #: 8004-4820 **SAMPLE ID:** MW369UG3-24 Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.374	mg/L	0.2	4/10/2024			SW846-9056A	=
Chloride	JW	27.2	mg/L	250	4/10/2024			SW846-9056A	=
Fluoride	J	0.276	mg/L	4	4/10/2024			SW846-9056A	=
Nitrate as Nitrogen	J	0.924	mg/L	10	4/10/2024			SW846-9056A	=
Sulfate		7.81	mg/L	0.4	4/10/2024			SW846-9056A	=
Barometric Pressure Reading		29.82	Inches/Hg		4/10/2024				X
Conductivity		347	µmhos/cm		4/10/2024				X
Depth to Water		41.39	ft		4/10/2024				X
Dissolved Oxygen		2.39	mg/L		4/10/2024				X
Eh (approx)		312	mV		4/10/2024				X
pH		5.89	Std Unit		4/10/2024				X
Temperature		60.7	deg F		4/10/2024				X
Turbidity		4.64	NTU		4/10/2024				X
Aluminum		0.0791	mg/L	0.05	4/10/2024			SW846-6020B	J
Antimony	U	0.003	mg/L	0.003	4/10/2024			SW846-6020B	=
Arsenic	J	0.00206	mg/L	0.005	4/10/2024			SW846-6020B	=
Barium	B	0.349	mg/L	0.004	4/10/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	4/10/2024			SW846-6020B	=
Boron		0.0153	mg/L	0.015	4/10/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	4/10/2024			SW846-6020B	=
Calcium		14.9	mg/L	0.2	4/10/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	4/10/2024			SW846-6020B	=
Cobalt		0.00409	mg/L	0.001	4/10/2024			SW846-6020B	J
Copper	J	0.0014	mg/L	0.002	4/10/2024			SW846-6020B	J
Iron		0.122	mg/L	0.1	4/10/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	4/10/2024			SW846-6020B	=
Magnesium		6.41	mg/L	0.03	4/10/2024			SW846-6020B	=
Manganese		0.00554	mg/L	0.005	4/10/2024			SW846-6020B	J
Molybdenum	U	0.001	mg/L	0.001	4/10/2024			SW846-6020B	=
Nickel		0.00298	mg/L	0.002	4/10/2024			SW846-6020B	J
Potassium		0.492	mg/L	0.3	4/10/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	4/10/2024			SW846-6020B	=
Selenium	J	0.00271	mg/L	0.005	4/10/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	4/10/2024			SW846-6020B	=
Sodium		47.8	mg/L	0.25	4/10/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	4/10/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	4/10/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	4/10/2024			SW846-6020B	=
Vanadium	BJ	0.00897	mg/L	0.02	4/10/2024			SW846-6020B	U
Zinc	U	0.02	mg/L	0.02	4/10/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	4/10/2024			SW846-7470A	=
Barium, Dissolved		0.371	mg/L	0.004	4/10/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	4/10/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	4/10/2024			SW846-6020B	UJ
PCB-1016	U	0.116	ug/L	0.116	4/10/2024			SW846-8082A	=

PCB-1221	U	0.116	ug/L	0.116	4/10/2024			SW846-8082A	=
PCB-1232	U	0.116	ug/L	0.116	4/10/2024			SW846-8082A	=
PCB-1242	U	0.116	ug/L	0.116	4/10/2024			SW846-8082A	=
PCB-1248	U	0.116	ug/L	0.116	4/10/2024			SW846-8082A	=
PCB-1254	U	0.116	ug/L	0.116	4/10/2024			SW846-8082A	=
PCB-1260	U	0.116	ug/L	0.116	4/10/2024			SW846-8082A	UJ
PCB-1268	U	0.116	ug/L	0.116	4/10/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.116	ug/L	0.116	4/10/2024			SW846-8082A	UJ
Radium-226	U	0.384	pCi/L	1.18	4/10/2024	0.798	0.799	AN-1418	=
Radium-228	U	1.63	pCi/L	3.43	4/10/2024	2.02	2.06	EPA-904.0-M	=
Strontium-90	U	0.714	pCi/L	7.36	4/10/2024	4.06	4.06	EPA-905.0-M	=
Tritium	U	32.9	pCi/L	228	4/10/2024	129	129	EPA-906.0-M	=
Technetium-99		70.9	pCi/L	20.5	4/10/2024	16	17.9	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.507	pCi/L	1.37	4/10/2024	0.831	0.837	HASL 300, Th-01-RC M	=
Thorium-232	U	0.255	pCi/L	0.813	4/10/2024	0.544	0.545	HASL 300, Th-01-RC M	=
Alpha activity	U	1.96	pCi/L	6.06	4/10/2024	3.32	3.33	SW846-9310	=
Beta activity		33.2	pCi/L	9.32	4/10/2024	8.43	10.1	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0193	ug/L	0.0193	4/10/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Benzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=

Ethylbenzene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Iodomethane	U	5	ug/L	5	4/10/2024	SW846-8260D	=
Methylene chloride	U	5	ug/L	5	4/10/2024	SW846-8260D	=
Styrene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Toluene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Total Xylene	U	3	ug/L	3	4/10/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	4/10/2024	SW846-8260D	=
Trichloroethene	J	0.96	ug/L	1	4/10/2024	SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	4/10/2024	SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	4/10/2024	SW846-8260D	UJ
Dissolved Solids	*	186	mg/L	10	4/10/2024	EPA-160.1	=
Iodide	U	0.5	mg/L	0.5	4/10/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20	mg/L	20	4/10/2024	EPA-410.4	=
Cyanide	U	0.2	mg/L	0.2	4/10/2024	SW846-9012B	=
Total Organic Halides (TOX)	J	8.2	ug/L	10	4/10/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.829	mg/L	2	4/10/2024	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:** 2nd Quarter 2024

AKGWA Well Tag #: 8004-4818 **SAMPLE ID:** MW370UG3-24 Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.54	mg/L	0.4	4/10/2024			SW846-9056A	=
Chloride	JW	40.9	mg/L	250	4/10/2024			SW846-9056A	J
Fluoride	J	0.225	mg/L	4	4/10/2024			SW846-9056A	=
Nitrate as Nitrogen	J	0.962	mg/L	10	4/10/2024			SW846-9056A	=
Sulfate		19.7	mg/L	0.8	4/10/2024			SW846-9056A	=
Barometric Pressure Reading		29.83	Inches/Hg		4/10/2024				X
Conductivity		409	µmhos/cm		4/10/2024				X
Depth to Water		42.28	ft		4/10/2024				X
Dissolved Oxygen		3.09	mg/L		4/10/2024				X
Eh (approx)		345	mV		4/10/2024				X
pH		5.93	Std Unit		4/10/2024				X
Temperature		61.5	deg F		4/10/2024				X
Turbidity		2.97	NTU		4/10/2024				X
Aluminum	U	0.05	mg/L	0.05	4/10/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	4/10/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	4/10/2024			SW846-6020B	=
Barium	B	0.221	mg/L	0.004	4/10/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	4/10/2024			SW846-6020B	=
Boron		0.105	mg/L	0.015	4/10/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	4/10/2024			SW846-6020B	=
Calcium		28.4	mg/L	0.2	4/10/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	4/10/2024			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	4/10/2024			SW846-6020B	=
Copper	J	0.00117	mg/L	0.002	4/10/2024			SW846-6020B	J
Iron	J	0.0363	mg/L	0.1	4/10/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	4/10/2024			SW846-6020B	=
Magnesium		12.3	mg/L	0.03	4/10/2024			SW846-6020B	=
Manganese	J	0.00124	mg/L	0.005	4/10/2024			SW846-6020B	J
Molybdenum	U	0.001	mg/L	0.001	4/10/2024			SW846-6020B	=
Nickel	U	0.002	mg/L	0.002	4/10/2024			SW846-6020B	=
Potassium		2.28	mg/L	0.3	4/10/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	4/10/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	4/10/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	4/10/2024			SW846-6020B	=
Sodium		43.9	mg/L	0.25	4/10/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	4/10/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	4/10/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	4/10/2024			SW846-6020B	=
Vanadium	BJ	0.00456	mg/L	0.02	4/10/2024			SW846-6020B	U
Zinc	U	0.02	mg/L	0.02	4/10/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	4/10/2024			SW846-7470A	=
Barium, Dissolved		0.227	mg/L	0.004	4/10/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	4/10/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	4/10/2024			SW846-6020B	UJ
PCB-1016	U	0.1	ug/L	0.1	4/10/2024			SW846-8082A	=

PCB-1221	U	0.1	ug/L	0.1	4/10/2024			SW846-8082A	=
PCB-1232	U	0.1	ug/L	0.1	4/10/2024			SW846-8082A	=
PCB-1242	U	0.1	ug/L	0.1	4/10/2024			SW846-8082A	=
PCB-1248	U	0.1	ug/L	0.1	4/10/2024			SW846-8082A	=
PCB-1254	U	0.1	ug/L	0.1	4/10/2024			SW846-8082A	=
PCB-1260	U	0.1	ug/L	0.1	4/10/2024			SW846-8082A	UJ
PCB-1268	U	0.1	ug/L	0.1	4/10/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.1	ug/L	0.1	4/10/2024			SW846-8082A	UJ
Radium-226	U	0.852	pCi/L	1.23	4/10/2024	1.16	1.16	AN-1418	=
Radium-228	U	1.14	pCi/L	3.79	4/10/2024	2.11	2.13	EPA-904.0-M	=
Strontium-90	U	-1.41	pCi/L	4.01	4/10/2024	1.89	1.89	EPA-905.0-M	=
Tritium	U	81.4	pCi/L	228	4/10/2024	132	133	EPA-906.0-M	=
Technetium-99		22.9	pCi/L	20.2	4/10/2024	12.9	13.1	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.804	pCi/L	1.88	4/10/2024	1.22	1.23	HASL 300, Th-01-RC M	=
Thorium-232	U	0.476	pCi/L	0.988	4/10/2024	0.853	0.856	HASL 300, Th-01-RC M	=
Alpha activity	U	2.93	pCi/L	6.51	4/10/2024	3.86	3.89	SW846-9310	=
Beta activity		13.2	pCi/L	9.6	4/10/2024	6.67	7.02	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0191	ug/L	0.0191	4/10/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Benzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=

Ethylbenzene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Iodomethane	U	5	ug/L	5	4/10/2024	SW846-8260D	=
Methylene chloride	U	5	ug/L	5	4/10/2024	SW846-8260D	=
Styrene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Toluene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Total Xylene	U	3	ug/L	3	4/10/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	4/10/2024	SW846-8260D	=
Trichloroethene		2.14	ug/L	1	4/10/2024	SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	4/10/2024	SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	4/10/2024	SW846-8260D	UJ
Dissolved Solids	*	232	mg/L	10	4/10/2024	EPA-160.1	=
Iodide	U	0.5	mg/L	0.5	4/10/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	J	18.7	mg/L	20	4/10/2024	EPA-410.4	=
Cyanide	U	0.2	mg/L	0.2	4/10/2024	SW846-9012B	=
Total Organic Halides (TOX)		10.6	ug/L	10	4/10/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.928	mg/L	2	4/10/2024	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:** 2nd Quarter 2024

AKGWA Well Tag #: 8004-4819 **SAMPLE ID:** MW371UG3-24 Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide	UW	0.2	mg/L	0.2	4/10/2024			SW846-9056A	=
Chloride	J	3.95	mg/L	250	4/10/2024			SW846-9056A	=
Fluoride	J	0.317	mg/L	4	4/10/2024			SW846-9056A	=
Nitrate as Nitrogen	UW	10	mg/L	10	4/10/2024			SW846-9056A	=
Sulfate		9.92	mg/L	0.4	4/10/2024			SW846-9056A	=
Barometric Pressure Reading		29.81	Inches/Hg		4/10/2024				X
Conductivity		697	µmhos/cm		4/10/2024				X
Depth to Water		25.84	ft		4/10/2024				X
Dissolved Oxygen		3.03	mg/L		4/10/2024				X
Eh (approx)		360	mV		4/10/2024				X
pH		6.45	Std Unit		4/10/2024				X
Temperature		61.2	deg F		4/10/2024				X
Turbidity		6.68	NTU		4/10/2024				X
Aluminum		0.117	mg/L	0.05	4/10/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	4/10/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	4/10/2024			SW846-6020B	=
Barium	B	0.199	mg/L	0.004	4/10/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	4/10/2024			SW846-6020B	=
Boron	U	0.015	mg/L	0.015	4/10/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	4/10/2024			SW846-6020B	=
Calcium		56.2	mg/L	2	4/10/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	4/10/2024			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	4/10/2024			SW846-6020B	=
Copper	J	0.000834	mg/L	0.002	4/10/2024			SW846-6020B	J
Iron		0.108	mg/L	0.1	4/10/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	4/10/2024			SW846-6020B	=
Magnesium		19	mg/L	0.03	4/10/2024			SW846-6020B	=
Manganese	J	0.00453	mg/L	0.005	4/10/2024			SW846-6020B	J
Molybdenum	J	0.000374	mg/L	0.001	4/10/2024			SW846-6020B	=
Nickel	J	0.00145	mg/L	0.002	4/10/2024			SW846-6020B	J
Potassium		0.347	mg/L	0.3	4/10/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	4/10/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	4/10/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	4/10/2024			SW846-6020B	=
Sodium		88.5	mg/L	2.5	4/10/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	4/10/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	4/10/2024			SW846-6020B	=
Uranium		0.00235	mg/L	0.0002	4/10/2024			SW846-6020B	=
Vanadium	BJ	0.00667	mg/L	0.02	4/10/2024			SW846-6020B	U
Zinc	J	0.00332	mg/L	0.02	4/10/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	4/10/2024			SW846-7470A	=
Barium, Dissolved		0.215	mg/L	0.004	4/10/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	4/10/2024			SW846-6020B	UJ
Uranium, Dissolved		0.00226	mg/L	0.0002	4/10/2024			SW846-6020B	J
PCB-1016	U	0.11	ug/L	0.11	4/10/2024			SW846-8082A	=

PCB-1221	U	0.11	ug/L	0.11	4/10/2024			SW846-8082A	=
PCB-1232	U	0.11	ug/L	0.11	4/10/2024			SW846-8082A	=
PCB-1242	U	0.11	ug/L	0.11	4/10/2024			SW846-8082A	=
PCB-1248	U	0.11	ug/L	0.11	4/10/2024			SW846-8082A	=
PCB-1254	U	0.11	ug/L	0.11	4/10/2024			SW846-8082A	=
PCB-1260	U	0.11	ug/L	0.11	4/10/2024			SW846-8082A	UJ
PCB-1268	U	0.11	ug/L	0.11	4/10/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.11	ug/L	0.11	4/10/2024			SW846-8082A	UJ
Radium-226	U	0.804	pCi/L	1.45	4/10/2024	1.17	1.17	AN-1418	=
Radium-228	U	1.5	pCi/L	4.45	4/10/2024	2.54	2.56	EPA-904.0-M	=
Strontium-90	U	-0.0152	pCi/L	4.77	4/10/2024	2.49	2.49	EPA-905.0-M	=
Tritium	U	56.8	pCi/L	229	4/10/2024	131	132	EPA-906.0-M	=
Technetium-99	U	6.12	pCi/L	20.3	4/10/2024	11.8	11.8	HASL 300, Tc-02-RC M	=
Thorium-230	U	1.02	pCi/L	1.55	4/10/2024	1.1	1.12	HASL 300, Th-01-RC M	=
Thorium-232	U	-0.0217	pCi/L	0.762	4/10/2024	0.372	0.373	HASL 300, Th-01-RC M	=
Alpha activity		11.5	pCi/L	9.02	4/10/2024	6.94	7.2	SW846-9310	=
Beta activity	U	7.53	pCi/L	8.84	4/10/2024	5.66	5.81	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0196	ug/L	0.0196	4/10/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Benzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=

Ethylbenzene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Iodomethane	U	5	ug/L	5	4/10/2024	SW846-8260D	=
Methylene chloride	U	5	ug/L	5	4/10/2024	SW846-8260D	=
Styrene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Toluene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Total Xylene	U	3	ug/L	3	4/10/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	4/10/2024	SW846-8260D	=
Trichloroethene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	4/10/2024	SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	4/10/2024	SW846-8260D	UJ
Dissolved Solids	*	398	mg/L	10	4/10/2024	EPA-160.1	=
Iodide	U	0.5	mg/L	0.5	4/10/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20	mg/L	20	4/10/2024	EPA-410.4	=
Cyanide	U	0.2	mg/L	0.2	4/10/2024	SW846-9012B	=
Total Organic Halides (TOX)	J	5.26	ug/L	10	4/10/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	1.97	mg/L	2	4/10/2024	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:** 2nd Quarter 2024

AKGWA Well Tag #: 8004-4808 **SAMPLE ID:** MW372UG3-24R Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.744	mg/L	0.2	4/11/2024			SW846-9056A	=
Chloride	J	38.7	mg/L	250	4/11/2024			SW846-9056A	=
Fluoride	J	0.242	mg/L	4	4/11/2024			SW846-9056A	=
Nitrate as Nitrogen	J	0.871	mg/L	10	4/11/2024			SW846-9056A	=
Sulfate		140	mg/L	4	4/11/2024			SW846-9056A	=
Barometric Pressure Reading		29.57	Inches/Hg		4/11/2024				X
Conductivity		758	µmhos/cm		4/11/2024				X
Depth to Water		36.31	ft		4/11/2024				X
Dissolved Oxygen		2.12	mg/L		4/11/2024				X
Eh (approx)		381	mV		4/11/2024				X
pH		6.05	Std Unit		4/11/2024				X
Temperature		61.5	deg F		4/11/2024				X
Turbidity		1.04	NTU		4/11/2024				X
Aluminum	U	0.05	mg/L	0.05	4/11/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	4/11/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	4/11/2024			SW846-6020B	=
Barium		0.0527	mg/L	0.004	4/11/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	4/11/2024			SW846-6020B	=
Boron		1.14	mg/L	0.15	4/11/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	4/11/2024			SW846-6020B	=
Calcium		65.3	mg/L	2	4/11/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	4/11/2024			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	4/11/2024			SW846-6020B	=
Copper	J	0.00067	mg/L	0.002	4/11/2024			SW846-6020B	J
Iron	J	0.0797	mg/L	0.1	4/11/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	4/11/2024			SW846-6020B	=
Magnesium	B	22.5	mg/L	0.03	4/11/2024			SW846-6020B	=
Manganese	J	0.00137	mg/L	0.005	4/11/2024			SW846-6020B	J
Molybdenum	U	0.001	mg/L	0.001	4/11/2024			SW846-6020B	=
Nickel	U	0.002	mg/L	0.002	4/11/2024			SW846-6020B	=
Potassium		2.14	mg/L	0.3	4/11/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	4/11/2024			SW846-6020B	=
Selenium	J	0.00212	mg/L	0.005	4/11/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	4/11/2024			SW846-6020B	=
Sodium		61.2	mg/L	2.5	4/11/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	4/11/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	4/11/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	4/11/2024			SW846-6020B	=
Vanadium	BJ	0.00419	mg/L	0.02	4/11/2024			SW846-6020B	U
Zinc	U	0.02	mg/L	0.02	4/11/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	4/11/2024			SW846-7470A	=
Barium, Dissolved		0.0533	mg/L	0.004	4/11/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	4/11/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	4/11/2024			SW846-6020B	UJ
PCB-1016	U	0.118	ug/L	0.118	4/11/2024			SW846-8082A	=

PCB-1221	U	0.118	ug/L	0.118	4/11/2024			SW846-8082A	=
PCB-1232	U	0.118	ug/L	0.118	4/11/2024			SW846-8082A	=
PCB-1242	U	0.118	ug/L	0.118	4/11/2024			SW846-8082A	=
PCB-1248	U	0.118	ug/L	0.118	4/11/2024			SW846-8082A	=
PCB-1254	U	0.118	ug/L	0.118	4/11/2024			SW846-8082A	=
PCB-1260	U	0.118	ug/L	0.118	4/11/2024			SW846-8082A	=
PCB-1268	U	0.118	ug/L	0.118	4/11/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.118	ug/L	0.118	4/11/2024			SW846-8082A	=
Radium-226	U	0.0405	pCi/L	0.535	4/11/2024	0.261	0.261	AN-1418	=
Radium-228	U	0.973	pCi/L	3.22	4/11/2024	1.8	1.82	EPA-904.0-M	=
Strontium-90	U	2.81	pCi/L	6.31	4/11/2024	3.71	3.73	EPA-905.0-M	=
Tritium	U	11.5	pCi/L	229	4/11/2024	120	120	EPA-906.0-M	=
Technetium-99		61.5	pCi/L	19.9	4/11/2024	15.2	16.6	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.108	pCi/L	1.8	4/11/2024	0.864	0.866	HASL 300, Th-01-RC M	=
Thorium-232	U	-0.0218	pCi/L	0.861	4/11/2024	0.428	0.429	HASL 300, Th-01-RC M	=
Alpha activity	U	3.78	pCi/L	8.09	4/11/2024	4.83	4.87	SW846-9310	=
Beta activity		37.6	pCi/L	9.26	4/11/2024	8.93	10.9	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0191	ug/L	0.0191	4/11/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	4/11/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	4/11/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	4/11/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	4/11/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	4/11/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	4/11/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	4/11/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	4/11/2024			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	4/11/2024			SW846-8260D	=
Benzene	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	4/11/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	4/11/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=

Ethylbenzene	U	1	ug/L	1	4/11/2024	SW846-8260D	=
Iodomethane	U	5	ug/L	5	4/11/2024	SW846-8260D	=
Methylene chloride	U	5	ug/L	5	4/11/2024	SW846-8260D	=
Styrene	U	1	ug/L	1	4/11/2024	SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	4/11/2024	SW846-8260D	=
Toluene	U	1	ug/L	1	4/11/2024	SW846-8260D	=
Total Xylene	U	3	ug/L	3	4/11/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	4/11/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	4/11/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	4/11/2024	SW846-8260D	=
Trichloroethene		1.1	ug/L	1	4/11/2024	SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	4/11/2024	SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	4/11/2024	SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	4/11/2024	SW846-8260D	UJ
Dissolved Solids		459	mg/L	10	4/11/2024	EPA-160.1	=
Iodide	U	0.5	mg/L	0.5	4/11/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20	mg/L	20	4/11/2024	EPA-410.4	=
Cyanide	U	0.2	mg/L	0.2	4/11/2024	SW846-9012B	=
Total Organic Halides (TOX)	J	6.5	ug/L	10	4/11/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.955	mg/L	2	4/11/2024	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:** 2nd Quarter 2024

AKGWA Well Tag #: 8004-4792 **SAMPLE ID:** MW373UG3-24 Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide	W	0.437	mg/L	0.4	4/10/2024			SW846-9056A	=
Chloride	J	30.8	mg/L	4	4/10/2024			SW846-9056A	=
Fluoride	J	0.214	mg/L	4	4/10/2024			SW846-9056A	=
Nitrate as Nitrogen	JW	0.53	mg/L	10	4/10/2024			SW846-9056A	=
Sulfate		192	mg/L	8	4/10/2024			SW846-9056A	=
Barometric Pressure Reading		29.81	Inches/Hg		4/10/2024				X
Conductivity		930	µmhos/cm		4/10/2024				X
Depth to Water		36.86	ft		4/10/2024				X
Dissolved Oxygen		2.61	mg/L		4/10/2024				X
Eh (approx)		383	mV		4/10/2024				X
pH		6.02	Std Unit		4/10/2024				X
Temperature		61.4	deg F		4/10/2024				X
Turbidity		2.33	NTU		4/10/2024				X
Aluminum	U	0.05	mg/L	0.05	4/10/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	4/10/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	4/10/2024			SW846-6020B	=
Barium	B	0.0326	mg/L	0.004	4/10/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	4/10/2024			SW846-6020B	=
Boron		2.15	mg/L	0.3	4/10/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	4/10/2024			SW846-6020B	=
Calcium		83.5	mg/L	4	4/10/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	4/10/2024			SW846-6020B	=
Cobalt	J	0.000462	mg/L	0.001	4/10/2024			SW846-6020B	J
Copper	J	0.000655	mg/L	0.002	4/10/2024			SW846-6020B	J
Iron	J	0.0751	mg/L	0.1	4/10/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	4/10/2024			SW846-6020B	=
Magnesium		29.3	mg/L	0.03	4/10/2024			SW846-6020B	=
Manganese		0.0719	mg/L	0.005	4/10/2024			SW846-6020B	=
Molybdenum	U	0.001	mg/L	0.001	4/10/2024			SW846-6020B	=
Nickel		0.00203	mg/L	0.002	4/10/2024			SW846-6020B	J
Potassium		2.57	mg/L	0.3	4/10/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	4/10/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	4/10/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	4/10/2024			SW846-6020B	=
Sodium		68.1	mg/L	5	4/10/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	4/10/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	4/10/2024			SW846-6020B	=
Uranium	J	0.000076	mg/L	0.0002	4/10/2024			SW846-6020B	=
Vanadium	BJ	0.00596	mg/L	0.02	4/10/2024			SW846-6020B	U
Zinc	U	0.02	mg/L	0.02	4/10/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	4/10/2024			SW846-7470A	=
Barium, Dissolved		0.0359	mg/L	0.004	4/10/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	4/10/2024			SW846-6020B	UJ
Uranium, Dissolved	J	0.00008	mg/L	0.0002	4/10/2024			SW846-6020B	J
PCB-1016	U	0.117	ug/L	0.117	4/10/2024			SW846-8082A	=

PCB-1221	U	0.117	ug/L	0.117	4/10/2024			SW846-8082A	=
PCB-1232	U	0.117	ug/L	0.117	4/10/2024			SW846-8082A	=
PCB-1242	U	0.117	ug/L	0.117	4/10/2024			SW846-8082A	=
PCB-1248	U	0.117	ug/L	0.117	4/10/2024			SW846-8082A	=
PCB-1254	U	0.117	ug/L	0.117	4/10/2024			SW846-8082A	=
PCB-1260	U	0.117	ug/L	0.117	4/10/2024			SW846-8082A	UJ
PCB-1268	U	0.117	ug/L	0.117	4/10/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.117	ug/L	0.117	4/10/2024			SW846-8082A	UJ
Radium-226	U	0.52	pCi/L	1.27	4/10/2024	0.972	0.973	AN-1418	=
Radium-228	U	1.37	pCi/L	4.1	4/10/2024	2.33	2.36	EPA-904.0-M	=
Strontium-90	U	0	pCi/L	5.72	4/10/2024	3.04	3.04	EPA-905.0-M	=
Tritium	U	14.2	pCi/L	226	4/10/2024	126	126	EPA-906.0-M	=
Technetium-99	U	2.12	pCi/L	20.2	4/10/2024	11.4	11.4	HASL 300, Tc-02-RC M	=
Thorium-230	U	-0.152	pCi/L	2.04	4/10/2024	0.873	0.873	HASL 300, Th-01-RC M	=
Thorium-232	U	0.136	pCi/L	1.06	4/10/2024	0.591	0.592	HASL 300, Th-01-RC M	=
Alpha activity	U	1.99	pCi/L	7.31	4/10/2024	3.87	3.89	SW846-9310	=
Beta activity		11.8	pCi/L	8.75	4/10/2024	6.08	6.39	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0194	ug/L	0.0194	4/10/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Benzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=

Ethylbenzene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Iodomethane	U	5	ug/L	5	4/10/2024	SW846-8260D	=
Methylene chloride	U	5	ug/L	5	4/10/2024	SW846-8260D	=
Styrene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Toluene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Total Xylene	U	3	ug/L	3	4/10/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	4/10/2024	SW846-8260D	=
Trichloroethene		2.77	ug/L	1	4/10/2024	SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	4/10/2024	SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	4/10/2024	SW846-8260D	UJ
Dissolved Solids	*	550	mg/L	10	4/10/2024	EPA-160.1	=
Iodide	U	0.5	mg/L	0.5	4/10/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20	mg/L	20	4/10/2024	EPA-410.4	=
Cyanide	U	0.2	mg/L	0.2	4/10/2024	SW846-9012B	=
Total Organic Halides (TOX)	J	5.44	ug/L	10	4/10/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	1.48	mg/L	2	4/10/2024	SW846-9060A	=

Paducah OREIS
GROUNDWATER MONITORING REPORT

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

Sampling Point: MW374 UP **RGA Type:** UCRS **Period:** 2nd Quarter 2024

AKGWA Well Tag #: 8004-0990 **SAMPLE ID:** MW374UG3-24 Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.424	mg/L	0.4	4/10/2024			SW846-9056A	=
Chloride	JW	41.5	mg/L	250	4/10/2024			SW846-9056A	=
Fluoride	J	0.27	mg/L	4	4/10/2024			SW846-9056A	=
Nitrate as Nitrogen	J	0.571	mg/L	10	4/10/2024			SW846-9056A	=
Sulfate		17.6	mg/L	0.4	4/10/2024			SW846-9056A	=
Barometric Pressure Reading		29.81	Inches/Hg		4/10/2024				X
Conductivity		685	µmhos/cm		4/10/2024				X
Depth to Water		24.34	ft		4/10/2024				X
Dissolved Oxygen		1.33	mg/L		4/10/2024				X
Eh (approx)		369	mV		4/10/2024				X
pH		6.71	Std Unit		4/10/2024				X
Temperature		62.2	deg F		4/10/2024				X
Turbidity		3.1	NTU		4/10/2024				X
Aluminum	J	0.0265	mg/L	0.05	4/10/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	4/10/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	4/10/2024			SW846-6020B	=
Barium	B	0.135	mg/L	0.004	4/10/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	4/10/2024			SW846-6020B	=
Boron		0.0399	mg/L	0.015	4/10/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	4/10/2024			SW846-6020B	=
Calcium		23.7	mg/L	0.2	4/10/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	4/10/2024			SW846-6020B	=
Cobalt	J	0.00046	mg/L	0.001	4/10/2024			SW846-6020B	J
Copper	J	0.000426	mg/L	0.002	4/10/2024			SW846-6020B	J
Iron		0.268	mg/L	0.1	4/10/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	4/10/2024			SW846-6020B	=
Magnesium		5.39	mg/L	0.03	4/10/2024			SW846-6020B	=
Manganese		0.129	mg/L	0.005	4/10/2024			SW846-6020B	=
Molybdenum	J	0.000243	mg/L	0.001	4/10/2024			SW846-6020B	=
Nickel	U	0.002	mg/L	0.002	4/10/2024			SW846-6020B	=
Potassium		0.404	mg/L	0.3	4/10/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	4/10/2024			SW846-6020B	=
Selenium		0.0072	mg/L	0.005	4/10/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	4/10/2024			SW846-6020B	=
Sodium		121	mg/L	2.5	4/10/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	4/10/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	4/10/2024			SW846-6020B	=
Uranium		0.00043	mg/L	0.0002	4/10/2024			SW846-6020B	=
Vanadium	BJ	0.00424	mg/L	0.02	4/10/2024			SW846-6020B	U
Zinc	U	0.02	mg/L	0.02	4/10/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	4/10/2024			SW846-7470A	=
Barium, Dissolved		0.145	mg/L	0.004	4/10/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	4/10/2024			SW846-6020B	UJ
Uranium, Dissolved		0.000419	mg/L	0.0002	4/10/2024			SW846-6020B	J
PCB-1016	U	0.111	ug/L	0.111	4/10/2024			SW846-8082A	=

PCB-1221	U	0.111	ug/L	0.111	4/10/2024			SW846-8082A	=
PCB-1232	U	0.111	ug/L	0.111	4/10/2024			SW846-8082A	=
PCB-1242	U	0.111	ug/L	0.111	4/10/2024			SW846-8082A	=
PCB-1248	U	0.111	ug/L	0.111	4/10/2024			SW846-8082A	=
PCB-1254	U	0.111	ug/L	0.111	4/10/2024			SW846-8082A	=
PCB-1260	U	0.111	ug/L	0.111	4/10/2024			SW846-8082A	UJ
PCB-1268	U	0.111	ug/L	0.111	4/10/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.111	ug/L	0.111	4/10/2024			SW846-8082A	UJ
Radium-226	U	0.808	pCi/L	1.54	4/10/2024	1.2	1.2	AN-1418	=
Radium-228		4.72	pCi/L	3.79	4/10/2024	2.67	2.93	EPA-904.0-M	=
Strontium-90	U	0.0269	pCi/L	4.81	4/10/2024	2.52	2.52	EPA-905.0-M	=
Tritium	U	8.54	pCi/L	227	4/10/2024	126	126	EPA-906.0-M	=
Technetium-99	U	3.02	pCi/L	20	4/10/2024	11.3	11.3	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.0143	pCi/L	1.68	4/10/2024	0.77	0.771	HASL 300, Th-01-RC M	=
Thorium-232	U	0.166	pCi/L	0.774	4/10/2024	0.528	0.529	HASL 300, Th-01-RC M	=
Alpha activity		8.22	pCi/L	6.77	4/10/2024	5.57	5.73	SW846-9310	=
Beta activity	U	9.1	pCi/L	9.35	4/10/2024	6.11	6.29	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.019	ug/L	0.019	4/10/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Benzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=

Ethylbenzene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Iodomethane	U	5	ug/L	5	4/10/2024	SW846-8260D	=
Methylene chloride	U	5	ug/L	5	4/10/2024	SW846-8260D	=
Styrene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Toluene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Total Xylene	U	3	ug/L	3	4/10/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	4/10/2024	SW846-8260D	=
Trichloroethene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	4/10/2024	SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	4/10/2024	SW846-8260D	UJ
Dissolved Solids	*	359	mg/L	10	4/10/2024	EPA-160.1	=
Iodide	U	0.5	mg/L	0.5	4/10/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)		60.6	mg/L	20	4/10/2024	EPA-410.4	=
Cyanide	U	0.2	mg/L	0.2	4/10/2024	SW846-9012B	=
Total Organic Halides (TOX)		16.9	ug/L	10	4/10/2024	SW846-9020B	=
Total Organic Carbon (TOC)		2.46	mg/L	2	4/10/2024	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:** 2nd Quarter 2024

AKGWA Well Tag #: 8004-0985 **SAMPLE ID:** MW375UG3-24 Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide	U	0.2	mg/L	0.2	4/10/2024			SW846-9056A	=
Chloride	JW	3.23	mg/L	250	4/10/2024			SW846-9056A	=
Fluoride	J	0.387	mg/L	4	4/10/2024			SW846-9056A	=
Nitrate as Nitrogen	J	0.843	mg/L	10	4/10/2024			SW846-9056A	=
Sulfate		22.1	mg/L	0.8	4/10/2024			SW846-9056A	=
Barometric Pressure Reading		29.77	Inches/Hg		4/10/2024				X
Conductivity		366	µmhos/cm		4/10/2024				X
Depth to Water		39.22	ft		4/10/2024				X
Dissolved Oxygen		2.03	mg/L		4/10/2024				X
Eh (approx)		361	mV		4/10/2024				X
pH		6.46	Std Unit		4/10/2024				X
Temperature		62.6	deg F		4/10/2024				X
Turbidity		2.66	NTU		4/10/2024				X
Aluminum	J	0.0451	mg/L	0.05	4/10/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	4/10/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	4/10/2024			SW846-6020B	=
Barium	B	0.163	mg/L	0.004	4/10/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	4/10/2024			SW846-6020B	=
Boron	J	0.0115	mg/L	0.015	4/10/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	4/10/2024			SW846-6020B	=
Calcium		13	mg/L	0.2	4/10/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	4/10/2024			SW846-6020B	=
Cobalt	J	0.000419	mg/L	0.001	4/10/2024			SW846-6020B	J
Copper	J	0.000612	mg/L	0.002	4/10/2024			SW846-6020B	J
Iron	J	0.0846	mg/L	0.1	4/10/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	4/10/2024			SW846-6020B	=
Magnesium		4.84	mg/L	0.03	4/10/2024			SW846-6020B	=
Manganese		0.0124	mg/L	0.005	4/10/2024			SW846-6020B	J
Molybdenum	U	0.001	mg/L	0.001	4/10/2024			SW846-6020B	=
Nickel	J	0.0012	mg/L	0.002	4/10/2024			SW846-6020B	J
Potassium	J	0.248	mg/L	0.3	4/10/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	4/10/2024			SW846-6020B	=
Selenium	J	0.00171	mg/L	0.005	4/10/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	4/10/2024			SW846-6020B	=
Sodium		50.7	mg/L	2.5	4/10/2024			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	4/10/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	4/10/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	4/10/2024			SW846-6020B	=
Vanadium	BJ	0.00511	mg/L	0.02	4/10/2024			SW846-6020B	U
Zinc	U	0.02	mg/L	0.02	4/10/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	4/10/2024			SW846-7470A	=
Barium, Dissolved		0.171	mg/L	0.004	4/10/2024			SW846-6020B	J
Chromium, Dissolved	U	0.01	mg/L	0.01	4/10/2024			SW846-6020B	UJ
Uranium, Dissolved	U	0.0002	mg/L	0.0002	4/10/2024			SW846-6020B	UJ
PCB-1016	U	0.109	ug/L	0.109	4/10/2024			SW846-8082A	=

PCB-1221	U	0.109	ug/L	0.109	4/10/2024			SW846-8082A	=
PCB-1232	U	0.109	ug/L	0.109	4/10/2024			SW846-8082A	=
PCB-1242	U	0.109	ug/L	0.109	4/10/2024			SW846-8082A	=
PCB-1248	U	0.109	ug/L	0.109	4/10/2024			SW846-8082A	=
PCB-1254	U	0.109	ug/L	0.109	4/10/2024			SW846-8082A	=
PCB-1260	U	0.109	ug/L	0.109	4/10/2024			SW846-8082A	UJ
PCB-1268	U	0.109	ug/L	0.109	4/10/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.109	ug/L	0.109	4/10/2024			SW846-8082A	UJ
Radium-226	U	0.708	pCi/L	0.878	4/10/2024	0.827	0.828	AN-1418	=
Radium-228	U	3.88	pCi/L	4.04	4/10/2024	2.68	2.86	EPA-904.0-M	=
Strontium-90	U	-0.334	pCi/L	3.69	4/10/2024	1.71	1.71	EPA-905.0-M	=
Tritium	U	-31.6	pCi/L	226	4/10/2024	123	123	EPA-906.0-M	=
Technetium-99	U	5.66	pCi/L	19.9	4/10/2024	11.5	11.5	HASL 300, Tc-02-RC M	=
Thorium-230	U	1.39	pCi/L	1.58	4/10/2024	1.25	1.28	HASL 300, Th-01-RC M	=
Thorium-232	U	0.13	pCi/L	1.02	4/10/2024	0.57	0.571	HASL 300, Th-01-RC M	=
Alpha activity	U	5.86	pCi/L	10.3	4/10/2024	6.33	6.4	SW846-9310	=
Beta activity	U	3.01	pCi/L	9.43	4/10/2024	5.4	5.43	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.019	ug/L	0.019	4/10/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Acetone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Benzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=

Ethylbenzene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Iodomethane	U	5	ug/L	5	4/10/2024	SW846-8260D	=
Methylene chloride	U	5	ug/L	5	4/10/2024	SW846-8260D	=
Styrene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Toluene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Total Xylene	U	3	ug/L	3	4/10/2024	SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	4/10/2024	SW846-8260D	=
Trichloroethene	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	4/10/2024	SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	4/10/2024	SW846-8260D	UJ
Dissolved Solids	*	180	mg/L	10	4/10/2024	EPA-160.1	=
Iodide	U	0.5	mg/L	0.5	4/10/2024	EPA-300.0	=
Chemical Oxygen Demand (COD)	J	14.1	mg/L	20	4/10/2024	EPA-410.4	=
Cyanide	U	0.2	mg/L	0.2	4/10/2024	SW846-9012B	=
Total Organic Halides (TOX)	J	7.32	ug/L	10	4/10/2024	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.775	mg/L	2	4/10/2024	SW846-9060A	=

Paducah OREIS
GROUNDWATER MONITORING REPORT

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

Sampling Point: QC **Period:** 2nd Quarter 2024

AKGWA Well Tag #: N/A **SAMPLE ID:** FB1UG3-24 **Sample Type:** FB

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Aluminum	U	0.05	mg/L	0.05	4/8/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	4/8/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Barium	U	0.004	mg/L	0.004	4/8/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	4/8/2024			SW846-6020B	=
Boron	U	0.015	mg/L	0.015	4/8/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Calcium	U	0.2	mg/L	0.2	4/8/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	4/8/2024			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Copper	U	0.002	mg/L	0.002	4/8/2024			SW846-6020B	=
Iron	U	0.1	mg/L	0.1	4/8/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	4/8/2024			SW846-6020B	=
Magnesium	U	0.03	mg/L	0.03	4/8/2024			SW846-6020B	=
Manganese	U	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Molybdenum	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Nickel	U	0.002	mg/L	0.002	4/8/2024			SW846-6020B	=
Potassium	U	0.3	mg/L	0.3	4/8/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Sodium	J	0.0956	mg/L	0.25	4/8/2024			SW846-6020B	=
Tantalum	UN	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	4/8/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	4/8/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	4/8/2024			SW846-6020B	=
Zinc	U	0.02	mg/L	0.02	4/8/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	4/8/2024			SW846-7470A	=
PCB-1016	U	0.107	ug/L	0.107	4/8/2024			SW846-8082A	=
PCB-1221	U	0.107	ug/L	0.107	4/8/2024			SW846-8082A	=
PCB-1232	U	0.107	ug/L	0.107	4/8/2024			SW846-8082A	=
PCB-1242	U	0.107	ug/L	0.107	4/8/2024			SW846-8082A	=
PCB-1248	U	0.107	ug/L	0.107	4/8/2024			SW846-8082A	=
PCB-1254	U	0.107	ug/L	0.107	4/8/2024			SW846-8082A	=
PCB-1260	U	0.107	ug/L	0.107	4/8/2024			SW846-8082A	=
PCB-1268	U	0.107	ug/L	0.107	4/8/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.107	ug/L	0.107	4/8/2024			SW846-8082A	=
Radium-226	U	0.175	pCi/L	1.07	4/8/2024	0.642	0.642	AN-1418	=
Radium-228	U	2.89	pCi/L	4.18	4/8/2024	2.6	2.7	EPA-904.0-M	=
Strontium-90	U	-0.872	pCi/L	3.43	4/8/2024	1.68	1.68	EPA-905.0-M	=
Tritium	U	79.5	pCi/L	234	4/8/2024	136	137	EPA-906.0-M	=
Technetium-99	U	1.13	pCi/L	22.4	4/8/2024	12.6	12.6	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.7	pCi/L	1.66	4/8/2024	1.02	1.03	HASL 300, Th-01-RC M	=
Thorium-232	U	0.403	pCi/L	0.977	4/8/2024	0.674	0.676	HASL 300, Th-01-RC M	=
Alpha activity	U	-0.602	pCi/L	5.27	4/8/2024	1.76	1.76	SW846-9310	UJ

Beta activity	U	4.2	pCi/L	8.99	4/8/2024	5.3	5.34	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0192	ug/L	0.0192	4/8/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1-Dichloroethane	UY1	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
2-Butanone		81.1	ug/L	5	4/8/2024			SW846-8260D	=
2-Hexanone		15.1	ug/L	5	4/8/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Acetone		27	ug/L	5	4/8/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Benzene	UY1	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chlorobenzene	J	0.35	ug/L	1	4/8/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Iodomethane	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Methylene chloride	J	0.77	ug/L	5	4/8/2024			SW846-8260D	=
Styrene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Toluene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Total Xylene	U	3	ug/L	3	4/8/2024			SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Trichloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Iodide	U	0.5	mg/L	0.5	4/8/2024			EPA-300.0	=

Paducah OREIS
GROUNDWATER MONITORING REPORT

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

Sampling Point: QC **Period:** 2nd Quarter 2024

AKGWA Well Tag #: N/A **SAMPLE ID:** RI1UG3-24 **Sample Type:** RI

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Aluminum	U	0.05	mg/L	0.05	4/8/2024			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	4/8/2024			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Barium	U	0.004	mg/L	0.004	4/8/2024			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	4/8/2024			SW846-6020B	=
Boron	U	0.015	mg/L	0.015	4/8/2024			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Calcium	U	0.2	mg/L	0.2	4/8/2024			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	4/8/2024			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Copper	U	0.002	mg/L	0.002	4/8/2024			SW846-6020B	=
Iron	U	0.1	mg/L	0.1	4/8/2024			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	4/8/2024			SW846-6020B	=
Magnesium	U	0.03	mg/L	0.03	4/8/2024			SW846-6020B	=
Manganese	U	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Molybdenum	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Nickel	U	0.002	mg/L	0.002	4/8/2024			SW846-6020B	=
Potassium	U	0.3	mg/L	0.3	4/8/2024			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	4/8/2024			SW846-6020B	=
Sodium	U	0.25	mg/L	0.25	4/8/2024			SW846-6020B	=
Tantalum	UN	0.005	mg/L	0.005	4/8/2024			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	4/8/2024			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	4/8/2024			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	4/8/2024			SW846-6020B	=
Zinc	U	0.02	mg/L	0.02	4/8/2024			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	4/8/2024			SW846-7470A	=
PCB-1016	U	0.106	ug/L	0.106	4/8/2024			SW846-8082A	=
PCB-1221	U	0.106	ug/L	0.106	4/8/2024			SW846-8082A	=
PCB-1232	U	0.106	ug/L	0.106	4/8/2024			SW846-8082A	=
PCB-1242	U	0.106	ug/L	0.106	4/8/2024			SW846-8082A	=
PCB-1248	U	0.106	ug/L	0.106	4/8/2024			SW846-8082A	=
PCB-1254	U	0.106	ug/L	0.106	4/8/2024			SW846-8082A	=
PCB-1260	U	0.106	ug/L	0.106	4/8/2024			SW846-8082A	=
PCB-1268	U	0.106	ug/L	0.106	4/8/2024			SW846-8082A	=
Polychlorinated biphenyl	U	0.106	ug/L	0.106	4/8/2024			SW846-8082A	=
Radium-226	U	0.421	pCi/L	0.48	4/8/2024	0.378	0.379	AN-1418	=
Radium-228	U	3.97	pCi/L	4.98	4/8/2024	3.19	3.35	EPA-904.0-M	=
Strontium-90	U	-0.0488	pCi/L	2.93	4/8/2024	1.51	1.51	EPA-905.0-M	=
Tritium	U	84.1	pCi/L	234	4/8/2024	136	137	EPA-906.0-M	=
Technetium-99	U	1.19	pCi/L	22.3	4/8/2024	12.5	12.5	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.519	pCi/L	1.28	4/8/2024	0.815	0.822	HASL 300, Th-01-RC M	=
Thorium-232	U	0.147	pCi/L	0.704	4/8/2024	0.473	0.474	HASL 300, Th-01-RC M	=
Alpha activity	U	-0.14	pCi/L	6.45	4/8/2024	2.65	2.65	SW846-9310	UJ

Beta activity	U	1.3	pCi/L	8.94	4/8/2024	4.86	4.86	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0191	ug/L	0.0191	4/8/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1-Dichloroethane	UY1	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Acetone	J	1.93	ug/L	5	4/8/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Benzene	UY1	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chlorobenzene	J	0.68	ug/L	1	4/8/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Iodomethane	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Methylene chloride	J	0.84	ug/L	5	4/8/2024			SW846-8260D	=
Styrene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Toluene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Total Xylene	U	3	ug/L	3	4/8/2024			SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Trichloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Trichlorofluoromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Iodide	U	0.5	mg/L	0.5	4/8/2024			EPA-300.0	=

Paducah OREIS
GROUNDWATER MONITORING REPORT

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

Sampling Point: QC **Period:** 2nd Quarter 2024

AKGWA Well Tag #: N/A **SAMPLE ID:** TB1UG3-24 **Sample Type:** TB

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
1,2-Dibromo-3-chloropropane	U	0.0189	ug/L	0.0189	4/8/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1-Dichloroethane	UY1	1	ug/L	1	4/8/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Acetone	J	2.15	ug/L	5	4/8/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Benzene	UY1	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chlorobenzene	J	0.6	ug/L	1	4/8/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Iodomethane	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Methylene chloride	J	0.74	ug/L	5	4/8/2024			SW846-8260D	=
Styrene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Toluene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
Total Xylene	U	3	ug/L	3	4/8/2024			SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	4/8/2024			SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	4/8/2024			SW846-8260D	=
Trichloroethene	U	1	ug/L	1	4/8/2024			SW846-8260D	=

Trichlorofluoromethane	U	1	ug/L	1	4/8/2024	SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	4/8/2024	SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	4/8/2024	SW846-8260D	=

Paducah OREIS
GROUNDWATER MONITORING REPORT

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

Sampling Point: QC **Period:** 2nd Quarter 2024

AKGWA Well Tag #: N/A **SAMPLE ID:** TB2UG3-24 **Sample Type:** TB

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
1,2-Dibromo-3-chloropropane	U	0.0188	ug/L	0.0188	4/9/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1-Dichloroethane	UY1	1	ug/L	1	4/9/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	4/9/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	4/9/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Acetone	J	2.88	ug/L	5	4/9/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Benzene	UY1	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chlorobenzene	J	0.49	ug/L	1	4/9/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Iodomethane	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Methylene chloride	J	0.75	ug/L	5	4/9/2024			SW846-8260D	=
Styrene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Toluene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
Total Xylene	U	3	ug/L	3	4/9/2024			SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	4/9/2024			SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	4/9/2024			SW846-8260D	=
Trichloroethene	U	1	ug/L	1	4/9/2024			SW846-8260D	=

Trichlorofluoromethane	U	1	ug/L	1	4/9/2024	SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	4/9/2024	SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	4/9/2024	SW846-8260D	=

Paducah OREIS
GROUNDWATER MONITORING REPORT

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

Sampling Point: QC **Period:** 2nd Quarter 2024

AKGWA Well Tag #: N/A **SAMPLE ID:** TB3UG3-24 **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	4/10/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Acetone	J	2.51	ug/L	5	4/10/2024			SW846-8260D	=
Acrolein	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Benzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Iodomethane	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Methylene chloride	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Styrene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Toluene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
Total Xylene	U	3	ug/L	3	4/10/2024			SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	4/10/2024			SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	4/10/2024			SW846-8260D	=
Trichloroethene	U	1	ug/L	1	4/10/2024			SW846-8260D	=

Trichlorofluoromethane	U	1	ug/L	1	4/10/2024	SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	4/10/2024	SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	4/10/2024	SW846-8260D	UJ

Paducah OREIS
GROUNDWATER MONITORING REPORT

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

Sampling Point: QC **Period:** 2nd Quarter 2024

AKGWA Well Tag #: N/A **SAMPLE ID:** TB4UG3-24 **Sample Type:** TB

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
1,2-Dibromo-3-chloropropane	U	0.0188	ug/L	0.0188	4/11/2024			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	4/11/2024			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	4/11/2024			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	4/11/2024			SW846-8260D	=
2-Butanone	U	5	ug/L	5	4/11/2024			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	4/11/2024			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	4/11/2024			SW846-8260D	=
Acetone	BJ	1.93	ug/L	5	4/11/2024			SW846-8260D	U
Acrolein	U	5	ug/L	5	4/11/2024			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	4/11/2024			SW846-8260D	=
Benzene	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Bromoform	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Bromomethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	4/11/2024			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Chloroethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Chloroform	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Chloromethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	4/11/2024			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Iodomethane	U	5	ug/L	5	4/11/2024			SW846-8260D	=
Methylene chloride	U	5	ug/L	5	4/11/2024			SW846-8260D	=
Styrene	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Toluene	U	1	ug/L	1	4/11/2024			SW846-8260D	=
Total Xylene	U	3	ug/L	3	4/11/2024			SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	4/11/2024			SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	4/11/2024			SW846-8260D	=
trans-1,4-Dichloro-2-butene	U	5	ug/L	5	4/11/2024			SW846-8260D	=
Trichloroethene	U	1	ug/L	1	4/11/2024			SW846-8260D	=

Trichlorofluoromethane	U	1	ug/L	1	4/11/2024	SW846-8260D	=
Vinyl acetate	U	5	ug/L	5	4/11/2024	SW846-8260D	=
Vinyl chloride	U	1	ug/L	1	4/11/2024	SW846-8260D	UJ

Qualifier Code Definitions	
*	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.

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

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

Validation Code Definitions	
=	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 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

Report Date: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW357UG3-24
Sample ID: 662151001
Matrix: WG
Collect Date: 08-APR-24 10:54
Receive Date: 10-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

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	0.00848	0.0188	ug/L	0.942	1	LOF	04/10/24	1604	2594815	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.472	0.330	2.00	mg/L		1	RM3	04/11/24	1038	2594894	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	04/11/24	1057	2594843	3
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	3.92	3.33	10.0	ug/L		1	RMJ	04/23/24	2255	2600105	4
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	04/11/24	1657	2595788	5
SW846 9056A Anions (5 elements) "As Received"												
Chloride	J	30.5	0.335	250	mg/L		5	CH6	04/11/24	0558	2594724	6
Sulfate		36.1	0.665	2.00	mg/L		5					
Bromide	W	0.336	0.0670	0.200	mg/L		1	CH6	04/10/24	1433	2594724	7
Fluoride	J	0.201	0.0330	4.00	mg/L		1					
Nitrate-N	HJ	1.07	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	04/12/24	1029	2595026	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	05/02/24	2129	2594582	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		0.0665	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		23.4	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					

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Address : 5600 Hobbs Road

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW357UG3-24 Project: FRNP00507
Sample ID: 662151001 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"												
Copper	J	0.000509	0.000300	0.00200	mg/L	1.00	1					
Iron	J	0.0406	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		0.00693	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		1.44	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		38.0	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	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	PRB	05/03/24	0054	2594582	10
Boron		0.320	0.0260	0.0750	mg/L	1.00	5	PRB	05/03/24	1220	2594582	11
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	05/03/24	1006	2594582	12
Tantalum	UN	0.00500	0.00100	0.00500	mg/L	1.00	1					
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.106	0.0354	0.106	ug/L	0.00106	1	NS2	04/29/24	1851	2603248	13
Aroclor-1221	U	0.106	0.0354	0.106	ug/L	0.00106	1					
Aroclor-1232	U	0.106	0.0354	0.106	ug/L	0.00106	1					
Aroclor-1242	U	0.106	0.0354	0.106	ug/L	0.00106	1					
Aroclor-1248	U	0.106	0.0354	0.106	ug/L	0.00106	1					
Aroclor-1254	U	0.106	0.0354	0.106	ug/L	0.00106	1					
Aroclor-1260	U	0.106	0.0354	0.106	ug/L	0.00106	1					
Aroclor-1268	U	0.106	0.0354	0.106	ug/L	0.00106	1					
Aroclor-Total	U	0.106	0.0354	0.106	ug/L	0.00106	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		204	2.38	10.0	mg/L			KLP1	04/15/24	1048	2597019	14
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

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Address : 5600 Hobbs Road

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW357UG3-24 Project: FRNP00507
Sample ID: 662151001 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	JW2	04/10/24	1523	2594811	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	04/12/24	1309	2595538	16
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	UY1	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	UY1	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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Address : 5600 Hobbs Road

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW357UG3-24 Project: FRNP00507
Sample ID: 662151001 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		1.84	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 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	04/11/24	1200	2595024
SW846 3005A	ICP-MS 3005A PREP	BB2	04/12/24	1545	2594580
SW846 8011 PREP	8011 Prep	LOF	04/10/24	1324	2594814
SW846 3535A	SW3535A PCB SPE Extraction	LW1	04/29/24	0525	2603247
SW846 9010C Distillation	SW846 9010C Prep	ES2	04/11/24	1025	2594841

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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW357UG3-24 Project: FRNP00507
Sample ID: 662151001 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

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"	5.72 ug/L	6.73	85	(56%-149%)
4cmx	8082A, PCB Liquids "As Received"	0.127 ug/L	0.213	60	(26%-108%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.129 ug/L	0.213	61	(30%-135%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	54.8 ug/L	50.0	110	(74%-123%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	51.1 ug/L	50.0	102	(77%-121%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	50.9 ug/L	50.0	102	(76%-127%)

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

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Report Date: July 24, 2024

Company :	Four Rivers Nuclear Partnership, LLC
Address :	5600 Hobbs Road
	Kevil, Kentucky 42053
Contact:	Ms. Jaime Morrow
Project:	C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	MW357UG3-24	Project:	FRNP00507
Sample ID:	662151002	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	08-APR-24 10:54		
Receive Date:	10-APR-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		0.0697	0.000670	0.00400	mg/L	1.00	1	RM4	05/03/24	1832	2594942	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	RM4	05/04/24	1120	2594942	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	SD	04/12/24	0805	2594941
EPA 160	Laboratory Filtration	AXS5	04/10/24	1250	2594748

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW358UG3-24
Sample ID: 662151003
Matrix: WG
Collect Date: 08-APR-24 11:41
Receive Date: 10-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

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	0.00867	0.0193	ug/L	0.964	1	LOF	04/10/24	1629	2594815	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average		2.05	0.330	2.00	mg/L		1	RM3	04/11/24	1116	2594894	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	04/11/24	1058	2594843	3
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	6.46	3.33	10.0	ug/L		1	RMJ	04/24/24	0110	2600105	4
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	04/11/24	1710	2595788	5
SW846 9056A Anions (5 elements) "As Received"												
Chloride	J	28.8	0.335	250	mg/L		5	CH6	04/11/24	0629	2594724	6
Nitrate-N	HJ	0.707	0.165	10.0	mg/L		5					
Sulfate		44.5	0.665	2.00	mg/L		5					
Bromide	W	0.358	0.0670	0.200	mg/L		1	CH6	04/10/24	1605	2594724	7
Fluoride	J	0.226	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	04/12/24	1030	2595026	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	05/03/24	1008	2594582	9
Tantalum	UN	0.00500	0.00100	0.00500	mg/L	1.00	1					
Boron		0.296	0.0260	0.0750	mg/L	1.00	5	PRB	05/03/24	1222	2594582	10
Manganese		1.11	0.00500	0.0250	mg/L	1.00	5					
Aluminum	J	0.0250	0.0193	0.0500	mg/L	1.00	1	PRB	05/02/24	2132	2594582	11
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	J	0.00228	0.00200	0.00500	mg/L	1.00	1					
Barium		0.0663	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					

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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW358UG3-24 Project: FRNP00507
Sample ID: 662151003 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"												
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		32.0	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Cobalt		0.0164	0.000300	0.00100	mg/L	1.00	1					
Copper	J	0.000777	0.000300	0.00200	mg/L	1.00	1					
Iron		4.00	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		15.0	0.0100	0.0300	mg/L	1.00	1					
Molybdenum	J	0.000285	0.000200	0.00100	mg/L	1.00	1					
Nickel		0.0390	0.000600	0.00200	mg/L	1.00	1					
Potassium		2.56	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		34.7	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	0.00675	0.00330	0.0200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	PRB	05/03/24	0058	2594582	12
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.116	0.0387	0.116	ug/L	0.00116	1	NS2	04/29/24	1903	2603248	13
Aroclor-1221	U	0.116	0.0387	0.116	ug/L	0.00116	1					
Aroclor-1232	U	0.116	0.0387	0.116	ug/L	0.00116	1					
Aroclor-1242	U	0.116	0.0387	0.116	ug/L	0.00116	1					
Aroclor-1248	U	0.116	0.0387	0.116	ug/L	0.00116	1					
Aroclor-1254	U	0.116	0.0387	0.116	ug/L	0.00116	1					
Aroclor-1260	U	0.116	0.0387	0.116	ug/L	0.00116	1					
Aroclor-1268	U	0.116	0.0387	0.116	ug/L	0.00116	1					
Aroclor-Total	U	0.116	0.0387	0.116	ug/L	0.00116	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		237	2.38	10.0	mg/L			KLP1	04/15/24	1048	2597019	14
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

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Certificate of Analysis

Report Date: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW358UG3-24 Project: FRNP00507
Sample ID: 662151003 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	11.8	8.95	20.0	mg/L		1	JW2	04/10/24	1523	2594811	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	04/12/24	1335	2595538	16
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	UY1	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	UY1	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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Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW358UG3-24 Project: FRNP00507
Sample ID: 662151003 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	J	0.830	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	04/10/24	1324	2594814
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	04/11/24	1200	2595024
SW846 9010C Distillation	SW846 9010C Prep	ES2	04/11/24	1025	2594841
SW846 3535A	SW3535A PCB SPE Extraction	LW1	04/29/24	0525	2603247
SW846 3005A	ICP-MS 3005A PREP	BB2	04/12/24	1545	2594580

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Company :	Four Rivers Nuclear Partnership, LLC
Address :	5600 Hobbs Road
	Kevil, Kentucky 42053
Contact:	Ms. Jaime Morrow
Project:	C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	MW358UG3-24	Project:	FRNP00507
Sample ID:	662151003	Client ID:	FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

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"	5.98 ug/L	6.88	87	(56%-149%)
4cmx	8082A, PCB Liquids "As Received"	0.159 ug/L	0.232	68	(26%-108%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.134 ug/L	0.232	58	(30%-135%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	54.2 ug/L	50.0	108	(74%-123%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	50.1 ug/L	50.0	100	(77%-121%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	50.5 ug/L	50.0	101	(76%-127%)

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: July 24, 2024

Company :	Four Rivers Nuclear Partnership, LLC
Address :	5600 Hobbs Road
	Kevil, Kentucky 42053
Contact:	Ms. Jaime Morrow
Project:	C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	MW358UG3-24	Project:	FRNP00507
Sample ID:	662151004	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	08-APR-24 11:41		
Receive Date:	10-APR-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	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	RM4	05/04/24	1122	2594942	1
Barium		0.0523	0.000670	0.00400	mg/L	1.00	1	RM4	05/03/24	1835	2594942	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	AXS5	04/10/24	1250	2594748
SW846 3005A	ICP-MS 3005A PREP	SD	04/12/24	0805	2594941

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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Report Date: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW360UG3-24
Sample ID: 662151005
Matrix: WG
Collect Date: 08-APR-24 08:06
Receive Date: 09-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

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	0.0196	0.00882	0.0196	ug/L	0.980	1	LOF	04/10/24	1653	2594815	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.816	0.330	2.00	mg/L		1	RM3	04/11/24	1153	2594894	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	04/11/24	0624	2594523	3
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	U	10.0	3.33	10.0	ug/L		1	RMJ	04/23/24	2353	2600105	4
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	04/11/24	1723	2595788	5
SW846 9056A Anions (5 elements) "As Received"												
Bromide	J	0.139	0.0670	0.200	mg/L		1	CH6	04/09/24	1244	2594056	6
Chloride	J	7.51	0.0670	250	mg/L		1					
Fluoride	J	0.259	0.0330	4.00	mg/L		1					
Nitrate-N	J	0.600	0.0330	10.0	mg/L		1					
Sulfate		12.1	0.133	0.400	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	04/11/24	1123	2594397	7
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Sodium		58.3	0.400	1.25	mg/L	1.00	5	PRB	05/03/24	1224	2594582	8
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	05/03/24	1010	2594582	9
Tantalum	UN	0.00500	0.00100	0.00500	mg/L	1.00	1					
Aluminum	J	0.0331	0.0193	0.0500	mg/L	1.00	1	PRB	05/02/24	2136	2594582	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		0.199	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron		0.0435	0.00520	0.0150	mg/L	1.00	1					

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Company : Four Rivers Nuclear Partnership, LLC
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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW360UG3-24 Project: FRNP00507
Sample ID: 662151005 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"												
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		19.1	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Cobalt	J	0.000735	0.000300	0.00100	mg/L	1.00	1					
Copper	J	0.00147	0.000300	0.00200	mg/L	1.00	1					
Iron	J	0.0728	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		8.14	0.0100	0.0300	mg/L	1.00	1					
Manganese		0.00611	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	U	0.00100	0.000200	0.00100	mg/L	1.00	1					
Nickel	J	0.00100	0.000600	0.00200	mg/L	1.00	1					
Potassium		0.694	0.0800	0.300	mg/L	1.00	1					
Selenium	J	0.00205	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	J	0.00471	0.00330	0.0200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	PRB	05/03/24	0102	2594582	11
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.100	0.0333	0.100	ug/L	0.00100	1	NS2	04/29/24	1915	2603248	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					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		208	2.38	10.0	mg/L			KLP1	04/15/24	1048	2597019	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(UG24-03)

Client Sample ID: MW360UG3-24 Project: FRNP00507
Sample ID: 662151005 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	JW2	04/09/24	1647	2594278	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	04/12/24	1401	2595538	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	UY1	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	UY1	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: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW360UG3-24 Project: FRNP00507
Sample ID: 662151005 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	J	0.570	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	LW1	04/29/24	0525	2603247
SW846 8011 PREP	8011 Prep	LOF	04/10/24	1324	2594814
SW846 3005A	ICP-MS 3005A PREP	BB2	04/12/24	1545	2594580
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	04/10/24	1145	2594396
SW846 9010C Distillation	SW846 9010C Prep	ES2	04/10/24	1008	2594522

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Address :	5600 Hobbs Road
	Kevil, Kentucky 42053
Contact:	Ms. Jaime Morrow
Project:	C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	MW360UG3-24	Project:	FRNP00507
Sample ID:	662151005	Client ID:	FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

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 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	
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"	6.55 ug/L	7.00	94	(56%-149%)
4cmx	8082A, PCB Liquids "As Received"	0.130 ug/L	0.200	65	(26%-108%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.121 ug/L	0.200	61	(30%-135%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	53.3 ug/L	50.0	107	(74%-123%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	49.2 ug/L	50.0	98	(77%-121%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	50.0 ug/L	50.0	100	(76%-127%)

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	MW360UG3-24	Project:	FRNP00507
Sample ID:	662151006	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	08-APR-24 08:06		
Receive Date:	09-APR-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	RM4	05/03/24	1839	2594942	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	RM4	05/04/24	1124	2594942	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	SD	04/12/24	0805	2594941
EPA 160	Laboratory Filtration	AXS5	04/10/24	1250	2594748

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
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

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Report Date: July 24, 2024

Company :	Four Rivers Nuclear Partnership, LLC
Address :	5600 Hobbs Road
	Kevil, Kentucky 42053
Contact:	Ms. Jaime Morrow
Project:	C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	MW361DUG3-24	Project:	FRNP00507
Sample ID:	662151007	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	08-APR-24 09:08		
Receive Date:	09-APR-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	0.00869	0.0193	ug/L	0.965	1	LOF	04/10/24	1839	2594815	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.511	0.330	2.00	mg/L		1	RM3	04/11/24	1346	2594894	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	04/11/24	0628	2594523	3
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	6.12	3.33	10.0	ug/L		1	RMJ	04/24/24	0145	2600105	4
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	04/11/24	1801	2595788	5
SW846 9056A Anions (5 elements) "As Received"												
Chloride	J	35.8	0.670	250	mg/L		10	CH6	04/09/24	2027	2594056	6
Sulfate		69.0	1.33	4.00	mg/L		10					
Bromide		0.457	0.0670	0.200	mg/L		1	CH6	04/09/24	1315	2594056	7
Fluoride	J	0.201	0.0330	4.00	mg/L		1					
Nitrate-N	J	1.10	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	04/11/24	1135	2594397	8
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	PRB	05/03/24	0127	2594582	9
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	05/03/24	1024	2594582	10
Tantalum	UN	0.00500	0.00100	0.00500	mg/L	1.00	1					
Boron		0.284	0.0260	0.0750	mg/L	1.00	5	PRB	05/03/24	1239	2594582	11
Aluminum	U	0.0500	0.0193	0.0500	mg/L	1.00	1	PRB	05/02/24	2201	2594582	12
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		0.0566	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					

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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW361DUG3-24 Project: FRNP00507
Sample ID: 662151007 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"												
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		32.4	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	0.00120	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		14.2	0.0100	0.0300	mg/L	1.00	1					
Manganese		0.00716	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		2.05	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		41.8	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	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	0.0340	0.102	ug/L	0.00102	1	NS2	04/29/24	1952	2603248	13
Aroclor-1221	U	0.102	0.0340	0.102	ug/L	0.00102	1					
Aroclor-1232	U	0.102	0.0340	0.102	ug/L	0.00102	1					
Aroclor-1242	U	0.102	0.0340	0.102	ug/L	0.00102	1					
Aroclor-1248	U	0.102	0.0340	0.102	ug/L	0.00102	1					
Aroclor-1254	U	0.102	0.0340	0.102	ug/L	0.00102	1					
Aroclor-1260	U	0.102	0.0340	0.102	ug/L	0.00102	1					
Aroclor-1268	U	0.102	0.0340	0.102	ug/L	0.00102	1					
Aroclor-Total	U	0.102	0.0340	0.102	ug/L	0.00102	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		260	2.38	10.0	mg/L			KLP1	04/15/24	1048	2597019	14
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

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Address : 5600 Hobbs Road

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW361DUG3-24 Project: FRNP00507
Sample ID: 662151007 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	JW2	04/09/24	1647	2594278	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	04/12/24	1426	2595538	16
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	UY1	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	UY1	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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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW361DUG3-24 Project: FRNP00507
Sample ID: 662151007 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	04/12/24	1545	2594580
SW846 9010C Distillation	SW846 9010C Prep	ES2	04/10/24	1008	2594522
SW846 8011 PREP	8011 Prep	LOF	04/10/24	1324	2594814
SW846 3535A	SW3535A PCB SPE Extraction	LW1	04/29/24	0525	2603247
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	04/10/24	1145	2594396

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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW361DUG3-24 Project: FRNP00507
Sample ID: 662151007 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

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"	6.67 ug/L	6.89	97	(56%-149%)
4cmx	8082A, PCB Liquids "As Received"	0.142 ug/L	0.204	70	(26%-108%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.129 ug/L	0.204	63	(30%-135%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	54.6 ug/L	50.0	109	(74%-123%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	51.7 ug/L	50.0	103	(77%-121%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	51.4 ug/L	50.0	103	(76%-127%)

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

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Company :	Four Rivers Nuclear Partnership, LLC
Address :	5600 Hobbs Road
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Contact:	Ms. Jaime Morrow
Project:	C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	MW361DUG3-24	Project:	FRNP00507
Sample ID:	662151008	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	08-APR-24 09:08		
Receive Date:	09-APR-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	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	RM4	05/04/24	1138	2594942	1
Barium		0.0555	0.000670	0.00400	mg/L	1.00	1	RM4	05/03/24	1906	2594942	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
SW846 3005A	ICP-MS 3005A PREP	SD	04/12/24	0805	2594941
EPA 160	Laboratory Filtration	AXS5	04/10/24	1250	2594748

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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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW361UG3-24
Sample ID: 662151009
Matrix: WG
Collect Date: 08-APR-24 09:08
Receive Date: 09-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

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	0.0196	0.00880	0.0196	ug/L	0.978	1	LOF	04/10/24	1901	2594815	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.500	0.330	2.00	mg/L		1	RM3	04/11/24	1424	2594894	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	04/11/24	0629	2594523	3
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	6.38	3.33	10.0	ug/L		1	RMJ	04/24/24	0311	2600105	4
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	04/11/24	1814	2595788	5
SW846 9056A Anions (5 elements) "As Received"												
Chloride	J	35.2	0.670	250	mg/L		10	CH6	04/09/24	2058	2594056	6
Sulfate		68.5	1.33	4.00	mg/L		10					
Bromide		0.425	0.0670	0.200	mg/L		1	CH6	04/09/24	1346	2594056	7
Fluoride	J	0.197	0.0330	4.00	mg/L		1					
Nitrate-N	J	1.11	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	04/11/24	1137	2594397	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	05/03/24	1025	2594582	9
Tantalum	UN	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	05/02/24	2205	2594582	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		0.0555	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		32.2	0.0800	0.200	mg/L	1.00	1					

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Certificate of Analysis

Report Date: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW361UG3-24 Project: FRNP00507
Sample ID: 662151009 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"												
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	0.000869	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		14.0	0.0100	0.0300	mg/L	1.00	1					
Manganese		0.00637	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		2.03	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		41.5	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	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Boron		0.273	0.0260	0.0750	mg/L	1.00	5	PRB	05/03/24	1241	2594582	11
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	PRB	05/03/24	0131	2594582	12
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.109	0.0364	0.109	ug/L	0.00109	1	NS2	04/29/24	2005	2603248	13
Aroclor-1221	U	0.109	0.0364	0.109	ug/L	0.00109	1					
Aroclor-1232	U	0.109	0.0364	0.109	ug/L	0.00109	1					
Aroclor-1242	U	0.109	0.0364	0.109	ug/L	0.00109	1					
Aroclor-1248	U	0.109	0.0364	0.109	ug/L	0.00109	1					
Aroclor-1254	U	0.109	0.0364	0.109	ug/L	0.00109	1					
Aroclor-1260	U	0.109	0.0364	0.109	ug/L	0.00109	1					
Aroclor-1268	U	0.109	0.0364	0.109	ug/L	0.00109	1					
Aroclor-Total	U	0.109	0.0364	0.109	ug/L	0.00109	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		269	2.38	10.0	mg/L			KLP1	04/15/24	1048	2597019	14
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

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Report Date: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW361UG3-24 Project: FRNP00507
Sample ID: 662151009 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	JW2	04/09/24	1647	2594278	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	04/12/24	1452	2595538	16
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	UY1	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	UY1	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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Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW361UG3-24 Project: FRNP00507
Sample ID: 662151009 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	J	0.340	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	04/10/24	1324	2594814
SW846 9010C Distillation	SW846 9010C Prep	ES2	04/10/24	1008	2594522
SW846 3005A	ICP-MS 3005A PREP	BB2	04/12/24	1545	2594580
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	04/10/24	1145	2594396
SW846 3535A	SW3535A PCB SPE Extraction	LW1	04/29/24	0525	2603247

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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW361UG3-24 Project: FRNP00507
Sample ID: 662151009 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

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"	6.57 ug/L	6.98	94	(56%-149%)
4cmx	8082A, PCB Liquids "As Received"	0.148 ug/L	0.219	68	(26%-108%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.136 ug/L	0.219	62	(30%-135%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	53.5 ug/L	50.0	107	(74%-123%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	51.3 ug/L	50.0	103	(77%-121%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	50.5 ug/L	50.0	101	(76%-127%)

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

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Certificate of Analysis

Report Date: July 24, 2024

Company :	Four Rivers Nuclear Partnership, LLC
Address :	5600 Hobbs Road
	Kevil, Kentucky 42053
Contact:	Ms. Jaime Morrow
Project:	C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	MW361UG3-24	Project:	FRNP00507
Sample ID:	662151010	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	08-APR-24 09:08		
Receive Date:	09-APR-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		0.0542	0.000670	0.00400	mg/L	1.00	1	RM4	05/03/24	1910	2594942	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	RM4	05/04/24	1140	2594942	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	SD	04/12/24	0805	2594941
EPA 160	Laboratory Filtration	AXS5	04/10/24	1250	2594748

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: July 24, 2024

Company :	Four Rivers Nuclear Partnership, LLC
Address :	5600 Hobbs Road
	Kevil, Kentucky 42053
Contact:	Ms. Jaime Morrow
Project:	C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	MW362UG3-24	Project:	FRNP00507
Sample ID:	662151011	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	08-APR-24 10:08		
Receive Date:	09-APR-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	0.00867	0.0193	ug/L	0.963	1	LOF	04/10/24	1925	2594815	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	1.86	0.330	2.00	mg/L		1	RM3	04/11/24	1501	2594894	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	04/11/24	0946	2594523	3
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens		17.3	3.33	10.0	ug/L		1	RMJ	04/24/24	0352	2600105	4
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	04/11/24	1827	2595788	5
SW846 9056A Anions (5 elements) "As Received"												
Bromide	U	0.200	0.0670	0.200	mg/L		1	CH6	04/09/24	1417	2594056	6
Chloride	J	2.63	0.0670	250	mg/L		1					
Fluoride	J	0.603	0.0330	4.00	mg/L		1					
Nitrate-N	J	0.456	0.0330	10.0	mg/L		1					
Sulfate		19.7	0.266	0.800	mg/L		2	CH6	04/09/24	2129	2594056	7
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	04/11/24	1138	2594397	8
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Uranium		0.00350	0.0000670	0.000200	mg/L	1.00	1	PRB	05/03/24	0134	2594582	9
Sodium		119	0.400	1.25	mg/L	1.00	5	PRB	05/03/24	1244	2594582	10
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	05/03/24	1027	2594582	11
Tantalum	UN	0.00500	0.00100	0.00500	mg/L	1.00	1					
Aluminum		1.07	0.0193	0.0500	mg/L	1.00	1	PRB	05/02/24	2208	2594582	12
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		0.0757	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW362UG3-24 Project: FRNP00507
Sample ID: 662151011 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"												
Boron		0.0240	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		14.8	0.0800	0.200	mg/L	1.00	1					
Chromium	J	0.00307	0.00300	0.0100	mg/L	1.00	1					
Cobalt	J	0.000327	0.000300	0.00100	mg/L	1.00	1					
Copper	J	0.00190	0.000300	0.00200	mg/L	1.00	1					
Iron		0.476	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		6.50	0.0100	0.0300	mg/L	1.00	1					
Manganese	J	0.00372	0.00100	0.00500	mg/L	1.00	1					
Molybdenum		0.00173	0.000200	0.00100	mg/L	1.00	1					
Nickel	J	0.00162	0.000600	0.00200	mg/L	1.00	1					
Potassium		0.374	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	J	0.00462	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	0.105	0.0349	0.105	ug/L	0.00105	1	NS2	04/29/24	2017	2603248	13
Aroclor-1221	U	0.105	0.0349	0.105	ug/L	0.00105	1					
Aroclor-1232	U	0.105	0.0349	0.105	ug/L	0.00105	1					
Aroclor-1242	U	0.105	0.0349	0.105	ug/L	0.00105	1					
Aroclor-1248	U	0.105	0.0349	0.105	ug/L	0.00105	1					
Aroclor-1254	U	0.105	0.0349	0.105	ug/L	0.00105	1					
Aroclor-1260	U	0.105	0.0349	0.105	ug/L	0.00105	1					
Aroclor-1268	U	0.105	0.0349	0.105	ug/L	0.00105	1					
Aroclor-Total	U	0.105	0.0349	0.105	ug/L	0.00105	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		325	2.38	10.0	mg/L			KLP1	04/15/24	1048	2597019	14
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

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Certificate of Analysis

Report Date: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW362UG3-24 Project: FRNP00507
Sample ID: 662151011 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	JW2	04/09/24	1647	2594278	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	04/12/24	1518	2595538	16
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	UY1	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	UY1	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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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW362UG3-24 Project: FRNP00507
Sample ID: 662151011 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	04/10/24	1324	2594814
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	04/10/24	1145	2594396
SW846 3005A	ICP-MS 3005A PREP	BB2	04/12/24	1545	2594580
SW846 3535A	SW3535A PCB SPE Extraction	LW1	04/29/24	0525	2603247
SW846 9010C Distillation	SW846 9010C Prep	ES2	04/10/24	1008	2594522

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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW362UG3-24 Project: FRNP00507
Sample ID: 662151011 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

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"	6.13 ug/L	6.88	89	(56%-149%)
4cmx	8082A, PCB Liquids "As Received"	0.135 ug/L	0.209	65	(26%-108%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.0923 ug/L	0.209	44	(30%-135%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	53.8 ug/L	50.0	108	(74%-123%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	50.7 ug/L	50.0	101	(77%-121%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	51.4 ug/L	50.0	103	(76%-127%)

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

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Company :	Four Rivers Nuclear Partnership, LLC
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	Kevil, Kentucky 42053
Contact:	Ms. Jaime Morrow
Project:	C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	MW362UG3-24	Project:	FRNP00507
Sample ID:	662151012	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	08-APR-24 10:08		
Receive Date:	09-APR-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		0.00360	0.0000670	0.000200	mg/L	1.00	1	RM4	05/04/24	1142	2594942	1
Barium		0.0739	0.000670	0.00400	mg/L	1.00	1	RM4	05/03/24	1913	2594942	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	AXS5	04/10/24	1250	2594748
SW846 3005A	ICP-MS 3005A PREP	SD	04/12/24	0805	2594941

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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Company : Four Rivers Nuclear Partnership, LLC
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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: FB1UG3-24
Sample ID: 662151013
Matrix: WATER
Collect Date: 08-APR-24 09:10
Receive Date: 10-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

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	0.959	1	LOF	04/10/24	2039	2594815	1
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	04/11/24	1906	2595788	2
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	04/12/24	1032	2595026	3
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Aluminum	U	0.0500	0.0193	0.0500	mg/L	1.00	1	PRB	05/02/24	2212	2594582	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	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	J	0.0956	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	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	05/03/24	1029	2594582	5

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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: FB1UG3-24 Project: FRNP00507
Sample ID: 662151013 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"												
Tantalum	UN	0.00500	0.00100	0.00500	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	PRB	05/03/24	0138	2594582	6
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.107	0.0358	0.107	ug/L	0.00107	1	NS2	04/29/24	2054	2603248	7
Aroclor-1221	U	0.107	0.0358	0.107	ug/L	0.00107	1					
Aroclor-1232	U	0.107	0.0358	0.107	ug/L	0.00107	1					
Aroclor-1242	U	0.107	0.0358	0.107	ug/L	0.00107	1					
Aroclor-1248	U	0.107	0.0358	0.107	ug/L	0.00107	1					
Aroclor-1254	U	0.107	0.0358	0.107	ug/L	0.00107	1					
Aroclor-1260	U	0.107	0.0358	0.107	ug/L	0.00107	1					
Aroclor-1268	U	0.107	0.0358	0.107	ug/L	0.00107	1					
Aroclor-Total	U	0.107	0.0358	0.107	ug/L	0.00107	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	04/11/24	1639	2595538	8
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	UY1	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		81.1	1.67	5.00	ug/L		1					
2-Hexanone		15.1	1.67	5.00	ug/L		1					
4-Methyl-2-pentanone	U	5.00	1.67	5.00	ug/L		1					
Acetone		27.0	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	UY1	1.00	0.333	1.00	ug/L		1					
Bromochloromethane	U	1.00	0.333	1.00	ug/L		1					

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Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: FB1UG3-24 Project: FRNP00507
Sample ID: 662151013 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
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	J	0.350	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	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	04/10/24	1324	2594814
SW846 3005A	ICP-MS 3005A PREP	BB2	04/12/24	1545	2594580
SW846 3535A	SW3535A PCB SPE Extraction	LW1	04/29/24	0525	2603247
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	04/11/24	1200	2595024

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Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: FB1UG3-24 Project: FRNP00507
Sample ID: 662151013 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

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 3005A/6020B	
7	SW846 3535A/8082A	
8	SW846 8260D	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	6.49 ug/L	6.85	95	(56%-149%)
4cmx	8082A, PCB Liquids "As Received"	0.138 ug/L	0.215	64	(26%-108%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.148 ug/L	0.215	69	(30%-135%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	53.9 ug/L	50.0	108	(74%-123%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	50.6 ug/L	50.0	101	(77%-121%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	50.4 ug/L	50.0	101	(76%-127%)

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

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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: RI1UG3-24
Sample ID: 662151014
Matrix: WATER
Collect Date: 08-APR-24 07:15
Receive Date: 10-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

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	LOF	04/10/24	2103	2594815	1
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	04/11/24	1919	2595788	2
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	04/12/24	1033	2595026	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	05/03/24	1031	2594582	4
Tantalum	UN	0.00500	0.00100	0.00500	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	PRB	05/03/24	0141	2594582	5
Aluminum	U	0.0500	0.0193	0.0500	mg/L	1.00	1	PRB	05/02/24	2216	2594582	6
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					

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Report Date: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: RI1UG3-24 Project: FRNP00507
Sample ID: 662151014 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	0.106	0.0354	0.106	ug/L	0.00106	1	NS2	04/29/24	2106	2603248	7
Aroclor-1221	U	0.106	0.0354	0.106	ug/L	0.00106	1					
Aroclor-1232	U	0.106	0.0354	0.106	ug/L	0.00106	1					
Aroclor-1242	U	0.106	0.0354	0.106	ug/L	0.00106	1					
Aroclor-1248	U	0.106	0.0354	0.106	ug/L	0.00106	1					
Aroclor-1254	U	0.106	0.0354	0.106	ug/L	0.00106	1					
Aroclor-1260	U	0.106	0.0354	0.106	ug/L	0.00106	1					
Aroclor-1268	U	0.106	0.0354	0.106	ug/L	0.00106	1					
Aroclor-Total	U	0.106	0.0354	0.106	ug/L	0.00106	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	04/11/24	1705	2595538	8
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	UY1	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	1.93	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	UY1	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: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: RI1UG3-24 Project: FRNP00507
Sample ID: 662151014 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
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	J	0.680	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	J	0.840	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	04/10/24	1324	2594814
SW846 3005A	ICP-MS 3005A PREP	BB2	04/12/24	1545	2594580
SW846 3535A	SW3535A PCB SPE Extraction	LW1	04/29/24	0525	2603247
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	04/11/24	1200	2595024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: RI1UG3-24 Project: FRNP00507
Sample ID: 662151014 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

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 3005A/6020B	
7	SW846 3535A/8082A	
8	SW846 8260D	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	6.52 ug/L	6.82	96	(56%-149%)
4cmx	8082A, PCB Liquids "As Received"	0.142 ug/L	0.213	67	(26%-108%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.133 ug/L	0.213	63	(30%-135%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	55.8 ug/L	50.0	112	(74%-123%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	51.3 ug/L	50.0	103	(77%-121%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	50.7 ug/L	50.0	101	(76%-127%)

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

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Certificate of Analysis

Report Date: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: TB1UG3-24
Sample ID: 662151015
Matrix: WATER
Collect Date: 08-APR-24 07:10
Receive Date: 09-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

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	0.00848	0.0189	ug/L	0.943	1	LOF	04/10/24	2128	2594815	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	04/11/24	1731	2595538	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	UY1	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	2.15	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	UY1	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	J	0.600	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: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: TB1UG3-24 Project: FRNP00507
Sample ID: 662151015 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	J	0.740	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	04/10/24	1324	2594814

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"	6.39 ug/L	6.73	95	(56%-149%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	54.6 ug/L	50.0	109	(74%-123%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	49.9 ug/L	50.0	100	(77%-121%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	50.6 ug/L	50.0	101	(76%-127%)

Notes:

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Certificate of Analysis

Report Date: July 24, 2024

Company :	Four Rivers Nuclear Partnership, LLC
Address :	5600 Hobbs Road
	Kevil, Kentucky 42053
Contact:	Ms. Jaime Morrow
Project:	C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	TB1UG3-24	Project:	FRNP00507
Sample ID:	662151015	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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Certificate of Analysis

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053
Report Date: July 24, 2024
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW357UG3-24
Sample ID: 662151001
Matrix: WG
Collect Date: 08-APR-24
Receive Date: 10-APR-24
Collector: Client
Project: FRNP00507
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
AN-1418 AlphaSpec Ra226, Liquid "As Received"														
Radium-226	U	0.303	+/-0.288	0.304	+/-0.289	5.00	pCi/L			CM4	05/04/24	0911	2604286	1
Th-01-RC M, Th Isotopes, Liquid "As Received"														
Thorium-230	U	0.675	+/-1.04	1.72	+/-1.05	50.0	pCi/L			CM4	05/02/24	1606	2604288	2
Thorium-232	U	-0.0148	+/-0.506	1.16	+/-0.506		pCi/L							
Rad Gas Flow Proportional Counting														
904.0Mod, Ra228, Liquid "As Received"														
Radium-228	U	0.147	+/-2.01	3.90	+/-2.01	4.99	pCi/L			KP1	04/16/24	0939	2594597	3
905.0Mod, Sr90, liquid "As Received"														
Strontium-90	U	0.666	+/-1.44	2.57	+/-1.44	8.00	pCi/L			JE1	04/29/24	1215	2594561	4
9310, Alpha/Beta Activity, liquid "As Received"														
Alpha	U	3.26	+/-3.73	5.95	+/-3.78	15.0	pCi/L			HH3	04/23/24	1449	2594594	5
Beta		18.8	+/-7.21	9.49	+/-7.87	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
906.0M, Tritium Dist, Liquid "As Received"														
Tritium	U	15.9	+/-125	222	+/-125	300	pCi/L			HB2	05/08/24	0411	2601917	6
Tc-02-RC-MOD, Tc99, Liquid "As Received"														
Technetium-99		32.3	+/-14.4	21.9	+/-14.8	25.0	pCi/L			GS3	05/07/24	1802	2602249	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"	2604286	100	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2604288	84.9	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2594597	83.6	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2594561	104	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2602249	98.1	(30%-110%)

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Kevil, Kentucky 42053

Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW357UG3-24
Sample ID: 662151001

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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Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW358UG3-24
Sample ID: 662151003
Matrix: WG
Collect Date: 08-APR-24
Receive Date: 10-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
AN-1418 AlphaSpec Ra226, Liquid "As Received"														
Radium-226		1.10	+/-1.08	0.939	+/-1.08	5.00	pCi/L			CM4	05/06/24	1110	2604286	1
Th-01-RC M, Th Isotopes, Liquid "As Received"														
Thorium-230	U	0.690	+/-1.03	1.59	+/-1.04	50.0	pCi/L			CM4	05/02/24	1606	2604288	2
Thorium-232	U	-0.226	+/-0.473	1.43	+/-0.474		pCi/L							
Rad Gas Flow Proportional Counting														
904.0Mod, Ra228, Liquid "As Received"														
Radium-228	U	1.38	+/-1.94	3.36	+/-1.98	4.99	pCi/L			KP1	04/16/24	0939	2594597	3
905.0Mod, Sr90, liquid "As Received"														
Strontium-90	UT	-0.0435	+/-0.876	1.78	+/-0.876	8.00	pCi/L			JE1	04/29/24	1215	2594561	4
9310, Alpha/Beta Activity, liquid "As Received"														
Alpha	U	1.51	+/-3.26	6.30	+/-3.27	15.0	pCi/L			HH3	04/23/24	1449	2594594	5
Beta		16.8	+/-7.01	9.54	+/-7.55	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
906.0M, Tritium Dist, Liquid "As Received"														
Tritium	U	76.5	+/-130	223	+/-130	300	pCi/L			HB2	05/08/24	0448	2601917	6
Tc-02-RC-MOD, Tc99, Liquid "As Received"														
Technetium-99		32.7	+/-14.2	21.6	+/-14.7	25.0	pCi/L			GS3	05/07/24	1813	2602249	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"	2604286	97.3	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2604288	71.3	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2594597	83.4	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2594561	114 *	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2602249	98	(30%-110%)

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Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW358UG3-24
Sample ID: 662151003

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: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW360UG3-24
Sample ID: 662151005
Matrix: WG
Collect Date: 08-APR-24
Receive Date: 09-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
AN-1418 AlphaSpec Ra226, Liquid "As Received"														
Radium-226	U	0.338	+/-0.330	0.408	+/-0.330	5.00	pCi/L			CM4	05/04/24	0911	2604286	1
Th-01-RC M, Th Isotopes, Liquid "As Received"														
Thorium-230	U	0.587	+/-0.956	1.57	+/-0.964	50.0	pCi/L			CM4	05/02/24	1606	2604288	2
Thorium-232	U	0.0288	+/-0.527	1.14	+/-0.528		pCi/L							
Rad Gas Flow Proportional Counting														
904.0Mod, Ra228, Liquid "As Received"														
Radium-228	U	0.00888	+/-2.30	4.53	+/-2.30	4.99	pCi/L			KP1	04/15/24	1041	2594266	3
905.0Mod, Sr90, liquid "As Received"														
Strontium-90	UT	-0.143	+/-0.894	1.82	+/-0.894	8.00	pCi/L			JE1	04/29/24	1215	2594561	4
9310, Alpha/Beta Activity, liquid "As Received"														
Alpha	U	2.08	+/-4.43	8.32	+/-4.44	15.0	pCi/L			HH3	04/23/24	1449	2594594	5
Beta	U	5.07	+/-5.46	9.07	+/-5.53	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
906.0M, Tritium Dist, Liquid "As Received"														
Tritium	U	7.58	+/-130	234	+/-130	300	pCi/L			HB2	05/08/24	0525	2601917	6
Tc-02-RC-MOD, Tc99, Liquid "As Received"														
Technetium-99	U	9.74	+/-13.1	22.3	+/-13.2	25.0	pCi/L			GS3	05/07/24	2120	2602105	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"	2604286	103	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2604288	79.8	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2594266	90.1	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2594561	118 *	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2602105	96.1	(30%-110%)

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Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW360UG3-24
Sample ID: 662151005

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: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW361DUG3-24
Sample ID: 662151007
Matrix: WG
Collect Date: 08-APR-24
Receive Date: 09-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
AN-1418 AlphaSpec Ra226, Liquid "As Received"														
Radium-226	U	0.139	+/-0.248	0.402	+/-0.248	5.00	pCi/L			CM4	05/04/24	0911	2604286	1
Th-01-RC M, Th Isotopes, Liquid "As Received"														
Thorium-230	U	0.467	+/-0.831	1.40	+/-0.837	50.0	pCi/L			CM4	05/02/24	1606	2604288	2
Thorium-232	U	0.0598	+/-0.452	0.911	+/-0.453		pCi/L							
Rad Gas Flow Proportional Counting														
904.0Mod, Ra228, Liquid "As Received"														
Radium-228	U	4.05	+/-2.99	4.59	+/-3.17	4.99	pCi/L			KP1	04/15/24	1041	2594266	3
905.0Mod, Sr90, liquid "As Received"														
Strontium-90	U	0.306	+/-1.39	2.66	+/-1.40	8.00	pCi/L			JE1	04/29/24	1216	2594561	4
9310, Alpha/Beta Activity, liquid "As Received"														
Alpha	U	1.13	+/-3.27	6.63	+/-3.28	15.0	pCi/L			HH3	04/23/24	1449	2594594	5
Beta		33.8	+/-8.46	9.30	+/-10.2	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
906.0M, Tritium Dist, Liquid "As Received"														
Tritium	U	-4.38	+/-131	237	+/-131	300	pCi/L			HB2	05/08/24	0556	2601917	6
Tc-02-RC-MOD, Tc99, Liquid "As Received"														
Technetium-99		41.1	+/-14.9	21.9	+/-15.6	25.0	pCi/L			GS3	05/07/24	2131	2602105	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"	2604286	106	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2604288	86	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2594266	74.3	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2594561	83.4	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2602105	97.5	(30%-110%)

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Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW361DUG3-24
Sample ID: 662151007

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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5600 Hobbs Road

Kevil, Kentucky 42053

Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW361UG3-24
Sample ID: 662151009
Matrix: WG
Collect Date: 08-APR-24
Receive Date: 09-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
AN-1418 AlphaSpec Ra226, Liquid "As Received"														
Radium-226	U	0.180	+/-0.271	0.421	+/-0.271	5.00	pCi/L			CM4	05/04/24	0911	2604286	1
Th-01-RC M, Th Isotopes, Liquid "As Received"														
Thorium-230	U	0.827	+/-1.02	1.54	+/-1.03	50.0	pCi/L			CM4	05/02/24	1606	2604288	2
Thorium-232	U	0.0662	+/-0.488	0.980	+/-0.489		pCi/L							
Rad Gas Flow Proportional Counting														
904.0Mod, Ra228, Liquid "As Received"														
Radium-228	U	1.81	+/-2.72	4.71	+/-2.76	4.99	pCi/L			KP1	04/15/24	1209	2594266	3
905.0Mod, Sr90, liquid "As Received"														
Strontium-90	U	0.145	+/-1.95	3.72	+/-1.95	8.00	pCi/L			JE1	04/29/24	1216	2594561	4
9310, Alpha/Beta Activity, liquid "As Received"														
Alpha	U	-0.713	+/-2.03	6.10	+/-2.04	15.0	pCi/L			HH3	04/23/24	1449	2594594	5
Beta		28.5	+/-7.97	9.22	+/-9.21	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
906.0M, Tritium Dist, Liquid "As Received"														
Tritium	U	22.0	+/-131	234	+/-131	300	pCi/L			HB2	05/08/24	0628	2601917	6
Tc-02-RC-MOD, Tc99, Liquid "As Received"														
Technetium-99		38.7	+/-14.4	21.3	+/-15.0	25.0	pCi/L			GS3	05/07/24	2143	2602105	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"	2604286	104	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2604288	91.1	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2594266	83.6	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2594561	69.5	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2602105	101	(30%-110%)

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Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW361UG3-24
Sample ID: 662151009

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
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MDC: Minimum Detectable Concentration
Mtd.: Method
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RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Kevil, Kentucky 42053

Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW362UG3-24
Sample ID: 662151011
Matrix: WG
Collect Date: 08-APR-24
Receive Date: 09-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
AN-1418 AlphaSpec Ra226, Liquid "As Received"														
Radium-226	U	0.332	+/-0.339	0.442	+/-0.340	5.00	pCi/L			CM4	05/04/24	0911	2604286	1
Th-01-RC M, Th Isotopes, Liquid "As Received"														
Thorium-230	U	0.705	+/-0.886	1.32	+/-0.895	50.0	pCi/L			CM4	05/02/24	1606	2604288	2
Thorium-232	U	0.256	+/-0.545	0.815	+/-0.547		pCi/L							
Rad Gas Flow Proportional Counting														
904.0Mod, Ra228, Liquid "As Received"														
Radium-228	U	1.19	+/-1.89	3.32	+/-1.91	4.99	pCi/L			KP1	04/15/24	1041	2594266	3
905.0Mod, Sr90, liquid "As Received"														
Strontium-90	U	-1.20	+/-2.06	4.04	+/-2.06	8.00	pCi/L			JE1	04/29/24	1216	2594561	4
9310, Alpha/Beta Activity, liquid "As Received"														
Alpha	U	5.68	+/-6.13	10.0	+/-6.21	15.0	pCi/L			HH3	04/23/24	1449	2594594	5
Beta	U	3.57	+/-5.19	8.89	+/-5.23	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
906.0M, Tritium Dist, Liquid "As Received"														
Tritium	U	91.1	+/-136	233	+/-137	300	pCi/L			HB2	05/08/24	0700	2601917	6
Tc-02-RC-MOD, Tc99, Liquid "As Received"														
Technetium-99	U	-0.309	+/-12.4	22.2	+/-12.4	25.0	pCi/L			GS3	05/07/24	2154	2602105	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"	2604286	99.6	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2604288	86.8	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2594266	93.4	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2594561	92.7	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2602105	97.8	(30%-110%)

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Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW362UG3-24
Sample ID: 662151011

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
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Certificate of Analysis

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
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Report Date: July 24, 2024

Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: FB1UG3-24
Sample ID: 662151013
Matrix: WATER
Collect Date: 08-APR-24
Receive Date: 10-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
AN-1418 AlphaSpec Ra226, Liquid "As Received"														
Radium-226	U	0.175	+/-0.642	1.07	+/-0.642	5.00	pCi/L			CM4	05/06/24	1110	2604286	1
Th-01-RC M, Th Isotopes, Liquid "As Received"														
Thorium-230	U	0.700	+/-1.02	1.66	+/-1.03	50.0	pCi/L			CM4	05/02/24	1606	2604288	2
Thorium-232	U	0.403	+/-0.674	0.977	+/-0.676		pCi/L							
Rad Gas Flow Proportional Counting														
904.0Mod, Ra228, Liquid "As Received"														
Radium-228	U	2.89	+/-2.60	4.18	+/-2.70	4.99	pCi/L			KP1	04/16/24	0939	2594597	3
905.0Mod, Sr90, liquid "As Received"														
Strontium-90	U	-0.872	+/-1.68	3.43	+/-1.68	8.00	pCi/L			JE1	04/29/24	1216	2594561	4
9310, Alpha/Beta Activity, liquid "As Received"														
Alpha	U	-0.602	+/-1.76	5.27	+/-1.76	15.0	pCi/L			HH3	04/23/24	1449	2594594	5
Beta	U	4.20	+/-5.30	8.99	+/-5.34	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
906.0M, Tritium Dist, Liquid "As Received"														
Tritium	U	79.5	+/-136	234	+/-137	300	pCi/L			HB2	05/08/24	0732	2601917	6
Tc-02-RC-MOD, Tc99, Liquid "As Received"														
Technetium-99	U	1.13	+/-12.6	22.4	+/-12.6	25.0	pCi/L			GS3	05/07/24	1825	2602249	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"	2604286	101	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2604288	75	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2594597	78.6	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2594561	83.4	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2602249	97.8	(30%-110%)

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Certificate of Analysis

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053

Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: FB1UG3-24
Sample ID: 662151013

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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Company : Four Rivers Nuclear Partnership, LLC
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Report Date: July 24, 2024

Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: RI1UG3-24
Sample ID: 662151014
Matrix: WATER
Collect Date: 08-APR-24
Receive Date: 10-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
AN-1418 AlphaSpec Ra226, Liquid "As Received"														
Radium-226	U	0.421	+/-0.378	0.480	+/-0.379	5.00	pCi/L			CM4	05/04/24	0911	2604286	1
Th-01-RC M, Th Isotopes, Liquid "As Received"														
Thorium-230	U	0.519	+/-0.815	1.28	+/-0.822	50.0	pCi/L			CM4	05/02/24	1606	2604288	2
Thorium-232	U	0.147	+/-0.473	0.704	+/-0.474		pCi/L							
Rad Gas Flow Proportional Counting														
904.0Mod, Ra228, Liquid "As Received"														
Radium-228	U	3.97	+/-3.19	4.98	+/-3.35	4.99	pCi/L			KP1	04/16/24	0939	2594597	3
905.0Mod, Sr90, liquid "As Received"														
Strontium-90	U	-0.0488	+/-1.51	2.93	+/-1.51	8.00	pCi/L			JE1	04/29/24	1216	2594561	4
9310, Alpha/Beta Activity, liquid "As Received"														
Alpha	U	-0.140	+/-2.65	6.45	+/-2.65	15.0	pCi/L			HH3	04/23/24	1449	2594594	5
Beta	U	1.30	+/-4.86	8.94	+/-4.86	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
906.0M, Tritium Dist, Liquid "As Received"														
Tritium	U	84.1	+/-136	234	+/-137	300	pCi/L			HB2	05/08/24	0803	2601917	6
Tc-02-RC-MOD, Tc99, Liquid "As Received"														
Technetium-99	U	1.19	+/-12.5	22.3	+/-12.5	25.0	pCi/L			GS3	05/07/24	1836	2602249	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"	2604286	96.5	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2604288	75.7	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2594597	70	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2594561	90.4	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2602249	97	(30%-110%)

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Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: RI1UG3-24
Sample ID: 662151014

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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ATTACHMENT C2

GEL LABORATORIES CERTIFICATE OF ANALYSIS

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Certificate of Analysis

Report Date: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW363UG3-24
Sample ID: 662355001
Matrix: WG
Collect Date: 09-APR-24 08:17
Receive Date: 10-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

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	0.00865	0.0192	ug/L	0.961	1	LOF	04/11/24	1618	2594818	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.841	0.330	2.00	mg/L		1	RM3	04/11/24	1600	2594894	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	04/11/24	1115	2594843	3
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	7.28	3.33	10.0	ug/L		1	RMJ	04/25/24	2334	2601759	4
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	04/11/24	1931	2595788	5
SW846 9056A Anions (5 elements) "As Received"												
Chloride	J	19.3	0.335	250	mg/L		5	CH6	04/10/24	1941	2594724	6
Sulfate		26.3	0.665	2.00	mg/L		5					
Bromide	UW	0.200	0.0670	0.200	mg/L		1	CH6	04/10/24	1128	2594724	7
Fluoride	J	0.309	0.0330	4.00	mg/L		1					
Nitrate-N	J	2.31	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	04/12/24	1048	2595026	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	05/01/24	2156	2595228	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		0.106	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron		0.0190	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		20.4	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
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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW363UG3-24 Project: FRNP00507
Sample ID: 662355001 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	0.000715	0.000300	0.00100	mg/L	1.00	1					
Copper	J	0.000929	0.000300	0.00200	mg/L	1.00	1					
Iron	J	0.0408	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		7.86	0.0100	0.0300	mg/L	1.00	1					
Manganese		0.127	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	U	0.00100	0.000200	0.00100	mg/L	1.00	1					
Nickel		0.0335	0.000600	0.00200	mg/L	1.00	1					
Potassium		1.87	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		34.9	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	0.00422	0.00330	0.0200	mg/L	1.00	1					
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	05/02/24	0157	2595228	10
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	PRB	05/02/24	1253	2595228	11
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.100	0.0333	0.100	ug/L	0.00100	1	NS2	04/29/24	2119	2603248	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					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		201	2.38	10.0	mg/L			KLP1	04/16/24	1352	2597771	13
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

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Address : 5600 Hobbs Road

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW363UG3-24 Project: FRNP00507
Sample ID: 662355001 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	9.44	8.95	20.0	mg/L		1	JW2	04/10/24	1523	2594811	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	04/11/24	1757	2595538	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	UY1	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	1.81	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	UY1	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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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW363UG3-24 Project: FRNP00507
Sample ID: 662355001 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	J	0.640	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	LW1	04/29/24	0525	2603247
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	04/11/24	1200	2595024
SW846 3005A	ICP-MS 3005A PREP	BB2	04/12/24	1545	2595227
SW846 8011 PREP	8011 Prep	LOF	04/11/24	1338	2594817
SW846 9010C Distillation	SW846 9010C Prep	ES2	04/11/24	1025	2594841

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Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW363UG3-24 Project: FRNP00507
Sample ID: 662355001 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

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"	6.51 ug/L	6.87	95	(56%-149%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.114 ug/L	0.200	57	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.121 ug/L	0.200	61	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	55.0 ug/L	50.0	110	(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"	50.6 ug/L	50.0	101	(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

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Address : 5600 Hobbs Road

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	MW363UG3-24	Project:	FRNP00507
Sample ID:	662355002	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	09-APR-24 08:17		
Receive Date:	10-APR-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	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	BAJ	05/03/24	1204	2595475	1
Barium		0.112	0.000670	0.00400	mg/L	1.00	1	BAJ	05/02/24	2057	2595475	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	JD2	04/11/24	1034	2594924
SW846 3005A	ICP-MS 3005A PREP	SD	04/15/24	0800	2595474

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
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

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Certificate of Analysis

Report Date: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW364UG3-24
Sample ID: 662355003
Matrix: WG
Collect Date: 09-APR-24 09:20
Receive Date: 10-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

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	0.00862	0.0192	ug/L	0.958	1	LOF	04/11/24	1732	2594818	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.526	0.330	2.00	mg/L		1	RM3	04/11/24	1752	2594894	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	04/11/24	1118	2594843	3
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	4.38	3.33	10.0	ug/L		1	RMJ	04/26/24	0105	2601759	4
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	04/11/24	2010	2595788	5
SW846 9056A Anions (5 elements) "As Received"												
Bromide	W	0.450	0.0670	0.200	mg/L		1	CH6	04/10/24	1158	2594724	6
Fluoride	J	0.182	0.0330	4.00	mg/L		1					
Nitrate-N	J	1.08	0.0330	10.0	mg/L		1					
Chloride	J	39.2	0.335	250	mg/L		5	CH6	04/10/24	2215	2594724	7
Sulfate		68.4	0.665	2.00	mg/L		5					
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	04/12/24	1056	2595026	8
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	PRB	05/02/24	1306	2595228	9
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	05/02/24	0210	2595228	10
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	05/01/24	2222	2595228	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		0.0527	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron		0.151	0.00520	0.0150	mg/L	1.00	1					

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Address : 5600 Hobbs Road

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW364UG3-24 Project: FRNP00507
Sample ID: 662355003 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"												
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		31.3	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	0.000946	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		14.0	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		1.95	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		39.3	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	0.0174	0.00330	0.0200	mg/L	1.00	1					
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.106	0.0354	0.106	ug/L	0.00106	1	NS2	04/29/24	2220	2603248	12
Aroclor-1221	U	0.106	0.0354	0.106	ug/L	0.00106	1					
Aroclor-1232	U	0.106	0.0354	0.106	ug/L	0.00106	1					
Aroclor-1242	U	0.106	0.0354	0.106	ug/L	0.00106	1					
Aroclor-1248	U	0.106	0.0354	0.106	ug/L	0.00106	1					
Aroclor-1254	U	0.106	0.0354	0.106	ug/L	0.00106	1					
Aroclor-1260	U	0.106	0.0354	0.106	ug/L	0.00106	1					
Aroclor-1268	U	0.106	0.0354	0.106	ug/L	0.00106	1					
Aroclor-Total	U	0.106	0.0354	0.106	ug/L	0.00106	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		274	2.38	10.0	mg/L			KLP1	04/16/24	1352	2597771	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(UG24-03)

Client Sample ID: MW364UG3-24 Project: FRNP00507
Sample ID: 662355003 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	JW2	04/10/24	1523	2594811	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	04/11/24	1823	2595538	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	UY1	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	1.89	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	UY1	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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Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW364UG3-24 Project: FRNP00507
Sample ID: 662355003 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	J	0.660	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	J	0.650	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	LW1	04/29/24	0525	2603247
SW846 8011 PREP	8011 Prep	LOF	04/11/24	1338	2594817
SW846 9010C Distillation	SW846 9010C Prep	ES2	04/11/24	1025	2594841
SW846 3005A	ICP-MS 3005A PREP	BB2	04/12/24	1545	2595227
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	04/11/24	1200	2595024

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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW364UG3-24 Project: FRNP00507
Sample ID: 662355003 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

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"	6.46 ug/L	6.84	94	(56%-149%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.148 ug/L	0.212	70	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.141 ug/L	0.212	66	(26%-108%)
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"	50.1 ug/L	50.0	100	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	51.1 ug/L	50.0	102	(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

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Company :	Four Rivers Nuclear Partnership, LLC
Address :	5600 Hobbs Road
	Kevil, Kentucky 42053
Contact:	Ms. Jaime Morrow
Project:	C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	MW364UG3-24	Project:	FRNP00507
Sample ID:	662355004	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	09-APR-24 09:20		
Receive Date:	10-APR-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		0.0568	0.000670	0.00400	mg/L	1.00	1	BAJ	05/02/24	2117	2595475	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	BAJ	05/03/24	1211	2595475	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	SD	04/15/24	0800	2595474
EPA 160	Laboratory Filtration	JD2	04/11/24	1034	2594924

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW365UG3-24
Sample ID: 662355005
Matrix: WG
Collect Date: 09-APR-24 10:01
Receive Date: 10-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

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	0.964	1	LOF	04/11/24	1757	2594818	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	1.13	0.330	2.00	mg/L		1	RM3	04/11/24	1830	2594894	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	04/11/24	1119	2594843	3
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens		16.7	3.33	10.0	ug/L		1	RMJ	04/26/24	0135	2601759	4
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	04/22/24	1651	2600800	5
SW846 9056A Anions (5 elements) "As Received"												
Bromide	UW	0.200	0.0670	0.200	mg/L		1	CH6	04/10/24	1229	2594724	6
Chloride	J	1.97	0.0670	250	mg/L		1					
Fluoride	J	0.406	0.0330	4.00	mg/L		1					
Nitrate-N	J	1.11	0.0330	10.0	mg/L		1					
Sulfate		53.5	0.665	2.00	mg/L		5	CH6	04/10/24	2246	2594724	7
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	04/12/24	1058	2595026	8
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	PRB	05/02/24	1307	2595228	9
Aluminum	J	0.0452	0.0193	0.0500	mg/L	1.00	1	PRB	05/01/24	2225	2595228	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		0.0851	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron	J	0.00685	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		16.3	0.0800	0.200	mg/L	1.00	1					

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Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW365UG3-24 Project: FRNP00507
Sample ID: 662355005 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"												
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Cobalt		0.00126	0.000300	0.00100	mg/L	1.00	1					
Copper		0.00287	0.000300	0.00200	mg/L	1.00	1					
Iron	J	0.0459	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		7.58	0.0100	0.0300	mg/L	1.00	1					
Manganese		0.0159	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	U	0.00100	0.000200	0.00100	mg/L	1.00	1					
Nickel		0.00518	0.000600	0.00200	mg/L	1.00	1					
Potassium	J	0.212	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		41.3	0.0800	0.250	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Vanadium	J	0.00342	0.00330	0.0200	mg/L	1.00	1					
Zinc	J	0.00549	0.00330	0.0200	mg/L	1.00	1					
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	05/02/24	0212	2595228	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	0.105	0.0349	0.105	ug/L	0.00105	1	NS2	04/29/24	2232	2603248	12
Aroclor-1221	U	0.105	0.0349	0.105	ug/L	0.00105	1					
Aroclor-1232	U	0.105	0.0349	0.105	ug/L	0.00105	1					
Aroclor-1242	U	0.105	0.0349	0.105	ug/L	0.00105	1					
Aroclor-1248	U	0.105	0.0349	0.105	ug/L	0.00105	1					
Aroclor-1254	U	0.105	0.0349	0.105	ug/L	0.00105	1					
Aroclor-1260	U	0.105	0.0349	0.105	ug/L	0.00105	1					
Aroclor-1268	U	0.105	0.0349	0.105	ug/L	0.00105	1					
Aroclor-Total	U	0.105	0.0349	0.105	ug/L	0.00105	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		219	2.38	10.0	mg/L			KLP1	04/16/24	1352	2597771	13
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

GEL LABORATORIES LLC
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Certificate of Analysis

Report Date: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW365UG3-24 Project: FRNP00507
Sample ID: 662355005 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	JW2	04/10/24	1523	2594811	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	04/11/24	1850	2595538	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	UY1	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	UY1	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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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW365UG3-24 Project: FRNP00507
Sample ID: 662355005 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	J	0.670	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	LW1	04/29/24	0525	2603247
SW846 9010C Distillation	SW846 9010C Prep	ES2	04/11/24	1025	2594841
SW846 3005A	ICP-MS 3005A PREP	BB2	04/12/24	1545	2595227
SW846 8011 PREP	8011 Prep	LOF	04/11/24	1338	2594817
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	04/11/24	1200	2595024

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	Kevil, Kentucky 42053
Contact:	Ms. Jaime Morrow
Project:	C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	MW365UG3-24	Project:	FRNP00507
Sample ID:	662355005	Client ID:	FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

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"	6.47 ug/L	6.89	94	(56%-149%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.111 ug/L	0.210	53	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.125 ug/L	0.210	60	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	53.3 ug/L	50.0	107	(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"	49.4 ug/L	50.0	99	(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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Company :	Four Rivers Nuclear Partnership, LLC
Address :	5600 Hobbs Road
	Kevil, Kentucky 42053
Contact:	Ms. Jaime Morrow
Project:	C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	MW365UG3-24	Project:	FRNP00507
Sample ID:	662355006	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	09-APR-24 10:01		
Receive Date:	10-APR-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		0.0887	0.000670	0.00400	mg/L	1.00	1	BAJ	05/02/24	2120	2595475	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	BAJ	05/03/24	1212	2595475	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	SD	04/15/24	0800	2595474
EPA 160	Laboratory Filtration	JD2	04/11/24	1034	2594924

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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Report Date: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW366UG3-24
Sample ID: 662355007
Matrix: WG
Collect Date: 09-APR-24 10:50
Receive Date: 10-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

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	0.00867	0.0193	ug/L	0.963	1	LOF	04/11/24	1821	2594818	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.600	0.330	2.00	mg/L		1	RM3	04/11/24	1907	2594894	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	04/11/24	1120	2594843	3
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	U	10.0	3.33	10.0	ug/L		1	RMJ	04/26/24	0240	2601759	4
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	04/22/24	1704	2600800	5
SW846 9056A Anions (5 elements) "As Received"												
Chloride	J	43.9	0.335	250	mg/L		5	CH6	04/10/24	2317	2594724	6
Sulfate		49.1	0.665	2.00	mg/L		5					
Bromide	W	0.507	0.0670	0.200	mg/L		1	CH6	04/10/24	1300	2594724	7
Fluoride	J	0.209	0.0330	4.00	mg/L		1					
Nitrate-N	J	0.895	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	04/12/24	1103	2595026	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	05/02/24	0214	2595228	9
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	05/01/24	2229	2595228	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		0.0998	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron		0.0688	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					

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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW366UG3-24 Project: FRNP00507
Sample ID: 662355007 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"												
Calcium		31.0	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	0.000528	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		13.5	0.0100	0.0300	mg/L	1.00	1					
Manganese	J	0.00321	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		1.91	0.0800	0.300	mg/L	1.00	1					
Selenium	J	0.00227	0.00150	0.00500	mg/L	1.00	1					
Silver	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Sodium		43.1	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	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	PRB	05/02/24	1309	2595228	11
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.107	0.0358	0.107	ug/L	0.00107	1	NS2	04/29/24	2245	2603248	12
Aroclor-1221	U	0.107	0.0358	0.107	ug/L	0.00107	1					
Aroclor-1232	U	0.107	0.0358	0.107	ug/L	0.00107	1					
Aroclor-1242	U	0.107	0.0358	0.107	ug/L	0.00107	1					
Aroclor-1248	U	0.107	0.0358	0.107	ug/L	0.00107	1					
Aroclor-1254	U	0.107	0.0358	0.107	ug/L	0.00107	1					
Aroclor-1260	U	0.107	0.0358	0.107	ug/L	0.00107	1					
Aroclor-1268	U	0.107	0.0358	0.107	ug/L	0.00107	1					
Aroclor-Total	U	0.107	0.0358	0.107	ug/L	0.00107	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		273	2.38	10.0	mg/L			KLP1	04/16/24	1352	2597771	13
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

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Client Sample ID: MW366UG3-24 Project: FRNP00507
Sample ID: 662355007 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	JW2	04/10/24	1523	2594811	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	04/11/24	1916	2595538	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	UY1	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	UY1	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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Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW366UG3-24 Project: FRNP00507
Sample ID: 662355007 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	J	0.620	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	J	0.870	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	LW1	04/29/24	0525	2603247
SW846 9010C Distillation	SW846 9010C Prep	ES2	04/11/24	1025	2594841
SW846 3005A	ICP-MS 3005A PREP	BB2	04/12/24	1545	2595227
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	04/11/24	1200	2595024
SW846 8011 PREP	8011 Prep	LOF	04/11/24	1338	2594817

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Certificate of Analysis

Report Date: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW366UG3-24 Project: FRNP00507
Sample ID: 662355007 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

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"	6.50 ug/L	6.88	95	(56%-149%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.111 ug/L	0.215	52	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.101 ug/L	0.215	47	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	53.4 ug/L	50.0	107	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	50.7 ug/L	50.0	101	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	49.4 ug/L	50.0	99	(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

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	MW366UG3-24	Project:	FRNP00507
Sample ID:	662355008	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	09-APR-24 10:50		
Receive Date:	10-APR-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		0.106	0.000670	0.00400	mg/L	1.00	1	BAJ	05/02/24	2123	2595475	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	BAJ	05/03/24	1213	2595475	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	SD	04/15/24	0800	2595474
EPA 160	Laboratory Filtration	JD2	04/11/24	1034	2594924

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
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

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Report Date: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW367UG3-24
Sample ID: 662355009
Matrix: WG
Collect Date: 09-APR-24 12:22
Receive Date: 10-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

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	LOF	04/11/24	1846	2594818	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.357	0.330	2.00	mg/L		1	RM3	04/11/24	1944	2594894	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	04/11/24	1127	2594843	3
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	U	10.0	3.33	10.0	ug/L		1	RMJ	04/26/24	0313	2601759	4
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	04/22/24	1716	2600800	5
SW846 9056A Anions (5 elements) "As Received"												
Bromide	UW	0.200	0.0670	0.200	mg/L		1	CH6	04/10/24	1331	2594724	6
Chloride	J	7.78	0.0670	250	mg/L		1					
Fluoride	J	0.131	0.0330	4.00	mg/L		1					
Nitrate-N	J	0.224	0.0330	10.0	mg/L		1					
Sulfate		20.4	0.266	0.800	mg/L		2	CH6	04/10/24	2348	2594724	7
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	04/12/24	1104	2595026	8
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Manganese		1.31	0.0100	0.0500	mg/L	1.00	10	PRB	05/02/24	0807	2595228	9
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	PRB	05/02/24	1311	2595228	10
Aluminum	U	0.0500	0.0193	0.0500	mg/L	1.00	1	PRB	05/01/24	2232	2595228	11
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	J	0.00273	0.00200	0.00500	mg/L	1.00	1					
Barium		0.127	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron	J	0.0147	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					

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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW367UG3-24 Project: FRNP00507
Sample ID: 662355009 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"												
Calcium		12.7	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Cobalt		0.00623	0.000300	0.00100	mg/L	1.00	1					
Copper	J	0.000558	0.000300	0.00200	mg/L	1.00	1					
Iron		5.98	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		6.66	0.0100	0.0300	mg/L	1.00	1					
Molybdenum	U	0.00100	0.000200	0.00100	mg/L	1.00	1					
Nickel		0.00237	0.000600	0.00200	mg/L	1.00	1					
Potassium		2.71	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		14.6	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	0.0109	0.00330	0.0200	mg/L	1.00	1					
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	05/02/24	0216	2595228	12
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.104	0.0348	0.104	ug/L	0.00104	1	NS2	04/29/24	2257	2603248	13
Aroclor-1221	U	0.104	0.0348	0.104	ug/L	0.00104	1					
Aroclor-1232	U	0.104	0.0348	0.104	ug/L	0.00104	1					
Aroclor-1242	U	0.104	0.0348	0.104	ug/L	0.00104	1					
Aroclor-1248	U	0.104	0.0348	0.104	ug/L	0.00104	1					
Aroclor-1254	U	0.104	0.0348	0.104	ug/L	0.00104	1					
Aroclor-1260	U	0.104	0.0348	0.104	ug/L	0.00104	1					
Aroclor-1268	U	0.104	0.0348	0.104	ug/L	0.00104	1					
Aroclor-Total	U	0.104	0.0348	0.104	ug/L	0.00104	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		112	2.38	10.0	mg/L			KLP1	04/16/24	1352	2597771	14
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

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Address : 5600 Hobbs Road

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW367UG3-24 Project: FRNP00507
Sample ID: 662355009 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	JW2	04/10/24	1523	2594811	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	04/11/24	1942	2595538	16
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	UY1	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	UY1	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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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW367UG3-24 Project: FRNP00507
Sample ID: 662355009 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	J	0.760	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 9010C Distillation	SW846 9010C Prep	ES2	04/11/24	1025	2594841
SW846 3005A	ICP-MS 3005A PREP	BB2	04/12/24	1545	2595227
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	04/11/24	1200	2595024
SW846 3535A	SW3535A PCB SPE Extraction	LW1	04/29/24	0525	2603247
SW846 8011 PREP	8011 Prep	LOF	04/11/24	1338	2594817

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Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW367UG3-24 Project: FRNP00507
Sample ID: 662355009 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

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"	7.01 ug/L	6.89	102	(56%-149%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.112 ug/L	0.209	54	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.103 ug/L	0.209	49	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	54.0 ug/L	50.0	108	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	50.9 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:

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

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Company :	Four Rivers Nuclear Partnership, LLC
Address :	5600 Hobbs Road
	Kevil, Kentucky 42053
Contact:	Ms. Jaime Morrow
Project:	C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	MW367UG3-24	Project:	FRNP00507
Sample ID:	662355010	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	09-APR-24 12:22		
Receive Date:	10-APR-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		0.133	0.000670	0.00400	mg/L	1.00	1	BAJ	05/02/24	2126	2595475	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	BAJ	05/03/24	1214	2595475	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	SD	04/15/24	0800	2595474
EPA 160	Laboratory Filtration	JD2	04/11/24	1034	2594924

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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Company :	Four Rivers Nuclear Partnership, LLC
Address :	5600 Hobbs Road
	Kevil, Kentucky 42053
Contact:	Ms. Jaime Morrow
Project:	C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	MW368UG3-24	Project:	FRNP00507
Sample ID:	662355011	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	09-APR-24 13:00		
Receive Date:	10-APR-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	0.00845	0.0188	ug/L	0.939	1	LOF	04/11/24	1910	2594818	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	1.17	0.330	2.00	mg/L		1	RM3	04/11/24	2022	2594894	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	04/11/24	1128	2594843	3
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	4.34	3.33	10.0	ug/L		1	RMJ	04/27/24	0041	2603958	4
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	04/22/24	1729	2600800	5
SW846 9056A Anions (5 elements) "As Received"												
Sulfate		169	2.66	8.00	mg/L		20	CH6	04/11/24	0019	2594724	6
Bromide	UW	0.200	0.0670	0.200	mg/L		1	CH6	04/10/24	1402	2594724	7
Chloride	J	4.39	0.0670	250	mg/L		1					
Fluoride	J	0.307	0.0330	4.00	mg/L		1					
Nitrate-N	J	0.271	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	04/12/24	1106	2595026	8
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Aluminum		0.427	0.0193	0.0500	mg/L	1.00	1	PRB	05/01/24	2236	2595228	9
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	J	0.00252	0.00200	0.00500	mg/L	1.00	1					
Barium		0.0646	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					
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: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW368UG3-24 Project: FRNP00507
Sample ID: 662355011 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"												
Copper	J	0.000680	0.000300	0.00200	mg/L	1.00	1					
Iron		0.193	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		17.8	0.0100	0.0300	mg/L	1.00	1					
Manganese		0.00744	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	J	0.000803	0.000200	0.00100	mg/L	1.00	1					
Nickel	J	0.00120	0.000600	0.00200	mg/L	1.00	1					
Potassium		0.706	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	J	0.00672	0.00330	0.0200	mg/L	1.00	1					
Zinc	J	0.00427	0.00330	0.0200	mg/L	1.00	1					
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	05/02/24	0217	2595228	10
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					
Calcium		67.0	0.800	2.00	mg/L	1.00	10	PRB	05/02/24	0811	2595228	11
Sodium		82.2	0.800	2.50	mg/L	1.00	10					
Uranium		0.000256	0.0000670	0.000200	mg/L	1.00	1	PRB	05/02/24	1313	2595228	12
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.0988	0.0329	0.0988	ug/L	0.000988	1	NS2	04/29/24	2309	2603248	13
Aroclor-1221	U	0.0988	0.0329	0.0988	ug/L	0.000988	1					
Aroclor-1232	U	0.0988	0.0329	0.0988	ug/L	0.000988	1					
Aroclor-1242	U	0.0988	0.0329	0.0988	ug/L	0.000988	1					
Aroclor-1248	U	0.0988	0.0329	0.0988	ug/L	0.000988	1					
Aroclor-1254	U	0.0988	0.0329	0.0988	ug/L	0.000988	1					
Aroclor-1260	U	0.0988	0.0329	0.0988	ug/L	0.000988	1					
Aroclor-1268	U	0.0988	0.0329	0.0988	ug/L	0.000988	1					
Aroclor-Total	U	0.0988	0.0329	0.0988	ug/L	0.000988	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		526	2.38	10.0	mg/L			KLP1	04/16/24	1352	2597771	14
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

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Address : 5600 Hobbs Road

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW368UG3-24 Project: FRNP00507
Sample ID: 662355011 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	JW2	04/10/24	1523	2594811	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	04/11/24	2008	2595538	16
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	UY1	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	UY1	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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Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW368UG3-24 Project: FRNP00507
Sample ID: 662355011 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	J	0.710	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	04/11/24	1338	2594817
SW846 3005A	ICP-MS 3005A PREP	BB2	04/12/24	1545	2595227
SW846 9010C Distillation	SW846 9010C Prep	ES2	04/11/24	1025	2594841
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	04/11/24	1200	2595024
SW846 3535A	SW3535A PCB SPE Extraction	LW1	04/29/24	0525	2603247

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Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW368UG3-24 Project: FRNP00507
Sample ID: 662355011 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

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"	6.59 ug/L	6.70	98	(56%-149%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.0667 ug/L	0.198	34	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.125 ug/L	0.198	63	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	53.2 ug/L	50.0	106	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	50.6 ug/L	50.0	101	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	49.9 ug/L	50.0	100	(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

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Report Date: July 24, 2024

Company :	Four Rivers Nuclear Partnership, LLC
Address :	5600 Hobbs Road
	Kevil, Kentucky 42053
Contact:	Ms. Jaime Morrow
Project:	C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	MW368UG3-24	Project:	FRNP00507
Sample ID:	662355012	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	09-APR-24 13:00		
Receive Date:	10-APR-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		0.0674	0.000670	0.00400	mg/L	1.00	1	BAJ	05/02/24	2129	2595475	1
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Uranium		0.000397	0.0000670	0.000200	mg/L	1.00	1	BAJ	05/03/24	1215	2595475	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 160	Laboratory Filtration	JD2	04/11/24	1034	2594924
SW846 3005A	ICP-MS 3005A PREP	SD	04/15/24	0800	2595474

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: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: TB2UG3-24
Sample ID: 662355013
Matrix: WATER
Collect Date: 09-APR-24 07:30
Receive Date: 10-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

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	0.00846	0.0188	ug/L	0.940	1	LOF	04/11/24	1935	2594818	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	04/11/24	2034	2595538	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	UY1	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	2.88	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	UY1	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	J	0.490	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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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: TB2UG3-24 Project: FRNP00507
Sample ID: 662355013 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	J	0.750	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	04/11/24	1338	2594817

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"	5.61 ug/L	6.71	84	(56%-149%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	54.2 ug/L	50.0	108	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	50.1 ug/L	50.0	100	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	50.4 ug/L	50.0	101	(77%-121%)

Notes:

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Contact:	Ms. Jaime Morrow
Project:	C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	TB2UG3-24	Project:	FRNP00507
Sample ID:	662355013	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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Certificate of Analysis

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053
Report Date: July 24, 2024
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW363UG3-24
Sample ID: 662355001
Matrix: WG
Collect Date: 09-APR-24
Receive Date: 10-APR-24
Collector: Client
Project: FRNP00507
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
AN-1418 AlphaSpec Ra226, Liquid "As Received"														
Radium-226	U	-0.0698	+/-0.461	1.13	+/-0.461	5.00	pCi/L			CM4	05/06/24	1110	2604286	1
Th-01-RC M, Th Isotopes, Liquid "As Received"														
Thorium-230	U	1.25	+/-1.12	1.40	+/-1.14	50.0	pCi/L			CM4	05/02/24	1606	2604288	2
Thorium-232	U	0.294	+/-0.621	0.921	+/-0.623		pCi/L							
Rad Gas Flow Proportional Counting														
904.0Mod, Ra228, Liquid "As Received"														
Radium-228	U	-1.57	+/-2.34	4.74	+/-2.34	4.99	pCi/L			KP1	04/15/24	0938	2595254	3
905.0Mod, Sr90, liquid "As Received"														
Strontium-90	U	0.534	+/-1.75	3.28	+/-1.75	8.00	pCi/L			JE1	04/23/24	1324	2595258	4
9310, Alpha/Beta Activity, liquid "As Received"														
Alpha	U	2.75	+/-5.25	9.74	+/-5.27	15.0	pCi/L			HH3	04/24/24	1704	2595278	5
Beta	U	6.64	+/-8.25	13.9	+/-8.33	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
906.0M, Tritium Dist, Liquid "As Received"														
Tritium	U	13.3	+/-130	232	+/-130	300	pCi/L			HB2	05/08/24	1229	2601924	6
Tc-02-RC-MOD, Tc99, Liquid "As Received"														
Technetium-99	U	6.20	+/-12.9	22.4	+/-13.0	25.0	pCi/L			GS3	05/07/24	1848	2602249	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"	2604286	103	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2604288	69.9	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2595254	89.2	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2595258	89.1	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2602249	95.7	(30%-110%)

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Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW363UG3-24
Sample ID: 662355001

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: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW364UG3-24
Sample ID: 662355003
Matrix: WG
Collect Date: 09-APR-24
Receive Date: 10-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
AN-1418 AlphaSpec Ra226, Liquid "As Received"														
Radium-226	U	0.307	+/-0.319	0.441	+/-0.320	5.00	pCi/L			CM4	05/04/24	0911	2604286	1
Th-01-RC M, Th Isotopes, Liquid "As Received"														
Thorium-230	U	1.26	+/-1.12	1.48	+/-1.13	50.0	pCi/L			CM4	05/02/24	1606	2604288	2
Thorium-232	U	-0.0217	+/-0.326	0.679	+/-0.326		pCi/L							
Rad Gas Flow Proportional Counting														
904.0Mod, Ra228, Liquid "As Received"														
Radium-228	U	1.56	+/-2.68	4.67	+/-2.71	4.99	pCi/L			KP1	04/15/24	1133	2595254	3
905.0Mod, Sr90, liquid "As Received"														
Strontium-90	U	2.30	+/-2.68	4.51	+/-2.70	8.00	pCi/L			JE1	04/23/24	1324	2595258	4
9310, Alpha/Beta Activity, liquid "As Received"														
Alpha	U	4.01	+/-4.56	7.26	+/-4.60	15.0	pCi/L			HH3	04/24/24	1704	2595278	5
Beta		17.7	+/-6.47	7.87	+/-7.09	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
906.0M, Tritium Dist, Liquid "As Received"														
Tritium	U	37.8	+/-132	232	+/-132	300	pCi/L			HB2	05/08/24	1306	2601924	6
Tc-02-RC-MOD, Tc99, Liquid "As Received"														
Technetium-99		44.2	+/-14.9	21.7	+/-15.7	25.0	pCi/L			GS3	05/07/24	1900	2602249	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"	2604286	104	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2604288	87.9	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2595254	83	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2595258	89.1	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2602249	98.4	(30%-110%)

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Report Date: July 24, 2024

Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW364UG3-24
Sample ID: 662355003

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: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW365UG3-24
Sample ID: 662355005
Matrix: WG
Collect Date: 09-APR-24
Receive Date: 10-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
AN-1418 AlphaSpec Ra226, Liquid "As Received"														
Radium-226	U	0.338	+/-0.316	0.369	+/-0.317	5.00	pCi/L			CM4	05/04/24	0911	2604286	1
Th-01-RC M, Th Isotopes, Liquid "As Received"														
Thorium-230	U	0.759	+/-1.03	1.56	+/-1.04	50.0	pCi/L			CM4	05/02/24	1606	2604288	2
Thorium-232	U	-0.163	+/-0.426	1.23	+/-0.427		pCi/L							
Rad Gas Flow Proportional Counting														
904.0Mod, Ra228, Liquid "As Received"														
Radium-228	U	2.50	+/-2.62	4.36	+/-2.70	4.99	pCi/L			KP1	04/15/24	0938	2595254	3
905.0Mod, Sr90, liquid "As Received"														
Strontium-90	U	-0.669	+/-3.17	5.99	+/-3.17	8.00	pCi/L			JE1	04/23/24	1556	2595258	4
9310, Alpha/Beta Activity, liquid "As Received"														
Alpha	U	0.224	+/-3.48	8.18	+/-3.48	15.0	pCi/L			HH3	04/24/24	1704	2595278	5
Beta		13.5	+/-5.80	7.24	+/-6.21	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
906.0M, Tritium Dist, Liquid "As Received"														
Tritium	U	62.1	+/-133	231	+/-134	300	pCi/L			HB2	05/08/24	1343	2601924	6
Tc-02-RC-MOD, Tc99, Liquid "As Received"														
Technetium-99	U	1.18	+/-12.1	21.5	+/-12.1	25.0	pCi/L			GS3	05/07/24	1911	2602249	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"	2604286	107	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2604288	69.6	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2595254	89.2	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2595258	87	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2602249	98	(30%-110%)

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Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW365UG3-24
Sample ID: 662355005

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: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW366UG3-24
Sample ID: 662355007
Matrix: WG
Collect Date: 09-APR-24
Receive Date: 10-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
AN-1418 AlphaSpec Ra226, Liquid "As Received"														
Radium-226	U	0.374	+/-0.343	0.422	+/-0.344	5.00	pCi/L			CM4	05/04/24	0911	2604286	1
Th-01-RC M, Th Isotopes, Liquid "As Received"														
Thorium-230	U	1.52	+/-1.32	1.78	+/-1.34	50.0	pCi/L			CM4	05/02/24	1606	2604288	2
Thorium-232	U	0.117	+/-0.521	0.936	+/-0.522		pCi/L							
Rad Gas Flow Proportional Counting														
904.0Mod, Ra228, Liquid "As Received"														
Radium-228	U	1.58	+/-2.51	4.37	+/-2.55	4.99	pCi/L			KP1	04/15/24	0938	2595254	3
905.0Mod, Sr90, liquid "As Received"														
Strontium-90	U	-0.626	+/-2.73	5.28	+/-2.73	8.00	pCi/L			JE1	04/23/24	1324	2595258	4
9310, Alpha/Beta Activity, liquid "As Received"														
Alpha	U	2.96	+/-4.52	8.03	+/-4.54	15.0	pCi/L			HH3	04/24/24	1704	2595278	5
Beta		30.3	+/-7.85	7.81	+/-9.28	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
906.0M, Tritium Dist, Liquid "As Received"														
Tritium	U	-96.9	+/-122	231	+/-122	300	pCi/L			HB2	05/08/24	1420	2601924	6
Tc-02-RC-MOD, Tc99, Liquid "As Received"														
Technetium-99		55.0	+/-15.7	21.9	+/-16.8	25.0	pCi/L			GS3	05/07/24	1923	2602249	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"	2604286	107	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2604288	73.6	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2595254	85.5	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2595258	84.8	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2602249	98	(30%-110%)

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Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW366UG3-24
Sample ID: 662355007

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: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW367UG3-24
Sample ID: 662355009
Matrix: WG
Collect Date: 09-APR-24
Receive Date: 10-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
AN-1418 AlphaSpec Ra226, Liquid "As Received"														
Radium-226	U	0.582	+/-0.867	1.11	+/-0.868	5.00	pCi/L			CM4	05/06/24	1110	2604286	1
Th-01-RC M, Th Isotopes, Liquid "As Received"														
Thorium-230	U	0.233	+/-0.776	1.48	+/-0.779	50.0	pCi/L			CM4	05/02/24	1635	2604288	2
Thorium-232	U	-0.171	+/-0.347	1.06	+/-0.347		pCi/L							
Rad Gas Flow Proportional Counting														
904.0Mod, Ra228, Liquid "As Received"														
Radium-228	U	3.08	+/-2.15	3.26	+/-2.29	4.99	pCi/L			KP1	04/15/24	0939	2595254	3
905.0Mod, Sr90, liquid "As Received"														
Strontium-90	U	-0.910	+/-1.95	4.12	+/-1.95	8.00	pCi/L			JE1	04/23/24	1324	2595258	4
9310, Alpha/Beta Activity, liquid "As Received"														
Alpha	U	0.465	+/-2.82	6.67	+/-2.83	15.0	pCi/L			HH3	04/24/24	1704	2595278	5
Beta	U	3.45	+/-5.97	10.4	+/-6.00	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
906.0M, Tritium Dist, Liquid "As Received"														
Tritium	U	48.1	+/-133	232	+/-133	300	pCi/L			HB2	05/08/24	1456	2601924	6
Tc-02-RC-MOD, Tc99, Liquid "As Received"														
Technetium-99	U	2.28	+/-12.4	21.9	+/-12.4	25.0	pCi/L			GS3	05/07/24	1935	2602249	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"	2604286	104	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2604288	93.1	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2595254	88.7	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2595258	84.8	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2602249	96.8	(30%-110%)

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Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW367UG3-24
Sample ID: 662355009

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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Address : LLC
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Kevil, Kentucky 42053

Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW368UG3-24
Sample ID: 662355011
Matrix: WG
Collect Date: 09-APR-24
Receive Date: 10-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
AN-1418 AlphaSpec Ra226, Liquid "As Received"														
Radium-226	U	0.990	+/-1.04	1.12	+/-1.04	5.00	pCi/L			CM4	05/06/24	1110	2604286	1
Th-01-RC M, Th Isotopes, Liquid "As Received"														
Thorium-230	U	0.681	+/-0.824	1.24	+/-0.833	50.0	pCi/L			CM4	05/02/24	1635	2604288	2
Thorium-232	U	0.293	+/-0.556	0.879	+/-0.558		pCi/L							
Rad Gas Flow Proportional Counting														
904.0Mod, Ra228, Liquid "As Received"														
Radium-228	U	1.97	+/-1.95	3.18	+/-2.01	4.99	pCi/L			KP1	05/13/24	1005	2609451	3
905.0Mod, Sr90, liquid "As Received"														
Strontium-90	U	0.0662	+/-2.32	4.47	+/-2.32	8.00	pCi/L			JE1	04/23/24	1324	2595258	4
9310, Alpha/Beta Activity, liquid "As Received"														
Alpha	U	4.23	+/-5.31	8.79	+/-5.36	15.0	pCi/L			HH3	04/24/24	1704	2595278	5
Beta	U	3.41	+/-5.07	8.71	+/-5.11	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
906.0M, Tritium Dist, Liquid "As Received"														
Tritium	U	115	+/-137	232	+/-139	300	pCi/L			HB2	05/08/24	1533	2601924	6
Tc-02-RC-MOD, Tc99, Liquid "As Received"														
Technetium-99	U	6.41	+/-12.8	22.2	+/-12.9	25.0	pCi/L			GS3	05/07/24	1946	2602249	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"	2604286	104	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2604288	95.4	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2609451	89.7	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2595258	78.5	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2602249	97.9	(30%-110%)

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Certificate of Analysis

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053

Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW368UG3-24
Sample ID: 662355011

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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ATTACHMENT C3

GEL LABORATORIES CERTIFICATE OF ANALYSIS

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Certificate of Analysis

Report Date: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW369UG3-24
Sample ID: 662538001
Matrix: WG
Collect Date: 10-APR-24 07:50
Receive Date: 11-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

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	0.00867	0.0193	ug/L	0.963	1	LOF	04/13/24	1551	2596320	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.829	0.330	2.00	mg/L		1	RM3	04/12/24	2131	2596321	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	04/16/24	0836	2596007	3
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	8.20	3.33	10.0	ug/L		1	RMJ	04/25/24	0122	2599514	4
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	04/22/24	1742	2600800	5
SW846 9056A Anions (5 elements) "As Received"												
Chloride	JW	27.2	0.670	250	mg/L		10	CH6	04/12/24	0428	2595422	6
Nitrate-N	J	0.924	0.0660	10.0	mg/L		2	CH6	04/12/24	0601	2595422	7
Bromide		0.374	0.0670	0.200	mg/L		1	CH6	04/11/24	2116	2595422	8
Fluoride	J	0.276	0.0330	4.00	mg/L		1					
Sulfate		7.81	0.133	0.400	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	04/22/24	1056	2599420	9
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Aluminum		0.0791	0.0193	0.0500	mg/L	1.00	1	PRB	05/03/24	1951	2595947	10
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	J	0.00206	0.00200	0.00500	mg/L	1.00	1					
Barium	B	0.349	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron		0.0153	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		14.9	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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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW369UG3-24 Project: FRNP00507
Sample ID: 662538001 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		0.00409	0.000300	0.00100	mg/L	1.00	1					
Copper	J	0.00140	0.000300	0.00200	mg/L	1.00	1					
Iron		0.122	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		6.41	0.0100	0.0300	mg/L	1.00	1					
Manganese		0.00554	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	U	0.00100	0.000200	0.00100	mg/L	1.00	1					
Nickel		0.00298	0.000600	0.00200	mg/L	1.00	1					
Potassium		0.492	0.0800	0.300	mg/L	1.00	1					
Selenium	J	0.00271	0.00150	0.00500	mg/L	1.00	1					
Silver	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Sodium		47.8	0.0800	0.250	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Vanadium	BJ	0.00897	0.00330	0.0200	mg/L	1.00	1					
Zinc	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	PRB	05/04/24	1101	2595947	11
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	05/04/24	0947	2595947	12
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.116	0.0388	0.116	ug/L	0.00116	1	JXM	04/30/24	1407	2604219	13
Aroclor-1221	U	0.116	0.0388	0.116	ug/L	0.00116	1					
Aroclor-1232	U	0.116	0.0388	0.116	ug/L	0.00116	1					
Aroclor-1242	U	0.116	0.0388	0.116	ug/L	0.00116	1					
Aroclor-1248	U	0.116	0.0388	0.116	ug/L	0.00116	1					
Aroclor-1254	U	0.116	0.0388	0.116	ug/L	0.00116	1					
Aroclor-1260	U	0.116	0.0388	0.116	ug/L	0.00116	1					
Aroclor-1268	U	0.116	0.0388	0.116	ug/L	0.00116	1					
Aroclor-Total	U	0.116	0.0388	0.116	ug/L	0.00116	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids	*	186	2.38	10.0	mg/L			ES2	04/17/24	1116	2598030	14
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(UG24-03)

Client Sample ID: MW369UG3-24 Project: FRNP00507
Sample ID: 662538001 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	JW2	04/12/24	1526	2596273	15
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	KP2	04/14/24	2211	2596435	16
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					

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Address : 5600 Hobbs Road

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW369UG3-24 Project: FRNP00507
Sample ID: 662538001 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	J	0.960	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 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	04/19/24	1145	2599414
SW846 8011 PREP	8011 Prep	LOF	04/13/24	1246	2596319
SW846 3535A	SW3535A PCB SPE Extraction	DXF4	04/30/24	0520	2604218
SW846 3005A	ICP-MS 3005A PREP	AB5	04/15/24	1510	2595946
SW846 9010C Distillation	SW846 9010C Prep	ES2	04/12/24	1139	2596006

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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW369UG3-24 Project: FRNP00507
Sample ID: 662538001 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

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"	6.95 ug/L	6.88	101	(56%-149%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.138 ug/L	0.233	59	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.137 ug/L	0.233	59	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	51.7 ug/L	50.0	103	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	53.9 ug/L	50.0	108	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	51.3 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

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	MW369UG3-24	Project:	FRNP00507
Sample ID:	662538002	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	10-APR-24 07:50		
Receive Date:	11-APR-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		0.371	0.000670	0.00400	mg/L	1.00	1	BAJ	04/24/24	2045	2596135	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	SD	04/15/24	0800	2596134
EPA 160	Laboratory Filtration	JD2	04/12/24	0743	2595964

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

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW370UG3-24
Sample ID: 662538003
Matrix: WG
Collect Date: 10-APR-24 08:35
Receive Date: 11-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

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	0.00860	0.0191	ug/L	0.956	1	LOF	04/13/24	1615	2596320	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.928	0.330	2.00	mg/L		1	RM3	04/12/24	2204	2596321	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	04/16/24	0837	2596007	3
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens		10.6	3.33	10.0	ug/L		1	RMJ	04/25/24	0228	2599514	4
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	04/22/24	1755	2600800	5
SW846 9056A Anions (5 elements) "As Received"												
Fluoride	J	0.225	0.0330	4.00	mg/L		1	CH6	04/11/24	1128	2595422	6
Bromide		0.540	0.134	0.400	mg/L		2	CH6	04/11/24	1810	2595422	7
Nitrate-N	J	0.962	0.0660	10.0	mg/L		2					
Sulfate		19.7	0.266	0.800	mg/L		2					
Chloride	JW	40.9	0.670	250	mg/L		10	CH6	04/11/24	1535	2595422	8
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	04/22/24	1058	2599420	9
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Aluminum	U	0.0500	0.0193	0.0500	mg/L	1.00	1	PRB	05/03/24	1954	2595947	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	B	0.221	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron		0.105	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		28.4	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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW370UG3-24 Project: FRNP00507
Sample ID: 662538003 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	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Copper	J	0.00117	0.000300	0.00200	mg/L	1.00	1					
Iron	J	0.0363	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		12.3	0.0100	0.0300	mg/L	1.00	1					
Manganese	J	0.00124	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		2.28	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		43.9	0.0800	0.250	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Vanadium	BJ	0.00456	0.00330	0.0200	mg/L	1.00	1					
Zinc	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	PRB	05/04/24	1103	2595947	11
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	05/04/24	0949	2595947	12
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.100	0.0333	0.100	ug/L	0.00100	1	JXM	04/30/24	1418	2604219	13
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	*	232	2.38	10.0	mg/L			ES2	04/17/24	1116	2598030	14
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

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Certificate of Analysis

Report Date: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW370UG3-24 Project: FRNP00507
Sample ID: 662538003 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	18.7	8.95	20.0	mg/L		1	HH2	04/11/24	1527	2595583	15
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	KP2	04/14/24	2237	2596435	16
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					

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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW370UG3-24 Project: FRNP00507
Sample ID: 662538003 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		2.14	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	04/15/24	1510	2595946
SW846 3535A	SW3535A PCB SPE Extraction	DXF4	04/30/24	0520	2604218
SW846 9010C Distillation	SW846 9010C Prep	ES2	04/12/24	1139	2596006
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	04/19/24	1145	2599414
SW846 8011 PREP	8011 Prep	LOF	04/13/24	1246	2596319

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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW370UG3-24 Project: FRNP00507
Sample ID: 662538003 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

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"	6.40 ug/L	6.83	94	(56%-149%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.122 ug/L	0.200	61	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.121 ug/L	0.200	61	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	51.4 ug/L	50.0	103	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	53.9 ug/L	50.0	108	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	50.9 ug/L	50.0	102	(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

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Company : Four Rivers Nuclear Partnership, LLC
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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	MW370UG3-24	Project:	FRNP00507
Sample ID:	662538004	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	10-APR-24 08:35		
Receive Date:	11-APR-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		0.227	0.000670	0.00400	mg/L	1.00	1	BAJ	04/24/24	2048	2596135	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	SD	04/15/24	0800	2596134
EPA 160	Laboratory Filtration	JD2	04/12/24	0743	2595964

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

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Report Date: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW371UG3-24
Sample ID: 662538005
Matrix: WG
Collect Date: 10-APR-24 09:38
Receive Date: 11-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

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	0.0196	0.00880	0.0196	ug/L	0.978	1	LOF	04/13/24	1729	2596320	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	1.97	0.330	2.00	mg/L		1	RM3	04/13/24	0002	2596321	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	04/16/24	0840	2596007	3
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	5.26	3.33	10.0	ug/L		1	RMJ	04/25/24	0317	2599514	4
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	04/22/24	1859	2600800	5
SW846 9056A Anions (5 elements) "As Received"												
Bromide	UW	0.200	0.0670	0.200	mg/L		1	CH6	04/11/24	1730	2595764	6
Chloride	J	3.95	0.0670	250	mg/L		1					
Fluoride	J	0.317	0.0330	4.00	mg/L		1					
Nitrate-N	UW	10.0	0.0330	10.0	mg/L		1					
Sulfate		9.92	0.133	0.400	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	04/18/24	0956	2597854	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	05/04/24	1003	2595947	8
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					
Uranium		0.00235	0.0000670	0.000200	mg/L	1.00	1	PRB	05/04/24	1115	2595947	9
Aluminum		0.117	0.0193	0.0500	mg/L	1.00	1	PRB	05/03/24	2020	2595947	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	B	0.199	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					

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Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW371UG3-24 Project: FRNP00507
Sample ID: 662538005 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"												
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					
Copper	J	0.000834	0.000300	0.00200	mg/L	1.00	1					
Iron		0.108	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		19.0	0.0100	0.0300	mg/L	1.00	1					
Manganese	J	0.00453	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	J	0.000374	0.000200	0.00100	mg/L	1.00	1					
Nickel	J	0.00145	0.000600	0.00200	mg/L	1.00	1					
Potassium		0.347	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	BJ	0.00667	0.00330	0.0200	mg/L	1.00	1					
Zinc	J	0.00332	0.00330	0.0200	mg/L	1.00	1					
Calcium		56.2	0.800	2.00	mg/L	1.00	10	PRB	05/04/24	2217	2595947	11
Sodium		88.5	0.800	2.50	mg/L	1.00	10					
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.110	0.0366	0.110	ug/L	0.00110	1	JXM	04/30/24	1451	2604219	12
Aroclor-1221	U	0.110	0.0366	0.110	ug/L	0.00110	1					
Aroclor-1232	U	0.110	0.0366	0.110	ug/L	0.00110	1					
Aroclor-1242	U	0.110	0.0366	0.110	ug/L	0.00110	1					
Aroclor-1248	U	0.110	0.0366	0.110	ug/L	0.00110	1					
Aroclor-1254	U	0.110	0.0366	0.110	ug/L	0.00110	1					
Aroclor-1260	U	0.110	0.0366	0.110	ug/L	0.00110	1					
Aroclor-1268	U	0.110	0.0366	0.110	ug/L	0.00110	1					
Aroclor-Total	U	0.110	0.0366	0.110	ug/L	0.00110	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids	*	398	2.38	10.0	mg/L			ES2	04/17/24	1116	2598030	13
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

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Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW371UG3-24 Project: FRNP00507
Sample ID: 662538005 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	JW2	04/12/24	1526	2596273	14
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	KP2	04/14/24	2302	2596435	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	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: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW371UG3-24 Project: FRNP00507
Sample ID: 662538005 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	04/13/24	1246	2596319
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	04/17/24	1150	2597851
SW846 3005A	ICP-MS 3005A PREP	AB5	04/15/24	1510	2595946
SW846 3535A	SW3535A PCB SPE Extraction	DXF4	04/30/24	0520	2604218
SW846 9010C Distillation	SW846 9010C Prep	ES2	04/12/24	1139	2596006

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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW371UG3-24 Project: FRNP00507
Sample ID: 662538005 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

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 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	
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"	6.93 ug/L	6.99	99	(56%-149%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.0982 ug/L	0.220	45	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.174 ug/L	0.220	79	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	50.6 ug/L	50.0	101	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	54.0 ug/L	50.0	108	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	50.0 ug/L	50.0	100	(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

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	MW371UG3-24	Project:	FRNP00507
Sample ID:	662538006	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	10-APR-24 09:38		
Receive Date:	11-APR-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		0.215	0.000670	0.00400	mg/L	1.00	1	BAJ	04/24/24	2108	2596135	1
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Uranium		0.00226	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	SD	04/15/24	0800	2596134
EPA 160	Laboratory Filtration	JD2	04/12/24	0743	2595964

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

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Report Date: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW373UG3-24
Sample ID: 662538009
Matrix: WG
Collect Date: 10-APR-24 11:08
Receive Date: 11-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

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	0.0194	0.00875	0.0194	ug/L	0.972	1	LOF	04/13/24	1754	2596320	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	1.48	0.330	2.00	mg/L		1	RM3	04/13/24	0034	2596321	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	04/16/24	0841	2596007	3
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	5.44	3.33	10.0	ug/L		1	RMJ	04/26/24	0003	2601759	4
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	04/22/24	1912	2600800	5
SW846 9056A Anions (5 elements) "As Received"												
Bromide	W	0.437	0.134	0.400	mg/L		2	CH6	04/11/24	1933	2595764	6
Nitrate-N	JW	0.530	0.0660	10.0	mg/L		2					
Chloride	J	30.8	1.34	250	mg/L		20	CH6	04/11/24	2004	2595764	7
Sulfate		192	2.66	8.00	mg/L		20					
Fluoride	J	0.214	0.0330	4.00	mg/L		1	CH6	04/11/24	1801	2595764	8
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	04/18/24	1001	2597854	9
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Uranium	J	0.0000760	0.0000670	0.000200	mg/L	1.00	1	PRB	05/04/24	1117	2595947	10
Boron		2.15	0.104	0.300	mg/L	1.00	20	PRB	05/04/24	2220	2595947	11
Calcium		83.5	1.60	4.00	mg/L	1.00	20					
Sodium		68.1	1.60	5.00	mg/L	1.00	20					
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	05/04/24	1005	2595947	12
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	05/03/24	2024	2595947	13
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					

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Address : 5600 Hobbs Road

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW373UG3-24 Project: FRNP00507
Sample ID: 662538009 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"												
Barium	B	0.0326	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					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Cobalt	J	0.000462	0.000300	0.00100	mg/L	1.00	1					
Copper	J	0.000655	0.000300	0.00200	mg/L	1.00	1					
Iron	J	0.0751	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		29.3	0.0100	0.0300	mg/L	1.00	1					
Manganese		0.0719	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	U	0.00100	0.000200	0.00100	mg/L	1.00	1					
Nickel		0.00203	0.000600	0.00200	mg/L	1.00	1					
Potassium		2.57	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	BJ	0.00596	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	0.117	0.0388	0.117	ug/L	0.00117	1	JXM	04/30/24	1502	2604219	14
Aroclor-1221	U	0.117	0.0388	0.117	ug/L	0.00117	1					
Aroclor-1232	U	0.117	0.0388	0.117	ug/L	0.00117	1					
Aroclor-1242	U	0.117	0.0388	0.117	ug/L	0.00117	1					
Aroclor-1248	U	0.117	0.0388	0.117	ug/L	0.00117	1					
Aroclor-1254	U	0.117	0.0388	0.117	ug/L	0.00117	1					
Aroclor-1260	U	0.117	0.0388	0.117	ug/L	0.00117	1					
Aroclor-1268	U	0.117	0.0388	0.117	ug/L	0.00117	1					
Aroclor-Total	U	0.117	0.0388	0.117	ug/L	0.00117	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids	*	550	2.38	10.0	mg/L			ES2	04/17/24	1116	2598030	15
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW373UG3-24 Project: FRNP00507
Sample ID: 662538009 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	JW2	04/12/24	1526	2596273	16
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	KP2	04/14/24	2328	2596435	17
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					

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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW373UG3-24 Project: FRNP00507
Sample ID: 662538009 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		2.77	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 9010C Distillation	SW846 9010C Prep	ES2	04/12/24	1139	2596006
SW846 3535A	SW3535A PCB SPE Extraction	DXF4	04/30/24	0520	2604218
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	04/17/24	1150	2597851
SW846 3005A	ICP-MS 3005A PREP	AB5	04/15/24	1510	2595946
SW846 8011 PREP	8011 Prep	LOF	04/13/24	1246	2596319

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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW373UG3-24 Project: FRNP00507
Sample ID: 662538009 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

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 3005A/6020B	
14	SW846 3535A/8082A	
15	EPA 160.1	
16	EPA 410.4	
17	SW846 8260D	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	7.35 ug/L	6.95	106	(56%-149%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.117 ug/L	0.233	50	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.115 ug/L	0.233	49	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	50.6 ug/L	50.0	101	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	53.5 ug/L	50.0	107	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	49.5 ug/L	50.0	99	(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

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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	MW373UG3-24	Project:	FRNP00507
Sample ID:	662538010	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	10-APR-24 11:08		
Receive Date:	11-APR-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		0.0359	0.000670	0.00400	mg/L	1.00	1	BAJ	04/24/24	2110	2596135	1
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Uranium	J	0.0000800	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	SD	04/15/24	0800	2596134
EPA 160	Laboratory Filtration	JD2	04/12/24	0743	2595964

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: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW374UG3-24
Sample ID: 662538011
Matrix: WG
Collect Date: 10-APR-24 12:27
Receive Date: 11-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

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	LOF	04/13/24	1819	2596320	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average		2.46	0.330	2.00	mg/L		1	RM3	04/13/24	0107	2596321	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	04/16/24	0842	2596007	3
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens		16.9	3.33	10.0	ug/L		1	RMJ	04/25/24	0438	2599514	4
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	04/22/24	1924	2600800	5
SW846 9056A Anions (5 elements) "As Received"												
Fluoride	J	0.270	0.0330	4.00	mg/L		1	CH6	04/11/24	1159	2595422	6
Sulfate		17.6	0.133	0.400	mg/L		1					
Chloride	JW	41.5	0.670	250	mg/L		10	CH6	04/11/24	2044	2595422	7
Bromide		0.424	0.134	0.400	mg/L		2	CH6	04/11/24	2147	2595422	8
Nitrate-N	J	0.571	0.0660	10.0	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	04/18/24	1003	2597854	9
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	05/04/24	1007	2595947	10
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					
Uranium		0.000430	0.0000670	0.000200	mg/L	1.00	1	PRB	05/04/24	1119	2595947	11
Sodium		121	0.800	2.50	mg/L	1.00	10	PRB	05/04/24	2224	2595947	12
Aluminum	J	0.0265	0.0193	0.0500	mg/L	1.00	1	PRB	05/03/24	2027	2595947	13
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	B	0.135	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW374UG3-24 Project: FRNP00507
Sample ID: 662538011 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"												
Boron		0.0399	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		23.7	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Cobalt	J	0.000460	0.000300	0.00100	mg/L	1.00	1					
Copper	J	0.000426	0.000300	0.00200	mg/L	1.00	1					
Iron		0.268	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		5.39	0.0100	0.0300	mg/L	1.00	1					
Manganese		0.129	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	J	0.000243	0.000200	0.00100	mg/L	1.00	1					
Nickel	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Potassium		0.404	0.0800	0.300	mg/L	1.00	1					
Selenium		0.00720	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	BJ	0.00424	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	0.111	0.0370	0.111	ug/L	0.00111	1	JXM	04/30/24	1513	2604219	14
Aroclor-1221	U	0.111	0.0370	0.111	ug/L	0.00111	1					
Aroclor-1232	U	0.111	0.0370	0.111	ug/L	0.00111	1					
Aroclor-1242	U	0.111	0.0370	0.111	ug/L	0.00111	1					
Aroclor-1248	U	0.111	0.0370	0.111	ug/L	0.00111	1					
Aroclor-1254	U	0.111	0.0370	0.111	ug/L	0.00111	1					
Aroclor-1260	U	0.111	0.0370	0.111	ug/L	0.00111	1					
Aroclor-1268	U	0.111	0.0370	0.111	ug/L	0.00111	1					
Aroclor-Total	U	0.111	0.0370	0.111	ug/L	0.00111	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids	*	359	2.38	10.0	mg/L			ES2	04/17/24	1116	2598030	15
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

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Address : 5600 Hobbs Road

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW374UG3-24 Project: FRNP00507
Sample ID: 662538011 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		60.6	8.95	20.0	mg/L		1	HH2	04/11/24	1527	2595583	16
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	KP2	04/14/24	2353	2596435	17
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					

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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW374UG3-24 Project: FRNP00507
Sample ID: 662538011 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 9010C Distillation	SW846 9010C Prep	ES2	04/12/24	1139	2596006
SW846 8011 PREP	8011 Prep	LOF	04/13/24	1246	2596319
SW846 3535A	SW3535A PCB SPE Extraction	DXF4	04/30/24	0520	2604218
SW846 3005A	ICP-MS 3005A PREP	AB5	04/15/24	1510	2595946
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	04/17/24	1150	2597851

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Address :	5600 Hobbs Road
	Kevil, Kentucky 42053
Contact:	Ms. Jaime Morrow
Project:	C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	MW374UG3-24	Project:	FRNP00507
Sample ID:	662538011	Client ID:	FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

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 3005A/6020B	
14	SW846 3535A/8082A	
15	EPA 160.1	
16	EPA 410.4	
17	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	6.77	97	(56%-149%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.109 ug/L	0.222	49	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.138 ug/L	0.222	62	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	50.0 ug/L	50.0	100	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	52.8 ug/L	50.0	106	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	49.0 ug/L	50.0	98	(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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Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	MW374UG3-24	Project:	FRNP00507
Sample ID:	662538012	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	10-APR-24 12:27		
Receive Date:	11-APR-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		0.145	0.000670	0.00400	mg/L	1.00	1	BAJ	04/24/24	2113	2596135	1
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Uranium		0.000419	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	SD	04/15/24	0800	2596134
EPA 160	Laboratory Filtration	JD2	04/12/24	0743	2595964

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

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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW375UG3-24
Sample ID: 662538013
Matrix: WG
Collect Date: 10-APR-24 13:22
Receive Date: 11-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

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	LOF	04/13/24	1933	2596320	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.775	0.330	2.00	mg/L		1	RM3	04/13/24	0140	2596321	2
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	04/16/24	0843	2596007	3
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	7.32	3.33	10.0	ug/L		1	RMJ	04/25/24	0506	2599514	4
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	04/22/24	1937	2600800	5
SW846 9056A Anions (5 elements) "As Received"												
Nitrate-N	J	0.843	0.0660	10.0	mg/L		2	CH6	04/11/24	2319	2595422	6
Sulfate		22.1	0.266	0.800	mg/L		2					
Bromide	U	0.200	0.0670	0.200	mg/L		1	CH6	04/11/24	1229	2595422	7
Chloride	JW	3.23	0.0670	250	mg/L		1					
Fluoride	J	0.387	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	04/18/24	1004	2597854	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	05/04/24	1008	2595947	9
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	PRB	05/04/24	1121	2595947	10
Sodium		50.7	0.800	2.50	mg/L	1.00	10	PRB	05/04/24	2228	2595947	11
Aluminum	J	0.0451	0.0193	0.0500	mg/L	1.00	1	PRB	05/03/24	2031	2595947	12
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	B	0.163	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					

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Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW375UG3-24 Project: FRNP00507
Sample ID: 662538013 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"												
Boron	J	0.0115	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		13.0	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Cobalt	J	0.000419	0.000300	0.00100	mg/L	1.00	1					
Copper	J	0.000612	0.000300	0.00200	mg/L	1.00	1					
Iron	J	0.0846	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		4.84	0.0100	0.0300	mg/L	1.00	1					
Manganese		0.0124	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	U	0.00100	0.000200	0.00100	mg/L	1.00	1					
Nickel	J	0.00120	0.000600	0.00200	mg/L	1.00	1					
Potassium	J	0.248	0.0800	0.300	mg/L	1.00	1					
Selenium	J	0.00171	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	BJ	0.00511	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	0.109	0.0362	0.109	ug/L	0.00109	1	JXM	04/30/24	1524	2604219	13
Aroclor-1221	U	0.109	0.0362	0.109	ug/L	0.00109	1					
Aroclor-1232	U	0.109	0.0362	0.109	ug/L	0.00109	1					
Aroclor-1242	U	0.109	0.0362	0.109	ug/L	0.00109	1					
Aroclor-1248	U	0.109	0.0362	0.109	ug/L	0.00109	1					
Aroclor-1254	U	0.109	0.0362	0.109	ug/L	0.00109	1					
Aroclor-1260	U	0.109	0.0362	0.109	ug/L	0.00109	1					
Aroclor-1268	U	0.109	0.0362	0.109	ug/L	0.00109	1					
Aroclor-Total	U	0.109	0.0362	0.109	ug/L	0.00109	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids	*	180	2.38	10.0	mg/L			ES2	04/17/24	1116	2598030	14
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

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Certificate of Analysis

Report Date: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW375UG3-24 Project: FRNP00507
Sample ID: 662538013 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	14.1	8.95	20.0	mg/L		1	HH2	04/11/24	1527	2595583	15
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	KP2	04/15/24	0018	2596435	16
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					

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Company : Four Rivers Nuclear Partnership, LLC
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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW375UG3-24 Project: FRNP00507
Sample ID: 662538013 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 9010C Distillation	SW846 9010C Prep	ES2	04/12/24	1139	2596006
SW846 3005A	ICP-MS 3005A PREP	AB5	04/15/24	1510	2595946
SW846 8011 PREP	8011 Prep	LOF	04/13/24	1246	2596319
SW846 3535A	SW3535A PCB SPE Extraction	DXF4	04/30/24	0520	2604218
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	04/17/24	1150	2597851

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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW375UG3-24 Project: FRNP00507
Sample ID: 662538013 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

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"	6.92 ug/L	6.80	102	(56%-149%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.117 ug/L	0.217	54	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.148 ug/L	0.217	68	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	50.2 ug/L	50.0	100	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	52.9 ug/L	50.0	106	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	50.1 ug/L	50.0	100	(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

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	MW375UG3-24	Project:	FRNP00507
Sample ID:	662538014	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	10-APR-24 13:22		
Receive Date:	11-APR-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		0.171	0.000670	0.00400	mg/L	1.00	1	BAJ	04/24/24	2116	2596135	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	JD2	04/12/24	0743	2595964
SW846 3005A	ICP-MS 3005A PREP	SD	04/15/24	0800	2596134

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

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Report Date: July 24, 2024

Company : Four Rivers Nuclear Partnership, LLC
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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: TB3UG3-24
Sample ID: 662538015
Matrix: WATER
Collect Date: 10-APR-24 07:00
Receive Date: 11-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

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	0.00860	0.0191	ug/L	0.956	1	LOF	04/13/24	1958	2596320	1
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	KP2	04/14/24	2146	2596435	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	J	2.51	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: July 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: TB3UG3-24 Project: FRNP00507
Sample ID: 662538015 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	04/13/24	1246	2596319

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"	6.74 ug/L	6.83	99	(56%-149%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	50.7 ug/L	50.0	101	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	52.6 ug/L	50.0	105	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	49.9 ug/L	50.0	100	(77%-121%)

Notes:

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Company :	Four Rivers Nuclear Partnership, LLC
Address :	5600 Hobbs Road
	Kevil, Kentucky 42053
Contact:	Ms. Jaime Morrow
Project:	C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	TB3UG3-24	Project:	FRNP00507
Sample ID:	662538015	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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Address : 5600 Hobbs Road
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Report Date: July 24, 2024
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW369UG3-24
Sample ID: 662538001
Matrix: WG
Collect Date: 10-APR-24
Receive Date: 11-APR-24
Collector: Client
Project: FRNP00507
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
AN-1418 AlphaSpec Ra226, Liquid "As Received"														
Radium-226	U	0.384	+/-0.798	1.18	+/-0.799	5.00	pCi/L			CM4	05/06/24	1110	2604286	1
Th-01-RC M, Th Isotopes, Liquid "As Received"														
Thorium-230	U	0.507	+/-0.831	1.37	+/-0.837	50.0	pCi/L			CM4	05/02/24	1635	2604288	2
Thorium-232	U	0.255	+/-0.544	0.813	+/-0.545		pCi/L							
Rad Gas Flow Proportional Counting														
904.0Mod, Ra228, Liquid "As Received"														
Radium-228	U	1.63	+/-2.02	3.43	+/-2.06	4.99	pCi/L			KP1	04/19/24	1133	2596025	3
905.0Mod, Sr90, liquid "As Received"														
Strontium-90	U	0.714	+/-4.06	7.36	+/-4.06	8.00	pCi/L			JE1	04/30/24	1224	2596776	4
9310, Alpha/Beta Activity, liquid "As Received"														
Alpha	U	1.96	+/-3.32	6.06	+/-3.33	15.0	pCi/L			HH3	04/25/24	0721	2596839	5
Beta		33.2	+/-8.43	9.32	+/-10.1	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
906.0M, Tritium Dist, Liquid "As Received"														
Tritium	U	32.9	+/-129	228	+/-129	300	pCi/L			HB2	05/09/24	0231	2602397	6
Tc-02-RC-MOD, Tc99, Liquid "As Received"														
Technetium-99		70.9	+/-16.0	20.5	+/-17.9	25.0	pCi/L			GS3	05/08/24	1809	2602400	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"	2604286	102	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2604288	88.9	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2596025	86.4	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2596776	61.5	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2602400	96.9	(30%-110%)

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Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW369UG3-24
Sample ID: 662538001

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

Kevil, Kentucky 42053 Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW370UG3-24 Project: FRNP00507
Sample ID: 662538003 Client ID: FRNP005
Matrix: WG
Collect Date: 10-APR-24
Receive Date: 11-APR-24
Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
AN-1418 AlphaSpec Ra226, Liquid "As Received"														
Radium-226	U	0.852	+/-1.16	1.23	+/-1.16	5.00	pCi/L			CM4	05/06/24	1116	2604290	1
Th-01-RC M, Th Isotopes, Liquid "As Received"														
Thorium-230	U	0.804	+/-1.22	1.88	+/-1.23	50.0	pCi/L			CM4	05/02/24	1641	2604291	2
Thorium-232	U	0.476	+/-0.853	0.988	+/-0.856		pCi/L							
Rad Gas Flow Proportional Counting														
904.0Mod, Ra228, Liquid "As Received"														
Radium-228	U	1.14	+/-2.11	3.79	+/-2.13	4.99	pCi/L			KP1	04/19/24	1133	2596025	3
905.0Mod, Sr90, liquid "As Received"														
Strontium-90	U	-1.41	+/-1.89	4.01	+/-1.89	8.00	pCi/L			JE1	04/30/24	1224	2596776	4
9310, Alpha/Beta Activity, liquid "As Received"														
Alpha	U	2.93	+/-3.86	6.51	+/-3.89	15.0	pCi/L			HH3	04/25/24	0721	2596839	5
Beta		13.2	+/-6.67	9.60	+/-7.02	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
906.0M, Tritium Dist, Liquid "As Received"														
Tritium	U	81.4	+/-132	228	+/-133	300	pCi/L			HB2	05/09/24	0303	2602397	6
Tc-02-RC-MOD, Tc99, Liquid "As Received"														
Technetium-99		22.9	+/-12.9	20.2	+/-13.1	25.0	pCi/L			GS3	05/08/24	1820	2602400	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"	2604290	96.6	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2604291	71.2	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2596025	76.7	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2596776	95.4	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2602400	98.5	(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: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW370UG3-24 Project: FRNP00507
Sample ID: 662538003 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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Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW371UG3-24
Sample ID: 662538005
Matrix: WG
Collect Date: 10-APR-24
Receive Date: 11-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
AN-1418 AlphaSpec Ra226, Liquid "As Received"														
Radium-226	U	0.804	+/-1.17	1.45	+/-1.17	5.00	pCi/L			CM4	05/06/24	1531	2604290	1
Th-01-RC M, Th Isotopes, Liquid "As Received"														
Thorium-230	U	1.02	+/-1.10	1.55	+/-1.12	50.0	pCi/L			CM4	05/02/24	1641	2604291	2
Thorium-232	U	-0.0217	+/-0.372	0.762	+/-0.373		pCi/L							
Rad Gas Flow Proportional Counting														
904.0Mod, Ra228, Liquid "As Received"														
Radium-228	U	1.50	+/-2.54	4.45	+/-2.56	4.99	pCi/L			KP1	04/19/24	1133	2596025	3
905.0Mod, Sr90, liquid "As Received"														
Strontium-90	U	-0.0152	+/-2.49	4.77	+/-2.49	8.00	pCi/L			JE1	04/30/24	1224	2596776	4
9310, Alpha/Beta Activity, liquid "As Received"														
Alpha		11.5	+/-6.94	9.02	+/-7.20	15.0	pCi/L			HH3	04/25/24	0721	2596839	5
Beta	U	7.53	+/-5.66	8.84	+/-5.81	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
906.0M, Tritium Dist, Liquid "As Received"														
Tritium	U	56.8	+/-131	229	+/-132	300	pCi/L			HB2	05/09/24	0335	2602397	6
Tc-02-RC-MOD, Tc99, Liquid "As Received"														
Technetium-99	U	6.12	+/-11.8	20.3	+/-11.8	25.0	pCi/L			GS3	05/08/24	1832	2602400	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"	2604290	97.1	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2604291	97.5	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2596025	82.1	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2596776	82.7	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2602400	98.1	(30%-110%)

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

Kevil, Kentucky 42053 Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW371UG3-24 Project: FRNP00507
Sample ID: 662538005 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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Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW373UG3-24
Sample ID: 662538009
Matrix: WG
Collect Date: 10-APR-24
Receive Date: 11-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
AN-1418 AlphaSpec Ra226, Liquid "As Received"														
Radium-226	U	0.520	+/-0.972	1.27	+/-0.973	5.00	pCi/L			CM4	05/06/24	1116	2604290	1
Th-01-RC M, Th Isotopes, Liquid "As Received"														
Thorium-230	U	-0.152	+/-0.873	2.04	+/-0.873	50.0	pCi/L			CM4	05/02/24	1642	2604291	2
Thorium-232	U	0.136	+/-0.591	1.06	+/-0.592		pCi/L							
Rad Gas Flow Proportional Counting														
904.0Mod, Ra228, Liquid "As Received"														
Radium-228	U	1.37	+/-2.33	4.10	+/-2.36	4.99	pCi/L			KP1	04/19/24	1133	2596025	3
905.0Mod, Sr90, liquid "As Received"														
Strontium-90	U	0.000	+/-3.04	5.72	+/-3.04	8.00	pCi/L			JE1	04/30/24	1224	2596776	4
9310, Alpha/Beta Activity, liquid "As Received"														
Alpha	U	1.99	+/-3.87	7.31	+/-3.89	15.0	pCi/L			HH3	04/25/24	0721	2596839	5
Beta		11.8	+/-6.08	8.75	+/-6.39	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
906.0M, Tritium Dist, Liquid "As Received"														
Tritium	U	14.2	+/-126	226	+/-126	300	pCi/L			HB2	05/09/24	0406	2602397	6
Tc-02-RC-MOD, Tc99, Liquid "As Received"														
Technetium-99	U	2.12	+/-11.4	20.2	+/-11.4	25.0	pCi/L			GS3	05/08/24	1843	2602400	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"	2604290	96.3	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2604291	85.3	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2596025	84.4	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2596776	76.4	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2602400	98.5	(30%-110%)

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Certificate of Analysis

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053

Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW373UG3-24
Sample ID: 662538009

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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Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW374UG3-24
Sample ID: 662538011
Matrix: WG
Collect Date: 10-APR-24
Receive Date: 11-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
AN-1418 AlphaSpec Ra226, Liquid "As Received"														
Radium-226	U	0.808	+/-1.20	1.54	+/-1.20	5.00	pCi/L			CM4	05/06/24	1116	2604290	1
Th-01-RC M, Th Isotopes, Liquid "As Received"														
Thorium-230	U	0.0143	+/-0.770	1.68	+/-0.771	50.0	pCi/L			CM4	05/02/24	1642	2604291	2
Thorium-232	U	0.166	+/-0.528	0.774	+/-0.529		pCi/L							
Rad Gas Flow Proportional Counting														
904.0Mod, Ra228, Liquid "As Received"														
Radium-228		4.72	+/-2.67	3.79	+/-2.93	4.99	pCi/L			KP1	04/19/24	1133	2596025	3
905.0Mod, Sr90, liquid "As Received"														
Strontium-90	U	0.0269	+/-2.52	4.81	+/-2.52	8.00	pCi/L			JE1	04/30/24	1224	2596776	4
9310, Alpha/Beta Activity, liquid "As Received"														
Alpha		8.22	+/-5.57	6.77	+/-5.73	15.0	pCi/L			HH3	04/25/24	0721	2596839	5
Beta	U	9.10	+/-6.11	9.35	+/-6.29	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
906.0M, Tritium Dist, Liquid "As Received"														
Tritium	U	8.54	+/-126	227	+/-126	300	pCi/L			HB2	05/09/24	0438	2602397	6
Tc-02-RC-MOD, Tc99, Liquid "As Received"														
Technetium-99	U	3.02	+/-11.3	20.0	+/-11.3	25.0	pCi/L			GS3	05/08/24	1855	2602400	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"	2604290	94.2	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2604291	95.8	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2596025	80.8	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2596776	80.6	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2602400	99.5	(30%-110%)

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Certificate of Analysis

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053

Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW374UG3-24
Sample ID: 662538011

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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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: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW375UG3-24 Project: FRNP00507
Sample ID: 662538013 Client ID: FRNP005
Matrix: WG
Collect Date: 10-APR-24
Receive Date: 11-APR-24
Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
AN-1418 AlphaSpec Ra226, Liquid "As Received"														
Radium-226	U	0.708	+/-0.827	0.878	+/-0.828	5.00	pCi/L			CM4	05/06/24	1116	2604290	1
Th-01-RC M, Th Isotopes, Liquid "As Received"														
Thorium-230	U	1.39	+/-1.25	1.58	+/-1.28	50.0	pCi/L			CM4	05/02/24	1642	2604291	2
Thorium-232	U	0.130	+/-0.570	1.02	+/-0.571		pCi/L							
Rad Gas Flow Proportional Counting														
904.0Mod, Ra228, Liquid "As Received"														
Radium-228	U	3.88	+/-2.68	4.04	+/-2.86	4.99	pCi/L			KP1	04/19/24	1133	2596025	3
905.0Mod, Sr90, liquid "As Received"														
Strontium-90	U	-0.334	+/-1.71	3.69	+/-1.71	8.00	pCi/L			JE1	04/30/24	1224	2596776	4
9310, Alpha/Beta Activity, liquid "As Received"														
Alpha	U	5.86	+/-6.33	10.3	+/-6.40	15.0	pCi/L			HH3	04/25/24	0721	2596839	5
Beta	U	3.01	+/-5.40	9.43	+/-5.43	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
906.0M, Tritium Dist, Liquid "As Received"														
Tritium	U	-31.6	+/-123	226	+/-123	300	pCi/L			HB2	05/09/24	0510	2602397	6
Tc-02-RC-MOD, Tc99, Liquid "As Received"														
Technetium-99	U	5.66	+/-11.5	19.9	+/-11.5	25.0	pCi/L			GS3	05/08/24	1907	2602400	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"	2604290	94.9	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2604291	88.4	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2596025	76.3	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2596776	72.1	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2602400	99.5	(30%-110%)

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Certificate of Analysis

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053

Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW375UG3-24
Sample ID: 662538013

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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ATTACHMENT C4

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: July 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(UG24-03)

Client Sample ID: MW372UG3-24R
Sample ID: 662795001
Matrix: WG
Collect Date: 11-APR-24 13:46
Receive Date: 13-APR-24
Collector: Client

Project: FRNP00507
Client ID: FRNP005

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	04/15/24	2132	2596326	2
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.955	0.330	2.00	mg/L		1	RM3	04/17/24	1612	2598429	3
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	04/16/24	1145	2596738	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	6.50	3.33	10.0	ug/L		1	RMJ	05/04/24	0012	2606558	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	TXT1	04/23/24	1434	2601456	6
SW846 9056A Anions (5 elements) "As Received"												
Chloride	J	38.7	0.670	250	mg/L		10	CH6	04/14/24	0528	2596629	7
Sulfate		140	1.33	4.00	mg/L		10					
Bromide		0.744	0.0670	0.200	mg/L		1	CH6	04/13/24	1159	2596629	8
Fluoride	J	0.242	0.0330	4.00	mg/L		1					
Nitrate-N	J	0.871	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	04/18/24	1029	2597854	9
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Aluminum	U	0.0500	0.0193	0.0500	mg/L	1.00	1	PRB	05/08/24	0755	2597151	10
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Barium		0.0527	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					
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	0.000670	0.000300	0.00200	mg/L	1.00	1					
Iron	J	0.0797	0.0330	0.100	mg/L	1.00	1					

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Certificate of Analysis

Report Date: July 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(UG24-03)

Client Sample ID: MW372UG3-24R
Sample ID: 662795001
Project: FRNP00507
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"												
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium	B	22.5	0.0100	0.0300	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		2.14	0.0800	0.300	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	BJ	0.00419	0.00330	0.0200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	PRB	05/08/24	1259	2597151	11
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	05/08/24	1458	2597151	12
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					
Arsenic	U	0.00500	0.00200	0.00500	mg/L	1.00	1	PRB	05/07/24	1836	2597151	13
Manganese	J	0.00137	0.00100	0.00500	mg/L	1.00	1					
Selenium	J	0.00212	0.00150	0.00500	mg/L	1.00	1					
Zinc	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Boron		1.14	0.0520	0.150	mg/L	1.00	10	PRB	05/08/24	1114	2597151	14
Calcium		65.3	0.800	2.00	mg/L	1.00	10					
Sodium		61.2	0.800	2.50	mg/L	1.00	10					
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.118	0.0391	0.118	ug/L	0.00118	1	NS2	04/29/24	2322	2603248	15
Aroclor-1221	U	0.118	0.0391	0.118	ug/L	0.00118	1					
Aroclor-1232	U	0.118	0.0391	0.118	ug/L	0.00118	1					
Aroclor-1242	U	0.118	0.0391	0.118	ug/L	0.00118	1					
Aroclor-1248	U	0.118	0.0391	0.118	ug/L	0.00118	1					
Aroclor-1254	U	0.118	0.0391	0.118	ug/L	0.00118	1					
Aroclor-1260	U	0.118	0.0391	0.118	ug/L	0.00118	1					
Aroclor-1268	U	0.118	0.0391	0.118	ug/L	0.00118	1					
Aroclor-Total	U	0.118	0.0391	0.118	ug/L	0.00118	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		459	2.38	10.0	mg/L			KLP1	04/18/24	1534	2599126	16
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW372UG3-24R
Sample ID: 662795001
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	U	20.0	8.95	20.0	mg/L		1	JW2	04/16/24	1508	2597597	17
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	PXY1	04/16/24	1326	2597630	18
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					

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW372UG3-24R
Sample ID: 662795001
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		1.10	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	04/15/24	1331	2596324
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JM13	04/17/24	1150	2597851
SW846 3535A	SW3535A PCB SPE Extraction	LW1	04/29/24	0525	2603247
SW846 9010C Distillation	SW846 9010C Prep	ES2	04/16/24	1040	2596737
SW846 3005A	ICP-MS 3005A PREP	SD	04/17/24	0815	2597149

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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW372UG3-24R
Sample ID: 662795001
Project: FRNP00507
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

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 7470A	
10	SW846 3005A/6020B	
11	SW846 3005A/6020B	
12	SW846 3005A/6020B	
13	SW846 3005A/6020B	
14	SW846 3005A/6020B	
15	SW846 3535A/8082A	
16	EPA 160.1	
17	EPA 410.4	
18	SW846 8260D	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	7.31 ug/L	6.84	107	(56%-149%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.146 ug/L	0.235	62	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.155 ug/L	0.235	66	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	54.5 ug/L	50.0	109	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	52.3 ug/L	50.0	105	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	50.5 ug/L	50.0	101	(77%-121%)

Notes:

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Certificate of Analysis

Report Date: July 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(UG24-03)

Client Sample ID:	MW372UG3-24R	Project:	FRNP00507
Sample ID:	662795001	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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Certificate of Analysis

Report Date: July 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(UG24-03)

Client Sample ID:	MW372UG3-24R	Project:	FRNP00507
Sample ID:	662795002	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	11-APR-24 13:46		
Receive Date:	13-APR-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	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	PRB	05/08/24	1308	2597151	1
Barium		0.0533	0.000670	0.00400	mg/L	1.00	1	PRB	05/08/24	0813	2597151	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
SW846 3005A	ICP-MS 3005A PREP	SD	04/17/24	0815	2597149
EPA 160	Laboratory Filtration	JD2	04/15/24	1104	2596889

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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Company :	Four Rivers Nuclear Partnership, LLC
Address :	5600 Hobbs Road
	Kevil, Kentucky 42053
Contact:	Ms. Jaime Morrow
Project:	C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	TB4UG3-24	Project:	FRNP00507
Sample ID:	662795003	Client ID:	FRNP005
Matrix:	WATER		
Collect Date:	11-APR-24 11:25		
Receive Date:	13-APR-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	0.00844	0.0188	ug/L	0.938	1	LOF	04/15/24	2157	2596326	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	04/16/24	1352	2597630	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	BJ	1.93	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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Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: TB4UG3-24 Project: FRNP00507
Sample ID: 662795003 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	04/15/24	1331	2596324

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"	7.99 ug/L	6.70	119	(56%-149%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	55.0 ug/L	50.0	110	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	52.3 ug/L	50.0	105	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	50.6 ug/L	50.0	101	(77%-121%)

Notes:

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Company :	Four Rivers Nuclear Partnership, LLC
Address :	5600 Hobbs Road
	Kevil, Kentucky 42053
Contact:	Ms. Jaime Morrow
Project:	C-746-U Landfill Quarterly(UG24-03)

Client Sample ID:	TB4UG3-24	Project:	FRNP00507
Sample ID:	662795003	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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Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053
Report Date: July 31, 2024
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW372UG3-24R
Sample ID: 662795001
Matrix: WG
Collect Date: 11-APR-24
Receive Date: 13-APR-24
Collector: Client
Project: FRNP00507
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
AN-1418 AlphaSpec Ra226, Liquid "As Received"														
Radium-226	U	0.0405	+/-0.261	0.535	+/-0.261	5.00	pCi/L			CM4	05/04/24	0921	2604290	1
Th-01-RC M, Th Isotopes, Liquid "As Received"														
Thorium-230	U	0.108	+/-0.864	1.80	+/-0.866	50.0	pCi/L			CM4	05/02/24	1642	2604291	2
Thorium-232	U	-0.0218	+/-0.428	0.861	+/-0.429		pCi/L							
Rad Gas Flow Proportional Counting														
904.0Mod, Ra228, Liquid "As Received"														
Radium-228	U	0.973	+/-1.80	3.22	+/-1.82	4.99	pCi/L			KP1	04/19/24	0951	2597115	3
905.0Mod, Sr90, liquid "As Received"														
Strontium-90	U	2.81	+/-3.71	6.31	+/-3.73	8.00	pCi/L			JE1	04/30/24	1440	2596778	4
9310, Alpha/Beta Activity, liquid "As Received"														
Alpha	U	3.78	+/-4.83	8.09	+/-4.87	15.0	pCi/L			HH3	04/25/24	1409	2596851	5
Beta		37.6	+/-8.93	9.26	+/-10.9	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
906.0M, Tritium Dist, Liquid "As Received"														
Tritium	U	11.5	+/-120	229	+/-120	300	pCi/L			HB2	05/10/24	0135	2602404	6
Tc-02-RC-MOD, Tc99, Liquid "As Received"														
Technetium-99		61.5	+/-15.2	19.9	+/-16.6	25.0	pCi/L			GS3	05/09/24	1021	2602462	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"	2604290	99.3	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2604291	82.8	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2597115	87.9	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2596778	78.5	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2602462	97.3	(30%-110%)

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Certificate of Analysis

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053

Report Date: July 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-03)

Client Sample ID: MW372UG3-24R
Sample ID: 662795001

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

APPENDIX D

STATISTICAL ANALYSES AND QUALIFICATION STATEMENT

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RESIDENTIAL/CONTAINED—QUARTERLY, 2nd CY 2024 Finds/Unit: KY8-980-008-982/1
Facility: U.S. DOE—Paducah Gaseous Diffusion Plant LAB ID: None
Permit Number: SW07300014, SW07300015, SW07300045

GROUNDWATER STATISTICAL COMMENTS

Introduction

The statistical analyses conducted on the second 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 second quarter 2024 data used to conduct the statistical analyses were collected in April 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

Station	Type	Groundwater Unit
MW357	TW	URGA
MW358	TW	LRGA
MW359[a,b]	TW	UCRS
MW360	TW	URGA
MW361	TW	LRGA
MW362[a]	TW	UCRS
MW363	TW	URGA
MW364	TW	LRGA
MW365[a]	TW	UCRS
MW366	TW	URGA
MW367	TW	LRGA
MW368[a]	TW	UCRS
MW369	BG	URGA
MW370	BG	LRGA
MW371[a]	BG	UCRS
MW372	BG	URGA
MW373	BG	LRGA
MW374[a]	BG	UCRS
MW375[a]	SG	UCRS
MW376[a,b]	SG	UCRS
MW377[a,b]	SG	UCRS

[a] 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.
[b] 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.[1]

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 ≤ 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, second 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.

[1] For pH, two-sided TLs (upper and lower) were calculated with an adjusted K factor using the following equations:
upper TL = X + (K × S)
lower TL = X - (K × S)

Exhibit D.2. List of Parameters Tested Using the One-Sided Upper Tolerance Level Test with Historical Background

Parameters
Acetone
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[a]
pH[b]
Potassium
Radium-226
Sodium
Sulfate
Technetium-99
Total Organic Carbon (TOC)
Total Organic Halides (TOX)
Vanadium
Zinc

[a] Oxidation-Reduction Potential calibrated as Eh.
[b] 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

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
Aluminum	**6**	**0**	**6**	**Yes**
Antimony	6	6	0	No
Beryllium	6	6	0	No
Boron	**6**	**2**	**4**	**Yes**
Bromide	**6**	**5**	**1**	**Yes**
Bromochloromethane	6	6	0	No
Bromodichloromethane	6	6	0	No
Bromoform	6	6	0	No
Bromomethane	6	6	0	No
Calcium	**6**	**0**	**6**	**Yes**
Carbon disulfide	6	6	0	No
Chemical Oxygen Demand (COD)	**6**	**4**	**2**	**Yes**
Chloride	**6**	**0**	**6**	**Yes**
Chlorobenzene	6	6	0	No
Chloroethane	6	6	0	No
Chloroform	6	6	0	No
Chloromethane	6	6	0	No
cis-1,2-Dichloroethene	6	6	0	No
cis-1,3-Dichloropropene	6	6	0	No
Cobalt	**6**	**2**	**4**	**Yes**
Conductivity	**6**	**0**	**6**	**Yes**
Copper	**6**	**0**	**6**	**Yes**
Cyanide	6	6	0	No
Dibromochloromethane	6	6	0	No
Dibromomethane	6	6	0	No
Dimethylbenzene, Total	6	6	0	No
Dissolved Oxygen	**6**	**0**	**6**	**Yes**
Dissolved Solids	**6**	**0**	**6**	**Yes**
Ethylbenzene	6	6	0	No
Iodide	6	6	0	No
Iodomethane	6	6	0	No
Iron	**6**	**0**	**6**	**Yes**
Magnesium	**6**	**0**	**6**	**Yes**
Manganese	**6**	**0**	**6**	**Yes**
Methylene chloride	**6**	**4**	**2**	**Yes**
Molybdenum	**6**	**2**	**4**	**Yes**
Nickel	**6**	**1**	**5**	**Yes**
Oxidation-Reduction Potential	**6**	**0**	**6**	**Yes**

Exhibit D.3. Summary of Censored, and Uncensored Data—UCRS (Continued)

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
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
pH	**6**	**0**	**6**	**Yes**
Potassium	**6**	**0**	**6**	**Yes**
Radium-226	6	6	0	No
Rhodium	6	6	0	No
Sodium	**6**	**0**	**6**	**Yes**
Styrene	6	6	0	No
Sulfate	**6**	**0**	**6**	**Yes**
Tantalum	6	6	0	No
Technetium-99	6	6	0	No
Tetrachloroethene	6	6	0	No
Thallium	6	6	0	No
Thorium-230	6	6	0	No
Toluene	6	6	0	No
Total Organic Carbon (TOC)	**6**	**0**	**6**	**Yes**
Total Organic Halides (TOX)	**6**	**0**	**6**	**Yes**
trans-1,2-Dichloroethene	6	6	0	No
trans-1,3-Dichloropropene	6	6	0	No
trans-1,4-Dichloro-2-Butene	6	6	0	No
Trichlorofluoromethane	6	6	0	No
Vanadium	**6**	**3**	**3**	**Yes**
Vinyl Acetate	6	6	0	No
Zinc	**6**	**3**	**3**	**Yes**

Bold denotes parameters with at least one uncensored observation.

Exhibit D.4. Summary of Censored, and Uncensored Data—URGA

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**	**5**	**1**	**Yes**
Acrolein	6	6	0	No
Acrylonitrile	6	6	0	No
Aluminum	**6**	**4**	**2**	**Yes**
Antimony	6	6	0	No
Beryllium	6	6	0	No
Boron	**6**	**0**	**6**	**Yes**
Bromide	**6**	**1**	**5**	**Yes**
Bromochloromethane	6	6	0	No
Bromodichloromethane	6	6	0	No
Bromoform	6	6	0	No
Bromomethane	6	6	0	No
Calcium	**6**	**0**	**6**	**Yes**
Carbon disulfide	6	6	0	No
Chemical Oxygen Demand (COD)	**6**	**5**	**1**	**Yes**
Chloride	**6**	**0**	**6**	**Yes**
Chlorobenzene	6	6	0	No
Chloroethane	6	6	0	No
Chloroform	6	6	0	No
Chloromethane	6	6	0	No
cis-1,2-Dichloroethene	6	6	0	No
cis-1,3-Dichloropropene	6	6	0	No
Cobalt	**6**	**3**	**3**	**Yes**
Conductivity	**6**	**0**	**6**	**Yes**
Copper	**6**	**0**	**6**	**Yes**
Cyanide	6	6	0	No
Dibromochloromethane	6	6	0	No
Dibromomethane	6	6	0	No
Dimethylbenzene, Total	6	6	0	No
Dissolved Oxygen	**6**	**0**	**6**	**Yes**
Dissolved Solids	**6**	**0**	**6**	**Yes**
Ethylbenzene	6	6	0	No
Iodide	6	6	0	No
Iodomethane	6	6	0	No
Iron	**6**	**1**	**5**	**Yes**
Magnesium	**6**	**0**	**6**	**Yes**
Manganese	**6**	**0**	**6**	**Yes**
Methylene chloride	**6**	**4**	**2**	**Yes**
Molybdenum	6	6	0	No
Nickel	**6**	**3**	**3**	**Yes**
Oxidation-Reduction Potential	**6**	**0**	**6**	**Yes**

Exhibit D.4. Summary of Censored, and Uncensored Data—URGA (Continued)

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
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
pH	**6**	**0**	**6**	**Yes**
Potassium	**6**	**0**	**6**	**Yes**
Radium-226	6	6	0	No
Rhodium	6	6	0	No
Sodium	**6**	**0**	**6**	**Yes**
Styrene	6	6	0	No
Sulfate	**6**	**0**	**6**	**Yes**
Tantalum	6	6	0	No
Technetium-99	**6**	**2**	**4**	**Yes**
Tetrachloroethene	6	6	0	No
Thallium	6	6	0	No
Thorium-230	6	6	0	No
Toluene	6	6	0	No
Total Organic Carbon (TOC)	**6**	**0**	**6**	**Yes**
Total Organic Halides (TOX)	**6**	**2**	**4**	**Yes**
trans-1,2-Dichloroethene	6	6	0	No
trans-1,3-Dichloropropene	6	6	0	No
trans-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
Zinc	**6**	**4**	**2**	**Yes**

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**	**5**	**1**	**Yes**
Acrolein	6	6	0	No
Acrylonitrile	6	6	0	No
Aluminum	**6**	**5**	**1**	**Yes**
Antimony	6	6	0	No
Beryllium	6	6	0	No
Boron	**6**	**0**	**6**	**Yes**
Bromide	**6**	**1**	**5**	**Yes**
Bromochloromethane	6	6	0	No
Bromodichloromethane	6	6	0	No
Bromoform	6	6	0	No
Bromomethane	6	6	0	No
Calcium	**6**	**0**	**6**	**Yes**
Carbon disulfide	6	6	0	No
Chemical Oxygen Demand (COD)	**6**	**4**	**2**	**Yes**
Chloride	**6**	**0**	**6**	**Yes**
Chlorobenzene	6	6	0	No
Chloroethane	6	6	0	No
Chloroform	6	6	0	No
Chloromethane	6	6	0	No
cis-1,2-Dichloroethene	6	6	0	No
cis-1,3-Dichloropropene	6	6	0	No
Cobalt	**6**	**3**	**3**	**Yes**
Conductivity	**6**	**0**	**6**	**Yes**
Copper	**6**	**0**	**6**	**Yes**
Cyanide	6	6	0	No
Dibromochloromethane	6	6	0	No
Dibromomethane	6	6	0	No
Dimethylbenzene, Total	6	6	0	No
Dissolved Oxygen	**6**	**0**	**6**	**Yes**
Dissolved Solids	**6**	**0**	**6**	**Yes**
Ethylbenzene	6	6	0	No
Iodide	6	6	0	No
Iodomethane	6	6	0	No
Iron	**6**	**2**	**4**	**Yes**
Magnesium	**6**	**0**	**6**	**Yes**
Manganese	**6**	**1**	**5**	**Yes**
Methylene chloride	**6**	**4**	**2**	**Yes**
Molybdenum	**6**	**5**	**1**	**Yes**

Exhibit D.5. Summary of Censored, and Uncensored Data—LRGA (Continued)

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
Nickel	**6**	**3**	**3**	**Yes**
Oxidation-Reduction Potential	**6**	**0**	**6**	**Yes**
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
pH	**6**	**0**	**6**	**Yes**
Potassium	**6**	**0**	**6**	**Yes**
Radium-226	**6**	**5**	**1**	**Yes**
Rhodium	6	6	0	No
Sodium	**6**	**0**	**6**	**Yes**
Styrene	6	6	0	No
Sulfate	**6**	**0**	**6**	**Yes**
Tantalum	6	6	0	No
Technetium-99	**6**	**2**	**4**	**Yes**
Tetrachloroethene	6	6	0	No
Thallium	6	6	0	No
Thorium-230	6	6	0	No
Toluene	6	6	0	No
Total Organic Carbon (TOC)	**6**	**0**	**6**	**Yes**
Total Organic Halides (TOX)	**6**	**1**	**5**	**Yes**
trans-1,2-Dichloroethene	6	6	0	No
trans-1,3-Dichloropropene	6	6	0	No
trans-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
Zinc	**6**	**3**	**3**	**Yes**

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, 26, and 28 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 and oxidation-reduction potential.

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
MW362: Dissolved Oxygen, Oxidation-Reduction Potential,* and Sulfate	**MW357:** Oxidation-Reduction Potential*	**MW358:** Oxidation-Reduction Potential*
MW365: Dissolved Oxygen, Oxidation-Reduction Potential,* and Sulfate	**MW360:** Oxidation-Reduction Potential*	**MW361:** Oxidation-Reduction Potential*
MW368: Dissolved Oxygen, Oxidation-Reduction Potential,* and Sulfate	**MW363:** Oxidation-Reduction Potential*	**MW364:** Oxidation-Reduction Potential*
MW371: Dissolved Oxygen and Oxidation-Reduction Potential*	**MW366:** Oxidation-Reduction Potential*	**MW367:** Oxidation-Reduction Potential*
MW374: Oxidation-Reduction Potential* and Sulfate	**MW369:** Oxidation-Reduction Potential* and Technetium-99	**MW370:** Oxidation-Reduction Potential*
MW375: Oxidation-Reduction Potential* and Sulfate	**MW372:** Calcium, Conductivity, Dissolved Solids, Magnesium, Oxidation-Reduction Potential,* and Sulfate	**MW373:** Calcium and Oxidation-Reduction Potential*

*Oxidation-Reduction Potential calibrated as Eh.

Exhibit D.7. Test Summaries for Qualified Parameters for Historical Background—UCRS

Parameter	Performed Test	CV Normality Test[a]	Results of Tolerance Interval Test Conducted
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 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[b]	Tolerance Interval	3.54	Current results exceed statistically derived historical background concentration in 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 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)

Parameter	Performed Test	CV Normality Test[a]	Results of Tolerance Interval Test Conducted
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
[a] If CV > 1.0, used log-transformed data.
[b] Oxidation-Reduction Potential calibrated as Eh.

Exhibit D.8. Test Summaries for Qualified Parameters for Historical Background—URGA

Parameter	Performed Test	CV Normality Test[a]	Results of Tolerance Interval Test Conducted
Acetone	Tolerance Interval	3.88	No exceedance of statistically derived historical background concentration.
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.
Methylene Chloride	Tolerance Interval	0.36	No exceedance of statistically derived historical background concentration.
Nickel	Tolerance Interval	0.91	No exceedance of statistically derived historical background concentration.
Oxidation-Reduction Potential[b]	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)

Parameter	Performed Test	CV Normality Test[a]	Results of Tolerance Interval Test Conducted
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 MW369.
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
[a] If CV > 1.0, used log-transformed data.
[b] Oxidation-Reduction Potential calibrated as Eh.

Exhibit D.9. Test Summaries for Qualified Parameters for Historical Background—LRGA

Parameter	Performed Test	CV Normality Test[a]	Results of Tolerance Interval Test Conducted
Acetone	Tolerance Interval	2.67	No exceedance of statistically derived historical background concentration.
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	No exceedance of statistically derived historical background concentration.
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[b]	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.
Radium-226	Tolerance Interval	2.66	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[a]	Results of Tolerance Interval Test Conducted
Zinc	Tolerance Interval	0.67	No exceedance of statistically derived historical background concentration.

CV: coefficient of variation
[a] If CV > 1.0, used log-transformed data.
[b] 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 2 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 UCRS well MW368 exceeded the current TL for sulfate this quarter.

URGA

This quarter's results showed that none of the URGA wells exceeded the current TL this quarter.

LRGA

This quarter's results showed that none of the LRGA wells exceeded the current TL this quarter.

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	0.74	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	0.17	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.
Sulfate	Tolerance Interval	0.80	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

Parameter	Performed Test	CV Normality Test	Results of Tolerance Interval Test Conducted
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	0.36	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	0.40	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	0.09	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.
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	0.36	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

Parameter	Performed Test	CV Normality Test	Results of Tolerance Interval Test Conducted
Calcium	Tolerance Interval	0.44	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.

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 Second 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
MW359	Downgradient
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)
MW362	Downgradient	Yes	1.07E+00	N/A	6.77E-02	NO
MW365	Downgradient	Yes	4.52E-02	N/A	-3.10E+00	NO
MW368	Downgradient	Yes	4.27E-01	N/A	-8.51E-01	NO
MW371	Upgradient	Yes	1.17E-01	N/A	-2.15E+00	NO
MW374	Upgradient	Yes	2.65E-02	N/A	-3.63E+00	NO
MW375	Sidegradient	Yes	4.51E-02	N/A	-3.10E+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 Second 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
MW359	Downgradient
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)
MW362	Downgradient	Yes	2.40E-02	N/A	-3.73E+00	NO
MW365	Downgradient	Yes	6.85E-03	N/A	-4.98E+00	NO
MW368	Downgradient	No	1.50E-02	N/A	-4.20E+00	N/A
MW371	Upgradient	No	1.50E-02	N/A	-4.20E+00	N/A
MW374	Upgradient	Yes	3.99E-02	N/A	-3.22E+00	NO
MW375	Sidegradient	Yes	1.15E-02	N/A	-4.47E+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 Second 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
MW359	Downgradient
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)
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	4.24E-01	NO	-8.58E-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 Second 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
MW359	Downgradient
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)
MW362	Downgradient	Yes	1.48E+01	NO	2.69E+00	N/A
MW365	Downgradient	Yes	1.63E+01	NO	2.79E+00	N/A
MW368	Downgradient	Yes	6.70E+01	NO	4.20E+00	N/A
MW371	Upgradient	Yes	5.62E+01	NO	4.03E+00	N/A
MW374	Upgradient	Yes	2.37E+01	NO	3.17E+00	N/A
MW375	Sidegradient	Yes	1.30E+01	NO	2.56E+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 Second Quarter 2024 Statistical Analysis Historical Background Comparison

Chemical Oxygen Demand (COD) 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=** 72.938 **S=** 70.749 **CV(1)=** 0.970 **K factor**=** 2.523 **TL(1)=** 2.51E+02 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 4.000 **S=** 0.702 **CV(2)=** 0.175 **K factor**=** 2.523 **TL(2)=** 5.77E+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	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	3.50E+01	3.56E+00
1/8/2003	3.50E+01	3.56E+00
4/3/2003	3.50E+01	3.56E+00
7/9/2003	3.50E+01	3.56E+00
10/6/2003	3.50E+01	3.56E+00

Well Number:	MW374	
Date Collected	Result	LN(Result)
10/8/2002	2.60E+02	5.56E+00
1/7/2003	2.14E+02	5.37E+00
4/2/2003	1.47E+02	4.99E+00
7/9/2003	7.20E+01	4.28E+00
10/7/2003	5.60E+01	4.03E+00
1/6/2004	6.80E+01	4.22E+00
4/7/2004	3.50E+01	3.56E+00
7/14/2004	3.50E+01	3.56E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW359	Downgradient
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)
MW362	Downgradient	No	2.00E+01	N/A	3.00E+00	N/A
MW365	Downgradient	No	2.00E+01	N/A	3.00E+00	N/A
MW368	Downgradient	No	2.00E+01	N/A	3.00E+00	N/A
MW371	Upgradient	No	2.00E+01	N/A	3.00E+00	N/A
MW374	Upgradient	Yes	6.06E+01	NO	4.10E+00	N/A
MW375	Sidegradient	Yes	1.41E+01	NO	2.65E+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 Second 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
MW359	Downgradient
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)
MW362	Downgradient	Yes	2.63E+00	NO	9.67E-01	N/A
MW365	Downgradient	Yes	1.97E+00	NO	6.78E-01	N/A
MW368	Downgradient	Yes	4.39E+00	NO	1.48E+00	N/A
MW371	Upgradient	Yes	3.95E+00	NO	1.37E+00	N/A
MW374	Upgradient	Yes	4.15E+01	NO	3.73E+00	N/A
MW375	Sidegradient	Yes	3.23E+00	NO	1.17E+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 Second 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
MW359	Downgradient
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)
MW362	Downgradient	Yes	3.27E-04	N/A	-8.03E+00	NO
MW365	Downgradient	Yes	1.26E-03	N/A	-6.68E+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	Yes	4.60E-04	N/A	-7.68E+00	NO
MW375	Sidegradient	Yes	4.19E-04	N/A	-7.78E+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 Second Quarter 2024 Statistical Analysis Historical Background Comparison

Conductivity UNITS: umho/cm 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=** 918.744 **S=** 417.257 **CV(1)=** 0.454 **K factor**=** 2.523 **TL(1)=** 1.97E+03 **LL(1)=** N/A

Statistics-Transformed Background Data **X=** 6.705 **S=** 0.550 **CV(2)=** 0.082 **K factor**=** 2.523 **TL(2)=** 8.09E+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	5.41E+02	6.29E+00
4/22/2002	6.43E+02	6.47E+00
7/15/2002	6.32E+02	6.45E+00
10/8/2002	6.31E+02	6.45E+00
1/8/2003	6.80E+02	6.52E+00
4/3/2003	7.49E+02	6.62E+00
7/9/2003	7.34E+02	6.60E+00
10/6/2003	7.53E+02	6.62E+00

Well Number:	MW374	
Date Collected	Result	LN(Result)
3/18/2002	1.01E+03	6.91E+00
10/8/2002	1.68E+03	7.43E+00
1/7/2003	1.72E+03	7.45E+00
4/2/2003	1.72E+02	5.15E+00
7/9/2003	1.23E+03	7.12E+00
10/7/2003	1.21E+03	7.10E+00
1/6/2004	1.17E+03	7.07E+00
4/7/2004	1.15E+03	7.04E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW359	Downgradient
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)
MW362	Downgradient	Yes	5.64E+02	NO	6.34E+00	N/A
MW365	Downgradient	Yes	3.63E+02	NO	5.89E+00	N/A
MW368	Downgradient	Yes	7.69E+02	NO	6.65E+00	N/A
MW371	Upgradient	Yes	6.97E+02	NO	6.55E+00	N/A
MW374	Upgradient	Yes	6.85E+02	NO	6.53E+00	N/A
MW375	Sidegradient	Yes	3.66E+02	NO	5.90E+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 Second 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
MW359	Downgradient
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)
MW362	Downgradient	Yes	1.90E-03	N/A	-6.27E+00	NO
MW365	Downgradient	Yes	2.87E-03	N/A	-5.85E+00	NO
MW368	Downgradient	Yes	6.80E-04	N/A	-7.29E+00	NO
MW371	Upgradient	Yes	8.34E-04	N/A	-7.09E+00	NO
MW374	Upgradient	Yes	4.26E-04	N/A	-7.76E+00	NO
MW375	Sidegradient	Yes	6.12E-04	N/A	-7.40E+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 Second 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
MW359	Downgradient
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)
MW362	Downgradient	Yes	7.16E+00	YES	1.97E+00	N/A
MW365	Downgradient	Yes	6.40E+00	YES	1.86E+00	N/A
MW368	Downgradient	Yes	6.96E+00	YES	1.94E+00	N/A
MW371	Upgradient	Yes	3.03E+00	YES	1.11E+00	N/A
MW374	Upgradient	Yes	1.33E+00	NO	2.85E-01	N/A
MW375	Sidegradient	Yes	2.03E+00	NO	7.08E-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

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 Second 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
MW359	Downgradient
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)
MW362	Downgradient	Yes	3.25E+02	NO	5.78E+00	N/A
MW365	Downgradient	Yes	2.19E+02	NO	5.39E+00	N/A
MW368	Downgradient	Yes	5.26E+02	NO	6.27E+00	N/A
MW371	Upgradient	Yes	3.98E+02	NO	5.99E+00	N/A
MW374	Upgradient	Yes	3.59E+02	NO	5.88E+00	N/A
MW375	Sidegradient	Yes	1.80E+02	NO	5.19E+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.

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 Second 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
MW359	Downgradient
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)
MW362	Downgradient	Yes	4.76E-01	NO	-7.42E-01	N/A
MW365	Downgradient	Yes	4.59E-02	NO	-3.08E+00	N/A
MW368	Downgradient	Yes	1.93E-01	NO	-1.65E+00	N/A
MW371	Upgradient	Yes	1.08E-01	NO	-2.23E+00	N/A
MW374	Upgradient	Yes	2.68E-01	NO	-1.32E+00	N/A
MW375	Sidegradient	Yes	8.46E-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.

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 Second 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
MW359	Downgradient
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)
MW362	Downgradient	Yes	6.50E+00	NO	1.87E+00	N/A
MW365	Downgradient	Yes	7.58E+00	NO	2.03E+00	N/A
MW368	Downgradient	Yes	1.78E+01	NO	2.88E+00	N/A
MW371	Upgradient	Yes	1.90E+01	NO	2.94E+00	N/A
MW374	Upgradient	Yes	5.39E+00	NO	1.68E+00	N/A
MW375	Sidegradient	Yes	4.84E+00	NO	1.58E+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 Second 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
MW359	Downgradient
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)
MW362	Downgradient	Yes	3.72E-03	NO	-5.59E+00	N/A
MW365	Downgradient	Yes	1.59E-02	NO	-4.14E+00	N/A
MW368	Downgradient	Yes	7.44E-03	NO	-4.90E+00	N/A
MW371	Upgradient	Yes	4.53E-03	NO	-5.40E+00	N/A
MW374	Upgradient	Yes	1.29E-01	NO	-2.05E+00	N/A
MW375	Sidegradient	Yes	1.24E-02	NO	-4.39E+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.

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 Second 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
MW359	Downgradient
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)
MW362	Downgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW365	Downgradient	Yes	6.70E-01	NO	-4.00E-01	N/A
MW368	Downgradient	Yes	7.10E-01	NO	-3.42E-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 Second 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
MW359	Downgradient
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)
MW362	Downgradient	Yes	1.73E-03	N/A	-6.36E+00	NO
MW365	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW368	Downgradient	Yes	8.03E-04	N/A	-7.13E+00	NO
MW371	Upgradient	Yes	3.74E-04	N/A	-7.89E+00	NO
MW374	Upgradient	Yes	2.43E-04	N/A	-8.32E+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 Second 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
MW359	Downgradient
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)
MW362	Downgradient	Yes	1.62E-03	NO	-6.43E+00	N/A
MW365	Downgradient	Yes	5.18E-03	NO	-5.26E+00	N/A
MW368	Downgradient	Yes	1.20E-03	NO	-6.73E+00	N/A
MW371	Upgradient	Yes	1.45E-03	NO	-6.54E+00	N/A
MW374	Upgradient	No	2.00E-03	N/A	-6.21E+00	N/A
MW375	Sidegradient	Yes	1.20E-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.

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 Second 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
MW359	Downgradient
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)
MW362	Downgradient	Yes	3.57E+02	N/A	5.88E+00	YES
MW365	Downgradient	Yes	3.53E+02	N/A	5.87E+00	YES
MW368	Downgradient	Yes	2.24E+02	N/A	5.41E+00	YES
MW371	Upgradient	Yes	3.60E+02	N/A	5.89E+00	YES
MW374	Upgradient	Yes	3.69E+02	N/A	5.91E+00	YES
MW375	Sidegradient	Yes	3.61E+02	N/A	5.89E+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

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.*

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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
MW359	Downgradient
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)?
MW362	Downgradient	Yes	7.01E+00	NO	1.95E+00	N/A
MW365	Downgradient	Yes	6.27E+00	NO	1.84E+00	N/A
MW368	Downgradient	Yes	6.36E+00	NO	1.85E+00	N/A
MW371	Upgradient	Yes	6.45E+00	NO	1.86E+00	N/A
MW374	Upgradient	Yes	6.71E+00	NO	1.90E+00	N/A
MW375	Sidegradient	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.*

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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
MW359	Downgradient
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)
MW362	Downgradient	Yes	3.74E-01	NO	-9.83E-01	N/A
MW365	Downgradient	Yes	2.12E-01	NO	-1.55E+00	N/A
MW368	Downgradient	Yes	7.06E-01	NO	-3.48E-01	N/A
MW371	Upgradient	Yes	3.47E-01	NO	-1.06E+00	N/A
MW374	Upgradient	Yes	4.04E-01	NO	-9.06E-01	N/A
MW375	Sidegradient	Yes	2.48E-01	NO	-1.39E+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.

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.*

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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
MW359	Downgradient
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)
MW362	Downgradient	Yes	1.19E+02	NO	4.78E+00	N/A
MW365	Downgradient	Yes	4.13E+01	NO	3.72E+00	N/A
MW368	Downgradient	Yes	8.22E+01	NO	4.41E+00	N/A
MW371	Upgradient	Yes	8.85E+01	NO	4.48E+00	N/A
MW374	Upgradient	Yes	1.21E+02	NO	4.80E+00	N/A
MW375	Sidegradient	Yes	5.07E+01	NO	3.93E+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.*

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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
MW359	Downgradient
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)
MW362	Downgradient	Yes	1.97E+01	YES	2.98E+00	N/A
MW365	Downgradient	Yes	5.35E+01	YES	3.98E+00	N/A
MW368	Downgradient	Yes	1.69E+02	YES	5.13E+00	N/A
MW371	Upgradient	Yes	9.92E+00	NO	2.29E+00	N/A
MW374	Upgradient	Yes	1.76E+01	YES	2.87E+00	N/A
MW375	Sidegradient	Yes	2.21E+01	YES	3.10E+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.

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

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.*

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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
MW359	Downgradient
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)
MW362	Downgradient	Yes	1.86E+00	N/A	6.21E-01	NO
MW365	Downgradient	Yes	1.13E+00	N/A	1.22E-01	NO
MW368	Downgradient	Yes	1.17E+00	N/A	1.57E-01	NO
MW371	Upgradient	Yes	1.97E+00	N/A	6.78E-01	NO
MW374	Upgradient	Yes	2.46E+00	N/A	9.00E-01	NO
MW375	Sidegradient	Yes	7.75E-01	N/A	-2.55E-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 Second 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
MW359	Downgradient
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)
MW362	Downgradient	Yes	1.73E+01	N/A	2.85E+00	NO
MW365	Downgradient	Yes	1.67E+01	N/A	2.82E+00	NO
MW368	Downgradient	Yes	4.34E+00	N/A	1.47E+00	NO
MW371	Upgradient	Yes	5.26E+00	N/A	1.66E+00	NO
MW374	Upgradient	Yes	1.69E+01	N/A	2.83E+00	NO
MW375	Sidegradient	Yes	7.32E+00	N/A	1.99E+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 Second 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
MW359	Downgradient
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)
MW362	Downgradient	Yes	4.62E-03	N/A	-5.38E+00	NO
MW365	Downgradient	Yes	3.42E-03	N/A	-5.68E+00	NO
MW368	Downgradient	Yes	6.72E-03	N/A	-5.00E+00	NO
MW371	Upgradient	No	6.67E-03	N/A	-5.01E+00	N/A
MW374	Upgradient	No	4.24E-03	N/A	-5.46E+00	N/A
MW375	Sidegradient	No	5.11E-03	N/A	-5.28E+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.*

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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
MW359	Downgradient
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)
MW362	Downgradient	No	2.00E-02	N/A	-3.91E+00	N/A
MW365	Downgradient	Yes	5.49E-03	N/A	-5.20E+00	NO
MW368	Downgradient	Yes	4.27E-03	N/A	-5.46E+00	NO
MW371	Upgradient	Yes	3.32E-03	N/A	-5.71E+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.*

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Acetone 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=** 372.563 **S=** 1447.319 **CV(1)=** 3.885 **K factor**=** 2.523 **TL(1)=** 4.02E+03 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 2.736 **S=** 1.603 **CV(2)=** 0.586 **K factor**=** 2.523 **TL(2)=** 6.78E+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	5.00E+00	1.61E+00
4/22/2002	1.00E+01	2.30E+00
7/15/2002	1.40E+01	2.64E+00
10/8/2002	1.00E+01	2.30E+00
1/8/2003	1.00E+01	2.30E+00
4/3/2003	1.00E+01	2.30E+00
7/8/2003	1.00E+01	2.30E+00
10/6/2003	5.80E+03	8.67E+00

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	1.40E+01	2.64E+00
4/23/2002	1.00E+01	2.30E+00
7/16/2002	1.00E+01	2.30E+00
10/8/2002	1.00E+01	2.30E+00
1/7/2003	1.00E+01	2.30E+00
4/2/2003	1.00E+01	2.30E+00
7/9/2003	1.80E+01	2.89E+00
10/7/2003	1.00E+01	2.30E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW360	Downgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW363	Downgradient	Yes	1.81E+00	N/A	5.93E-01	NO
MW366	Downgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW369	Upgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW372	Upgradient	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 Second 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

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

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

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)
MW357	Downgradient	No	5.00E-02	N/A	-3.00E+00	N/A
MW360	Downgradient	Yes	3.31E-02	N/A	-3.41E+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	7.91E-02	N/A	-2.54E+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.

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 Second 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

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

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)
MW357	Downgradient	Yes	3.20E-01	NO	-1.14E+00	N/A
MW360	Downgradient	Yes	4.35E-02	NO	-3.13E+00	N/A
MW363	Downgradient	Yes	1.90E-02	NO	-3.96E+00	N/A
MW366	Downgradient	Yes	6.88E-02	NO	-2.68E+00	N/A
MW369	Upgradient	Yes	1.53E-02	NO	-4.18E+00	N/A
MW372	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.

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.*

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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

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

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

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)
MW357	Downgradient	Yes	3.36E-01	NO	-1.09E+00	N/A
MW360	Downgradient	Yes	1.39E-01	NO	-1.97E+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	3.74E-01	NO	-9.83E-01	N/A
MW372	Upgradient	Yes	7.44E-01	NO	-2.96E-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 Second 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

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

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

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)
MW357	Downgradient	Yes	2.34E+01	NO	3.15E+00	N/A
MW360	Downgradient	Yes	1.91E+01	NO	2.95E+00	N/A
MW363	Downgradient	Yes	2.04E+01	NO	3.02E+00	N/A
MW366	Downgradient	Yes	3.10E+01	NO	3.43E+00	N/A
MW369	Upgradient	Yes	1.49E+01	NO	2.70E+00	N/A
MW372	Upgradient	Yes	6.53E+01	YES	4.18E+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

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 Second Quarter 2024 Statistical Analysis Historical Background Comparison

Chemical Oxygen Demand (COD) 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=** 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

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

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	Yes	9.44E+00	NO	2.24E+00	N/A
MW366	Downgradient	No	2.00E+01	N/A	3.00E+00	N/A
MW369	Upgradient	No	2.00E+01	N/A	3.00E+00	N/A
MW372	Upgradient	No	2.00E+01	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.

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.*

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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

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

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)
MW357	Downgradient	Yes	3.05E+01	NO	3.42E+00	N/A
MW360	Downgradient	Yes	7.51E+00	NO	2.02E+00	N/A
MW363	Downgradient	Yes	1.93E+01	NO	2.96E+00	N/A
MW366	Downgradient	Yes	4.39E+01	NO	3.78E+00	N/A
MW369	Upgradient	Yes	2.72E+01	NO	3.30E+00	N/A
MW372	Upgradient	Yes	3.87E+01	NO	3.66E+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 Second 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

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

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

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)
MW357	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW360	Downgradient	Yes	7.35E-04	NO	-7.22E+00	N/A
MW363	Downgradient	Yes	7.15E-04	NO	-7.24E+00	N/A
MW366	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW369	Upgradient	Yes	4.09E-03	NO	-5.50E+00	N/A
MW372	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.

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 Second Quarter 2024 Statistical Analysis Historical 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 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=** 482.856	**S=** 57.603	**CV(1)=** 0.119	**K factor**=** 2.523	**TL(1)=** 6.28E+02	**LL(1)=** N/A
Statistics-Transformed Background Data	**X=** 6.173	**S=** 0.123	**CV(2)=** 0.020	**K factor**=** 2.523	**TL(2)=** 6.48E+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	3.88E+02	5.96E+00
4/22/2002	4.04E+02	6.00E+00
7/15/2002	3.94E+02	5.98E+00
10/8/2002	4.03E+02	6.00E+00
1/8/2003	5.20E+02	6.25E+00
4/3/2003	4.87E+02	6.19E+00
7/8/2003	4.78E+02	6.17E+00
10/6/2003	4.76E+02	6.17E+00

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	5.08E+02	6.23E+00
4/23/2002	5.01E+02	6.22E+00
7/16/2002	5.07E+02	6.23E+00
10/8/2002	4.95E+02	6.20E+00
1/7/2003	5.09E+02	6.23E+00
4/2/2003	5.15E+02	6.24E+00
7/9/2003	5.76E+02	6.36E+00
10/7/2003	5.65E+02	6.34E+00

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)
MW357	Downgradient	Yes	4.16E+02	NO	6.03E+00	N/A
MW360	Downgradient	Yes	3.88E+02	NO	5.96E+00	N/A
MW363	Downgradient	Yes	3.51E+02	NO	5.86E+00	N/A
MW366	Downgradient	Yes	4.91E+02	NO	6.20E+00	N/A
MW369	Upgradient	Yes	3.47E+02	NO	5.85E+00	N/A
MW372	Upgradient	Yes	7.58E+02	YES	6.63E+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

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 Second 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

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

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

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)
MW357	Downgradient	Yes	5.09E-04	NO	-7.58E+00	N/A
MW360	Downgradient	Yes	1.47E-03	NO	-6.52E+00	N/A
MW363	Downgradient	Yes	9.29E-04	NO	-6.98E+00	N/A
MW366	Downgradient	Yes	5.28E-04	NO	-7.55E+00	N/A
MW369	Upgradient	Yes	1.40E-03	NO	-6.57E+00	N/A
MW372	Upgradient	Yes	6.70E-04	NO	-7.31E+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 Second 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

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

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

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)
MW357	Downgradient	Yes	4.60E+00	NO	1.53E+00	N/A
MW360	Downgradient	Yes	5.02E+00	NO	1.61E+00	N/A
MW363	Downgradient	Yes	2.09E+00	NO	7.37E-01	N/A
MW366	Downgradient	Yes	3.18E+00	NO	1.16E+00	N/A
MW369	Upgradient	Yes	2.39E+00	NO	8.71E-01	N/A
MW372	Upgradient	Yes	2.12E+00	NO	7.51E-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.

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 Second 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

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

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

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)
MW357	Downgradient	Yes	2.04E+02	NO	5.32E+00	N/A
MW360	Downgradient	Yes	2.08E+02	NO	5.34E+00	N/A
MW363	Downgradient	Yes	2.01E+02	NO	5.30E+00	N/A
MW366	Downgradient	Yes	2.73E+02	NO	5.61E+00	N/A
MW369	Upgradient	Yes	1.86E+02	NO	5.23E+00	N/A
MW372	Upgradient	Yes	4.59E+02	YES	6.13E+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

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 Second 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

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

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

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)
MW357	Downgradient	Yes	4.06E-02	NO	-3.20E+00	N/A
MW360	Downgradient	Yes	7.28E-02	NO	-2.62E+00	N/A
MW363	Downgradient	Yes	4.08E-02	NO	-3.20E+00	N/A
MW366	Downgradient	No	1.00E-01	N/A	-2.30E+00	N/A
MW369	Upgradient	Yes	1.22E-01	NO	-2.10E+00	N/A
MW372	Upgradient	Yes	7.97E-02	NO	-2.53E+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 Second 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

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

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

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)
MW357	Downgradient	Yes	1.01E+01	NO	2.31E+00	N/A
MW360	Downgradient	Yes	8.14E+00	NO	2.10E+00	N/A
MW363	Downgradient	Yes	7.86E+00	NO	2.06E+00	N/A
MW366	Downgradient	Yes	1.35E+01	NO	2.60E+00	N/A
MW369	Upgradient	Yes	6.41E+00	NO	1.86E+00	N/A
MW372	Upgradient	Yes	2.25E+01	YES	3.11E+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

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 Second 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

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

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

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)
MW357	Downgradient	Yes	6.93E-03	NO	-4.97E+00	N/A
MW360	Downgradient	Yes	6.11E-03	NO	-5.10E+00	N/A
MW363	Downgradient	Yes	1.27E-01	NO	-2.06E+00	N/A
MW366	Downgradient	Yes	3.21E-03	NO	-5.74E+00	N/A
MW369	Upgradient	Yes	5.54E-03	NO	-5.20E+00	N/A
MW372	Upgradient	Yes	1.37E-03	NO	-6.59E+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 Second Quarter 2024 Statistical Analysis Historical Background Comparison

Methylene chloride 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=** 5.438	**S=** 1.931	**CV(1)=** 0.355	**K factor**=** 2.523	**TL(1)=** 1.03E+01	**LL(1)=** N/A
Statistics-Transformed Background Data	**X=** 1.639	**S=** 0.345	**CV(2)=** 0.211	**K factor**=** 2.523	**TL(2)=** 2.51E+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	2.00E+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
7/8/2003	5.00E+00	1.61E+00
10/6/2003	5.00E+00	1.61E+00

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	5.00E+00	1.61E+00
4/23/2002	5.00E+00	1.61E+00
7/16/2002	1.00E+01	2.30E+00
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

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)
MW357	Downgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW360	Downgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW363	Downgradient	Yes	6.40E-01	NO	-4.46E-01	N/A
MW366	Downgradient	Yes	6.20E-01	NO	-4.78E-01	N/A
MW369	Upgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW372	Upgradient	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 Second 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

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

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)
MW357	Downgradient	No	2.00E-03	N/A	-6.21E+00	N/A
MW360	Downgradient	Yes	1.00E-03	NO	-6.91E+00	N/A
MW363	Downgradient	Yes	3.35E-02	NO	-3.40E+00	N/A
MW366	Downgradient	No	2.00E-03	N/A	-6.21E+00	N/A
MW369	Upgradient	Yes	2.98E-03	NO	-5.82E+00	N/A
MW372	Upgradient	No	2.00E-03	N/A	-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.

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 Second 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	3.80E+02	N/A	5.94E+00	YES
MW360	Downgradient	Yes	3.79E+02	N/A	5.94E+00	YES
MW363	Downgradient	Yes	3.89E+02	N/A	5.96E+00	YES
MW366	Downgradient	Yes	4.07E+02	N/A	6.01E+00	YES
MW369	Upgradient	Yes	3.12E+02	N/A	5.74E+00	YES
MW372	Upgradient	Yes	3.81E+02	N/A	5.94E+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 Second 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

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

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

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)?
MW357	Downgradient	Yes	6.14E+00	NO	1.81E+00	N/A
MW360	Downgradient	Yes	6.08E+00	NO	1.81E+00	N/A
MW363	Downgradient	Yes	6.07E+00	NO	1.80E+00	N/A
MW366	Downgradient	Yes	6.07E+00	NO	1.80E+00	N/A
MW369	Upgradient	Yes	5.89E+00	NO	1.77E+00	N/A
MW372	Upgradient	Yes	6.05E+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.

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 Second 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

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

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

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)
MW357	Downgradient	Yes	1.44E+00	NO	3.65E-01	N/A
MW360	Downgradient	Yes	6.94E-01	NO	-3.65E-01	N/A
MW363	Downgradient	Yes	1.87E+00	NO	6.26E-01	N/A
MW366	Downgradient	Yes	1.91E+00	NO	6.47E-01	N/A
MW369	Upgradient	Yes	4.92E-01	NO	-7.09E-01	N/A
MW372	Upgradient	Yes	2.14E+00	NO	7.61E-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 Second 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

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

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

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)
MW357	Downgradient	Yes	3.80E+01	NO	3.64E+00	N/A
MW360	Downgradient	Yes	5.83E+01	NO	4.07E+00	N/A
MW363	Downgradient	Yes	3.49E+01	NO	3.55E+00	N/A
MW366	Downgradient	Yes	4.31E+01	NO	3.76E+00	N/A
MW369	Upgradient	Yes	4.78E+01	NO	3.87E+00	N/A
MW372	Upgradient	Yes	6.12E+01	NO	4.11E+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 Second 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

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

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

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)
MW357	Downgradient	Yes	3.61E+01	NO	3.59E+00	N/A
MW360	Downgradient	Yes	1.21E+01	NO	2.49E+00	N/A
MW363	Downgradient	Yes	2.63E+01	NO	3.27E+00	N/A
MW366	Downgradient	Yes	4.91E+01	NO	3.89E+00	N/A
MW369	Upgradient	Yes	7.81E+00	NO	2.06E+00	N/A
MW372	Upgradient	Yes	1.40E+02	YES	4.94E+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

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 Second 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	3.23E+01	NO	3.48E+00	N/A
MW360	Downgradient	No	9.74E+00	N/A	2.28E+00	N/A
MW363	Downgradient	No	6.20E+00	N/A	1.82E+00	N/A
MW366	Downgradient	Yes	5.50E+01	NO	4.01E+00	N/A
MW369	Upgradient	Yes	7.09E+01	YES	4.26E+00	N/A
MW372	Upgradient	Yes	6.15E+01	NO	4.12E+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

MW369

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 Second 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

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	4.72E-01	N/A	-7.51E-01	NO
MW360	Downgradient	Yes	8.16E-01	N/A	-2.03E-01	NO
MW363	Downgradient	Yes	8.41E-01	N/A	-1.73E-01	NO
MW366	Downgradient	Yes	6.00E-01	N/A	-5.11E-01	NO
MW369	Upgradient	Yes	8.29E-01	N/A	-1.88E-01	NO
MW372	Upgradient	Yes	9.55E-01	N/A	-4.60E-02	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 Second 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

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

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)
MW357	Downgradient	Yes	3.92E+00	NO	1.37E+00	N/A
MW360	Downgradient	No	1.00E+01	N/A	2.30E+00	N/A
MW363	Downgradient	Yes	7.28E+00	NO	1.99E+00	N/A
MW366	Downgradient	No	1.00E+01	N/A	2.30E+00	N/A
MW369	Upgradient	Yes	8.20E+00	NO	2.10E+00	N/A
MW372	Upgradient	Yes	6.50E+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 Second 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

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

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

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)
MW357	Downgradient	No	2.00E-02	N/A	-3.91E+00	N/A
MW360	Downgradient	Yes	4.71E-03	N/A	-5.36E+00	NO
MW363	Downgradient	Yes	4.22E-03	N/A	-5.47E+00	NO
MW366	Downgradient	No	2.00E-02	N/A	-3.91E+00	N/A
MW369	Upgradient	No	2.00E-02	N/A	-3.91E+00	N/A
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.

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 Second Quarter 2024 Statistical Analysis Historical Background Comparison

Acetone 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=** 51.625	**S=** 137.818	**CV(1)=** 2.670	**K factor**=** 2.523	**TL(1)=** 3.99E+02	**LL(1)=** N/A
Statistics-Transformed Background Data	**X=** 2.777	**S=** 1.127	**CV(2)=** 0.406	**K factor**=** 2.523	**TL(2)=** 5.62E+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	1.80E+01	2.89E+00
4/23/2002	1.10E+02	4.70E+00
7/15/2002	1.00E+01	2.30E+00
10/8/2002	1.80E+01	2.89E+00
1/8/2003	1.00E+01	2.30E+00
4/3/2003	1.00E+01	2.30E+00
7/9/2003	1.00E+01	2.30E+00
10/6/2003	1.00E+01	2.30E+00

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	9.00E+00	2.20E+00
4/23/2002	5.60E+02	6.33E+00
7/16/2002	1.00E+01	2.30E+00
10/8/2002	1.00E+01	2.30E+00
1/7/2003	1.00E+01	2.30E+00
4/2/2003	1.00E+01	2.30E+00
7/9/2003	1.00E+01	2.30E+00
10/7/2003	1.10E+01	2.40E+00

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)
MW358	Downgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW361	Downgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW364	Downgradient	Yes	1.89E+00	N/A	6.37E-01	NO
MW367	Downgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW370	Upgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW373	Upgradient	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 Second 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

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	2.50E-02	N/A	-3.69E+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	No	5.00E-02	N/A	-3.00E+00	N/A
MW373	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.

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 Second 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

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

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

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)
MW358	Downgradient	Yes	2.96E-01	NO	-1.22E+00	N/A
MW361	Downgradient	Yes	2.84E-01	NO	-1.26E+00	N/A
MW364	Downgradient	Yes	1.51E-01	NO	-1.89E+00	N/A
MW367	Downgradient	Yes	1.47E-02	NO	-4.22E+00	N/A
MW370	Upgradient	Yes	1.05E-01	NO	-2.25E+00	N/A
MW373	Upgradient	Yes	2.15E+00	NO	7.65E-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 Second 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

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

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)
MW358	Downgradient	Yes	3.58E-01	NO	-1.03E+00	N/A
MW361	Downgradient	Yes	4.57E-01	NO	-7.83E-01	N/A
MW364	Downgradient	Yes	4.50E-01	NO	-7.99E-01	N/A
MW367	Downgradient	No	2.00E-01	N/A	-1.61E+00	N/A
MW370	Upgradient	Yes	5.40E-01	NO	-6.16E-01	N/A
MW373	Upgradient	Yes	4.37E-01	NO	-8.28E-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 Second 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

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

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

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)
MW358	Downgradient	Yes	3.20E+01	NO	3.47E+00	N/A
MW361	Downgradient	Yes	3.22E+01	NO	3.47E+00	N/A
MW364	Downgradient	Yes	3.13E+01	NO	3.44E+00	N/A
MW367	Downgradient	Yes	1.27E+01	NO	2.54E+00	N/A
MW370	Upgradient	Yes	2.84E+01	NO	3.35E+00	N/A
MW373	Upgradient	Yes	8.35E+01	YES	4.42E+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

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 Second Quarter 2024 Statistical Analysis Historical Background Comparison

Chemical Oxygen Demand (COD) 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=** 41.938	**S=** 24.732	**CV(1)=** 0.590	**K factor**=** 2.523	**TL(1)=** 1.04E+02	**LL(1)=** N/A
Statistics-Transformed Background Data	**X=** 3.658	**S=** 0.339	**CV(2)=** 0.093	**K factor**=** 2.523	**TL(2)=** 4.51E+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	3.50E+01	3.56E+00
4/23/2002	1.34E+02	4.90E+00
7/15/2002	3.50E+01	3.56E+00
10/8/2002	3.50E+01	3.56E+00
1/8/2003	3.50E+01	3.56E+00
4/3/2003	3.50E+01	3.56E+00
7/9/2003	3.50E+01	3.56E+00
10/6/2003	3.50E+01	3.56E+00

Well Number:	MW373	
Date Collected	Result	LN(Result)
3/18/2002	3.50E+01	3.56E+00
4/23/2002	4.70E+01	3.85E+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

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)
MW358	Downgradient	Yes	1.18E+01	NO	2.47E+00	N/A
MW361	Downgradient	No	2.00E+01	N/A	3.00E+00	N/A
MW364	Downgradient	No	2.00E+01	N/A	3.00E+00	N/A
MW367	Downgradient	No	2.00E+01	N/A	3.00E+00	N/A
MW370	Upgradient	Yes	1.87E+01	NO	2.93E+00	N/A
MW373	Upgradient	No	2.00E+01	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.

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 Second 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

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

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

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)
MW358	Downgradient	Yes	2.88E+01	NO	3.36E+00	N/A
MW361	Downgradient	Yes	3.58E+01	NO	3.58E+00	N/A
MW364	Downgradient	Yes	3.92E+01	NO	3.67E+00	N/A
MW367	Downgradient	Yes	7.78E+00	NO	2.05E+00	N/A
MW370	Upgradient	Yes	4.09E+01	NO	3.71E+00	N/A
MW373	Upgradient	Yes	3.08E+01	NO	3.43E+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 Second 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

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	1.64E-02	N/A	-4.11E+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	6.23E-03	N/A	-5.08E+00	NO
MW370	Upgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW373	Upgradient	Yes	4.62E-04	N/A	-7.68E+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 Second 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

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

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

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)
MW358	Downgradient	Yes	4.77E+02	NO	6.17E+00	N/A
MW361	Downgradient	Yes	5.12E+02	NO	6.24E+00	N/A
MW364	Downgradient	Yes	4.71E+02	NO	6.15E+00	N/A
MW367	Downgradient	Yes	2.59E+02	NO	5.56E+00	N/A
MW370	Upgradient	Yes	4.09E+02	NO	6.01E+00	N/A
MW373	Upgradient	Yes	9.30E+02	NO	6.84E+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 Second 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

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

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

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)
MW358	Downgradient	Yes	7.77E-04	NO	-7.16E+00	N/A
MW361	Downgradient	Yes	1.20E-03	NO	-6.73E+00	N/A
MW364	Downgradient	Yes	9.46E-04	NO	-6.96E+00	N/A
MW367	Downgradient	Yes	5.58E-04	NO	-7.49E+00	N/A
MW370	Upgradient	Yes	1.17E-03	NO	-6.75E+00	N/A
MW373	Upgradient	Yes	6.55E-04	NO	-7.33E+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 Second 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

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

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

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)
MW358	Downgradient	Yes	1.55E+00	NO	4.38E-01	N/A
MW361	Downgradient	Yes	3.67E+00	NO	1.30E+00	N/A
MW364	Downgradient	Yes	3.40E+00	NO	1.22E+00	N/A
MW367	Downgradient	Yes	1.36E+00	NO	3.07E-01	N/A
MW370	Upgradient	Yes	3.09E+00	NO	1.13E+00	N/A
MW373	Upgradient	Yes	2.61E+00	NO	9.59E-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 Second 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

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

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

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)
MW358	Downgradient	Yes	2.37E+02	NO	5.47E+00	N/A
MW361	Downgradient	Yes	2.69E+02	NO	5.59E+00	N/A
MW364	Downgradient	Yes	2.74E+02	NO	5.61E+00	N/A
MW367	Downgradient	Yes	1.12E+02	NO	4.72E+00	N/A
MW370	Upgradient	Yes	2.32E+02	NO	5.45E+00	N/A
MW373	Upgradient	Yes	5.50E+02	NO	6.31E+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 Second 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

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

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

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)
MW358	Downgradient	Yes	4.00E+00	NO	1.39E+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	5.98E+00	NO	1.79E+00	N/A
MW370	Upgradient	Yes	3.63E-02	NO	-3.32E+00	N/A
MW373	Upgradient	Yes	7.51E-02	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 Second 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

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

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

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)
MW358	Downgradient	Yes	1.50E+01	NO	2.71E+00	N/A
MW361	Downgradient	Yes	1.42E+01	NO	2.65E+00	N/A
MW364	Downgradient	Yes	1.40E+01	NO	2.64E+00	N/A
MW367	Downgradient	Yes	6.66E+00	NO	1.90E+00	N/A
MW370	Upgradient	Yes	1.23E+01	NO	2.51E+00	N/A
MW373	Upgradient	Yes	2.93E+01	NO	3.38E+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 Second 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

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

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

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)
MW358	Downgradient	Yes	1.11E+00	NO	1.04E-01	N/A
MW361	Downgradient	Yes	7.16E-03	NO	-4.94E+00	N/A
MW364	Downgradient	No	5.00E-03	N/A	-5.30E+00	N/A
MW367	Downgradient	Yes	1.31E+00	NO	2.70E-01	N/A
MW370	Upgradient	Yes	1.24E-03	NO	-6.69E+00	N/A
MW373	Upgradient	Yes	7.19E-02	NO	-2.63E+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 Second Quarter 2024 Statistical Analysis Historical Background Comparison

Methylene chloride 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=** 5.375	**S=** 2.156	**CV(1)=** 0.401	**K factor**=** 2.523	**TL(1)=** 1.08E+01	**LL(1)=** N/A
Statistics-Transformed Background Data	**X=** 1.603	**S=** 0.428	**CV(2)=** 0.267	**K factor**=** 2.523	**TL(2)=** 2.68E+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	2.00E+00	6.93E-01
4/23/2002	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: MW373

Date Collected	Result	LN(Result)
3/18/2002	2.00E+00	6.93E-01
4/23/2002	7.00E+00	1.95E+00
7/16/2002	1.00E+01	2.30E+00
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

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)
MW358	Downgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW361	Downgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW364	Downgradient	Yes	6.60E-01	NO	-4.16E-01	N/A
MW367	Downgradient	Yes	7.60E-01	NO	-2.74E-01	N/A
MW370	Upgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW373	Upgradient	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 Second 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

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	2.85E-04	N/A	-8.16E+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	1.00E-03	N/A	-6.91E+00	N/A
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.

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 Second 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

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

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

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)
MW358	Downgradient	Yes	3.90E-02	NO	-3.24E+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	2.37E-03	NO	-6.04E+00	N/A
MW370	Upgradient	No	2.00E-03	N/A	-6.21E+00	N/A
MW373	Upgradient	Yes	2.03E-03	NO	-6.20E+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 Second 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	1.45E+02	N/A	4.98E+00	YES
MW361	Downgradient	Yes	3.93E+02	N/A	5.97E+00	YES
MW364	Downgradient	Yes	3.96E+02	N/A	5.98E+00	YES
MW367	Downgradient	Yes	2.40E+02	N/A	5.48E+00	YES
MW370	Upgradient	Yes	3.45E+02	N/A	5.84E+00	YES
MW373	Upgradient	Yes	3.83E+02	N/A	5.95E+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 Second 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

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

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

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)?
MW358	Downgradient	Yes	6.17E+00	NO	1.82E+00	N/A
MW361	Downgradient	Yes	5.91E+00	NO	1.78E+00	N/A
MW364	Downgradient	Yes	6.01E+00	NO	1.79E+00	N/A
MW367	Downgradient	Yes	5.82E+00	NO	1.76E+00	N/A
MW370	Upgradient	Yes	5.93E+00	NO	1.78E+00	N/A
MW373	Upgradient	Yes	6.02E+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.

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 Second 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

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

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

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)
MW358	Downgradient	Yes	2.56E+00	NO	9.40E-01	N/A
MW361	Downgradient	Yes	2.05E+00	NO	7.18E-01	N/A
MW364	Downgradient	Yes	1.95E+00	NO	6.68E-01	N/A
MW367	Downgradient	Yes	2.71E+00	NO	9.97E-01	N/A
MW370	Upgradient	Yes	2.28E+00	NO	8.24E-01	N/A
MW373	Upgradient	Yes	2.57E+00	NO	9.44E-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 Second Quarter 2024 Statistical Analysis Historical Background Comparison

Radium-226 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=** 2.158	**S=** 5.739	**CV(1)=** 2.660	**K factor**=** 2.523	**TL(1)=** 1.66E+01	**LL(1)=** N/A
Statistics-Transformed Background Data	**X=** -0.670	**S=** 1.833	**CV(2)=** -2.736	**K factor**=** 2.523	**TL(2)=** 3.07E+00	**LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW370	
Date Collected	Result	LN(Result)
7/15/2002	1.01E+01	2.31E+00
10/8/2002	-8.25E-01	#Func!
1/8/2003	4.15E-01	-8.79E-01
10/6/2003	5.20E-01	-6.54E-01
1/7/2004	1.03E+00	2.96E-02
4/7/2004	4.34E-01	-8.35E-01
7/13/2004	5.32E-01	-6.31E-01
10/7/2004	2.99E-01	-1.21E+00

Well Number:	MW373	
Date Collected	Result	LN(Result)
7/16/2002	2.15E+01	3.07E+00
10/8/2002	3.27E-02	-3.42E+00
1/7/2003	-8.44E-01	#Func!
10/7/2003	0.00E+00	#Func!
1/6/2004	1.77E-01	-1.73E+00
4/7/2004	7.92E-01	-2.33E-01
7/14/2004	3.27E-01	-1.12E+00
10/7/2004	3.30E-02	-3.41E+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	1.10E+00	N/A	9.53E-02	NO
MW361	Downgradient	No	1.80E-01	N/A	-1.71E+00	N/A
MW364	Downgradient	No	3.07E-01	N/A	-1.18E+00	N/A
MW367	Downgradient	No	5.82E-01	N/A	-5.41E-01	N/A
MW370	Upgradient	No	8.52E-01	N/A	-1.60E-01	N/A
MW373	Upgradient	No	5.20E-01	N/A	-6.54E-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 Second 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

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

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

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)
MW358	Downgradient	Yes	3.47E+01	NO	3.55E+00	N/A
MW361	Downgradient	Yes	4.18E+01	NO	3.73E+00	N/A
MW364	Downgradient	Yes	3.93E+01	NO	3.67E+00	N/A
MW367	Downgradient	Yes	1.46E+01	NO	2.68E+00	N/A
MW370	Upgradient	Yes	4.39E+01	NO	3.78E+00	N/A
MW373	Upgradient	Yes	6.81E+01	NO	4.22E+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 Second 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

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	4.45E+01	N/A	3.80E+00	NO
MW361	Downgradient	Yes	6.90E+01	N/A	4.23E+00	NO
MW364	Downgradient	Yes	6.84E+01	N/A	4.23E+00	NO
MW367	Downgradient	Yes	2.04E+01	N/A	3.02E+00	NO
MW370	Upgradient	Yes	1.97E+01	N/A	2.98E+00	NO
MW373	Upgradient	Yes	1.92E+02	N/A	5.26E+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 Second 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	3.27E+01	N/A	3.49E+00	NO
MW361	Downgradient	Yes	4.11E+01	N/A	3.72E+00	NO
MW364	Downgradient	Yes	4.42E+01	N/A	3.79E+00	NO
MW367	Downgradient	No	2.28E+00	N/A	8.24E-01	N/A
MW370	Upgradient	Yes	2.29E+01	N/A	3.13E+00	NO
MW373	Upgradient	No	2.12E+00	N/A	7.51E-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.

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 Second 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

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	2.05E+00	N/A	7.18E-01	NO
MW361	Downgradient	Yes	5.11E-01	N/A	-6.71E-01	NO
MW364	Downgradient	Yes	5.26E-01	N/A	-6.42E-01	NO
MW367	Downgradient	Yes	3.57E-01	N/A	-1.03E+00	NO
MW370	Upgradient	Yes	9.28E-01	N/A	-7.47E-02	NO
MW373	Upgradient	Yes	1.48E+00	N/A	3.92E-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 Second 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

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

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

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)
MW358	Downgradient	Yes	6.46E+00	NO	1.87E+00	N/A
MW361	Downgradient	Yes	6.38E+00	NO	1.85E+00	N/A
MW364	Downgradient	Yes	4.38E+00	NO	1.48E+00	N/A
MW367	Downgradient	No	1.00E+01	N/A	2.30E+00	N/A
MW370	Upgradient	Yes	1.06E+01	NO	2.36E+00	N/A
MW373	Upgradient	Yes	5.44E+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 Second 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

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

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

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)
MW358	Downgradient	Yes	6.75E-03	NO	-5.00E+00	N/A
MW361	Downgradient	No	2.00E-02	N/A	-3.91E+00	N/A
MW364	Downgradient	Yes	1.74E-02	NO	-4.05E+00	N/A
MW367	Downgradient	Yes	1.09E-02	NO	-4.52E+00	N/A
MW370	Upgradient	No	2.00E-02	N/A	-3.91E+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.

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 Second 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=** 2.811	**S=** 2.072	**CV(1)=** 0.737	**K factor**=** 2.523	**TL(1)=** 8.04E+00	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 0.833	**S=** 0.627	**CV(2)=** 0.753	**K factor**=** 2.523	**TL(2)=** 2.42E+00	**LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number:	MW371	
Date Collected	Result	LN(Result)
4/12/2022	7.49E+00	2.01E+00
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

Well Number:	MW374	
Date Collected	Result	LN(Result)
4/12/2022	2.86E+00	1.05E+00
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW362	Downgradient	Yes	7.16E+00	NO	1.97E+00	N/A
MW365	Downgradient	Yes	6.40E+00	NO	1.86E+00	N/A
MW368	Downgradient	Yes	6.96E+00	NO	1.94E+00	N/A
MW371	Upgradient	Yes	3.03E+00	NO	1.11E+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 Second 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=** 375.688 **S=** 65.422 **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

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number:	MW371	
Date Collected	Result	LN(Result)
4/12/2022	3.75E+02	5.93E+00
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

Well Number:	MW374	
Date Collected	Result	LN(Result)
4/12/2022	3.53E+02	5.87E+00
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW362	Downgradient	Yes	3.57E+02	NO	5.88E+00	N/A
MW365	Downgradient	Yes	3.53E+02	NO	5.87E+00	N/A
MW368	Downgradient	Yes	2.24E+02	NO	5.41E+00	N/A
MW371	Upgradient	Yes	3.60E+02	NO	5.89E+00	N/A
MW374	Upgradient	Yes	3.69E+02	NO	5.91E+00	N/A
MW375	Sidegradient	Yes	3.61E+02	NO	5.89E+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 Second 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=** 22.559 **S=** 18.113 **CV(1)=** 0.803 **K factor**=** 2.523 **TL(1)=** 6.83E+01 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 2.927 **S=** 0.566 **CV(2)=** 0.193 **K factor**=** 2.523 **TL(2)=** 4.35E+00 **LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number:	MW371	
Date Collected	Result	LN(Result)
4/12/2022	7.54E+01	4.32E+00
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

Well Number:	MW374	
Date Collected	Result	LN(Result)
4/12/2022	1.64E+01	2.80E+00
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW362	Downgradient	Yes	1.97E+01	NO	2.98E+00	N/A
MW365	Downgradient	Yes	5.35E+01	NO	3.98E+00	N/A
MW368	Downgradient	Yes	1.69E+02	YES	5.13E+00	N/A
MW374	Upgradient	Yes	1.76E+01	NO	2.87E+00	N/A
MW375	Sidegradient	Yes	2.21E+01	NO	3.10E+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

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 Second 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=** 39.613 **S=** 24.469 **CV(1)=** 0.618 **K factor**=** 2.523 **TL(1)=** 1.01E+02 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 3.460 **S=** 0.709 **CV(2)=** 0.205 **K factor**=** 2.523 **TL(2)=** 5.25E+00 **LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW369

Date Collected	Result	LN(Result)
4/12/2022	1.65E+01	2.80E+00
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

Well Number: MW372

Date Collected	Result	LN(Result)
4/12/2022	6.11E+01	4.11E+00
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Upgradient	Yes	6.53E+01	NO	4.18E+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 Second 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=** 568.188 **S=** 206.132 **CV(1)=** 0.363 **K factor**=** 2.523 **TL(1)=** 1.09E+03 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 6.277 **S=** 0.378 **CV(2)=** 0.060 **K factor**=** 2.523 **TL(2)=** 7.23E+00 **LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number:	MW369	
Date Collected	Result	LN(Result)
4/12/2022	3.78E+02	5.93E+00
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

Well Number:	MW372	
Date Collected	Result	LN(Result)
4/12/2022	7.38E+02	6.60E+00
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Upgradient	Yes	7.58E+02	NO	6.63E+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 Second 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=** 319.625 **S=** 127.529 **CV(1)=** 0.399 **K factor**=** 2.523 **TL(1)=** 6.41E+02 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 5.686 **S=** 0.424 **CV(2)=** 0.075 **K factor**=** 2.523 **TL(2)=** 6.75E+00 **LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number:	MW369	
Date Collected	Result	LN(Result)
4/12/2022	2.34E+02	5.46E+00
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

Well Number:	MW372	
Date Collected	Result	LN(Result)
4/12/2022	4.57E+02	6.12E+00
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Upgradient	Yes	4.59E+02	NO	6.13E+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 Second 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=** 14.583 **S=** 8.176 **CV(1)=** 0.561 **K factor**=** 2.523 **TL(1)=** 3.52E+01 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 2.507 **S=** 0.625 **CV(2)=** 0.249 **K factor**=** 2.523 **TL(2)=** 4.08E+00 **LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number:	MW369	
Date Collected	Result	LN(Result)
4/12/2022	6.89E+00	1.93E+00
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

Well Number:	MW372	
Date Collected	Result	LN(Result)
4/12/2022	2.20E+01	3.09E+00
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Upgradient	Yes	2.25E+01	NO	3.11E+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 Second 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=** 415.250 **S=** 37.931 **CV(1)=** 0.091 **K factor**=** 2.523 **TL(1)=** 5.11E+02 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 6.025 **S=** 0.091 **CV(2)=** 0.015 **K factor**=** 2.523 **TL(2)=** 6.25E+00 **LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number:	MW369	
Date Collected	Result	LN(Result)
4/12/2022	3.82E+02	5.95E+00
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

Well Number:	MW372	
Date Collected	Result	LN(Result)
4/12/2022	4.02E+02	6.00E+00
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	3.80E+02	NO	5.94E+00	N/A
MW360	Downgradient	Yes	3.79E+02	NO	5.94E+00	N/A
MW363	Downgradient	Yes	3.89E+02	NO	5.96E+00	N/A
MW366	Downgradient	Yes	4.07E+02	NO	6.01E+00	N/A
MW369	Upgradient	Yes	3.12E+02	NO	5.74E+00	N/A
MW372	Upgradient	Yes	3.81E+02	NO	5.94E+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 Second 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=** 75.451 **S=** 69.654 **CV(1)=** 0.923 **K factor**=** 2.523 **TL(1)=** 2.51E+02 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 3.528 **S=** 1.480 **CV(2)=** 0.420 **K factor**=** 2.523 **TL(2)=** 7.26E+00 **LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW369

Date Collected	Result	LN(Result)
4/12/2022	8.93E+00	2.19E+00
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

Well Number: MW372

Date Collected	Result	LN(Result)
4/12/2022	1.44E+02	4.97E+00
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Upgradient	Yes	1.40E+02	NO	4.94E+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 Second 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=** 55.438 **S=** 19.738 **CV(1)=** 0.356 **K factor**=** 2.523 **TL(1)=** 1.05E+02 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 3.940 **S=** 0.431 **CV(2)=** 0.109 **K factor**=** 2.523 **TL(2)=** 5.03E+00 **LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number:	MW369	
Date Collected	Result	LN(Result)
4/12/2022	5.72E+01	4.05E+00
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

Well Number:	MW372	
Date Collected	Result	LN(Result)
4/12/2022	7.94E+01	4.37E+00
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW369	Upgradient	Yes	7.09E+01	NO	4.26E+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 Second 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=** 50.431 **S=** 22.090 **CV(1)=** 0.438 **K factor**=** 2.523 **TL(1)=** 1.06E+02 **LL(1)=** N/A

Statistics-Transformed Background Data **X=** 3.826 **S=** 0.454 **CV(2)=** 0.119 **K factor**=** 2.523 **TL(2)=** 4.97E+00 **LL(2)=** N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW370

Date Collected	Result	LN(Result)
4/12/2022	3.05E+01	3.42E+00
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

Well Number: MW373

Date Collected	Result	LN(Result)
4/12/2022	6.28E+01	4.14E+00
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW373	Upgradient	Yes	8.35E+01	NO	4.42E+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 Second 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=** 417.313 **S=** 52.399 **CV(1)=** 0.126 **K factor**=** 2.523 **TL(1)=** 5.50E+02 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 6.027 **S=** 0.124 **CV(2)=** 0.021 **K factor**=** 2.523 **TL(2)=** 6.34E+00 **LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number:	MW370	
Date Collected	Result	LN(Result)
4/12/2022	3.90E+02	5.97E+00
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

Well Number:	MW373	
Date Collected	Result	LN(Result)
4/12/2022	3.99E+02	5.99E+00
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	1.45E+02	NO	4.98E+00	N/A
MW361	Downgradient	Yes	3.93E+02	NO	5.97E+00	N/A
MW364	Downgradient	Yes	3.96E+02	NO	5.98E+00	N/A
MW367	Downgradient	Yes	2.40E+02	NO	5.48E+00	N/A
MW370	Upgradient	Yes	3.45E+02	NO	5.84E+00	N/A
MW373	Upgradient	Yes	3.83E+02	NO	5.95E+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.*

ATTACHMENT D3

STATISTICIAN QUALIFICATION STATEMENT

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FOUR RIVERS
NUCLEAR PARTNERSHIP, LLC

Four Rivers Nuclear Partnership, LLC
5511 Hobbs Road
Kevil, KY 42053
www.fourriversnuclearpartnership.com

July 22, 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 second 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

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, *Groundwater Monitoring Parameters*. The uppermost aquifer below the C-746-U Contained 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 second quarter 2024 and determine groundwater flow rate and direction.

Water levels during this reporting period were measured on April 23, 2024. As shown on Figure E.1, all 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 Contained Landfill, as measured along the defined groundwater flow directions, were 4.01×10^{-4}ft/ft and 3.98×10^{-4} ft/ft, respectively. Water level measurements in wells at the C-746-U Contained 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 Contained Landfill was 2.05×10^{-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 4.25×10^{2} to 7.25×10^{2} ft/day (1.50×10^{-1} to 2.56×10^{-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 Contained Landfill typically trends northeastward toward the Ohio River. As demonstrated on the potentiometric maps for April 2024, the groundwater flow direction in the immediate area of the landfill was to the north.

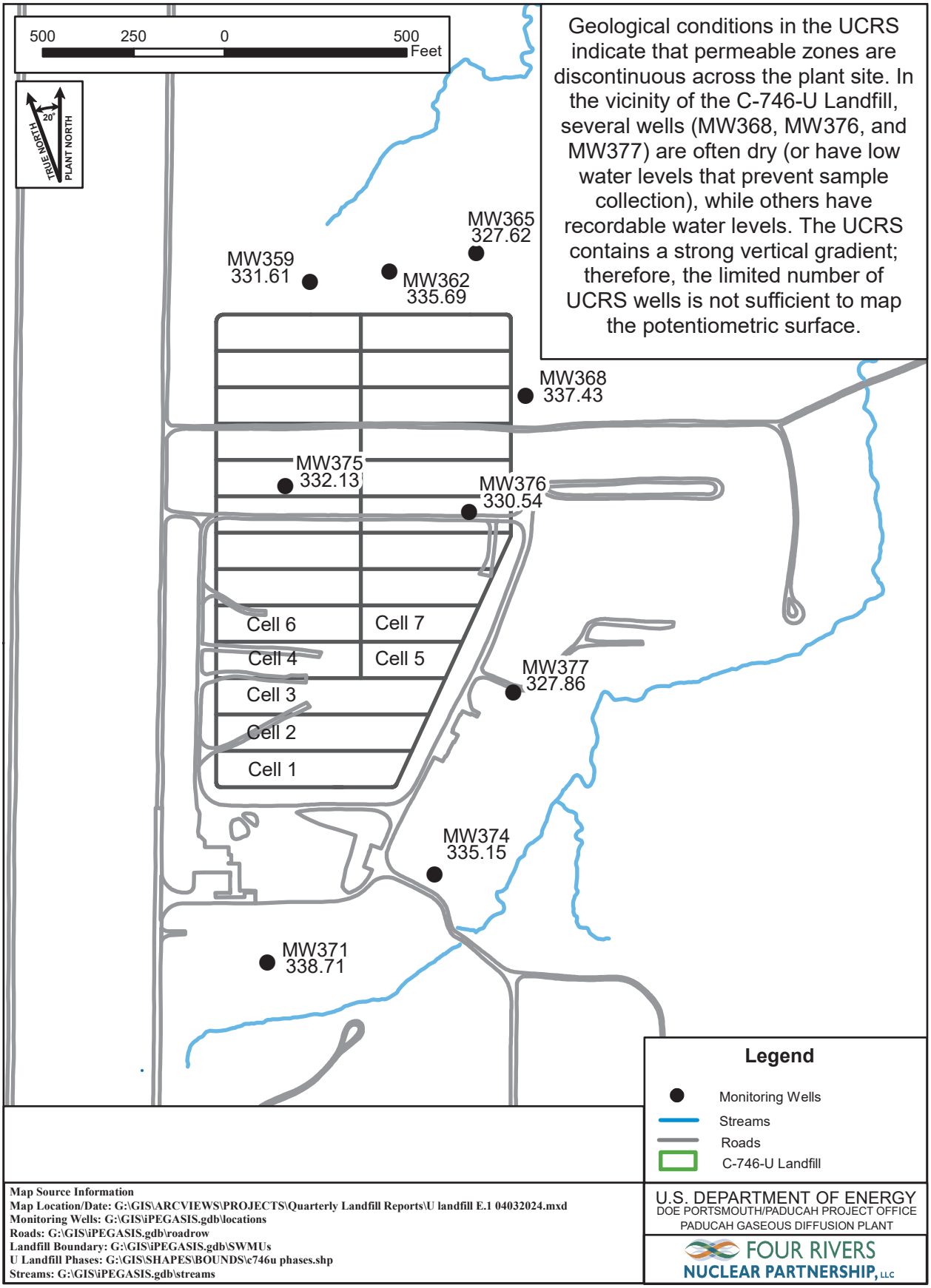

Figure E.1. Potentiometric Measurements of the Upper Continental Recharge System at the C-746-U Landfill, April 23, 2024

Table E.1. C-746-U Contained Landfill Second Quarter 2024 (April) Water Levels

C-746-U Contained Landfill (April 2024) Water Levels										
							Raw Data		*Corrected Data	
Date	Time	Well	Aquifer	Datum Elev (ft amsl)	BP (in Hg)	Delta BP (ft H20)	DTW (ft)	Elev (ft amsl)	DTW (ft)	Elev (ft amsl)
4/23/2024	13:41	MW357	URGA	368.77	29.99	-0.02	46.48	322.29	46.46	322.31
4/23/2024	13:39	MW358	LRGA	368.92	29.99	-0.02	46.64	322.28	46.62	322.30
4/23/2024	13:40	MW359	UCRS	368.91	29.99	-0.02	37.32	331.59	37.30	331.61
4/23/2024	13:34	MW360	URGA	362.07	29.99	-0.02	39.80	322.27	39.78	322.29
4/23/2024	13:37	MW361	LRGA	361.32	29.99	-0.02	39.05	322.27	39.03	322.29
4/23/2024	13:36	MW362	UCRS	361.85	29.99	-0.02	26.18	335.67	26.16	335.69
4/23/2024	13:48	MW363	URGA	368.56	29.99	-0.02	46.34	322.22	46.32	322.24
4/23/2024	13:45	MW364	LRGA	368.17	29.99	-0.02	46.06	322.11	46.04	322.13
4/23/2024	13:46	MW365	UCRS	368.14	29.99	-0.02	40.54	327.60	40.52	327.62
4/23/2024	13:50	MW366	URGA	368.95	29.99	-0.02	46.66	322.29	46.64	322.31
4/23/2024	13:53	MW367	LRGA	369.37	29.97	0.00	47.08	322.29	47.08	322.29
4/23/2024	13:52	MW368	UCRS	368.98	29.97	0.00	31.55	337.43	31.55	337.43
4/24/2024	9:06	MW369	URGA	364.23	30.13	-0.18	41.46	322.77	41.28	322.95
4/24/2024	9:07	MW370	LRGA	365.12	30.13	-0.18	42.35	322.77	42.17	322.95
4/23/2024	14:20	MW371	UCRS	364.64	29.97	0.00	25.93	338.71	25.93	338.71
4/23/2024	14:15	MW372	URGA	359.42	29.97	0.00	36.44	322.98	36.44	322.98
4/23/2024	14:13	MW373	LRGA	359.73	29.97	0.00	36.76	322.97	36.76	322.97
4/23/2024	14:14	MW374	UCRS	359.44	29.97	0.00	24.29	335.15	24.29	335.15
4/23/2024	14:05	MW375	UCRS	370.36	29.97	0.00	38.23	332.13	38.23	332.13
4/23/2024	14:08	MW376	UCRS	370.39	29.97	0.00	39.85	330.54	39.85	330.54
4/23/2024	14:10	MW377	UCRS	365.74	29.97	0.00	37.88	327.86	37.88	327.86
Reference Barometric Pressure					**29.97**					

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

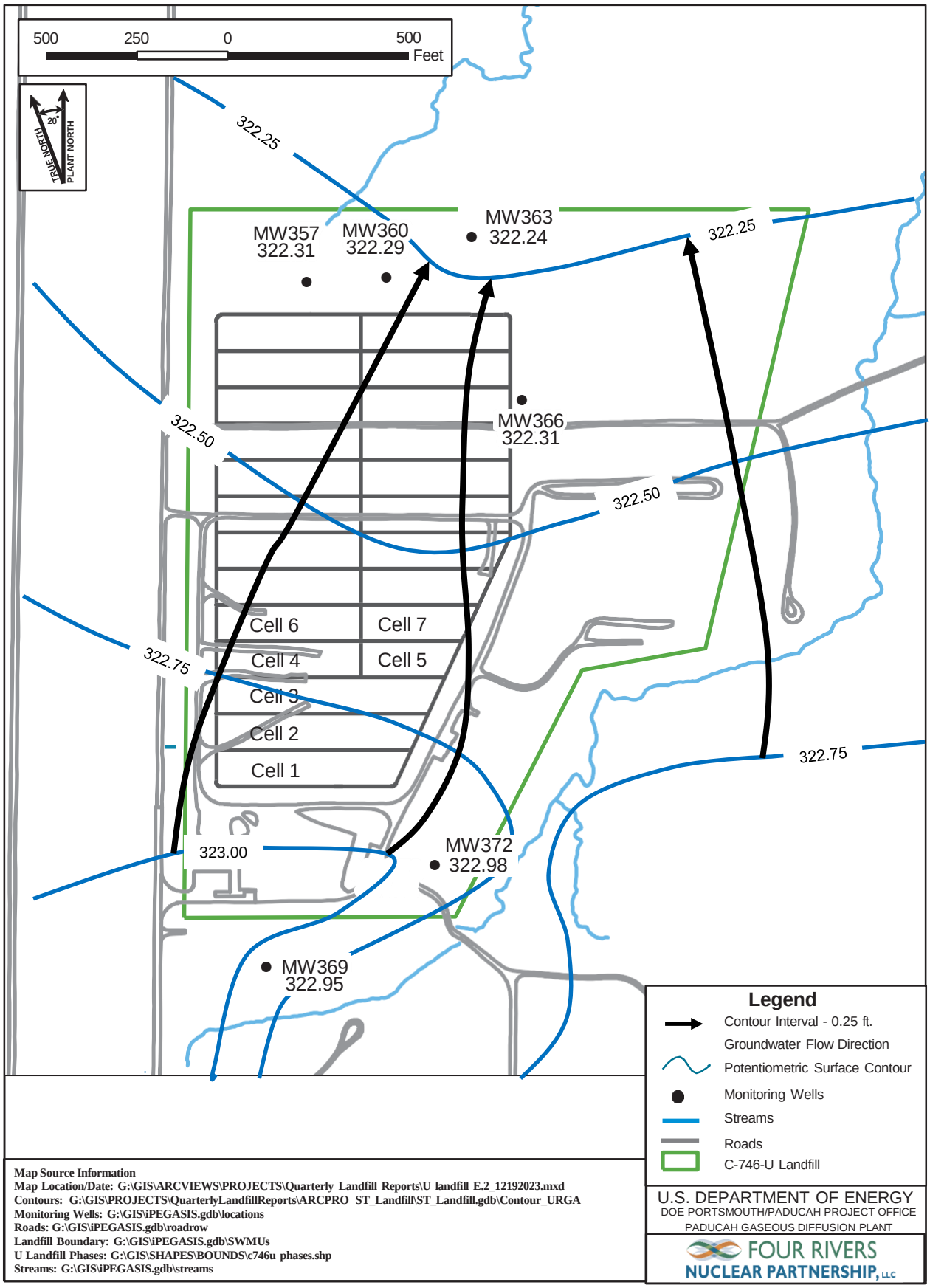

Figure E.2. Potentiometric Surface of the Upper Regional Gravel Aquifer at the C-746-U Landfill, April 23, 2024

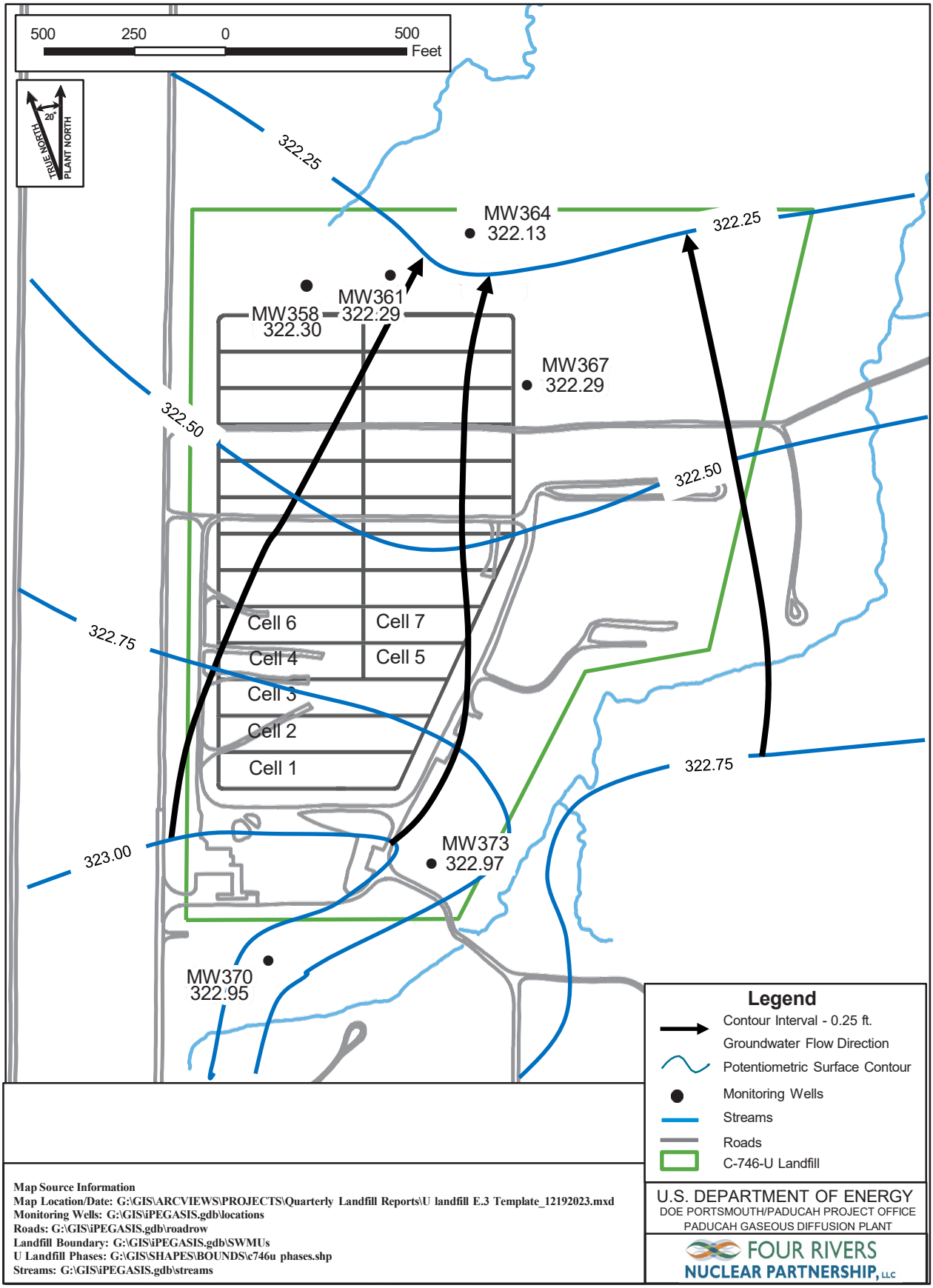

Figure E.3. Potentiometric Surface of the Lower Regional Gravel Aquifer at the C-746-U Landfill, April 23, 2024

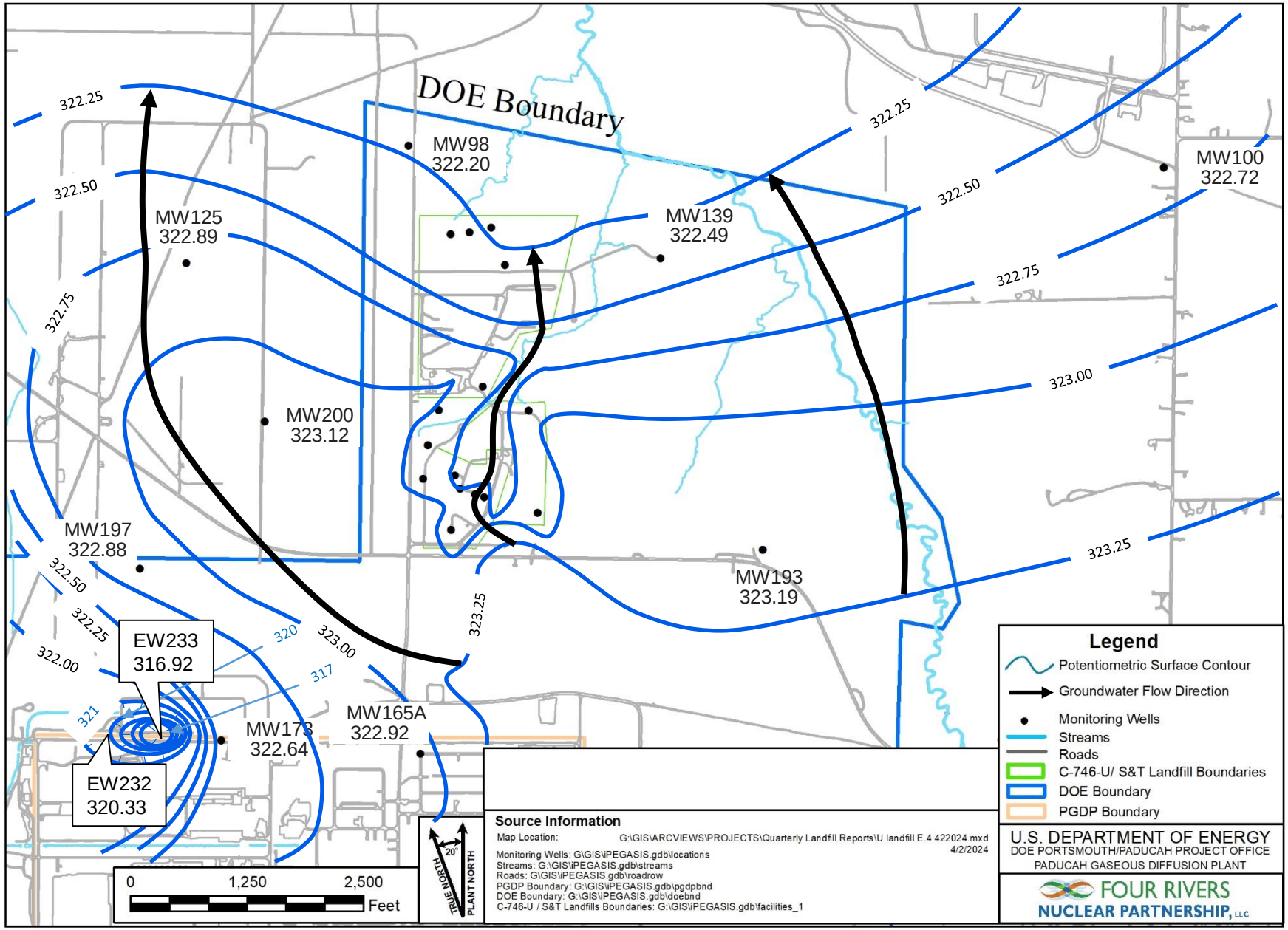

Figure E.4. Vicinity Potentiometric Surface of the Regional Gravel Aquifer, April 23, 2024

Table E.2. C-746-U Contained Landfill Hydraulic Gradients

	ft/ft
Beneath Landfill—Upper RGA	4.01×10^{-4}
Beneath Landfill—Lower RGA	3.98×10^{-4}
Vicinity	2.05×10^{-4}

Table E.3. C-746-U Contained 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
Upper RGA					
7.25×10^{2}	2.56×10^{-1}	2.90×10^{-1}	1.03×10^{-4}	1.16	4.10×10^{-4}
4.25×10^{2}	1.50×10^{-1}	1.70×10^{-1}	6.01×10^{-5}	6.81×10^{-1}	2.40×10^{-4}
Lower RGA					
7.25×10^{2}	2.56×10^{-1}	2.89×10^{-1}	1.02×10^{-4}	1.15	4.08×10^{-4}
4.25×10^{2}	1.50×10^{-1}	1.69×10^{-1}	5.97×10^{-5}	6.77×10^{-1}	2.39×10^{-4}
Vicinity					
7.25×10^{2}	2.56×10^{-1}	1.49×10^{-1}	5.26×10^{-5}	5.96×10^{-1}	2.10×10^{-4}
4.25×10^{2}	1.50×10^{-1}	8.7×10^{-2}	3.08×10^{-5}	3.49×10^{-1}	1.23×10^{-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 second 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.

	Parameter	**Monitoring Well**
Upper Continental Recharge System	None	
Upper Regional Gravel Aquifer	Technetium-99	MW369
Lower Regional Gravel Aquifer	None	

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.

5/20/2024

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

AKGWA	Station	Analysis	Method	Results	Units	MCL

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					
Gradient	D	S	S	S	D	D	D	U	U	D	D	D	D	U	U	D	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
ACETONE																					
Quarter 3, 2002										✱	✱	✱									
Quarter 4, 2002										✱	✱	✱									
Quarter 1, 2003											✱	✱									
Quarter 2, 2003											✱	✱									
Quarter 3, 2003	✱						✱			✱	✱	✱			✱			✱			
Quarter 4, 2003						✱	✱				✱			✱							
Quarter 3, 2004						✱										✱					
Quarter 3, 2005						✱															
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Quarter 1, 2004																					■
Quarter 2, 2004						■															
Quarter 3, 2009						■															
ALUMINUM																					
Quarter 3, 2003											✱										
BETA ACTIVITY																					
Quarter 1, 2004															■						
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BROMIDE																					
Quarter 2, 2004													✱								

Chart of MCL and Historical UTL Exceedances for the C-746-U Contained Landfill (Continued)

Groundwater Flow System	UCRS									URGA						LRGA					
Gradient	D	S	S	S	D	D	D	U	U	D	D	D	D	U	U	D	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
CALCIUM																					
Quarter 3, 2003										*											
Quarter 2, 2005																					*
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Quarter 4, 2010														*							
Quarter 1, 2011															*						
CHEMICAL OXYGEN DEMAND																					
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															*						
CHLORIDE																					
Quarter 1, 2006																				*	
Quarter 2, 2014															*						
COBALT																					
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					
Gradient	D	S	S	S	D	D	D	U	U	D	D	D	D	U	U	D	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
CONDUCTIVITY																					
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															*						
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Quarter 4, 2009															*						
Quarter 1, 2010															*						
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Quarter 4, 2010															*						
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Quarter 2, 2011															*						
Quarter 3, 2011															*						
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Quarter 1, 2012														*	*						
Quarter 2, 2012															*						
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Quarter 2, 2013															*						
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Quarter 4, 2013															*						
Quarter 1, 2014															*						
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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															*						
DISSOLVED OXYGEN																					
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					
Gradient	D	S	S	S	D	D	D	U	U	D	D	D	D	U	U	D	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
DISSOLVED OXYGEN																					
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	✱					✱	✱	✱													
DISSOLVED SOLIDS																					
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															✱						
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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					
Gradient	D	S	S	S	D	D	D	U	U	D	D	D	D	U	U	D	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
DISSOLVED SOLIDS																					
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															✱						
IODIDE																					
Quarter 2, 2003																✱					
Quarter 3, 2003	✱									✱											
Quarter 4, 2003							✱														
Quarter 3, 2010						✱		✱					✱				✱				
IODINE-131																					
Quarter 3, 2010																		■			
IODOMETHANE																					
Quarter 4, 2003						✱															
IRON																					
Quarter 4, 2002						✱															
Quarter 3, 2003																✱					
Quarter 4, 2003										✱						✱					
Quarter 1, 2004										✱						✱					
Quarter 2, 2004										✱											
Quarter 3, 2004										✱											
Quarter 3, 2005																✱					
MAGNESIUM																					
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															✱						
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Quarter 3, 2010															✱						
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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															✱						

Chart of MCL and Historical UTL Exceedances for the C-746-U Contained Landfill (Continued)

Groundwater Flow System	UCRS									URGA						LRGA					
Gradient	D	S	S	S	D	D	D	U	U	D	D	D	D	U	U	D	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
MANGANESE																					
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 3, 2008							✱														
Quarter 4, 2008							✱														
Quarter 3, 2009							✱														
Quarter 3, 2011							✱														
Quarter 2, 2016														✱							
Quarter 3, 2016									✱												
Quarter 1, 2022																			✱		
NICKEL																					
Quarter 3, 2003										✱											
Quarter 1, 2022																			✱		
Quarter 4, 2022																			✱		
Quarter 1, 2023																			✱		
Quarter 2, 2023																			✱		
Quarter 4, 2023												✱									
Quarter 1, 2024																			✱		
NITRATE AS NITROGEN																					
Quarter 4, 2021												■									
OXIDATION-REDUCTION POTENTIAL																					
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					
Gradient	D	S	S	S	D	D	D	U	U	D	D	D	D	U	U	D	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
OXIDATION-REDUCTION POTENTIAL																					
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 1, 2024	*	*				*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
PCB, TOTAL																					
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							*														
PCB-1016																					
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							*														
PCB-1242																					
Quarter 3, 2006							*					*									
Quarter 4, 2006										*											
Quarter 1, 2008							*														
Quarter 2, 2012							*														
PCB-1248																					
Quarter 2, 2008							*														
PCB-1260																					
Quarter 2, 2006							*														
pH																					
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					
Gradient	D	S	S	S	D	D	D	U	U	D	D	D	D	U	U	D	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
pH																					
Quarter 3, 2018					✱					✱		✱					✱	✱	✱		
Quarter 4, 2018																✱		✱			
Quarter 3, 2019																✱					
Quarter 1, 2021																✱		✱		✱	
Quarter 3, 2021																					✱
Quarter 4, 2021																✱					✱
POTASSIUM																					
Quarter 1, 2014																✱					
RADIUM-228																					
Quarter 2, 2005														■							
Quarter 4, 2005						■						■						■			
SELENIUM																					
Quarter 4, 2003									■												
SODIUM																					
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											✱										
STRONTIUM-90																					
Quarter 4, 2008							■														
SULFATE																					
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					
Gradient	D	S	S	S	D	D	D	U	U	D	D	D	D	U	U	D	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
SULFATE																					
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	*	*				*	*		*						*						
TECHNETIUM-99																					
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					
Gradient	D	S	S	S	D	D	D	U	U	D	D	D	D	U	U	D	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
TECHNETIUM-99																					
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														✱							
THORIUM-230																					
Quarter 4, 2015																✱					
Quarter 2, 2016										✱											
Quarter 4, 2016	✱											✱				✱			✱		
Quarter 4, 2017													✱								
Quarter 2, 2018										✱			✱								
Quarter 2, 2021									✱												
TOLUENE																					
Quarter 2, 2014										✱				✱							
TOTAL ORGANIC CARBON																					
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																			✱		
TOTAL ORGANIC HALIDES																					
Quarter 4, 2002										✱											
Quarter 1, 2003										✱											
Quarter 2, 2003										✱											
Quarter 1, 2004																✱					
TRICHLOROETHENE																					
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															■					■	■
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 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					
Gradient	D	S	S	S	D	D	D	U	U	D	D	D	D	U	U	D	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
TRICHLOROETHENE																					
Quarter 3, 2012															■						■
Quarter 4, 2012														■	■						■
Quarter 1, 2013													■		■						■
Quarter 2, 2013													■		■		■		■		■
Quarter 3, 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															■		■	■			■
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 1, 2023													■	■	■		■				■
Quarter 2, 2023															■						
Quarter 3, 2023											■		■		■					■	
TURBIDITY																					
Quarter 1, 2003										✱											
URANIUM																					
Quarter 4, 2002		✱			✱	✱	✱			✱	✱	✱	✱	✱	✱	✱		✱	✱	✱	✱
Quarter 4, 2006																					✱
ZINC																					
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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CP3-WM-0017-F04 - C-746-U LANDFILL METHANE MONITORING REPORT

PADUCAH GASEOUS DIFFUSION PLANT

Permit #: 073-00045

McCracken County, Kentucky

Date:	May 13, 2024	Time:	0900	Monitor:	Michael Hideg

Weather Conditions: Mostly sunny, Approximately 69°, humidity: 78%

Monitoring Equipment: Multi RAE – Serial # 7970

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: Signature 6/6/24 Date

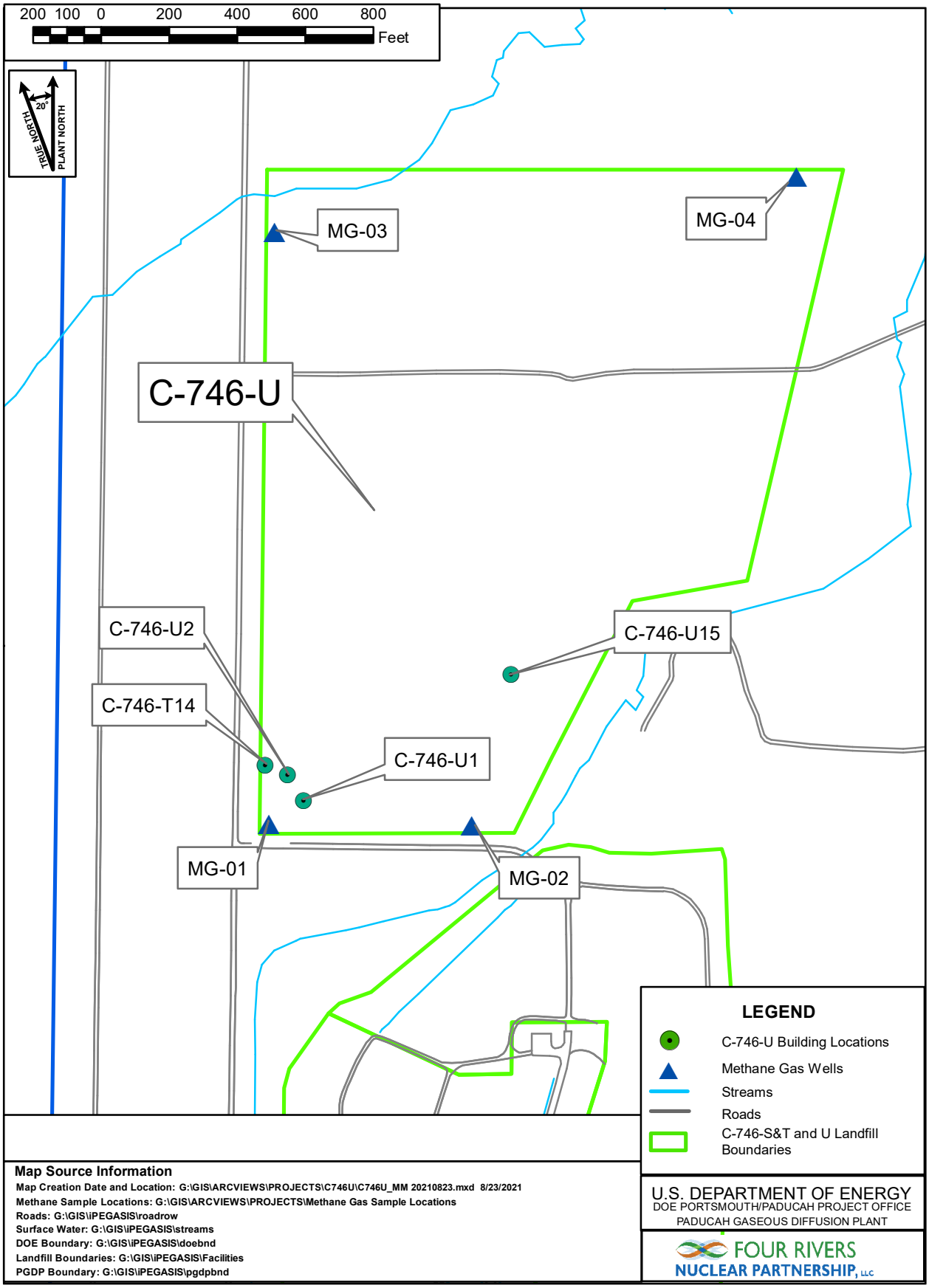

Figure H.1. C-746-U Landfill Methane Monitoring Locations

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:** 2nd Quarter 2024

SAMPLE ID: L150US3-24 Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Chloride		12.5	mg/L	1	4/10/2024			EPA-300.0	X
Sulfate		53.2	mg/L	2	4/10/2024			EPA-300.0	X
Conductivity		354	µmhos/cm		4/10/2024				X
pH		7.84	Std Unit		4/10/2024				X
Iron		0.244	mg/L	0.1	4/10/2024			EPA-200.8	X
Sodium		10.8	mg/L	0.25	4/10/2024			EPA-200.8	X
Uranium		0.00165	mg/L	0.0002	4/10/2024			EPA-200.8	X
Alpha activity	U	1.03	pCi/L	7.44	4/10/2024	3.64	3.64	SW846-9310	X
Beta activity	U	7.7	pCi/L	9.51	4/10/2024	6.02	6.16	SW846-9310	X
Dissolved Solids		224	mg/L	10	4/10/2024			EPA-160.1	X
Suspended Solids		5.8	mg/L	5	4/10/2024			EPA-160.2	X
Chemical Oxygen Demand (COD)		33.7	mg/L	20	4/10/2024			EPA-410.4	X
Total Solids		243	mg/L	10	4/10/2024			SM-2540B	X
Total Organic Carbon (TOC)		10.8	mg/L	1	4/10/2024			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:** 2nd Quarter 2024

SAMPLE ID: L154US3-24 Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Chloride		4.91	mg/L	0.2	4/10/2024			EPA-300.0	X
Sulfate		5.81	mg/L	0.4	4/10/2024			EPA-300.0	X
Conductivity		158	µmhos/cm		4/10/2024				X
pH		7.16	Std Unit		4/10/2024				X
Iron		5.06	mg/L	0.1	4/10/2024			EPA-200.8	X
Sodium		5.46	mg/L	0.25	4/10/2024			EPA-200.8	X
Uranium		0.00301	mg/L	0.0002	4/10/2024			EPA-200.8	X
Alpha activity	U	3.45	pCi/L	9.3	4/10/2024	5.25	5.28	SW846-9310	X
Beta activity	U	7.04	pCi/L	13.9	4/10/2024	8.26	8.35	SW846-9310	X
Dissolved Solids		229	mg/L	10	4/10/2024			EPA-160.1	X
Suspended Solids		49.2	mg/L	10	4/10/2024			EPA-160.2	X
Chemical Oxygen Demand (COD)		75.5	mg/L	20	4/10/2024			EPA-410.4	X
Total Solids		286	mg/L	10	4/10/2024			SM-2540B	X
Total Organic Carbon (TOC)		27.6	mg/L	5	4/10/2024			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:** 2nd Quarter 2024

SAMPLE ID: L351US3-24 Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Chloride		3.33	mg/L	0.2	4/10/2024			EPA-300.0	X
Sulfate		45	mg/L	2	4/10/2024			EPA-300.0	X
Conductivity		226	µmhos/cm		4/10/2024				X
pH		7.49	Std Unit		4/10/2024				X
Iron		2.43	mg/L	0.1	4/10/2024			EPA-200.8	X
Sodium		3.99	mg/L	0.25	4/10/2024			EPA-200.8	X
Uranium		0.003	mg/L	0.0002	4/10/2024			EPA-200.8	X
Alpha activity	U	8.54	pCi/L	9.49	4/10/2024	6.49	6.65	SW846-9310	X
Beta activity		16.2	pCi/L	9.46	4/10/2024	6.97	7.48	SW846-9310	X
Dissolved Solids		147	mg/L	10	4/10/2024			EPA-160.1	X
Suspended Solids		64.6	mg/L	4.81	4/10/2024			EPA-160.2	X
Chemical Oxygen Demand (COD)		40.6	mg/L	20	4/10/2024			EPA-410.4	X
Total Solids		272	mg/L	10	4/10/2024			SM-2540B	X
Total Organic Carbon (TOC)		12.7	mg/L	1	4/10/2024			SW846-9060A	X

Qualifier Code Definitions	
*	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.

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

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

Validation Code Definitions	
=	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

Report Date: July 24, 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(US24-03)

Client Sample ID: L150US3-24
Sample ID: 662794001
Matrix: WS
Collect Date: 10-APR-24 13:34
Receive Date: 12-APR-24
Collector: Client

Project: FRNP00514
Client ID: FRNP005

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		10.8	0.330	1.00	mg/L		1	RM3	04/13/24	2157	2596331	1
Ion Chromatography												
EPA 300.0 Anions (Chloride and Sulfate) "As Received"												
Chloride		12.5	0.335	1.00	mg/L		5	CH6	04/15/24	1427	2596629	2
Sulfate		53.2	0.665	2.00	mg/L		5					
Metals Analysis-ICP-MS												
200.8/200.2 MIMICP Metals- Fe Na U "As Received"												
Iron		0.244	0.0330	0.100	mg/L	1.00	1	RM4	05/01/24	0521	2596538	3
Uranium		0.00165	0.0000670	0.000200	mg/L	1.00	1					
Sodium		10.8	0.0800	0.250	mg/L	1.00	1	RM4	05/01/24	1453	2596538	4
Solids Analysis												
EPA 160.1 Solids, Dissolved "As Received"												
Total Dissolved Solids		224	2.38	10.0	mg/L			ES2	04/17/24	1150	2598037	5
EPA 160.2 Total Suspended Liq "As Received"												
Total Suspended Solids		5.80	1.14	5.00	mg/L			ES2	04/17/24	0545	2598041	6
SM 2540 B Solids, Total "As Received"												
Total Solids		243	6.29	10.0	mg/L			ES2	04/17/24	1230	2598039	7
Spectrometric Analysis												
EPA 410.4 Chem. Oxygen Demand "As Received"												
COD		33.7	8.95	20.0	mg/L		1	JW2	04/12/24	1527	2596273	8

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 200.2	ICP-MS 200.2 PREP	AB5	04/15/24	1530	2596537

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

Certificate of Analysis

Report Date: July 24, 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(US24-03)

Client Sample ID:	L150US3-24	Project:	FRNP00514
Sample ID:	662794001	Client ID:	FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060A	
2	EPA 300.0	
3	EPA 200.8	
4	EPA 200.8	
5	EPA 160.1	
6	EPA 160.2	
7	SM 2540B	
8	EPA 410.4	

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: July 24, 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(US24-03)

Client Sample ID: L154US3-24
Sample ID: 662794002
Matrix: WS
Collect Date: 10-APR-24 13:51
Receive Date: 12-APR-24
Collector: Client

Project: FRNP00514
Client ID: FRNP005

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		27.6	1.65	5.00	mg/L		5	RM3	04/15/24	1154	2596331	1
Ion Chromatography												
EPA 300.0 Anions (Chloride and Sulfate) "As Received"												
Chloride		4.91	0.0670	0.200	mg/L		1	CH6	04/13/24	1941	2596629	2
Sulfate		5.81	0.133	0.400	mg/L		1					
Metals Analysis-ICP-MS												
200.8/200.2 MIMICP Metals- Fe Na U "As Received"												
Sodium		5.46	0.0800	0.250	mg/L	1.00	1	RM4	05/01/24	1456	2596538	3
Iron		5.06	0.0330	0.100	mg/L	1.00	1	RM4	05/01/24	0525	2596538	4
Uranium		0.00301	0.0000670	0.000200	mg/L	1.00	1					
Solids Analysis												
EPA 160.1 Solids, Dissolved "As Received"												
Total Dissolved Solids		229	2.38	10.0	mg/L			ES2	04/17/24	1150	2598037	5
EPA 160.2 Total Suspended Liq "As Received"												
Total Suspended Solids		49.2	2.28	10.0	mg/L			ES2	04/17/24	0545	2598041	6
SM 2540 B Solids, Total "As Received"												
Total Solids		286	6.29	10.0	mg/L			ES2	04/17/24	1230	2598039	7
Spectrometric Analysis												
EPA 410.4 Chem. Oxygen Demand "As Received"												
COD		75.5	8.95	20.0	mg/L		1	JW2	04/12/24	1527	2596273	8

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 200.2	ICP-MS 200.2 PREP	AB5	04/15/24	1530	2596537

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

Certificate of Analysis

Report Date: July 24, 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(US24-03)

Client Sample ID:	L154US3-24	Project:	FRNP00514
Sample ID:	662794002	Client ID:	FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060A	
2	EPA 300.0	
3	EPA 200.8	
4	EPA 200.8	
5	EPA 160.1	
6	EPA 160.2	
7	SM 2540B	
8	EPA 410.4	

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

Certificate of Analysis

Report Date: July 24, 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(US24-03)

Client Sample ID:	L351US3-24	Project:	FRNP00514
Sample ID:	662794003	Client ID:	FRNP005
Matrix:	WS		
Collect Date:	10-APR-24 13:15		
Receive Date:	12-APR-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		12.7	0.330	1.00	mg/L		1	RM3	04/13/24	2301	2596331	1
Ion Chromatography												
EPA 300.0 Anions (Chloride and Sulfate) "As Received"												
Chloride		3.33	0.0670	0.200	mg/L		1	CH6	04/13/24	2145	2596629	2
Sulfate		45.0	0.665	2.00	mg/L		5	CH6	04/15/24	1458	2596629	3
Metals Analysis-ICP-MS												
200.8/200.2 MIMICP Metals- Fe Na U "As Received"												
Sodium		3.99	0.0800	0.250	mg/L	1.00	1	RM4	05/01/24	1500	2596538	4
Iron		2.43	0.0330	0.100	mg/L	1.00	1	RM4	05/01/24	0528	2596538	5
Uranium		0.00300	0.0000670	0.000200	mg/L	1.00	1					
Solids Analysis												
EPA 160.1 Solids, Dissolved "As Received"												
Total Dissolved Solids		147	2.38	10.0	mg/L			ES2	04/17/24	1150	2598037	6
EPA 160.2 Total Suspended Liq "As Received"												
Total Suspended Solids		64.6	1.10	4.81	mg/L			ES2	04/17/24	0545	2598041	7
SM 2540 B Solids, Total "As Received"												
Total Solids		272	6.29	10.0	mg/L			ES2	04/17/24	1230	2598039	8
Spectrometric Analysis												
EPA 410.4 Chem. Oxygen Demand "As Received"												
COD		40.6	8.95	20.0	mg/L		1	JW2	04/12/24	1527	2596273	9

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 200.2	ICP-MS 200.2 PREP	AB5	04/15/24	1530	2596537

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

Certificate of Analysis

Report Date: July 24, 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(US24-03)

Client Sample ID:	L351US3-24	Project:	FRNP00514
Sample ID:	662794003	Client ID:	FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060A	
2	EPA 300.0	
3	EPA 300.0	
4	EPA 200.8	
5	EPA 200.8	
6	EPA 160.1	
7	EPA 160.2	
8	SM 2540B	
9	EPA 410.4	

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

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053
Report Date: July 24, 2024
Contact: Ms. Jaime Morrow
Project: C-746-U Landfill Surface Water Quarterly(US24-03)

Client Sample ID: L150US3-24
Sample ID: 662794001
Matrix: WS
Collect Date: 10-APR-24
Receive Date: 12-APR-24
Collector: Client
Project: FRNP00514
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gas Flow Proportional Counting														
GFPC, Gross A/B, liquid "As Received"														
Alpha	U	1.03	+/-3.64	7.44	+/-3.64	15.0	pCi/L			HH3	04/25/24	1501	2596850	1
Beta	U	7.70	+/-6.02	9.51	+/-6.16	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

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Certificate of Analysis

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

Kevil, Kentucky 42053 Report Date: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Surface Water Quarterly(US24-03)

Client Sample ID: L154US3-24 Project: FRNP00514
Sample ID: 662794002 Client ID: FRNP005
Matrix: WS
Collect Date: 10-APR-24
Receive Date: 12-APR-24
Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gas Flow Proportional Counting														
GFPC, Gross A/B, liquid "As Received"														
Alpha	U	3.45	+/-5.25	9.30	+/-5.28	15.0	pCi/L			HH3	05/02/24	1239	2596850	1
Beta	U	7.04	+/-8.26	13.9	+/-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
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: July 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Surface Water Quarterly(US24-03)

Client Sample ID: L351US3-24 Project: FRNP00514
Sample ID: 662794003 Client ID: FRNP005
Matrix: WS
Collect Date: 10-APR-24
Receive Date: 12-APR-24
Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gas Flow Proportional Counting														
GFPC, Gross A/B, liquid "As Received"														
Alpha	U	8.54	+/-6.49	9.49	+/-6.65	15.0	pCi/L			HH3	04/25/24	1501	2596850	1
Beta		16.2	+/-6.97	9.46	+/-7.48	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

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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 26th day of June 2023.

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

Analytical Method	Preparation Method	Product
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		905.0Mod, 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)
MW357					
Date Collected:4/8/24					
1047	62.3	422	6.37	5.88	1.86
1050	61.8	418	6.18	4.69	2.02
1053	61.7	416	6.14	4.60	2.11
MW360					
Date Collected: 4/8/24					
0759	59.4	391	6.18	4.17	4.80
0802	59.7	389	6.09	4.98	4.02
0805	59.7	388	6.08	5.02	4.16
MW362					
Date Collected: 4/8/24					
1001	60.6	563	6.73	7.42	10.03
1004	59.8	564	7.00	7.27	11.36
1007	59.7	564	7.01	7.16	11.17
MW364					
Date Collected: 4/9/24					
0913	61.5	471	6.11	4.01	0.00
0916	61.3	470	6.04	3.49	0.00
0919	61.3	471	6.01	3.40	0.00
MW366					
Date Collected:4/9/24					
1043	62.7	484	6.17	4.86	1.19
1046	62.4	489	6.10	3.29	1.24
1049	62.5	491	6.07	3.18	1.31
MW368					
Date Collected:4/9/24					
1253	61.7	761	6.24	6.56	0.00
1256	61.5	766	6.33	6.91	0.00
1259	61.7	769	6.36	6.96	0.00
MW370					
Date Collected:4/10/24					
0828	61.6	345	5.95	2.89	4.60
0831	61.6	400	5.94	3.03	3.86
0834	61.5	409	5.93	3.09	2.97
MW372					
Date Collected:4/11/24					
1339	61.6	754	6.10	2.84	1.36
1342	61.5	757	6.06	2.20	1.11
1345	61.5	758	6.05	2.12	1.04
MW374					
Date Collected: 4/10/24					
1220	63.1	695	6.77	3.49	3.11
1223	62.6	691	6.72	1.41	3.06
1226	62.2	685	6.71	1.33	3.10

	Temperature (°F)	Conductivity (µmhos/cm)	pH (Std Unit)	Dissolved oxygen (mg/L)	Turbidity (NTU)
MW358					
Date Collected:4/8/24					
1134	62.7	466	6.22	4.78	3.33
1137	61.2	470	6.20	1.66	3.09
1140	61.0	477	6.17	1.55	3.71
MW361					
Date Collected:4/8/24					
0901	60.1	495	6.12	4.52	1.45
0904	59.9	507	5.97	3.71	1.36
0907	59.9	512	5.91	3.67	1.51
MW363					
Date Collected:4/9/24					
0810	62.1	353	6.11	3.57	0.00
0813	61.9	350	6.07	2.21	0.00
0816	61.4	351	6.07	2.09	0.00
MW365					
Date Collected:4/9/24					
0954	61.3	365	6.34	6.20	0.00
0957	60.9	363	6.30	6.35	0.00
1000	60.8	363	6.27	6.40	0.00
MW367					
Date Collected: 4/9/24					
1215	61.9	251	5.90	1.99	6.20
1218	62.0	260	5.83	1.50	6.78
1221	61.9	259	5.82	1.36	6.34
MW369					
Date Collected:4/10/24					
0743	60.8	347	5.93	3.78	4.74
0746	60.7	346	5.90	2.44	4.81
0749	60.7	347	5.89	2.39	4.64
MW371					
Date Collected:4/10/24					
0931	61.4	684	6.45	4.73	6.18
0934	61.2	694	6.46	3.13	6.00
0937	61.2	697	6.45	3.03	6.68
MW373					
Date Collected:4/10/24					
1101	61.7	918	6.21	4.22	3.44
1104	61.4	925	6.11	2.70	2.87
1107	61.4	930	6.02	2.61	2.33
MW375					
Date Collected:4/10/24					
1315	63.0	377	6.80	3.00	3.18
1318	62.7	363	6.49	2.12	2.72
1321	62.6	366	6.46	2.03	2.66

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