



Department of Energy

Portsmouth/Paducah Project Office
1017 Majestic Drive, Suite 200
Lexington, Kentucky 40513
(859) 219-4000

Mr. Todd Hendricks
Division of Waste Management
Kentucky Department for Environmental Protection
300 Sower Boulevard, 2nd Floor
Frankfort, Kentucky 40601

PPPO-02-10026937-24B

Ms. Jamie Nielsen
Division of Waste Management
Kentucky Department for Environmental Protection
300 Sower Boulevard, 2nd Floor
Frankfort, Kentucky 40601

Dear Mr. Hendricks and Ms. Nielsen:

**C-746-S&T LANDFILLS FOURTH QUARTER CALENDAR YEAR 2023
(OCTOBER–DECEMBER) COMPLIANCE MONITORING REPORT, PADUCAH
GASEOUS DIFFUSION PLANT, PADUCAH, KENTUCKY, FRNP-RPT-0294/V4,
PERMIT NUMBER SW07300014, SW07300015, SW07300045, AGENCY
INTEREST ID NO. 3059**

The subject report for the fourth quarter calendar year (CY) 2023 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 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 of the fourth quarter CY 2023 monitoring well (MW) data collected from the C-746-S&T Landfills were performed in accordance with Monitoring Condition GSTR0003, 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).

A statistically significant exceedance was indicated for calcium and magnesium in MW373. This statistical exceedance is a Type 2 Exceedance—Source Unknown. Continued evaluation of calcium and magnesium levels through future quarterly monitoring events is recommended. This report also serves as the statistical exceedance notification for the fourth quarter CY 2023, in accordance with Monitoring Condition GSTR0001, Standard Requirement 5, of the Permit.

If you have any questions or require additional information, please contact Ryan Callihan at (740) 970-0255.

Sincerely,

APRIL LADD Digitally signed by APRIL LADD
Date: 2024.02.22 15:13:23
-06'00'

April Ladd
Paducah Site Lead
Portsmouth/Paducah Project Office

Enclosure:

C-746-S&T Landfills Fourth Quarter Calendar Year 2023 (October–December) Compliance Monitoring Report, Paducah Gaseous Diffusion Plant, Paducah, Kentucky,
FRNP-RPT-0294/V4

cc w/ enclosure:

abigail.parish@pppo.gov, PPPO
april.ladd@pppo.gov, PPPO
april.webb@ky.gov, KDEP
bruce.ford@pad.pppo.gov, FRNP
bryan.smith@pad.pppo.gov FRNP
dennis.greene@pad.pppo.gov, FRNP
frnpcorrespondence@pad.pppo.gov
jaime.morrow@pad.pppo.gov, FRNP
joel.bradburne@pppo.gov, PPPO
ken.davis@pad.pppo.gov, FRNP
leo.williamson@ky.gov, KDEP
mary.evans@ky.gov, KDEP
myrna.redfield@pad.pppo.gov, FRNP
pad.rmc@pad.pppo.gov
reinhard.knerr@pppo.gov, PPPO
ryan.callihan@pppo.gov, PPPO
sonja.smiley@ky.gov, KDEP
stephaniec.brock@ky.gov, KYRHB

cc via KY eForms portal:

jamie.nielsen@ky.gov, KDEP
lauren.linehan@ky.gov, KDEP
teresa.osborne@ky.gov, KDEP
todd.hendricks@ky.gov, KDEP

FRNP-RPT-0294/V4

**C-746-S&T Landfills
Fourth Quarter Calendar Year 2023
(October–December)
Compliance Monitoring Report,
Paducah Gaseous Diffusion Plant,
Paducah, Kentucky**



CLEARED FOR PUBLIC RELEASE

**C-746-S&T Landfills
Fourth Quarter Calendar Year 2023
(October–December)
Compliance Monitoring Report,
Paducah Gaseous Diffusion Plant,
Paducah, Kentucky**

Date Issued—February 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

CLEARED FOR PUBLIC RELEASE

THIS PAGE INTENTIONALLY LEFT BLANK

CONTENTS

FIGURES.....	v
TABLES	v
ACRONYMS.....	vii
1. INTRODUCTION.....	1
1.1 BACKGROUND.....	1
1.2 MONITORING PERIOD ACTIVITIES	1
1.2.1 Groundwater Monitoring.....	1
1.2.2 Methane Monitoring.....	3
1.2.3 Surface Water Monitoring.....	4
1.3 KEY RESULTS.....	4
2. DATA EVALUATION/STATISTICAL SYNOPSIS.....	11
2.1 STATISTICAL ANALYSIS OF GROUNDWATER DATA.....	12
2.1.1 Upper Continental Recharge System.....	12
2.1.2 Upper Regional Gravel Aquifer	12
2.1.3 Lower Regional Gravel Aquifer	13
2.2 DATA VERIFICATION AND VALIDATION.....	13
3. PROFESSIONAL GEOLOGIST AUTHORIZATION.....	15
4. REFERENCES.....	17
APPENDIX A: GROUNDWATER, SURFACE WATER, LEACHATE, AND METHANE MONITORING SAMPLE DATA REPORTING FORM.....	A-1
APPENDIX B: FACILITY INFORMATION SHEET.....	B-1
APPENDIX C: GROUNDWATER SAMPLE ANALYSES AND LABORATORY REPORTS.....	C-1
APPENDIX D: STATISTICAL ANALYSES AND QUALIFICATION STATEMENT.....	D-1
APPENDIX E: GROUNDWATER FLOW RATE AND DIRECTION	E-1
APPENDIX F: NOTIFICATIONS.....	F-1
APPENDIX G: CHART OF MCL AND UTL EXCEEDANCES.....	G-1
APPENDIX H: METHANE MONITORING DATA.....	H-1
APPENDIX I: SURFACE WATER ANALYSES AND LABORATORY REPORTS.....	I-1
APPENDIX J: ANALYTICAL LABORATORY CERTIFICATION	J-1

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

FIGURES

1. C-746-S&T Landfills Groundwater Monitoring Well Network.....	2
2. C-746-S&T Landfills Surface Water Monitoring Locations.....	5

TABLES

1. Summary of MCL Exceedances.....	4
2. Exceedances of Statistically Derived Historical Background Concentrations	6
3. Exceedances of Current Background UTL in Downgradient Wells	6
4. C-746-S&T Landfills Downgradient Wells Trend Summary Utilizing the Previous Eight Quarters	7
5. Exceedances of Current Background UTL in Downgradient UCRS Wells	8
6. Monitoring Wells Included in Statistical Analysis.....	12

THIS PAGE INTENTIONALLY LEFT BLANK

ACRONYMS

<i>CFR</i>	<i>Code of Federal Regulations</i>
COD	chemical oxygen demand
<i>KAR</i>	<i>Kentucky Administrative Regulations</i>
<i>KRS</i>	<i>Kentucky Revised Statutes</i>
LEL	lower explosive limit
LRGA	Lower Regional Gravel Aquifer
LTL	lower tolerance limit
MCL	maximum contaminant level
MW	monitoring well
RGA	Regional Gravel Aquifer
UCRS	Upper Continental Recharge System
URGA	Upper Regional Gravel Aquifer
UTL	upper tolerance limit

THIS PAGE INTENTIONALLY LEFT BLANK

1. INTRODUCTION

This report, *C-746-S&T Landfills Fourth Quarter Calendar Year 2023 (October–December) Compliance Monitoring Report, Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, is being submitted in accordance with Solid Waste Landfill 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 that 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 and for all permit required parameters listed in 40 *CFR* § 302.4, Appendix A, 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 exceedances of the MCL and historical UTL that have occurred since the fourth quarter calendar year 2002. Methane monitoring results are documented on the approved C-746-S&T Landfills Methane Monitoring Report form provided in Appendix H. The form includes pertinent remarks/observations as required by 401 *KAR* 48:090 § 5. Surface water results 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-S&T Landfills are closed, solid waste landfills located north of the Paducah Site and south of the C-746-U Landfill. Construction and operation of the C-746-S Residential Landfill were permitted in April 1981 under Solid Waste Landfill Permit No. 073-00014. The permitted C-746-S Landfill area covers about 16 acres and contains a clay liner with a final cover of compacted soil. The C-746-S Landfill was a sanitary landfill for the Paducah Gaseous Diffusion Plant operations. The C-746-S Landfill is closed and has been inactive since July 1995.

Construction and operation of the C-746-T Inert Landfill were permitted in February 1985 under Solid Waste Landfill Permit No. 073-00015. The permitted C-746-T Landfill area covers about 20 acres and contains a clay liner with a final cover of compacted soil. The C-746-T Landfill was used to dispose of construction debris (e.g., concrete, wood, rock) and steam plant fly ash from the Paducah Gaseous Diffusion Plant operations. The C-746-T Landfill is closed and has been inactive since June 1992.

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 23 monitoring wells (MWs) under permit for the C-746-S&T Landfills: 5 UCRS wells, 11 URGA wells, and 7 LRGA wells. A map of the MW locations is presented in Figure 1. All MWs listed on the permit were sampled this quarter, except MW389 and MW390 (screened in the UCRS), which had insufficient amounts of water to obtain samples.

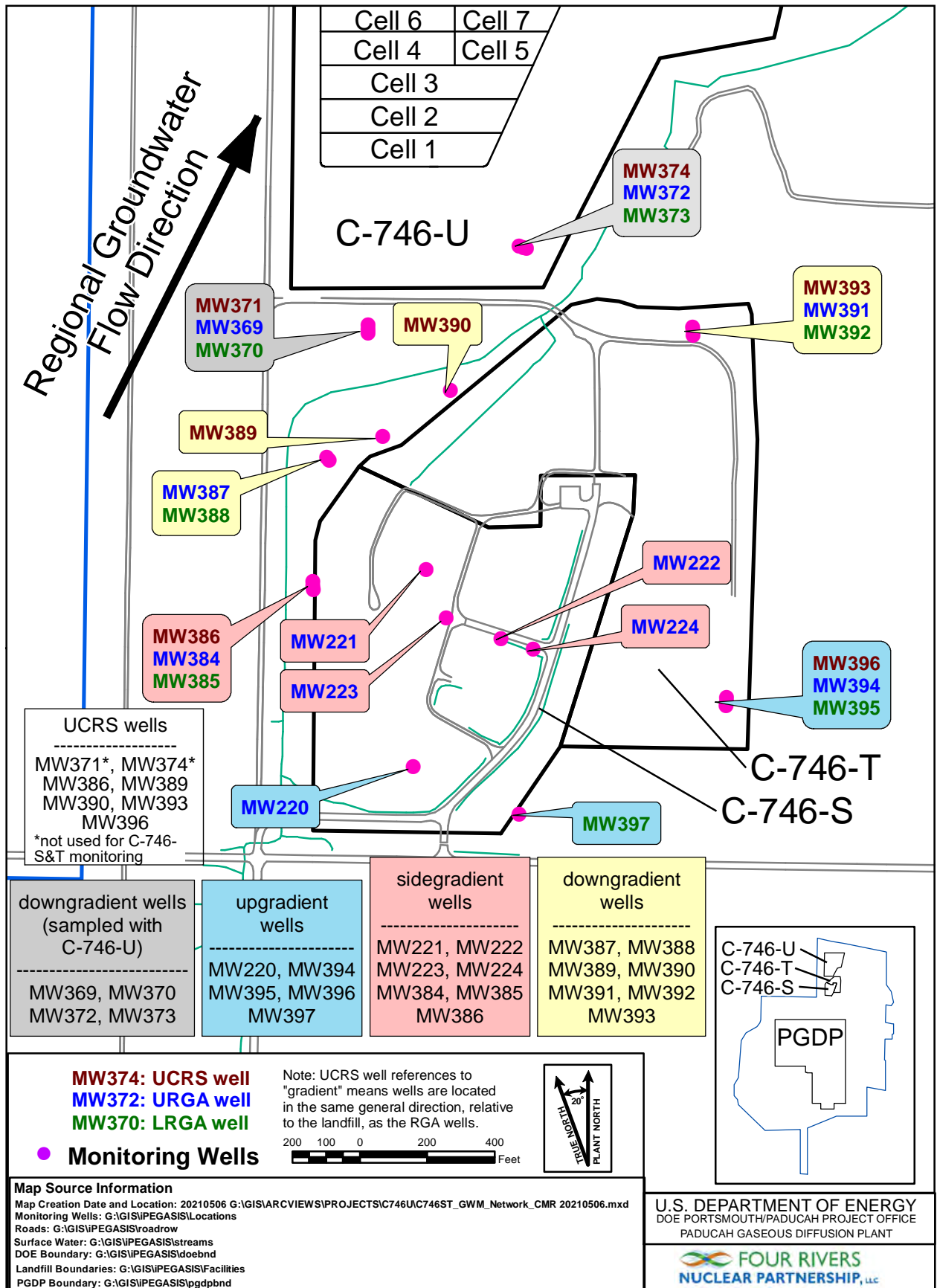


Figure 1. C-746-S&T Landfills Groundwater Monitoring Well Network

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*, PAD-PROJ-0139 (Groundwater Monitoring Plan), UCRS wells are included in the monitoring program (LATA Kentucky 2014). Groundwater flow gradients are downward through the UCRS, but the underlying Regional Gravel Aquifer (RGA) flows laterally. Groundwater flow in the RGA is typically in a north-northeasterly direction in the vicinity of the C-746-S&T Landfills. 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 (for background), and exceedances of these values are reported in the quarterly report.

Groundwater sampling was conducted within the fourth quarter 2023 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 fourth quarter 2023 was conducted on October 11–19, 2023. The analytical laboratory used U.S. Environmental Protection Agency-approved methods, as applicable. The parameters specified in Permit Condition GSTR0003, Special Condition 3, were analyzed for all locations sampled.

The groundwater flow rate and direction determination are provided in Appendix E. Depth-to-water was measured on October 23, 2023, in MWs of the C-746-S&T Landfills (see Appendix E, Table E.1); in MWs of the C-746-U Landfill; and in MWs of the surrounding region (shown on Appendix E, Figure E.3). 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 October, RGA groundwater flow was directed inward and then north towards the Ohio River. The hydraulic gradient for the RGA in the vicinity of the C-746-S&T Landfills in October was 3.08×10^{-4} ft/ft, while the gradient beneath the C-746-S&T Landfills was approximately 2.60×10^{-4} ft/ft (see Appendix E, Table E.2). Calculated groundwater flow rates (average linear velocities) for the RGA at the C-746-S&T Landfills ranged from 0.441 to 0.753 ft/day (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 Solid Waste Landfill Permit. Industrial Hygiene staff monitored for the occurrence of methane in one on-site building location, four locations along the landfill boundary, and 27 passive gas vents located in Cells 1, 2, and 3 of the C-746-S Landfill on November 7, 2023. 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-S&T Landfills Methane Monitoring Report provided in Appendix H.

1.2.3 Surface Water Monitoring

Surface water sampling was performed on October 29, 2023, at the three locations monitored for the C-746-S&T Landfills: (1) upstream location L135, (2) instream location L154, and (3) instream location L136 (Figure 2). Surface water was monitored, as specified in 401 KAR 48:300 § 2, 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 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. Parameters that had concentrations that exceeded their respective MCL are listed in Table 1. Those constituents that exceeded their respective MCL were evaluated further against their historical background UTL. Table 2 identifies parameters that exceeded their MCL and also exceeded their historical background UTL, as well as other parameters that do not have MCLs but have concentrations that exceeded the statistically derived historical background UTL¹ during the fourth quarter 2023. 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 designated as background wells (Table 3).

Table 1. Summary of MCL Exceedances

UCRS	URGA	LRGA
None	MW384: Trichloroethene	MW392: Trichloroethene
	MW394: Trichloroethene	

¹ The UTL comparison for pH uses a two-sided test, both UTL and LTL.

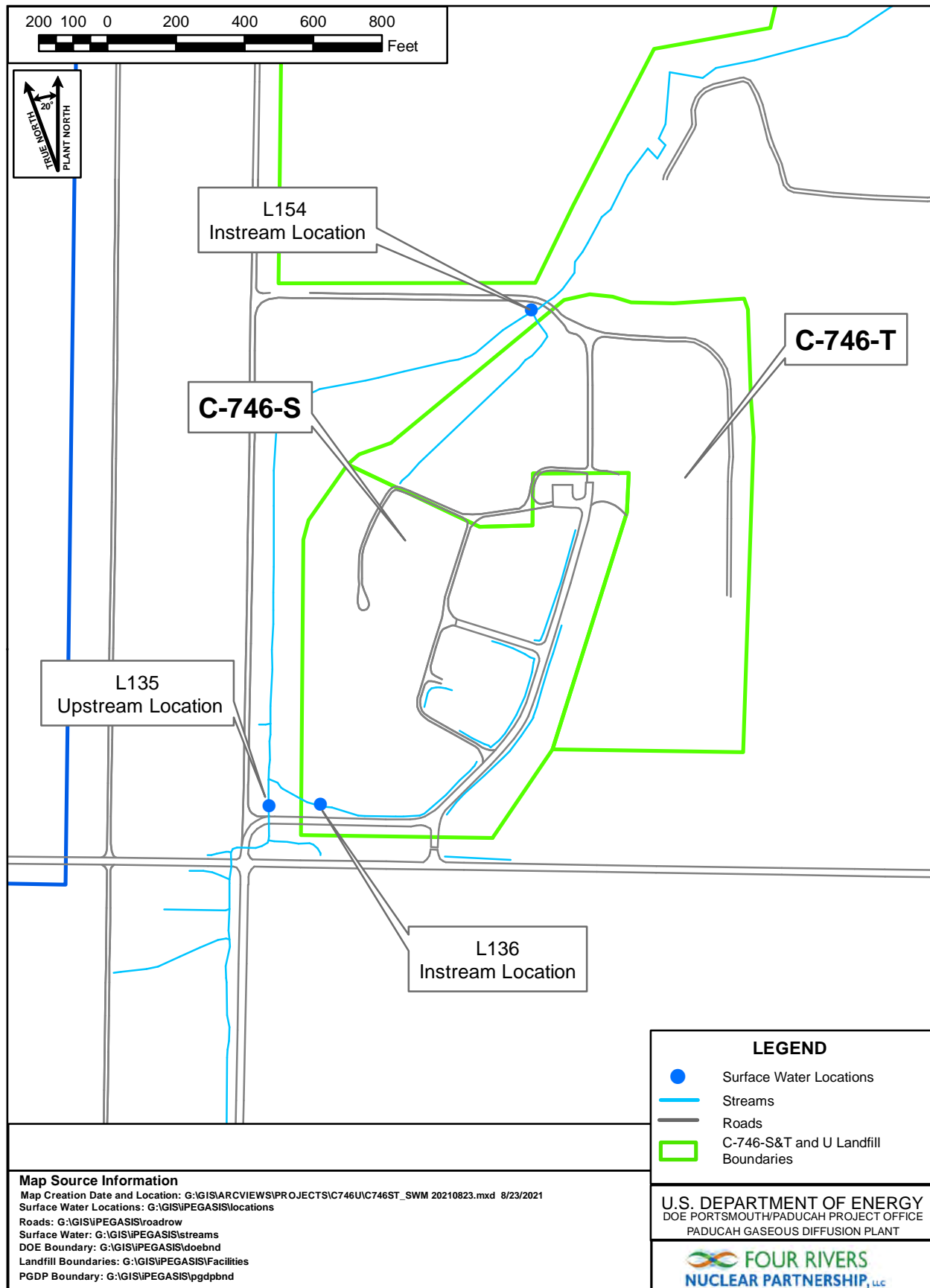


Figure 2. C-746-S&T Landfill Surface Water Monitoring Locations

Table 2. Exceedances of Statistically Derived Historical Background Concentrations

UCRS ^a	URGA	LRGA
MW386: Oxidation-reduction potential ^b	MW220: Oxidation-reduction potential ^b	MW370: Oxidation-reduction potential ^b and sulfate
MW393: Oxidation-reduction potential ^b	MW221: Oxidation-reduction potential ^b	MW373: Calcium, conductivity, dissolved solids, magnesium, oxidation-reduction potential, ^b and sulfate
MW396: Oxidation-reduction potential ^b	MW222: Oxidation-reduction potential ^b	MW385: Oxidation-reduction potential, ^b sulfate, and technetium-99
	MW223: Oxidation-reduction potential ^b	MW388: Oxidation-reduction potential ^b and sulfate
	MW224: Oxidation-reduction potential ^b	MW392: Oxidation-reduction potential ^b
	MW369: Technetium-99	MW395: Oxidation-reduction potential ^b
	MW372: Calcium, conductivity, dissolved solids, magnesium, sodium, and sulfate	MW397: Oxidation-reduction potential ^b
	MW384: Oxidation-reduction potential, ^b sodium, sulfate, and technetium-99	
	MW387: Magnesium, oxidation-reduction potential, ^b sulfate, and technetium-99	
	MW391: Oxidation-reduction potential ^b	
	MW394: 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: MW221, MW222, MW223, MW224, MW384, MW385, and MW386.

Downgradient wells: MW369, MW370, MW372, MW373, MW387, MW388, MW389, MW390, MW391, MW392, and MW393.

Background wells: MW220, MW394, MW395, MW396, and MW397.

Table 3. Exceedances of Current Background UTL in Downgradient Wells

URGA	LRGA
MW369: Technetium-99	MW370: Sulfate
MW372: Calcium, conductivity, dissolved solids, magnesium, sodium, and sulfate	MW373: Calcium, conductivity, dissolved solids, magnesium, and sulfate
MW387: Magnesium, sulfate, and technetium-99	MW388: Sulfate

The notification of parameters that exceeded the MCL has been submitted electronically to the Kentucky Division of Waste Management, in accordance with 401 *KAR* 48:300 § 7, prior to the submittal of this report.

The constituents that exceeded their MCL were subjected to a comparison against the UTL concentrations calculated using historical concentrations from wells identified as background. In accordance with the approved Groundwater Monitoring Plan (LATA Kentucky 2014), the

MCL exceedance for TCE in downgradient well MW392 did not exceed the historical background concentration and is considered to be a Type 1 exceedance—not attributable to the C-746-S&T Landfills.

This report serves as the notification of parameters that had statistically significant increased concentrations relative to historical background concentrations, as required by Permit No. SW07300014, SW07300015, SW07300045, Condition GSTR0003, Standard Requirement 5, and 401 KAR 48:300 § 7.

The constituents listed in Table 2 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 to identify if the current downgradient well concentrations are consistent with current background values. The current background UTL was developed using the most recent eight quarters of data from wells identified as background wells. Table 3 summarizes the evaluation against current background UTL for those constituents present in downgradient wells with historical UTL exceedances. In accordance with the approved Groundwater Monitoring Plan (LATA Kentucky 2014), constituents in downgradient wells that exceed the historical UTL, but do not exceed the current UTL, are considered not to have a C-746-S&T Landfills source; therefore, they are Type 1 exceedances—not attributable to the C-746-S&T Landfills.

The constituents listed in Table 3 that exceed both the historical UTL and the current UTL and do not have an identified source are considered preliminarily to be Type 2 exceedances, per the approved Groundwater Monitoring Plan (LATA Kentucky 2014). To evaluate these preliminary Type 2 exceedances further, the parameters were subjected to the Mann-Kendall statistical test for trend using the most recent eight quarters of data. The results are summarized in Table 4. Fifteen of the 17 preliminary Type 2 exceedances in downgradient wells do not have increasing trends and are considered to be Type 1 exceedances—not attributable to the C-746-S&T Landfills.

Table 4. C-746-S&T Landfills Downgradient Wells Trend Summary Utilizing the Previous Eight Quarters

Location	Well ID	Parameter	Sample Size	Alpha ^a	p-Value ^b	S ^c	Decision ^d
C-746-S&T Landfills	MW369	Technetium-99	8	0.05	0.274	6	No Trend
	MW370	Sulfate	8	0.05	0.054	-14	No Trend
	MW372	Calcium	8	0.05	0.274	-6	No Trend
		Conductivity	8	0.05	0.452	2	No Trend
		Dissolved Solids	8	0.05	0.016	-19	Decreasing
		Magnesium	8	0.05	0.089	-12	No Trend
		Sodium	8	0.05	0.119	-8	No Trend
		Sulfate	8	0.05	0.548	-1	No Trend
	MW373	Calcium	8	0.05	0.031	17	Increasing
		Conductivity	8	0.05	0.089	13	No Trend
		Dissolved Solids	8	0.05	0.138	11	No Trend

**Table 4. C-746-S&T Landfills Downgradient Wells Trend Summary
Utilizing the Previous Eight Quarters (Continued)**

Location	Well ID	Parameter	Sample Size	Alpha ^a	p-Value ^b	S ^c	Decision ^d
C-746-S&T Landfills	MW373	Magnesium	8	0.05	0.016	18	Increasing
		Sulfate	8	0.05	0.274	7	No Trend
	MW387	Magnesium	8	0.05	0.054	-15	No Trend
		Sulfate	8	0.05	0.089	-12	No Trend
		Technetium-99	8	0.05	0.138	-10	No Trend
	MW388	Sulfate	8	0.05	0.548	1	No Trend

^a An alpha of 0.05 represents a 95% confidence interval.

^b The p-value represents the risk of acceptance of the H_a hypothesis of a trend, in terms of a percentage.

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

^d The Mann-Kendall decision operates on two hypotheses: the H₀ and H_a. H₀ assumes there is no trend in the data, whereas H_a assumes either a positive or negative trend.

NOTE: Statistics were generated using ProUCL.

Two of the 17 preliminary Type 2 exceedances in downgradient wells had an increasing trend. Specifically, the Mann-Kendall statistical test indicates increasing trends for both calcium and magnesium in LRGA well MW373 over the past eight quarters. It should be noted that concentrations of calcium and magnesium in URGA well MW372 are consistently lower than those shown in collocated LRGA well MW373. Since calcium and magnesium concentrations are lower in the shallower screened well at this location, the C-746-S&T Landfills are likely not the source of the concentrations observed in the deeper screened well. Therefore, the observed trends should be considered Type 2 exceedances—sources unknown. Evaluation of calcium and magnesium trends through future quarterly monitoring events is recommended.

In accordance with Permit Condition GSTR0003, Special Condition 2, of the Solid Waste Landfill Permit, the groundwater assessment and corrective action requirements of 401 KAR 48:300 § 8 shall not apply to the C-746-S Residential Landfill and the C-746-T Inert Landfill. This variance in the permit provides that groundwater assessment and corrective actions for these landfills will be conducted in accordance with the corrective action requirements of 401 KAR 39:090.

The statistical evaluation of UCRS concentrations against the current UCRS background UTL did not identify any UCRS wells exceeding both the historical and current backgrounds (Table 5).

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

UCRS
None

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

All MCL and UTL exceedances reported for this quarter, except for calcium and magnesium in MW373, were evaluated and considered to be Type 1 exceedances—not attributable to the C-746-S&T Landfills.

THIS PAGE INTENTIONALLY LEFT BLANK

2. DATA EVALUATION/STATISTICAL SYNOPSIS

The statistical analyses conducted on the fourth quarter 2023 groundwater data collected from the C-746-S&T Landfill MWs were performed in accordance with the Groundwater Monitoring Plan (LATA Kentucky 2014). The statistical analyses for this report utilize data from the first eight quarters that were sampled for each parameter, beginning with the first two 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).

For those parameters that exceed the MCL for Kentucky solid waste facilities found in 401 *KAR* 47:030 § 6, exceedances were documented and evaluated further as follows. Exceedances 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 landfills. 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 downgradient wells) to identify if this exceedance is attributable to upgradient/non-landfill sources. If the downgradient well 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 further evaluated using the Mann-Kendall test for trend. If there was not a statistically significant increasing trend for a constituent in a downgradient well, the exceedance was reclassified as a Type 1 exceedance—not attributable to the landfills.

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 further evaluated using the Mann-Kendall test for trend. If there was not a statistically significant increasing trend for a constituent in a downgradient well, the exceedance was reclassified as a Type 1 exceedance—not attributable to the landfills.

To calculate the UTL, the data were divided into censored (non-detects) 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 show 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 the UTL and LTL to determine if statistically significant deviations in concentrations exist with respect to background well data.

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

Table 6. Monitoring Wells Included in Statistical Analysis^a

UCRS	URGA	LRGA
MW386	MW220 (background)	MW370
MW389 ^b	MW221	MW373
MW390 ^b	MW222	MW385
MW393	MW223	MW388
MW396 ^c	MW224	MW392
	MW369	MW395 (background)
	MW372	MW397 (background)
	MW384	
	MW387	
	MW391	
	MW394 (background)	

^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 background.

2.1 STATISTICAL ANALYSIS OF GROUNDWATER DATA

Parameters requiring statistical analysis are summarized in Appendix D for each hydrological 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 exceedances 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 background in order to determine if the current downgradient well concentrations are consistent with current background values. Table 3 summarizes the constituents present in downgradient wells with historical UTL exceedances that are above the current UTL. Those constituents that have exceeded both the historical and current background UTLs in downgradient wells were further evaluated for increasing trends and are listed in Table 4.

2.1.1 Upper Continental Recharge System

In this quarter, 27 parameters, including those with MCLs, required statistical analysis in the UCRS. During the fourth quarter, oxidation-reduction potential displayed concentrations that exceeded the respective historical UTL and are listed in Table 2.

2.1.2 Upper Regional Gravel Aquifer

In this quarter, 28 parameters, including those with MCLs, required statistical analysis in the URGA. During the fourth quarter, calcium, conductivity, dissolved solids, magnesium, oxidation-reduction potential, sodium, sulfate, and technetium-99 displayed concentrations that exceeded their respective historical UTLs and are listed in Table 2. Calcium, conductivity, dissolved solids, magnesium, sodium, sulfate, and technetium-99 exceeded the current background UTL in downgradient wells and are included in Table 3.

2.1.3 Lower Regional Gravel Aquifer

In this quarter, 27 parameters, including those with MCLs, required statistical analysis in the LRGA. During the fourth 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. Calcium, conductivity, dissolved solids, magnesium, and sulfate exceeded the current background UTL in downgradient wells and are included in Table 3.

2.2 DATA VERIFICATION AND VALIDATION

Data verification is the process of comparing a data set against 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 for 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 tables 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.

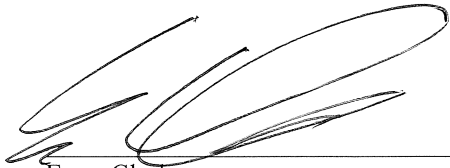
THIS PAGE INTENTIONALLY LEFT BLANK

3. PROFESSIONAL GEOLOGIST AUTHORIZATION

DOCUMENT IDENTIFICATION: *C-746-S&T Landfills Fourth Quarter Calendar Year 2023
(October–December) Compliance Monitoring Report, Paducah
Gaseous Diffusion Plant, Paducah, Kentucky
(FRNP-RPT-0294/V4)*

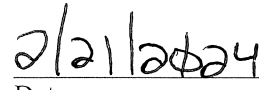
Stamped and signed pursuant to my authority as a duly registered geologist under the provisions of *KRS Chapter 322A*.





Evan Clark

PG265379



Date

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX A

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

THIS PAGE INTENTIONALLY LEFT BLANK

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

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

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

Permit No: SW07300014,
SW07300015,
SW07300045 Finds/Unit No: _____ Quarter & Year 4th Qtr. CY 2023

Please check the following as applicable:

_____ Characterization X Quarterly _____ Semiannual _____ Annual _____ Assessment

Please check applicable submittal(s): X Groundwater _____ Surface Water
_____ Leachate _____ Methane Monitoring

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

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

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

Date

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

Date

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX B
FACILITY INFORMATION SHEET

THIS PAGE INTENTIONALLY LEFT BLANK

FACILITY INFORMATION SHEET

Groundwater: October 2023
Methane: November 2023
Surface Water: October 2023

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 Kevil, Kentucky 42053
Street City/State Zip

Phone No: (270) 441-6800 Latitude: N 37° 07' 37.70" Longitude: W 88° 47' 55.41"

OWNER INFORMATION

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

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

Contact Person Title: Four Rivers Nuclear Partnership, LLC

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

SAMPLING PERSONNEL (IF OTHER THAN LANDFILL OR LABORATORY)

Company: Four Rivers Nuclear Partnership, LLC

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

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

LABORATORY RECORD #1

Laboratory: GEL Laboratories, LLC Lab ID No: KY90129

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

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

LABORATORY RECORD #2

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

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

Mailing Address: N/A N/A 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 N/A N/A
Street City/State Zip

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX C
GROUNDWATER SAMPLE ANALYSES
AND LABORATORY REPORTS

THIS PAGE INTENTIONALLY LEFT BLANK

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045
Sampling Point: MW220 UP **RGA Type:** URGA **Period:** 4th Quarter 2023
AKGWA Well Tag #: 8000-5201 **SAMPLE ID:** MW220SG1-24 **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.209	mg/L	0.2	10/16/2023			SW846-9056	=
Chloride	J	17.4	mg/L	250	10/16/2023			SW846-9056	=
Fluoride	J	0.332	mg/L	4	10/16/2023			SW846-9056	=
Nitrate as Nitrogen	J	0.805	mg/L	10	10/16/2023			SW846-9056	=
Sulfate		15.5	mg/L	0.4	10/16/2023			SW846-9056	=
Barometric Pressure Reading		30.08	Inches/Hg		10/16/2023				X
Conductivity		323	µmhos/cm		10/16/2023				X
Depth to Water		58.77	ft		10/16/2023				X
Dissolved Oxygen		6.14	mg/L		10/16/2023				X
Eh (approx)		406	mV		10/16/2023				X
pH		6.12	Std Unit		10/16/2023				X
Temperature		61.9	deg F		10/16/2023				X
Turbidity		3.41	NTU		10/16/2023				X
Aluminum		0.0805	mg/L	0.05	10/16/2023			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	10/16/2023			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	10/16/2023			SW846-6020B	=
Barium		0.211	mg/L	0.004	10/16/2023			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	10/16/2023			SW846-6020B	=
Boron	J	0.00828	mg/L	0.015	10/16/2023			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	10/16/2023			SW846-6020B	=
Calcium		21.6	mg/L	0.2	10/16/2023			SW846-6020B	J
Chromium	J	0.00596	mg/L	0.01	10/16/2023			SW846-6020B	=
Cobalt	J	0.000367	mg/L	0.001	10/16/2023			SW846-6020B	J
Copper		0.00249	mg/L	0.002	10/16/2023			SW846-6020B	J
Iron		0.188	mg/L	0.1	10/16/2023			SW846-6020B	J
Lead	U	0.002	mg/L	0.002	10/16/2023			SW846-6020B	=
Magnesium		8.85	mg/L	0.03	10/16/2023			SW846-6020B	=
Manganese	J	0.00452	mg/L	0.005	10/16/2023			SW846-6020B	J
Molybdenum	BJ	0.000875	mg/L	0.001	10/16/2023			SW846-6020B	U
Nickel		0.00653	mg/L	0.002	10/16/2023			SW846-6020B	J
Potassium		1.99	mg/L	0.3	10/16/2023			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	10/16/2023			SW846-6020B	=
Selenium	J	0.0017	mg/L	0.005	10/16/2023			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	10/16/2023			SW846-6020B	=
Sodium		37.2	mg/L	0.25	10/16/2023			SW846-6020B	=
Tantalum	UN	0.005	mg/L	0.005	10/16/2023			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	10/16/2023			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	10/16/2023			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	10/16/2023			SW846-6020B	=
Zinc	J	0.00745	mg/L	0.02	10/16/2023			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	10/16/2023			SW846-7470A	=
Barium, Dissolved		0.199	mg/L	0.004	10/16/2023			SW846-6020B	=
Chromium, Dissolved	J	0.00345	mg/L	0.01	10/16/2023			SW846-6020B	=
Uranium, Dissolved	U	0.0002	mg/L	0.0002	10/16/2023			SW846-6020B	=
PCB-1016	U	0.117	ug/L	0.117	10/16/2023			SW846-8082A	=

PCB-1221	U	0.117	ug/L	0.117	10/16/2023			SW846-8082A	=
PCB-1232	U	0.117	ug/L	0.117	10/16/2023			SW846-8082A	=
PCB-1242	U	0.117	ug/L	0.117	10/16/2023			SW846-8082A	=
PCB-1248	U	0.117	ug/L	0.117	10/16/2023			SW846-8082A	=
PCB-1254	U	0.117	ug/L	0.117	10/16/2023			SW846-8082A	=
PCB-1260	U	0.117	ug/L	0.117	10/16/2023			SW846-8082A	UJ
PCB-1268	U	0.117	ug/L	0.117	10/16/2023			SW846-8082A	=
Polychlorinated biphenyl	U	0.117	ug/L	0.117	10/16/2023			SW846-8082A	UJ
Radium-226	U	0.531	pCi/L	1.85	10/16/2023	1.18	1.18	AN-1418	=
Strontium-90	U	2.44	pCi/L	5.5	10/16/2023	3.23	3.25	EPA-905.0-M	=
Tritium	U	52.5	pCi/L	215	10/16/2023	124	124	EPA-906.0-M	=
Technetium-99	U	15.8	pCi/L	18.9	10/16/2023	11.6	11.7	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.335	pCi/L	0.88	10/16/2023	0.527	0.531	HASL 300, Th-01-RC M	=
Alpha activity	U	-1.29	pCi/L	9.32	10/16/2023	3.53	3.53	SW846-9310	=
Beta activity	U	19	pCi/L	12	10/16/2023	8.34	8.93	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0187	ug/L	0.0187	10/16/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
2-Butanone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Iodomethane	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Methylene chloride	J	2.96	ug/L	5	10/16/2023			SW846-8260D	=

Styrene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Toluene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Total Xylene	U	3 ug/L	3	10/16/2023	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5 ug/L	5	10/16/2023	SW846-8260D	=
Trichloroethene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/16/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Dissolved Solids	*	158 mg/L	10	10/16/2023	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	10/16/2023	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20 mg/L	20	10/16/2023	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	10/16/2023	SW846-9012B	=
Total Organic Halides (TOX)	J	6.46 ug/L	10	10/16/2023	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.952 mg/L	2	10/16/2023	SW846-9060A	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045

Sampling Point: MW221 **SIDE:** **RGA Type:** URGA **Period:** 4th Quarter 2023

AKGWA Well Tag #: 8000-5202 **SAMPLE ID:** MW221SG1-24 **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.415	mg/L	0.2	10/16/2023			SW846-9056	=
Chloride	J	32.9	mg/L	250	10/16/2023			SW846-9056	=
Fluoride	J	0.315	mg/L	4	10/16/2023			SW846-9056	=
Nitrate as Nitrogen	JH	1	mg/L	10	10/16/2023			SW846-9056	J
Sulfate		13.8	mg/L	0.4	10/16/2023			SW846-9056	=
Barometric Pressure Reading		30.05	Inches/Hg		10/16/2023				X
Conductivity		371	µmhos/cm		10/16/2023				X
Depth to Water		68.42	ft		10/16/2023				X
Dissolved Oxygen		5.76	mg/L		10/16/2023				X
Eh (approx)		468	mV		10/16/2023				X
pH		6.14	Std Unit		10/16/2023				X
Temperature		57.1	deg F		10/16/2023				X
Turbidity		2.44	NTU		10/16/2023				X
Aluminum	U	0.05	mg/L	0.05	10/16/2023			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	10/16/2023			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	10/16/2023			SW846-6020B	=
Barium		0.208	mg/L	0.004	10/16/2023			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	10/16/2023			SW846-6020B	=
Boron		0.0158	mg/L	0.015	10/16/2023			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	10/16/2023			SW846-6020B	=
Calcium		20.3	mg/L	0.2	10/16/2023			SW846-6020B	J
Chromium	U	0.01	mg/L	0.01	10/16/2023			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	10/16/2023			SW846-6020B	=
Copper		0.00236	mg/L	0.002	10/16/2023			SW846-6020B	J
Iron	U	0.1	mg/L	0.1	10/16/2023			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	10/16/2023			SW846-6020B	=
Magnesium		8.73	mg/L	0.03	10/16/2023			SW846-6020B	=
Manganese	U	0.005	mg/L	0.005	10/16/2023			SW846-6020B	=
Molybdenum	B	0.00271	mg/L	0.001	10/16/2023			SW846-6020B	=
Nickel		0.0113	mg/L	0.002	10/16/2023			SW846-6020B	J
Potassium		1.18	mg/L	0.3	10/16/2023			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	10/16/2023			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	10/16/2023			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	10/16/2023			SW846-6020B	=
Sodium		44.1	mg/L	0.25	10/16/2023			SW846-6020B	=
Tantalum	UN	0.005	mg/L	0.005	10/16/2023			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	10/16/2023			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	10/16/2023			SW846-6020B	=
Vanadium	BJ	0.00339	mg/L	0.02	10/16/2023			SW846-6020B	U
Zinc	J	0.0171	mg/L	0.02	10/16/2023			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	10/16/2023			SW846-7470A	=
Barium, Dissolved		0.215	mg/L	0.004	10/16/2023			SW846-6020B	=
Chromium, Dissolved	U	0.01	mg/L	0.01	10/16/2023			SW846-6020B	=
Uranium, Dissolved	U	0.0002	mg/L	0.0002	10/16/2023			SW846-6020B	=
PCB-1016	U	0.105	ug/L	0.105	10/16/2023			SW846-8082A	=

PCB-1221	U	0.105	ug/L	0.105	10/16/2023			SW846-8082A	=
PCB-1232	U	0.105	ug/L	0.105	10/16/2023			SW846-8082A	=
PCB-1242	U	0.105	ug/L	0.105	10/16/2023			SW846-8082A	=
PCB-1248	U	0.105	ug/L	0.105	10/16/2023			SW846-8082A	=
PCB-1254	U	0.105	ug/L	0.105	10/16/2023			SW846-8082A	=
PCB-1260	U	0.105	ug/L	0.105	10/16/2023			SW846-8082A	UJ
PCB-1268	U	0.105	ug/L	0.105	10/16/2023			SW846-8082A	=
Polychlorinated biphenyl	U	0.105	ug/L	0.105	10/16/2023			SW846-8082A	UJ
Radium-226	U	0.511	pCi/L	0.639	10/16/2023	0.598	0.599	AN-1418	=
Strontium-90	U	1.54	pCi/L	3.22	10/16/2023	1.9	1.92	EPA-905.0-M	=
Tritium	U	-44.7	pCi/L	215	10/16/2023	117	117	EPA-906.0-M	=
Technetium-99	U	4.79	pCi/L	17.4	10/16/2023	10.1	10.1	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.251	pCi/L	0.868	10/16/2023	0.497	0.5	HASL 300, Th-01-RC M	=
Alpha activity	U	-3.07	pCi/L	12.5	10/16/2023	4.77	4.78	SW846-9310	=
Beta activity	U	2.92	pCi/L	11.6	10/16/2023	6.56	6.58	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0188	ug/L	0.0188	10/16/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
2-Butanone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Iodomethane	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Methylene chloride	J	3.23	ug/L	5	10/16/2023			SW846-8260D	=

Styrene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Toluene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Total Xylene	U	3 ug/L	3	10/16/2023	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5 ug/L	5	10/16/2023	SW846-8260D	=
Trichloroethene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/16/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Dissolved Solids	*	183 mg/L	10	10/16/2023	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	10/16/2023	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20 mg/L	20	10/16/2023	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	10/16/2023	SW846-9012B	=
Total Organic Halides (TOX)	J	7.56 ug/L	10	10/16/2023	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.744 mg/L	2	10/16/2023	SW846-9060A	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045
Sampling Point: MW222 **SIDE:** **RGA Type:** URGa **Period:** 4th Quarter 2023
AKGWA Well Tag #: 8000-5242 **SAMPLE ID:** MW222SG1-24 **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.375	mg/L	0.2	10/16/2023			SW846-9056	=
Chloride	J	28.5	mg/L	250	10/16/2023			SW846-9056	=
Fluoride	J	0.334	mg/L	4	10/16/2023			SW846-9056	=
Nitrate as Nitrogen	JH	0.905	mg/L	10	10/16/2023			SW846-9056	J
Sulfate		11	mg/L	0.4	10/16/2023			SW846-9056	=
Barometric Pressure Reading		30.08	Inches/Hg		10/16/2023				X
Conductivity		313	µmhos/cm		10/16/2023				X
Depth to Water		72.28	ft		10/16/2023				X
Dissolved Oxygen		3.71	mg/L		10/16/2023				X
Eh (approx)		465	mV		10/16/2023				X
pH		6.2	Std Unit		10/16/2023				X
Temperature		60.3	deg F		10/16/2023				X
Turbidity		3.24	NTU		10/16/2023				X
Aluminum	U	0.05	mg/L	0.05	10/16/2023			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	10/16/2023			SW846-6020B	=
Arsenic	J	0.00252	mg/L	0.005	10/16/2023			SW846-6020B	=
Barium		0.259	mg/L	0.004	10/16/2023			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	10/16/2023			SW846-6020B	=
Boron	J	0.00911	mg/L	0.015	10/16/2023			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	10/16/2023			SW846-6020B	=
Calcium		16.1	mg/L	0.2	10/16/2023			SW846-6020B	J
Chromium	U	0.01	mg/L	0.01	10/16/2023			SW846-6020B	=
Cobalt	J	0.000865	mg/L	0.001	10/16/2023			SW846-6020B	J
Copper	J	0.0015	mg/L	0.002	10/16/2023			SW846-6020B	J
Iron	U	0.1	mg/L	0.1	10/16/2023			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	10/16/2023			SW846-6020B	=
Magnesium		7.01	mg/L	0.03	10/16/2023			SW846-6020B	=
Manganese		0.00902	mg/L	0.005	10/16/2023			SW846-6020B	J
Molybdenum	B	0.00154	mg/L	0.001	10/16/2023			SW846-6020B	=
Nickel		0.0167	mg/L	0.002	10/16/2023			SW846-6020B	=
Potassium		0.533	mg/L	0.3	10/16/2023			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	10/16/2023			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	10/16/2023			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	10/16/2023			SW846-6020B	=
Sodium		40.8	mg/L	0.25	10/16/2023			SW846-6020B	=
Tantalum	UN	0.005	mg/L	0.005	10/16/2023			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	10/16/2023			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	10/16/2023			SW846-6020B	=
Vanadium	BJ	0.00738	mg/L	0.02	10/16/2023			SW846-6020B	U
Zinc	J	0.00875	mg/L	0.02	10/16/2023			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	10/16/2023			SW846-7470A	=
Barium, Dissolved		0.257	mg/L	0.004	10/16/2023			SW846-6020B	=
Chromium, Dissolved	U	0.01	mg/L	0.01	10/16/2023			SW846-6020B	=
Uranium, Dissolved	U	0.0002	mg/L	0.0002	10/16/2023			SW846-6020B	=
PCB-1016	U	0.107	ug/L	0.107	10/16/2023			SW846-8082A	=

PCB-1221	U	0.107	ug/L	0.107	10/16/2023			SW846-8082A	=
PCB-1232	U	0.107	ug/L	0.107	10/16/2023			SW846-8082A	=
PCB-1242	U	0.107	ug/L	0.107	10/16/2023			SW846-8082A	=
PCB-1248	U	0.107	ug/L	0.107	10/16/2023			SW846-8082A	=
PCB-1254	U	0.107	ug/L	0.107	10/16/2023			SW846-8082A	=
PCB-1260	U	0.107	ug/L	0.107	10/16/2023			SW846-8082A	UJ
PCB-1268	U	0.107	ug/L	0.107	10/16/2023			SW846-8082A	=
Polychlorinated biphenyl	U	0.107	ug/L	0.107	10/16/2023			SW846-8082A	UJ
Radium-226	U	0.457	pCi/L	0.83	10/16/2023	0.617	0.618	AN-1418	=
Strontium-90	U	-3.16	pCi/L	5.28	10/16/2023	2.25	2.25	EPA-905.0-M	UJ
Tritium	U	0.645	pCi/L	215	10/16/2023	120	120	EPA-906.0-M	=
Technetium-99	U	5.09	pCi/L	17.3	10/16/2023	10.1	10.1	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.0241	pCi/L	0.874	10/16/2023	0.427	0.429	HASL 300, Th-01-RC M	=
Alpha activity	U	-1.45	pCi/L	9.28	10/16/2023	3.47	3.47	SW846-9310	=
Beta activity	U	5.58	pCi/L	12.6	10/16/2023	7.41	7.46	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0189	ug/L	0.0189	10/16/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
2-Butanone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Iodomethane	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Methylene chloride	J	3.03	ug/L	5	10/16/2023			SW846-8260D	=

Styrene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Toluene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Total Xylene	U	3 ug/L	3	10/16/2023	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5 ug/L	5	10/16/2023	SW846-8260D	=
Trichloroethene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/16/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Dissolved Solids	*	160 mg/L	10	10/16/2023	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	10/16/2023	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20 mg/L	20	10/16/2023	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	10/16/2023	SW846-9012B	=
Total Organic Halides (TOX)	J	5.34 ug/L	10	10/16/2023	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.84 mg/L	2	10/16/2023	SW846-9060A	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045

Sampling Point: MW223 **SIDE:** **RGA Type:** URGA **Period:** 4th Quarter 2023

AKGWA Well Tag #: 8000-5243 **SAMPLE ID:** MW223SG1-24 **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.383	mg/L	0.2	10/16/2023			SW846-9056	=
Chloride	J	29.7	mg/L	250	10/16/2023			SW846-9056	=
Fluoride	J	0.358	mg/L	4	10/16/2023			SW846-9056	=
Nitrate as Nitrogen	JH	0.945	mg/L	10	10/16/2023			SW846-9056	J
Sulfate		12.5	mg/L	0.4	10/16/2023			SW846-9056	=
Barometric Pressure Reading		30.07	Inches/Hg		10/16/2023				X
Conductivity		362	µmhos/cm		10/16/2023				X
Depth to Water		71.53	ft		10/16/2023				X
Dissolved Oxygen		3.59	mg/L		10/16/2023				X
Eh (approx)		462	mV		10/16/2023				X
pH		6.19	Std Unit		10/16/2023				X
Temperature		58.5	deg F		10/16/2023				X
Turbidity		2.37	NTU		10/16/2023				X
Aluminum	U	0.05	mg/L	0.05	10/16/2023			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	10/16/2023			SW846-6020B	=
Arsenic	J	0.00292	mg/L	0.005	10/16/2023			SW846-6020B	=
Barium		0.255	mg/L	0.004	10/16/2023			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	10/16/2023			SW846-6020B	=
Boron	J	0.00824	mg/L	0.015	10/16/2023			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	10/16/2023			SW846-6020B	=
Calcium		21.3	mg/L	0.2	10/16/2023			SW846-6020B	J
Chromium		0.017	mg/L	0.01	10/16/2023			SW846-6020B	=
Cobalt	J	0.000462	mg/L	0.001	10/16/2023			SW846-6020B	J
Copper		0.00236	mg/L	0.002	10/16/2023			SW846-6020B	J
Iron	U	0.1	mg/L	0.1	10/16/2023			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	10/16/2023			SW846-6020B	=
Magnesium		8.73	mg/L	0.03	10/16/2023			SW846-6020B	=
Manganese		0.00667	mg/L	0.005	10/16/2023			SW846-6020B	J
Molybdenum	B	0.00502	mg/L	0.001	10/16/2023			SW846-6020B	=
Nickel		0.161	mg/L	0.002	10/16/2023			SW846-6020B	=
Potassium		1.68	mg/L	0.3	10/16/2023			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	10/16/2023			SW846-6020B	=
Selenium	J	0.00172	mg/L	0.005	10/16/2023			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	10/16/2023			SW846-6020B	=
Sodium		44	mg/L	0.25	10/16/2023			SW846-6020B	=
Tantalum	UN	0.005	mg/L	0.005	10/16/2023			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	10/16/2023			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	10/16/2023			SW846-6020B	=
Vanadium	BJ	0.00844	mg/L	0.02	10/16/2023			SW846-6020B	U
Zinc	J	0.0156	mg/L	0.02	10/16/2023			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	10/16/2023			SW846-7470A	=
Barium, Dissolved		0.258	mg/L	0.004	10/16/2023			SW846-6020B	=
Chromium, Dissolved		0.0116	mg/L	0.01	10/16/2023			SW846-6020B	=
Uranium, Dissolved	U	0.0002	mg/L	0.0002	10/16/2023			SW846-6020B	=
PCB-1016	U	0.103	ug/L	0.103	10/16/2023			SW846-8082A	=

PCB-1221	U	0.103	ug/L	0.103	10/16/2023			SW846-8082A	=
PCB-1232	U	0.103	ug/L	0.103	10/16/2023			SW846-8082A	=
PCB-1242	U	0.103	ug/L	0.103	10/16/2023			SW846-8082A	=
PCB-1248	U	0.103	ug/L	0.103	10/16/2023			SW846-8082A	=
PCB-1254	U	0.103	ug/L	0.103	10/16/2023			SW846-8082A	=
PCB-1260	U	0.103	ug/L	0.103	10/16/2023			SW846-8082A	UJ
PCB-1268	U	0.103	ug/L	0.103	10/16/2023			SW846-8082A	=
Polychlorinated biphenyl	U	0.103	ug/L	0.103	10/16/2023			SW846-8082A	UJ
Radium-226	U	0.228	pCi/L	0.609	10/16/2023	0.443	0.443	AN-1418	=
Strontium-90	U	-0.457	pCi/L	2.42	10/16/2023	1.11	1.11	EPA-905.0-M	=
Tritium	U	-42.1	pCi/L	214	10/16/2023	117	117	EPA-906.0-M	=
Technetium-99	U	10.4	pCi/L	17.2	10/16/2023	10.3	10.3	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.297	pCi/L	0.749	10/16/2023	0.46	0.464	HASL 300, Th-01-RC M	=
Alpha activity	U	-0.0115	pCi/L	8.02	10/16/2023	3.19	3.19	SW846-9310	=
Beta activity	U	5.92	pCi/L	12.2	10/16/2023	7.21	7.28	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0188	ug/L	0.0188	10/16/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
2-Butanone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Iodomethane	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Methylene chloride	J	2.76	ug/L	5	10/16/2023			SW846-8260D	=

Styrene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Toluene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Total Xylene	U	3 ug/L	3	10/16/2023	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5 ug/L	5	10/16/2023	SW846-8260D	=
Trichloroethene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/16/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Dissolved Solids	*	185 mg/L	10	10/16/2023	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	10/16/2023	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20 mg/L	20	10/16/2023	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	10/16/2023	SW846-9012B	=
Total Organic Halides (TOX)	J	4.72 ug/L	10	10/16/2023	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.848 mg/L	2	10/16/2023	SW846-9060A	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045
Sampling Point: MW224 **SIDE:** **RGA Type:** URGA **Period:** 4th Quarter 2023
AKGWA Well Tag #: 8000-5244 **SAMPLE ID:** MW224SG1-24 **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.261	mg/L	0.2	10/16/2023			SW846-9056	=
Chloride	J	17.4	mg/L	250	10/16/2023			SW846-9056	=
Fluoride	J	0.401	mg/L	4	10/16/2023			SW846-9056	=
Nitrate as Nitrogen	JH	0.849	mg/L	10	10/16/2023			SW846-9056	J
Sulfate		13.6	mg/L	0.4	10/16/2023			SW846-9056	=
Barometric Pressure Reading		30.09	Inches/Hg		10/16/2023				X
Conductivity		401	µmhos/cm		10/16/2023				X
Depth to Water		72.61	ft		10/16/2023				X
Dissolved Oxygen		2.24	mg/L		10/16/2023				X
Eh (approx)		487	mV		10/16/2023				X
pH		6.14	Std Unit		10/16/2023				X
Temperature		62.2	deg F		10/16/2023				X
Turbidity		2.99	NTU		10/16/2023				X
Aluminum	U	0.05	mg/L	0.05	10/16/2023			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	10/16/2023			SW846-6020B	=
Arsenic	J	0.00304	mg/L	0.005	10/16/2023			SW846-6020B	=
Barium		0.238	mg/L	0.004	10/16/2023			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	10/16/2023			SW846-6020B	=
Boron		0.0182	mg/L	0.015	10/16/2023			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	10/16/2023			SW846-6020B	=
Calcium		22.1	mg/L	0.2	10/16/2023			SW846-6020B	J
Chromium	J	0.00319	mg/L	0.01	10/16/2023			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	10/16/2023			SW846-6020B	=
Copper	J	0.00185	mg/L	0.002	10/16/2023			SW846-6020B	J
Iron	U	0.1	mg/L	0.1	10/16/2023			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	10/16/2023			SW846-6020B	=
Magnesium		9.64	mg/L	0.03	10/16/2023			SW846-6020B	=
Manganese	J	0.00292	mg/L	0.005	10/16/2023			SW846-6020B	J
Molybdenum	BJ	0.000935	mg/L	0.001	10/16/2023			SW846-6020B	U
Nickel		0.00893	mg/L	0.002	10/16/2023			SW846-6020B	J
Potassium		0.934	mg/L	0.3	10/16/2023			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	10/16/2023			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	10/16/2023			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	10/16/2023			SW846-6020B	=
Sodium		57.4	mg/L	2.5	10/16/2023			SW846-6020B	=
Tantalum	UN	0.005	mg/L	0.005	10/16/2023			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	10/16/2023			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	10/16/2023			SW846-6020B	=
Vanadium	BJ	0.00904	mg/L	0.02	10/16/2023			SW846-6020B	U
Zinc	J	0.00821	mg/L	0.02	10/16/2023			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	10/16/2023			SW846-7470A	=
Barium, Dissolved		0.236	mg/L	0.004	10/16/2023			SW846-6020B	=
Chromium, Dissolved	U	0.01	mg/L	0.01	10/16/2023			SW846-6020B	=
Uranium, Dissolved	U	0.0002	mg/L	0.0002	10/16/2023			SW846-6020B	=
PCB-1016	U	0.109	ug/L	0.109	10/16/2023			SW846-8082A	=

PCB-1221	U	0.109	ug/L	0.109	10/16/2023			SW846-8082A	=
PCB-1232	U	0.109	ug/L	0.109	10/16/2023			SW846-8082A	=
PCB-1242	U	0.109	ug/L	0.109	10/16/2023			SW846-8082A	=
PCB-1248	U	0.109	ug/L	0.109	10/16/2023			SW846-8082A	=
PCB-1254	U	0.109	ug/L	0.109	10/16/2023			SW846-8082A	=
PCB-1260	U	0.109	ug/L	0.109	10/16/2023			SW846-8082A	UJ
PCB-1268	U	0.109	ug/L	0.109	10/16/2023			SW846-8082A	=
Polychlorinated biphenyl	U	0.109	ug/L	0.109	10/16/2023			SW846-8082A	UJ
Radium-226	U	0.0893	pCi/L	1.14	10/16/2023	0.558	0.558	AN-1418	=
Strontium-90	U	-1.48	pCi/L	3.63	10/16/2023	1.69	1.69	EPA-905.0-M	=
Tritium	U	-104	pCi/L	215	10/16/2023	112	112	EPA-906.0-M	=
Technetium-99	U	11.5	pCi/L	17.2	10/16/2023	10.4	10.4	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.457	pCi/L	0.856	10/16/2023	0.544	0.549	HASL 300, Th-01-RC M	=
Alpha activity	U	1.72	pCi/L	7.04	10/16/2023	3.57	3.58	SW846-9310	=
Beta activity	U	2.59	pCi/L	14.6	10/16/2023	8.26	8.27	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0186	ug/L	0.0186	10/16/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
2-Butanone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Iodomethane	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Methylene chloride	J	2.82	ug/L	5	10/16/2023			SW846-8260D	=

Styrene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Toluene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Total Xylene	U	3 ug/L	3	10/16/2023	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5 ug/L	5	10/16/2023	SW846-8260D	=
Trichloroethene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/16/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Dissolved Solids	*	213 mg/L	10	10/16/2023	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	10/16/2023	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20 mg/L	20	10/16/2023	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	10/16/2023	SW846-9012B	=
Total Organic Halides (TOX)		11.4 ug/L	10	10/16/2023	SW846-9020B	=
Total Organic Carbon (TOC)	J	1.12 mg/L	2	10/16/2023	SW846-9060A	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045
Sampling Point: MW369 DOWN **RGA Type:** URGA **Period:** 4th Quarter 2023
AKGWA Well Tag #: 8004-4820 **SAMPLE ID:** MW369UG1-24 **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.331	mg/L	0.2	10/11/2023			SW846-9056A	=
Chloride	J	27.5	mg/L	250	10/11/2023			SW846-9056A	=
Fluoride	J	0.292	mg/L	4	10/11/2023			SW846-9056A	=
Nitrate as Nitrogen	J	0.922	mg/L	10	10/11/2023			SW846-9056A	=
Sulfate		8.72	mg/L	0.4	10/11/2023			SW846-9056A	=
Barometric Pressure Reading		29.85	Inches/Hg		10/11/2023				X
Conductivity		345	µmhos/cm		10/11/2023				X
Depth to Water		40.89	ft		10/11/2023				X
Dissolved Oxygen		3.49	mg/L		10/11/2023				X
Eh (approx)		385	mV		10/11/2023				X
pH		6.02	Std Unit		10/11/2023				X
Temperature		58.7	deg F		10/11/2023				X
Turbidity		6.84	NTU		10/11/2023				X
Aluminum		0.0661	mg/L	0.05	10/11/2023			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	10/11/2023			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	10/11/2023			SW846-6020B	=
Barium		0.379	mg/L	0.004	10/11/2023			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	10/11/2023			SW846-6020B	=
Boron		0.0159	mg/L	0.015	10/11/2023			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	10/11/2023			SW846-6020B	=
Calcium		16	mg/L	0.2	10/11/2023			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	10/11/2023			SW846-6020B	=
Cobalt		0.00636	mg/L	0.001	10/11/2023			SW846-6020B	J
Copper		0.00446	mg/L	0.002	10/11/2023			SW846-6020B	J
Iron		0.323	mg/L	0.1	10/11/2023			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	10/11/2023			SW846-6020B	=
Magnesium		6.42	mg/L	0.03	10/11/2023			SW846-6020B	=
Manganese		0.0369	mg/L	0.005	10/11/2023			SW846-6020B	=
Molybdenum	J	0.00025	mg/L	0.001	10/11/2023			SW846-6020B	=
Nickel		0.00431	mg/L	0.002	10/11/2023			SW846-6020B	J
Potassium		0.574	mg/L	0.3	10/11/2023			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	10/11/2023			SW846-6020B	=
Selenium	J	0.00322	mg/L	0.005	10/11/2023			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	10/11/2023			SW846-6020B	=
Sodium		46.9	mg/L	0.25	10/11/2023			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	10/11/2023			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	10/11/2023			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	10/11/2023			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	10/11/2023			SW846-6020B	=
Zinc	J	0.00914	mg/L	0.02	10/11/2023			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	10/11/2023			SW846-7470A	=
Barium, Dissolved		0.392	mg/L	0.004	10/11/2023			SW846-6020B	=
Chromium, Dissolved	U	0.01	mg/L	0.01	10/11/2023			SW846-6020B	=
Uranium, Dissolved	U	0.0002	mg/L	0.0002	10/11/2023			SW846-6020B	=
PCB-1016	U	0.104	ug/L	0.104	10/11/2023			SW846-8082A	UJ

PCB-1221	U	0.104	ug/L	0.104	10/11/2023			SW846-8082A	=
PCB-1232	U	0.104	ug/L	0.104	10/11/2023			SW846-8082A	=
PCB-1242	U	0.104	ug/L	0.104	10/11/2023			SW846-8082A	=
PCB-1248	U	0.104	ug/L	0.104	10/11/2023			SW846-8082A	=
PCB-1254	U	0.104	ug/L	0.104	10/11/2023			SW846-8082A	=
PCB-1260	U	0.104	ug/L	0.104	10/11/2023			SW846-8082A	UJ
PCB-1268	U	0.104	ug/L	0.104	10/11/2023			SW846-8082A	=
Polychlorinated biphenyl	U	0.104	ug/L	0.104	10/11/2023			SW846-8082A	UJ
Radium-226	U	0.405	pCi/L	1.24	10/11/2023	0.842	0.842	AN-1418	=
Radium-228	U	2.82	pCi/L	3.13	10/11/2023	2.08	2.2	EPA-904-M	=
Strontium-90	U	3.63	pCi/L	4.6	10/11/2023	2.85	2.9	EPA-905.0-M	=
Tritium	U	-45.9	pCi/L	229	10/11/2023	125	125	EPA-906.0-M	=
Technetium-99		76.7	pCi/L	18.3	10/11/2023	14	16.5	HASL 300, Tc-02-RC M	=
Thorium-230	U	1.63	pCi/L	2.18	10/11/2023	1.61	1.63	HASL 300, Th-01-RC M	=
Thorium-232	U	-0.166	pCi/L	1.51	10/11/2023	0.546	0.547	HASL 300, Th-01-RC M	=
Alpha activity	U	2.23	pCi/L	9.13	10/11/2023	4.78	4.79	SW846-9310	=
Beta activity		45.5	pCi/L	12.1	10/11/2023	10.5	12.9	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.019	ug/L	0.019	10/11/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
2-Butanone	U	5	ug/L	5	10/11/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/11/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/11/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/11/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/11/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/11/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/11/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=

Ethylbenzene	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Iodomethane	U	5 ug/L	5	10/11/2023	SW846-8260D	=
Methylene chloride	U	5 ug/L	5	10/11/2023	SW846-8260D	=
Styrene	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Toluene	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Total Xylene	U	3 ug/L	3	10/11/2023	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	10/11/2023	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5 ug/L	5	10/11/2023	SW846-8260D	=
Trichloroethene		1.72 ug/L	1	10/11/2023	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/11/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Dissolved Solids		192 mg/L	10	10/11/2023	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	10/11/2023	EPA-300.0	=
Chemical Oxygen Demand (COD)	J	13.2 mg/L	20	10/11/2023	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	10/11/2023	SW846-9012B	=
Total Organic Halides (TOX)	J	7.88 ug/L	10	10/11/2023	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.824 mg/L	2	10/11/2023	SW846-9060A	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045

Sampling Point: MW370 DOWN **RGA Type:** LRGA **Period:** 4th Quarter 2023

AKGWA Well Tag #: 8004-4818 **SAMPLE ID:** MW370UG1-24 **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.549	mg/L	0.2	10/11/2023			SW846-9056A	=
Chloride	J	39.4	mg/L	250	10/11/2023			SW846-9056A	=
Fluoride	J	0.238	mg/L	4	10/11/2023			SW846-9056A	=
Nitrate as Nitrogen	J	0.971	mg/L	10	10/11/2023			SW846-9056A	=
Sulfate		18.8	mg/L	4	10/11/2023			SW846-9056A	=
Barometric Pressure Reading		29.87	Inches/Hg		10/11/2023				X
Conductivity		450	µmhos/cm		10/11/2023				X
Depth to Water		41.36	ft		10/11/2023				X
Dissolved Oxygen		4.64	mg/L		10/11/2023				X
Eh (approx)		327	mV		10/11/2023				X
pH		6.1	Std Unit		10/11/2023				X
Temperature		59.7	deg F		10/11/2023				X
Turbidity		4.66	NTU		10/11/2023				X
Aluminum	U	0.05	mg/L	0.05	10/11/2023			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	10/11/2023			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	10/11/2023			SW846-6020B	=
Barium		0.234	mg/L	0.004	10/11/2023			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	10/11/2023			SW846-6020B	=
Boron		0.118	mg/L	0.015	10/11/2023			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	10/11/2023			SW846-6020B	=
Calcium		29	mg/L	0.2	10/11/2023			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	10/11/2023			SW846-6020B	=
Cobalt	J	0.000302	mg/L	0.001	10/11/2023			SW846-6020B	J
Copper		0.00205	mg/L	0.002	10/11/2023			SW846-6020B	J
Iron	J	0.0622	mg/L	0.1	10/11/2023			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	10/11/2023			SW846-6020B	=
Magnesium		12.1	mg/L	0.03	10/11/2023			SW846-6020B	=
Manganese		0.00696	mg/L	0.005	10/11/2023			SW846-6020B	J
Molybdenum	U	0.001	mg/L	0.001	10/11/2023			SW846-6020B	=
Nickel	U	0.002	mg/L	0.002	10/11/2023			SW846-6020B	=
Potassium		2.55	mg/L	0.3	10/11/2023			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	10/11/2023			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	10/11/2023			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	10/11/2023			SW846-6020B	=
Sodium		43.3	mg/L	0.25	10/11/2023			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	10/11/2023			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	10/11/2023			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	10/11/2023			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	10/11/2023			SW846-6020B	=
Zinc	J	0.00963	mg/L	0.02	10/11/2023			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	10/11/2023			SW846-7470A	=
Barium, Dissolved		0.239	mg/L	0.004	10/11/2023			SW846-6020B	=
Chromium, Dissolved	U	0.01	mg/L	0.01	10/11/2023			SW846-6020B	=
Uranium, Dissolved	U	0.0002	mg/L	0.0002	10/11/2023			SW846-6020B	=
PCB-1016	U	0.1	ug/L	0.1	10/11/2023			SW846-8082A	UJ

PCB-1221	U	0.1	ug/L	0.1	10/11/2023			SW846-8082A	=
PCB-1232	U	0.1	ug/L	0.1	10/11/2023			SW846-8082A	=
PCB-1242	U	0.1	ug/L	0.1	10/11/2023			SW846-8082A	=
PCB-1248	U	0.1	ug/L	0.1	10/11/2023			SW846-8082A	=
PCB-1254	U	0.1	ug/L	0.1	10/11/2023			SW846-8082A	=
PCB-1260	U	0.1	ug/L	0.1	10/11/2023			SW846-8082A	UJ
PCB-1268	U	0.1	ug/L	0.1	10/11/2023			SW846-8082A	=
Polychlorinated biphenyl	U	0.1	ug/L	0.1	10/11/2023			SW846-8082A	UJ
Radium-226	U	0.243	pCi/L	1.15	10/11/2023	0.767	0.767	AN-1418	=
Radium-228	U	2.3	pCi/L	4.37	10/11/2023	2.61	2.67	EPA-904-M	=
Strontium-90	U	5.54	pCi/L	6.31	10/11/2023	4.03	4.13	EPA-905.0-M	=
Tritium	U	-14.4	pCi/L	227	10/11/2023	126	126	EPA-906.0-M	=
Technetium-99	U	18.6	pCi/L	18.7	10/11/2023	11.5	11.7	HASL 300, Tc-02-RC M	=
Thorium-230	U	2.5	pCi/L	2.64	10/11/2023	2.08	2.12	HASL 300, Th-01-RC M	=
Thorium-232	U	-0.103	pCi/L	2.18	10/11/2023	0.91	0.911	HASL 300, Th-01-RC M	=
Alpha activity	U	-0.84	pCi/L	11.5	10/11/2023	4.98	4.98	SW846-9310	=
Beta activity	U	8.9	pCi/L	11.4	10/11/2023	7.11	7.26	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0187	ug/L	0.0187	10/11/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
2-Butanone	U	5	ug/L	5	10/11/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/11/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/11/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/11/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/11/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/11/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/11/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=

Ethylbenzene	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Iodomethane	U	5 ug/L	5	10/11/2023	SW846-8260D	=
Methylene chloride	U	5 ug/L	5	10/11/2023	SW846-8260D	=
Styrene	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Toluene	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Total Xylene	U	3 ug/L	3	10/11/2023	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	10/11/2023	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5 ug/L	5	10/11/2023	SW846-8260D	=
Trichloroethene		2.84 ug/L	1	10/11/2023	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/11/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Dissolved Solids		230 mg/L	10	10/11/2023	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	10/11/2023	EPA-300.0	=
Chemical Oxygen Demand (COD)	J	13.2 mg/L	20	10/11/2023	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	10/11/2023	SW846-9012B	=
Total Organic Halides (TOX)		10.2 ug/L	10	10/11/2023	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.846 mg/L	2	10/11/2023	SW846-9060A	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045

Sampling Point: MW372 DOWN **RGA Type:** URGA **Period:** 4th Quarter 2023

AKGWA Well Tag #: 8004-4808 **SAMPLE ID:** MW372UG1-24 **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.497	mg/L	0.2	10/11/2023			SW846-9056A	=
Chloride	J	38.4	mg/L	250	10/11/2023			SW846-9056A	=
Fluoride	J	0.263	mg/L	4	10/11/2023			SW846-9056A	=
Nitrate as Nitrogen	J	0.818	mg/L	10	10/11/2023			SW846-9056A	=
Sulfate		143	mg/L	4	10/11/2023			SW846-9056A	=
Barometric Pressure Reading		29.87	Inches/Hg		10/11/2023				X
Conductivity		747	µmhos/cm		10/11/2023				X
Depth to Water		36.05	ft		10/11/2023				X
Dissolved Oxygen		3.24	mg/L		10/11/2023				X
Eh (approx)		340	mV		10/11/2023				X
pH		6.13	Std Unit		10/11/2023				X
Temperature		60.6	deg F		10/11/2023				X
Turbidity		4	NTU		10/11/2023				X
Aluminum	U	0.05	mg/L	0.05	10/11/2023			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	10/11/2023			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	10/11/2023			SW846-6020B	=
Barium		0.0547	mg/L	0.004	10/11/2023			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	10/11/2023			SW846-6020B	=
Boron		1.19	mg/L	0.3	10/11/2023			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	10/11/2023			SW846-6020B	=
Calcium		64.6	mg/L	4	10/11/2023			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	10/11/2023			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	10/11/2023			SW846-6020B	=
Copper	J	0.00162	mg/L	0.002	10/11/2023			SW846-6020B	J
Iron		0.125	mg/L	0.1	10/11/2023			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	10/11/2023			SW846-6020B	=
Magnesium		21.6	mg/L	0.03	10/11/2023			SW846-6020B	=
Manganese	J	0.00265	mg/L	0.005	10/11/2023			SW846-6020B	J
Molybdenum	J	0.00022	mg/L	0.001	10/11/2023			SW846-6020B	=
Nickel	J	0.000761	mg/L	0.002	10/11/2023			SW846-6020B	J
Potassium		2.1	mg/L	0.3	10/11/2023			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	10/11/2023			SW846-6020B	=
Selenium	J	0.0016	mg/L	0.005	10/11/2023			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	10/11/2023			SW846-6020B	=
Sodium		59	mg/L	5	10/11/2023			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	10/11/2023			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	10/11/2023			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	10/11/2023			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	10/11/2023			SW846-6020B	=
Zinc	U	0.02	mg/L	0.02	10/11/2023			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	10/11/2023			SW846-7470A	=
Barium, Dissolved		0.0563	mg/L	0.004	10/11/2023			SW846-6020B	=
Chromium, Dissolved	U	0.01	mg/L	0.01	10/11/2023			SW846-6020B	=
Uranium, Dissolved	U	0.0002	mg/L	0.0002	10/11/2023			SW846-6020B	=
PCB-1016	U	0.104	ug/L	0.104	10/11/2023			SW846-8082A	UJ

PCB-1221	U	0.104	ug/L	0.104	10/11/2023			SW846-8082A	=
PCB-1232	U	0.104	ug/L	0.104	10/11/2023			SW846-8082A	=
PCB-1242	U	0.104	ug/L	0.104	10/11/2023			SW846-8082A	=
PCB-1248	U	0.104	ug/L	0.104	10/11/2023			SW846-8082A	=
PCB-1254	U	0.104	ug/L	0.104	10/11/2023			SW846-8082A	=
PCB-1260	U	0.104	ug/L	0.104	10/11/2023			SW846-8082A	UJ
PCB-1268	U	0.104	ug/L	0.104	10/11/2023			SW846-8082A	=
Polychlorinated biphenyl	U	0.104	ug/L	0.104	10/11/2023			SW846-8082A	UJ
Radium-226	U	0.483	pCi/L	0.686	10/11/2023	0.528	0.529	AN-1418	=
Radium-228	U	0.29	pCi/L	3.38	10/11/2023	1.75	1.76	EPA-904-M	=
Strontium-90	U	2.91	pCi/L	6.15	10/11/2023	3.62	3.65	EPA-905.0-M	=
Tritium	U	9.23	pCi/L	229	10/11/2023	128	128	EPA-906.0-M	=
Technetium-99		22.5	pCi/L	19.2	10/11/2023	12.1	12.3	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.0946	pCi/L	3.11	10/11/2023	1.46	1.46	HASL 300, Th-01-RC M	=
Thorium-232	U	0.674	pCi/L	1.48	10/11/2023	1.23	1.23	HASL 300, Th-01-RC M	=
Alpha activity	U	-0.22	pCi/L	10.1	10/11/2023	4.13	4.13	SW846-9310	=
Beta activity		29.2	pCi/L	12.2	10/11/2023	9.25	10.5	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0189	ug/L	0.0189	10/11/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
2-Butanone	U	5	ug/L	5	10/11/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/11/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/11/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/11/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/11/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/11/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/11/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=

Ethylbenzene	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Iodomethane	U	5 ug/L	5	10/11/2023	SW846-8260D	=
Methylene chloride	U	5 ug/L	5	10/11/2023	SW846-8260D	=
Styrene	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Toluene	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Total Xylene	U	3 ug/L	3	10/11/2023	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	10/11/2023	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5 ug/L	5	10/11/2023	SW846-8260D	=
Trichloroethene		4.31 ug/L	1	10/11/2023	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/11/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Dissolved Solids		447 mg/L	10	10/11/2023	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	10/11/2023	EPA-300.0	=
Chemical Oxygen Demand (COD)	J	11 mg/L	20	10/11/2023	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	10/11/2023	SW846-9012B	=
Total Organic Halides (TOX)	J	8.32 ug/L	10	10/11/2023	SW846-9020B	=
Total Organic Carbon (TOC)	J	1 mg/L	2	10/11/2023	SW846-9060A	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045

Sampling Point: MW373 DOWN **RGA Type:** LRGA **Period:** 4th Quarter 2023

AKGWA Well Tag #: 8004-4792 **SAMPLE ID:** MW373UG1-24 **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.462	mg/L	0.2	10/11/2023			SW846-9056A	=
Chloride	J	31.2	mg/L	4	10/11/2023			SW846-9056A	=
Fluoride	J	0.233	mg/L	4	10/11/2023			SW846-9056A	=
Nitrate as Nitrogen	J	0.71	mg/L	10	10/11/2023			SW846-9056A	=
Sulfate		177	mg/L	8	10/11/2023			SW846-9056A	=
Barometric Pressure Reading		29.85	Inches/Hg		10/11/2023				X
Conductivity		898	µmhos/cm		10/11/2023				X
Depth to Water		36.32	ft		10/11/2023				X
Dissolved Oxygen		2	mg/L		10/11/2023				X
Eh (approx)		357	mV		10/11/2023				X
pH		6.14	Std Unit		10/11/2023				X
Temperature		64.7	deg F		10/11/2023				X
Turbidity		3.68	NTU		10/11/2023				X
Aluminum	U	0.05	mg/L	0.05	10/11/2023			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	10/11/2023			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	10/11/2023			SW846-6020B	=
Barium		0.0339	mg/L	0.004	10/11/2023			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	10/11/2023			SW846-6020B	=
Boron		2.06	mg/L	0.3	10/11/2023			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	10/11/2023			SW846-6020B	=
Calcium		79	mg/L	4	10/11/2023			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	10/11/2023			SW846-6020B	=
Cobalt	J	0.000542	mg/L	0.001	10/11/2023			SW846-6020B	J
Copper	J	0.00162	mg/L	0.002	10/11/2023			SW846-6020B	J
Iron	J	0.0956	mg/L	0.1	10/11/2023			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	10/11/2023			SW846-6020B	=
Magnesium		27.8	mg/L	0.03	10/11/2023			SW846-6020B	=
Manganese		0.0709	mg/L	0.005	10/11/2023			SW846-6020B	=
Molybdenum	U	0.001	mg/L	0.001	10/11/2023			SW846-6020B	=
Nickel	J	0.00179	mg/L	0.002	10/11/2023			SW846-6020B	J
Potassium		2.7	mg/L	0.3	10/11/2023			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	10/11/2023			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	10/11/2023			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	10/11/2023			SW846-6020B	=
Sodium		64.6	mg/L	5	10/11/2023			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	10/11/2023			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	10/11/2023			SW846-6020B	=
Uranium	J	0.000072	mg/L	0.0002	10/11/2023			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	10/11/2023			SW846-6020B	=
Zinc	J	0.00486	mg/L	0.02	10/11/2023			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	10/11/2023			SW846-7470A	=
Barium, Dissolved		0.0351	mg/L	0.004	10/11/2023			SW846-6020B	=
Chromium, Dissolved	U	0.01	mg/L	0.01	10/11/2023			SW846-6020B	=
Uranium, Dissolved	J	0.000069	mg/L	0.0002	10/11/2023			SW846-6020B	=
PCB-1016	U	0.101	ug/L	0.101	10/11/2023			SW846-8082A	UJ

PCB-1221	U	0.101	ug/L	0.101	10/11/2023			SW846-8082A	=
PCB-1232	U	0.101	ug/L	0.101	10/11/2023			SW846-8082A	=
PCB-1242	U	0.101	ug/L	0.101	10/11/2023			SW846-8082A	=
PCB-1248	U	0.101	ug/L	0.101	10/11/2023			SW846-8082A	=
PCB-1254	U	0.101	ug/L	0.101	10/11/2023			SW846-8082A	=
PCB-1260	U	0.101	ug/L	0.101	10/11/2023			SW846-8082A	UJ
PCB-1268	U	0.101	ug/L	0.101	10/11/2023			SW846-8082A	=
Polychlorinated biphenyl	U	0.101	ug/L	0.101	10/11/2023			SW846-8082A	UJ
Radium-226	U	0.199	pCi/L	0.81	10/11/2023	0.456	0.457	AN-1418	=
Radium-228	U	0.993	pCi/L	3.48	10/11/2023	1.94	1.96	EPA-904-M	=
Strontium-90	U	4.55	pCi/L	5.98	10/11/2023	3.76	3.84	EPA-905.0-M	=
Tritium	U	-33.1	pCi/L	229	10/11/2023	125	125	EPA-906.0-M	=
Technetium-99	U	14.7	pCi/L	18.1	10/11/2023	11	11.2	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.179	pCi/L	2.42	10/11/2023	1.18	1.18	HASL 300, Th-01-RC M	=
Thorium-232	U	0.0402	pCi/L	1.88	10/11/2023	0.866	0.867	HASL 300, Th-01-RC M	=
Alpha activity	U	1.39	pCi/L	8.09	10/11/2023	3.86	3.86	SW846-9310	=
Beta activity	U	6.39	pCi/L	14.5	10/11/2023	8.56	8.62	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0188	ug/L	0.0188	10/11/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
2-Butanone	U	5	ug/L	5	10/11/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/11/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/11/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/11/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/11/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/11/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/11/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/11/2023			SW846-8260D	=

Ethylbenzene	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Iodomethane	U	5 ug/L	5	10/11/2023	SW846-8260D	=
Methylene chloride	U	5 ug/L	5	10/11/2023	SW846-8260D	=
Styrene	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Toluene	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Total Xylene	U	3 ug/L	3	10/11/2023	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	10/11/2023	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5 ug/L	5	10/11/2023	SW846-8260D	=
Trichloroethene		3.5 ug/L	1	10/11/2023	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/11/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/11/2023	SW846-8260D	=
Dissolved Solids		529 mg/L	10	10/11/2023	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	10/11/2023	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20 mg/L	20	10/11/2023	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	10/11/2023	SW846-9012B	=
Total Organic Halides (TOX)		13 ug/L	10	10/11/2023	SW846-9020B	=
Total Organic Carbon (TOC)	J	1.33 mg/L	2	10/11/2023	SW846-9060A	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045

Sampling Point: MW384 **SIDE:** **RGA Type:** URGA **Period:** 4th Quarter 2023

AKGWA Well Tag #: 8004-4809 **SAMPLE ID:** MW384SG1-24 **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.425	mg/L	0.2	10/19/2023			SW846-9056	=
Chloride	J	31.9	mg/L	250	10/19/2023			SW846-9056	=
Fluoride	J	0.202	mg/L	4	10/19/2023			SW846-9056	=
Nitrate as Nitrogen	J	0.848	mg/L	10	10/19/2023			SW846-9056	=
Sulfate		24	mg/L	2	10/19/2023			SW846-9056	=
Barometric Pressure Reading		29.87	Inches/Hg		10/19/2023				X
Conductivity		508	µmhos/cm		10/19/2023				X
Depth to Water		42.1	ft		10/19/2023				X
Dissolved Oxygen		4.26	mg/L		10/19/2023				X
Eh (approx)		465	mV		10/19/2023				X
pH		6.1	Std Unit		10/19/2023				X
Temperature		59.9	deg F		10/19/2023				X
Turbidity		21.84	NTU		10/19/2023				X
Aluminum	J	0.0209	mg/L	0.05	10/19/2023			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	10/19/2023			SW846-6020B	=
Arsenic	J	0.00255	mg/L	0.005	10/19/2023			SW846-6020B	=
Barium		0.261	mg/L	0.004	10/19/2023			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	10/19/2023			SW846-6020B	=
Boron		0.0363	mg/L	0.015	10/19/2023			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	10/19/2023			SW846-6020B	=
Calcium		29.9	mg/L	0.2	10/19/2023			SW846-6020B	=
Chromium	J	0.00472	mg/L	0.01	10/19/2023			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	10/19/2023			SW846-6020B	=
Copper		0.00229	mg/L	0.002	10/19/2023			SW846-6020B	J
Iron		0.446	mg/L	0.1	10/19/2023			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	10/19/2023			SW846-6020B	=
Magnesium		12.3	mg/L	0.03	10/19/2023			SW846-6020B	=
Manganese		0.0113	mg/L	0.005	10/19/2023			SW846-6020B	J
Molybdenum	U	0.001	mg/L	0.001	10/19/2023			SW846-6020B	=
Nickel	J	0.000629	mg/L	0.002	10/19/2023			SW846-6020B	J
Potassium		1.52	mg/L	0.3	10/19/2023			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	10/19/2023			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	10/19/2023			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	10/19/2023			SW846-6020B	=
Sodium		60.1	mg/L	2.5	10/19/2023			SW846-6020B	=
Tantalum	UN	0.005	mg/L	0.005	10/19/2023			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	10/19/2023			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	10/19/2023			SW846-6020B	=
Vanadium	BJ	0.00407	mg/L	0.02	10/19/2023			SW846-6020B	U
Zinc	J	0.00434	mg/L	0.02	10/19/2023			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	10/19/2023			SW846-7470A	=
Barium, Dissolved		0.249	mg/L	0.004	10/19/2023			SW846-6020B	=
Chromium, Dissolved	U	0.01	mg/L	0.01	10/19/2023			SW846-6020B	=
Uranium, Dissolved	U	0.0002	mg/L	0.0002	10/19/2023			SW846-6020B	=
PCB-1016	U	0.097	ug/L	0.097	10/19/2023			SW846-8082A	=

PCB-1221	U	0.097	ug/L	0.097	10/19/2023			SW846-8082A	=
PCB-1232	U	0.097	ug/L	0.097	10/19/2023			SW846-8082A	=
PCB-1242	U	0.097	ug/L	0.097	10/19/2023			SW846-8082A	=
PCB-1248	U	0.097	ug/L	0.097	10/19/2023			SW846-8082A	=
PCB-1254	U	0.097	ug/L	0.097	10/19/2023			SW846-8082A	=
PCB-1260	U	0.097	ug/L	0.097	10/19/2023			SW846-8082A	UJ
PCB-1268	U	0.097	ug/L	0.097	10/19/2023			SW846-8082A	=
Polychlorinated biphenyl	U	0.097	ug/L	0.097	10/19/2023			SW846-8082A	UJ
Radium-226	U	0.199	pCi/L	0.709	10/19/2023	0.45	0.45	AN-1418	=
Strontium-90	U	2.69	pCi/L	5	10/19/2023	3	3.03	EPA-905.0-M	=
Tritium	U	12.5	pCi/L	221	10/19/2023	124	124	EPA-906.0-M	=
Technetium-99		79.6	pCi/L	17.9	10/19/2023	14.1	16.7	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.541	pCi/L	2.4	10/19/2023	1.36	1.36	HASL 300, Th-01-RC M	=
Alpha activity	U	0.592	pCi/L	9.49	10/19/2023	4.35	4.36	SW846-9310	=
Beta activity		41.9	pCi/L	12.2	10/19/2023	10.3	12.5	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0191	ug/L	0.0191	10/19/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,4-Dichlorobenzene	UY2	1	ug/L	1	10/19/2023			SW846-8260D	=
2-Butanone	U	5	ug/L	5	10/19/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/19/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Iodomethane	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Methylene chloride	J	0.84	ug/L	5	10/19/2023			SW846-8260D	=

Styrene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Toluene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Total Xylene	U	3 ug/L	3	10/19/2023	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5 ug/L	5	10/19/2023	SW846-8260D	=
Trichloroethene		6.03 ug/L	1	10/19/2023	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/19/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Dissolved Solids		238 mg/L	10	10/19/2023	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	10/19/2023	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20 mg/L	20	10/19/2023	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	10/19/2023	SW846-9012B	=
Total Organic Halides (TOX)		10.8 ug/L	10	10/19/2023	SW846-9020B	=
Total Organic Carbon (TOC)	J	1.55 mg/L	2	10/19/2023	SW846-9060A	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045
Sampling Point: MW385 **SIDE:** **RGA Type:** LRGA **Period:** 4th Quarter 2023
AKGWA Well Tag #: 8004-4810 **SAMPLE ID:** MW385SG1-24 **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.251	mg/L	0.2	10/19/2023			SW846-9056	=
Chloride	J	20.7	mg/L	250	10/19/2023			SW846-9056	=
Fluoride	J	0.193	mg/L	4	10/19/2023			SW846-9056	=
Nitrate as Nitrogen	J	0.821	mg/L	10	10/19/2023			SW846-9056	=
Sulfate		19	mg/L	0.4	10/19/2023			SW846-9056	=
Barometric Pressure Reading		29.88	Inches/Hg		10/19/2023				X
Conductivity		462	µmhos/cm		10/19/2023				X
Depth to Water		42.49	ft		10/19/2023				X
Dissolved Oxygen		1.37	mg/L		10/19/2023				X
Eh (approx)		368	mV		10/19/2023				X
pH		6.46	Std Unit		10/19/2023				X
Temperature		59.7	deg F		10/19/2023				X
Turbidity		4.33	NTU		10/19/2023				X
Aluminum		0.0591	mg/L	0.05	10/19/2023			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	10/19/2023			SW846-6020B	=
Arsenic	J	0.00243	mg/L	0.005	10/19/2023			SW846-6020B	=
Barium		0.214	mg/L	0.004	10/19/2023			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	10/19/2023			SW846-6020B	=
Boron		0.067	mg/L	0.015	10/19/2023			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	10/19/2023			SW846-6020B	=
Calcium		24.8	mg/L	0.2	10/19/2023			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	10/19/2023			SW846-6020B	=
Cobalt	J	0.000593	mg/L	0.001	10/19/2023			SW846-6020B	J
Copper	J	0.00173	mg/L	0.002	10/19/2023			SW846-6020B	J
Iron		0.105	mg/L	0.1	10/19/2023			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	10/19/2023			SW846-6020B	=
Magnesium		9.75	mg/L	0.03	10/19/2023			SW846-6020B	=
Manganese	J	0.0042	mg/L	0.005	10/19/2023			SW846-6020B	J
Molybdenum	J	0.000237	mg/L	0.001	10/19/2023			SW846-6020B	=
Nickel	J	0.00126	mg/L	0.002	10/19/2023			SW846-6020B	J
Potassium		1.49	mg/L	0.3	10/19/2023			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	10/19/2023			SW846-6020B	=
Selenium		0.00522	mg/L	0.005	10/19/2023			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	10/19/2023			SW846-6020B	=
Sodium		39.7	mg/L	0.25	10/19/2023			SW846-6020B	=
Tantalum	UN	0.005	mg/L	0.005	10/19/2023			SW846-6020B	UJ
Thallium	U	0.002	mg/L	0.002	10/19/2023			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	10/19/2023			SW846-6020B	=
Vanadium	BJ	0.00452	mg/L	0.02	10/19/2023			SW846-6020B	U
Zinc	J	0.00471	mg/L	0.02	10/19/2023			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	10/19/2023			SW846-7470A	=
Barium, Dissolved		0.237	mg/L	0.004	10/19/2023			SW846-6020B	=
Chromium, Dissolved	U	0.01	mg/L	0.01	10/19/2023			SW846-6020B	=
Uranium, Dissolved	U	0.0002	mg/L	0.0002	10/19/2023			SW846-6020B	=
PCB-1016	U	0.1	ug/L	0.1	10/19/2023			SW846-8082A	=

PCB-1221	U	0.1	ug/L	0.1	10/19/2023			SW846-8082A	=
PCB-1232	U	0.1	ug/L	0.1	10/19/2023			SW846-8082A	=
PCB-1242	U	0.1	ug/L	0.1	10/19/2023			SW846-8082A	=
PCB-1248	U	0.1	ug/L	0.1	10/19/2023			SW846-8082A	=
PCB-1254	U	0.1	ug/L	0.1	10/19/2023			SW846-8082A	=
PCB-1260	U	0.1	ug/L	0.1	10/19/2023			SW846-8082A	UJ
PCB-1268	U	0.1	ug/L	0.1	10/19/2023			SW846-8082A	=
Polychlorinated biphenyl	U	0.1	ug/L	0.1	10/19/2023			SW846-8082A	UJ
Radium-226	U	0.443	pCi/L	0.62	10/19/2023	0.537	0.538	AN-1418	=
Strontium-90	U	2.23	pCi/L	4.42	10/19/2023	2.63	2.65	EPA-905.0-M	=
Tritium	U	-16.5	pCi/L	219	10/19/2023	121	121	EPA-906.0-M	=
Technetium-99		52.6	pCi/L	17.2	10/19/2023	12.5	13.8	HASL 300, Tc-02-RC M	=
Thorium-230	U	1.13	pCi/L	1.51	10/19/2023	1.08	1.09	HASL 300, Th-01-RC M	=
Alpha activity	U	1.47	pCi/L	9.15	10/19/2023	4.63	4.64	SW846-9310	=
Beta activity		24.4	pCi/L	9.47	10/19/2023	7.41	8.44	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0189	ug/L	0.0189	10/19/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,4-Dichlorobenzene	UY2	1	ug/L	1	10/19/2023			SW846-8260D	UJ
2-Butanone	U	5	ug/L	5	10/19/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/19/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Iodomethane	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Methylene chloride	J	1.05	ug/L	5	10/19/2023			SW846-8260D	=

Styrene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Toluene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Total Xylene	U	3 ug/L	3	10/19/2023	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5 ug/L	5	10/19/2023	SW846-8260D	=
Trichloroethene		2.92 ug/L	1	10/19/2023	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/19/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Dissolved Solids		182 mg/L	10	10/19/2023	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	10/19/2023	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20 mg/L	20	10/19/2023	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	10/19/2023	SW846-9012B	=
Total Organic Halides (TOX)	J	4.76 ug/L	10	10/19/2023	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.883 mg/L	2	10/19/2023	SW846-9060A	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045
Sampling Point: MW386 **SIDE:** **RGA Type:** UCRS **Period:** 4th Quarter 2023
AKGWA Well Tag #: 8004-4804 **SAMPLE ID:** MW386DSG1-24 **Sample Type:** FR

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide	J	0.144	mg/L	0.2	10/19/2023			SW846-9056	=
Chloride	J	9.28	mg/L	250	10/19/2023			SW846-9056	=
Fluoride	J	0.758	mg/L	4	10/19/2023			SW846-9056	=
Nitrate as Nitrogen	U	10	mg/L	10	10/19/2023			SW846-9056	=
Sulfate		37.8	mg/L	2	10/19/2023			SW846-9056	=
Aluminum	U	0.05	mg/L	0.05	10/19/2023			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	10/19/2023			SW846-6020B	=
Arsenic	J	0.00299	mg/L	0.005	10/19/2023			SW846-6020B	=
Barium		0.209	mg/L	0.004	10/19/2023			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	10/19/2023			SW846-6020B	=
Boron	J	0.0122	mg/L	0.015	10/19/2023			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	10/19/2023			SW846-6020B	=
Calcium		20.4	mg/L	0.2	10/19/2023			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	10/19/2023			SW846-6020B	=
Cobalt		0.01	mg/L	0.001	10/19/2023			SW846-6020B	=
Copper	J	0.00122	mg/L	0.002	10/19/2023			SW846-6020B	J
Iron		0.73	mg/L	0.1	10/19/2023			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	10/19/2023			SW846-6020B	=
Magnesium		8.45	mg/L	0.03	10/19/2023			SW846-6020B	=
Manganese		1.19	mg/L	0.05	10/19/2023			SW846-6020B	=
Molybdenum	J	0.000638	mg/L	0.001	10/19/2023			SW846-6020B	=
Nickel		0.00465	mg/L	0.002	10/19/2023			SW846-6020B	J
Potassium	J	0.265	mg/L	0.3	10/19/2023			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	10/19/2023			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	10/19/2023			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	10/19/2023			SW846-6020B	=
Sodium		101	mg/L	2.5	10/19/2023			SW846-6020B	=
Tantalum	UN	0.005	mg/L	0.005	10/19/2023			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	10/19/2023			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	10/19/2023			SW846-6020B	=
Vanadium	BJ	0.00367	mg/L	0.02	10/19/2023			SW846-6020B	U
Zinc	J	0.0036	mg/L	0.02	10/19/2023			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	10/19/2023			SW846-7470A	=
Barium, Dissolved		0.189	mg/L	0.004	10/19/2023			SW846-6020B	=
Chromium, Dissolved	U	0.01	mg/L	0.01	10/19/2023			SW846-6020B	=
Uranium, Dissolved	U	0.0002	mg/L	0.0002	10/19/2023			SW846-6020B	=
PCB-1016	U	0.11	ug/L	0.11	10/19/2023			SW846-8082A	=
PCB-1221	U	0.11	ug/L	0.11	10/19/2023			SW846-8082A	=
PCB-1232	U	0.11	ug/L	0.11	10/19/2023			SW846-8082A	=
PCB-1242	U	0.11	ug/L	0.11	10/19/2023			SW846-8082A	=
PCB-1248	U	0.11	ug/L	0.11	10/19/2023			SW846-8082A	=
PCB-1254	U	0.11	ug/L	0.11	10/19/2023			SW846-8082A	=
PCB-1260	U	0.11	ug/L	0.11	10/19/2023			SW846-8082A	UJ
PCB-1268	U	0.11	ug/L	0.11	10/19/2023			SW846-8082A	=
Polychlorinated biphenyl	U	0.11	ug/L	0.11	10/19/2023			SW846-8082A	UJ

Radium-226	U	0.446	pCi/L	0.899	10/19/2023	0.611	0.611	AN-1418	=
Strontium-90	U	-0.697	pCi/L	4.14	10/19/2023	1.94	1.94	EPA-905.0-M	=
Tritium	U	20.5	pCi/L	220	10/19/2023	124	124	EPA-906.0-M	=
Technetium-99	U	2.84	pCi/L	18.1	10/19/2023	10.4	10.4	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.885	pCi/L	1.43	10/19/2023	0.964	0.975	HASL 300, Th-01-RC M	=
Alpha activity	U	4.3	pCi/L	9.4	10/19/2023	5.54	5.59	SW846-9310	=
Beta activity	U	-1.86	pCi/L	12.3	10/19/2023	6.47	6.47	SW846-9310	UJ
1,2-Dibromo-3-chloropropane	U	0.0192	ug/L	0.0192	10/19/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,4-Dichlorobenzene	UY2	1	ug/L	1	10/19/2023			SW846-8260D	=
2-Butanone	U	5	ug/L	5	10/19/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/19/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Iodomethane	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Methylene chloride	J	1.12	ug/L	5	10/19/2023			SW846-8260D	=
Styrene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Toluene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Total Xylene	U	3	ug/L	3	10/19/2023			SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Trichloroethene	U	1	ug/L	1	10/19/2023			SW846-8260D	=

Trichlorofluoromethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/19/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Dissolved Solids		364 mg/L	10	10/19/2023	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	10/19/2023	EPA-300.0	=
Chemical Oxygen Demand (COD)	J	16.5 mg/L	20	10/19/2023	EPA-410.4	=
Cyanide	J	0.00237 mg/L	0.2	10/19/2023	SW846-9012B	=
Total Organic Halides (TOX)		128 ug/L	10	10/19/2023	SW846-9020B	=
Total Organic Carbon (TOC)		5.51 mg/L	2	10/19/2023	SW846-9060A	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045

Sampling Point: MW386 **SIDE:** **RGA Type:** UCRS **Period:** 4th Quarter 2023

AKGWA Well Tag #: 8004-4804 **SAMPLE ID:** MW386SG1-24 **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide	J	0.145	mg/L	0.2	10/19/2023			SW846-9056	=
Chloride	J	9.59	mg/L	250	10/19/2023			SW846-9056	=
Fluoride	J	0.735	mg/L	4	10/19/2023			SW846-9056	=
Nitrate as Nitrogen	U	10	mg/L	10	10/19/2023			SW846-9056	=
Sulfate		38.2	mg/L	2	10/19/2023			SW846-9056	=
Barometric Pressure Reading		29.88	Inches/Hg		10/19/2023				X
Conductivity		579	µmhos/cm		10/19/2023				X
Depth to Water		21.41	ft		10/19/2023				X
Dissolved Oxygen		1.11	mg/L		10/19/2023				X
Eh (approx)		260	mV		10/19/2023				X
pH		6.69	Std Unit		10/19/2023				X
Temperature		61.4	deg F		10/19/2023				X
Turbidity		3.87	NTU		10/19/2023				X
Aluminum	U	0.05	mg/L	0.05	10/19/2023			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	10/19/2023			SW846-6020B	=
Arsenic	J	0.00331	mg/L	0.005	10/19/2023			SW846-6020B	=
Barium		0.214	mg/L	0.004	10/19/2023			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	10/19/2023			SW846-6020B	=
Boron	J	0.0119	mg/L	0.015	10/19/2023			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	10/19/2023			SW846-6020B	=
Calcium		20.6	mg/L	0.2	10/19/2023			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	10/19/2023			SW846-6020B	=
Cobalt		0.01	mg/L	0.001	10/19/2023			SW846-6020B	=
Copper	J	0.00154	mg/L	0.002	10/19/2023			SW846-6020B	J
Iron		0.93	mg/L	0.1	10/19/2023			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	10/19/2023			SW846-6020B	=
Magnesium		8.43	mg/L	0.03	10/19/2023			SW846-6020B	=
Manganese		1.2	mg/L	0.05	10/19/2023			SW846-6020B	=
Molybdenum	J	0.000609	mg/L	0.001	10/19/2023			SW846-6020B	=
Nickel		0.00483	mg/L	0.002	10/19/2023			SW846-6020B	J
Potassium	J	0.259	mg/L	0.3	10/19/2023			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	10/19/2023			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	10/19/2023			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	10/19/2023			SW846-6020B	=
Sodium		102	mg/L	2.5	10/19/2023			SW846-6020B	=
Tantalum	UN	0.005	mg/L	0.005	10/19/2023			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	10/19/2023			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	10/19/2023			SW846-6020B	=
Vanadium	BJ	0.00466	mg/L	0.02	10/19/2023			SW846-6020B	U
Zinc	J	0.00378	mg/L	0.02	10/19/2023			SW846-6020B	=
Mercury	J	0.000089	mg/L	0.0002	10/19/2023			SW846-7470A	=
Barium, Dissolved		0.189	mg/L	0.004	10/19/2023			SW846-6020B	=
Chromium, Dissolved	U	0.01	mg/L	0.01	10/19/2023			SW846-6020B	=
Uranium, Dissolved	U	0.0002	mg/L	0.0002	10/19/2023			SW846-6020B	=
PCB-1016	U	0.112	ug/L	0.112	10/19/2023			SW846-8082A	=

PCB-1221	U	0.112	ug/L	0.112	10/19/2023			SW846-8082A	=
PCB-1232	U	0.112	ug/L	0.112	10/19/2023			SW846-8082A	=
PCB-1242	U	0.112	ug/L	0.112	10/19/2023			SW846-8082A	=
PCB-1248	U	0.112	ug/L	0.112	10/19/2023			SW846-8082A	=
PCB-1254	U	0.112	ug/L	0.112	10/19/2023			SW846-8082A	=
PCB-1260	U	0.112	ug/L	0.112	10/19/2023			SW846-8082A	UJ
PCB-1268	U	0.112	ug/L	0.112	10/19/2023			SW846-8082A	=
Polychlorinated biphenyl	U	0.112	ug/L	0.112	10/19/2023			SW846-8082A	UJ
Radium-226	U	0.491	pCi/L	0.56	10/19/2023	0.431	0.433	AN-1418	=
Strontium-90	U	0.192	pCi/L	6.15	10/19/2023	3.19	3.19	EPA-905.0-M	=
Tritium	U	-84.9	pCi/L	221	10/19/2023	117	117	EPA-906.0-M	=
Technetium-99	U	5.57	pCi/L	18	10/19/2023	10.5	10.5	HASL 300, Tc-02-RC M	=
Thorium-230	U	1.49	pCi/L	1.55	10/19/2023	1.29	1.32	HASL 300, Th-01-RC M	=
Alpha activity	U	7.67	pCi/L	8.85	10/19/2023	6.29	6.41	SW846-9310	=
Beta activity		20.3	pCi/L	12.1	10/19/2023	8.51	9.16	SW846-9310	J
1,2-Dibromo-3-chloropropane	U	0.0188	ug/L	0.0188	10/19/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,4-Dichlorobenzene	UY2	1	ug/L	1	10/19/2023			SW846-8260D	=
2-Butanone	U	5	ug/L	5	10/19/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/19/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Iodomethane	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Methylene chloride	J	1.04	ug/L	5	10/19/2023			SW846-8260D	=

Styrene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Toluene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Total Xylene	U	3 ug/L	3	10/19/2023	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5 ug/L	5	10/19/2023	SW846-8260D	=
Trichloroethene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/19/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Dissolved Solids		325 mg/L	10	10/19/2023	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	10/19/2023	EPA-300.0	=
Chemical Oxygen Demand (COD)	J	14.2 mg/L	20	10/19/2023	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	10/19/2023	SW846-9012B	=
Total Organic Halides (TOX)		139 ug/L	10	10/19/2023	SW846-9020B	=
Total Organic Carbon (TOC)		5.7 mg/L	2	10/19/2023	SW846-9060A	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045

Sampling Point: MW387 DOWN **RGA Type:** URGA **Period:** 4th Quarter 2023

AKGWA Well Tag #: 8004-4815 **SAMPLE ID:** MW387SG1-24 **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.463	mg/L	0.2	10/18/2023			SW846-9056	=
Chloride	J	36.6	mg/L	250	10/18/2023			SW846-9056	=
Fluoride	J	0.926	mg/L	4	10/18/2023			SW846-9056	=
Nitrate as Nitrogen	JH	1.01	mg/L	10	10/18/2023			SW846-9056	J
Sulfate		26.7	mg/L	2	10/18/2023			SW846-9056	=
Barometric Pressure Reading		30.06	Inches/Hg		10/18/2023				X
Conductivity		550	µmhos/cm		10/18/2023				X
Depth to Water		40.48	ft		10/18/2023				X
Dissolved Oxygen		4.97	mg/L		10/18/2023				X
Eh (approx)		478	mV		10/18/2023				X
pH		6.28	Std Unit		10/18/2023				X
Temperature		66.7	deg F		10/18/2023				X
Turbidity		7.96	NTU		10/18/2023				X
Aluminum		0.0665	mg/L	0.05	10/18/2023			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	10/18/2023			SW846-6020B	=
Arsenic	J	0.00235	mg/L	0.005	10/18/2023			SW846-6020B	=
Barium		0.107	mg/L	0.004	10/18/2023			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	10/18/2023			SW846-6020B	=
Boron		0.0378	mg/L	0.015	10/18/2023			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	10/18/2023			SW846-6020B	=
Calcium		38.7	mg/L	0.2	10/18/2023			SW846-6020B	=
Chromium	J	0.0059	mg/L	0.01	10/18/2023			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	10/18/2023			SW846-6020B	=
Copper	J	0.00163	mg/L	0.002	10/18/2023			SW846-6020B	J
Iron		0.356	mg/L	0.1	10/18/2023			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	10/18/2023			SW846-6020B	=
Magnesium		16.2	mg/L	0.03	10/18/2023			SW846-6020B	=
Manganese		0.036	mg/L	0.005	10/18/2023			SW846-6020B	=
Molybdenum	U	0.001	mg/L	0.001	10/18/2023			SW846-6020B	=
Nickel	J	0.000921	mg/L	0.002	10/18/2023			SW846-6020B	J
Potassium		1.7	mg/L	0.3	10/18/2023			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	10/18/2023			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	10/18/2023			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	10/18/2023			SW846-6020B	=
Sodium		51.1	mg/L	2.5	10/18/2023			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	10/18/2023			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	10/18/2023			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	10/18/2023			SW846-6020B	=
Vanadium	BJ	0.00392	mg/L	0.02	10/18/2023			SW846-6020B	U
Zinc	J	0.00411	mg/L	0.02	10/18/2023			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	10/18/2023			SW846-7470A	=
Barium, Dissolved		0.105	mg/L	0.004	10/18/2023			SW846-6020B	=
Chromium, Dissolved	J	0.00528	mg/L	0.01	10/18/2023			SW846-6020B	=
Uranium, Dissolved	U	0.0002	mg/L	0.0002	10/18/2023			SW846-6020B	=
PCB-1016	U	0.0993	ug/L	0.0993	10/18/2023			SW846-8082A	UJ

PCB-1221	U	0.0993	ug/L	0.0993	10/18/2023			SW846-8082A	=
PCB-1232	U	0.0993	ug/L	0.0993	10/18/2023			SW846-8082A	=
PCB-1242	U	0.0993	ug/L	0.0993	10/18/2023			SW846-8082A	=
PCB-1248	U	0.0993	ug/L	0.0993	10/18/2023			SW846-8082A	=
PCB-1254	U	0.0993	ug/L	0.0993	10/18/2023			SW846-8082A	=
PCB-1260	U	0.0993	ug/L	0.0993	10/18/2023			SW846-8082A	UJ
PCB-1268	U	0.0993	ug/L	0.0993	10/18/2023			SW846-8082A	=
Polychlorinated biphenyl	U	0.0993	ug/L	0.0993	10/18/2023			SW846-8082A	UJ
Radium-226	U	0.257	pCi/L	0.972	10/18/2023	0.57	0.57	AN-1418	=
Strontium-90	U	-2.94	pCi/L	6.63	10/18/2023	2.84	2.84	EPA-905.0-M	UJ
Tritium	U	-71.8	pCi/L	220	10/18/2023	117	117	EPA-906.0-M	=
Technetium-99		51.4	pCi/L	18	10/18/2023	12.9	14.1	HASL 300, Tc-02-RC M	=
Thorium-230	U	1.07	pCi/L	1.38	10/18/2023	1.02	1.03	HASL 300, Th-01-RC M	=
Alpha activity	U	2.94	pCi/L	9.33	10/18/2023	5.16	5.19	SW846-9310	=
Beta activity		26.4	pCi/L	8.42	10/18/2023	7.48	8.69	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0194	ug/L	0.0194	10/18/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
2-Butanone	U	5	ug/L	5	10/18/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/18/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Iodomethane	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Methylene chloride	U	5	ug/L	5	10/18/2023			SW846-8260D	=

Styrene	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Toluene	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Total Xylene	U	3 ug/L	3	10/18/2023	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	10/18/2023	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5 ug/L	5	10/18/2023	SW846-8260D	=
Trichloroethene	J	0.46 ug/L	1	10/18/2023	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/18/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Dissolved Solids		270 mg/L	10	10/18/2023	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	10/18/2023	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20 mg/L	20	10/18/2023	EPA-410.4	=
Cyanide	J	0.00202 mg/L	0.2	10/18/2023	SW846-9012B	=
Total Organic Halides (TOX)	J	9.06 ug/L	10	10/18/2023	SW846-9020B	=
Total Organic Carbon (TOC)	J	1.06 mg/L	2	10/18/2023	SW846-9060A	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045

Sampling Point: MW388 DOWN **RGA Type:** LRGA **Period:** 4th Quarter 2023

AKGWA Well Tag #: 8004-4816 **SAMPLE ID:** MW388SG1-24 **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.431	mg/L	0.2	10/18/2023			SW846-9056	=
Chloride	J	33.4	mg/L	250	10/18/2023			SW846-9056	=
Fluoride	J	0.225	mg/L	4	10/18/2023			SW846-9056	=
Nitrate as Nitrogen	JH	1.04	mg/L	10	10/18/2023			SW846-9056	J
Sulfate		18.6	mg/L	0.4	10/18/2023			SW846-9056	=
Barometric Pressure Reading		30.03	Inches/Hg		10/18/2023				X
Conductivity		412	µmhos/cm		10/18/2023				X
Depth to Water		40.4	ft		10/18/2023				X
Dissolved Oxygen		5.42	mg/L		10/18/2023				X
Eh (approx)		457	mV		10/18/2023				X
pH		6.08	Std Unit		10/18/2023				X
Temperature		66	deg F		10/18/2023				X
Turbidity		7.19	NTU		10/18/2023				X
Aluminum		0.0609	mg/L	0.05	10/18/2023			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	10/18/2023			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	10/18/2023			SW846-6020B	=
Barium		0.185	mg/L	0.004	10/18/2023			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	10/18/2023			SW846-6020B	=
Boron		0.0247	mg/L	0.015	10/18/2023			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	10/18/2023			SW846-6020B	=
Calcium		24.3	mg/L	0.2	10/18/2023			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	10/18/2023			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	10/18/2023			SW846-6020B	=
Copper		0.00247	mg/L	0.002	10/18/2023			SW846-6020B	J
Iron		0.341	mg/L	0.1	10/18/2023			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	10/18/2023			SW846-6020B	=
Magnesium		10.5	mg/L	0.03	10/18/2023			SW846-6020B	=
Manganese	J	0.00219	mg/L	0.005	10/18/2023			SW846-6020B	J
Molybdenum	U	0.001	mg/L	0.001	10/18/2023			SW846-6020B	=
Nickel	U	0.002	mg/L	0.002	10/18/2023			SW846-6020B	=
Potassium		1.71	mg/L	0.3	10/18/2023			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	10/18/2023			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	10/18/2023			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	10/18/2023			SW846-6020B	=
Sodium		44.1	mg/L	0.25	10/18/2023			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	10/18/2023			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	10/18/2023			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	10/18/2023			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	10/18/2023			SW846-6020B	=
Zinc	U	0.02	mg/L	0.02	10/18/2023			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	10/18/2023			SW846-7470A	=
Barium, Dissolved		0.204	mg/L	0.004	10/18/2023			SW846-6020B	=
Chromium, Dissolved	U	0.01	mg/L	0.01	10/18/2023			SW846-6020B	=
Uranium, Dissolved	U	0.0002	mg/L	0.0002	10/18/2023			SW846-6020B	=
PCB-1016	U	0.129	ug/L	0.129	10/18/2023			SW846-8082A	UJ

PCB-1221	U	0.129	ug/L	0.129	10/18/2023			SW846-8082A	=
PCB-1232	U	0.129	ug/L	0.129	10/18/2023			SW846-8082A	=
PCB-1242	U	0.129	ug/L	0.129	10/18/2023			SW846-8082A	=
PCB-1248	U	0.129	ug/L	0.129	10/18/2023			SW846-8082A	=
PCB-1254	U	0.129	ug/L	0.129	10/18/2023			SW846-8082A	=
PCB-1260	U	0.129	ug/L	0.129	10/18/2023			SW846-8082A	UJ
PCB-1268	U	0.129	ug/L	0.129	10/18/2023			SW846-8082A	=
Polychlorinated biphenyl	U	0.129	ug/L	0.129	10/18/2023			SW846-8082A	UJ
Radium-226	U	0.105	pCi/L	1.48	10/18/2023	0.736	0.737	AN-1418	=
Strontium-90	U	3.16	pCi/L	6.96	10/18/2023	4.09	4.12	EPA-905.0-M	=
Tritium	U	-46	pCi/L	221	10/18/2023	120	120	EPA-906.0-M	=
Technetium-99	U	10.4	pCi/L	19.4	10/18/2023	11.5	11.6	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.878	pCi/L	1.06	10/18/2023	0.805	0.816	HASL 300, Th-01-RC M	=
Alpha activity	U	5.58	pCi/L	8.56	10/18/2023	5.44	5.53	SW846-9310	=
Beta activity	U	6.29	pCi/L	9.35	10/18/2023	5.77	5.87	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0195	ug/L	0.0195	10/18/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
2-Butanone	U	5	ug/L	5	10/18/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/18/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Iodomethane	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Methylene chloride	U	5	ug/L	5	10/18/2023			SW846-8260D	=

Styrene	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Toluene	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Total Xylene	U	3 ug/L	3	10/18/2023	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	10/18/2023	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5 ug/L	5	10/18/2023	SW846-8260D	=
Trichloroethene	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/18/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Dissolved Solids		191 mg/L	10	10/18/2023	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	10/18/2023	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20 mg/L	20	10/18/2023	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	10/18/2023	SW846-9012B	=
Total Organic Halides (TOX)	U	10 ug/L	10	10/18/2023	SW846-9020B	=
Total Organic Carbon (TOC)	J	1.03 mg/L	2	10/18/2023	SW846-9060A	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045

Sampling Point: MW391 DOWN **RGA Type:** URGA **Period:** 4th Quarter 2023

AKGWA Well Tag #: 8004-4805 **SAMPLE ID:** MW391SG1-24 **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.527	mg/L	0.2	10/17/2023			SW846-9056	=
Chloride	J	40.8	mg/L	250	10/17/2023			SW846-9056	=
Fluoride	J	0.198	mg/L	4	10/17/2023			SW846-9056	=
Nitrate as Nitrogen	JH	1.12	mg/L	10	10/17/2023			SW846-9056	J
Sulfate		11.9	mg/L	0.4	10/17/2023			SW846-9056	=
Barometric Pressure Reading		30.09	Inches/Hg		10/17/2023				X
Conductivity		372	µmhos/cm		10/17/2023				X
Depth to Water		43.79	ft		10/17/2023				X
Dissolved Oxygen		5.58	mg/L		10/17/2023				X
Eh (approx)		490	mV		10/17/2023				X
pH		5.9	Std Unit		10/17/2023				X
Temperature		56.1	deg F		10/17/2023				X
Turbidity		5.61	NTU		10/17/2023				X
Aluminum	J	0.047	mg/L	0.05	10/17/2023			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	10/17/2023			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	10/17/2023			SW846-6020B	=
Barium		0.234	mg/L	0.004	10/17/2023			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	10/17/2023			SW846-6020B	=
Boron		0.025	mg/L	0.015	10/17/2023			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	10/17/2023			SW846-6020B	=
Calcium		26.6	mg/L	0.2	10/17/2023			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	10/17/2023			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	10/17/2023			SW846-6020B	=
Copper		0.00235	mg/L	0.002	10/17/2023			SW846-6020B	J
Iron		0.303	mg/L	0.1	10/17/2023			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	10/17/2023			SW846-6020B	=
Magnesium		10.9	mg/L	0.03	10/17/2023			SW846-6020B	=
Manganese		0.0071	mg/L	0.005	10/17/2023			SW846-6020B	J
Molybdenum	U	0.001	mg/L	0.001	10/17/2023			SW846-6020B	=
Nickel	J	0.000632	mg/L	0.002	10/17/2023			SW846-6020B	J
Potassium		1.52	mg/L	0.3	10/17/2023			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	10/17/2023			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	10/17/2023			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	10/17/2023			SW846-6020B	=
Sodium		32.3	mg/L	0.25	10/17/2023			SW846-6020B	=
Tantalum	UN	0.005	mg/L	0.005	10/17/2023			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	10/17/2023			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	10/17/2023			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	10/17/2023			SW846-6020B	=
Zinc	J	0.00714	mg/L	0.02	10/17/2023			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	10/17/2023			SW846-7470A	=
Barium, Dissolved		0.238	mg/L	0.004	10/17/2023			SW846-6020B	=
Chromium, Dissolved	U	0.01	mg/L	0.01	10/17/2023			SW846-6020B	=
Uranium, Dissolved	U	0.0002	mg/L	0.0002	10/17/2023			SW846-6020B	=
PCB-1016	U	0.1	ug/L	0.1	10/17/2023			SW846-8082A	UJ

PCB-1221	U	0.1	ug/L	0.1	10/17/2023			SW846-8082A	=
PCB-1232	U	0.1	ug/L	0.1	10/17/2023			SW846-8082A	=
PCB-1242	U	0.1	ug/L	0.1	10/17/2023			SW846-8082A	=
PCB-1248	U	0.1	ug/L	0.1	10/17/2023			SW846-8082A	=
PCB-1254	U	0.1	ug/L	0.1	10/17/2023			SW846-8082A	=
PCB-1260	U	0.1	ug/L	0.1	10/17/2023			SW846-8082A	UJ
PCB-1268	U	0.1	ug/L	0.1	10/17/2023			SW846-8082A	=
Polychlorinated biphenyl	U	0.1	ug/L	0.1	10/17/2023			SW846-8082A	UJ
Radium-226	U	-0.0101	pCi/L	0.837	10/17/2023	0.363	0.363	AN-1418	=
Strontium-90	U	-0.249	pCi/L	4.15	10/17/2023	2.04	2.04	EPA-905.0-M	=
Tritium	U	-25.4	pCi/L	228	10/17/2023	126	126	EPA-906.0-M	=
Technetium-99	U	14.4	pCi/L	17.8	10/17/2023	10.9	11	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.208	pCi/L	2.04	10/17/2023	1.03	1.03	HASL 300, Th-01-RC M	=
Alpha activity	U	1.85	pCi/L	6.74	10/17/2023	3.57	3.58	SW846-9310	=
Beta activity	U	6.78	pCi/L	8.31	10/17/2023	5.31	5.43	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.019	ug/L	0.019	10/17/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
2-Butanone	U	5	ug/L	5	10/17/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/17/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Iodomethane	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Methylene chloride	U	5	ug/L	5	10/17/2023			SW846-8260D	=

Styrene	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Toluene	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Total Xylene	U	3 ug/L	3	10/17/2023	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	10/17/2023	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5 ug/L	5	10/17/2023	SW846-8260D	=
Trichloroethene		1.04 ug/L	1	10/17/2023	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/17/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Dissolved Solids		166 mg/L	10	10/17/2023	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	10/17/2023	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20 mg/L	20	10/17/2023	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	10/17/2023	SW846-9012B	=
Total Organic Halides (TOX)	J	4.78 ug/L	10	10/17/2023	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.726 mg/L	2	10/17/2023	SW846-9060A	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045

Sampling Point: MW392 DOWN **RGA Type:** LRGA **Period:** 4th Quarter 2023

AKGWA Well Tag #: 8004-4806 **SAMPLE ID:** MW392SG1-24 **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.529	mg/L	0.2	10/17/2023			SW846-9056	=
Chloride	J	41.5	mg/L	250	10/17/2023			SW846-9056	=
Fluoride	J	0.238	mg/L	4	10/17/2023			SW846-9056	=
Nitrate as Nitrogen	JH	0.642	mg/L	10	10/17/2023			SW846-9056	J
Sulfate		7.76	mg/L	0.4	10/17/2023			SW846-9056	=
Barometric Pressure Reading		30.09	Inches/Hg		10/17/2023				X
Conductivity		334	µmhos/cm		10/17/2023				X
Depth to Water		42.98	ft		10/17/2023				X
Dissolved Oxygen		1.86	mg/L		10/17/2023				X
Eh (approx)		477	mV		10/17/2023				X
pH		6	Std Unit		10/17/2023				X
Temperature		58.9	deg F		10/17/2023				X
Turbidity		5.37	NTU		10/17/2023				X
Aluminum		0.0736	mg/L	0.05	10/17/2023			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	10/17/2023			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	10/17/2023			SW846-6020B	=
Barium		0.303	mg/L	0.004	10/17/2023			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	10/17/2023			SW846-6020B	=
Boron		0.021	mg/L	0.015	10/17/2023			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	10/17/2023			SW846-6020B	=
Calcium		24.3	mg/L	0.2	10/17/2023			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	10/17/2023			SW846-6020B	=
Cobalt	J	0.000475	mg/L	0.001	10/17/2023			SW846-6020B	J
Copper		0.00255	mg/L	0.002	10/17/2023			SW846-6020B	J
Iron		0.312	mg/L	0.1	10/17/2023			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	10/17/2023			SW846-6020B	=
Magnesium		10.2	mg/L	0.03	10/17/2023			SW846-6020B	=
Manganese		0.231	mg/L	0.005	10/17/2023			SW846-6020B	=
Molybdenum	J	0.000226	mg/L	0.001	10/17/2023			SW846-6020B	=
Nickel		0.00431	mg/L	0.002	10/17/2023			SW846-6020B	J
Potassium		2.06	mg/L	0.3	10/17/2023			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	10/17/2023			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	10/17/2023			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	10/17/2023			SW846-6020B	=
Sodium		24.9	mg/L	0.25	10/17/2023			SW846-6020B	=
Tantalum	UN	0.005	mg/L	0.005	10/17/2023			SW846-6020B	UJ
Thallium	U	0.002	mg/L	0.002	10/17/2023			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	10/17/2023			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	10/17/2023			SW846-6020B	=
Zinc	J	0.00722	mg/L	0.02	10/17/2023			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	10/17/2023			SW846-7470A	=
Barium, Dissolved		0.294	mg/L	0.004	10/17/2023			SW846-6020B	=
Chromium, Dissolved	U	0.01	mg/L	0.01	10/17/2023			SW846-6020B	=
Uranium, Dissolved	U	0.0002	mg/L	0.0002	10/17/2023			SW846-6020B	=
PCB-1016	U	0.105	ug/L	0.105	10/17/2023			SW846-8082A	UJ

PCB-1221	U	0.105	ug/L	0.105	10/17/2023			SW846-8082A	=
PCB-1232	U	0.105	ug/L	0.105	10/17/2023			SW846-8082A	=
PCB-1242	U	0.105	ug/L	0.105	10/17/2023			SW846-8082A	=
PCB-1248	U	0.105	ug/L	0.105	10/17/2023			SW846-8082A	=
PCB-1254	U	0.105	ug/L	0.105	10/17/2023			SW846-8082A	=
PCB-1260	U	0.105	ug/L	0.105	10/17/2023			SW846-8082A	UJ
PCB-1268	U	0.105	ug/L	0.105	10/17/2023			SW846-8082A	=
Polychlorinated biphenyl	U	0.105	ug/L	0.105	10/17/2023			SW846-8082A	UJ
Radium-226	U	0.592	pCi/L	1.46	10/17/2023	1.11	1.11	AN-1418	=
Strontium-90	U	2.07	pCi/L	3.9	10/17/2023	2.33	2.36	EPA-905.0-M	=
Tritium	U	41.1	pCi/L	228	10/17/2023	131	131	EPA-906.0-M	=
Technetium-99	U	11.5	pCi/L	17.7	10/17/2023	10.6	10.7	HASL 300, Tc-02-RC M	=
Thorium-230	U	1.72	pCi/L	2.55	10/17/2023	1.93	1.96	HASL 300, Th-01-RC M	=
Alpha activity	U	-3.41	pCi/L	7.81	10/17/2023	1.74	1.75	SW846-9310	UJ
Beta activity	U	2.22	pCi/L	9.53	10/17/2023	5.32	5.33	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0188	ug/L	0.0188	10/17/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
2-Butanone	U	5	ug/L	5	10/17/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/17/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Iodomethane	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Methylene chloride	U	5	ug/L	5	10/17/2023			SW846-8260D	=

Styrene	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Toluene	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Total Xylene	U	3 ug/L	3	10/17/2023	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	10/17/2023	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5 ug/L	5	10/17/2023	SW846-8260D	=
Trichloroethene		9.43 ug/L	1	10/17/2023	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/17/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Dissolved Solids		136 mg/L	10	10/17/2023	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	10/17/2023	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20 mg/L	20	10/17/2023	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	10/17/2023	SW846-9012B	=
Total Organic Halides (TOX)	J	9.86 ug/L	10	10/17/2023	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.707 mg/L	2	10/17/2023	SW846-9060A	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045
Sampling Point: MW393 DOWN **RGA Type:** UCRS **Period:** 4th Quarter 2023
AKGWA Well Tag #: 8004-4807 **SAMPLE ID:** MW393SG1-24 **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide	J	0.129	mg/L	0.2	10/17/2023			SW846-9056	=
Chloride	J	9.78	mg/L	250	10/17/2023			SW846-9056	=
Fluoride	J	0.334	mg/L	4	10/17/2023			SW846-9056	=
Nitrate as Nitrogen	U	10	mg/L	10	10/17/2023			SW846-9056	=
Sulfate		20.3	mg/L	0.8	10/17/2023			SW846-9056	=
Barometric Pressure Reading		30.12	Inches/Hg		10/17/2023				X
Conductivity		440	µmhos/cm		10/17/2023				X
Depth to Water		29.13	ft		10/17/2023				X
Dissolved Oxygen		2.6	mg/L		10/17/2023				X
Eh (approx)		325	mV		10/17/2023				X
pH		6.29	Std Unit		10/17/2023				X
Temperature		64	deg F		10/17/2023				X
Turbidity		11.07	NTU		10/17/2023				X
Aluminum	J	0.0254	mg/L	0.05	10/17/2023			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	10/17/2023			SW846-6020B	=
Arsenic	J	0.00423	mg/L	0.005	10/17/2023			SW846-6020B	=
Barium		0.0942	mg/L	0.004	10/17/2023			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	10/17/2023			SW846-6020B	=
Boron		0.017	mg/L	0.015	10/17/2023			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	10/17/2023			SW846-6020B	=
Calcium		15.7	mg/L	0.2	10/17/2023			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	10/17/2023			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	10/17/2023			SW846-6020B	=
Copper	J	0.00115	mg/L	0.002	10/17/2023			SW846-6020B	J
Iron		1.38	mg/L	0.1	10/17/2023			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	10/17/2023			SW846-6020B	=
Magnesium		3.95	mg/L	0.03	10/17/2023			SW846-6020B	=
Manganese		0.0662	mg/L	0.005	10/17/2023			SW846-6020B	=
Molybdenum	J	0.000524	mg/L	0.001	10/17/2023			SW846-6020B	=
Nickel	U	0.002	mg/L	0.002	10/17/2023			SW846-6020B	=
Potassium		0.475	mg/L	0.3	10/17/2023			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	10/17/2023			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	10/17/2023			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	10/17/2023			SW846-6020B	=
Sodium		85	mg/L	2.5	10/17/2023			SW846-6020B	=
Tantalum	UN	0.005	mg/L	0.005	10/17/2023			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	10/17/2023			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	10/17/2023			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	10/17/2023			SW846-6020B	=
Zinc	J	0.00496	mg/L	0.02	10/17/2023			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	10/17/2023			SW846-7470A	=
Barium, Dissolved		0.0551	mg/L	0.004	10/17/2023			SW846-6020B	=
Chromium, Dissolved	U	0.01	mg/L	0.01	10/17/2023			SW846-6020B	=
Uranium, Dissolved	U	0.0002	mg/L	0.0002	10/17/2023			SW846-6020B	=
PCB-1016	U	0.106	ug/L	0.106	10/17/2023			SW846-8082A	UJ

PCB-1221	U	0.106	ug/L	0.106	10/17/2023			SW846-8082A	=
PCB-1232	U	0.106	ug/L	0.106	10/17/2023			SW846-8082A	=
PCB-1242	U	0.106	ug/L	0.106	10/17/2023			SW846-8082A	=
PCB-1248	U	0.106	ug/L	0.106	10/17/2023			SW846-8082A	=
PCB-1254	U	0.106	ug/L	0.106	10/17/2023			SW846-8082A	=
PCB-1260	U	0.106	ug/L	0.106	10/17/2023			SW846-8082A	UJ
PCB-1268	U	0.106	ug/L	0.106	10/17/2023			SW846-8082A	=
Polychlorinated biphenyl	U	0.106	ug/L	0.106	10/17/2023			SW846-8082A	UJ
Radium-226	U	0.695	pCi/L	0.856	10/17/2023	0.685	0.687	AN-1418	=
Strontium-90	U	1.38	pCi/L	6.56	10/17/2023	3.64	3.65	EPA-905.0-M	=
Tritium	U	55.6	pCi/L	228	10/17/2023	131	132	EPA-906.0-M	=
Technetium-99	U	6.63	pCi/L	17.4	10/17/2023	10.2	10.3	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.655	pCi/L	1.53	10/17/2023	0.955	0.963	HASL 300, Th-01-RC M	=
Alpha activity	U	4.39	pCi/L	7.69	10/17/2023	4.82	4.88	SW846-9310	=
Beta activity	U	-2.3	pCi/L	9.28	10/17/2023	4.5	4.5	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0189	ug/L	0.0189	10/17/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
2-Butanone	U	5	ug/L	5	10/17/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/17/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Iodomethane	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Methylene chloride	U	5	ug/L	5	10/17/2023			SW846-8260D	=

Styrene	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Toluene	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Total Xylene	U	3 ug/L	3	10/17/2023	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	10/17/2023	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5 ug/L	5	10/17/2023	SW846-8260D	=
Trichloroethene	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/17/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Dissolved Solids		251 mg/L	10	10/17/2023	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	10/17/2023	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20 mg/L	20	10/17/2023	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	10/17/2023	SW846-9012B	=
Total Organic Halides (TOX)		10 ug/L	10	10/17/2023	SW846-9020B	=
Total Organic Carbon (TOC)		2.66 mg/L	2	10/17/2023	SW846-9060A	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045

Sampling Point: MW394 UP **RGA Type:** URGA **Period:** 4th Quarter 2023

AKGWA Well Tag #: 8004-4802 **SAMPLE ID:** MW394SG1-24 **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.537	mg/L	0.2	10/17/2023			SW846-9056	=
Chloride	J	43.5	mg/L	250	10/17/2023			SW846-9056	=
Fluoride	J	0.196	mg/L	4	10/17/2023			SW846-9056	=
Nitrate as Nitrogen	J	1.08	mg/L	10	10/17/2023			SW846-9056	=
Sulfate		11.7	mg/L	0.4	10/17/2023			SW846-9056	=
Barometric Pressure Reading		30.13	Inches/Hg		10/17/2023				X
Conductivity		403	µmhos/cm		10/17/2023				X
Depth to Water		55.28	ft		10/17/2023				X
Dissolved Oxygen		5.26	mg/L		10/17/2023				X
Eh (approx)		461	mV		10/17/2023				X
pH		6	Std Unit		10/17/2023				X
Temperature		62.1	deg F		10/17/2023				X
Turbidity		5.24	NTU		10/17/2023				X
Aluminum	J	0.0295	mg/L	0.05	10/17/2023			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	10/17/2023			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	10/17/2023			SW846-6020B	=
Barium		0.264	mg/L	0.004	10/17/2023			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	10/17/2023			SW846-6020B	=
Boron		0.0199	mg/L	0.015	10/17/2023			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	10/17/2023			SW846-6020B	=
Calcium		27.9	mg/L	0.2	10/17/2023			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	10/17/2023			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	10/17/2023			SW846-6020B	=
Copper	J	0.00181	mg/L	0.002	10/17/2023			SW846-6020B	J
Iron		0.124	mg/L	0.1	10/17/2023			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	10/17/2023			SW846-6020B	=
Magnesium		11.6	mg/L	0.03	10/17/2023			SW846-6020B	=
Manganese	J	0.00321	mg/L	0.005	10/17/2023			SW846-6020B	J
Molybdenum	U	0.001	mg/L	0.001	10/17/2023			SW846-6020B	=
Nickel		0.00559	mg/L	0.002	10/17/2023			SW846-6020B	J
Potassium		1.26	mg/L	0.3	10/17/2023			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	10/17/2023			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	10/17/2023			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	10/17/2023			SW846-6020B	=
Sodium		34.5	mg/L	0.25	10/17/2023			SW846-6020B	=
Tantalum	UN	0.005	mg/L	0.005	10/17/2023			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	10/17/2023			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	10/17/2023			SW846-6020B	=
Vanadium	U	0.02	mg/L	0.02	10/17/2023			SW846-6020B	=
Zinc	J	0.00625	mg/L	0.02	10/17/2023			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	10/17/2023			SW846-7470A	=
Barium, Dissolved		0.263	mg/L	0.004	10/17/2023			SW846-6020B	=
Chromium, Dissolved	U	0.01	mg/L	0.01	10/17/2023			SW846-6020B	=
Uranium, Dissolved	U	0.0002	mg/L	0.0002	10/17/2023			SW846-6020B	=
PCB-1016	U	0.0947	ug/L	0.0947	10/17/2023			SW846-8082A	UJ

PCB-1221	U	0.0947	ug/L	0.0947	10/17/2023			SW846-8082A	=
PCB-1232	U	0.0947	ug/L	0.0947	10/17/2023			SW846-8082A	=
PCB-1242	U	0.0947	ug/L	0.0947	10/17/2023			SW846-8082A	=
PCB-1248	U	0.0947	ug/L	0.0947	10/17/2023			SW846-8082A	=
PCB-1254	U	0.0947	ug/L	0.0947	10/17/2023			SW846-8082A	=
PCB-1260	U	0.0947	ug/L	0.0947	10/17/2023			SW846-8082A	UJ
PCB-1268	U	0.0947	ug/L	0.0947	10/17/2023			SW846-8082A	=
Polychlorinated biphenyl	U	0.0947	ug/L	0.0947	10/17/2023			SW846-8082A	UJ
Radium-226	U	0.282	pCi/L	0.971	10/17/2023	0.585	0.586	AN-1418	=
Strontium-90	U	4.77	pCi/L	4.95	10/17/2023	3.24	3.33	EPA-905.0-M	=
Tritium	U	-55.5	pCi/L	228	10/17/2023	123	123	EPA-906.0-M	=
Technetium-99	U	16.3	pCi/L	17.3	10/17/2023	10.7	10.9	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.0878	pCi/L	1.68	10/17/2023	0.81	0.812	HASL 300, Th-01-RC M	=
Alpha activity	U	-2.41	pCi/L	7.77	10/17/2023	2.23	2.24	SW846-9310	UJ
Beta activity	U	2.65	pCi/L	8.73	10/17/2023	4.94	4.96	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0195	ug/L	0.0195	10/17/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
2-Butanone	U	5	ug/L	5	10/17/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/17/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Iodomethane	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Methylene chloride	U	5	ug/L	5	10/17/2023			SW846-8260D	=

Styrene	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Toluene	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Total Xylene	U	3 ug/L	3	10/17/2023	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	10/17/2023	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5 ug/L	5	10/17/2023	SW846-8260D	=
Trichloroethene		5.25 ug/L	1	10/17/2023	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/17/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Dissolved Solids		170 mg/L	10	10/17/2023	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	10/17/2023	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20 mg/L	20	10/17/2023	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	10/17/2023	SW846-9012B	=
Total Organic Halides (TOX)	J	7.7 ug/L	10	10/17/2023	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.845 mg/L	2	10/17/2023	SW846-9060A	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045

Sampling Point: MW395 UP **RGA Type:** LRGA **Period:** 4th Quarter 2023

AKGWA Well Tag #: 8004-4801 **SAMPLE ID:** MW395SG1-24 **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.534	mg/L	0.2	10/18/2023			SW846-9056	=
Chloride	J	44.4	mg/L	250	10/18/2023			SW846-9056	=
Fluoride	J	0.155	mg/L	4	10/18/2023			SW846-9056	=
Nitrate as Nitrogen	JH	1.64	mg/L	10	10/18/2023			SW846-9056	J
Sulfate		11	mg/L	0.4	10/18/2023			SW846-9056	=
Barometric Pressure Reading		30.09	Inches/Hg		10/18/2023				X
Conductivity		383	µmhos/cm		10/18/2023				X
Depth to Water		55.98	ft		10/18/2023				X
Dissolved Oxygen		4.19	mg/L		10/18/2023				X
Eh (approx)		409	mV		10/18/2023				X
pH		6.02	Std Unit		10/18/2023				X
Temperature		60.4	deg F		10/18/2023				X
Turbidity		3.7	NTU		10/18/2023				X
Aluminum	U	0.05	mg/L	0.05	10/18/2023			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	10/18/2023			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	10/18/2023			SW846-6020B	=
Barium		0.274	mg/L	0.004	10/18/2023			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	10/18/2023			SW846-6020B	=
Boron		0.0191	mg/L	0.015	10/18/2023			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	10/18/2023			SW846-6020B	=
Calcium		27.8	mg/L	0.2	10/18/2023			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	10/18/2023			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	10/18/2023			SW846-6020B	=
Copper	J	0.0019	mg/L	0.002	10/18/2023			SW846-6020B	J
Iron	J	0.0556	mg/L	0.1	10/18/2023			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	10/18/2023			SW846-6020B	=
Magnesium		11.5	mg/L	0.03	10/18/2023			SW846-6020B	=
Manganese		0.00973	mg/L	0.005	10/18/2023			SW846-6020B	J
Molybdenum	U	0.001	mg/L	0.001	10/18/2023			SW846-6020B	=
Nickel	J	0.00102	mg/L	0.002	10/18/2023			SW846-6020B	J
Potassium		1.57	mg/L	0.3	10/18/2023			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	10/18/2023			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	10/18/2023			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	10/18/2023			SW846-6020B	=
Sodium		30.6	mg/L	0.25	10/18/2023			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	10/18/2023			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	10/18/2023			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	10/18/2023			SW846-6020B	=
Vanadium	BJ	0.00389	mg/L	0.02	10/18/2023			SW846-6020B	U
Zinc	J	0.00437	mg/L	0.02	10/18/2023			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	10/18/2023			SW846-7470A	=
Barium, Dissolved		0.261	mg/L	0.004	10/18/2023			SW846-6020B	=
Chromium, Dissolved	U	0.01	mg/L	0.01	10/18/2023			SW846-6020B	=
Uranium, Dissolved	U	0.0002	mg/L	0.0002	10/18/2023			SW846-6020B	=
PCB-1016	U	0.1	ug/L	0.1	10/18/2023			SW846-8082A	UJ

PCB-1221	U	0.1	ug/L	0.1	10/18/2023			SW846-8082A	=
PCB-1232	U	0.1	ug/L	0.1	10/18/2023			SW846-8082A	=
PCB-1242	U	0.1	ug/L	0.1	10/18/2023			SW846-8082A	=
PCB-1248	U	0.1	ug/L	0.1	10/18/2023			SW846-8082A	=
PCB-1254	U	0.1	ug/L	0.1	10/18/2023			SW846-8082A	=
PCB-1260	U	0.1	ug/L	0.1	10/18/2023			SW846-8082A	UJ
PCB-1268	U	0.1	ug/L	0.1	10/18/2023			SW846-8082A	=
Polychlorinated biphenyl	U	0.1	ug/L	0.1	10/18/2023			SW846-8082A	UJ
Radium-226	U	0.333	pCi/L	0.385	10/18/2023	0.332	0.333	AN-1418	=
Strontium-90	U	3.55	pCi/L	4.52	10/18/2023	2.79	2.85	EPA-905.0-M	=
Tritium	U	46.3	pCi/L	220	10/18/2023	126	126	EPA-906.0-M	=
Technetium-99	U	16.4	pCi/L	17.9	10/18/2023	11	11.2	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.697	pCi/L	2.25	10/18/2023	1.39	1.4	HASL 300, Th-01-RC M	=
Alpha activity	U	0.363	pCi/L	8.13	10/18/2023	3.85	3.85	SW846-9310	=
Beta activity	U	-2.48	pCi/L	8.63	10/18/2023	4.19	4.19	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0192	ug/L	0.0192	10/18/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
2-Butanone	U	5	ug/L	5	10/18/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/18/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Iodomethane	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Methylene chloride	U	5	ug/L	5	10/18/2023			SW846-8260D	=

Styrene	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Toluene	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Total Xylene	U	3 ug/L	3	10/18/2023	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	10/18/2023	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5 ug/L	5	10/18/2023	SW846-8260D	=
Trichloroethene		4.93 ug/L	1	10/18/2023	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/18/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Dissolved Solids		176 mg/L	10	10/18/2023	EPA-160.1	=
Iodide	U	0.5 mg/L	0.5	10/18/2023	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20 mg/L	20	10/18/2023	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	10/18/2023	SW846-9012B	=
Total Organic Halides (TOX)	J	8.22 ug/L	10	10/18/2023	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.97 mg/L	2	10/18/2023	SW846-9060A	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045

Sampling Point: MW396 UP **RGA Type:** UCRS **Period:** 4th Quarter 2023

AKGWA Well Tag #: 8004-4803 **SAMPLE ID:** MW396SG1-24 **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.767	mg/L	0.2	10/18/2023			SW846-9056	=
Chloride	J	51.9	mg/L	250	10/18/2023			SW846-9056	=
Fluoride	J	0.608	mg/L	4	10/18/2023			SW846-9056	=
Nitrate as Nitrogen	UH	10	mg/L	10	10/18/2023			SW846-9056	UJ
Sulfate		27	mg/L	4	10/18/2023			SW846-9056	=
Barometric Pressure Reading		30.09	Inches/Hg		10/18/2023				X
Conductivity		700	µmhos/cm		10/18/2023				X
Depth to Water		21.14	ft		10/18/2023				X
Dissolved Oxygen		1	mg/L		10/18/2023				X
Eh (approx)		262	mV		10/18/2023				X
pH		6.46	Std Unit		10/18/2023				X
Temperature		59.7	deg F		10/18/2023				X
Turbidity		8.55	NTU		10/18/2023				X
Aluminum	J	0.0484	mg/L	0.05	10/18/2023			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	10/18/2023			SW846-6020B	=
Arsenic	J	0.00239	mg/L	0.005	10/18/2023			SW846-6020B	=
Barium		0.406	mg/L	0.004	10/18/2023			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	10/18/2023			SW846-6020B	=
Boron	J	0.007	mg/L	0.015	10/18/2023			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	10/18/2023			SW846-6020B	=
Calcium		32.4	mg/L	0.2	10/18/2023			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	10/18/2023			SW846-6020B	=
Cobalt		0.00465	mg/L	0.001	10/18/2023			SW846-6020B	J
Copper		0.00285	mg/L	0.002	10/18/2023			SW846-6020B	J
Iron		1.46	mg/L	0.1	10/18/2023			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	10/18/2023			SW846-6020B	=
Magnesium		13.9	mg/L	0.03	10/18/2023			SW846-6020B	=
Manganese		0.683	mg/L	0.005	10/18/2023			SW846-6020B	=
Molybdenum	J	0.000536	mg/L	0.001	10/18/2023			SW846-6020B	=
Nickel	J	0.00172	mg/L	0.002	10/18/2023			SW846-6020B	J
Potassium		0.749	mg/L	0.3	10/18/2023			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	10/18/2023			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	10/18/2023			SW846-6020B	=
Silver		0.00162	mg/L	0.001	10/18/2023			SW846-6020B	=
Sodium		98.1	mg/L	2.5	10/18/2023			SW846-6020B	=
Tantalum	U	0.005	mg/L	0.005	10/18/2023			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	10/18/2023			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	10/18/2023			SW846-6020B	=
Vanadium	BJ	0.0034	mg/L	0.02	10/18/2023			SW846-6020B	U
Zinc	J	0.00962	mg/L	0.02	10/18/2023			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	10/18/2023			SW846-7470A	=
Barium, Dissolved		0.393	mg/L	0.004	10/18/2023			SW846-6020B	=
Chromium, Dissolved	U	0.01	mg/L	0.01	10/18/2023			SW846-6020B	=
Uranium, Dissolved	U	0.0002	mg/L	0.0002	10/18/2023			SW846-6020B	=
PCB-1016	U	0.0952	ug/L	0.0952	10/18/2023			SW846-8082A	UJ

PCB-1221	U	0.0952	ug/L	0.0952	10/18/2023			SW846-8082A	=
PCB-1232	U	0.0952	ug/L	0.0952	10/18/2023			SW846-8082A	=
PCB-1242	U	0.0952	ug/L	0.0952	10/18/2023			SW846-8082A	=
PCB-1248	U	0.0952	ug/L	0.0952	10/18/2023			SW846-8082A	=
PCB-1254	U	0.0952	ug/L	0.0952	10/18/2023			SW846-8082A	=
PCB-1260	U	0.0952	ug/L	0.0952	10/18/2023			SW846-8082A	UJ
PCB-1268	U	0.0952	ug/L	0.0952	10/18/2023			SW846-8082A	=
Polychlorinated biphenyl	U	0.0952	ug/L	0.0952	10/18/2023			SW846-8082A	UJ
Radium-226	U	0.0892	pCi/L	0.709	10/18/2023	0.392	0.392	AN-1418	=
Strontium-90	UT	-0.354	pCi/L	5.34	10/18/2023	3.03	3.03	EPA-905.0-M	UJ
Tritium	U	37.2	pCi/L	220	10/18/2023	125	126	EPA-906.0-M	=
Technetium-99	U	4.46	pCi/L	19.6	10/18/2023	11.3	11.3	HASL 300, Tc-02-RC M	=
Thorium-230	U	-0.0667	pCi/L	1.34	10/18/2023	0.583	0.584	HASL 300, Th-01-RC M	=
Alpha activity	U	2.98	pCi/L	7.56	10/18/2023	4.32	4.34	SW846-9310	=
Beta activity	U	-1.6	pCi/L	7.98	10/18/2023	3.86	3.86	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0192	ug/L	0.0192	10/18/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
2-Butanone	U	5	ug/L	5	10/18/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/18/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Iodomethane	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Methylene chloride	U	5	ug/L	5	10/18/2023			SW846-8260D	=

Styrene	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Toluene	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Total Xylene	U	3 ug/L	3	10/18/2023	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	10/18/2023	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5 ug/L	5	10/18/2023	SW846-8260D	=
Trichloroethene	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/18/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Dissolved Solids		370 mg/L	10	10/18/2023	EPA-160.1	=
Iodide	J	0.495 mg/L	0.5	10/18/2023	EPA-300.0	=
Chemical Oxygen Demand (COD)	J	16.5 mg/L	20	10/18/2023	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	10/18/2023	SW846-9012B	=
Total Organic Halides (TOX)		18.6 ug/L	10	10/18/2023	SW846-9020B	=
Total Organic Carbon (TOC)		4.14 mg/L	2	10/18/2023	SW846-9060A	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045
Sampling Point: MW397 UP **RGA Type:** LRGA **Period:** 4th Quarter 2023
AKGWA Well Tag #: 8004-4817 **SAMPLE ID:** MW397SG1-24 **Sample Type:** REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Bromide		0.396	mg/L	0.2	10/16/2023			SW846-9056	=
Chloride	J	33.1	mg/L	250	10/16/2023			SW846-9056	=
Fluoride	J	0.125	mg/L	4	10/16/2023			SW846-9056	=
Nitrate as Nitrogen	JH	1.03	mg/L	10	10/16/2023			SW846-9056	J
Sulfate		11.5	mg/L	0.4	10/16/2023			SW846-9056	=
Barometric Pressure Reading		30.06	Inches/Hg		10/16/2023				X
Conductivity		309	µmhos/cm		10/16/2023				X
Depth to Water		63.74	ft		10/16/2023				X
Dissolved Oxygen		6.73	mg/L		10/16/2023				X
Eh (approx)		487	mV		10/16/2023				X
pH		6.04	Std Unit		10/16/2023				X
Temperature		61.5	deg F		10/16/2023				X
Turbidity		56.91	NTU		10/16/2023				X
Aluminum		0.494	mg/L	0.05	10/16/2023			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	10/16/2023			SW846-6020B	=
Arsenic	J	0.00308	mg/L	0.005	10/16/2023			SW846-6020B	=
Barium		0.153	mg/L	0.004	10/16/2023			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	10/16/2023			SW846-6020B	=
Boron	J	0.00997	mg/L	0.015	10/16/2023			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	10/16/2023			SW846-6020B	=
Calcium		18.6	mg/L	0.2	10/16/2023			SW846-6020B	J
Chromium	J	0.00352	mg/L	0.01	10/16/2023			SW846-6020B	=
Cobalt	J	0.000511	mg/L	0.001	10/16/2023			SW846-6020B	J
Copper	J	0.00175	mg/L	0.002	10/16/2023			SW846-6020B	J
Iron		1.36	mg/L	0.1	10/16/2023			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	10/16/2023			SW846-6020B	=
Magnesium		7.83	mg/L	0.03	10/16/2023			SW846-6020B	=
Manganese		0.0283	mg/L	0.005	10/16/2023			SW846-6020B	=
Molybdenum	BJ	0.000483	mg/L	0.001	10/16/2023			SW846-6020B	U
Nickel		0.00224	mg/L	0.002	10/16/2023			SW846-6020B	J
Potassium		1.86	mg/L	0.3	10/16/2023			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	10/16/2023			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	10/16/2023			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	10/16/2023			SW846-6020B	=
Sodium		31.5	mg/L	0.25	10/16/2023			SW846-6020B	=
Tantalum	UN	0.005	mg/L	0.005	10/16/2023			SW846-6020B	UJ
Thallium	U	0.002	mg/L	0.002	10/16/2023			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	10/16/2023			SW846-6020B	=
Vanadium	BJ	0.0106	mg/L	0.02	10/16/2023			SW846-6020B	U
Zinc	J	0.00737	mg/L	0.02	10/16/2023			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	10/16/2023			SW846-7470A	=
Barium, Dissolved		0.139	mg/L	0.004	10/16/2023			SW846-6020B	=
Chromium, Dissolved	U	0.01	mg/L	0.01	10/16/2023			SW846-6020B	=
Uranium, Dissolved	U	0.0002	mg/L	0.0002	10/16/2023			SW846-6020B	=
PCB-1016	U	0.115	ug/L	0.115	10/16/2023			SW846-8082A	=

PCB-1221	U	0.115	ug/L	0.115	10/16/2023			SW846-8082A	=
PCB-1232	U	0.115	ug/L	0.115	10/16/2023			SW846-8082A	=
PCB-1242	U	0.115	ug/L	0.115	10/16/2023			SW846-8082A	=
PCB-1248	U	0.115	ug/L	0.115	10/16/2023			SW846-8082A	=
PCB-1254	U	0.115	ug/L	0.115	10/16/2023			SW846-8082A	=
PCB-1260	U	0.115	ug/L	0.115	10/16/2023			SW846-8082A	UJ
PCB-1268	U	0.115	ug/L	0.115	10/16/2023			SW846-8082A	=
Polychlorinated biphenyl	U	0.115	ug/L	0.115	10/16/2023			SW846-8082A	UJ
Radium-226	U	0.402	pCi/L	0.912	10/16/2023	0.613	0.613	AN-1418	=
Strontium-90	U	2.35	pCi/L	3.24	10/16/2023	2.02	2.05	EPA-905.0-M	=
Tritium	U	-79	pCi/L	215	10/16/2023	114	114	EPA-906.0-M	=
Technetium-99		22.9	pCi/L	17.1	10/16/2023	10.9	11.2	HASL 300, Tc-02-RC M	=
Thorium-230	U	0.772	pCi/L	1.16	10/16/2023	0.832	0.842	HASL 300, Th-01-RC M	=
Alpha activity	U	1.89	pCi/L	9.15	10/16/2023	4.69	4.7	SW846-9310	=
Beta activity	U	-1.47	pCi/L	13.9	10/16/2023	7.51	7.51	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0186	ug/L	0.0186	10/16/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
2-Butanone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Iodomethane	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Methylene chloride	J	3	ug/L	5	10/16/2023			SW846-8260D	=

Styrene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Toluene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Total Xylene	U	3 ug/L	3	10/16/2023	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5 ug/L	5	10/16/2023	SW846-8260D	=
Trichloroethene	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/16/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Dissolved Solids	*	165 mg/L	10	10/16/2023	EPA-160.1	J
Iodide	U	0.5 mg/L	0.5	10/16/2023	EPA-300.0	=
Chemical Oxygen Demand (COD)	U	20 mg/L	20	10/16/2023	EPA-410.4	=
Cyanide	U	0.2 mg/L	0.2	10/16/2023	SW846-9012B	=
Total Organic Halides (TOX)	J	8.52 ug/L	10	10/16/2023	SW846-9020B	=
Total Organic Carbon (TOC)	J	0.762 mg/L	2	10/16/2023	SW846-9060A	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill

County: McCracken

Permit #: SW07300014,SW07300015,SW07300045

Sampling Point: QC

Period: 4th Quarter 2023

AKGWA Well Tag #: N/A

SAMPLE ID: FB1SG1-24

Sample Typ FB

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Aluminum	U	0.05	mg/L	0.05	10/19/2023			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	10/19/2023			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	10/19/2023			SW846-6020B	=
Barium	U	0.004	mg/L	0.004	10/19/2023			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	10/19/2023			SW846-6020B	=
Boron	U	0.015	mg/L	0.015	10/19/2023			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	10/19/2023			SW846-6020B	=
Calcium	U	0.2	mg/L	0.2	10/19/2023			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	10/19/2023			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	10/19/2023			SW846-6020B	=
Copper	U	0.002	mg/L	0.002	10/19/2023			SW846-6020B	=
Iron	U	0.1	mg/L	0.1	10/19/2023			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	10/19/2023			SW846-6020B	=
Magnesium	U	0.03	mg/L	0.03	10/19/2023			SW846-6020B	=
Manganese	U	0.005	mg/L	0.005	10/19/2023			SW846-6020B	=
Molybdenum	U	0.001	mg/L	0.001	10/19/2023			SW846-6020B	=
Nickel	U	0.002	mg/L	0.002	10/19/2023			SW846-6020B	=
Potassium	U	0.3	mg/L	0.3	10/19/2023			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	10/19/2023			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	10/19/2023			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	10/19/2023			SW846-6020B	=
Sodium	U	0.25	mg/L	0.25	10/19/2023			SW846-6020B	=
Tantalum	UN	0.005	mg/L	0.005	10/19/2023			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	10/19/2023			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	10/19/2023			SW846-6020B	=
Vanadium	BJ	0.00523	mg/L	0.02	10/19/2023			SW846-6020B	U
Zinc	U	0.02	mg/L	0.02	10/19/2023			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	10/19/2023			SW846-7470A	=
PCB-1016	U	0.103	ug/L	0.103	10/19/2023			SW846-8082A	=
PCB-1221	U	0.103	ug/L	0.103	10/19/2023			SW846-8082A	=
PCB-1232	U	0.103	ug/L	0.103	10/19/2023			SW846-8082A	=
PCB-1242	U	0.103	ug/L	0.103	10/19/2023			SW846-8082A	=
PCB-1248	U	0.103	ug/L	0.103	10/19/2023			SW846-8082A	=
PCB-1254	U	0.103	ug/L	0.103	10/19/2023			SW846-8082A	=
PCB-1260	U	0.103	ug/L	0.103	10/19/2023			SW846-8082A	UJ
PCB-1268	U	0.103	ug/L	0.103	10/19/2023			SW846-8082A	=
Polychlorinated biphenyl	U	0.103	ug/L	0.103	10/19/2023			SW846-8082A	UJ
Radium-226	U	0.394	pCi/L	0.832	10/19/2023	0.576	0.577	AN-1418	=
Strontium-90	U	-5.25	pCi/L	7.29	10/19/2023	3.54	3.54	EPA-905.0-M	UJ
Tritium		619	pCi/L	314	10/19/2023	234	263	EPA-906.0-M	=
Technetium-99	U	0.617	pCi/L	17.5	10/19/2023	9.92	9.92	HASL 300, Tc-02-RC M	=
Thorium-230	U	-0.024	pCi/L	1.86	10/19/2023	0.822	0.823	HASL 300, Th-01-RC M	=
Alpha activity	U	2.47	pCi/L	6.1	10/19/2023	3.52	3.54	SW846-9310	=
Beta activity	U	6.59	pCi/L	14.2	10/19/2023	8.39	8.46	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0187	ug/L	0.0187	10/19/2023			SW846-8011	=

1,1,1,2-Tetrachloroethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
1,1,1-Trichloroethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
1,1,2-Trichloroethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
1,1-Dichloroethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
1,1-Dichloroethene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
1,2,3-Trichloropropane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
1,2-Dibromoethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
1,2-Dichlorobenzene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
1,2-Dichloroethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
1,2-Dichloropropane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
1,4-Dichlorobenzene	UY2	1 ug/L	1	10/19/2023	SW846-8260D	=
2-Butanone	U	5 ug/L	5	10/19/2023	SW846-8260D	=
2-Hexanone	U	5 ug/L	5	10/19/2023	SW846-8260D	=
4-Methyl-2-pentanone	U	5 ug/L	5	10/19/2023	SW846-8260D	=
Acetone	U	5 ug/L	5	10/19/2023	SW846-8260D	=
Acrolein	U	5 ug/L	5	10/19/2023	SW846-8260D	=
Acrylonitrile	U	5 ug/L	5	10/19/2023	SW846-8260D	=
Benzene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Bromochloromethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Bromodichloromethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Bromoform	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Bromomethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Carbon disulfide	U	5 ug/L	5	10/19/2023	SW846-8260D	=
Carbon tetrachloride	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Chlorobenzene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Chloroethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Chloroform	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Chloromethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
cis-1,2-Dichloroethene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
cis-1,3-Dichloropropene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Dibromochloromethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Dibromomethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Ethylbenzene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Iodomethane	U	5 ug/L	5	10/19/2023	SW846-8260D	=
Methylene chloride	J	1.1 ug/L	5	10/19/2023	SW846-8260D	=
Styrene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Toluene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Total Xylene	U	3 ug/L	3	10/19/2023	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5 ug/L	5	10/19/2023	SW846-8260D	=
Trichloroethene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/19/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Iodide	U	0.5 mg/L	0.5	10/19/2023	EPA-300.0	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill

County: McCracken

Permit #: SW07300014,SW07300015,SW07300045

Sampling Point: QC

Period: 4th Quarter 2023

AKGWA Well Tag #: N/A

SAMPLE ID: RI1SG1-24

Sample Typ RI

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Aluminum	U	0.05	mg/L	0.05	10/19/2023			SW846-6020B	=
Antimony	U	0.003	mg/L	0.003	10/19/2023			SW846-6020B	=
Arsenic	U	0.005	mg/L	0.005	10/19/2023			SW846-6020B	=
Barium	U	0.004	mg/L	0.004	10/19/2023			SW846-6020B	=
Beryllium	U	0.0005	mg/L	0.0005	10/19/2023			SW846-6020B	=
Boron	U	0.015	mg/L	0.015	10/19/2023			SW846-6020B	=
Cadmium	U	0.001	mg/L	0.001	10/19/2023			SW846-6020B	=
Calcium	U	0.2	mg/L	0.2	10/19/2023			SW846-6020B	=
Chromium	U	0.01	mg/L	0.01	10/19/2023			SW846-6020B	=
Cobalt	U	0.001	mg/L	0.001	10/19/2023			SW846-6020B	=
Copper	J	0.000361	mg/L	0.002	10/19/2023			SW846-6020B	J
Iron	U	0.1	mg/L	0.1	10/19/2023			SW846-6020B	=
Lead	U	0.002	mg/L	0.002	10/19/2023			SW846-6020B	=
Magnesium	U	0.03	mg/L	0.03	10/19/2023			SW846-6020B	=
Manganese	U	0.005	mg/L	0.005	10/19/2023			SW846-6020B	=
Molybdenum	U	0.001	mg/L	0.001	10/19/2023			SW846-6020B	=
Nickel	U	0.002	mg/L	0.002	10/19/2023			SW846-6020B	=
Potassium	U	0.3	mg/L	0.3	10/19/2023			SW846-6020B	=
Rhodium	U	0.005	mg/L	0.005	10/19/2023			SW846-6020B	=
Selenium	U	0.005	mg/L	0.005	10/19/2023			SW846-6020B	=
Silver	U	0.001	mg/L	0.001	10/19/2023			SW846-6020B	=
Sodium	U	0.25	mg/L	0.25	10/19/2023			SW846-6020B	=
Tantalum	UN	0.005	mg/L	0.005	10/19/2023			SW846-6020B	=
Thallium	U	0.002	mg/L	0.002	10/19/2023			SW846-6020B	=
Uranium	U	0.0002	mg/L	0.0002	10/19/2023			SW846-6020B	=
Vanadium	BJ	0.00488	mg/L	0.02	10/19/2023			SW846-6020B	U
Zinc	U	0.02	mg/L	0.02	10/19/2023			SW846-6020B	=
Mercury	U	0.0002	mg/L	0.0002	10/19/2023			SW846-7470A	=
PCB-1016	U	0.115	ug/L	0.115	10/19/2023			SW846-8082A	=
PCB-1221	U	0.115	ug/L	0.115	10/19/2023			SW846-8082A	=
PCB-1232	U	0.115	ug/L	0.115	10/19/2023			SW846-8082A	=
PCB-1242	U	0.115	ug/L	0.115	10/19/2023			SW846-8082A	=
PCB-1248	U	0.115	ug/L	0.115	10/19/2023			SW846-8082A	=
PCB-1254	U	0.115	ug/L	0.115	10/19/2023			SW846-8082A	=
PCB-1260	U	0.115	ug/L	0.115	10/19/2023			SW846-8082A	UJ
PCB-1268	U	0.115	ug/L	0.115	10/19/2023			SW846-8082A	=
Polychlorinated biphenyl	U	0.115	ug/L	0.115	10/19/2023			SW846-8082A	UJ
Radium-226	U	-0.088	pCi/L	1.16	10/19/2023	0.457	0.457	AN-1418	=
Strontium-90	U	-0.0257	pCi/L	5.43	10/19/2023	2.85	2.85	EPA-905.0-M	=
Tritium	U	227	pCi/L	232	10/19/2023	145	152	EPA-906.0-M	=
Technetium-99	U	6.08	pCi/L	17.2	10/19/2023	10	10.1	HASL 300, Tc-02-RC M	=
Thorium-230	U	-0.463	pCi/L	2.59	10/19/2023	0.784	0.787	HASL 300, Th-01-RC M	=
Alpha activity	U	-2.3	pCi/L	9.04	10/19/2023	3.18	3.18	SW846-9310	=
Beta activity	U	11.1	pCi/L	13.9	10/19/2023	8.59	8.78	SW846-9310	=
1,2-Dibromo-3-chloropropane	U	0.0189	ug/L	0.0189	10/19/2023			SW846-8011	=

1,1,1,2-Tetrachloroethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
1,1,1-Trichloroethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
1,1,2-Trichloroethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
1,1-Dichloroethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
1,1-Dichloroethene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
1,2,3-Trichloropropane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
1,2-Dibromoethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
1,2-Dichlorobenzene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
1,2-Dichloroethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
1,2-Dichloropropane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
1,4-Dichlorobenzene	UY2	1 ug/L	1	10/19/2023	SW846-8260D	=
2-Butanone	U	5 ug/L	5	10/19/2023	SW846-8260D	=
2-Hexanone	U	5 ug/L	5	10/19/2023	SW846-8260D	=
4-Methyl-2-pentanone	U	5 ug/L	5	10/19/2023	SW846-8260D	=
Acetone	U	5 ug/L	5	10/19/2023	SW846-8260D	=
Acrolein	U	5 ug/L	5	10/19/2023	SW846-8260D	=
Acrylonitrile	U	5 ug/L	5	10/19/2023	SW846-8260D	=
Benzene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Bromochloromethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Bromodichloromethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Bromoform	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Bromomethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Carbon disulfide	U	5 ug/L	5	10/19/2023	SW846-8260D	=
Carbon tetrachloride	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Chlorobenzene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Chloroethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Chloroform	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Chloromethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
cis-1,2-Dichloroethene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
cis-1,3-Dichloropropene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Dibromochloromethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Dibromomethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Ethylbenzene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Iodomethane	U	5 ug/L	5	10/19/2023	SW846-8260D	=
Methylene chloride	J	1.03 ug/L	5	10/19/2023	SW846-8260D	=
Styrene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Tetrachloroethene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Toluene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Total Xylene	U	3 ug/L	3	10/19/2023	SW846-8260D	=
trans-1,2-Dichloroethene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
trans-1,3-Dichloropropene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5 ug/L	5	10/19/2023	SW846-8260D	=
Trichloroethene	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Trichlorofluoromethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/19/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Iodide	U	0.5 mg/L	0.5	10/19/2023	EPA-300.0	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill

County: McCracken

Permit #: SW07300014,SW07300015,SW07300045

Sampling Point: QC

Period: 4th Quarter 2023

AKGWA Well Tag #: N/A

SAMPLE ID: TB1SG1-24

Sample Typ TB

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
1,2-Dibromo-3-chloropropane	U	0.0192	ug/L	0.0192	10/16/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
2-Butanone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Iodomethane	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Methylene chloride	J	2.42	ug/L	5	10/16/2023			SW846-8260D	=
Styrene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Toluene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Total Xylene	U	3	ug/L	3	10/16/2023			SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	10/16/2023			SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5	ug/L	5	10/16/2023			SW846-8260D	=
Trichloroethene	U	1	ug/L	1	10/16/2023			SW846-8260D	=

Trichlorofluoromethane	U	1 ug/L	1	10/16/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/16/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/16/2023	SW846-8260D	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045

Sampling Point: QC **Period:** 4th Quarter 2023

AKGWA Well Tag #: N/A **SAMPLE ID:** TB2SG1-24 **Sample Typ** TB

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
1,2-Dibromo-3-chloropropane	U	0.0197	ug/L	0.0197	10/17/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
2-Butanone	U	5	ug/L	5	10/17/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/17/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Iodomethane	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Methylene chloride	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Styrene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Toluene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Total Xylene	U	3	ug/L	3	10/17/2023			SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	10/17/2023			SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5	ug/L	5	10/17/2023			SW846-8260D	=
Trichloroethene	U	1	ug/L	1	10/17/2023			SW846-8260D	=

Trichlorofluoromethane	U	1 ug/L	1	10/17/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/17/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/17/2023	SW846-8260D	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill

County: McCracken

Permit #: SW07300014,SW07300015,SW07300045

Sampling Point: QC

Period: 4th Quarter 2023

AKGWA Well Tag #: N/A

SAMPLE ID: TB3SG1-24

Sample Typ 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	10/18/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
1,4-Dichlorobenzene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
2-Butanone	U	5	ug/L	5	10/18/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/18/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Iodomethane	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Methylene chloride	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Styrene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Toluene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Total Xylene	U	3	ug/L	3	10/18/2023			SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	10/18/2023			SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5	ug/L	5	10/18/2023			SW846-8260D	=
Trichloroethene	U	1	ug/L	1	10/18/2023			SW846-8260D	=

Trichlorofluoromethane	U	1 ug/L	1	10/18/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/18/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/18/2023	SW846-8260D	=

**Paducah OREIS
GROUNDWATER MONITORING REPORT**

Facility: C-746-S&T Landfill

County: McCracken

Permit #: SW07300014,SW07300015,SW07300045

Sampling Point: QC

Period: 4th Quarter 2023

AKGWA Well Tag #: N/A

SAMPLE ID: TB4SG1-24

Sample Typ 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	10/19/2023			SW846-8011	=
1,1,1,2-Tetrachloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,1,1-Trichloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,1,2,2-Tetrachloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,1,2-Trichloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,1-Dichloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,1-Dichloroethene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,2,3-Trichloropropane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,2-Dibromoethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,2-Dichlorobenzene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,2-Dichloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,2-Dichloropropane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
1,4-Dichlorobenzene	UY2	1	ug/L	1	10/19/2023			SW846-8260D	=
2-Butanone	U	5	ug/L	5	10/19/2023			SW846-8260D	=
2-Hexanone	U	5	ug/L	5	10/19/2023			SW846-8260D	=
4-Methyl-2-pentanone	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Acetone	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Acrolein	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Acrylonitrile	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Benzene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Bromochloromethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Bromodichloromethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Bromoform	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Bromomethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Carbon disulfide	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Carbon tetrachloride	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Chlorobenzene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Chloroethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Chloroform	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Chloromethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
cis-1,2-Dichloroethene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
cis-1,3-Dichloropropene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Dibromochloromethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Dibromomethane	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Ethylbenzene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Iodomethane	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Methylene chloride	J	1.09	ug/L	5	10/19/2023			SW846-8260D	=
Styrene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Tetrachloroethene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Toluene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Total Xylene	U	3	ug/L	3	10/19/2023			SW846-8260D	=
trans-1,2-Dichloroethene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
trans-1,3-Dichloropropene	U	1	ug/L	1	10/19/2023			SW846-8260D	=
Trans-1,4-Dichloro-2-butene	U	5	ug/L	5	10/19/2023			SW846-8260D	=
Trichloroethene	U	1	ug/L	1	10/19/2023			SW846-8260D	=

Trichlorofluoromethane	U	1 ug/L	1	10/19/2023	SW846-8260D	=
Vinyl acetate	U	5 ug/L	5	10/19/2023	SW846-8260D	=
Vinyl chloride	U	1 ug/L	1	10/19/2023	SW846-8260D	=

Qualifier Code Definitions	
B	Analyte found in the associated blank
H	Analysis performed outside holding time requirement
J	Estimated value
L	LCS 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 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	Analyte analyzed for but not detected at or below the lowest concentration reported.
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	

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

THIS PAGE INTENTIONALLY LEFT BLANK

ATTACHMENT C1

GEL LABORATORIES CERTIFICATE OF ANALYSIS

THIS PAGE INTENTIONALLY LEFT BLANK

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: December 13, 2023

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW220SG1-24
Sample ID: 641454001
Matrix: WG
Collect Date: 16-OCT-23
Receive Date: 18-OCT-23
Collector: Client

Project: FRNP00511
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
-----------	-----------	--------	-------------	-----	-----	----	-------	----	----	---------	------	------	-------	------

Rad Alpha Spec Analysis

AlphaSpec Ra226, Liquid "As Received"

Radium-226	U	0.531	+/-1.18	1.85	+/-1.18	5.00	pCi/L			CM4	11/03/23	0926	2514530	1
------------	---	-------	---------	------	---------	------	-------	--	--	-----	----------	------	---------	---

Th-01-RC M, Th Isotopes, Liquid "As Received"

Thorium-230	U	0.335	+/-0.527	0.880	+/-0.531	50.0	pCi/L			CM4	10/31/23	1710	2514535	2
-------------	---	-------	----------	-------	----------	------	-------	--	--	-----	----------	------	---------	---

Rad Gas Flow Proportional Counting

905.0 Mod, Sr90, liquid "As Received"

Strontium-90	U	2.44	+/-3.23	5.50	+/-3.25	8.00	pCi/L			ST2	10/30/23	1220	2510841	3
--------------	---	------	---------	------	---------	------	-------	--	--	-----	----------	------	---------	---

9310,Alpha/Beta Activity, liquid "As Received"

Alpha	U	-1.29	+/-3.53	9.32	+/-3.53	15.0	pCi/L			KP1	10/25/23	1322	2510791	4
-------	---	-------	---------	------	---------	------	-------	--	--	-----	----------	------	---------	---

Beta		19.0	+/-8.34	12.0	+/-8.93	50.0	pCi/L							
------	--	------	---------	------	---------	------	-------	--	--	--	--	--	--	--

Rad Liquid Scintillation Analysis

906.0 Mod, Tritium Dist, Liquid "As Received"

Tritium	U	52.5	+/-124	215	+/-124	300	pCi/L			GS3	10/29/23	1457	2512918	5
---------	---	------	--------	-----	--------	-----	-------	--	--	-----	----------	------	---------	---

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

Technetium-99	U	15.8	+/-11.6	18.9	+/-11.7	25.0	pCi/L			AG2	11/01/23	1301	2511941	6
---------------	---	------	---------	------	---------	------	-------	--	--	-----	----------	------	---------	---

The following Analytical Methods were performed

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AlphaSpec Ra226, Liquid "As Received"	2514530	85.8	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2514535	77	(30%-110%)
Strontium Carrier	905.0 Mod, Sr90, liquid "As Received"	2510841	75	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2511941	97.4	(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: December 13, 2023

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW220SG1-24

Project: FRNP00511

Sample ID: 641454001

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: December 13, 2023

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW221SG1-24

Project: FRNP00511

Sample ID: 641454003

Client ID: FRNP005

Matrix: WG

Collect Date: 16-OCT-23

Receive Date: 18-OCT-23

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.511	+/-0.598	0.639	+/-0.599	5.00	pCi/L			CM4	11/02/23	0818	2514530	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.251	+/-0.497	0.868	+/-0.500	50.0	pCi/L			CM4	10/31/23	1710	2514535	2
Rad Gas Flow Proportional Counting														
<i>905.0 Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	1.54	+/-1.90	3.22	+/-1.92	8.00	pCi/L			ST2	10/30/23	1220	2510841	3
<i>9310,Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	-3.07	+/-4.77	12.5	+/-4.78	15.0	pCi/L			KP1	10/25/23	1322	2510791	4
Beta	U	2.92	+/-6.56	11.6	+/-6.58	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
<i>906.0 Mod, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	-44.7	+/-117	215	+/-117	300	pCi/L			GS3	10/29/23	1534	2512918	5
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	4.79	+/-10.1	17.4	+/-10.1	25.0	pCi/L			AG2	10/31/23	1539	2511941	6

The following Analytical Methods were performed

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AlphaSpec Ra226, Liquid "As Received"	2514530	89.2	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2514535	76.5	(30%-110%)
Strontium Carrier	905.0 Mod, Sr90, liquid "As Received"	2510841	90.9	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2511941	98.9	(30%-110%)

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: December 13, 2023

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW221SG1-24

Project: FRNP00511

Sample ID: 641454003

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: December 13, 2023

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW222SG1-24

Project: FRNP00511

Sample ID: 641454005

Client ID: FRNP005

Matrix: WG

Collect Date: 16-OCT-23

Receive Date: 18-OCT-23

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.457	+/-0.617	0.830	+/-0.618	5.00	pCi/L			CM4	11/02/23	0818	2514530	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.0241	+/-0.427	0.874	+/-0.429	50.0	pCi/L			CM4	10/31/23	1710	2514535	2
Rad Gas Flow Proportional Counting														
<i>905.0 Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	-3.16	+/-2.25	5.28	+/-2.25	8.00	pCi/L			ST2	10/30/23	1220	2510841	3
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	-1.45	+/-3.47	9.28	+/-3.47	15.0	pCi/L			KP1	10/25/23	1322	2510791	4
Beta	U	5.58	+/-7.41	12.6	+/-7.46	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
<i>906.0 Mod, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	0.645	+/-120	215	+/-120	300	pCi/L			GS3	10/29/23	1611	2512918	5
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	5.09	+/-10.1	17.3	+/-10.1	25.0	pCi/L			AG2	10/31/23	1556	2511941	6

The following Analytical Methods were performed

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AlphaSpec Ra226, Liquid "As Received"	2514530	80	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2514535	87.1	(30%-110%)
Strontium Carrier	905.0 Mod, Sr90, liquid "As Received"	2510841	56.8	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2511941	98.1	(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: December 13, 2023

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW222SG1-24

Project: FRNP00511

Sample ID: 641454005

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: December 13, 2023

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW223SG1-24

Project: FRNP00511

Sample ID: 641454007

Client ID: FRNP005

Matrix: WG

Collect Date: 16-OCT-23

Receive Date: 18-OCT-23

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.228	+/-0.443	0.609	+/-0.443	5.00	pCi/L			CM4	11/02/23	0818	2514530	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.297	+/-0.460	0.749	+/-0.464	50.0	pCi/L			CM4	10/31/23	1710	2514535	2
Rad Gas Flow Proportional Counting														
<i>905.0 Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	-0.457	+/-1.11	2.42	+/-1.11	8.00	pCi/L			ST2	10/30/23	1220	2510841	3
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	-0.0115	+/-3.19	8.02	+/-3.19	15.0	pCi/L			KP1	10/25/23	1322	2510791	4
Beta	U	5.92	+/-7.21	12.2	+/-7.28	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
<i>906.0 Mod, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	-42.1	+/-117	214	+/-117	300	pCi/L			GS3	10/29/23	1648	2512918	5
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	10.4	+/-10.3	17.2	+/-10.3	25.0	pCi/L			AG2	10/31/23	1612	2511941	6

The following Analytical Methods were performed

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AlphaSpec Ra226, Liquid "As Received"	2514530	87.8	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2514535	83.2	(30%-110%)
Strontium Carrier	905.0 Mod, Sr90, liquid "As Received"	2510841	90.9	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2511941	100	(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: December 13, 2023

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW223SG1-24

Project: FRNP00511

Sample ID: 641454007

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: December 13, 2023

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW224SG1-24

Project: FRNP00511

Sample ID: 641454009

Client ID: FRNP005

Matrix: WG

Collect Date: 16-OCT-23

Receive Date: 18-OCT-23

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.0893	+/-0.558	1.14	+/-0.558	5.00	pCi/L			CM4	11/02/23	0818	2514530	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.457	+/-0.544	0.856	+/-0.549	50.0	pCi/L			CM4	10/31/23	1710	2514535	2
Rad Gas Flow Proportional Counting														
<i>905.0 Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	-1.48	+/-1.69	3.63	+/-1.69	8.00	pCi/L			ST2	10/30/23	1220	2510841	3
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	1.72	+/-3.57	7.04	+/-3.58	15.0	pCi/L			KP1	10/25/23	1322	2510791	4
Beta	U	2.59	+/-8.26	14.6	+/-8.27	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
<i>906.0 Mod, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	-104	+/-112	215	+/-112	300	pCi/L			GS3	10/29/23	1725	2512918	5
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	11.5	+/-10.4	17.2	+/-10.4	25.0	pCi/L			AG2	10/31/23	1629	2511941	6

The following Analytical Methods were performed

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AlphaSpec Ra226, Liquid "As Received"	2514530	75.9	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2514535	90.3	(30%-110%)
Strontium Carrier	905.0 Mod, Sr90, liquid "As Received"	2510841	86.4	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2511941	99.8	(30%-110%)

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: December 13, 2023

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW224SG1-24

Project: FRNP00511

Sample ID: 641454009

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: December 13, 2023

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW397SG1-24

Project: FRNP00511

Sample ID: 641454011

Client ID: FRNP005

Matrix: WG

Collect Date: 16-OCT-23

Receive Date: 18-OCT-23

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.402	+/-0.613	0.912	+/-0.613	5.00	pCi/L			CM4	11/02/23	0818	2514530	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.772	+/-0.832	1.16	+/-0.842	50.0	pCi/L			CM4	10/31/23	1710	2514535	2
Rad Gas Flow Proportional Counting														
<i>905.0 Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	2.35	+/-2.02	3.24	+/-2.05	8.00	pCi/L			ST2	10/30/23	1220	2510841	3
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	1.89	+/-4.69	9.15	+/-4.70	15.0	pCi/L			KP1	10/25/23	1322	2510791	4
Beta	U	-1.47	+/-7.51	13.9	+/-7.51	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
<i>906.0 Mod, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	-79.0	+/-114	215	+/-114	300	pCi/L			GS3	10/29/23	1801	2512918	5
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99		22.9	+/-10.9	17.1	+/-11.2	25.0	pCi/L			AG2	10/31/23	1646	2511941	6

The following Analytical Methods were performed

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AlphaSpec Ra226, Liquid "As Received"	2514530	87.8	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2514535	94.1	(30%-110%)
Strontium Carrier	905.0 Mod, Sr90, liquid "As Received"	2510841	88.6	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2511941	99.9	(30%-110%)

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: December 13, 2023

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW397SG1-24

Project: FRNP00511

Sample ID: 641454011

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: December 13, 2023

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

 Kevil, Kentucky 42053
 Contact: Ms. Jaime Morrow
 Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW220SG1-24	Project: FRNP00511
Sample ID: 641454001	Client ID: FRNP005
Matrix: WG	
Collect Date: 16-OCT-23 12:06	
Receive Date: 18-OCT-23	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011, VOA Compounds Liquid "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0187	0.00839	0.0187	ug/L	0.933	1	LOF	10/19/23	1611	2511295	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.952	0.330	2.00	mg/L		1	RM3	11/03/23	1201	2517902	3
Flow Injection Analysis												
9012B, Total Cyanide "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	10/25/23	0742	2510940	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	6.46	3.33	10.0	ug/L		1	RMJ	11/01/23	0128	2512276	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	HXC1	10/20/23	1948	2512145	6
SW846 9056A Anions (5) "As Received"												
Chloride	J	17.4	0.335	250	mg/L		5	JLD1	10/18/23	2142	2509898	7
Fluoride	J	0.332	0.165	4.00	mg/L		5					
Bromide		0.209	0.0670	0.200	mg/L		1	JLD1	10/18/23	1218	2509898	8
Nitrate-N	J	0.805	0.0330	10.0	mg/L		1					
Sulfate		15.5	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	10/27/23	0951	2514160	9
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	11/02/23	0040	2510716	10
Tantalum	UN	0.00500	0.00100	0.00500	mg/L	1.00	1					
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1	PRB	11/01/23	2156	2510716	11
Arsenic	U	0.00500	0.00200	0.00500	mg/L	1.00	1					
Barium		0.211	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron	J	0.00828	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		21.6	0.0800	0.200	mg/L	1.00	1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: December 13, 2023

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

 Kevil, Kentucky 42053
 Contact: Ms. Jaime Morrow
 Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW220SG1-24	Project: FRNP00511
Sample ID: 641454001	Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Chromium	J	0.00596	0.00300	0.0100	mg/L	1.00	1					
Cobalt	J	0.000367	0.000300	0.00100	mg/L	1.00	1					
Copper		0.00249	0.000300	0.00200	mg/L	1.00	1					
Iron		0.188	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		8.85	0.0100	0.0300	mg/L	1.00	1					
Manganese	J	0.00452	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	JB	0.000875	0.000200	0.00100	mg/L	1.00	1					
Nickel		0.00653	0.000600	0.00200	mg/L	1.00	1					
Potassium		1.99	0.0800	0.300	mg/L	1.00	1					
Selenium	J	0.00170	0.00150	0.00500	mg/L	1.00	1					
Silver	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Sodium		37.2	0.0800	0.250	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					
Vanadium	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Zinc	J	0.00745	0.00330	0.0200	mg/L	1.00	1					
Aluminum		0.0805	0.0193	0.0500	mg/L	1.00	1	PRB	11/02/23	1659	2510716	12
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.117	0.0390	0.117	ug/L	0.00117	1	NS2	10/27/23	1610	2514783	13
Aroclor-1221	U	0.117	0.0390	0.117	ug/L	0.00117	1					
Aroclor-1232	U	0.117	0.0390	0.117	ug/L	0.00117	1					
Aroclor-1242	U	0.117	0.0390	0.117	ug/L	0.00117	1					
Aroclor-1248	U	0.117	0.0390	0.117	ug/L	0.00117	1					
Aroclor-1254	U	0.117	0.0390	0.117	ug/L	0.00117	1					
Aroclor-1260	U	0.117	0.0390	0.117	ug/L	0.00117	1					
Aroclor-1268	U	0.117	0.0390	0.117	ug/L	0.00117	1					
Aroclor-Total	U	0.117	0.0390	0.117	ug/L	0.00117	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids	*	158	2.38	10.0	mg/L			CH6	10/19/23	1523	2511097	14
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: December 13, 2023

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW220SG1-24 Project: FRNP00511
Sample ID: 641454001 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 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 Compounds Liquid "As Received"	6.05 ug/L	6.66	91	(46%-159%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.244 ug/L	0.234	104	(32%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.167 ug/L	0.234	71	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	48.4 ug/L	50.0	97	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	44.9 ug/L	50.0	90	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	51.5 ug/L	50.0	103	(77%-121%)

Notes:

Column headers are defined as follows:

DF: Dilution Factor 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: December 13, 2023

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW221SG1-24 Project: FRNP00511
Sample ID: 641454003 Client ID: FRNP005
Matrix: WG
Collect Date: 16-OCT-23 07:34
Receive Date: 18-OCT-23
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011, VOA Compounds Liquid "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0188	0.00847	0.0188	ug/L	0.941	1	LOF	10/19/23	1636	2511295	2
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.744	0.330	2.00	mg/L		1	RM3	11/03/23	1240	2517902	3
Flow Injection Analysis												
9012B, Total Cyanide "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	10/25/23	0743	2510940	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	7.56	3.33	10.0	ug/L		1	RMJ	11/01/23	0224	2512276	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	HXC1	10/20/23	2001	2512145	6
SW846 9056A Anions (5) "As Received"												
Bromide		0.415	0.0670	0.200	mg/L		1	JLD1	10/18/23	1249	2509898	7
Fluoride	J	0.315	0.0330	4.00	mg/L		1					
Sulfate		13.8	0.133	0.400	mg/L		1					
Chloride	J	32.9	0.335	250	mg/L		5	JLD1	10/18/23	2214	2509898	8
Nitrate-N	JH	1.00	0.165	10.0	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	10/27/23	0956	2514160	9
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Aluminum	U	0.0500	0.0193	0.0500	mg/L	1.00	1	PRB	11/02/23	1700	2510716	10
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1	PRB	11/01/23	2203	2510716	11
Arsenic	U	0.00500	0.00200	0.00500	mg/L	1.00	1					
Barium		0.208	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron		0.0158	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		20.3	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: December 13, 2023

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

 Kevil, Kentucky 42053
 Contact: Ms. Jaime Morrow
 Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW221SG1-24	Project: FRNP00511
Sample ID: 641454003	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 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 Compounds Liquid "As Received"	6.38 ug/L	6.72	95	(46%-159%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.208 ug/L	0.210	99	(32%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.145 ug/L	0.210	69	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	48.7 ug/L	50.0	97	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	48.3 ug/L	50.0	97	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	49.3 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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: December 13, 2023

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW221SG1-24 Project: FRNP00511
Sample ID: 641454004 Client ID: FRNP005
Matrix: WG
Collect Date: 16-OCT-23 07:34
Receive Date: 18-OCT-23
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	PRB	11/01/23	2207	2510716	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	10/25/23	1530	2510715
EPA 160	Laboratory Filtration	RXB5	10/18/23	1535	2510453

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: December 13, 2023

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW222SG1-24 Project: FRNP00511
Sample ID: 641454005 Client ID: FRNP005
Matrix: WG
Collect Date: 16-OCT-23 09:11
Receive Date: 18-OCT-23
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011, VOA Compounds Liquid "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0189	0.00851	0.0189	ug/L	0.946	1	LOF	10/19/23	1700	2511295	2
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.840	0.330	2.00	mg/L		1	RM3	11/03/23	1402	2517921	3
Flow Injection Analysis												
9012B, Total Cyanide "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	10/25/23	0744	2510940	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	5.34	3.33	10.0	ug/L		1	RMJ	11/01/23	0258	2512276	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	HXC1	10/20/23	2014	2512145	6
SW846 9056A Anions (5) "As Received"												
Chloride	J	28.5	0.335	250	mg/L		5	JLD1	10/18/23	2245	2509898	7
Bromide		0.375	0.0670	0.200	mg/L		1	JLD1	10/18/23	1320	2509898	8
Fluoride	J	0.334	0.0330	4.00	mg/L		1					
Nitrate-N	JH	0.905	0.0330	10.0	mg/L		1					
Sulfate		11.0	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	10/27/23	0957	2514160	9
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	11/02/23	0044	2510716	10
Tantalum	UN	0.00500	0.00100	0.00500	mg/L	1.00	1					
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1	PRB	11/01/23	2210	2510716	11
Arsenic	J	0.00252	0.00200	0.00500	mg/L	1.00	1					
Barium		0.259	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron	J	0.00911	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		16.1	0.0800	0.200	mg/L	1.00	1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: December 13, 2023

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

Contact: Kevil, Kentucky 42053
Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW222SG1-24
Sample ID: 641454005

Project: FRNP00511
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Cobalt	J	0.000865	0.000300	0.00100	mg/L	1.00	1					
Copper	J	0.00150	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		7.01	0.0100	0.0300	mg/L	1.00	1					
Manganese		0.00902	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	B	0.00154	0.000200	0.00100	mg/L	1.00	1					
Nickel		0.0167	0.000600	0.00200	mg/L	1.00	1					
Potassium		0.533	0.0800	0.300	mg/L	1.00	1					
Selenium	U	0.00500	0.00150	0.00500	mg/L	1.00	1					
Silver	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Sodium		40.8	0.0800	0.250	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					
Vanadium	JB	0.00738	0.00330	0.0200	mg/L	1.00	1					
Zinc	J	0.00875	0.00330	0.0200	mg/L	1.00	1					
Aluminum	U	0.0500	0.0193	0.0500	mg/L	1.00	1	PRB	11/02/23	1702	2510716	12
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.107	0.0355	0.107	ug/L	0.00107	1	NS2	10/27/23	1640	2514783	13
Aroclor-1221	U	0.107	0.0355	0.107	ug/L	0.00107	1					
Aroclor-1232	U	0.107	0.0355	0.107	ug/L	0.00107	1					
Aroclor-1242	U	0.107	0.0355	0.107	ug/L	0.00107	1					
Aroclor-1248	U	0.107	0.0355	0.107	ug/L	0.00107	1					
Aroclor-1254	U	0.107	0.0355	0.107	ug/L	0.00107	1					
Aroclor-1260	U	0.107	0.0355	0.107	ug/L	0.00107	1					
Aroclor-1268	U	0.107	0.0355	0.107	ug/L	0.00107	1					
Aroclor-Total	U	0.107	0.0355	0.107	ug/L	0.00107	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids	*	160	2.38	10.0	mg/L			CH6	10/19/23	1523	2511097	14
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: December 13, 2023

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

 Kevil, Kentucky 42053
 Contact: Ms. Jaime Morrow
 Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW222SG1-24	Project: FRNP00511
Sample ID: 641454005	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 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 Compounds Liquid "As Received"	6.06 ug/L	6.76	90	(46%-159%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.165 ug/L	0.213	77	(32%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.145 ug/L	0.213	68	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	48.2 ug/L	50.0	96	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	49.7 ug/L	50.0	99	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	49.6 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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: December 13, 2023

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW222SG1-24 Project: FRNP00511
Sample ID: 641454006 Client ID: FRNP005
Matrix: WG
Collect Date: 16-OCT-23 09:11
Receive Date: 18-OCT-23
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		0.257	0.000670	0.00400	mg/L	1.00	1	PRB	11/01/23	2214	2510716	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	RXB5	10/18/23	1535	2510453
SW846 3005A	ICP-MS 3005A PREP	SD	10/25/23	1530	2510715

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: December 13, 2023

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW223SG1-24 Project: FRNP00511
Sample ID: 641454007 Client ID: FRNP005
Matrix: WG
Collect Date: 16-OCT-23 08:25
Receive Date: 18-OCT-23
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011, VOA Compounds Liquid "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0188	0.00847	0.0188	ug/L	0.942	1	LOF	10/19/23	1725	2511295	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.848	0.330	2.00	mg/L		1	RM3	11/03/23	1441	2517921	3
Flow Injection Analysis												
9012B, Total Cyanide "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	10/25/23	0745	2510940	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	4.72	3.33	10.0	ug/L		1	RMJ	11/01/23	2152	2513059	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	HXC1	10/20/23	2027	2512145	6
SW846 9056A Anions (5) "As Received"												
Bromide		0.383	0.0670	0.200	mg/L		1	JLD1	10/18/23	1352	2509898	7
Fluoride	J	0.358	0.0330	4.00	mg/L		1					
Nitrate-N	JH	0.945	0.0330	10.0	mg/L		1					
Sulfate		12.5	0.133	0.400	mg/L		1					
Chloride	J	29.7	0.335	250	mg/L		5	JLD1	10/18/23	2316	2509898	8
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	10/27/23	0959	2514160	9
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1	PRB	11/01/23	2225	2510716	10
Arsenic	J	0.00292	0.00200	0.00500	mg/L	1.00	1					
Barium		0.255	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron	J	0.00824	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		21.3	0.0800	0.200	mg/L	1.00	1					
Chromium		0.0170	0.00300	0.0100	mg/L	1.00	1					
Cobalt	J	0.000462	0.000300	0.00100	mg/L	1.00	1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: December 13, 2023

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

 Kevil, Kentucky 42053
 Contact: Ms. Jaime Morrow
 Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW223SG1-24	Project: FRNP00511
Sample ID: 641454007	Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Copper		0.00236	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		8.73	0.0100	0.0300	mg/L	1.00	1					
Manganese		0.00667	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	B	0.00502	0.000200	0.00100	mg/L	1.00	1					
Nickel		0.161	0.000600	0.00200	mg/L	1.00	1					
Potassium		1.68	0.0800	0.300	mg/L	1.00	1					
Selenium	J	0.00172	0.00150	0.00500	mg/L	1.00	1					
Silver	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Sodium		44.0	0.0800	0.250	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					
Vanadium	JB	0.00844	0.00330	0.0200	mg/L	1.00	1					
Zinc	J	0.0156	0.00330	0.0200	mg/L	1.00	1					
Aluminum	U	0.0500	0.0193	0.0500	mg/L	1.00	1	PRB	11/02/23	1704	2510716	11
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	11/02/23	0046	2510716	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	0.103	0.0342	0.103	ug/L	0.00103	1	NS2	10/27/23	1655	2514783	13
Aroclor-1221	U	0.103	0.0342	0.103	ug/L	0.00103	1					
Aroclor-1232	U	0.103	0.0342	0.103	ug/L	0.00103	1					
Aroclor-1242	U	0.103	0.0342	0.103	ug/L	0.00103	1					
Aroclor-1248	U	0.103	0.0342	0.103	ug/L	0.00103	1					
Aroclor-1254	U	0.103	0.0342	0.103	ug/L	0.00103	1					
Aroclor-1260	U	0.103	0.0342	0.103	ug/L	0.00103	1					
Aroclor-1268	U	0.103	0.0342	0.103	ug/L	0.00103	1					
Aroclor-Total	U	0.103	0.0342	0.103	ug/L	0.00103	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids	*	185	2.38	10.0	mg/L			CH6	10/19/23	1523	2511097	14
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: December 13, 2023

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW223SG1-24 Project: FRNP00511
Sample ID: 641454007 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 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 Compounds Liquid "As Received"	6.15 ug/L	6.73	91	(46%-159%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.182 ug/L	0.206	89	(32%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.130 ug/L	0.206	63	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	49.3 ug/L	50.0	99	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	47.3 ug/L	50.0	95	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	50.5 ug/L	50.0	101	(77%-121%)

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: December 13, 2023

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW223SG1-24 Project: FRNP00511
Sample ID: 641454008 Client ID: FRNP005
Matrix: WG
Collect Date: 16-OCT-23 08:25
Receive Date: 18-OCT-23
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		0.258	0.000670	0.00400	mg/L	1.00	1	PRB	11/01/23	2228	2510716	1
Chromium		0.0116	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	10/25/23	1530	2510715
EPA 160	Laboratory Filtration	RXB5	10/18/23	1535	2510453

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: December 13, 2023

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW224SG1-24 Project: FRNP00511
Sample ID: 641454009 Client ID: FRNP005
Matrix: WG
Collect Date: 16-OCT-23 10:03
Receive Date: 18-OCT-23
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011, VOA Compounds Liquid "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0186	0.00838	0.0186	ug/L	0.931	1	LOF	10/19/23	1750	2511295	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	1.12	0.330	2.00	mg/L		1	RM3	11/03/23	1520	2517921	3
Flow Injection Analysis												
9012B, Total Cyanide "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	10/25/23	0746	2510940	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens		11.4	3.33	10.0	ug/L		1	RMJ	11/01/23	0431	2512276	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	HXC1	10/20/23	2040	2512145	6
SW846 9056A Anions (5) "As Received"												
Bromide		0.261	0.0670	0.200	mg/L		1	JLD1	10/18/23	1423	2509898	7
Fluoride	J	0.401	0.0330	4.00	mg/L		1					
Sulfate		13.6	0.133	0.400	mg/L		1					
Chloride	J	17.4	0.335	250	mg/L		5	JLD1	10/18/23	2348	2509898	8
Nitrate-N	JH	0.849	0.165	10.0	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	10/27/23	1001	2514160	9
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1	PRB	11/01/23	2232	2510716	10
Arsenic	J	0.00304	0.00200	0.00500	mg/L	1.00	1					
Barium		0.238	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron		0.0182	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		22.1	0.0800	0.200	mg/L	1.00	1					
Chromium	J	0.00319	0.00300	0.0100	mg/L	1.00	1					
Cobalt	U	0.00100	0.000300	0.00100	mg/L	1.00	1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: December 13, 2023

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

 Kevil, Kentucky 42053
 Contact: Ms. Jaime Morrow
 Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW224SG1-24	Project: FRNP00511
Sample ID: 641454009	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 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 Compounds Liquid "As Received"	5.86 ug/L	6.65	88	(46%-159%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.144 ug/L	0.217	66	(32%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.120 ug/L	0.217	55	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	48.5 ug/L	50.0	97	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	44.2 ug/L	50.0	88	(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	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: December 13, 2023

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW224SG1-24 Project: FRNP00511
Sample ID: 641454010 Client ID: FRNP005
Matrix: WG
Collect Date: 16-OCT-23 10:03
Receive Date: 18-OCT-23
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		0.236	0.000670	0.00400	mg/L	1.00	1	PRB	11/01/23	2236	2510716	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	RXB5	10/18/23	1535	2510453
SW846 3005A	ICP-MS 3005A PREP	SD	10/25/23	1530	2510715

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: December 13, 2023

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

 Kevil, Kentucky 42053
 Contact: Ms. Jaime Morrow
 Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW397SG1-24	Project: FRNP00511
Sample ID: 641454011	Client ID: FRNP005
Matrix: WG	
Collect Date: 16-OCT-23 13:00	
Receive Date: 18-OCT-23	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011, VOA Compounds Liquid "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0186	0.00836	0.0186	ug/L	0.928	1	LOF	10/19/23	1814	2511295	2
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.762	0.330	2.00	mg/L		1	RM3	11/03/23	1559	2517921	3
Flow Injection Analysis												
9012B, Total Cyanide "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	10/25/23	0747	2510940	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	8.52	3.33	10.0	ug/L		1	RMJ	10/31/23	2354	2512276	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	HXC1	10/20/23	2053	2512145	6
SW846 9056A Anions (5) "As Received"												
Chloride	J	33.1	0.335	250	mg/L		5	JLD1	10/19/23	0019	2509898	7
Bromide		0.396	0.0670	0.200	mg/L		1	JLD1	10/18/23	1454	2509898	8
Fluoride	J	0.125	0.0330	4.00	mg/L		1					
Nitrate-N	JH	1.03	0.0330	10.0	mg/L		1					
Sulfate		11.5	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	10/27/23	1002	2514160	9
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1	PRB	11/01/23	2239	2510716	10
Arsenic	J	0.00308	0.00200	0.00500	mg/L	1.00	1					
Barium		0.153	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron	J	0.00997	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		18.6	0.0800	0.200	mg/L	1.00	1					
Chromium	J	0.00352	0.00300	0.0100	mg/L	1.00	1					
Cobalt	J	0.000511	0.000300	0.00100	mg/L	1.00	1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: December 13, 2023

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW397SG1-24 Project: FRNP00511
Sample ID: 641454011 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Copper	J	0.00175	0.000300	0.00200	mg/L	1.00	1					
Iron		1.36	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		7.83	0.0100	0.0300	mg/L	1.00	1					
Manganese		0.0283	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	JB	0.000483	0.000200	0.00100	mg/L	1.00	1					
Nickel		0.00224	0.000600	0.00200	mg/L	1.00	1					
Potassium		1.86	0.0800	0.300	mg/L	1.00	1					
Selenium	U	0.00500	0.00150	0.00500	mg/L	1.00	1					
Silver	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Sodium		31.5	0.0800	0.250	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					
Vanadium	JB	0.0106	0.00330	0.0200	mg/L	1.00	1					
Zinc	J	0.00737	0.00330	0.0200	mg/L	1.00	1					
Aluminum		0.494	0.0193	0.0500	mg/L	1.00	1	PRB	11/02/23	1714	2510716	11
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	11/02/23	0054	2510716	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	0.115	0.0382	0.115	ug/L	0.00115	1	NS2	10/27/23	1726	2514783	13
Aroclor-1221	U	0.115	0.0382	0.115	ug/L	0.00115	1					
Aroclor-1232	U	0.115	0.0382	0.115	ug/L	0.00115	1					
Aroclor-1242	U	0.115	0.0382	0.115	ug/L	0.00115	1					
Aroclor-1248	U	0.115	0.0382	0.115	ug/L	0.00115	1					
Aroclor-1254	U	0.115	0.0382	0.115	ug/L	0.00115	1					
Aroclor-1260	U	0.115	0.0382	0.115	ug/L	0.00115	1					
Aroclor-1268	U	0.115	0.0382	0.115	ug/L	0.00115	1					
Aroclor-Total	U	0.115	0.0382	0.115	ug/L	0.00115	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids	*	165	2.38	10.0	mg/L			CH6	10/19/23	1523	2511097	14
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: December 13, 2023

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW397SG1-24
Sample ID: 641454011

Project: FRNP00511
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												
COD	U	20.0	8.95	20.0	mg/L		1	HH2	10/19/23	1403	2511090	15
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	AXH5	10/19/23	1303	2511023	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					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: December 13, 2023

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW397SG1-24 Project: FRNP00511
Sample ID: 641454011 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 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 Compounds Liquid "As Received"	6.46 ug/L	6.63	97	(46%-159%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.189 ug/L	0.229	83	(32%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.152 ug/L	0.229	66	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	48.1 ug/L	50.0	96	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	43.3 ug/L	50.0	87	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	51.0 ug/L	50.0	102	(77%-121%)

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: December 13, 2023

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: TB1SG1-24 Project: FRNP00511
Sample ID: 641454013 Client ID: FRNP005
Matrix: WATER
Collect Date: 16-OCT-23 06:30
Receive Date: 18-OCT-23
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011, VOA Compounds Liquid "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0192	0.00863	0.0192	ug/L	0.959	1	LOF	10/27/23	1501	2511973	1
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	AXH5	10/19/23	1000	2511023	3
1,1,1-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
1,2,3-Trichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dibromoethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,4-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
2-Butanone	U	5.00	1.67	5.00	ug/L		1					
2-Hexanone	U	5.00	1.67	5.00	ug/L		1					
4-Methyl-2-pentanone	U	5.00	1.67	5.00	ug/L		1					
Acetone	U	5.00	1.74	5.00	ug/L		1					
Acrolein	U	5.00	1.67	5.00	ug/L		1					
Acrylonitrile	U	5.00	1.67	5.00	ug/L		1					
Benzene	U	1.00	0.333	1.00	ug/L		1					
Bromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromodichloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromoform	U	1.00	0.333	1.00	ug/L		1					
Bromomethane	U	1.00	0.337	1.00	ug/L		1					
Carbon disulfide	U	5.00	1.67	5.00	ug/L		1					
Carbon tetrachloride	U	1.00	0.333	1.00	ug/L		1					
Chlorobenzene	U	1.00	0.333	1.00	ug/L		1					
Chloroethane	U	1.00	0.333	1.00	ug/L		1					
Chloroform	U	1.00	0.333	1.00	ug/L		1					
Chloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromomethane	U	1.00	0.333	1.00	ug/L		1					
Ethylbenzene	U	1.00	0.333	1.00	ug/L		1					
Iodomethane	U	5.00	1.67	5.00	ug/L		1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: December 13, 2023

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: TB1SG1-24
Sample ID: 641454013

Project: FRNP00511
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

THIS PAGE INTENTIONALLY LEFT BLANK

ATTACHMENT C2

GEL LABORATORIES CERTIFICATE OF ANALYSIS

THIS PAGE INTENTIONALLY LEFT BLANK

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: January 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW391SG1-24
Sample ID: 641604001
Matrix: WG
Collect Date: 17-OCT-23
Receive Date: 19-OCT-23
Collector: Client

Project: FRNP00511
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	-0.0101	+/-0.363	0.837	+/-0.363	5.00	pCi/L			CM4	11/02/23	0818	2514530	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.208	+/-1.03	2.04	+/-1.03	50.0	pCi/L			CM4	11/02/23	0956	2514535	2
Rad Gas Flow Proportional Counting														
<i>905.0 Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	-0.249	+/-2.04	4.15	+/-2.04	8.00	pCi/L			ST2	11/01/23	0913	2512683	3
<i>9310,Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	1.85	+/-3.57	6.74	+/-3.58	15.0	pCi/L			KP1	10/30/23	1346	2512661	4
Beta	U	6.78	+/-5.31	8.31	+/-5.43	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
<i>906.0 Mod, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	-25.4	+/-126	228	+/-126	300	pCi/L			GS3	11/01/23	1952	2512932	5
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	14.4	+/-10.9	17.8	+/-11.0	25.0	pCi/L			AG2	10/31/23	1702	2511941	6

The following Analytical Methods were performed

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AlphaSpec Ra226, Liquid "As Received"	2514530	88	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2514535	91.1	(30%-110%)
Strontium Carrier	905.0 Mod, Sr90, liquid "As Received"	2512683	79.5	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2511941	95.3	(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: January 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW391SG1-24

Project: FRNP00511

Sample ID: 641604001

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: January 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW392SG1-24

Project: FRNP00511

Sample ID: 641604003

Client ID: FRNP005

Matrix: WG

Collect Date: 17-OCT-23

Receive Date: 19-OCT-23

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.592	+/-1.11	1.46	+/-1.11	5.00	pCi/L			CM4	11/03/23	0926	2514530	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	1.72	+/-1.93	2.55	+/-1.96	50.0	pCi/L			CM4	11/02/23	0956	2514535	2
Rad Gas Flow Proportional Counting														
<i>905.0 Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	2.07	+/-2.33	3.90	+/-2.36	8.00	pCi/L			ST2	11/01/23	0913	2512683	3
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	-3.41	+/-1.74	7.81	+/-1.75	15.0	pCi/L			KP1	10/30/23	1346	2512661	4
Beta	U	2.22	+/-5.32	9.53	+/-5.33	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
<i>906.0 Mod, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	41.1	+/-131	228	+/-131	300	pCi/L			GS3	11/01/23	2029	2512932	5
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	11.5	+/-10.6	17.7	+/-10.7	25.0	pCi/L			AG2	10/31/23	1719	2511941	6

The following Analytical Methods were performed

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AlphaSpec Ra226, Liquid "As Received"	2514530	89.4	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2514535	74.1	(30%-110%)
Strontium Carrier	905.0 Mod, Sr90, liquid "As Received"	2512683	95.5	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2511941	97.3	(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: January 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW392SG1-24

Project: FRNP00511

Sample ID: 641604003

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: January 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW393SG1-24

Project: FRNP00511

Sample ID: 641604005

Client ID: FRNP005

Matrix: WG

Collect Date: 17-OCT-23

Receive Date: 19-OCT-23

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.695	+/-0.685	0.856	+/-0.687	5.00	pCi/L			CM4	11/02/23	0818	2514530	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.655	+/-0.955	1.53	+/-0.963	50.0	pCi/L			CM4	10/31/23	1710	2514535	2
Rad Gas Flow Proportional Counting														
<i>905.0 Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	1.38	+/-3.64	6.56	+/-3.65	8.00	pCi/L			ST2	11/01/23	0913	2512683	3
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	4.39	+/-4.82	7.69	+/-4.88	15.0	pCi/L			KP1	10/30/23	1346	2512661	4
Beta	U	-2.30	+/-4.50	9.28	+/-4.50	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
<i>906.0 Mod, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	55.6	+/-131	228	+/-132	300	pCi/L			GS3	11/01/23	2106	2512932	5
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	6.63	+/-10.2	17.4	+/-10.3	25.0	pCi/L			AG2	10/31/23	1735	2511941	6

The following Analytical Methods were performed

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AlphaSpec Ra226, Liquid "As Received"	2514530	88.3	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2514535	80.8	(30%-110%)
Strontium Carrier	905.0 Mod, Sr90, liquid "As Received"	2512683	63.6	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2511941	98.1	(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: January 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW393SG1-24

Project: FRNP00511

Sample ID: 641604005

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: January 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW394SG1-24

Project: FRNP00511

Sample ID: 641604007

Client ID: FRNP005

Matrix: WG

Collect Date: 17-OCT-23

Receive Date: 19-OCT-23

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.282	+/-0.585	0.971	+/-0.586	5.00	pCi/L			CM4	11/02/23	0818	2514530	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.0878	+/-0.810	1.68	+/-0.812	50.0	pCi/L			CM4	10/31/23	1710	2514535	2
Rad Gas Flow Proportional Counting														
<i>905.0 Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	4.77	+/-3.24	4.95	+/-3.33	8.00	pCi/L			ST2	11/01/23	0914	2512683	3
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	-2.41	+/-2.23	7.77	+/-2.24	15.0	pCi/L			KP1	10/30/23	1346	2512661	4
Beta	U	2.65	+/-4.94	8.73	+/-4.96	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
<i>906.0 Mod, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	-55.5	+/-123	228	+/-123	300	pCi/L			GS3	11/01/23	2143	2512932	5
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	16.3	+/-10.7	17.3	+/-10.9	25.0	pCi/L			AG2	10/31/23	1752	2511941	6

The following Analytical Methods were performed

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AlphaSpec Ra226, Liquid "As Received"	2514530	84.4	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2514535	83.6	(30%-110%)
Strontium Carrier	905.0 Mod, Sr90, liquid "As Received"	2512683	81.8	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2511941	98.9	(30%-110%)

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: January 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW394SG1-24

Project: FRNP00511

Sample ID: 641604007

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW391SG1-24 Project: FRNP00511
Sample ID: 641604001 Client ID: FRNP005
Matrix: WG
Collect Date: 17-OCT-23 08:52
Receive Date: 19-OCT-23
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011, VOA Compounds Liquid "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0190	0.00853	0.0190	ug/L	0.948	1	LOF	10/19/23	2017	2511295	2
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.726	0.330	2.00	mg/L		1	RM3	11/03/23	1756	2517921	3
Flow Injection Analysis												
9012B, Total Cyanide "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	10/26/23	0745	2511719	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	4.78	3.33	10.0	ug/L		1	RMJ	11/02/23	0003	2513059	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	HXC1	10/21/23	1223	2512264	6
SW846 9056A Anions (5) "As Received"												
Chloride	J	40.8	0.670	250	mg/L		10	VN1	10/20/23	0122	2511189	7
Bromide		0.527	0.0670	0.200	mg/L		1	VN1	10/19/23	1457	2511189	8
Fluoride	J	0.198	0.0330	4.00	mg/L		1					
Nitrate-N	HJ	1.12	0.0330	10.0	mg/L		1					
Sulfate		11.9	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	10/25/23	1052	2512991	9
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Aluminum	J	0.0470	0.0193	0.0500	mg/L	1.00	1	PRB	11/03/23	1522	2512185	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		0.234	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron		0.0250	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		26.6	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW391SG1-24
Sample ID: 641604001

Project: FRNP00511
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Cobalt	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Copper		0.00235	0.000300	0.00200	mg/L	1.00	1					
Iron		0.303	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		10.9	0.0100	0.0300	mg/L	1.00	1					
Manganese		0.00710	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	U	0.00100	0.000200	0.00100	mg/L	1.00	1					
Nickel	J	0.000632	0.000600	0.00200	mg/L	1.00	1					
Potassium		1.52	0.0800	0.300	mg/L	1.00	1					
Selenium	U	0.00500	0.00150	0.00500	mg/L	1.00	1					
Silver	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Sodium		32.3	0.0800	0.250	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					
Vanadium	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Zinc	J	0.00714	0.00330	0.0200	mg/L	1.00	1					
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	11/04/23	0808	2512185	11
Tantalum	UN	0.00500	0.00100	0.00500	mg/L	1.00	1					
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.100	0.0334	0.100	ug/L	0.00100	1	NS2	11/07/23	1505	2520345	12
Aroclor-1221	U	0.100	0.0334	0.100	ug/L	0.00100	1					
Aroclor-1232	U	0.100	0.0334	0.100	ug/L	0.00100	1					
Aroclor-1242	U	0.100	0.0334	0.100	ug/L	0.00100	1					
Aroclor-1248	U	0.100	0.0334	0.100	ug/L	0.00100	1					
Aroclor-1254	U	0.100	0.0334	0.100	ug/L	0.00100	1					
Aroclor-1260	U	0.100	0.0334	0.100	ug/L	0.00100	1					
Aroclor-1268	U	0.100	0.0334	0.100	ug/L	0.00100	1					
Aroclor-Total	U	0.100	0.0334	0.100	ug/L	0.00100	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		166	2.38	10.0	mg/L			CH6	10/20/23	1655	2511818	13
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

 Kevil, Kentucky 42053
 Contact: Ms. Jaime Morrow
 Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW391SG1-24	Project: FRNP00511
Sample ID: 641604001	Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												
COD	U	20.0	8.95	20.0	mg/L		1	HH2	10/19/23	1409	2511193	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	10/23/23	1525	2512768	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					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW391SG1-24
Sample ID: 641604001

Project: FRNP00511
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		1.04	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	10/24/23	1210	2511715
SW846 8011 PREP	8011 Prep	LOF	10/19/23	1330	2511257
SW846 3535A	SW3535A PCB SPE Extraction	DXF4	11/07/23	0551	2520344
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	EK1	10/24/23	1230	2512990
SW846 3005A	ICP-MS 3005A PREP	JM13	10/23/23	0735	2512184

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

 Kevil, Kentucky 42053
 Contact: Ms. Jaime Morrow
 Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW391SG1-24	Project: FRNP00511
Sample ID: 641604001	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 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 Compounds Liquid "As Received"	6.62 ug/L	6.77	98	(46%-159%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.164 ug/L	0.201	82	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.0673 ug/L	0.201	34	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	49.1 ug/L	50.0	98	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	42.7 ug/L	50.0	85	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	47.1 ug/L	50.0	94	(77%-121%)

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

Company : Four Rivers Nuclear Partnership, LLC
 Address : 5600 Hobbs Road
 Kevil, Kentucky 42053
 Contact: Ms. Jaime Morrow
 Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW392SG1-24	Project: FRNP00511
Sample ID: 641604003	Client ID: FRNP005
Matrix: WG	
Collect Date: 17-OCT-23 09:41	
Receive Date: 19-OCT-23	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011, VOA Compounds Liquid "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0188	0.00846	0.0188	ug/L	0.940	1	LOF	10/19/23	2041	2511295	2
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.707	0.330	2.00	mg/L		1	RM3	11/03/23	1835	2517921	3
Flow Injection Analysis												
9012B, Total Cyanide "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	10/26/23	0746	2511719	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	9.86	3.33	10.0	ug/L		1	RMJ	11/01/23	2235	2513059	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	HXC1	10/21/23	1235	2512264	6
SW846 9056A Anions (5) "As Received"												
Bromide		0.529	0.0670	0.200	mg/L		1	VN1	10/19/23	1528	2511189	7
Fluoride	J	0.238	0.0330	4.00	mg/L		1					
Nitrate-N	HJ	0.642	0.0330	10.0	mg/L		1					
Sulfate		7.76	0.133	0.400	mg/L		1					
Chloride	J	41.5	0.670	250	mg/L		10	VN1	10/20/23	0153	2511189	8
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	10/25/23	1054	2512991	9
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	11/04/23	0810	2512185	10
Tantalum	UN	0.00500	0.00100	0.00500	mg/L	1.00	1					
Aluminum		0.0736	0.0193	0.0500	mg/L	1.00	1	PRB	11/03/23	1529	2512185	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		0.303	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron		0.0210	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

Company : Four Rivers Nuclear Partnership, LLC
 Address : 5600 Hobbs Road
 Kevil, Kentucky 42053
 Contact: Ms. Jaime Morrow
 Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW392SG1-24	Project: FRNP00511
Sample ID: 641604003	Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												
COD	U	20.0	8.95	20.0	mg/L		1	HH2	10/19/23	1409	2511193	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	10/23/23	1553	2512768	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					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW392SG1-24
Sample ID: 641604003

Project: FRNP00511
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		9.43	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	JM13	10/23/23	0735	2512184
SW846 8011 PREP	8011 Prep	LOF	10/19/23	1330	2511257
SW846 9010C Distillation	SW846 9010C Prep	ES2	10/24/23	1210	2511715
SW846 3535A	SW3535A PCB SPE Extraction	DXF4	11/07/23	0551	2520344
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	EK1	10/24/23	1230	2512990

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW392SG1-24 Project: FRNP00511
Sample ID: 641604004 Client ID: FRNP005
Matrix: WG
Collect Date: 17-OCT-23 09:41
Receive Date: 19-OCT-23
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		0.294	0.000670	0.00400	mg/L	1.00	1	PRB	11/03/23	1555	2512185	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	JM13	10/23/23	0735	2512184
EPA 160	Laboratory Filtration	RXB5	10/19/23	1455	2511190

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW393SG1-24 Project: FRNP00511
Sample ID: 641604005 Client ID: FRNP005
Matrix: WG
Collect Date: 17-OCT-23 12:31
Receive Date: 19-OCT-23
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011, VOA Compounds Liquid "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0189	0.00853	0.0189	ug/L	0.947	1	LOF	10/19/23	2155	2511295	2
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average		2.66	0.330	2.00	mg/L		1	RM3	11/03/23	2055	2517921	3
Flow Injection Analysis												
9012B, Total Cyanide "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	10/26/23	0750	2511719	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens		10.0	3.33	10.0	ug/L		1	RMJ	11/03/23	0236	2513060	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	HXC1	10/21/23	1314	2512264	6
SW846 9056A Anions (5) "As Received"												
Bromide	J	0.129	0.0670	0.200	mg/L		1	VN1	10/19/23	1220	2511189	7
Chloride	J	9.78	0.0670	250	mg/L		1					
Fluoride	J	0.334	0.0330	4.00	mg/L		1					
Nitrate-N	U	10.0	0.0330	10.0	mg/L		1					
Sulfate		20.3	0.266	0.800	mg/L		2	VN1	10/20/23	0430	2511189	8
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	10/25/23	1105	2512991	9
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	11/04/23	0820	2512185	10
Tantalum	UN	0.00500	0.00100	0.00500	mg/L	1.00	1					
Sodium		85.0	0.800	2.50	mg/L	1.00	10	PRB	11/03/23	1813	2512185	11
Aluminum	J	0.0254	0.0193	0.0500	mg/L	1.00	1	PRB	11/03/23	1613	2512185	12
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	J	0.00423	0.00200	0.00500	mg/L	1.00	1					
Barium		0.0942	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron		0.0170	0.00520	0.0150	mg/L	1.00	1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW393SG1-24
Sample ID: 641604005

Project: FRNP00511
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		15.7	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	0.00115	0.000300	0.00200	mg/L	1.00	1					
Iron		1.38	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		3.95	0.0100	0.0300	mg/L	1.00	1					
Manganese		0.0662	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	J	0.000524	0.000200	0.00100	mg/L	1.00	1					
Nickel	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Potassium		0.475	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					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					
Vanadium	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Zinc	J	0.00496	0.00330	0.0200	mg/L	1.00	1					
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.106	0.0353	0.106	ug/L	0.00106	1	NS2	11/07/23	1535	2520345	13
Aroclor-1221	U	0.106	0.0353	0.106	ug/L	0.00106	1					
Aroclor-1232	U	0.106	0.0353	0.106	ug/L	0.00106	1					
Aroclor-1242	U	0.106	0.0353	0.106	ug/L	0.00106	1					
Aroclor-1248	U	0.106	0.0353	0.106	ug/L	0.00106	1					
Aroclor-1254	U	0.106	0.0353	0.106	ug/L	0.00106	1					
Aroclor-1260	U	0.106	0.0353	0.106	ug/L	0.00106	1					
Aroclor-1268	U	0.106	0.0353	0.106	ug/L	0.00106	1					
Aroclor-Total	U	0.106	0.0353	0.106	ug/L	0.00106	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		251	2.38	10.0	mg/L			CH6	10/20/23	1655	2511818	14
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW393SG1-24
Sample ID: 641604005

Project: FRNP00511
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	JM13	10/23/23	0735	2512184
SW846 9010C Distillation	SW846 9010C Prep	ES2	10/24/23	1210	2511715
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	EK1	10/24/23	1230	2512990
SW846 3535A	SW3535A PCB SPE Extraction	DXF4	11/07/23	0551	2520344
SW846 8011 PREP	8011 Prep	LOF	10/19/23	1330	2511257

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

Contact: Kevil, Kentucky 42053
Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW393SG1-24
Sample ID: 641604005

Project: FRNP00511
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 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 Compounds Liquid "As Received"	6.10 ug/L	6.77	90	(46%-159%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.180 ug/L	0.212	85	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.126 ug/L	0.212	60	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	46.3 ug/L	50.0	93	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	43.3 ug/L	50.0	87	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	46.7 ug/L	50.0	93	(77%-121%)

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW393SG1-24 Project: FRNP00511
Sample ID: 641604006 Client ID: FRNP005
Matrix: WG
Collect Date: 17-OCT-23 12:31
Receive Date: 19-OCT-23
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		0.0551	0.000670	0.00400	mg/L	1.00	1	PRB	11/03/23	1616	2512185	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	RXB5	10/19/23	1455	2511190
SW846 3005A	ICP-MS 3005A PREP	JM13	10/23/23	0735	2512184

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW394SG1-24 Project: FRNP00511
Sample ID: 641604007 Client ID: FRNP005
Matrix: WG
Collect Date: 17-OCT-23 13:21
Receive Date: 19-OCT-23
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011, VOA Compounds Liquid "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0195	0.00879	0.0195	ug/L	0.977	1	LOF	10/19/23	2219	2511295	2
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.845	0.330	2.00	mg/L		1	RM3	11/03/23	2134	2517921	3
Flow Injection Analysis												
9012B, Total Cyanide "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	10/26/23	0751	2511719	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	7.70	3.33	10.0	ug/L		1	RMJ	11/02/23	0132	2513059	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	HXC1	10/21/23	1327	2512264	6
SW846 9056A Anions (5) "As Received"												
Bromide		0.537	0.0670	0.200	mg/L		1	VN1	10/19/23	1251	2511189	7
Fluoride	J	0.196	0.0330	4.00	mg/L		1					
Nitrate-N	J	1.08	0.0330	10.0	mg/L		1					
Sulfate		11.7	0.133	0.400	mg/L		1					
Chloride	J	43.5	0.670	250	mg/L		10	VN1	10/20/23	0501	2511189	8
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	10/25/23	1107	2512991	9
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Aluminum	J	0.0295	0.0193	0.0500	mg/L	1.00	1	PRB	11/03/23	1620	2512185	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		0.264	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron		0.0199	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		27.9	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW394SG1-24
Sample ID: 641604007

Project: FRNP00511
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												
COD	U	20.0	8.95	20.0	mg/L		1	HH2	10/19/23	1409	2511193	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	10/23/23	1648	2512768	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					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW394SG1-24
Sample ID: 641604007

Project: FRNP00511
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		5.25	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	EK1	10/24/23	1230	2512990
SW846 3005A	ICP-MS 3005A PREP	JM13	10/23/23	0735	2512184
SW846 9010C Distillation	SW846 9010C Prep	ES2	10/24/23	1210	2511715
SW846 8011 PREP	8011 Prep	LOF	10/19/23	1330	2511257
SW846 3535A	SW3535A PCB SPE Extraction	DXF4	11/07/23	0551	2520344

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW394SG1-24 Project: FRNP00511
Sample ID: 641604007 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 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 Compounds Liquid "As Received"	6.97 ug/L	6.98	100	(46%-159%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.166 ug/L	0.189	88	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.108 ug/L	0.189	57	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	47.5 ug/L	50.0	95	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	43.1 ug/L	50.0	86	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	45.7 ug/L	50.0	91	(77%-121%)

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW394SG1-24 Project: FRNP00511
Sample ID: 641604008 Client ID: FRNP005
Matrix: WG
Collect Date: 17-OCT-23 13:21
Receive Date: 19-OCT-23
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		0.263	0.000670	0.00400	mg/L	1.00	1	PRB	11/03/23	1624	2512185	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	JM13	10/23/23	0735	2512184
EPA 160	Laboratory Filtration	RXB5	10/19/23	1455	2511190

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: TB2SG1-24 Project: FRNP00511
Sample ID: 641604009 Client ID: FRNP005
Matrix: WATER
Collect Date: 17-OCT-23 07:30
Receive Date: 19-OCT-23
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011, VOA Compounds Liquid "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0197	0.00889	0.0197	ug/L	0.987	1	LOF	10/19/23	2244	2511295	2
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	PXY1	10/23/23	1715	2512768	3
1,1,1-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
1,2,3-Trichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dibromoethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,4-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
2-Butanone	U	5.00	1.67	5.00	ug/L		1					
2-Hexanone	U	5.00	1.67	5.00	ug/L		1					
4-Methyl-2-pentanone	U	5.00	1.67	5.00	ug/L		1					
Acetone	U	5.00	1.74	5.00	ug/L		1					
Acrolein	U	5.00	1.67	5.00	ug/L		1					
Acrylonitrile	U	5.00	1.67	5.00	ug/L		1					
Benzene	U	1.00	0.333	1.00	ug/L		1					
Bromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromodichloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromoform	U	1.00	0.333	1.00	ug/L		1					
Bromomethane	U	1.00	0.337	1.00	ug/L		1					
Carbon disulfide	U	5.00	1.67	5.00	ug/L		1					
Carbon tetrachloride	U	1.00	0.333	1.00	ug/L		1					
Chlorobenzene	U	1.00	0.333	1.00	ug/L		1					
Chloroethane	U	1.00	0.333	1.00	ug/L		1					
Chloroform	U	1.00	0.333	1.00	ug/L		1					
Chloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromomethane	U	1.00	0.333	1.00	ug/L		1					
Ethylbenzene	U	1.00	0.333	1.00	ug/L		1					
Iodomethane	U	5.00	1.67	5.00	ug/L		1					

THIS PAGE INTENTIONALLY LEFT BLANK

ATTACHMENT C3

GEL LABORATORIES CERTIFICATE OF ANALYSIS

THIS PAGE INTENTIONALLY LEFT BLANK

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: January 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW387SG1-24
Sample ID: 641824001
Matrix: WG
Collect Date: 18-OCT-23
Receive Date: 20-OCT-23
Collector: Client

Project: FRNP00511
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.257	+/-0.570	0.972	+/-0.570	5.00	pCi/L			EJ1	11/08/23	0836	2514549	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	1.07	+/-1.02	1.38	+/-1.03	50.0	pCi/L			EJ1	11/03/23	0857	2514550	2
Rad Gas Flow Proportional Counting														
<i>905.0 Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	-2.94	+/-2.84	6.63	+/-2.84	8.00	pCi/L			ST2	11/01/23	1658	2513903	3
<i>9310,Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	2.94	+/-5.16	9.33	+/-5.19	15.0	pCi/L			KP1	10/30/23	1227	2514435	4
Beta		26.4	+/-7.48	8.42	+/-8.69	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
<i>906.0 Mod, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	-71.8	+/-117	220	+/-117	300	pCi/L			GS3	11/03/23	0126	2512935	5
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99		51.4	+/-12.9	18.0	+/-14.1	25.0	pCi/L			AG2	10/31/23	1809	2511941	6

The following Analytical Methods were performed

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AlphaSpec Ra226, Liquid "As Received"	2514549	86.8	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2514550	87.2	(30%-110%)
Strontium Carrier	905.0 Mod, Sr90, liquid "As Received"	2513903	65.9	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2511941	94	(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: January 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW387SG1-24

Project: FRNP00511

Sample ID: 641824001

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: January 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW388SG1-24

Project: FRNP00511

Sample ID: 641824003

Client ID: FRNP005

Matrix: WG

Collect Date: 18-OCT-23

Receive Date: 20-OCT-23

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.105	+/-0.736	1.48	+/-0.737	5.00	pCi/L			EJ1	11/08/23	1238	2514549	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.878	+/-0.805	1.06	+/-0.816	50.0	pCi/L			EJ1	11/03/23	0857	2514550	2
Rad Gas Flow Proportional Counting														
<i>905.0 Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	3.16	+/-4.09	6.96	+/-4.12	8.00	pCi/L			ST2	11/01/23	1658	2513903	3
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	5.58	+/-5.44	8.56	+/-5.53	15.0	pCi/L			KP1	10/30/23	1227	2514435	4
Beta	U	6.29	+/-5.77	9.35	+/-5.87	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
<i>906.0 Mod, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	-46.0	+/-120	221	+/-120	300	pCi/L			GS3	11/03/23	0203	2512935	5
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	10.4	+/-11.5	19.4	+/-11.6	25.0	pCi/L			AG2	11/01/23	1317	2511941	6

The following Analytical Methods were performed

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AlphaSpec Ra226, Liquid "As Received"	2514549	94.2	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2514550	106	(30%-110%)
Strontium Carrier	905.0 Mod, Sr90, liquid "As Received"	2513903	86.4	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2511941	96.7	(30%-110%)

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: January 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW388SG1-24

Project: FRNP00511

Sample ID: 641824003

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: January 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW395SG1-24

Project: FRNP00511

Sample ID: 641824005

Client ID: FRNP005

Matrix: WG

Collect Date: 18-OCT-23

Receive Date: 20-OCT-23

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.333	+/-0.332	0.385	+/-0.333	5.00	pCi/L			EJ1	11/06/23	1951	2514549	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.697	+/-1.39	2.25	+/-1.40	50.0	pCi/L			EJ1	11/04/23	0942	2514550	2
Rad Gas Flow Proportional Counting														
<i>905.0 Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	3.55	+/-2.79	4.52	+/-2.85	8.00	pCi/L			ST2	11/07/23	1303	2513903	3
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	0.363	+/-3.85	8.13	+/-3.85	15.0	pCi/L			KP1	10/30/23	1227	2514435	4
Beta	U	-2.48	+/-4.19	8.63	+/-4.19	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
<i>906.0 Mod, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	46.3	+/-126	220	+/-126	300	pCi/L			GS3	11/03/23	0240	2512935	5
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	16.4	+/-11.0	17.9	+/-11.2	25.0	pCi/L			AG2	10/31/23	1842	2511941	6

The following Analytical Methods were performed

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AlphaSpec Ra226, Liquid "As Received"	2514549	88.1	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2514550	81.5	(30%-110%)
Strontium Carrier	905.0 Mod, Sr90, liquid "As Received"	2513903	79.5	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2511941	96	(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: January 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW395SG1-24

Project: FRNP00511

Sample ID: 641824005

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: January 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW396SG1-24

Project: FRNP00511

Sample ID: 641824007

Client ID: FRNP005

Matrix: WG

Collect Date: 18-OCT-23

Receive Date: 20-OCT-23

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.0892	+/-0.392	0.709	+/-0.392	5.00	pCi/L			EJ1	11/08/23	0836	2514549	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	-0.0667	+/-0.583	1.34	+/-0.584	50.0	pCi/L			EJ1	11/03/23	0857	2514550	2
Rad Gas Flow Proportional Counting														
<i>905.0 Mod, Sr90, liquid "As Received"</i>														
Strontium-90	TU	-0.354	+/-3.03	5.34	+/-3.03	8.00	pCi/L			ST2	11/01/23	1821	2513903	3
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	2.98	+/-4.32	7.56	+/-4.34	15.0	pCi/L			KP1	10/30/23	1227	2514435	4
Beta	U	-1.60	+/-3.86	7.98	+/-3.86	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
<i>906.0 Mod, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	37.2	+/-125	220	+/-126	300	pCi/L			GS3	11/03/23	0317	2512935	5
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	4.46	+/-11.3	19.6	+/-11.3	25.0	pCi/L			AG2	10/31/23	1859	2511941	6

The following Analytical Methods were performed

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AlphaSpec Ra226, Liquid "As Received"	2514549	86.5	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2514550	99.7	(30%-110%)
Strontium Carrier	905.0 Mod, Sr90, liquid "As Received"	2513903	29.5 *	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2511941	87.8	(30%-110%)

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: January 24, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW396SG1-24

Project: FRNP00511

Sample ID: 641824007

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

 Kevil, Kentucky 42053
 Contact: Ms. Jaime Morrow
 Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW387SG1-24	Project: FRNP00511
Sample ID: 641824001	Client ID: FRNP005
Matrix: WG	
Collect Date: 18-OCT-23 12:29	
Receive Date: 20-OCT-23	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011, VOA Compounds Liquid "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0194	0.00871	0.0194	ug/L	0.968	1	LOF	10/27/23	1640	2511973	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	1.06	0.330	2.00	mg/L		1	RM3	11/03/23	2213	2517921	3
Flow Injection Analysis												
9012B, Total Cyanide "As Received"												
Cyanide, Total	J	0.00202	0.00167	0.200	mg/L	1.00	1	AXH3	10/23/23	0900	2512392	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	9.06	3.33	10.0	ug/L		1	RMJ	11/03/23	1047	2513060	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	HXC1	10/21/23	1339	2512264	6
SW846 9056A Anions (5) "As Received"												
Bromide		0.463	0.0670	0.200	mg/L		1	LXA2	10/20/23	1116	2511922	7
Fluoride	J	0.926	0.0330	4.00	mg/L		1					
Chloride	J	36.6	0.335	250	mg/L		5	LXA2	10/20/23	2132	2511922	8
Nitrate-N	HJ	1.01	0.165	10.0	mg/L		5					
Sulfate		26.7	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	10/27/23	1351	2514162	9
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Sodium		51.1	0.800	2.50	mg/L	1.00	10	PRB	11/04/23	1621	2512960	10
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	11/04/23	1054	2512960	11
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					
Aluminum		0.0665	0.0193	0.0500	mg/L	1.00	1	PRB	11/04/23	1342	2512960	12
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	J	0.00235	0.00200	0.00500	mg/L	1.00	1					
Barium		0.107	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron		0.0378	0.00520	0.0150	mg/L	1.00	1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW387SG1-24
Sample ID: 641824001

Project: FRNP00511
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	0.460	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	10/23/23	0832	2512391
SW846 8011 PREP	8011 Prep	LOF	10/27/23	1204	2511971
SW846 3005A	ICP-MS 3005A PREP	JD2	10/31/23	0815	2512959
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	EK1	10/26/23	1230	2514161
SW846 3535A	SW3535A PCB SPE Extraction	DXF4	11/07/23	0551	2520344

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

 Kevil, Kentucky 42053
 Contact: Ms. Jaime Morrow
 Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW387SG1-24	Project: FRNP00511
Sample ID: 641824001	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 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 Compounds Liquid "As Received"	6.57 ug/L	6.91	95	(46%-159%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.160 ug/L	0.199	81	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.0824 ug/L	0.199	41	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	44.4 ug/L	50.0	89	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	41.9 ug/L	50.0	84	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	46.6 ug/L	50.0	93	(77%-121%)

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW387SG1-24 Project: FRNP00511
Sample ID: 641824002 Client ID: FRNP005
Matrix: WG
Collect Date: 18-OCT-23 12:29
Receive Date: 20-OCT-23
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		0.105	0.000670	0.00400	mg/L	1.00	1	PRB	11/04/23	1345	2512960	1
Chromium	J	0.00528	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	JP2	10/23/23	1435	2512066
SW846 3005A	ICP-MS 3005A PREP	JD2	10/31/23	0815	2512959

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

 Kevil, Kentucky 42053
 Contact: Ms. Jaime Morrow
 Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW388SG1-24	Project: FRNP00511
Sample ID: 641824003	Client ID: FRNP005
Matrix: WG	
Collect Date: 18-OCT-23 13:18	
Receive Date: 20-OCT-23	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011, VOA Compounds Liquid "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0195	0.00876	0.0195	ug/L	0.974	1	LOF	10/27/23	1704	2511973	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	1.03	0.330	2.00	mg/L		1	RM3	11/03/23	2252	2517921	3
Flow Injection Analysis												
9012B, Total Cyanide "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	10/23/23	0901	2512392	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	U	10.0	3.33	10.0	ug/L		1	RMJ	11/03/23	1202	2513060	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	HXC1	10/21/23	1352	2512264	6
SW846 9056A Anions (5) "As Received"												
Chloride	J	33.4	0.335	250	mg/L		5	LXA2	10/20/23	2203	2511922	7
Nitrate-N	HJ	1.04	0.165	10.0	mg/L		5					
Bromide		0.431	0.0670	0.200	mg/L		1	LXA2	10/20/23	1146	2511922	8
Fluoride	J	0.225	0.0330	4.00	mg/L		1					
Sulfate		18.6	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	10/27/23	1353	2514162	9
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	11/04/23	1056	2512960	10
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					
Aluminum		0.0609	0.0193	0.0500	mg/L	1.00	1	PRB	11/04/23	1349	2512960	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		0.185	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron		0.0247	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW388SG1-24 Project: FRNP00511
Sample ID: 641824003 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	10/20/23	1639	2512020	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	10/23/23	1810	2512768	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					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW388SG1-24 Project: FRNP00511
Sample ID: 641824003 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 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 Compounds Liquid "As Received"	7.00 ug/L	6.96	101	(46%-159%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.233 ug/L	0.257	91	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.154 ug/L	0.257	60	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	45.4 ug/L	50.0	91	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	42.6 ug/L	50.0	85	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	46.3 ug/L	50.0	93	(77%-121%)

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW395SG1-24 Project: FRNP00511
Sample ID: 641824005 Client ID: FRNP005
Matrix: WG
Collect Date: 18-OCT-23 09:37
Receive Date: 20-OCT-23
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011, VOA Compounds Liquid "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0192	0.00866	0.0192	ug/L	0.962	1	LOF	10/27/23	1818	2511973	2
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.970	0.330	2.00	mg/L		1	RM3	11/03/23	2331	2517921	3
Flow Injection Analysis												
9012B, Total Cyanide "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	10/23/23	0902	2512392	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	8.22	3.33	10.0	ug/L		1	RMJ	11/03/23	0036	2513060	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	HXC1	10/21/23	1431	2512264	6
SW846 9056A Anions (5) "As Received"												
Chloride	J	44.4	0.670	250	mg/L		10	LXA2	10/20/23	2336	2511922	7
Nitrate-N	HJ	1.64	0.330	10.0	mg/L		10					
Bromide		0.534	0.0670	0.200	mg/L		1	LXA2	10/20/23	1217	2511922	8
Fluoride	J	0.155	0.0330	4.00	mg/L		1					
Sulfate		11.0	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	10/27/23	1355	2514162	9
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	11/04/23	1058	2512960	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	11/04/23	1404	2512960	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		0.274	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron		0.0191	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW395SG1-24 Project: FRNP00511
Sample ID: 641824005 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 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 Compounds Liquid "As Received"	6.67 ug/L	6.87	97	(46%-159%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.182 ug/L	0.200	91	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.120 ug/L	0.200	60	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	45.5 ug/L	50.0	91	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	42.4 ug/L	50.0	85	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	46.9 ug/L	50.0	94	(77%-121%)

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID:	MW395SG1-24	Project:	FRNP00511
Sample ID:	641824006	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	18-OCT-23 09:37		
Receive Date:	20-OCT-23		
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		0.261	0.000670	0.00400	mg/L	1.00	1	PRB	11/04/23	1422	2512960	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	JD2	10/31/23	0815	2512959
EPA 160	Laboratory Filtration	JP2	10/23/23	1435	2512066

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW396SG1-24 Project: FRNP00511
Sample ID: 641824007 Client ID: FRNP005
Matrix: WG
Collect Date: 18-OCT-23 08:43
Receive Date: 20-OCT-23
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011, VOA Compounds Liquid "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0192	0.00866	0.0192	ug/L	0.962	1	LOF	10/27/23	1932	2511973	2
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average		4.14	0.330	2.00	mg/L		1	RM3	11/04/23	0128	2517921	3
Flow Injection Analysis												
9012B, Total Cyanide "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	10/23/23	0906	2512392	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens		18.6	3.33	10.0	ug/L		1	RMJ	11/03/23	2330	2519937	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	J	0.495	0.167	0.500	mg/L		1	HXC1	10/21/23	1509	2512264	6
SW846 9056A Anions (5) "As Received"												
Bromide		0.767	0.0670	0.200	mg/L		1	LXA2	10/20/23	1248	2511922	7
Fluoride	J	0.608	0.0330	4.00	mg/L		1					
Nitrate-N	HU	10.0	0.0330	10.0	mg/L		1					
Chloride	J	51.9	0.670	250	mg/L		10	LXA2	10/21/23	0109	2511922	8
Sulfate		27.0	1.33	4.00	mg/L		10					
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	JP2	10/27/23	1403	2514162	9
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Aluminum	J	0.0484	0.0193	0.0500	mg/L	1.00	1	PRB	11/04/23	1447	2512960	10
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	J	0.00239	0.00200	0.00500	mg/L	1.00	1					
Barium		0.406	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron	J	0.00700	0.00520	0.0150	mg/L	1.00	1					
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					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW396SG1-24
Sample ID: 641824007

Project: FRNP00511
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Cobalt		0.00465	0.000300	0.00100	mg/L	1.00	1					
Copper		0.00285	0.000300	0.00200	mg/L	1.00	1					
Iron		1.46	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		13.9	0.0100	0.0300	mg/L	1.00	1					
Manganese		0.683	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	J	0.000536	0.000200	0.00100	mg/L	1.00	1					
Nickel	J	0.00172	0.000600	0.00200	mg/L	1.00	1					
Potassium		0.749	0.0800	0.300	mg/L	1.00	1					
Selenium	U	0.00500	0.00150	0.00500	mg/L	1.00	1					
Silver		0.00162	0.000300	0.00100	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					
Vanadium	BJ	0.00340	0.00330	0.0200	mg/L	1.00	1					
Zinc	J	0.00962	0.00330	0.0200	mg/L	1.00	1					
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	11/04/23	1111	2512960	11
Tantalum	U	0.00500	0.00100	0.00500	mg/L	1.00	1					
Sodium		98.1	0.800	2.50	mg/L	1.00	10	PRB	11/04/23	1624	2512960	12
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.0952	0.0317	0.0952	ug/L	0.000952	1	NS2	11/07/23	1745	2520345	13
Aroclor-1221	U	0.0952	0.0317	0.0952	ug/L	0.000952	1					
Aroclor-1232	U	0.0952	0.0317	0.0952	ug/L	0.000952	1					
Aroclor-1242	U	0.0952	0.0317	0.0952	ug/L	0.000952	1					
Aroclor-1248	U	0.0952	0.0317	0.0952	ug/L	0.000952	1					
Aroclor-1254	U	0.0952	0.0317	0.0952	ug/L	0.000952	1					
Aroclor-1260	U	0.0952	0.0317	0.0952	ug/L	0.000952	1					
Aroclor-1268	U	0.0952	0.0317	0.0952	ug/L	0.000952	1					
Aroclor-Total	U	0.0952	0.0317	0.0952	ug/L	0.000952	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		370	2.38	10.0	mg/L			CH6	10/24/23	1513	2513108	14
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

Contact: Kevil, Kentucky 42053
Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW396SG1-24
Sample ID: 641824007

Project: FRNP00511
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 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 Compounds Liquid "As Received"	5.82 ug/L	6.87	85	(46%-159%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.109 ug/L	0.190	57	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.0748 ug/L	0.190	39	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	47.9 ug/L	50.0	96	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	42.7 ug/L	50.0	85	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	47.5 ug/L	50.0	95	(77%-121%)

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW396SG1-24 Project: FRNP00511
Sample ID: 641824008 Client ID: FRNP005
Matrix: WG
Collect Date: 18-OCT-23 08:43
Receive Date: 20-OCT-23
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		0.393	0.000670	0.00400	mg/L	1.00	1	PRB	11/04/23	1450	2512960	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	JP2	10/23/23	1435	2512066
SW846 3005A	ICP-MS 3005A PREP	JD2	10/31/23	0815	2512959

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: TB3SG1-24 Project: FRNP00511
Sample ID: 641824009 Client ID: FRNP005
Matrix: WATER
Collect Date: 18-OCT-23 07:20
Receive Date: 20-OCT-23
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011, VOA Compounds Liquid "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0189	0.00850	0.0189	ug/L	0.945	1	LOF	10/27/23	1956	2511973	2
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	PXY1	10/23/23	1933	2512768	3
1,1,1-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
1,2,3-Trichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dibromoethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,4-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
2-Butanone	U	5.00	1.67	5.00	ug/L		1					
2-Hexanone	U	5.00	1.67	5.00	ug/L		1					
4-Methyl-2-pentanone	U	5.00	1.67	5.00	ug/L		1					
Acetone	U	5.00	1.74	5.00	ug/L		1					
Acrolein	U	5.00	1.67	5.00	ug/L		1					
Acrylonitrile	U	5.00	1.67	5.00	ug/L		1					
Benzene	U	1.00	0.333	1.00	ug/L		1					
Bromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromodichloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromoform	U	1.00	0.333	1.00	ug/L		1					
Bromomethane	U	1.00	0.337	1.00	ug/L		1					
Carbon disulfide	U	5.00	1.67	5.00	ug/L		1					
Carbon tetrachloride	U	1.00	0.333	1.00	ug/L		1					
Chlorobenzene	U	1.00	0.333	1.00	ug/L		1					
Chloroethane	U	1.00	0.333	1.00	ug/L		1					
Chloroform	U	1.00	0.333	1.00	ug/L		1					
Chloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromomethane	U	1.00	0.333	1.00	ug/L		1					
Ethylbenzene	U	1.00	0.333	1.00	ug/L		1					
Iodomethane	U	5.00	1.67	5.00	ug/L		1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: TB3SG1-24
Sample ID: 641824009

Project: FRNP00511
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	10/27/23	1204	2511971

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 Compounds Liquid "As Received"	6.44 ug/L	6.75	95	(46%-159%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	46.7 ug/L	50.0	93	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	42.2 ug/L	50.0	84	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	46.7 ug/L	50.0	93	(77%-121%)

Notes:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 24, 2024

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: TB3SG1-24
Sample ID: 641824009

Project: FRNP00511
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

THIS PAGE INTENTIONALLY LEFT BLANK

ATTACHMENT C4

GEL LABORATORIES CERTIFICATE OF ANALYSIS

THIS PAGE INTENTIONALLY LEFT BLANK

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: February 1, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW384SG1-24
Sample ID: 642072001
Matrix: WG
Collect Date: 19-OCT-23
Receive Date: 20-OCT-23
Collector: Client

Project: FRNP00511
Client ID: FRNP005

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.199	+/-0.450	0.709	+/-0.450	5.00	pCi/L			EJ1	11/08/23	0836	2514549	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.541	+/-1.36	2.40	+/-1.36	50.0	pCi/L			EJ1	11/04/23	0942	2514550	2
Rad Gas Flow Proportional Counting														
<i>905.0 Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	2.69	+/-3.00	5.00	+/-3.03	8.00	pCi/L			ST2	11/02/23	1719	2514493	3
<i>9310,Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	0.592	+/-4.35	9.49	+/-4.36	15.0	pCi/L			KP1	10/30/23	1349	2514502	4
Beta		41.9	+/-10.3	12.2	+/-12.5	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
<i>906.0 Mod, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	12.5	+/-124	221	+/-124	300	pCi/L			GS3	11/03/23	1526	2512935	5
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99		79.6	+/-14.1	17.9	+/-16.7	25.0	pCi/L			AG2	11/08/23	2300	2512487	6

The following Analytical Methods were performed

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AlphaSpec Ra226, Liquid "As Received"	2514549	92.5	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2514550	80.4	(30%-110%)
Strontium Carrier	905.0 Mod, Sr90, liquid "As Received"	2514493	61.4	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2512487	90.3	(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: February 1, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW384SG1-24

Project: FRNP00511

Sample ID: 642072001

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: February 1, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW385SG1-24

Project: FRNP00511

Sample ID: 642072003

Client ID: FRNP005

Matrix: WG

Collect Date: 19-OCT-23

Receive Date: 20-OCT-23

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.443	+/-0.537	0.620	+/-0.538	5.00	pCi/L			EJ1	11/08/23	0836	2514549	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	1.13	+/-1.08	1.51	+/-1.09	50.0	pCi/L			EJ1	11/03/23	0857	2514550	2
Rad Gas Flow Proportional Counting														
<i>905.0 Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	2.23	+/-2.63	4.42	+/-2.65	8.00	pCi/L			ST2	11/02/23	1719	2514493	3
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	1.47	+/-4.63	9.15	+/-4.64	15.0	pCi/L			KP1	10/30/23	1349	2514502	4
Beta		24.4	+/-7.41	9.47	+/-8.44	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
<i>906.0 Mod, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	-16.5	+/-121	219	+/-121	300	pCi/L			GS3	11/03/23	1603	2512935	5
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99		52.6	+/-12.5	17.2	+/-13.8	25.0	pCi/L			AG2	11/08/23	2316	2512487	6

The following Analytical Methods were performed

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AlphaSpec Ra226, Liquid "As Received"	2514549	91.3	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2514550	86.1	(30%-110%)
Strontium Carrier	905.0 Mod, Sr90, liquid "As Received"	2514493	70.5	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2512487	94.1	(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: February 1, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW385SG1-24

Project: FRNP00511

Sample ID: 642072003

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: February 1, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW386DSG1-24

Project: FRNP00511

Sample ID: 642072005

Client ID: FRNP005

Matrix: WG

Collect Date: 19-OCT-23

Receive Date: 20-OCT-23

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.446	+/-0.611	0.899	+/-0.611	5.00	pCi/L			EJ1	11/08/23	0836	2514549	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.885	+/-0.964	1.43	+/-0.975	50.0	pCi/L			EJ1	11/03/23	0857	2514550	2
Rad Gas Flow Proportional Counting														
<i>905.0 Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	-0.697	+/-1.94	4.14	+/-1.94	8.00	pCi/L			ST2	11/02/23	1719	2514493	3
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	4.30	+/-5.54	9.40	+/-5.59	15.0	pCi/L			KP1	10/30/23	1349	2514502	4
Beta	U	-1.86	+/-6.47	12.3	+/-6.47	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
<i>906.0 Mod, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	20.5	+/-124	220	+/-124	300	pCi/L			GS3	11/03/23	1640	2512935	5
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	2.84	+/-10.4	18.1	+/-10.4	25.0	pCi/L			AG2	11/08/23	2333	2512487	6

The following Analytical Methods were performed

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AlphaSpec Ra226, Liquid "As Received"	2514549	96.7	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2514550	101	(30%-110%)
Strontium Carrier	905.0 Mod, Sr90, liquid "As Received"	2514493	72.7	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2512487	89.8	(30%-110%)

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: February 1, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW386DSG1-24

Project: FRNP00511

Sample ID: 642072005

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: February 1, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW386SG1-24

Project: FRNP00511

Sample ID: 642072007

Client ID: FRNP005

Matrix: WG

Collect Date: 19-OCT-23

Receive Date: 20-OCT-23

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.491	+/-0.431	0.560	+/-0.433	5.00	pCi/L			EJ1	11/06/23	1951	2514549	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	1.49	+/-1.29	1.55	+/-1.32	50.0	pCi/L			EJ1	11/03/23	0907	2514550	2
Rad Gas Flow Proportional Counting														
<i>905.0 Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	0.192	+/-3.19	6.15	+/-3.19	8.00	pCi/L			ST2	11/02/23	1719	2514493	3
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	7.67	+/-6.29	8.85	+/-6.41	15.0	pCi/L			KP1	10/30/23	1349	2514502	4
Beta		20.3	+/-8.51	12.1	+/-9.16	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
<i>906.0 Mod, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	-84.9	+/-117	221	+/-117	300	pCi/L			GS3	11/03/23	1717	2512935	5
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	5.57	+/-10.5	18.0	+/-10.5	25.0	pCi/L			AG2	11/08/23	2350	2512487	6

The following Analytical Methods were performed

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AlphaSpec Ra226, Liquid "As Received"	2514549	95.9	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2514550	86.9	(30%-110%)
Strontium Carrier	905.0 Mod, Sr90, liquid "As Received"	2514493	56.8	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2512487	91.3	(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: February 1, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW386SG1-24

Project: FRNP00511

Sample ID: 642072007

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: February 1, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: FB1SG1-24

Project: FRNP00511

Sample ID: 642072009

Client ID: FRNP005

Matrix: WATER

Collect Date: 19-OCT-23

Receive Date: 20-OCT-23

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.394	+/-0.576	0.832	+/-0.577	5.00	pCi/L			EJ1	11/08/23	0836	2514549	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	-0.0240	+/-0.822	1.86	+/-0.823	50.0	pCi/L			EJ1	11/03/23	0907	2514550	2
Rad Gas Flow Proportional Counting														
<i>905.0 Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	-5.25	+/-3.54	7.29	+/-3.54	8.00	pCi/L			ST2	11/02/23	1719	2514493	3
<i>9310,Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	2.47	+/-3.52	6.10	+/-3.54	15.0	pCi/L			KP1	10/30/23	1351	2514502	4
Beta	U	6.59	+/-8.39	14.2	+/-8.46	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
<i>906.0 Mod, Tritium Dist, Liquid "As Received"</i>														
Tritium		619	+/-234	314	+/-263	300	pCi/L			CR1	11/08/23	1912	2521783	5
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	0.617	+/-9.92	17.5	+/-9.92	25.0	pCi/L			AG2	11/09/23	0006	2512487	6

The following Analytical Methods were performed

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AlphaSpec Ra226, Liquid "As Received"	2514549	93.2	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2514550	76.7	(30%-110%)
Strontium Carrier	905.0 Mod, Sr90, liquid "As Received"	2514493	72.7	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2512487	92.1	(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: February 1, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: FB1SG1-24

Project: FRNP00511

Sample ID: 642072009

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: February 1, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: RI1SG1-24

Project: FRNP00511

Sample ID: 642072010

Client ID: FRNP005

Matrix: WATER

Collect Date: 19-OCT-23

Receive Date: 20-OCT-23

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	-0.0880	+/-0.457	1.16	+/-0.457	5.00	pCi/L			EJ1	11/08/23	0842	2514549	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	-0.463	+/-0.784	2.59	+/-0.787	50.0	pCi/L			EJ1	11/04/23	0942	2514550	2
Rad Gas Flow Proportional Counting														
<i>905.0 Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	-0.0257	+/-2.85	5.43	+/-2.85	8.00	pCi/L			ST2	11/02/23	1719	2514493	3
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	-2.30	+/-3.18	9.04	+/-3.18	15.0	pCi/L			KP1	10/30/23	1351	2514502	4
Beta	U	11.1	+/-8.59	13.9	+/-8.78	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
<i>906.0 Mod, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	227	+/-145	232	+/-152	300	pCi/L			GS3	11/03/23	1830	2512935	5
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	6.08	+/-10.0	17.2	+/-10.1	25.0	pCi/L			AG2	11/09/23	0023	2512487	6

The following Analytical Methods were performed

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Barium-133 Tracer	AlphaSpec Ra226, Liquid "As Received"	2514549	91.8	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2514550	76.5	(30%-110%)
Strontium Carrier	905.0 Mod, Sr90, liquid "As Received"	2514493	72.7	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2512487	93.8	(30%-110%)

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: February 1, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: RI1SG1-24

Project: FRNP00511

Sample ID: 642072010

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW384SG1-24 Project: FRNP00511
Sample ID: 642072001 Client ID: FRNP005
Matrix: WG
Collect Date: 19-OCT-23 07:10
Receive Date: 20-OCT-23
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011, VOA Compounds Liquid "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0191	0.00861	0.0191	ug/L	0.957	1	LOF	10/26/23	1511	2514735	2
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	1.55	0.330	2.00	mg/L		1	RM3	11/04/23	0207	2517921	3
Flow Injection Analysis												
9012B, Total Cyanide "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	10/23/23	0914	2512392	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens		10.8	3.33	10.0	ug/L		1	RMJ	11/04/23	0346	2519937	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	HXC1	10/21/23	1522	2512264	6
SW846 9056A Anions (5) "As Received"												
Bromide		0.425	0.0670	0.200	mg/L		1	LXA2	10/20/23	1420	2511922	7
Fluoride	J	0.202	0.0330	4.00	mg/L		1					
Chloride	J	31.9	0.335	250	mg/L		5	LXA2	10/21/23	0312	2511922	8
Nitrate-N	J	0.848	0.165	10.0	mg/L		5					
Sulfate		24.0	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	AXS5	11/01/23	1116	2516787	9
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Aluminum	J	0.0209	0.0193	0.0500	mg/L	1.00	1	PRB	11/04/23	1454	2512960	10
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	J	0.00255	0.00200	0.00500	mg/L	1.00	1					
Barium		0.261	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron		0.0363	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		29.9	0.0800	0.200	mg/L	1.00	1					
Chromium	J	0.00472	0.00300	0.0100	mg/L	1.00	1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

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

 Kevil, Kentucky 42053
 Contact: Ms. Jaime Morrow
 Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW384SG1-24	Project: FRNP00511
Sample ID: 642072001	Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Cobalt	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Copper		0.00229	0.000300	0.00200	mg/L	1.00	1					
Iron		0.446	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		0.0113	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	U	0.00100	0.000200	0.00100	mg/L	1.00	1					
Nickel	J	0.000629	0.000600	0.00200	mg/L	1.00	1					
Potassium		1.52	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					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					
Vanadium	BJ	0.00407	0.00330	0.0200	mg/L	1.00	1					
Zinc	J	0.00434	0.00330	0.0200	mg/L	1.00	1					
Sodium		60.1	0.800	2.50	mg/L	1.00	10	PRB	11/04/23	1628	2512960	11
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	11/04/23	1113	2512960	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	0.0970	0.0323	0.0970	ug/L	0.000970	1	JXM	11/09/23	2117	2520891	13
Aroclor-1221	U	0.0970	0.0323	0.0970	ug/L	0.000970	1					
Aroclor-1232	U	0.0970	0.0323	0.0970	ug/L	0.000970	1					
Aroclor-1242	U	0.0970	0.0323	0.0970	ug/L	0.000970	1					
Aroclor-1248	U	0.0970	0.0323	0.0970	ug/L	0.000970	1					
Aroclor-1254	U	0.0970	0.0323	0.0970	ug/L	0.000970	1					
Aroclor-1260	U	0.0970	0.0323	0.0970	ug/L	0.000970	1					
Aroclor-1268	U	0.0970	0.0323	0.0970	ug/L	0.000970	1					
Aroclor-Total	U	0.0970	0.0323	0.0970	ug/L	0.000970	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		238	2.38	10.0	mg/L			CH6	10/24/23	1513	2513108	14
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW384SG1-24
Sample ID: 642072001

Project: FRNP00511
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	10/20/23	1639	2512020	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	10/24/23	1333	2513215	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	UY2	1.00	0.333	1.00	ug/L		1					
2-Butanone	U	5.00	1.67	5.00	ug/L		1					
2-Hexanone	U	5.00	1.67	5.00	ug/L		1					
4-Methyl-2-pentanone	U	5.00	1.67	5.00	ug/L		1					
Acetone	U	5.00	1.74	5.00	ug/L		1					
Acrolein	U	5.00	1.67	5.00	ug/L		1					
Acrylonitrile	U	5.00	1.67	5.00	ug/L		1					
Benzene	U	1.00	0.333	1.00	ug/L		1					
Bromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromodichloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromoform	U	1.00	0.333	1.00	ug/L		1					
Bromomethane	U	1.00	0.337	1.00	ug/L		1					
Carbon disulfide	U	5.00	1.67	5.00	ug/L		1					
Carbon tetrachloride	U	1.00	0.333	1.00	ug/L		1					
Chlorobenzene	U	1.00	0.333	1.00	ug/L		1					
Chloroethane	U	1.00	0.333	1.00	ug/L		1					
Chloroform	U	1.00	0.333	1.00	ug/L		1					
Chloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromomethane	U	1.00	0.333	1.00	ug/L		1					
Ethylbenzene	U	1.00	0.333	1.00	ug/L		1					
Iodomethane	U	5.00	1.67	5.00	ug/L		1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW384SG1-24 Project: FRNP00511
Sample ID: 642072001 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	0.840	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		6.03	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	DG3	11/09/23	1128	2520888
SW846 3005A	ICP-MS 3005A PREP	JD2	10/31/23	0815	2512959
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JP2	10/31/23	1145	2516783
SW846 9010C Distillation	SW846 9010C Prep	ES2	10/23/23	0832	2512391
SW846 8011 PREP	8011 Prep	LOF	10/26/23	1234	2514734

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

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

 Kevil, Kentucky 42053
 Contact: Ms. Jaime Morrow
 Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW384SG1-24	Project: FRNP00511
Sample ID: 642072001	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 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 Compounds Liquid "As Received"	5.73 ug/L	6.83	84	(46%-159%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.205 ug/L	0.194	105	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.142 ug/L	0.194	73	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	44.4 ug/L	50.0	89	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	41.7 ug/L	50.0	83	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	45.7 ug/L	50.0	91	(77%-121%)

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID:	MW384SG1-24	Project:	FRNP00511
Sample ID:	642072002	Client ID:	FRNP005
Matrix:	WG		
Collect Date:	19-OCT-23 07:10		
Receive Date:	20-OCT-23		
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		0.249	0.000670	0.00400	mg/L	1.00	1	PRB	11/04/23	1458	2512960	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	JD2	10/31/23	0815	2512959
EPA 160	Laboratory Filtration	JP2	10/23/23	1435	2512066

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW385SG1-24 Project: FRNP00511
Sample ID: 642072003 Client ID: FRNP005
Matrix: WG
Collect Date: 19-OCT-23 08:01
Receive Date: 20-OCT-23
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011, VOA Compounds Liquid "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0189	0.00852	0.0189	ug/L	0.947	1	LOF	10/26/23	1536	2514735	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.883	0.330	2.00	mg/L		1	RM3	11/04/23	0347	2517921	3
Flow Injection Analysis												
9012B, Total Cyanide "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	10/23/23	0915	2512392	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	4.76	3.33	10.0	ug/L		1	RMJ	11/04/23	0013	2519937	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	HXC1	10/21/23	1535	2512264	6
SW846 9056A Anions (5) "As Received"												
Chloride	J	20.7	0.335	250	mg/L		5	LXA2	10/21/23	0343	2511922	7
Nitrate-N	J	0.821	0.165	10.0	mg/L		5					
Bromide		0.251	0.0670	0.200	mg/L		1	LXA2	10/20/23	1451	2511922	8
Fluoride	J	0.193	0.0330	4.00	mg/L		1					
Sulfate		19.0	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	AXS5	11/01/23	1117	2516787	9
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	11/04/23	1115	2512960	10
Tantalum	NU	0.00500	0.00100	0.00500	mg/L	1.00	1					
Aluminum		0.0591	0.0193	0.0500	mg/L	1.00	1	PRB	11/04/23	1501	2512960	11
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	J	0.00243	0.00200	0.00500	mg/L	1.00	1					
Barium		0.214	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron		0.0670	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

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

Contact: Kevil, Kentucky 42053
Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW385SG1-24 Project: FRNP00511
Sample ID: 642072003 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Calcium		24.8	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Cobalt	J	0.000593	0.000300	0.00100	mg/L	1.00	1					
Copper	J	0.00173	0.000300	0.00200	mg/L	1.00	1					
Iron		0.105	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		9.75	0.0100	0.0300	mg/L	1.00	1					
Manganese	J	0.00420	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	J	0.000237	0.000200	0.00100	mg/L	1.00	1					
Nickel	J	0.00126	0.000600	0.00200	mg/L	1.00	1					
Potassium		1.49	0.0800	0.300	mg/L	1.00	1					
Selenium		0.00522	0.00150	0.00500	mg/L	1.00	1					
Silver	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Sodium		39.7	0.0800	0.250	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					
Vanadium	BJ	0.00452	0.00330	0.0200	mg/L	1.00	1					
Zinc	J	0.00471	0.00330	0.0200	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	11/09/23	2137	2520891	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		182	2.38	10.0	mg/L			CH6	10/24/23	1513	2513108	13
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

Company : Four Rivers Nuclear Partnership, LLC
 Address : 5600 Hobbs Road
 Kevil, Kentucky 42053
 Contact: Ms. Jaime Morrow
 Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW385SG1-24	Project: FRNP00511
Sample ID: 642072003	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	10/20/23	1639	2512020	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	10/24/23	1401	2513215	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	UY2	1.00	0.333	1.00	ug/L		1					
2-Butanone	U	5.00	1.67	5.00	ug/L		1					
2-Hexanone	U	5.00	1.67	5.00	ug/L		1					
4-Methyl-2-pentanone	U	5.00	1.67	5.00	ug/L		1					
Acetone	U	5.00	1.74	5.00	ug/L		1					
Acrolein	U	5.00	1.67	5.00	ug/L		1					
Acrylonitrile	U	5.00	1.67	5.00	ug/L		1					
Benzene	U	1.00	0.333	1.00	ug/L		1					
Bromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromodichloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromoform	U	1.00	0.333	1.00	ug/L		1					
Bromomethane	U	1.00	0.337	1.00	ug/L		1					
Carbon disulfide	U	5.00	1.67	5.00	ug/L		1					
Carbon tetrachloride	U	1.00	0.333	1.00	ug/L		1					
Chlorobenzene	U	1.00	0.333	1.00	ug/L		1					
Chloroethane	U	1.00	0.333	1.00	ug/L		1					
Chloroform	U	1.00	0.333	1.00	ug/L		1					
Chloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromomethane	U	1.00	0.333	1.00	ug/L		1					
Ethylbenzene	U	1.00	0.333	1.00	ug/L		1					
Iodomethane	U	5.00	1.67	5.00	ug/L		1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW385SG1-24
Sample ID: 642072003

Project: FRNP00511
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	1.05	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		2.92	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	DG3	11/09/23	1128	2520888
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JP2	10/31/23	1145	2516783
SW846 3005A	ICP-MS 3005A PREP	JD2	10/31/23	0815	2512959
SW846 8011 PREP	8011 Prep	LOF	10/26/23	1234	2514734
SW846 9010C Distillation	SW846 9010C Prep	ES2	10/23/23	0832	2512391

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW385SG1-24 Project: FRNP00511
Sample ID: 642072003 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 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 Compounds Liquid "As Received"	6.59 ug/L	6.76	97	(46%-159%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.214 ug/L	0.200	107	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.146 ug/L	0.200	73	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	43.4 ug/L	50.0	87	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	41.7 ug/L	50.0	83	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	46.2 ug/L	50.0	92	(77%-121%)

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW385SG1-24 Project: FRNP00511
Sample ID: 642072004 Client ID: FRNP005
Matrix: WG
Collect Date: 19-OCT-23 08:01
Receive Date: 20-OCT-23
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		0.237	0.000670	0.00400	mg/L	1.00	1	PRB	11/04/23	1526	2512960	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	JD2	10/31/23	0815	2512959
EPA 160	Laboratory Filtration	JP2	10/23/23	1435	2512066

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW386DSG1-24 Project: FRNP00511
Sample ID: 642072005 Client ID: FRNP005
Matrix: WG
Collect Date: 19-OCT-23 09:03
Receive Date: 20-OCT-23
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011, VOA Compounds Liquid "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0192	0.00863	0.0192	ug/L	0.959	1	LOF	10/26/23	1649	2514735	2
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average		5.51	0.330	2.00	mg/L		1	RM3	11/04/23	0246	2517921	3
Flow Injection Analysis												
9012B, Total Cyanide "As Received"												
Cyanide, Total	J	0.00237	0.00167	0.200	mg/L	1.00	1	AXH3	10/23/23	0919	2512392	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens		128	3.33	10.0	ug/L		1	RMJ	11/04/23	0426	2519937	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	HXC1	10/21/23	1614	2512264	6
SW846 9056A Anions (5) "As Received"												
Chloride	J	9.28	0.335	250	mg/L		5	LXA2	10/21/23	0617	2511922	7
Sulfate		37.8	0.665	2.00	mg/L		5					
Bromide	J	0.144	0.0670	0.200	mg/L		1	LXA2	10/20/23	1522	2511922	8
Fluoride	J	0.758	0.0330	4.00	mg/L		1					
Nitrate-N	U	10.0	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	AXS5	11/01/23	1125	2516787	9
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Manganese		1.19	0.0100	0.0500	mg/L	1.00	10	PRB	11/04/23	1632	2512960	10
Sodium		101	0.800	2.50	mg/L	1.00	10					
Aluminum	U	0.0500	0.0193	0.0500	mg/L	1.00	1	PRB	11/04/23	1552	2512960	11
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	J	0.00299	0.00200	0.00500	mg/L	1.00	1					
Barium		0.209	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron	J	0.0122	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW386DSG1-24
Sample ID: 642072005

Project: FRNP00511
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	16.5	8.95	20.0	mg/L		1	JW2	10/20/23	1639	2512020	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	10/24/23	1428	2513215	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	UY2	1.00	0.333	1.00	ug/L		1					
2-Butanone	U	5.00	1.67	5.00	ug/L		1					
2-Hexanone	U	5.00	1.67	5.00	ug/L		1					
4-Methyl-2-pentanone	U	5.00	1.67	5.00	ug/L		1					
Acetone	U	5.00	1.74	5.00	ug/L		1					
Acrolein	U	5.00	1.67	5.00	ug/L		1					
Acrylonitrile	U	5.00	1.67	5.00	ug/L		1					
Benzene	U	1.00	0.333	1.00	ug/L		1					
Bromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromodichloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromoform	U	1.00	0.333	1.00	ug/L		1					
Bromomethane	U	1.00	0.337	1.00	ug/L		1					
Carbon disulfide	U	5.00	1.67	5.00	ug/L		1					
Carbon tetrachloride	U	1.00	0.333	1.00	ug/L		1					
Chlorobenzene	U	1.00	0.333	1.00	ug/L		1					
Chloroethane	U	1.00	0.333	1.00	ug/L		1					
Chloroform	U	1.00	0.333	1.00	ug/L		1					
Chloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromomethane	U	1.00	0.333	1.00	ug/L		1					
Ethylbenzene	U	1.00	0.333	1.00	ug/L		1					
Iodomethane	U	5.00	1.67	5.00	ug/L		1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW386DSG1-24
Sample ID: 642072005

Project: FRNP00511
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	1.12	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 7470A Prep	EPA 7470A Mercury Prep Liquid	JP2	10/31/23	1145	2516783
SW846 3535A	SW3535A PCB SPE Extraction	DG3	11/09/23	1128	2520888
SW846 8011 PREP	8011 Prep	LOF	10/26/23	1234	2514734
SW846 9010C Distillation	SW846 9010C Prep	ES2	10/23/23	0832	2512391
SW846 3005A	ICP-MS 3005A PREP	JD2	10/31/23	0815	2512959

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW386DSG1-24 Project: FRNP00511
Sample ID: 642072005 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 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 Compounds Liquid "As Received"	5.20 ug/L	6.85	76	(46%-159%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.199 ug/L	0.219	91	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.135 ug/L	0.219	62	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	44.5 ug/L	50.0	89	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	41.3 ug/L	50.0	83	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	46.5 ug/L	50.0	93	(77%-121%)

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW386DSG1-24 Project: FRNP00511
Sample ID: 642072006 Client ID: FRNP005
Matrix: WG
Collect Date: 19-OCT-23 09:03
Receive Date: 20-OCT-23
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		0.189	0.000670	0.00400	mg/L	1.00	1	PRB	11/04/23	1555	2512960	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	JP2	10/23/23	1435	2512066
SW846 3005A	ICP-MS 3005A PREP	JD2	10/31/23	0815	2512959

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

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

 Kevil, Kentucky 42053
 Contact: Ms. Jaime Morrow
 Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW386SG1-24	Project: FRNP00511
Sample ID: 642072007	Client ID: FRNP005
Matrix: WG	
Collect Date: 19-OCT-23 09:03	
Receive Date: 20-OCT-23	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011, VOA Compounds Liquid "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0188	0.00845	0.0188	ug/L	0.939	1	LOF	10/26/23	1714	2514735	2
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average		5.70	0.330	2.00	mg/L		1	RM3	11/04/23	0544	2517921	3
Flow Injection Analysis												
9012B, Total Cyanide "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	10/23/23	0920	2512392	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens		139	3.33	10.0	ug/L		1	RMJ	11/04/23	0522	2519937	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	HXC1	10/21/23	1627	2512264	6
SW846 9056A Anions (5) "As Received"												
Chloride	J	9.59	0.335	250	mg/L		5	LXA2	10/21/23	0648	2511922	7
Sulfate		38.2	0.665	2.00	mg/L		5					
Bromide	J	0.145	0.0670	0.200	mg/L		1	LXA2	10/20/23	1553	2511922	8
Fluoride	J	0.735	0.0330	4.00	mg/L		1					
Nitrate-N	U	10.0	0.0330	10.0	mg/L		1					
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	J	0.0000890	0.0000670	0.000200	mg/L	1.00	1	AXS5	11/01/23	1127	2516787	9
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Manganese		1.20	0.0100	0.0500	mg/L	1.00	10	PRB	11/06/23	1046	2512960	10
Sodium		102	0.800	2.50	mg/L	1.00	10					
Aluminum	U	0.0500	0.0193	0.0500	mg/L	1.00	1	PRB	11/04/23	1559	2512960	11
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	J	0.00331	0.00200	0.00500	mg/L	1.00	1					
Barium		0.214	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron	J	0.0119	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

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

Contact: Kevil, Kentucky 42053
Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW386SG1-24 Project: FRNP00511
Sample ID: 642072007 Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Calcium		20.6	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Cobalt		0.0100	0.000300	0.00100	mg/L	1.00	1					
Copper	J	0.00154	0.000300	0.00200	mg/L	1.00	1					
Iron		0.930	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		8.43	0.0100	0.0300	mg/L	1.00	1					
Molybdenum	J	0.000609	0.000200	0.00100	mg/L	1.00	1					
Nickel		0.00483	0.000600	0.00200	mg/L	1.00	1					
Potassium	J	0.259	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					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					
Vanadium	BJ	0.00466	0.00330	0.0200	mg/L	1.00	1					
Zinc	J	0.00378	0.00330	0.0200	mg/L	1.00	1					
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	11/04/23	1131	2512960	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	0.112	0.0374	0.112	ug/L	0.00112	1	JXM	11/09/23	2254	2520891	13
Aroclor-1221	U	0.112	0.0374	0.112	ug/L	0.00112	1					
Aroclor-1232	U	0.112	0.0374	0.112	ug/L	0.00112	1					
Aroclor-1242	U	0.112	0.0374	0.112	ug/L	0.00112	1					
Aroclor-1248	U	0.112	0.0374	0.112	ug/L	0.00112	1					
Aroclor-1254	U	0.112	0.0374	0.112	ug/L	0.00112	1					
Aroclor-1260	U	0.112	0.0374	0.112	ug/L	0.00112	1					
Aroclor-1268	U	0.112	0.0374	0.112	ug/L	0.00112	1					
Aroclor-Total	U	0.112	0.0374	0.112	ug/L	0.00112	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		325	2.38	10.0	mg/L			CH6	10/24/23	1513	2513108	14
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

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

 Kevil, Kentucky 42053
 Contact: Ms. Jaime Morrow
 Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW386SG1-24	Project: FRNP00511
Sample ID: 642072007	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	14.2	8.95	20.0	mg/L		1	JW2	10/20/23	1639	2512020	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	10/24/23	1456	2513215	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	UY2	1.00	0.333	1.00	ug/L		1					
2-Butanone	U	5.00	1.67	5.00	ug/L		1					
2-Hexanone	U	5.00	1.67	5.00	ug/L		1					
4-Methyl-2-pentanone	U	5.00	1.67	5.00	ug/L		1					
Acetone	U	5.00	1.74	5.00	ug/L		1					
Acrolein	U	5.00	1.67	5.00	ug/L		1					
Acrylonitrile	U	5.00	1.67	5.00	ug/L		1					
Benzene	U	1.00	0.333	1.00	ug/L		1					
Bromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromodichloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromoform	U	1.00	0.333	1.00	ug/L		1					
Bromomethane	U	1.00	0.337	1.00	ug/L		1					
Carbon disulfide	U	5.00	1.67	5.00	ug/L		1					
Carbon tetrachloride	U	1.00	0.333	1.00	ug/L		1					
Chlorobenzene	U	1.00	0.333	1.00	ug/L		1					
Chloroethane	U	1.00	0.333	1.00	ug/L		1					
Chloroform	U	1.00	0.333	1.00	ug/L		1					
Chloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromomethane	U	1.00	0.333	1.00	ug/L		1					
Ethylbenzene	U	1.00	0.333	1.00	ug/L		1					
Iodomethane	U	5.00	1.67	5.00	ug/L		1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

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

 Kevil, Kentucky 42053
 Contact: Ms. Jaime Morrow
 Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW386SG1-24	Project: FRNP00511
Sample ID: 642072007	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 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 Compounds Liquid "As Received"	5.23 ug/L	6.70	78	(46%-159%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.198 ug/L	0.224	88	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.126 ug/L	0.224	56	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	45.2 ug/L	50.0	90	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	41.9 ug/L	50.0	84	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	46.7 ug/L	50.0	93	(77%-121%)

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: MW386SG1-24 Project: FRNP00511
Sample ID: 642072008 Client ID: FRNP005
Matrix: WG
Collect Date: 19-OCT-23 09:03
Receive Date: 20-OCT-23
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		0.189	0.000670	0.00400	mg/L	1.00	1	PRB	11/04/23	1603	2512960	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	JD2	10/31/23	0815	2512959
EPA 160	Laboratory Filtration	JP2	10/23/23	1435	2512066

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	SW846 3005A/6020B		

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: FB1SG1-24
Sample ID: 642072009

Project: FRNP00511
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
6020, Metals (15+) "As Received"												
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	11/04/23	1133	2512960	6
Tantalum	UN	0.00500	0.00100	0.00500	mg/L	1.00	1					
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.103	0.0342	0.103	ug/L	0.00103	1	JXM	11/09/23	2314	2520891	7
Aroclor-1221	U	0.103	0.0342	0.103	ug/L	0.00103	1					
Aroclor-1232	U	0.103	0.0342	0.103	ug/L	0.00103	1					
Aroclor-1242	U	0.103	0.0342	0.103	ug/L	0.00103	1					
Aroclor-1248	U	0.103	0.0342	0.103	ug/L	0.00103	1					
Aroclor-1254	U	0.103	0.0342	0.103	ug/L	0.00103	1					
Aroclor-1260	U	0.103	0.0342	0.103	ug/L	0.00103	1					
Aroclor-1268	U	0.103	0.0342	0.103	ug/L	0.00103	1					
Aroclor-Total	U	0.103	0.0342	0.103	ug/L	0.00103	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	10/24/23	1523	2513215	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	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
1,2,3-Trichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dibromoethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,4-Dichlorobenzene	UY2	1.00	0.333	1.00	ug/L		1					
2-Butanone	U	5.00	1.67	5.00	ug/L		1					
2-Hexanone	U	5.00	1.67	5.00	ug/L		1					
4-Methyl-2-pentanone	U	5.00	1.67	5.00	ug/L		1					
Acetone	U	5.00	1.74	5.00	ug/L		1					
Acrolein	U	5.00	1.67	5.00	ug/L		1					
Acrylonitrile	U	5.00	1.67	5.00	ug/L		1					
Benzene	U	1.00	0.333	1.00	ug/L		1					
Bromochloromethane	U	1.00	0.333	1.00	ug/L		1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: FB1SG1-24 Project: FRNP00511
Sample ID: 642072009 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	EPA 300.0		
4	SW846 7470A		
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 Compounds Liquid "As Received"	6.63 ug/L	6.68	99	(46%-159%)
Decachlorobiphenyl		8082A, PCB Liquids "As Received"	0.216 ug/L	0.206	105	(30%-135%)
4cmx		8082A, PCB Liquids "As Received"	0.152 ug/L	0.206	74	(26%-108%)
Bromofluorobenzene		8260D, Volatiles- full suite "As Received"	46.1 ug/L	50.0	92	(74%-123%)
1,2-Dichloroethane-d4		8260D, Volatiles- full suite "As Received"	41.7 ug/L	50.0	83	(76%-127%)
Toluene-d8		8260D, Volatiles- full suite "As Received"	47.1 ug/L	50.0	94	(77%-121%)

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: RI1SG1-24
Sample ID: 642072010

Project: FRNP00511
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	U	1.00	0.333	1.00	ug/L		1					
Chloroethane	U	1.00	0.333	1.00	ug/L		1					
Chloroform	U	1.00	0.333	1.00	ug/L		1					
Chloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromomethane	U	1.00	0.333	1.00	ug/L		1					
Ethylbenzene	U	1.00	0.333	1.00	ug/L		1					
Iodomethane	U	5.00	1.67	5.00	ug/L		1					
Methylene chloride	J	1.03	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	DG3	11/09/23	1128	2520888
SW846 3005A	ICP-MS 3005A PREP	JD2	10/31/23	0815	2512959
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	JP2	10/31/23	1145	2516783
SW846 8011 PREP	8011 Prep	LOF	10/26/23	1234	2514734

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

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

Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: RI1SG1-24 Project: FRNP00511
Sample ID: 642072010 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	EPA 300.0		
4	SW846 7470A		
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 Compounds Liquid "As Received"	6.84 ug/L	6.73	102	(46%-159%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.242 ug/L	0.231	105	(30%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.157 ug/L	0.231	68	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	44.3 ug/L	50.0	89	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	41.2 ug/L	50.0	82	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	46.2 ug/L	50.0	92	(77%-121%)

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: TB4SG1-24 Project: FRNP00511
Sample ID: 642072011 Client ID: FRNP005
Matrix: WATER
Collect Date: 19-OCT-23 06:30
Receive Date: 20-OCT-23
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011, VOA Compounds Liquid "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0189	0.00849	0.0189	ug/L	0.944	1	LOF	10/26/23	1917	2514735	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	10/24/23	1618	2513215	3
1,1,1-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
1,2,3-Trichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dibromoethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,4-Dichlorobenzene	UY2	1.00	0.333	1.00	ug/L		1					
2-Butanone	U	5.00	1.67	5.00	ug/L		1					
2-Hexanone	U	5.00	1.67	5.00	ug/L		1					
4-Methyl-2-pentanone	U	5.00	1.67	5.00	ug/L		1					
Acetone	U	5.00	1.74	5.00	ug/L		1					
Acrolein	U	5.00	1.67	5.00	ug/L		1					
Acrylonitrile	U	5.00	1.67	5.00	ug/L		1					
Benzene	U	1.00	0.333	1.00	ug/L		1					
Bromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromodichloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromoform	U	1.00	0.333	1.00	ug/L		1					
Bromomethane	U	1.00	0.337	1.00	ug/L		1					
Carbon disulfide	U	5.00	1.67	5.00	ug/L		1					
Carbon tetrachloride	U	1.00	0.333	1.00	ug/L		1					
Chlorobenzene	U	1.00	0.333	1.00	ug/L		1					
Chloroethane	U	1.00	0.333	1.00	ug/L		1					
Chloroform	U	1.00	0.333	1.00	ug/L		1					
Chloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromomethane	U	1.00	0.333	1.00	ug/L		1					
Ethylbenzene	U	1.00	0.333	1.00	ug/L		1					
Iodomethane	U	5.00	1.67	5.00	ug/L		1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Quarterly(SG24-01)

Client Sample ID: TB4SG1-24
Sample ID: 642072011

Project: FRNP00511
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

THIS PAGE INTENTIONALLY LEFT BLANK

ATTACHMENT C5

GEL LABORATORIES CERTIFICATE OF ANALYSIS

THIS PAGE INTENTIONALLY LEFT BLANK

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: January 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-01)

Client Sample ID: MW369UG1-24
Sample ID: 640884001
Matrix: WG
Collect Date: 11-OCT-23
Receive Date: 12-OCT-23
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	0.405	+/-0.842	1.24	+/-0.842	5.00	pCi/L			CM4	11/03/23	0901	2510223	1
------------	---	-------	----------	------	----------	------	-------	--	--	-----	----------	------	---------	---

Th-01-RC M, Th Isotopes, Liquid "As Received"

Thorium-230	U	1.63	+/-1.61	2.18	+/-1.63	50.0	pCi/L			CM4	11/01/23	1412	2510227	2
-------------	---	------	---------	------	---------	------	-------	--	--	-----	----------	------	---------	---

Thorium-232	U	-0.166	+/-0.546	1.51	+/-0.547		pCi/L							
-------------	---	--------	----------	------	----------	--	-------	--	--	--	--	--	--	--

Rad Gas Flow Proportional Counting

904.0Mod, Ra228, Liquid "As Received"

Radium-228	U	2.82	+/-2.08	3.13	+/-2.20	4.99	pCi/L			JE1	10/20/23	1122	2509216	3
------------	---	------	---------	------	---------	------	-------	--	--	-----	----------	------	---------	---

905.0Mod, Sr90, liquid "As Received"

Strontium-90	U	3.63	+/-2.85	4.60	+/-2.90	8.00	pCi/L			ST2	11/07/23	1303	2513903	4
--------------	---	------	---------	------	---------	------	-------	--	--	-----	----------	------	---------	---

9310, Alpha/Beta Activity, liquid "As Received"

Alpha	U	2.23	+/-4.78	9.13	+/-4.79	15.0	pCi/L			KP1	10/30/23	1232	2510825	5
-------	---	------	---------	------	---------	------	-------	--	--	-----	----------	------	---------	---

Beta		45.5	+/-10.5	12.1	+/-12.9	50.0	pCi/L							
------	--	------	---------	------	---------	------	-------	--	--	--	--	--	--	--

Rad Liquid Scintillation Analysis

906.0M, Tritium Dist, Liquid "As Received"

Tritium	U	-45.9	+/-125	229	+/-125	300	pCi/L			GS3	11/01/23	1611	2512932	6
---------	---	-------	--------	-----	--------	-----	-------	--	--	-----	----------	------	---------	---

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

Technetium-99		76.7	+/-14.0	18.3	+/-16.5	25.0	pCi/L			AG2	11/06/23	0213	2508220	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"	2510223	90.2	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2510227	101	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2509216	90.9	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2513903	77.3	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2508220	93.8	(30%-110%)

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: January 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-01)

Client Sample ID: MW369UG1-24

Project: FRNP00507

Sample ID: 640884001

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: January 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-01)

Client Sample ID: MW370UG1-24

Project: FRNP00507

Sample ID: 640884003

Client ID: FRNP005

Matrix: WG

Collect Date: 11-OCT-23

Receive Date: 12-OCT-23

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>AN-1418 AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.243	+/-0.767	1.15	+/-0.767	5.00	pCi/L			CM4	11/03/23	0901	2510223	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	2.50	+/-2.08	2.64	+/-2.12	50.0	pCi/L			CM4	11/01/23	1412	2510227	2
Thorium-232	U	-0.103	+/-0.910	2.18	+/-0.911		pCi/L							
Rad Gas Flow Proportional Counting														
<i>904.0Mod, Ra228, Liquid "As Received"</i>														
Radium-228	U	2.30	+/-2.61	4.37	+/-2.67	4.99	pCi/L			JE1	10/20/23	1122	2509216	3
<i>905.0Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	5.54	+/-4.03	6.31	+/-4.13	8.00	pCi/L			ST2	11/01/23	1658	2513903	4
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	-0.840	+/-4.98	11.5	+/-4.98	15.0	pCi/L			KP1	10/30/23	1232	2510825	5
Beta	U	8.90	+/-7.11	11.4	+/-7.26	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
<i>906.0M, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	-14.4	+/-126	227	+/-126	300	pCi/L			GS3	11/01/23	1648	2512932	6
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	18.6	+/-11.5	18.7	+/-11.7	25.0	pCi/L			AG2	11/07/23	1306	2508220	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"	2510223	82.1	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2510227	94.7	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2509216	93.3	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2513903	79.5	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2508220	92.9	(30%-110%)

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: January 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-01)

Client Sample ID: MW370UG1-24

Project: FRNP00507

Sample ID: 640884003

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: January 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-01)

Client Sample ID: MW371UG1-24

Project: FRNP00507

Sample ID: 640884005

Client ID: FRNP005

Matrix: WG

Collect Date: 11-OCT-23

Receive Date: 12-OCT-23

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>AN-1418 AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.431	+/-0.460	0.516	+/-0.461	5.00	pCi/L			CM4	11/02/23	0842	2510223	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	-0.0785	+/-1.09	2.53	+/-1.10	50.0	pCi/L			CM4	11/01/23	1412	2510227	2
Thorium-232	U	0.0459	+/-0.923	2.00	+/-0.923		pCi/L							
Rad Gas Flow Proportional Counting														
<i>904.0Mod, Ra228, Liquid "As Received"</i>														
Radium-228	U	1.17	+/-1.86	3.27	+/-1.89	4.99	pCi/L			JE1	10/20/23	1122	2509216	3
<i>905.0Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	2.88	+/-2.04	3.19	+/-2.10	8.00	pCi/L			ST2	11/07/23	1030	2513903	4
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	3.63	+/-5.58	9.93	+/-5.61	15.0	pCi/L			KP1	10/30/23	1232	2510825	5
Beta	U	3.66	+/-7.30	12.8	+/-7.32	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
<i>906.0M, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	35.7	+/-130	229	+/-130	300	pCi/L			GS3	11/01/23	1725	2512932	6
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	-7.46	+/-9.66	17.8	+/-9.66	25.0	pCi/L			AG2	11/06/23	0246	2508220	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"	2510223	90.4	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2510227	94.2	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2509216	90.5	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2513903	79.5	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2508220	95.6	(30%-110%)

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: January 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-01)

Client Sample ID: MW371UG1-24

Project: FRNP00507

Sample ID: 640884005

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: January 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-01)

Client Sample ID: MW372UG1-24

Project: FRNP00507

Sample ID: 640884007

Client ID: FRNP005

Matrix: WG

Collect Date: 11-OCT-23

Receive Date: 12-OCT-23

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>AN-1418 AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.483	+/-0.528	0.686	+/-0.529	5.00	pCi/L			CM4	11/02/23	0842	2510223	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.0946	+/-1.46	3.11	+/-1.46	50.0	pCi/L			CM4	11/01/23	1412	2510227	2
Thorium-232	U	0.674	+/-1.23	1.48	+/-1.23		pCi/L							
Rad Gas Flow Proportional Counting														
<i>904.0Mod, Ra228, Liquid "As Received"</i>														
Radium-228	U	0.290	+/-1.75	3.38	+/-1.76	4.99	pCi/L			JE1	10/20/23	1122	2509216	3
<i>905.0Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	2.91	+/-3.62	6.15	+/-3.65	8.00	pCi/L			ST2	11/01/23	1658	2513903	4
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	-0.220	+/-4.13	10.1	+/-4.13	15.0	pCi/L			KP1	10/30/23	1232	2510825	5
Beta		29.2	+/-9.25	12.2	+/-10.5	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
<i>906.0M, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	9.23	+/-128	229	+/-128	300	pCi/L			GS3	11/01/23	1801	2512932	6
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99		22.5	+/-12.1	19.2	+/-12.3	25.0	pCi/L			AG2	11/06/23	0303	2508220	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"	2510223	87	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2510227	81.4	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2509216	89.9	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2513903	63.6	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2508220	94.6	(30%-110%)

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: January 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-01)

Client Sample ID: MW372UG1-24

Project: FRNP00507

Sample ID: 640884007

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: January 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-01)

Client Sample ID: MW373UG1-24

Project: FRNP00507

Sample ID: 640884009

Client ID: FRNP005

Matrix: WG

Collect Date: 11-OCT-23

Receive Date: 12-OCT-23

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>AN-1418 AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	0.199	+/-0.456	0.810	+/-0.457	5.00	pCi/L			CM4	11/02/23	0842	2510223	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	0.179	+/-1.18	2.42	+/-1.18	50.0	pCi/L			CM4	11/01/23	1412	2510227	2
Thorium-232	U	0.0402	+/-0.866	1.88	+/-0.867		pCi/L							
Rad Gas Flow Proportional Counting														
<i>904.0Mod, Ra228, Liquid "As Received"</i>														
Radium-228	U	0.993	+/-1.94	3.48	+/-1.96	4.99	pCi/L			JE1	10/20/23	1122	2509216	3
<i>905.0Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	4.55	+/-3.76	5.98	+/-3.84	8.00	pCi/L			ST2	11/01/23	1658	2513903	4
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	1.39	+/-3.86	8.09	+/-3.86	15.0	pCi/L			KP1	10/30/23	1235	2510825	5
Beta	U	6.39	+/-8.56	14.5	+/-8.62	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
<i>906.0M, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	-33.1	+/-125	229	+/-125	300	pCi/L			GS3	11/01/23	1838	2512932	6
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	14.7	+/-11.0	18.1	+/-11.2	25.0	pCi/L			AG2	11/06/23	0319	2508220	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"	2510223	87.3	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2510227	89.7	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2509216	88.1	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2513903	77.3	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2508220	96.5	(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: January 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-01)

Client Sample ID: MW373UG1-24

Project: FRNP00507

Sample ID: 640884009

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: January 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-01)

Client Sample ID: MW374UG1-24

Project: FRNP00507

Sample ID: 640884011

Client ID: FRNP005

Matrix: WG

Collect Date: 11-OCT-23

Receive Date: 12-OCT-23

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>AN-1418 AlphaSpec Ra226, Liquid "As Received"</i>														
Radium-226	U	1.14	+/-1.28	1.56	+/-1.28	5.00	pCi/L			CM4	11/03/23	0901	2510223	1
<i>Th-01-RC M, Th Isotopes, Liquid "As Received"</i>														
Thorium-230	U	2.43	+/-2.25	2.89	+/-2.28	50.0	pCi/L			CM4	11/01/23	1412	2510227	2
Thorium-232	U	0.330	+/-1.27	2.42	+/-1.27		pCi/L							
Rad Gas Flow Proportional Counting														
<i>904.0Mod, Ra228, Liquid "As Received"</i>														
Radium-228	U	0.705	+/-1.91	3.54	+/-1.92	4.99	pCi/L			JE1	10/20/23	1122	2509216	3
<i>905.0Mod, Sr90, liquid "As Received"</i>														
Strontium-90	U	0.174	+/-3.32	6.28	+/-3.32	8.00	pCi/L			ST2	11/01/23	1658	2513903	4
<i>9310, Alpha/Beta Activity, liquid "As Received"</i>														
Alpha	U	3.69	+/-6.42	11.7	+/-6.45	15.0	pCi/L			KP1	10/30/23	1235	2510825	5
Beta	U	8.54	+/-8.51	14.1	+/-8.63	50.0	pCi/L							
Rad Liquid Scintillation Analysis														
<i>906.0M, Tritium Dist, Liquid "As Received"</i>														
Tritium	U	-87.8	+/-121	228	+/-121	300	pCi/L			GS3	11/01/23	1915	2512932	6
<i>Tc-02-RC-MOD, Tc99, Liquid "As Received"</i>														
Technetium-99	U	14.6	+/-11.9	19.7	+/-12.1	25.0	pCi/L			AG2	11/06/23	0336	2508220	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"	2510223	91.1	(30%-110%)
Thorium-229 Tracer	Th-01-RC M, Th Isotopes, Liquid "As Received"	2510227	83.8	(30%-110%)
Barium-133 Tracer	904.0Mod, Ra228, Liquid "As Received"	2509216	90.8	(30%-110%)
Strontium Carrier	905.0Mod, Sr90, liquid "As Received"	2513903	81.8	(30%-110%)
Technetium-99m Tracer	Tc-02-RC-MOD, Tc99, Liquid "As Received"	2508220	91.9	(30%-110%)

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: January 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-U Landfill Quarterly(UG24-01)

Client Sample ID: MW374UG1-24

Project: FRNP00507

Sample ID: 640884011

Client ID: FRNP005

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

Notes:

The MDC is a sample specific MDC.

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

Column headers are defined as follows:

DF: Dilution Factor

Mtd.: Method

DL: Detection Limit

PF: Prep Factor

Lc/LC: Critical Level

RL: Reporting Limit

MDA: Minimum Detectable Activity

TPU: Total Propagated Uncertainty

MDC: Minimum Detectable Concentration

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 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(UG24-01)

Client Sample ID: MW369UG1-24 Project: FRNP00507
Sample ID: 640884001 Client ID: FRNP005
Matrix: WG
Collect Date: 11-OCT-23 07:41
Receive Date: 12-OCT-23
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0190	0.00853	0.0190	ug/L	0.948	1	LOF	10/17/23	1635	2507796	2
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.824	0.330	2.00	mg/L		1	RM3	11/03/23	0627	2517902	3
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	10/23/23	0713	2508852	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	7.88	3.33	10.0	ug/L		1	RMJ	10/21/23	0127	2509519	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	HXC1	10/20/23	1731	2512145	6
SW846 9056A Anions (5 elements) "As Received"												
Bromide		0.331	0.0670	0.200	mg/L		1	JLD1	10/12/23	1329	2507664	7
Fluoride	J	0.292	0.0330	4.00	mg/L		1					
Nitrate-N	J	0.922	0.0330	10.0	mg/L		1					
Sulfate		8.72	0.133	0.400	mg/L		1					
Chloride	J	27.5	0.335	250	mg/L		5	JLD1	10/12/23	2357	2507664	8
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	AXS5	10/30/23	1231	2514927	9
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Aluminum		0.0661	0.0193	0.0500	mg/L	1.00	1	PRB	11/03/23	1645	2508582	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		0.379	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron		0.0159	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		16.0	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 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(UG24-01)

Client Sample ID: MW370UG1-24 Project: FRNP00507
Sample ID: 640884003 Client ID: FRNP005
Matrix: WG
Collect Date: 11-OCT-23 08:28
Receive Date: 12-OCT-23
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	0.0187	0.00841	0.0187	ug/L	0.934	1	LOF	10/17/23	1659	2507796	2
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.846	0.330	2.00	mg/L		1	RM3	11/03/23	0807	2517902	3
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	10/23/23	0714	2508852	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens		10.2	3.33	10.0	ug/L		1	RMJ	10/20/23	2334	2509519	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	HXC1	10/20/23	1744	2512145	6
SW846 9056A Anions (5 elements) "As Received"												
Bromide		0.549	0.0670	0.200	mg/L		1	JLD1	10/12/23	1401	2507664	7
Fluoride	J	0.238	0.0330	4.00	mg/L		1					
Nitrate-N	J	0.971	0.0330	10.0	mg/L		1					
Chloride	J	39.4	0.670	250	mg/L		10	JLD1	10/13/23	0028	2507664	8
Sulfate		18.8	1.33	4.00	mg/L		10					
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	AXS5	10/30/23	1232	2514927	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	11/03/23	1652	2508582	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		0.234	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron		0.118	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		29.0	0.0800	0.200	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 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(UG24-01)

Client Sample ID: MW370UG1-24
Sample ID: 640884003

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"												
Cobalt	J	0.000302	0.000300	0.00100	mg/L	1.00	1					
Copper		0.00205	0.000300	0.00200	mg/L	1.00	1					
Iron	J	0.0622	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		12.1	0.0100	0.0300	mg/L	1.00	1					
Manganese		0.00696	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		2.55	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		43.3	0.0800	0.250	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					
Vanadium	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Zinc	J	0.00963	0.00330	0.0200	mg/L	1.00	1					
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	11/03/23	2259	2508582	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	0.100	0.0333	0.100	ug/L	0.00100	1	NS2	11/01/23	1400	2517137	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		230	2.38	10.0	mg/L			CH6	10/13/23	1601	2508295	13
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 31, 2024

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

Contact: Kevil, Kentucky 42053
Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-01)

Client Sample ID: MW370UG1-24
Sample ID: 640884003

Project: FRNP00507
Client ID: FRNP005

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
Methylene chloride	U	5.00	0.500	5.00	ug/L		1					
Styrene	U	1.00	0.333	1.00	ug/L		1					
Tetrachloroethylene	U	1.00	0.333	1.00	ug/L		1					
Toluene	U	1.00	0.333	1.00	ug/L		1					
Trichloroethylene		2.84	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	EK1	10/27/23	1210	2514920
SW846 8011 PREP	8011 Prep	LOF	10/17/23	1322	2507795
SW846 3005A	ICP-MS 3005A PREP	JM13	10/17/23	1535	2508581
SW846 9010C Distillation	SW846 9010C Prep	ES2	10/18/23	0901	2508851
SW846 3535A	SW3535A PCB SPE Extraction	LW1	11/01/23	0543	2517128
SW846 9010C Distillation	SW846 9010C Prep	ES2	10/20/23	1051	2508851

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 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(UG24-01)

Client Sample ID: MW370UG1-24	Project: FRNP00507
Sample ID: 640884003	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 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"	4.96 ug/L	6.67	74	(46%-159%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.160 ug/L	0.200	80	(32%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.114 ug/L	0.200	57	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	49.2 ug/L	50.0	98	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	50.3 ug/L	50.0	101	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	50.9 ug/L	50.0	102	(77%-121%)

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 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(UG24-01)

Client Sample ID: MW370UG1-24 Project: FRNP00507
Sample ID: 640884004 Client ID: FRNP005
Matrix: WG
Collect Date: 11-OCT-23 08:28
Receive Date: 12-OCT-23
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		0.239	0.000670	0.00400	mg/L	1.00	1	PRB	11/03/23	1718	2508582	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	RXB5	10/13/23	1438	2508416
SW846 3005A	ICP-MS 3005A PREP	JM13	10/17/23	1535	2508581

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 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(UG24-01)

Client Sample ID: MW371UG1-24 Project: FRNP00507
Sample ID: 640884005 Client ID: FRNP005
Matrix: WG
Collect Date: 11-OCT-23 09:30
Receive Date: 12-OCT-23
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	0.0187	0.00844	0.0187	ug/L	0.937	1	LOF	10/17/23	1812	2507796	1
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average		2.11	0.330	2.00	mg/L		1	RM3	11/03/23	0706	2517902	3
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	10/23/23	0717	2508852	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	4.52	3.33	10.0	ug/L		1	RMJ	10/21/23	0230	2509519	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	HXC1	10/20/23	1822	2512145	6
SW846 9056A Anions (5 elements) "As Received"												
Nitrate-N	J	0.172	0.0660	10.0	mg/L		2	JLD1	10/13/23	0202	2507664	7
Bromide	U	0.200	0.0670	0.200	mg/L		1	JLD1	10/12/23	1432	2507664	8
Chloride	J	3.73	0.0670	250	mg/L		1					
Fluoride	J	0.284	0.0330	4.00	mg/L		1					
Sulfate		15.8	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	AXS5	10/30/23	1244	2514927	9
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Aluminum		0.949	0.0193	0.0500	mg/L	1.00	1	PRB	11/03/23	1743	2508582	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		0.138	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					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 31, 2024

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

Contact: Kevil, Kentucky 42053
 Ms. Jaime Morrow
 Project: C-746-U Landfill Quarterly(UG24-01)

Client Sample ID: MW371UG1-24	Project: FRNP00507
Sample ID: 640884005	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 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"	6.14 ug/L	6.70	92	(46%-159%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.168 ug/L	0.203	83	(32%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.127 ug/L	0.203	63	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	48.4 ug/L	50.0	97	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	51.4 ug/L	50.0	103	(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	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: January 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(UG24-01)

Client Sample ID: MW371UG1-24 Project: FRNP00507
Sample ID: 640884006 Client ID: FRNP005
Matrix: WG
Collect Date: 11-OCT-23 09:30
Receive Date: 12-OCT-23
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		0.137	0.000670	0.00400	mg/L	1.00	1	PRB	11/03/23	1747	2508582	1
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Uranium		0.00157	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	RXB5	10/13/23	1438	2508416
SW846 3005A	ICP-MS 3005A PREP	JM13	10/17/23	1535	2508581

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 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(UG24-01)

Client Sample ID: MW372UG1-24	Project: FRNP00507
Sample ID: 640884007	Client ID: FRNP005
Matrix: WG	
Collect Date: 11-OCT-23 10:17	
Receive Date: 12-OCT-23	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0189	0.00853	0.0189	ug/L	0.947	1	LOF	10/17/23	1837	2507796	2
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	1.00	0.330	2.00	mg/L		1	RM3	11/03/23	1004	2517902	3
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	10/23/23	0718	2508852	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens	J	8.32	3.33	10.0	ug/L		1	RMJ	10/21/23	0310	2509519	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	HXC1	10/20/23	1835	2512145	6
SW846 9056A Anions (5 elements) "As Received"												
Chloride	J	38.4	0.670	250	mg/L		10	JLD1	10/13/23	0234	2507664	7
Sulfate		143	1.33	4.00	mg/L		10					
Bromide		0.497	0.0670	0.200	mg/L		1	JLD1	10/12/23	1503	2507664	8
Fluoride	J	0.263	0.0330	4.00	mg/L		1					
Nitrate-N	J	0.818	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	AXS5	10/30/23	1245	2514927	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	11/03/23	2314	2508582	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	11/03/23	1750	2508582	11
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	U	0.00500	0.00200	0.00500	mg/L	1.00	1					
Barium		0.0547	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 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(UG24-01)

Client Sample ID: MW372UG1-24
Sample ID: 640884007

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"												
Cobalt	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Copper	J	0.00162	0.000300	0.00200	mg/L	1.00	1					
Iron		0.125	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		21.6	0.0100	0.0300	mg/L	1.00	1					
Manganese	J	0.00265	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	J	0.000220	0.000200	0.00100	mg/L	1.00	1					
Nickel	J	0.000761	0.000600	0.00200	mg/L	1.00	1					
Potassium		2.10	0.0800	0.300	mg/L	1.00	1					
Selenium	J	0.00160	0.00150	0.00500	mg/L	1.00	1					
Silver	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Uranium	U	0.000200	0.0000670	0.000200	mg/L	1.00	1					
Vanadium	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Zinc	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Boron		1.19	0.104	0.300	mg/L	1.00	20	PRB	11/03/23	1845	2508582	12
Calcium		64.6	1.60	4.00	mg/L	1.00	20					
Sodium		59.0	1.60	5.00	mg/L	1.00	20					
Semi-Volatiles-PCB												
8082A, PCB Liquids "As Received"												
Aroclor-1016	U	0.104	0.0347	0.104	ug/L	0.00104	1	NS2	11/01/23	1500	2517137	13
Aroclor-1221	U	0.104	0.0347	0.104	ug/L	0.00104	1					
Aroclor-1232	U	0.104	0.0347	0.104	ug/L	0.00104	1					
Aroclor-1242	U	0.104	0.0347	0.104	ug/L	0.00104	1					
Aroclor-1248	U	0.104	0.0347	0.104	ug/L	0.00104	1					
Aroclor-1254	U	0.104	0.0347	0.104	ug/L	0.00104	1					
Aroclor-1260	U	0.104	0.0347	0.104	ug/L	0.00104	1					
Aroclor-1268	U	0.104	0.0347	0.104	ug/L	0.00104	1					
Aroclor-Total	U	0.104	0.0347	0.104	ug/L	0.00104	1					
Solids Analysis												
160.1, Dissolved Solids "As Received"												
Total Dissolved Solids		447	2.38	10.0	mg/L			CH6	10/13/23	1601	2508295	14
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 31, 2024

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

Contact: Kevil, Kentucky 42053
Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-01)

Client Sample ID: MW372UG1-24
Sample ID: 640884007

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 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"	6.15 ug/L	6.77	91	(46%-159%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.217 ug/L	0.208	104	(32%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.155 ug/L	0.208	75	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	48.3 ug/L	50.0	97	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	51.2 ug/L	50.0	102	(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 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: January 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(UG24-01)

Client Sample ID: MW372UG1-24 Project: FRNP00507
Sample ID: 640884008 Client ID: FRNP005
Matrix: WG
Collect Date: 11-OCT-23 10:17
Receive Date: 12-OCT-23
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		0.0563	0.000670	0.00400	mg/L	1.00	1	PRB	11/03/23	1754	2508582	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	RXB5	10/13/23	1438	2508416
SW846 3005A	ICP-MS 3005A PREP	JM13	10/17/23	1535	2508581

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3005A/6020B	

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 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(UG24-01)

Client Sample ID: MW373UG1-24 Project: FRNP00507
Sample ID: 640884009 Client ID: FRNP005
Matrix: WG
Collect Date: 11-OCT-23 12:35
Receive Date: 12-OCT-23
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	0.00848	0.0188	ug/L	0.942	1	LOF	10/17/23	1901	2507796	2
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	1.33	0.330	2.00	mg/L		1	RM3	11/03/23	1043	2517902	3
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	10/23/23	0719	2508852	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens		13.0	3.33	10.0	ug/L		1	RMJ	10/21/23	0411	2509519	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	HXC1	10/20/23	1914	2512145	6
SW846 9056A Anions (5 elements) "As Received"												
Chloride	J	31.2	1.34	250	mg/L		20	JLD1	10/13/23	0336	2507664	7
Sulfate		177	2.66	8.00	mg/L		20					
Nitrate-N	J	0.710	0.165	10.0	mg/L		5	JLD1	10/13/23	0305	2507664	8
Bromide		0.462	0.0670	0.200	mg/L		1	JLD1	10/12/23	1535	2507664	9
Fluoride	J	0.233	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	AXS5	10/30/23	1247	2514927	10
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Boron		2.06	0.104	0.300	mg/L	1.00	20	PRB	11/03/23	1848	2508582	11
Calcium		79.0	1.60	4.00	mg/L	1.00	20					
Sodium		64.6	1.60	5.00	mg/L	1.00	20					
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	11/03/23	2316	2508582	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	11/03/23	1757	2508582	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		0.0339	0.000670	0.00400	mg/L	1.00	1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 31, 2024

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

Contact: Kevil, Kentucky 42053
 Ms. Jaime Morrow
 Project: C-746-U Landfill Quarterly(UG24-01)

Client Sample ID: MW373UG1-24	Project: FRNP00507
Sample ID: 640884009	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 9056A		
10	SW846 7470A		
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"	6.51 ug/L	6.73	97	(46%-159%)
Decachlorobiphenyl	8082A, PCB Liquids "As Received"	0.189 ug/L	0.202	93	(32%-135%)
4cmx	8082A, PCB Liquids "As Received"	0.132 ug/L	0.202	65	(26%-108%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	48.0 ug/L	50.0	96	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	51.1 ug/L	50.0	102	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	49.2 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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 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(UG24-01)

Client Sample ID: MW373UG1-24 Project: FRNP00507
Sample ID: 640884010 Client ID: FRNP005
Matrix: WG
Collect Date: 11-OCT-23 12:35
Receive Date: 12-OCT-23
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		0.0351	0.000670	0.00400	mg/L	1.00	1	PRB	11/03/23	1801	2508582	1
Chromium	U	0.0100	0.00300	0.0100	mg/L	1.00	1					
Uranium	J	0.0000690	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	JM13	10/17/23	1535	2508581
EPA 160	Laboratory Filtration	RXB5	10/13/23	1438	2508416

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	SW846 3005A/6020B		

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 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(UG24-01)

Client Sample ID: MW374UG1-24 Project: FRNP00507
Sample ID: 640884011 Client ID: FRNP005
Matrix: WG
Collect Date: 11-OCT-23 13:19
Receive Date: 12-OCT-23
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0190	0.00856	0.0190	ug/L	0.952	1	LOF	10/17/23	1926	2507796	2
Carbon Analysis												
9060A, Total Organic Carbon "As Received"												
Total Organic Carbon Average		2.28	0.330	2.00	mg/L		1	RM3	11/03/23	1122	2517902	3
Flow Injection Analysis												
9012B, Cyanide, Total "As Received"												
Cyanide, Total	U	0.200	0.00167	0.200	mg/L	1.00	1	AXH3	10/23/23	0720	2508852	4
Halogen Analysis												
9020B, TOX (Organic Halogen) "As Received"												
Total Organic Halogens		16.5	3.33	10.0	ug/L		1	RMJ	10/21/23	0447	2509519	5
Ion Chromatography												
300.0, Iodide in Liquid "As Received"												
Iodide	U	0.500	0.167	0.500	mg/L		1	HXC1	10/20/23	1936	2512145	6
SW846 9056A Anions (5 elements) "As Received"												
Bromide		0.607	0.0670	0.200	mg/L		1	JLD1	10/13/23	1225	2508401	7
Fluoride	J	0.227	0.0330	4.00	mg/L		1					
Nitrate-N	JW	0.223	0.0330	10.0	mg/L		1					
Sulfate		14.2	0.133	0.400	mg/L		1					
Chloride	J	48.9	0.670	250	mg/L		10	JLD1	10/14/23	0005	2508401	8
Mercury Analysis-CVAA												
7470, Mercury Liquid "As Received"												
Mercury	U	0.000200	0.0000670	0.000200	mg/L	1.00	1	AXS5	10/30/23	1249	2514927	9
Metals Analysis-ICP-MS												
6020, Metals (15+ elements) "As Received"												
Aluminum		0.171	0.0193	0.0500	mg/L	1.00	1	PRB	11/03/23	1805	2508582	10
Antimony	U	0.00300	0.00100	0.00300	mg/L	1.00	1					
Arsenic	J	0.00293	0.00200	0.00500	mg/L	1.00	1					
Barium		0.175	0.000670	0.00400	mg/L	1.00	1					
Beryllium	U	0.000500	0.000200	0.000500	mg/L	1.00	1					
Boron		0.0181	0.00520	0.0150	mg/L	1.00	1					
Cadmium	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Calcium		24.5	0.0800	0.200	mg/L	1.00	1					
Chromium	J	0.00459	0.00300	0.0100	mg/L	1.00	1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 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(UG24-01)

Client Sample ID: MW374UG1-24
Sample ID: 640884011

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"												
Cobalt	J	0.000917	0.000300	0.00100	mg/L	1.00	1					
Copper	J	0.00117	0.000300	0.00200	mg/L	1.00	1					
Iron		1.37	0.0330	0.100	mg/L	1.00	1					
Lead	U	0.00200	0.000500	0.00200	mg/L	1.00	1					
Magnesium		5.90	0.0100	0.0300	mg/L	1.00	1					
Manganese		0.330	0.00100	0.00500	mg/L	1.00	1					
Molybdenum	J	0.000304	0.000200	0.00100	mg/L	1.00	1					
Nickel	J	0.000710	0.000600	0.00200	mg/L	1.00	1					
Potassium		0.433	0.0800	0.300	mg/L	1.00	1					
Selenium		0.00698	0.00150	0.00500	mg/L	1.00	1					
Silver	U	0.00100	0.000300	0.00100	mg/L	1.00	1					
Thallium	U	0.00200	0.000600	0.00200	mg/L	1.00	1					
Uranium		0.000329	0.0000670	0.000200	mg/L	1.00	1					
Vanadium	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Zinc	U	0.0200	0.00330	0.0200	mg/L	1.00	1					
Sodium		121	0.800	2.50	mg/L	1.00	10	PRB	11/03/23	1852	2508582	11
Rhodium	U	0.00500	0.00160	0.00500	mg/L	1.00	1	PRB	11/03/23	2318	2508582	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	0.106	0.0354	0.106	ug/L	0.00106	1	NS2	11/01/23	1531	2517137	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		384	2.38	10.0	mg/L			CH6	10/13/23	1601	2508295	14
Spectrometric Analysis												
410.4, Chem. Oxygen Demand "As Received"												

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 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(UG24-01)

Client Sample ID: TB3UG1-24 Project: FRNP00507
Sample ID: 640884013 Client ID: FRNP005
Matrix: WATER
Collect Date: 11-OCT-23 06:45
Receive Date: 12-OCT-23
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
504.1/8011 Analysis of EDB/DBCP												
8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"												
1,2-Dibromo-3-chloropropane	U	0.0191	0.00861	0.0191	ug/L	0.957	1	LOF	10/17/23	1950	2507796	1
Volatile Organics												
8260D, Volatiles- full suite "As Received"												
1,1,1,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1	JM6	10/13/23	1230	2508300	3
1,1,1-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2,2-Tetrachloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1,2-Trichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,1-Dichloroethylene	U	1.00	0.333	1.00	ug/L		1					
1,2,3-Trichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dibromoethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloroethane	U	1.00	0.333	1.00	ug/L		1					
1,2-Dichloropropane	U	1.00	0.333	1.00	ug/L		1					
1,4-Dichlorobenzene	U	1.00	0.333	1.00	ug/L		1					
2-Butanone	U	5.00	1.67	5.00	ug/L		1					
2-Hexanone	U	5.00	1.67	5.00	ug/L		1					
4-Methyl-2-pentanone	U	5.00	1.67	5.00	ug/L		1					
Acetone	U	5.00	1.74	5.00	ug/L		1					
Acrolein	U	5.00	1.67	5.00	ug/L		1					
Acrylonitrile	U	5.00	1.67	5.00	ug/L		1					
Benzene	U	1.00	0.333	1.00	ug/L		1					
Bromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromodichloromethane	U	1.00	0.333	1.00	ug/L		1					
Bromoform	U	1.00	0.333	1.00	ug/L		1					
Bromomethane	U	1.00	0.337	1.00	ug/L		1					
Carbon disulfide	U	5.00	1.67	5.00	ug/L		1					
Carbon tetrachloride	U	1.00	0.333	1.00	ug/L		1					
Chlorobenzene	U	1.00	0.333	1.00	ug/L		1					
Chloroethane	U	1.00	0.333	1.00	ug/L		1					
Chloroform	U	1.00	0.333	1.00	ug/L		1					
Chloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromochloromethane	U	1.00	0.333	1.00	ug/L		1					
Dibromomethane	U	1.00	0.333	1.00	ug/L		1					
Ethylbenzene	U	1.00	0.333	1.00	ug/L		1					
Iodomethane	U	5.00	1.67	5.00	ug/L		1					

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 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(UG24-01)

Client Sample ID: TB3UG1-24	Project: FRNP00507
Sample ID: 640884013	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	10/17/23	1322	2507795

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 8011	
2	SW846 8011	
3	SW846 8260D	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	8011 VOA- 1,2-Dibromo-3-chloropropane "As Received"	6.33 ug/L	6.83	93	(46%-159%)
Bromofluorobenzene	8260D, Volatiles- full suite "As Received"	48.1 ug/L	50.0	96	(74%-123%)
1,2-Dichloroethane-d4	8260D, Volatiles- full suite "As Received"	50.5 ug/L	50.0	101	(76%-127%)
Toluene-d8	8260D, Volatiles- full suite "As Received"	49.7 ug/L	50.0	99	(77%-121%)

Notes:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 31, 2024

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

Contact: Kevil, Kentucky 42053
Ms. Jaime Morrow
Project: C-746-U Landfill Quarterly(UG24-01)

Client Sample ID: TB3UG1-24
Sample ID: 640884013

Project: FRNP00507
Client ID: FRNP005

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

Column headers are defined as follows:

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

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX D
STATISTICAL ANALYSES AND
QUALIFICATION STATEMENT

THIS PAGE INTENTIONALLY LEFT BLANK

GROUNDWATER STATISTICAL COMMENTS

Introduction

The statistical analyses conducted on the fourth quarter 2023 groundwater data collected from the C-746-S&T Landfills monitoring wells (MWs) were performed in accordance with Permit GSTR0003, 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).

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 fourth quarter 2023 data used to conduct the statistical analyses were collected in October 2023. The statistical analyses for this report first used data from the initial 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 compliance well that 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. For parameters with no established MCL and for 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 for pH. 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
MW220	BG	URGA
MW221	SG	URGA
MW222	SG	URGA
MW223	SG	URGA
MW224	SG	URGA
MW369	TW	URGA
MW370	TW	LRGA
MW372	TW	URGA
MW373	TW	LRGA
MW384	SG	URGA
MW385	SG	LRGA
MW386 ^a	SG	UCRS
MW387	TW	URGA
MW388	TW	LRGA
MW389 ^{a,b}	TW	UCRS
MW390 ^{a,b}	TW	UCRS
MW391	TW	URGA
MW392	TW	LRGA
MW393 ^a	TW	UCRS
MW394	BG	URGA
MW395	BG	LRGA
MW396 ^a	BG	UCRS
MW397	BG	LRGA

^a The gradients in UCRS wells are downward. The UCRS wells identified as up-, side-, or downgradient are those wells located in the same general direction as the RGA wells considered to be up-, side-, or downgradient.

^b Well was dry this quarter and a groundwater sample could not be collected.

BG: upgradient or background wells

TW: compliance 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. 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, 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. Statistical analyses are performed on the last eight quarters of 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 (or is below the LTL for pH), the well has a statistically significant difference in concentration compared to the 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).
 - For each parameter, the background data are used to establish a baseline. On this data set, the mean (X) and the standard deviation (S) are computed.
 - The data set is checked for normality using coefficient of variation (CV). If $CV \leq 1.0$, then the data are assumed to be normally distributed. Data sets with $CV > 1.0$ are assumed to be log-normally distributed; for data sets with $CV > 1.0$, the data are log-transformed and analyzed.
 - The factor (K) for one-sided upper TL with 95% minimum coverage is determined (Table 5, Appendix B; *EPA Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Interim Final Guidance*, 1989) based on the number of background data points.
 - The one-sided upper TL is calculated using the following equation:
$$TL = X + (K \times S)$$
2. Each observation from downgradient wells is compared to the calculated one-sided upper TL in Step 1. If an observation value exceeds the TL (or is below the LTL for pH), then there is statistically significant evidence that the well concentration exceeds the historical background.

Type of Data Used

Exhibit D.1 presents the background wells (identified as “BG”), the compliance or test wells (identified as “TW”), and the sidegradient wells (identified as “SG”) for the C-746-S&T Residential and Inert Landfills. 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, fourth quarter 2023. The observations are representative of the current quarter data. Historical background data are presented in Attachment D1. The sampling dates associated with background data are listed next to the result in Attachment D1. 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. A result has been considered a nondetect if it has a “U” validation code.

¹ For pH, two-sided TLs (upper and lower) were calculated with an adjusted K factor using the following equations.

$$\begin{aligned} \text{upper TL} &= X + (K \times S) \\ \text{lower TL} &= X - (K \times S) \end{aligned}$$

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

Parameters
Aluminum
Boron
Bromide
Calcium
Chemical Oxygen Demand (COD)
Chloride
Cobalt
Conductivity
Copper
Cyanide
Dissolved Oxygen
Dissolved Solids
Iodide
Iron
Magnesium
Manganese
Methylene Chloride
Molybdenum
Nickel
Oxidation-Reduction Potential ¹
pH ²
Potassium
Sodium
Sulfate
Technetium-99
Total Organic Carbon (TOC)
Total Organic Halides (TOX)
Trichloroethene
Zinc

¹Oxidation-Reduction Potential calibrated as Eh.

² 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	3	3	0	No
1,1,2,2-Tetrachloroethane	3	3	0	No
1,1,2-Trichloroethane	3	3	0	No
1,1-Dichloroethane	3	3	0	No
1,2,3-Trichloropropane	3	3	0	No
1,2-Dibromo-3-chloropropane	3	3	0	No
1,2-Dibromoethane	3	3	0	No
1,2-Dichlorobenzene	3	3	0	No
1,2-Dichloropropane	3	3	0	No
2-Butanone	3	3	0	No
2-Hexanone	3	3	0	No
4-Methyl-2-pentanone	3	3	0	No
Acetone	3	3	0	No
Acrolein	3	3	0	No
Acrylonitrile	3	3	0	No
Aluminum	3	1	2	Yes
Antimony	3	3	0	No
Beryllium	3	3	0	No
Boron	3	0	3	Yes
Bromide	3	0	3	Yes
Bromochloromethane	3	3	0	No
Bromodichloromethane	3	3	0	No
Bromoform	3	3	0	No
Bromomethane	3	3	0	No
Calcium	3	0	3	Yes
Carbon disulfide	3	3	0	No
Chloride	3	0	3	Yes
Chlorobenzene	3	3	0	No
Chloroethane	3	3	0	No
Chloroform	3	3	0	No
Chloromethane	3	3	0	No
<i>cis</i> 1,2-Dichloroethene	3	3	0	No
<i>cis</i> 1,3-Dichloropropene	3	3	0	No
Cobalt	3	1	2	Yes
COD	3	1	2	Yes
Conductivity	3	0	3	Yes
Copper	3	0	3	Yes
Cyanide	3	2	1	Yes
Dibromochloromethane	3	3	0	No
Dibromomethane	3	3	0	No
Dimethylbenzene, Total	3	3	0	No
Dissolved Oxygen	3	0	3	Yes
Dissolved Solids	3	0	3	Yes
Ethylbenzene	3	3	0	No
Iodide	3	2	1	Yes

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

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
Iodomethane	3	3	0	No
Iron	3	0	3	Yes
Magnesium	3	0	3	Yes
Manganese	3	0	3	Yes
Methylene chloride	3	2	1	Yes
Molybdenum	3	0	3	Yes
Nickel	3	1	2	Yes
Oxidation-Reduction Potential	3	0	3	Yes
Polychlorinated biphenyl (PCB), Total	3	3	0	No
PCB-1016	3	3	0	No
PCB-1221	3	3	0	No
PCB-1232	3	3	0	No
PCB-1242	3	3	0	No
PCB-1248	3	3	0	No
PCB-1254	3	3	0	No
PCB-1260	3	3	0	No
PCB-1268	3	3	0	No
pH	3	0	3	Yes
Potassium	3	0	3	Yes
Radium-226	3	3	0	No
Rhodium	3	3	0	No
Sodium	3	0	3	Yes
Styrene	3	3	0	No
Sulfate	3	0	3	Yes
Tantalum	3	3	0	No
Technetium-99	3	3	0	No
Tetrachloroethene	3	3	0	No
Thallium	3	3	0	No
Thorium-230	3	3	0	No
TOC	3	0	3	Yes
Toluene	3	3	0	No
TOX	3	0	3	Yes
<i>trans</i> 1,2-Dichloroethene	3	3	0	No
<i>trans</i> 1,3-Dichloropropene	3	3	0	No
<i>trans</i> 1,4-Dichloro-2-Butene	3	3	0	No
Trichlorofluoromethane	3	3	0	No
Vanadium	3	3	0	No
Vinyl Acetate	3	3	0	No
Zinc	3	0	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	11	11	0	No
1,1,2,2-Tetrachloroethane	11	11	0	No
1,1,2-Trichloroethane	11	11	0	No
1,1-Dichloroethane	11	11	0	No
1,2,3-Trichloropropane	11	11	0	No
1,2-Dibromo-3-chloropropane	11	11	0	No
1,2-Dibromoethane	11	11	0	No
1,2-Dichlorobenzene	11	11	0	No
1,2-Dichloropropane	11	11	0	No
2-Butanone	11	11	0	No
2-Hexanone	11	11	0	No
4-Methyl-2-pentanone	11	11	0	No
Acetone	11	11	0	No
Acrolein	11	11	0	No
Acrylonitrile	11	11	0	No
Aluminum	11	5	6	Yes
Antimony	11	11	0	No
Beryllium	11	11	0	No
Boron	11	0	11	Yes
Bromide	11	0	11	Yes
Bromochloromethane	11	11	0	No
Bromodichloromethane	11	11	0	No
Bromoform	11	11	0	No
Bromomethane	11	11	0	No
Calcium	11	0	11	Yes
Carbon disulfide	11	11	0	No
Chloride	11	0	11	Yes
Chlorobenzene	11	11	0	No
Chloroethane	11	11	0	No
Chloroform	11	11	0	No
Chloromethane	11	11	0	No
<i>cis</i> 1,2-Dichloroethene	11	11	0	No
<i>cis</i> 1,3-Dichloropropene	11	11	0	No
Cobalt	11	7	4	Yes
COD	11	9	2	Yes
Conductivity	11	0	11	Yes
Copper	11	0	11	Yes
Cyanide	11	10	1	Yes
Dibromochloromethane	11	11	0	No
Dibromomethane	11	11	0	No
Dimethylbenzene, Total	11	11	0	No
Dissolved Oxygen	11	0	11	Yes
Dissolved Solids	11	0	11	Yes
Ethylbenzene	11	11	0	No
Iodide	11	11	0	No

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

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
Iodomethane	11	11	0	No
Iron	11	4	7	Yes
Magnesium	11	0	11	Yes
Manganese	11	1	10	Yes
Methylene chloride	11	5	6	Yes
Molybdenum	11	6	5	Yes
Nickel	11	0	11	Yes
Oxidation-Reduction Potential	11	0	11	Yes
PCB, Total	11	11	0	No
PCB-1016	11	11	0	No
PCB-1221	11	11	0	No
PCB-1232	11	11	0	No
PCB-1242	11	11	0	No
PCB-1248	11	11	0	No
PCB-1254	11	11	0	No
PCB-1260	11	11	0	No
PCB-1268	11	11	0	No
pH	11	0	11	Yes
Potassium	11	0	11	Yes
Radium-226	11	11	0	No
Rhodium	11	11	0	No
Sodium	11	0	11	Yes
Styrene	11	11	0	No
Sulfate	11	0	11	Yes
Tantalum	11	11	0	No
Technetium-99	11	7	4	Yes
Tetrachloroethene	11	11	0	No
Thallium	11	11	0	No
Thorium-230	11	11	0	No
TOC	11	0	11	Yes
Toluene	11	11	0	No
TOX	11	0	11	Yes
<i>trans</i> 1,2-Dichloroethene	11	11	0	No
<i>trans</i> 1,3-Dichloropropene	11	11	0	No
<i>trans</i> 1,4-Dichloro-2-Butene	11	11	0	No
Trichloroethene	11	5	6	Yes
Trichlorofluoromethane	11	11	0	No
Vanadium	11	11	0	No
Vinyl Acetate	11	11	0	No
Zinc	11	1	10	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	7	7	0	No
1,1,2,2-Tetrachloroethane	7	7	0	No
1,1,2-Trichloroethane	7	7	0	No
1,1-Dichloroethane	7	7	0	No
1,2,3-Trichloropropane	7	7	0	No
1,2-Dibromo-3-chloropropane	7	7	0	No
1,2-Dibromoethane	7	7	0	No
1,2-Dichlorobenzene	7	7	0	No
1,2-Dichloropropane	7	7	0	No
2-Butanone	7	7	0	No
2-Hexanone	7	7	0	No
4-Methyl-2-pentanone	7	7	0	No
Acetone	7	7	0	No
Acrolein	7	7	0	No
Acrylonitrile	7	7	0	No
Aluminum	7	3	4	Yes
Antimony	7	7	0	No
Beryllium	7	7	0	No
Boron	7	0	7	Yes
Bromide	7	0	7	Yes
Bromochloromethane	7	7	0	No
Bromodichloromethane	7	7	0	No
Bromoform	7	7	0	No
Bromomethane	7	7	0	No
Calcium	7	0	7	Yes
Carbon disulfide	7	7	0	No
Chloride	7	0	7	Yes
Chlorobenzene	7	7	0	No
Chloroethane	7	7	0	No
Chloroform	7	7	0	No
Chloromethane	7	7	0	No
<i>cis</i> 1,2-Dichloroethene	7	7	0	No
<i>cis</i> 1,3-Dichloropropene	7	7	0	No
Cobalt	7	2	5	Yes
COD	7	6	1	Yes
Conductivity	7	0	7	Yes
Copper	7	0	7	Yes
Cyanide	7	7	0	No
Dibromochloromethane	7	7	0	No
Dibromomethane	7	7	0	No
Dimethylbenzene, Total	7	7	0	No
Dissolved Oxygen	7	0	7	Yes
Dissolved Solids	7	0	7	Yes
Ethylbenzene	7	7	0	No
Iodide	7	7	0	No
Iodomethane	7	7	0	No
Iron	7	0	7	Yes
Magnesium	7	0	7	Yes

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

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
Manganese	7	0	7	Yes
Methylene chloride	7	5	2	Yes
Molybdenum	7	5	2	Yes
Nickel	7	2	5	Yes
Oxidation-Reduction Potential	7	0	7	Yes
PCB, Total	7	7	0	No
PCB-1016	7	7	0	No
PCB-1221	7	7	0	No
PCB-1232	7	7	0	No
PCB-1242	7	7	0	No
PCB-1248	7	7	0	No
PCB-1254	7	7	0	No
PCB-1260	7	7	0	No
PCB-1268	7	7	0	No
pH	7	0	7	Yes
Potassium	7	0	7	Yes
Radium-226	7	7	0	No
Rhodium	7	7	0	No
Sodium	7	0	7	Yes
Styrene	7	7	0	No
Sulfate	7	0	7	Yes
Tantalum	7	7	0	No
Technetium-99	7	5	2	Yes
Tetrachloroethene	7	7	0	No
Thallium	7	7	0	No
Thorium-230	7	7	0	No
TOC	7	0	7	Yes
Toluene	7	7	0	No
TOX	7	1	6	Yes
<i>trans</i> 1,2-Dichloroethene	7	7	0	No
<i>trans</i> 1,3-Dichloropropene	7	7	0	No
<i>trans</i> 1,4-Dichloro-2-Butene	7	7	0	No
Trichloroethene	7	2	5	Yes
Trichlorofluoromethane	7	7	0	No
Vanadium	7	7	0	No
Vinyl Acetate	7	7	0	No
Zinc	7	1	6	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 tests that were calculated using historical background and presented in Attachment D1. For the UCRS, URGA, and LRGA, the test was applied to 27, 28, and 27 parameters, respectively, including those listed in bold print in Exhibits D.3, D.4, and D.5, which includes trichloroethene that exceeded its MCL. A summary of exceedances when compared to statistically derived historical background by well number is shown in Exhibit D.6.

UCRS

This quarter's results identified exceedances of historical background upper tolerance limit (UTL) for oxidation-reduction potential.

URGA

This quarter's results identified exceedances of historical background UTL for calcium, conductivity, dissolved solids, magnesium, oxidation-reduction potential, sodium, sulfate, and technetium-99.

LRGA

This quarter's results identified exceedances of historical background UTL for calcium, conductivity, dissolved solids, magnesium, oxidation-reduction potential, sulfate, and technetium-99.

Statistical Summary

Summaries of the results of the statistical tests conducted on data obtained from wells in the UCRS, the URGA, and in the LRGA 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
MW386: Oxidation-reduction potential*	MW220: Oxidation-reduction potential*	MW370: Oxidation-reduction potential* and sulfate
MW393: Oxidation-reduction potential*	MW221: Oxidation-reduction potential*	MW373: Calcium, conductivity, dissolved solids, magnesium, oxidation-reduction potential,* and sulfate
MW396: Oxidation-reduction potential*	MW222: Oxidation-reduction potential*	MW385: Oxidation-reduction potential,* sulfate, and technetium-99
	MW223: Oxidation-reduction potential*	MW388: Oxidation-reduction potential* and sulfate
	MW224: Oxidation-reduction potential*	MW392: Oxidation-reduction potential*
	MW369: Technetium-99	MW395: Oxidation-reduction potential*
	MW372: Calcium, conductivity, dissolved solids, magnesium, sodium, and sulfate	MW397: Oxidation-reduction potential*
	MW384: Oxidation-reduction potential,* sodium, sulfate, and technetium-99	
	MW387: Magnesium, oxidation-reduction potential,* sulfate, and technetium-99	
	MW391: Oxidation-reduction potential*	
	MW394: 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	0.57	No exceedance of statistically derived historical background concentration.
Boron	Tolerance Interval	1.28	No exceedance of statistically derived historical background concentration.
Bromide	Tolerance Interval	0.24	No exceedance of statistically derived historical background concentration.
Calcium	Tolerance Interval	0.20	No exceedance of statistically derived historical background concentration.
Chloride	Tolerance Interval	0.05	No exceedance of statistically derived historical background concentration.
Cobalt	Tolerance Interval	1.34	No exceedance of statistically derived historical background concentration.
COD	Tolerance Interval	0.00	No exceedance of statistically derived historical background concentration.
Conductivity	Tolerance Interval	0.12	No exceedance of statistically derived historical background concentration.
Copper	Tolerance Interval	0.48	No exceedance of statistically derived historical background concentration.
Cyanide	Tolerance Interval	0.01	No exceedance of statistically derived historical background concentration.
Dissolved Oxygen	Tolerance Interval	1.20	No exceedance of statistically derived historical background concentration.
Dissolved Solids	Tolerance Interval	0.19	No exceedance of statistically derived historical background concentration.
Iodide	Tolerance Interval	0.13	No exceedance of statistically derived historical background concentration.
Iron	Tolerance Interval	0.48	No exceedance of statistically derived historical background concentration.
Magnesium	Tolerance Interval	0.20	No exceedance of statistically derived historical background concentration.
Manganese	Tolerance Interval	0.46	No exceedance of statistically derived historical background concentration.
Methylene Chloride	Tolerance Interval	0.56	No exceedance of statistically derived historical background concentration.
Molybdenum	Tolerance Interval	1.51	No exceedance of statistically derived historical background concentration.
Nickel	Tolerance Interval	1.27	No exceedance of statistically derived historical background concentration.
Oxidation-Reduction Potential ^b	Tolerance Interval	4.77	Current results exceed statistically derived historical background concentration in MW386, MW393, and MW396.
pH	Tolerance Interval	0.05	No exceedance of statistically derived historical background concentration.
Potassium	Tolerance Interval	0.28	No exceedance of statistically derived historical background concentration.
Sodium	Tolerance Interval	0.30	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
Sulfate	Tolerance Interval	0.40	No exceedance of statistically derived historical background concentration.
Technetium-99	Tolerance Interval	0.86	Current results exceed statistically derived historical background concentration in MW390.
TOC	Tolerance Interval	0.47	No exceedance of statistically derived historical background concentration.
TOX	Tolerance Interval	0.38	No exceedance of statistically derived historical background concentration.
Zinc	Tolerance Interval	0.79	No exceedance of statistically derived historical background concentration.

CV: coefficient of variation

^aIf CV > 1.0, used log-transformed data.

^bOxidation-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
Aluminum	Tolerance Interval	0.28	No exceedance of statistically derived historical background concentration.
Boron	Tolerance Interval	1.45	No exceedance of statistically derived historical background concentration.
Bromide	Tolerance Interval	0.00	No exceedance of statistically derived historical background concentration.
Calcium	Tolerance Interval	0.17	Current results exceed statistically derived historical background concentrations in MW372.
Chloride	Tolerance Interval	0.23	No exceedance of statistically derived historical background concentration.
Cobalt	Tolerance Interval	2.44	No exceedance of statistically derived historical background concentration.
COD	Tolerance Interval	0.00	No exceedance of statistically derived historical background concentration.
Conductivity	Tolerance Interval	0.28	Current results exceed statistically derived historical background concentration in MW372.
Copper	Tolerance Interval	0.43	No exceedance of statistically derived historical background concentration.
Cyanide	Tolerance Interval	0.43	No exceedance of statistically derived historical background concentration.
Dissolved Oxygen	Tolerance Interval	0.50	No exceedance of statistically derived historical background concentration.
Dissolved Solids	Tolerance Interval	0.12	Current results exceed statistically derived historical background concentration in MW372.
Iron	Tolerance Interval	1.17	No exceedance of statistically derived historical background concentration.
Magnesium	Tolerance Interval	0.16	Current results exceed statistically derived historical background concentration in MW372 and MW387.
Manganese	Tolerance Interval	2.16	No exceedance of statistically derived historical background concentration.
Methylene Chloride	Tolerance Interval	0.16	No exceedance of statistically derived historical background concentration.
Molybdenum	Tolerance Interval	1.26	No exceedance of statistically derived historical background concentration.
Nickel	Tolerance Interval	1.79	No exceedance of statistically derived historical background concentration.
Oxidation-Reduction Potential ^b	Tolerance Interval	0.48	Current results exceed statistically derived historical background concentration in MW220, MW221, MW222, MW223, MW224, MW384, MW387, MW391, and MW394.
pH	Tolerance Interval	0.05	No exceedance of statistically derived historical background concentration.
Potassium	Tolerance Interval	1.40	No exceedance of statistically derived historical background concentration.
Sodium	Tolerance Interval	0.24	Current results exceed statistically derived historical background concentration in MW372 and MW384.

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	0.25	Current results exceed statistically derived historical background concentration in MW372, MW384, and MW387.
Technetium-99	Tolerance Interval	0.99	Current results exceed statistically derived historical background concentration in MW369, MW384, and MW387.
TOC	Tolerance Interval	0.49	No exceedance of statistically derived historical background concentration.
TOX	Tolerance Interval	2.57	No exceedance of statistically derived historical background concentration.
Trichloroethene ^c	Tolerance Interval	0.95	No exceedance of statistically derived historical background concentration.
Zinc	Tolerance Interval	0.72	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.

^c Tolerance interval was calculated based on an MCL exceedance.

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
Aluminum	Tolerance Interval	0.86	No exceedance of statistically derived historical background concentration.
Boron	Tolerance Interval	1.24	No exceedance of statistically derived historical background concentration.
Bromide	Tolerance Interval	0.00	No exceedance of statistically derived historical background concentration.
Calcium	Tolerance Interval	0.50	Current results exceed statistically derived historical background concentration in MW373.
Chloride	Tolerance Interval	0.22	No exceedance of statistically derived historical background concentration.
Cobalt	Tolerance Interval	1.51	No exceedance of statistically derived historical background concentration.
COD	Tolerance Interval	0.04	No exceedance of statistically derived historical background concentration.
Conductivity	Tolerance Interval	0.14	Current results exceed statistically derived historical background concentration in MW373.
Copper	Tolerance Interval	0.47	No exceedance of statistically derived historical background concentration.
Dissolved Oxygen	Tolerance Interval	0.52	No exceedance of statistically derived historical background concentration.
Dissolved Solids	Tolerance Interval	0.16	Current results exceed statistically derived historical background concentration in MW373.
Iron	Tolerance Interval	1.29	No exceedance of statistically derived historical background concentration.
Magnesium	Tolerance Interval	0.51	Current results exceed statistically derived historical background concentration in MW373.
Manganese	Tolerance Interval	1.49	No exceedance of statistically derived historical background concentration.
Methylene Chloride	Tolerance Interval	0.55	No exceedance of statistically derived historical background concentration.
Molybdenum	Tolerance Interval	1.45	No exceedance of statistically derived historical background concentration.
Nickel	Tolerance Interval	1.09	No exceedance of statistically derived historical background concentration.
Oxidation-Reduction Potential ^b	Tolerance Interval	0.33	Current results exceed statistically derived historical background concentration in MW370, MW373, MW385, MW388, MW392, MW395, and MW397.
pH	Tolerance Interval	0.04	No exceedance of statistically derived historical background concentration.
Potassium	Tolerance Interval	0.40	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
Sodium	Tolerance Interval	0.47	No exceedance of statistically derived historical background concentration.
Sulfate	Tolerance Interval	0.20	Current results exceed statistically derived historical background concentration in MW370, MW373, MW385, and MW388.
Technetium-99	Tolerance Interval	0.80	Current results exceed statistically derived historical background concentration in MW385.
TOC	Tolerance Interval	0.55	No exceedance of statistically derived historical background concentration.
TOX	Tolerance Interval	0.59	No exceedance of statistically derived historical background concentration.
Trichloroethene ^c	Tolerance Interval	0.78	No exceedance of statistically derived historical background concentration.
Zinc	Tolerance Interval	0.76	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.

^c Tolerance interval was calculated based on an MCL exceedance.

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 one-sided TL calculated using the most recent eight quarters of data and are presented in Attachment D2. For the UCRS, URGA, and LRGA, the test was applied to 1, 8, and 7 parameters, respectively, because these parameter concentrations exceeded the historical background TL.

For downgradient wells only, a summary of instances where concentrations exceeded the TL calculated using current background data is shown in Exhibit D.10.

UCRS

Because gradients in the UCRS are downward (vertical), there are no hydrogeologically downgradient UCRS wells. It should be noted, however, that no exceedances of current background were identified in UCRS wells this quarter.

URGA

This quarter's results identified current background exceedances in downgradient wells for calcium, conductivity, dissolved solids, magnesium, sodium, sulfate, and technetium-99.

LRGA

This quarter's results identified current background exceedances in downgradient wells for calcium, conductivity, dissolved solids, magnesium, and sulfate.

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.11, Exhibit D.12, and Exhibit D.13, respectively.

Exhibit D.10. Summary of Exceedances (Downgradient Wells) of the TL Calculated Using Current Background Concentrations

URGA	LRGA
MW369: Technetium-99	MW370: Sulfate
MW372: Calcium, conductivity, dissolved solids, magnesium, sodium, and sulfate	MW373: Calcium, conductivity, dissolved solids, magnesium, and sulfate
MW387: Magnesium, sulfate, and technetium-99	MW388: Sulfate

Exhibit D.11. Test Summaries for Qualified Parameters for Current Background—UCRS

Parameter	Performed Test	CV Normality Test^a	Results of Tolerance Interval Test Conducted
Oxidation-Reduction Potential ^b	Tolerance Interval	0.28	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.

^a If CV > 1.0, used log-transformed data.

^b Oxidation-Reduction Potential calibrated as Eh.

Exhibit D.12. Test Summaries for Qualified Parameters for Current Background—URGA

Parameter	Performed Test	CV Normality Test^a	Results of Tolerance Interval Test Conducted
Calcium	Tolerance Interval	0.13	MW372 exceeded the upper TL, which is evidence of elevated concentration with respect to current background data.
Conductivity	Tolerance Interval	0.09	MW372 exceeded the upper TL, which is evidence of elevated concentration with respect to current background data.
Dissolved Solids	Tolerance Interval	0.12	MW372 exceeded the upper TL, which is evidence of elevated concentration with respect to current background data.
Magnesium	Tolerance Interval	0.14	MW372 and MW387 exceeded the upper TL, which is evidence of elevated concentration with respect to current background data.
Oxidation-Reduction Potential ^b	Tolerance Interval	0.11	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.
Sodium	Tolerance Interval	0.15	MW372 and MW384 exceeded the upper TL, which is evidence of elevated concentration with respect to current background data.
Sulfate	Tolerance Interval	0.26	MW372 and MW387 exceeded the upper TL, which is evidence of elevated concentration with respect to current background data.
Technetium-99	Tolerance Interval	0.61	MW369, MW384 and MW387 exceeded the upper TL, which is evidence of elevated concentration with respect to current background data.

CV: coefficient of variation

^a If CV > 1.0, used log-transformed data.

^b Oxidation-Reduction Potential calibrated as Eh.

Exhibit D.13. Test Summaries for Qualified Parameters for Current Background—LRGA

Parameter	Performed Test	CV Normality Test^a	Results of Tolerance Interval Test Conducted
Calcium	Tolerance Interval	0.18	MW373 exceeded the upper TL, which is evidence of elevated concentration with respect to current background data.
Conductivity	Tolerance Interval	0.10	MW373 exceeded the upper TL, which is evidence of elevated concentration with respect to current background data.
Dissolved Solids	Tolerance Interval	0.14	MW373 exceeded the upper TL, which is evidence of elevated concentration with respect to current background data.
Magnesium	Tolerance Interval	0.19	MW373 exceeded the upper TL, which is evidence of elevated concentration with respect to current background data.
Oxidation-Reduction Potential ^b	Tolerance Interval	0.18	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	0.02	MW370, MW373, MW385, and MW388 exceeded the upper TL, which is evidence of elevated concentration with respect to current background data.
Technetium-99	Tolerance Interval	0.57	MW385 exceeded the upper TL, which is evidence of elevated concentration with respect to current background data.

^a If CV > 1.0, used log-transformed data.

^b Oxidation-Reduction Potential calibrated as Eh.

ATTACHMENT D1

**COMPARISON OF CURRENT DATA TO
ONE-SIDED UPPER TOLERANCE INTERVAL TEST
CALCULATED USING
HISTORICAL BACKGROUND DATA**

THIS PAGE INTENTIONALLY LEFT BLANK

C-746-S/T Fourth Quarter 2023 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= 0.320 S= 0.182 CV(1)=0.567 K factor**= 3.188 TL(1)= 9.00E-01 LL(1)=N/A

Statistics-Transformed Background Data X= -1.259 S= 0.503 CV(2)=-0.400 K factor**= 3.188 TL(2)= 3.45E-01 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	3.93E-01	-9.34E-01
9/16/2002	2.00E-01	-1.61E+00
10/16/2002	2.00E-01	-1.61E+00
1/13/2003	5.01E-01	-6.91E-01
4/8/2003	2.00E-01	-1.61E+00
7/16/2003	2.00E-01	-1.61E+00
10/14/2003	2.00E-01	-1.61E+00
1/14/2004	6.68E-01	-4.03E-01

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient
MW390	Downgradient

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)
MW386	Sidegradient	No	5.00E-02	N/A	-3.00E+00	N/A
MW393	Downgradient	Yes	2.54E-02	NO	-3.67E+00	N/A
MW396	Upgradient	Yes	4.84E-02	NO	-3.03E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

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, $S = \sqrt{\text{Sum} [(background\ result - X)^2] / [\text{count of background results} - 1]}$

TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$

X Mean, $X = (\text{sum of background results}) / (\text{count of background results})$

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 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= 0.833 CV(1)=1.282 K factor**= 3.188 TL(1)= 3.31E+00 LL(1)=N/A

Statistics-Transformed Background Data X= -1.034 S= 1.066 CV(2)=-1.031 K factor**= 3.188 TL(2)= 2.36E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	2.00E+00	6.93E-01
9/16/2002	2.00E+00	6.93E-01
10/16/2002	2.00E-01	-1.61E+00
1/13/2003	2.00E-01	-1.61E+00
4/8/2003	2.00E-01	-1.61E+00
7/16/2003	2.00E-01	-1.61E+00
10/14/2003	2.00E-01	-1.61E+00
1/14/2004	2.00E-01	-1.61E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient
MW390	Downgradient

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)
MW386	Sidegradient	Yes	1.22E-02	N/A	-4.41E+00	NO
MW393	Downgradient	Yes	1.70E-02	N/A	-4.07E+00	NO
MW396	Upgradient	Yes	7.00E-03	N/A	-4.96E+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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$
 TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$
 X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 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= 1.388 S= 0.327 CV(1)=0.236 K factor**= 3.188 TL(1)= 2.43E+00 LL(1)=N/A

Statistics-Transformed Background Data X= 0.301 S= 0.252 CV(2)=0.838 K factor**= 3.188 TL(2)= 1.10E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	Result	LN(Result)
MW396		
Date Collected	Result	LN(Result)
8/13/2002	1.50E+00	4.05E-01
9/16/2002	1.60E+00	4.70E-01
10/16/2002	1.60E+00	4.70E-01
1/13/2003	1.00E+00	0.00E+00
4/8/2003	1.00E+00	0.00E+00
7/16/2003	1.00E+00	0.00E+00
10/14/2003	1.70E+00	5.31E-01
1/14/2004	1.70E+00	5.31E-01

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient
MW390	Downgradient

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)
MW386	Sidegradient	Yes	1.45E-01	NO	-1.93E+00	N/A
MW393	Downgradient	Yes	1.29E-01	NO	-2.05E+00	N/A
MW396	Upgradient	Yes	7.67E-01	NO	-2.65E-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-S/T Fourth Quarter 2023 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= 41.825 S= 8.445 CV(1)=0.202 K factor**= 3.188 TL(1)= 6.87E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 3.711 S= 0.241 CV(2)=0.065 K factor**= 3.188 TL(2)= 4.48E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	Result	LN(Result)
MW396		
Date Collected	Result	LN(Result)
8/13/2002	3.84E+01	3.65E+00
9/16/2002	4.29E+01	3.76E+00
10/16/2002	4.02E+01	3.69E+00
1/13/2003	4.67E+01	3.84E+00
4/8/2003	4.98E+01	3.91E+00
7/16/2003	4.33E+01	3.77E+00
10/14/2003	4.97E+01	3.91E+00
1/14/2004	2.36E+01	3.16E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient
MW390	Downgradient

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)
MW386	Sidegradient	Yes	2.06E+01	NO	3.03E+00	N/A
MW393	Downgradient	Yes	1.57E+01	NO	2.75E+00	N/A
MW396	Upgradient	Yes	3.24E+01	NO	3.48E+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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 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= 101.725 S= 5.245 CV(1)=0.052 K factor**= 3.188 TL(1)= 1.18E+02 LL(1)=N/A

Statistics-Transformed Background Data X= 4.621 S= 0.053 CV(2)=0.011 K factor**= 3.188 TL(2)= 4.79E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	9.16E+01	4.52E+00
9/16/2002	9.83E+01	4.59E+00
10/16/2002	1.01E+02	4.62E+00
1/13/2003	1.08E+02	4.68E+00
4/8/2003	1.01E+02	4.61E+00
7/16/2003	1.03E+02	4.63E+00
10/14/2003	1.07E+02	4.67E+00
1/14/2004	1.04E+02	4.65E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient
MW390	Downgradient

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)
MW386	Sidegradient	Yes	9.59E+00	NO	2.26E+00	N/A
MW393	Downgradient	Yes	9.78E+00	NO	2.28E+00	N/A
MW396	Upgradient	Yes	5.19E+01	NO	3.95E+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-S/T Fourth Quarter 2023 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= 0.008 S= 0.011 CV(1)=1.340 K factor**= 3.188 TL(1)= 4.18E-02 LL(1)=N/A

Statistics-Transformed Background Data X= -5.645 S= 1.339 CV(2)=-0.237 K factor**= 3.188 TL(2)= -1.38E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	Result	LN(Result)
MW396		
Date Collected	Result	LN(Result)
8/13/2002	2.50E-02	-3.69E+00
9/16/2002	2.50E-02	-3.69E+00
10/16/2002	1.00E-03	-6.91E+00
1/13/2003	3.24E-03	-5.73E+00
4/8/2003	4.36E-03	-5.44E+00
7/16/2003	2.76E-03	-5.89E+00
10/14/2003	1.00E-03	-6.91E+00
1/14/2004	1.00E-03	-6.91E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient
MW390	Downgradient

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)
MW386	Sidegradient	Yes	1.00E-02	N/A	-4.61E+00	NO
MW393	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW396	Upgradient	Yes	4.65E-03	N/A	-5.37E+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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$
- TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$
- X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 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= 922.500 S= 107.616 CV(1)=0.117 K factor**= 3.188 TL(1)= 1.27E+03 LL(1)=N/A

Statistics-Transformed Background Data X= 6.822 S= 0.111 CV(2)=0.016 K factor**= 3.188 TL(2)= 7.17E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	7.84E+02	6.66E+00
9/30/2002	8.71E+02	6.77E+00
10/16/2002	8.68E+02	6.77E+00
1/13/2003	9.12E+02	6.82E+00
4/8/2003	9.42E+02	6.85E+00
7/16/2003	9.10E+02	6.81E+00
10/14/2003	9.35E+02	6.84E+00
1/14/2004	1.16E+03	7.05E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient
MW390	Downgradient

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)
MW386	Sidegradient	Yes	5.79E+02	NO	6.36E+00	N/A
MW393	Downgradient	Yes	4.40E+02	NO	6.09E+00	N/A
MW396	Upgradient	Yes	7.00E+02	NO	6.55E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, $CV = S/X$ If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, $S = \sqrt{[\text{Sum} \{[(\text{background result}-X)^2]/[\text{count of background results} - 1]\}}^{0.5}$

TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** Read from Table 5, Appendix B of *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.*

C-746-S/T Fourth Quarter 2023 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= 0.028 S= 0.014 CV(1)=0.481 K factor**= 3.188 TL(1)= 7.16E-02 LL(1)=N/A

Statistics-Transformed Background Data X= -3.650 S= 0.414 CV(2)=-0.113 K factor**= 3.188 TL(2)= -2.33E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	5.00E-02	-3.00E+00
9/16/2002	5.00E-02	-3.00E+00
10/16/2002	2.60E-02	-3.65E+00
1/13/2003	2.00E-02	-3.91E+00
4/8/2003	2.00E-02	-3.91E+00
7/16/2003	2.00E-02	-3.91E+00
10/14/2003	2.00E-02	-3.91E+00
1/14/2004	2.00E-02	-3.91E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient
MW390	Downgradient

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)
MW386	Sidegradient	Yes	1.54E-03	NO	-6.48E+00	N/A
MW393	Downgradient	Yes	1.15E-03	NO	-6.77E+00	N/A
MW396	Upgradient	Yes	2.85E-03	NO	-5.86E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

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, $S = \sqrt{[\text{Sum} \{[(\text{background result}-X)^2]/[\text{count of background results} - 1]\}}^{0.5}$

TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 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= 1.395 S= 1.677 CV(1)=1.202 K factor**= 3.188 TL(1)= 6.74E+00 LL(1)=N/A

Statistics-Transformed Background Data X= -0.043 S= 0.814 CV(2)=-18.867 K factor**= 3.188 TL(2)= 2.55E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	Result	LN(Result)
MW396		
Date Collected	Result	LN(Result)
8/13/2002	5.45E+00	1.70E+00
9/16/2002	4.00E-01	-9.16E-01
10/16/2002	5.40E-01	-6.16E-01
1/13/2003	7.20E-01	-3.29E-01
4/8/2003	6.90E-01	-3.71E-01
7/16/2003	1.10E+00	9.53E-02
10/14/2003	7.10E-01	-3.42E-01
1/14/2004	1.55E+00	4.38E-01

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient
MW390	Downgradient

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)
MW386	Sidegradient	Yes	1.11E+00	N/A	1.04E-01	NO
MW393	Downgradient	Yes	2.60E+00	N/A	9.56E-01	NO
MW396	Upgradient	Yes	1.00E+00	N/A	0.00E+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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$
 TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$
 X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 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= 550.375 S= 104.330 CV(1)=0.190 **K factor**= 3.188** TL(1)= 8.83E+02 LL(1)=N/A

Statistics-Transformed Background Data X= 6.298 S= 0.162 CV(2)=0.026 **K factor**= 3.188** TL(2)= 6.82E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	5.02E+02	6.22E+00
9/16/2002	5.06E+02	6.23E+00
10/16/2002	5.43E+02	6.30E+00
1/13/2003	5.21E+02	6.26E+00
4/8/2003	5.04E+02	6.22E+00
7/16/2003	5.32E+02	6.28E+00
10/14/2003	4.90E+02	6.19E+00
1/14/2004	8.05E+02	6.69E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient
MW390	Downgradient

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)
MW386	Sidegradient	Yes	3.64E+02	NO	5.90E+00	N/A
MW393	Downgradient	Yes	2.51E+02	NO	5.53E+00	N/A
MW396	Upgradient	Yes	3.70E+02	NO	5.91E+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, $S = \sqrt{[\text{Sum} \{[(\text{background result}-X)^2]/[\text{count of background results} - 1]\}}^{0.5}$

TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** Read from Table 5, Appendix B of *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.*

C-746-S/T Fourth Quarter 2023 Statistical Analysis Historical Background Comparison

Iodide

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= 2.150 S= 0.283 CV(1)=0.132 K factor**= 3.188 TL(1)= 3.05E+00 LL(1)=N/A

Statistics-Transformed Background Data X= 0.759 S= 0.123 CV(2)=0.162 K factor**= 3.188 TL(2)= 1.15E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	2.00E+00	6.93E-01
9/16/2002	2.00E+00	6.93E-01
10/16/2002	2.00E+00	6.93E-01
1/13/2003	2.00E+00	6.93E-01
4/8/2003	2.00E+00	6.93E-01
7/16/2003	2.70E+00	9.93E-01
10/14/2003	2.50E+00	9.16E-01
1/14/2004	2.00E+00	6.93E-01

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient
MW390	Downgradient

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)
MW386	Sidegradient	No	5.00E-01	N/A	-6.93E-01	N/A
MW393	Downgradient	No	5.00E-01	N/A	-6.93E-01	N/A
MW396	Upgradient	Yes	4.95E-01	NO	-7.03E-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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 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= 7.796 S= 3.723 CV(1)=0.478 K factor**= 3.188 TL(1)= 1.97E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 1.880 S= 0.723 CV(2)=0.384 K factor**= 3.188 TL(2)= 4.18E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	1.80E+00	5.88E-01
9/16/2002	9.53E+00	2.25E+00
10/16/2002	7.43E+00	2.01E+00
1/13/2003	9.93E+00	2.30E+00
4/8/2003	1.02E+01	2.32E+00
7/16/2003	9.16E+00	2.21E+00
10/14/2003	1.19E+01	2.48E+00
1/14/2004	2.42E+00	8.84E-01

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient
MW390	Downgradient

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)
MW386	Sidegradient	Yes	9.30E-01	NO	-7.26E-02	N/A
MW393	Downgradient	Yes	1.38E+00	NO	3.22E-01	N/A
MW396	Upgradient	Yes	1.46E+00	NO	3.78E-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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 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= 16.876 S= 3.313 CV(1)=0.196 K factor**= 3.188 TL(1)= 2.74E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 2.804 S= 0.240 CV(2)=0.086 K factor**= 3.188 TL(2)= 3.57E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	1.55E+01	2.74E+00
9/16/2002	1.73E+01	2.85E+00
10/16/2002	1.78E+01	2.88E+00
1/13/2003	1.92E+01	2.95E+00
4/8/2003	1.78E+01	2.88E+00
7/16/2003	1.78E+01	2.88E+00
10/14/2003	2.02E+01	3.01E+00
1/14/2004	9.41E+00	2.24E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient
MW390	Downgradient

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)
MW386	Sidegradient	Yes	8.45E+00	NO	2.13E+00	N/A
MW393	Downgradient	Yes	3.95E+00	NO	1.37E+00	N/A
MW396	Upgradient	Yes	1.39E+01	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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 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= 0.774 S= 0.353 CV(1)=0.456 K factor**= 3.188 TL(1)= 1.90E+00 LL(1)=N/A

Statistics-Transformed Background Data X= -0.566 S= 1.192 CV(2)=-2.105 K factor**= 3.188 TL(2)= 3.23E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	5.70E-01	-5.62E-01
9/16/2002	6.47E-01	-4.35E-01
10/16/2002	8.80E-01	-1.28E-01
1/13/2003	1.13E+00	1.24E-01
4/8/2003	9.65E-01	-3.56E-02
7/16/2003	9.83E-01	-1.71E-02
10/14/2003	9.84E-01	-1.61E-02
1/14/2004	3.14E-02	-3.46E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient
MW390	Downgradient

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)
MW386	Sidegradient	Yes	1.20E+00	NO	1.82E-01	N/A
MW393	Downgradient	Yes	6.62E-02	NO	-2.72E+00	N/A
MW396	Upgradient	Yes	6.83E-01	NO	-3.81E-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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 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= 5.625 S= 3.159 CV(1)=0.562 K factor**= 3.188 TL(1)= 1.57E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 1.614 S= 0.500 CV(2)=0.310 K factor**= 3.188 TL(2)= 3.21E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	Result	LN(Result)
MW396		
Date Collected	Result	LN(Result)
8/13/2002	1.30E+01	2.56E+00
9/30/2002	2.00E+00	6.93E-01
10/16/2002	5.00E+00	1.61E+00
1/13/2003	5.00E+00	1.61E+00
4/8/2003	5.00E+00	1.61E+00
7/16/2003	5.00E+00	1.61E+00
10/14/2003	5.00E+00	1.61E+00
1/14/2004	5.00E+00	1.61E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient
MW390	Downgradient

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)
MW386	Sidegradient	Yes	1.12E+00	NO	1.13E-01	N/A
MW393	Downgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW396	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-S/T Fourth Quarter 2023 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= 0.007 S= 0.011 CV(1)=1.507 K factor**= 3.188 TL(1)= 4.22E-02 LL(1)=N/A

Statistics-Transformed Background Data X= -5.928 S= 1.420 CV(2)=-0.240 K factor**= 3.188 TL(2)= -1.40E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	Result	LN(Result)
MW396		
Date Collected	Result	LN(Result)
8/13/2002	2.50E-02	-3.69E+00
9/16/2002	2.50E-02	-3.69E+00
10/16/2002	1.00E-03	-6.91E+00
1/13/2003	1.28E-03	-6.66E+00
4/8/2003	2.71E-03	-5.91E+00
7/16/2003	1.17E-03	-6.75E+00
10/14/2003	1.00E-03	-6.91E+00
1/14/2004	1.00E-03	-6.91E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient
MW390	Downgradient

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)
MW386	Sidegradient	Yes	6.38E-04	N/A	-7.36E+00	NO
MW393	Downgradient	Yes	5.24E-04	N/A	-7.55E+00	NO
MW396	Upgradient	Yes	5.36E-04	N/A	-7.53E+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-S/T Fourth Quarter 2023 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= 0.016 S= 0.021 CV(1)=1.272 K factor**= 3.188 TL(1)= 8.26E-02 LL(1)=N/A

Statistics-Transformed Background Data X= -4.706 S= 1.057 CV(2)=-0.225 K factor**= 3.188 TL(2)= -1.34E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	5.00E-02	-3.00E+00
9/16/2002	5.00E-02	-3.00E+00
10/16/2002	5.00E-03	-5.30E+00
1/13/2003	5.00E-03	-5.30E+00
4/8/2003	5.71E-03	-5.17E+00
7/16/2003	5.00E-03	-5.30E+00
10/14/2003	5.00E-03	-5.30E+00
1/14/2004	5.00E-03	-5.30E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient
MW390	Downgradient

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)
MW386	Sidegradient	Yes	4.83E-03	N/A	-5.33E+00	NO
MW393	Downgradient	No	2.00E-03	N/A	-6.21E+00	N/A
MW396	Upgradient	Yes	1.72E-03	N/A	-6.37E+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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 Statistical Analysis Historical Background Comparison

pH

UNITS: Std Unit

UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data X= 6.460 S= 0.350 CV(1)=0.054 K factor**= 3.736 TL(1)= 7.77E+00 LL(1)=5.15E+00

Statistics-Transformed Background Data X= 1.864 S= 0.054 CV(2)=0.029 K factor**= 3.736 TL(2)= 2.07E+00 LL(2)=1.66E+00

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	6.17E+00	1.82E+00
9/16/2002	6.40E+00	1.86E+00
10/16/2002	5.90E+00	1.77E+00
1/13/2003	6.40E+00	1.86E+00
4/8/2003	6.65E+00	1.89E+00
7/16/2003	6.40E+00	1.86E+00
10/14/2003	6.71E+00	1.90E+00
1/14/2004	7.05E+00	1.95E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient
MW390	Downgradient

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)?
MW386	Sidegradient	Yes	6.69E+00	NO	1.90E+00	N/A
MW393	Downgradient	Yes	6.29E+00	NO	1.84E+00	N/A
MW396	Upgradient	Yes	6.46E+00	NO	1.87E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, $CV = S/X$ If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, $S = \sqrt{[\text{Sum} \{[(\text{background result}-X)^2]/[\text{count of background results} - 1]\}}^{0.5}$

TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 Statistical Analysis Historical Background Comparison

Potassium

UNITS: mg/L

UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data X= 1.411 S= 0.399 CV(1)=0.282 K factor**= 3.188 TL(1)= 2.68E+00 LL(1)=N/A

Statistics-Transformed Background Data X= 0.311 S= 0.271 CV(2)=0.870 K factor**= 3.188 TL(2)= 1.18E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	Result	LN(Result)
MW396		
Date Collected	Result	LN(Result)
8/13/2002	2.00E+00	6.93E-01
9/16/2002	2.00E+00	6.93E-01
10/16/2002	9.78E-01	-2.22E-02
1/13/2003	1.08E+00	7.70E-02
4/8/2003	1.12E+00	1.13E-01
7/16/2003	1.38E+00	3.22E-01
10/14/2003	1.24E+00	2.15E-01
1/14/2004	1.49E+00	3.99E-01

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient
MW390	Downgradient

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)
MW386	Sidegradient	Yes	2.65E-01	NO	-1.33E+00	N/A
MW393	Downgradient	Yes	4.75E-01	NO	-7.44E-01	N/A
MW396	Upgradient	Yes	7.49E-01	NO	-2.89E-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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 Statistical Analysis Historical Background Comparison

Sodium

UNITS: mg/L

UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data X= 106.825 S= 32.041 CV(1)=0.300 **K factor**= 3.188** TL(1)= 2.09E+02 LL(1)=N/A

Statistics-Transformed Background Data X= 4.595 S= 0.492 CV(2)=0.107 **K factor**= 3.188** TL(2)= 6.16E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	1.15E+02	4.74E+00
9/16/2002	1.16E+02	4.75E+00
10/16/2002	1.17E+02	4.76E+00
1/13/2003	1.22E+02	4.80E+00
4/8/2003	1.06E+02	4.66E+00
7/16/2003	1.17E+02	4.76E+00
10/14/2003	1.32E+02	4.88E+00
1/14/2004	2.96E+01	3.39E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient
MW390	Downgradient

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)
MW386	Sidegradient	Yes	1.02E+02	NO	4.62E+00	N/A
MW393	Downgradient	Yes	8.50E+01	NO	4.44E+00	N/A
MW396	Upgradient	Yes	9.81E+01	NO	4.59E+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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 Statistical Analysis Historical Background Comparison

Sulfate

UNITS: mg/L

UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data X= 22.463 S= 8.876 CV(1)=0.395 K factor**= 3.188 TL(1)= 5.08E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 3.054 S= 0.351 CV(2)=0.115 K factor**= 3.188 TL(2)= 4.17E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	Result	LN(Result)
MW396		
Date Collected	Result	LN(Result)
8/13/2002	4.19E+01	3.74E+00
9/16/2002	2.63E+01	3.27E+00
10/16/2002	2.06E+01	3.03E+00
1/13/2003	1.66E+01	2.81E+00
4/8/2003	2.39E+01	3.17E+00
7/16/2003	1.88E+01	2.93E+00
10/14/2003	1.29E+01	2.56E+00
1/14/2004	1.87E+01	2.93E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient
MW390	Downgradient

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)
MW386	Sidegradient	Yes	3.82E+01	NO	3.64E+00	N/A
MW393	Downgradient	Yes	2.03E+01	NO	3.01E+00	N/A
MW396	Upgradient	Yes	2.70E+01	NO	3.30E+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-S/T Fourth Quarter 2023 Statistical Analysis Historical Background Comparison

Total Organic Carbon (TOC)

UNITS: mg/L

UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data X= 9.988 S= 4.696 CV(1)=0.470 K factor**= 3.188 TL(1)= 2.50E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 2.210 S= 0.454 CV(2)=0.205 K factor**= 3.188 TL(2)= 3.66E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	Result	LN(Result)
MW396		
Date Collected	Result	LN(Result)
8/13/2002	1.90E+01	2.94E+00
9/16/2002	1.46E+01	2.68E+00
10/16/2002	1.04E+01	2.34E+00
1/13/2003	4.40E+00	1.48E+00
4/8/2003	7.00E+00	1.95E+00
7/16/2003	7.30E+00	1.99E+00
10/14/2003	9.10E+00	2.21E+00
1/14/2004	8.10E+00	2.09E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient
MW390	Downgradient

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)
MW386	Sidegradient	Yes	5.70E+00	NO	1.74E+00	N/A
MW393	Downgradient	Yes	2.66E+00	NO	9.78E-01	N/A
MW396	Upgradient	Yes	4.14E+00	NO	1.42E+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

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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 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= 142.650 S= 53.533 CV(1)=0.375 K factor**= 3.188 TL(1)= 3.13E+02 LL(1)=N/A

Statistics-Transformed Background Data X= 4.896 S= 0.390 CV(2)=0.080 K factor**= 3.188 TL(2)= 6.14E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	1.93E+02	5.26E+00
9/16/2002	1.90E+02	5.25E+00
10/16/2002	2.21E+02	5.40E+00
1/13/2003	1.06E+02	4.66E+00
4/8/2003	7.78E+01	4.35E+00
7/16/2003	1.22E+02	4.80E+00
10/14/2003	8.64E+01	4.46E+00
1/14/2004	1.45E+02	4.98E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient
MW390	Downgradient

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)
MW386	Sidegradient	Yes	1.39E+02	NO	4.93E+00	N/A
MW393	Downgradient	Yes	1.00E+01	NO	2.30E+00	N/A
MW396	Upgradient	Yes	1.86E+01	NO	2.92E+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, $S = \sqrt{\text{Sum} [(background\ result - X)^2] / [\text{count of background results} - 1]}$

TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$

X Mean, $X = (\text{sum of background results}) / (\text{count of background results})$

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 Statistical Analysis Historical Background Comparison

Zinc

UNITS: mg/L

UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data X= 0.044 S= 0.035 CV(1)=0.786 K factor**= 3.188 TL(1)= 1.56E-01 LL(1)=N/A

Statistics-Transformed Background Data X= -3.342 S= 0.682 CV(2)=-0.204 K factor**= 3.188 TL(2)= -1.17E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	1.00E-01	-2.30E+00
9/16/2002	1.00E-01	-2.30E+00
10/16/2002	2.50E-02	-3.69E+00
1/13/2003	3.50E-02	-3.35E+00
4/8/2003	3.50E-02	-3.35E+00
7/16/2003	2.00E-02	-3.91E+00
10/14/2003	2.00E-02	-3.91E+00
1/14/2004	2.00E-02	-3.91E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient
MW390	Downgradient

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)
MW386	Sidegradient	Yes	3.78E-03	NO	-5.58E+00	N/A
MW393	Downgradient	Yes	4.96E-03	NO	-5.31E+00	N/A
MW396	Upgradient	Yes	9.62E-03	NO	-4.64E+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, $S = \sqrt{[\text{Sum} \{[(\text{background result}-X)^2]/[\text{count of background results} - 1]\}}^{0.5}$

TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 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= 0.221 S= 0.061 CV(1)=0.277 K factor**= 2.523 TL(1)= 3.76E-01 LL(1)=N/A

Statistics-Transformed Background Data X= -1.534 S= 0.212 CV(2)=-0.138 K factor**= 2.523 TL(2)= -9.99E-01 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: MW220

Date Collected	Result	LN(Result)
10/14/2002	2.00E-01	-1.61E+00
1/15/2003	2.00E-01	-1.61E+00
4/10/2003	2.00E-01	-1.61E+00
7/14/2003	2.00E-01	-1.61E+00
10/13/2003	4.27E-01	-8.51E-01
1/13/2004	3.09E-01	-1.17E+00
4/13/2004	2.00E-01	-1.61E+00
7/21/2004	2.02E-01	-1.60E+00

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	2.00E-01	-1.61E+00
9/16/2002	2.00E-01	-1.61E+00
10/16/2002	2.00E-01	-1.61E+00
1/13/2003	2.00E-01	-1.61E+00
4/10/2003	2.00E-01	-1.61E+00
7/16/2003	2.00E-01	-1.61E+00
10/14/2003	2.00E-01	-1.61E+00
1/13/2004	2.00E-01	-1.61E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	8.05E-02	NO	-2.52E+00	N/A
MW221	Sidegradient	No	5.00E-02	N/A	-3.00E+00	N/A
MW222	Sidegradient	No	5.00E-02	N/A	-3.00E+00	N/A
MW223	Sidegradient	No	5.00E-02	N/A	-3.00E+00	N/A
MW224	Sidegradient	No	5.00E-02	N/A	-3.00E+00	N/A
MW369	Downgradient	Yes	6.61E-02	NO	-2.72E+00	N/A
MW372	Downgradient	No	5.00E-02	N/A	-3.00E+00	N/A
MW384	Sidegradient	Yes	2.09E-02	NO	-3.87E+00	N/A
MW387	Downgradient	Yes	6.65E-02	NO	-2.71E+00	N/A
MW391	Downgradient	Yes	4.70E-02	NO	-3.06E+00	N/A
MW394	Upgradient	Yes	2.95E-02	NO	-3.52E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

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-S/T Fourth Quarter 2023 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= 0.425 S= 0.615 CV(1)=1.447 K factor**= 2.523 TL(1)= 1.98E+00 LL(1)=N/A

Statistics-Transformed Background Data X= -1.322 S= 0.786 CV(2)=-0.595 K factor**= 2.523 TL(2)= 6.63E-01 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Well Number: MW220

Date Collected	Result	LN(Result)
10/14/2002	2.00E-01	-1.61E+00
1/15/2003	2.00E-01	-1.61E+00
4/10/2003	2.00E-01	-1.61E+00
7/14/2003	2.00E-01	-1.61E+00
10/13/2003	2.00E-01	-1.61E+00
1/13/2004	2.00E-01	-1.61E+00
4/13/2004	2.00E-01	-1.61E+00
7/21/2004	2.00E-01	-1.61E+00

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	2.00E+00	6.93E-01
9/16/2002	2.00E+00	6.93E-01
10/16/2002	2.00E-01	-1.61E+00
1/13/2003	2.00E-01	-1.61E+00
4/10/2003	2.00E-01	-1.61E+00
7/16/2003	2.00E-01	-1.61E+00
10/14/2003	2.00E-01	-1.61E+00
1/13/2004	2.00E-01	-1.61E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	8.28E-03	N/A	-4.79E+00	NO
MW221	Sidegradient	Yes	1.58E-02	N/A	-4.15E+00	NO
MW222	Sidegradient	Yes	9.11E-03	N/A	-4.70E+00	NO
MW223	Sidegradient	Yes	8.24E-03	N/A	-4.80E+00	NO
MW224	Sidegradient	Yes	1.82E-02	N/A	-4.01E+00	NO
MW369	Downgradient	Yes	1.59E-02	N/A	-4.14E+00	NO
MW372	Downgradient	Yes	1.19E+00	N/A	1.74E-01	NO
MW384	Sidegradient	Yes	3.63E-02	N/A	-3.32E+00	NO
MW387	Downgradient	Yes	3.78E-02	N/A	-3.28E+00	NO
MW391	Downgradient	Yes	2.50E-02	N/A	-3.69E+00	NO
MW394	Upgradient	Yes	1.99E-02	N/A	-3.92E+00	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

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-S/T Fourth Quarter 2023 Statistical Analysis Historical Background Comparison

Bromide

UNITS: mg/L

URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data X= 1.000 S= 0.000 CV(1)=0.000 K factor**= 2.523 TL(1)= 1.00E+00 LL(1)=N/A

Statistics-Transformed Background Data X= 0.000 S= 0.000 CV(2)=#Num! K factor**= 2.523 TL(2)= 0.00E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW220

Date Collected	Result	LN(Result)
10/14/2002	1.00E+00	0.00E+00
1/15/2003	1.00E+00	0.00E+00
4/10/2003	1.00E+00	0.00E+00
7/14/2003	1.00E+00	0.00E+00
10/13/2003	1.00E+00	0.00E+00
1/13/2004	1.00E+00	0.00E+00
4/13/2004	1.00E+00	0.00E+00
7/21/2004	1.00E+00	0.00E+00

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	1.00E+00	0.00E+00
9/16/2002	1.00E+00	0.00E+00
10/16/2002	1.00E+00	0.00E+00
1/13/2003	1.00E+00	0.00E+00
4/10/2003	1.00E+00	0.00E+00
7/16/2003	1.00E+00	0.00E+00
10/14/2003	1.00E+00	0.00E+00
1/13/2004	1.00E+00	0.00E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	2.09E-01	NO	-1.57E+00	N/A
MW221	Sidegradient	Yes	4.15E-01	NO	-8.79E-01	N/A
MW222	Sidegradient	Yes	3.75E-01	NO	-9.81E-01	N/A
MW223	Sidegradient	Yes	3.83E-01	NO	-9.60E-01	N/A
MW224	Sidegradient	Yes	2.61E-01	NO	-1.34E+00	N/A
MW369	Downgradient	Yes	3.31E-01	NO	-1.11E+00	N/A
MW372	Downgradient	Yes	4.97E-01	NO	-6.99E-01	N/A
MW384	Sidegradient	Yes	4.25E-01	NO	-8.56E-01	N/A
MW387	Downgradient	Yes	4.63E-01	NO	-7.70E-01	N/A
MW391	Downgradient	Yes	5.27E-01	NO	-6.41E-01	N/A
MW394	Upgradient	Yes	5.37E-01	NO	-6.22E-01	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

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-S/T Fourth Quarter 2023 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= 27.638 S= 4.743 CV(1)=0.172 K factor**= 2.523 TL(1)= 3.96E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 3.304 S= 0.183 CV(2)=0.055 K factor**= 2.523 TL(2)= 3.76E+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: MW220

Date Collected	Result	LN(Result)
10/14/2002	2.36E+01	3.16E+00
1/15/2003	2.59E+01	3.25E+00
4/10/2003	3.04E+01	3.41E+00
7/14/2003	3.39E+01	3.52E+00
10/13/2003	2.13E+01	3.06E+00
1/13/2004	2.03E+01	3.01E+00
4/13/2004	2.38E+01	3.17E+00
7/21/2004	1.90E+01	2.94E+00

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	2.95E+01	3.38E+00
9/16/2002	2.99E+01	3.40E+00
10/16/2002	3.12E+01	3.44E+00
1/13/2003	3.07E+01	3.42E+00
4/10/2003	3.44E+01	3.54E+00
7/16/2003	2.96E+01	3.39E+00
10/14/2003	3.03E+01	3.41E+00
1/13/2004	2.84E+01	3.35E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	2.16E+01	NO	3.07E+00	N/A
MW221	Sidegradient	Yes	2.03E+01	NO	3.01E+00	N/A
MW222	Sidegradient	Yes	1.61E+01	NO	2.78E+00	N/A
MW223	Sidegradient	Yes	2.13E+01	NO	3.06E+00	N/A
MW224	Sidegradient	Yes	2.21E+01	NO	3.10E+00	N/A
MW369	Downgradient	Yes	1.60E+01	NO	2.77E+00	N/A
MW372	Downgradient	Yes	6.46E+01	YES	4.17E+00	N/A
MW384	Sidegradient	Yes	2.99E+01	NO	3.40E+00	N/A
MW387	Downgradient	Yes	3.87E+01	NO	3.66E+00	N/A
MW391	Downgradient	Yes	2.66E+01	NO	3.28E+00	N/A
MW394	Upgradient	Yes	2.79E+01	NO	3.33E+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

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-S/T Fourth Quarter 2023 Statistical Analysis Historical Background Comparison
Chloride UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data X= 49.044 S= 11.278 CV(1)=0.230 K factor**= 2.523 TL(1)= 7.75E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 3.866 S= 0.244 CV(2)=0.063 K factor**= 2.523 TL(2)= 4.48E+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: MW220

Date Collected	Result	LN(Result)
10/14/2002	4.46E+01	3.80E+00
1/15/2003	4.32E+01	3.77E+00
4/10/2003	3.15E+01	3.45E+00
7/14/2003	3.08E+01	3.43E+00
10/13/2003	4.09E+01	3.71E+00
1/13/2004	4.08E+01	3.71E+00
4/13/2004	3.75E+01	3.62E+00
7/21/2004	4.08E+01	3.71E+00

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	6.04E+01	4.10E+00
9/16/2002	6.03E+01	4.10E+00
10/16/2002	5.80E+01	4.06E+00
1/13/2003	6.07E+01	4.11E+00
4/10/2003	6.29E+01	4.14E+00
7/16/2003	5.81E+01	4.06E+00
10/14/2003	5.82E+01	4.06E+00
1/13/2004	5.60E+01	4.03E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	1.74E+01	NO	2.86E+00	N/A
MW221	Sidegradient	Yes	3.29E+01	NO	3.49E+00	N/A
MW222	Sidegradient	Yes	2.85E+01	NO	3.35E+00	N/A
MW223	Sidegradient	Yes	2.97E+01	NO	3.39E+00	N/A
MW224	Sidegradient	Yes	1.74E+01	NO	2.86E+00	N/A
MW369	Downgradient	Yes	2.75E+01	NO	3.31E+00	N/A
MW372	Downgradient	Yes	3.84E+01	NO	3.65E+00	N/A
MW384	Sidegradient	Yes	3.19E+01	NO	3.46E+00	N/A
MW387	Downgradient	Yes	3.66E+01	NO	3.60E+00	N/A
MW391	Downgradient	Yes	4.08E+01	NO	3.71E+00	N/A
MW394	Upgradient	Yes	4.35E+01	NO	3.77E+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-S/T Fourth Quarter 2023 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= 0.016 S= 0.040 CV(1)=2.440 K factor**= 2.523 TL(1)= 1.16E-01 LL(1)=N/A

Statistics-Transformed Background Data X= -5.582 S= 1.573 CV(2)=-0.282 K factor**= 2.523 TL(2)= -1.61E+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: MW220

Date Collected	Result	LN(Result)
10/14/2002	4.10E-03	-5.50E+00
1/15/2003	4.96E-03	-5.31E+00
4/10/2003	2.89E-03	-5.85E+00
7/14/2003	1.61E-01	-1.83E+00
10/13/2003	2.26E-02	-3.79E+00
1/13/2004	4.64E-03	-5.37E+00
4/13/2004	1.00E-03	-6.91E+00
7/21/2004	2.64E-03	-5.94E+00

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	2.50E-02	-3.69E+00
9/16/2002	2.50E-02	-3.69E+00
10/16/2002	1.00E-03	-6.91E+00
1/13/2003	1.00E-03	-6.91E+00
4/10/2003	1.00E-03	-6.91E+00
7/16/2003	1.00E-03	-6.91E+00
10/14/2003	1.00E-03	-6.91E+00
1/13/2004	1.00E-03	-6.91E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	3.67E-04	N/A	-7.91E+00	NO
MW221	Sidegradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW222	Sidegradient	Yes	8.65E-04	N/A	-7.05E+00	NO
MW223	Sidegradient	Yes	4.62E-04	N/A	-7.68E+00	NO
MW224	Sidegradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW369	Downgradient	Yes	6.36E-03	N/A	-5.06E+00	NO
MW372	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW384	Sidegradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW387	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW391	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW394	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-S/T Fourth Quarter 2023 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= 382.132 S= 107.134 CV(1)=0.280 K factor**= 2.523 TL(1)= 6.52E+02 LL(1)=N/A

Statistics-Transformed Background Data X= 5.716 S= 1.164 CV(2)=0.204 K factor**= 2.523 TL(2)= 8.65E+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: MW220

Date Collected	Result	LN(Result)
10/14/2002	3.68E+02	5.91E+00
1/15/2003	4.33E+02	6.07E+00
4/10/2003	4.89E+02	6.19E+00
7/14/2003	4.30E+02	6.06E+00
10/13/2003	3.46E+02	5.85E+00
1/13/2004	3.65E+02	5.90E+00
4/13/2004	4.16E+02	6.03E+00
7/21/2004	3.53E+02	5.87E+00

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	4.06E+02	6.01E+00
9/16/2002	4.18E+02	6.04E+00
10/16/2002	4.11E+02	6.02E+00
1/13/2003	4.22E+02	6.05E+00
4/10/2003	4.20E+02	6.04E+00
7/16/2003	4.38E+02	6.08E+00
10/14/2003	3.91E+00	1.36E+00
1/13/2004	3.95E+02	5.98E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	3.23E+02	NO	5.78E+00	N/A
MW221	Sidegradient	Yes	3.71E+02	NO	5.92E+00	N/A
MW222	Sidegradient	Yes	3.13E+02	NO	5.75E+00	N/A
MW223	Sidegradient	Yes	3.62E+02	NO	5.89E+00	N/A
MW224	Sidegradient	Yes	4.01E+02	NO	5.99E+00	N/A
MW369	Downgradient	Yes	3.45E+02	NO	5.84E+00	N/A
MW372	Downgradient	Yes	7.47E+02	YES	6.62E+00	N/A
MW384	Sidegradient	Yes	5.08E+02	NO	6.23E+00	N/A
MW387	Downgradient	Yes	5.50E+02	NO	6.31E+00	N/A
MW391	Downgradient	Yes	3.72E+02	NO	5.92E+00	N/A
MW394	Upgradient	Yes	4.03E+02	NO	6.00E+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

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-S/T Fourth Quarter 2023 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= 0.024 S= 0.010 CV(1)=0.429 K factor**= 2.523 TL(1)= 4.96E-02 LL(1)=N/A

Statistics-Transformed Background Data X= -3.794 S= 0.312 CV(2)=-0.082 K factor**= 2.523 TL(2)= -3.01E+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: MW220

Date Collected	Result	LN(Result)
10/14/2002	2.11E-02	-3.86E+00
1/15/2003	2.00E-02	-3.91E+00
4/10/2003	2.00E-02	-3.91E+00
7/14/2003	2.00E-02	-3.91E+00
10/13/2003	2.00E-02	-3.91E+00
1/13/2004	2.00E-02	-3.91E+00
4/13/2004	2.00E-02	-3.91E+00
7/21/2004	2.00E-02	-3.91E+00

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	5.00E-02	-3.00E+00
9/16/2002	5.00E-02	-3.00E+00
10/16/2002	2.00E-02	-3.91E+00
1/13/2003	2.00E-02	-3.91E+00
4/10/2003	2.00E-02	-3.91E+00
7/16/2003	2.00E-02	-3.91E+00
10/14/2003	2.00E-02	-3.91E+00
1/13/2004	2.00E-02	-3.91E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	2.49E-03	NO	-6.00E+00	N/A
MW221	Sidegradient	Yes	2.36E-03	NO	-6.05E+00	N/A
MW222	Sidegradient	Yes	1.50E-03	NO	-6.50E+00	N/A
MW223	Sidegradient	Yes	2.36E-03	NO	-6.05E+00	N/A
MW224	Sidegradient	Yes	1.85E-03	NO	-6.29E+00	N/A
MW369	Downgradient	Yes	4.46E-03	NO	-5.41E+00	N/A
MW372	Downgradient	Yes	1.62E-03	NO	-6.43E+00	N/A
MW384	Sidegradient	Yes	2.29E-03	NO	-6.08E+00	N/A
MW387	Downgradient	Yes	1.63E-03	NO	-6.42E+00	N/A
MW391	Downgradient	Yes	2.35E-03	NO	-6.05E+00	N/A
MW394	Upgradient	Yes	1.81E-03	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-S/T Fourth Quarter 2023 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= 3.784 S= 1.887 CV(1)=0.499 K factor**= 2.523 TL(1)= 8.54E+00 LL(1)=N/A

Statistics-Transformed Background Data X= 1.182 S= 0.612 CV(2)=0.518 K factor**= 2.523 TL(2)= 2.73E+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: MW220

Date Collected	Result	LN(Result)
10/14/2002	6.79E+00	1.92E+00
1/15/2003	7.25E+00	1.98E+00
4/10/2003	3.60E+00	1.28E+00
7/14/2003	9.40E-01	-6.19E-02
10/13/2003	1.65E+00	5.01E-01
1/13/2004	3.48E+00	1.25E+00
4/13/2004	1.05E+00	4.88E-02
7/21/2004	4.46E+00	1.50E+00

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	6.09E+00	1.81E+00
9/16/2002	3.85E+00	1.35E+00
10/16/2002	5.11E+00	1.63E+00
1/13/2003	3.83E+00	1.34E+00
4/10/2003	4.15E+00	1.42E+00
7/16/2003	1.83E+00	6.04E-01
10/14/2003	3.33E+00	1.20E+00
1/13/2004	3.14E+00	1.14E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	6.14E+00	NO	1.81E+00	N/A
MW221	Sidegradient	Yes	5.76E+00	NO	1.75E+00	N/A
MW222	Sidegradient	Yes	3.71E+00	NO	1.31E+00	N/A
MW223	Sidegradient	Yes	3.59E+00	NO	1.28E+00	N/A
MW224	Sidegradient	Yes	2.24E+00	NO	8.06E-01	N/A
MW369	Downgradient	Yes	3.49E+00	NO	1.25E+00	N/A
MW372	Downgradient	Yes	3.24E+00	NO	1.18E+00	N/A
MW384	Sidegradient	Yes	4.26E+00	NO	1.45E+00	N/A
MW387	Downgradient	Yes	4.97E+00	NO	1.60E+00	N/A
MW391	Downgradient	Yes	5.58E+00	NO	1.72E+00	N/A
MW394	Upgradient	Yes	5.26E+00	NO	1.66E+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-S/T Fourth Quarter 2023 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= 232.688 S= 27.490 CV(1)=0.118 **K factor**= 2.523** TL(1)= 3.02E+02 LL(1)=N/A

Statistics-Transformed Background Data X= 5.443 S= 0.118 CV(2)=0.022 **K factor**= 2.523** TL(2)= 5.74E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW220

Date Collected	Result	LN(Result)
10/14/2002	2.08E+02	5.34E+00
1/15/2003	2.57E+02	5.55E+00
4/10/2003	2.88E+02	5.66E+00
7/14/2003	2.62E+02	5.57E+00
10/13/2003	1.97E+02	5.28E+00
1/13/2004	1.98E+02	5.29E+00
4/13/2004	2.45E+02	5.50E+00
7/21/2004	2.04E+02	5.32E+00

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	2.47E+02	5.51E+00
9/16/2002	2.59E+02	5.56E+00
10/16/2002	2.01E+02	5.30E+00
1/13/2003	2.28E+02	5.43E+00
4/10/2003	2.49E+02	5.52E+00
7/16/2003	2.40E+02	5.48E+00
10/14/2003	2.30E+02	5.44E+00
1/13/2004	2.10E+02	5.35E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	1.58E+02	NO	5.06E+00	N/A
MW221	Sidegradient	Yes	1.83E+02	NO	5.21E+00	N/A
MW222	Sidegradient	Yes	1.60E+02	NO	5.08E+00	N/A
MW223	Sidegradient	Yes	1.85E+02	NO	5.22E+00	N/A
MW224	Sidegradient	Yes	2.13E+02	NO	5.36E+00	N/A
MW369	Downgradient	Yes	1.92E+02	NO	5.26E+00	N/A
MW372	Downgradient	Yes	4.47E+02	YES	6.10E+00	N/A
MW384	Sidegradient	Yes	2.38E+02	NO	5.47E+00	N/A
MW387	Downgradient	Yes	2.70E+02	NO	5.60E+00	N/A
MW391	Downgradient	Yes	1.66E+02	NO	5.11E+00	N/A
MW394	Upgradient	Yes	1.70E+02	NO	5.14E+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-S/T Fourth Quarter 2023 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= 0.897 S= 1.050 CV(1)=1.170 K factor**= 2.523 TL(1)= 3.55E+00 LL(1)=N/A

Statistics-Transformed Background Data X= -0.565 S= 0.951 CV(2)=-1.683 K factor**= 2.523 TL(2)= 1.83E+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: MW220

Date Collected	Result	LN(Result)
10/14/2002	2.00E-01	-1.61E+00
1/15/2003	2.00E-01	-1.61E+00
4/10/2003	4.29E-01	-8.46E-01
7/14/2003	4.33E+00	1.47E+00
10/13/2003	1.81E+00	5.93E-01
1/13/2004	7.93E-01	-2.32E-01
4/13/2004	1.30E-01	-2.04E+00
7/21/2004	3.82E-01	-9.62E-01

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	1.34E+00	2.93E-01
9/16/2002	3.28E-01	-1.11E+00
10/16/2002	1.38E+00	3.22E-01
1/13/2003	1.30E+00	2.62E-01
4/10/2003	4.94E-01	-7.05E-01
7/16/2003	6.20E-01	-4.78E-01
10/14/2003	3.70E-01	-9.94E-01
1/13/2004	2.51E-01	-1.38E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	1.88E-01	N/A	-1.67E+00	NO
MW221	Sidegradient	No	1.00E-01	N/A	-2.30E+00	N/A
MW222	Sidegradient	No	1.00E-01	N/A	-2.30E+00	N/A
MW223	Sidegradient	No	1.00E-01	N/A	-2.30E+00	N/A
MW224	Sidegradient	No	1.00E-01	N/A	-2.30E+00	N/A
MW369	Downgradient	Yes	3.23E-01	N/A	-1.13E+00	NO
MW372	Downgradient	Yes	1.25E-01	N/A	-2.08E+00	NO
MW384	Sidegradient	Yes	4.46E-01	N/A	-8.07E-01	NO
MW387	Downgradient	Yes	3.56E-01	N/A	-1.03E+00	NO
MW391	Downgradient	Yes	3.03E-01	N/A	-1.19E+00	NO
MW394	Upgradient	Yes	1.24E-01	N/A	-2.09E+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-S/T Fourth Quarter 2023 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= 10.796 S= 1.703 CV(1)=0.158 K factor**= 2.523 TL(1)= 1.51E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 2.368 S= 0.158 CV(2)=0.067 K factor**= 2.523 TL(2)= 2.77E+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: MW220

Date Collected	Result	LN(Result)
10/14/2002	9.16E+00	2.21E+00
1/15/2003	1.00E+01	2.30E+00
4/10/2003	1.08E+01	2.38E+00
7/14/2003	1.47E+01	2.69E+00
10/13/2003	9.03E+00	2.20E+00
1/13/2004	8.49E+00	2.14E+00
4/13/2004	9.70E+00	2.27E+00
7/21/2004	8.06E+00	2.09E+00

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	1.18E+01	2.47E+00
9/16/2002	1.21E+01	2.49E+00
10/16/2002	1.13E+01	2.42E+00
1/13/2003	1.03E+01	2.33E+00
4/10/2003	1.17E+01	2.46E+00
7/16/2003	1.20E+01	2.48E+00
10/14/2003	1.22E+01	2.50E+00
1/13/2004	1.14E+01	2.43E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	8.85E+00	NO	2.18E+00	N/A
MW221	Sidegradient	Yes	8.73E+00	NO	2.17E+00	N/A
MW222	Sidegradient	Yes	7.01E+00	NO	1.95E+00	N/A
MW223	Sidegradient	Yes	8.73E+00	NO	2.17E+00	N/A
MW224	Sidegradient	Yes	9.64E+00	NO	2.27E+00	N/A
MW369	Downgradient	Yes	6.42E+00	NO	1.86E+00	N/A
MW372	Downgradient	Yes	2.16E+01	YES	3.07E+00	N/A
MW384	Sidegradient	Yes	1.23E+01	NO	2.51E+00	N/A
MW387	Downgradient	Yes	1.62E+01	YES	2.79E+00	N/A
MW391	Downgradient	Yes	1.09E+01	NO	2.39E+00	N/A
MW394	Upgradient	Yes	1.16E+01	NO	2.45E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

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
- MW387

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-S/T Fourth Quarter 2023 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= 0.287 S= 0.619 CV(1)=2.156 K factor**= 2.523 TL(1)= 1.85E+00 LL(1)=N/A

Statistics-Transformed Background Data X= -2.455 S= 1.619 CV(2)=-0.659 K factor**= 2.523 TL(2)= 1.63E+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: MW220

Date Collected	Result	LN(Result)
10/14/2002	3.06E-02	-3.49E+00
1/15/2003	2.91E-02	-3.54E+00
4/10/2003	1.37E-02	-4.29E+00
7/14/2003	2.54E+00	9.32E-01
10/13/2003	3.78E-01	-9.73E-01
1/13/2004	1.59E-01	-1.84E+00
4/13/2004	7.07E-03	-4.95E+00
7/21/2004	8.41E-02	-2.48E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	4.52E-03	N/A	-5.40E+00	NO
MW221	Sidegradient	No	5.00E-03	N/A	-5.30E+00	N/A
MW222	Sidegradient	Yes	9.02E-03	N/A	-4.71E+00	NO
MW223	Sidegradient	Yes	6.67E-03	N/A	-5.01E+00	NO
MW224	Sidegradient	Yes	2.92E-03	N/A	-5.84E+00	NO
MW369	Downgradient	Yes	3.69E-02	N/A	-3.30E+00	NO
MW372	Downgradient	Yes	2.65E-03	N/A	-5.93E+00	NO
MW384	Sidegradient	Yes	1.13E-02	N/A	-4.48E+00	NO
MW387	Downgradient	Yes	3.60E-02	N/A	-3.32E+00	NO
MW391	Downgradient	Yes	7.10E-03	N/A	-4.95E+00	NO
MW394	Upgradient	Yes	3.21E-03	N/A	-5.74E+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-S/T Fourth Quarter 2023 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= 4.813 S= 0.750 CV(1)=0.156 K factor**= 2.523 TL(1)= 6.70E+00 LL(1)=N/A

Statistics-Transformed Background Data X= 1.552 S= 0.229 CV(2)=0.148 K factor**= 2.523 TL(2)= 2.13E+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: MW220

Date Collected	Result	LN(Result)
10/14/2002	5.00E+00	1.61E+00
1/15/2003	5.00E+00	1.61E+00
4/10/2003	5.00E+00	1.61E+00
7/14/2003	5.00E+00	1.61E+00
10/13/2003	5.00E+00	1.61E+00
1/13/2004	5.00E+00	1.61E+00
4/13/2004	5.00E+00	1.61E+00
7/21/2004	5.00E+00	1.61E+00

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	5.00E+00	1.61E+00
9/30/2002	2.00E+00	6.93E-01
10/16/2002	5.00E+00	1.61E+00
1/13/2003	5.00E+00	1.61E+00
4/10/2003	5.00E+00	1.61E+00
7/16/2003	5.00E+00	1.61E+00
10/14/2003	5.00E+00	1.61E+00
1/13/2004	5.00E+00	1.61E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	2.96E+00	NO	1.09E+00	N/A
MW221	Sidegradient	Yes	3.23E+00	NO	1.17E+00	N/A
MW222	Sidegradient	Yes	3.03E+00	NO	1.11E+00	N/A
MW223	Sidegradient	Yes	2.76E+00	NO	1.02E+00	N/A
MW224	Sidegradient	Yes	2.82E+00	NO	1.04E+00	N/A
MW369	Downgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW372	Downgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW384	Sidegradient	Yes	8.40E-01	NO	-1.74E-01	N/A
MW387	Downgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW391	Downgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW394	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-S/T Fourth Quarter 2023 Statistical Analysis Historical Background Comparison

Molybdenum

UNITS: mg/L

URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data X= 0.006 S= 0.008 CV(1)=1.261 K factor**= 2.523 TL(1)= 2.64E-02 LL(1)=N/A

Statistics-Transformed Background Data X= -5.747 S= 1.205 CV(2)=-0.210 K factor**= 2.523 TL(2)= -2.71E+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: MW220

Date Collected	Result	LN(Result)
10/14/2002	5.58E-03	-5.19E+00
1/15/2003	9.83E-03	-4.62E+00
4/10/2003	1.09E-02	-4.52E+00
7/14/2003	2.45E-03	-6.01E+00
10/13/2003	5.66E-03	-5.17E+00
1/13/2004	5.72E-03	-5.16E+00
4/13/2004	1.00E-03	-6.91E+00
7/21/2004	3.92E-03	-5.54E+00

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	2.50E-02	-3.69E+00
9/16/2002	2.50E-02	-3.69E+00
10/16/2002	1.00E-03	-6.91E+00
1/13/2003	1.00E-03	-6.91E+00
4/10/2003	1.00E-03	-6.91E+00
7/16/2003	1.00E-03	-6.91E+00
10/14/2003	1.00E-03	-6.91E+00
1/13/2004	1.00E-03	-6.91E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	No	8.75E-04	N/A	-7.04E+00	N/A
MW221	Sidegradient	Yes	2.71E-03	N/A	-5.91E+00	NO
MW222	Sidegradient	Yes	1.54E-03	N/A	-6.48E+00	NO
MW223	Sidegradient	Yes	5.02E-03	N/A	-5.29E+00	NO
MW224	Sidegradient	No	9.35E-04	N/A	-6.97E+00	N/A
MW369	Downgradient	Yes	2.50E-04	N/A	-8.29E+00	NO
MW372	Downgradient	Yes	2.20E-04	N/A	-8.42E+00	NO
MW384	Sidegradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW387	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW391	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW394	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-S/T Fourth Quarter 2023 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= 0.127 S= 0.228 CV(1)=1.790 K factor**= 2.523 TL(1)= 7.01E-01 LL(1)=N/A

Statistics-Transformed Background Data X= -3.617 S= 1.837 CV(2)=-0.508 K factor**= 2.523 TL(2)= 1.02E+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: MW220

Date Collected	Result	LN(Result)
10/14/2002	4.18E-01	-8.72E-01
1/15/2003	7.38E-01	-3.04E-01
4/10/2003	5.44E-01	-6.09E-01
7/14/2003	1.06E-01	-2.24E+00
10/13/2003	5.29E-02	-2.94E+00
1/13/2004	2.09E-02	-3.87E+00
4/13/2004	5.00E-03	-5.30E+00
7/21/2004	1.92E-02	-3.95E+00

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	5.00E-02	-3.00E+00
9/16/2002	5.00E-02	-3.00E+00
10/16/2002	5.00E-03	-5.30E+00
1/13/2003	5.00E-03	-5.30E+00
4/10/2003	5.00E-03	-5.30E+00
7/16/2003	5.00E-03	-5.30E+00
10/14/2003	5.00E-03	-5.30E+00
1/13/2004	5.00E-03	-5.30E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	6.53E-03	N/A	-5.03E+00	NO
MW221	Sidegradient	Yes	1.13E-02	N/A	-4.48E+00	NO
MW222	Sidegradient	Yes	1.67E-02	N/A	-4.09E+00	NO
MW223	Sidegradient	Yes	1.61E-01	N/A	-1.83E+00	NO
MW224	Sidegradient	Yes	8.93E-03	N/A	-4.72E+00	NO
MW369	Downgradient	Yes	4.31E-03	N/A	-5.45E+00	NO
MW372	Downgradient	Yes	7.61E-04	N/A	-7.18E+00	NO
MW384	Sidegradient	Yes	6.29E-04	N/A	-7.37E+00	NO
MW387	Downgradient	Yes	9.21E-04	N/A	-6.99E+00	NO
MW391	Downgradient	Yes	6.32E-04	N/A	-7.37E+00	NO
MW394	Upgradient	Yes	5.59E-03	N/A	-5.19E+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-S/T Fourth Quarter 2023 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= 179.872 S= 86.318 CV(1)=0.480 **K factor**= 2.523** TL(1)= 3.98E+02 LL(1)=N/A

Statistics-Transformed Background Data X= 4.861 S= 1.252 CV(2)=0.258 **K factor**= 2.523** TL(2)= 8.02E+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: MW220

Date Collected	Result	LN(Result)
10/14/2002	2.05E+02	5.32E+00
1/15/2003	1.95E+00	6.68E-01
4/10/2003	2.03E+02	5.31E+00
7/14/2003	3.00E+01	3.40E+00
10/13/2003	1.07E+02	4.67E+00
1/13/2004	2.95E+02	5.69E+00
4/13/2004	1.90E+02	5.25E+00
7/21/2004	3.19E+02	5.77E+00

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	9.00E+01	4.50E+00
9/16/2002	2.40E+02	5.48E+00
10/16/2002	1.85E+02	5.22E+00
1/13/2003	2.20E+02	5.39E+00
4/10/2003	1.96E+02	5.28E+00
7/16/2003	1.72E+02	5.15E+00
10/14/2003	1.75E+02	5.16E+00
1/13/2004	2.49E+02	5.52E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	4.06E+02	YES	6.01E+00	N/A
MW221	Sidegradient	Yes	4.68E+02	YES	6.15E+00	N/A
MW222	Sidegradient	Yes	4.65E+02	YES	6.14E+00	N/A
MW223	Sidegradient	Yes	4.62E+02	YES	6.14E+00	N/A
MW224	Sidegradient	Yes	4.87E+02	YES	6.19E+00	N/A
MW369	Downgradient	Yes	3.85E+02	NO	5.95E+00	N/A
MW372	Downgradient	Yes	3.40E+02	NO	5.83E+00	N/A
MW384	Sidegradient	Yes	4.65E+02	YES	6.14E+00	N/A
MW387	Downgradient	Yes	4.78E+02	YES	6.17E+00	N/A
MW391	Downgradient	Yes	4.90E+02	YES	6.19E+00	N/A
MW394	Upgradient	Yes	4.61E+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.

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.

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

MW220
MW221
MW222
MW223
MW224
MW384
MW387
MW391
MW394

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, $CV = S/X$ If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, $S = [\text{Sum} [(background\ result - X)^2] / [\text{count of background results} - 1]]^{0.5}$

TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$

X Mean, $X = (\text{sum of background results}) / (\text{count of background results})$

** Read from Table 5, Appendix B of *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance*, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 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= 6.138 S= 0.282 CV(1)=0.046 K factor**= 2.904 TL(1)= 6.96E+00 LL(1)=5.32E+00

Statistics-Transformed Background Data X= 1.813 S= 0.047 CV(2)=0.026 K factor**= 2.904 TL(2)= 1.95E+00 LL(2)=1.68E+00

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW220

Date Collected	Result	LN(Result)
10/14/2002	6.04E+00	1.80E+00
1/15/2003	6.31E+00	1.84E+00
4/10/2003	6.50E+00	1.87E+00
7/14/2003	6.30E+00	1.84E+00
10/13/2003	6.34E+00	1.85E+00
1/13/2004	6.33E+00	1.85E+00
4/13/2004	6.30E+00	1.84E+00
7/21/2004	5.90E+00	1.77E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)? Result <LL(1)?	LN(Result)	LN(Result) >TL(2)? LN(Result) <LL(2)?
MW220	Upgradient	Yes	6.12E+00	NO	1.81E+00	N/A
MW221	Sidegradient	Yes	6.14E+00	NO	1.81E+00	N/A
MW222	Sidegradient	Yes	6.20E+00	NO	1.82E+00	N/A
MW223	Sidegradient	Yes	6.19E+00	NO	1.82E+00	N/A
MW224	Sidegradient	Yes	6.14E+00	NO	1.81E+00	N/A
MW369	Downgradient	Yes	6.02E+00	NO	1.80E+00	N/A
MW372	Downgradient	Yes	6.13E+00	NO	1.81E+00	N/A
MW384	Sidegradient	Yes	6.10E+00	NO	1.81E+00	N/A
MW387	Downgradient	Yes	6.28E+00	NO	1.84E+00	N/A
MW391	Downgradient	Yes	5.90E+00	NO	1.77E+00	N/A
MW394	Upgradient	Yes	6.00E+00	NO	1.79E+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-S/T Fourth Quarter 2023 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= 6.654 S= 9.310 CV(1)=1.399 K factor**= 2.523 TL(1)= 3.01E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 1.130 S= 1.208 CV(2)=1.069 K factor**= 2.523 TL(2)= 4.18E+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: MW220

Date Collected	Result	LN(Result)
10/14/2002	6.70E+00	1.90E+00
1/15/2003	2.97E+01	3.39E+00
4/10/2003	2.49E+01	3.21E+00
7/14/2003	1.13E+00	1.22E-01
10/13/2003	3.43E+00	1.23E+00
1/13/2004	6.71E+00	1.90E+00
4/13/2004	1.93E+01	2.96E+00
7/21/2004	3.97E+00	1.38E+00

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	2.00E+00	6.93E-01
9/16/2002	2.00E+00	6.93E-01
10/16/2002	1.03E+00	2.96E-02
1/13/2003	1.10E+00	9.53E-02
4/10/2003	1.24E+00	2.15E-01
7/16/2003	1.14E+00	1.31E-01
10/14/2003	1.05E+00	4.88E-02
1/13/2004	1.07E+00	6.77E-02

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	1.99E+00	N/A	6.88E-01	NO
MW221	Sidegradient	Yes	1.18E+00	N/A	1.66E-01	NO
MW222	Sidegradient	Yes	5.33E-01	N/A	-6.29E-01	NO
MW223	Sidegradient	Yes	1.68E+00	N/A	5.19E-01	NO
MW224	Sidegradient	Yes	9.34E-01	N/A	-6.83E-02	NO
MW369	Downgradient	Yes	5.74E-01	N/A	-5.55E-01	NO
MW372	Downgradient	Yes	2.10E+00	N/A	7.42E-01	NO
MW384	Sidegradient	Yes	1.52E+00	N/A	4.19E-01	NO
MW387	Downgradient	Yes	1.70E+00	N/A	5.31E-01	NO
MW391	Downgradient	Yes	1.52E+00	N/A	4.19E-01	NO
MW394	Upgradient	Yes	1.26E+00	N/A	2.31E-01	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

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-S/T Fourth Quarter 2023 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= 36.363 S= 8.666 CV(1)=0.238 K factor**= 2.523 TL(1)= 5.82E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 3.570 S= 0.222 CV(2)=0.062 K factor**= 2.523 TL(2)= 4.13E+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: MW220

Date Collected	Result	LN(Result)
10/14/2002	3.54E+01	3.57E+00
1/15/2003	4.06E+01	3.70E+00
4/10/2003	5.10E+01	3.93E+00
7/14/2003	5.82E+01	4.06E+00
10/13/2003	3.81E+01	3.64E+00
1/13/2004	3.70E+01	3.61E+00
4/13/2004	4.32E+01	3.77E+00
7/21/2004	3.38E+01	3.52E+00

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	3.29E+01	3.49E+00
9/16/2002	2.99E+01	3.40E+00
10/16/2002	2.90E+01	3.37E+00
1/13/2003	2.71E+01	3.30E+00
4/10/2003	2.48E+01	3.21E+00
7/16/2003	3.56E+01	3.57E+00
10/14/2003	3.39E+01	3.52E+00
1/13/2004	3.13E+01	3.44E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	3.72E+01	NO	3.62E+00	N/A
MW221	Sidegradient	Yes	4.41E+01	NO	3.79E+00	N/A
MW222	Sidegradient	Yes	4.08E+01	NO	3.71E+00	N/A
MW223	Sidegradient	Yes	4.40E+01	NO	3.78E+00	N/A
MW224	Sidegradient	Yes	5.74E+01	NO	4.05E+00	N/A
MW369	Downgradient	Yes	4.69E+01	NO	3.85E+00	N/A
MW372	Downgradient	Yes	5.90E+01	YES	4.08E+00	N/A
MW384	Sidegradient	Yes	6.01E+01	YES	4.10E+00	N/A
MW387	Downgradient	Yes	5.11E+01	NO	3.93E+00	N/A
MW391	Downgradient	Yes	3.23E+01	NO	3.48E+00	N/A
MW394	Upgradient	Yes	3.45E+01	NO	3.54E+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
- MW384

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-S/T Fourth Quarter 2023 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= 10.481 S= 2.648 CV(1)=0.253 K factor**= 2.523 TL(1)= 1.72E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 2.322 S= 0.239 CV(2)=0.103 K factor**= 2.523 TL(2)= 2.92E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW220

Date Collected	Result	LN(Result)
10/14/2002	1.04E+01	2.34E+00
1/15/2003	9.80E+00	2.28E+00
4/10/2003	1.54E+01	2.73E+00
7/14/2003	1.49E+01	2.70E+00
10/13/2003	1.35E+01	2.60E+00
1/13/2004	1.03E+01	2.33E+00
4/13/2004	1.43E+01	2.66E+00
7/21/2004	1.05E+01	2.35E+00

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	1.12E+01	2.42E+00
9/16/2002	8.30E+00	2.12E+00
10/16/2002	8.00E+00	2.08E+00
1/13/2003	8.50E+00	2.14E+00
4/10/2003	7.90E+00	2.07E+00
7/16/2003	8.40E+00	2.13E+00
10/14/2003	8.20E+00	2.10E+00
1/13/2004	8.10E+00	2.09E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	1.55E+01	NO	2.74E+00	N/A
MW221	Sidegradient	Yes	1.38E+01	NO	2.62E+00	N/A
MW222	Sidegradient	Yes	1.10E+01	NO	2.40E+00	N/A
MW223	Sidegradient	Yes	1.25E+01	NO	2.53E+00	N/A
MW224	Sidegradient	Yes	1.36E+01	NO	2.61E+00	N/A
MW369	Downgradient	Yes	8.72E+00	NO	2.17E+00	N/A
MW372	Downgradient	Yes	1.43E+02	YES	4.96E+00	N/A
MW384	Sidegradient	Yes	2.40E+01	YES	3.18E+00	N/A
MW387	Downgradient	Yes	2.67E+01	YES	3.28E+00	N/A
MW391	Downgradient	Yes	1.19E+01	NO	2.48E+00	N/A
MW394	Upgradient	Yes	1.17E+01	NO	2.46E+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
- MW384
- MW387

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-S/T Fourth Quarter 2023 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= 63.475 S= 163.135 CV(1)=2.570 K factor**= 2.523 TL(1)= 4.75E+02 LL(1)=N/A

Statistics-Transformed Background Data X= 3.103 S= 1.145 CV(2)=0.369 K factor**= 2.523 TL(2)= 5.99E+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: MW220

Date Collected	Result	LN(Result)
10/14/2002	5.00E+01	3.91E+00
1/15/2003	1.00E+01	2.30E+00
4/10/2003	1.00E+01	2.30E+00
7/14/2003	1.00E+01	2.30E+00
10/13/2003	1.00E+01	2.30E+00
1/13/2004	1.00E+01	2.30E+00
4/13/2004	1.00E+01	2.30E+00
7/21/2004	1.00E+01	2.30E+00

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	5.00E+01	3.91E+00
9/16/2002	6.72E+02	6.51E+00
10/16/2002	5.00E+01	3.91E+00
1/13/2003	3.61E+01	3.59E+00
4/10/2003	1.00E+01	2.30E+00
7/16/2003	4.27E+01	3.75E+00
10/14/2003	2.20E+01	3.09E+00
1/13/2004	1.28E+01	2.55E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	6.46E+00	N/A	1.87E+00	NO
MW221	Sidegradient	Yes	7.56E+00	N/A	2.02E+00	NO
MW222	Sidegradient	Yes	5.34E+00	N/A	1.68E+00	NO
MW223	Sidegradient	Yes	4.72E+00	N/A	1.55E+00	NO
MW224	Sidegradient	Yes	1.14E+01	N/A	2.43E+00	NO
MW369	Downgradient	Yes	7.88E+00	N/A	2.06E+00	NO
MW372	Downgradient	Yes	8.32E+00	N/A	2.12E+00	NO
MW384	Sidegradient	Yes	1.08E+01	N/A	2.38E+00	NO
MW387	Downgradient	Yes	9.06E+00	N/A	2.20E+00	NO
MW391	Downgradient	Yes	4.78E+00	N/A	1.56E+00	NO
MW394	Upgradient	Yes	7.70E+00	N/A	2.04E+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-S/T Fourth Quarter 2023 Statistical Analysis Historical Background Comparison

Trichloroethene

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= 8.813 S= 8.376 CV(1)=0.951 K factor**= 2.523 TL(1)= 2.99E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 1.395 S= 1.449 CV(2)=1.039 K factor**= 2.523 TL(2)= 5.05E+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: MW220

Date Collected	Result	LN(Result)
10/14/2002	1.00E+00	0.00E+00
1/15/2003	1.00E+00	0.00E+00
4/10/2003	1.00E+00	0.00E+00
7/14/2003	1.00E+00	0.00E+00
10/13/2003	1.00E+00	0.00E+00
1/13/2004	1.00E+00	0.00E+00
4/13/2004	1.00E+00	0.00E+00
7/21/2004	1.00E+00	0.00E+00

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	1.60E+01	2.77E+00
9/30/2002	2.00E+01	3.00E+00
10/16/2002	1.70E+01	2.83E+00
1/13/2003	1.50E+01	2.71E+00
4/10/2003	1.00E+01	2.30E+00
7/16/2003	1.90E+01	2.94E+00
10/14/2003	2.00E+01	3.00E+00
1/13/2004	1.60E+01	2.77E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	No	1.00E+00	N/A	0.00E+00	N/A
MW221	Sidegradient	No	1.00E+00	N/A	0.00E+00	N/A
MW222	Sidegradient	No	1.00E+00	N/A	0.00E+00	N/A
MW223	Sidegradient	No	1.00E+00	N/A	0.00E+00	N/A
MW224	Sidegradient	No	1.00E+00	N/A	0.00E+00	N/A
MW369	Downgradient	Yes	1.72E+00	N/A	5.42E-01	N/A
MW372	Downgradient	Yes	4.31E+00	N/A	1.46E+00	N/A
MW384	Sidegradient	Yes	6.03E+00	NO	1.80E+00	N/A
MW387	Downgradient	Yes	4.60E-01	N/A	-7.77E-01	N/A
MW391	Downgradient	Yes	1.04E+00	N/A	3.92E-02	N/A
MW394	Upgradient	Yes	5.25E+00	NO	1.66E+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-S/T Fourth Quarter 2023 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= 0.036 S= 0.026 CV(1)=0.722 K factor**= 2.523 TL(1)= 1.01E-01 LL(1)=N/A

Statistics-Transformed Background Data X= -3.485 S= 0.525 CV(2)=-0.151 K factor**= 2.523 TL(2)=-2.16E+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: MW220

Date Collected	Result	LN(Result)
10/14/2002	2.50E-02	-3.69E+00
1/15/2003	3.50E-02	-3.35E+00
4/10/2003	3.50E-02	-3.35E+00
7/14/2003	3.89E-02	-3.25E+00
10/13/2003	2.60E-02	-3.65E+00
1/13/2004	2.00E-02	-3.91E+00
4/13/2004	2.00E-02	-3.91E+00
7/21/2004	2.00E-02	-3.91E+00

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	1.00E-01	-2.30E+00
9/16/2002	1.00E-01	-2.30E+00
10/16/2002	2.50E-02	-3.69E+00
1/13/2003	3.50E-02	-3.35E+00
4/10/2003	3.50E-02	-3.35E+00
7/16/2003	2.00E-02	-3.91E+00
10/14/2003	2.00E-02	-3.91E+00
1/13/2004	2.00E-02	-3.91E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	7.45E-03	NO	-4.90E+00	N/A
MW221	Sidegradient	Yes	1.71E-02	NO	-4.07E+00	N/A
MW222	Sidegradient	Yes	8.75E-03	NO	-4.74E+00	N/A
MW223	Sidegradient	Yes	1.56E-02	NO	-4.16E+00	N/A
MW224	Sidegradient	Yes	8.21E-03	NO	-4.80E+00	N/A
MW369	Downgradient	Yes	9.14E-03	NO	-4.70E+00	N/A
MW372	Downgradient	No	2.00E-02	N/A	-3.91E+00	N/A
MW384	Sidegradient	Yes	4.34E-03	NO	-5.44E+00	N/A
MW387	Downgradient	Yes	4.11E-03	NO	-5.49E+00	N/A
MW391	Downgradient	Yes	7.14E-03	NO	-4.94E+00	N/A
MW394	Upgradient	Yes	6.25E-03	NO	-5.08E+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-S/T Fourth Quarter 2023 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= 0.258 S= 0.221 CV(1)=0.856 K factor**= 2.523 TL(1)= 8.15E-01 LL(1)=N/A

Statistics-Transformed Background Data X= -2.266 S= 2.485 CV(2)=-1.097 K factor**= 2.523 TL(2)= 4.00E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	2.00E-01	-1.61E+00
9/16/2002	2.00E-01	-1.61E+00
10/16/2002	2.00E-04	-8.52E+00
1/13/2003	7.37E-01	-3.05E-01
4/10/2003	2.00E-01	-1.61E+00
7/16/2003	2.00E-01	-1.61E+00
10/14/2003	2.00E-01	-1.61E+00
1/13/2004	2.00E-01	-1.61E+00

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	8.24E-01	-1.94E-01
9/16/2002	2.00E-01	-1.61E+00
10/17/2002	2.00E-04	-8.52E+00
1/13/2003	3.63E-01	-1.01E+00
4/8/2003	2.00E-01	-1.61E+00
7/16/2003	2.00E-01	-1.61E+00
10/14/2003	2.00E-01	-1.61E+00
1/13/2004	2.00E-01	-1.61E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	No	5.00E-02	N/A	-3.00E+00	N/A
MW373	Downgradient	No	5.00E-02	N/A	-3.00E+00	N/A
MW385	Sidegradient	Yes	5.91E-02	NO	-2.83E+00	N/A
MW388	Downgradient	Yes	6.09E-02	NO	-2.80E+00	N/A
MW392	Downgradient	Yes	7.36E-02	NO	-2.61E+00	N/A
MW395	Upgradient	No	5.00E-02	N/A	-3.00E+00	N/A
MW397	Upgradient	Yes	4.94E-01	NO	-7.05E-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, $S = [\text{Sum}([(background\ result - X)^2]/[\text{count of background results} - 1])]^{0.5}$

TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 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= 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

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: MW395		
Date Collected	Result	LN(Result)
8/13/2002	2.00E+00	6.93E-01
9/16/2002	2.00E+00	6.93E-01
10/16/2002	2.00E-01	-1.61E+00
1/13/2003	2.00E-01	-1.61E+00
4/10/2003	2.00E-01	-1.61E+00
7/16/2003	2.00E-01	-1.61E+00
10/14/2003	2.00E-01	-1.61E+00
1/13/2004	2.00E-01	-1.61E+00
Well Number: MW397		
Date Collected	Result	LN(Result)
8/13/2002	2.00E+00	6.93E-01
9/16/2002	2.00E+00	6.93E-01
10/17/2002	2.00E-01	-1.61E+00
1/13/2003	2.00E-01	-1.61E+00
4/8/2003	2.00E-01	-1.61E+00
7/16/2003	2.00E-01	-1.61E+00
10/14/2003	2.00E-01	-1.61E+00
1/13/2004	2.00E-01	-1.61E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	1.18E-01	N/A	-2.14E+00	NO
MW373	Downgradient	Yes	2.06E+00	N/A	7.23E-01	NO
MW385	Sidegradient	Yes	6.70E-02	N/A	-2.70E+00	NO
MW388	Downgradient	Yes	2.47E-02	N/A	-3.70E+00	NO
MW392	Downgradient	Yes	2.10E-02	N/A	-3.86E+00	NO
MW395	Upgradient	Yes	1.91E-02	N/A	-3.96E+00	NO
MW397	Upgradient	Yes	9.97E-03	N/A	-4.61E+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-S/T Fourth Quarter 2023 Statistical Analysis Historical Background Comparison

Bromide

UNITS: mg/L

LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data X= 1.000 S= 0.000 CV(1)=0.000 K factor**= 2.523 TL(1)= 1.00E+00 LL(1)=N/A

Statistics-Transformed Background Data X= 0.000 S= 0.000 CV(2)=#Num! K factor**= 2.523 TL(2)= 0.00E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	1.00E+00	0.00E+00
9/16/2002	1.00E+00	0.00E+00
10/16/2002	1.00E+00	0.00E+00
1/13/2003	1.00E+00	0.00E+00
4/10/2003	1.00E+00	0.00E+00
7/16/2003	1.00E+00	0.00E+00
10/14/2003	1.00E+00	0.00E+00
1/13/2004	1.00E+00	0.00E+00

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	1.00E+00	0.00E+00
9/16/2002	1.00E+00	0.00E+00
10/17/2002	1.00E+00	0.00E+00
1/13/2003	1.00E+00	0.00E+00
4/8/2003	1.00E+00	0.00E+00
7/16/2003	1.00E+00	0.00E+00
10/14/2003	1.00E+00	0.00E+00
1/13/2004	1.00E+00	0.00E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	5.49E-01	NO	-6.00E-01	N/A
MW373	Downgradient	Yes	4.62E-01	NO	-7.72E-01	N/A
MW385	Sidegradient	Yes	2.51E-01	NO	-1.38E+00	N/A
MW388	Downgradient	Yes	4.31E-01	NO	-8.42E-01	N/A
MW392	Downgradient	Yes	5.29E-01	NO	-6.37E-01	N/A
MW395	Upgradient	Yes	5.34E-01	NO	-6.27E-01	N/A
MW397	Upgradient	Yes	3.96E-01	NO	-9.26E-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-S/T Fourth Quarter 2023 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= 23.103 S= 11.538 CV(1)=0.499 K factor**= 2.523 TL(1)= 5.22E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 2.357 S= 2.411 CV(2)=1.023 K factor**= 2.523 TL(2)= 8.44E+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: MW395

Date Collected	Result	LN(Result)
8/13/2002	3.22E+01	3.47E+00
9/16/2002	3.30E+01	3.50E+00
10/16/2002	2.95E-02	-3.52E+00
1/13/2003	3.21E+01	3.47E+00
4/10/2003	4.02E+01	3.69E+00
7/16/2003	3.24E+01	3.48E+00
10/14/2003	3.39E+01	3.52E+00
1/13/2004	3.12E+01	3.44E+00

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	1.94E+01	2.97E+00
9/16/2002	1.90E+01	2.94E+00
10/17/2002	1.79E-02	-4.02E+00
1/13/2003	1.78E+01	2.88E+00
4/8/2003	2.03E+01	3.01E+00
7/16/2003	1.94E+01	2.97E+00
10/14/2003	1.99E+01	2.99E+00
1/13/2004	1.88E+01	2.93E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	2.90E+01	NO	3.37E+00	N/A
MW373	Downgradient	Yes	7.90E+01	YES	4.37E+00	N/A
MW385	Sidegradient	Yes	2.48E+01	NO	3.21E+00	N/A
MW388	Downgradient	Yes	2.43E+01	NO	3.19E+00	N/A
MW392	Downgradient	Yes	2.43E+01	NO	3.19E+00	N/A
MW395	Upgradient	Yes	2.78E+01	NO	3.33E+00	N/A
MW397	Upgradient	Yes	1.86E+01	NO	2.92E+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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 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= 51.844 S= 11.652 CV(1)=0.225 K factor**= 2.523 TL(1)= 8.12E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 3.924 S= 0.229 CV(2)=0.058 K factor**= 2.523 TL(2)= 4.50E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	6.22E+01	4.13E+00
9/16/2002	6.47E+01	4.17E+00
10/16/2002	6.22E+01	4.13E+00
1/13/2003	6.35E+01	4.15E+00
4/10/2003	6.41E+01	4.16E+00
7/16/2003	6.40E+01	4.16E+00
10/14/2003	6.32E+01	4.15E+00
1/13/2004	6.06E+01	4.10E+00

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	3.89E+01	3.66E+00
9/16/2002	3.98E+01	3.68E+00
10/17/2002	3.93E+01	3.67E+00
1/13/2003	4.05E+01	3.70E+00
4/8/2003	4.21E+01	3.74E+00
7/16/2003	4.20E+01	3.74E+00
10/14/2003	4.08E+01	3.71E+00
1/13/2004	4.16E+01	3.73E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	3.94E+01	NO	3.67E+00	N/A
MW373	Downgradient	Yes	3.12E+01	NO	3.44E+00	N/A
MW385	Sidegradient	Yes	2.07E+01	NO	3.03E+00	N/A
MW388	Downgradient	Yes	3.34E+01	NO	3.51E+00	N/A
MW392	Downgradient	Yes	4.15E+01	NO	3.73E+00	N/A
MW395	Upgradient	Yes	4.44E+01	NO	3.79E+00	N/A
MW397	Upgradient	Yes	3.31E+01	NO	3.50E+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-S/T Fourth Quarter 2023 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= 0.007 S= 0.011 CV(1)=1.515 K factor**= 2.523 TL(1)= 3.41E-02 LL(1)=N/A

Statistics-Transformed Background Data X= -6.053 S= 1.416 CV(2)=-0.234 K factor**= 2.523 TL(2)= -2.48E+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: MW395

Date Collected	Result	LN(Result)
8/13/2002	2.50E-02	-3.69E+00
9/16/2002	2.50E-02	-3.69E+00
10/16/2002	1.00E-03	-6.91E+00
1/13/2003	1.48E-03	-6.52E+00
4/10/2003	1.51E-03	-6.50E+00
7/16/2003	1.00E-03	-6.91E+00
10/14/2003	1.00E-03	-6.91E+00
1/13/2004	1.00E-03	-6.91E+00

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	2.50E-02	-3.69E+00
9/16/2002	2.50E-02	-3.69E+00
10/17/2002	1.00E-03	-6.91E+00
1/13/2003	1.00E-03	-6.91E+00
4/8/2003	1.00E-03	-6.91E+00
7/16/2003	1.00E-03	-6.91E+00
10/14/2003	1.00E-03	-6.91E+00
1/13/2004	1.00E-03	-6.91E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	3.02E-04	N/A	-8.11E+00	NO
MW373	Downgradient	Yes	5.42E-04	N/A	-7.52E+00	NO
MW385	Sidegradient	Yes	5.93E-04	N/A	-7.43E+00	NO
MW388	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW392	Downgradient	Yes	4.75E-04	N/A	-7.65E+00	NO
MW395	Upgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW397	Upgradient	Yes	5.11E-04	N/A	-7.58E+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-S/T Fourth Quarter 2023 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= 377.875 S= 52.101 CV(1)=0.138 K factor**= 2.523 TL(1)= 5.09E+02 LL(1)=N/A

Statistics-Transformed Background Data X= 5.926 S= 0.136 CV(2)=0.023 K factor**= 2.523 TL(2)= 6.27E+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: MW395

Date Collected	Result	LN(Result)
8/13/2002	4.05E+02	6.00E+00
9/16/2002	4.01E+02	5.99E+00
10/16/2002	3.92E+02	5.97E+00
1/13/2003	4.04E+02	6.00E+00
4/10/2003	4.88E+02	6.19E+00
7/16/2003	4.50E+02	6.11E+00
10/14/2003	4.10E+02	6.02E+00
1/13/2004	4.13E+02	6.02E+00

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	3.22E+02	5.77E+00
9/16/2002	3.15E+02	5.75E+00
10/17/2002	3.17E+02	5.76E+00
1/13/2003	3.20E+02	5.77E+00
4/8/2003	3.90E+02	5.97E+00
7/16/2003	3.54E+02	5.87E+00
10/14/2003	3.31E+02	5.80E+00
1/13/2004	3.34E+02	5.81E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	4.50E+02	NO	6.11E+00	N/A
MW373	Downgradient	Yes	8.98E+02	YES	6.80E+00	N/A
MW385	Sidegradient	Yes	4.62E+02	NO	6.14E+00	N/A
MW388	Downgradient	Yes	4.12E+02	NO	6.02E+00	N/A
MW392	Downgradient	Yes	3.34E+02	NO	5.81E+00	N/A
MW395	Upgradient	Yes	3.83E+02	NO	5.95E+00	N/A
MW397	Upgradient	Yes	3.09E+02	NO	5.73E+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

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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 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= 0.028 S= 0.013 CV(1)=0.474 K factor**= 2.523 TL(1)= 6.15E-02 LL(1)=N/A

Statistics-Transformed Background Data X= -3.662 S= 0.406 CV(2)=-0.111 K factor**= 2.523 TL(2)= -2.64E+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: MW395		
Date Collected	Result	LN(Result)
8/13/2002	5.00E-02	-3.00E+00
9/16/2002	5.00E-02	-3.00E+00
10/16/2002	2.81E-02	-3.57E+00
1/13/2003	2.00E-02	-3.91E+00
4/10/2003	2.00E-02	-3.91E+00
7/16/2003	2.00E-02	-3.91E+00
10/14/2003	2.00E-02	-3.91E+00
1/13/2004	2.00E-02	-3.91E+00
Well Number: MW397		
Date Collected	Result	LN(Result)
8/13/2002	5.00E-02	-3.00E+00
9/16/2002	5.00E-02	-3.00E+00
10/17/2002	2.00E-02	-3.91E+00
1/13/2003	2.00E-02	-3.91E+00
4/8/2003	2.00E-02	-3.91E+00
7/16/2003	2.00E-02	-3.91E+00
10/14/2003	2.00E-02	-3.91E+00
1/13/2004	2.00E-02	-3.91E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	2.05E-03	NO	-6.19E+00	N/A
MW373	Downgradient	Yes	1.62E-03	NO	-6.43E+00	N/A
MW385	Sidegradient	Yes	1.73E-03	NO	-6.36E+00	N/A
MW388	Downgradient	Yes	2.47E-03	NO	-6.00E+00	N/A
MW392	Downgradient	Yes	2.55E-03	NO	-5.97E+00	N/A
MW395	Upgradient	Yes	1.90E-03	NO	-6.27E+00	N/A
MW397	Upgradient	Yes	1.75E-03	NO	-6.35E+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-S/T Fourth Quarter 2023 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= 4.678 S= 2.431 CV(1)=0.520 K factor**= 2.523 TL(1)= 1.08E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 1.414 S= 0.550 CV(2)=0.389 K factor**= 2.523 TL(2)= 2.80E+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: MW395

Date Collected	Result	LN(Result)
8/13/2002	7.29E+00	1.99E+00
9/30/2002	4.03E+00	1.39E+00
10/16/2002	3.85E+00	1.35E+00
1/13/2003	2.36E+00	8.59E-01
4/10/2003	1.14E+00	1.31E-01
7/16/2003	1.76E+00	5.65E-01
10/14/2003	4.05E+00	1.40E+00
1/13/2004	4.26E+00	1.45E+00

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	1.16E+01	2.45E+00
9/16/2002	5.86E+00	1.77E+00
10/17/2002	5.94E+00	1.78E+00
1/13/2003	4.66E+00	1.54E+00
4/8/2003	3.77E+00	1.33E+00
7/16/2003	3.47E+00	1.24E+00
10/14/2003	5.34E+00	1.68E+00
1/13/2004	5.51E+00	1.71E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	4.64E+00	NO	1.53E+00	N/A
MW373	Downgradient	Yes	2.00E+00	NO	6.93E-01	N/A
MW385	Sidegradient	Yes	1.37E+00	NO	3.15E-01	N/A
MW388	Downgradient	Yes	5.42E+00	NO	1.69E+00	N/A
MW392	Downgradient	Yes	1.86E+00	NO	6.21E-01	N/A
MW395	Upgradient	Yes	4.19E+00	NO	1.43E+00	N/A
MW397	Upgradient	Yes	6.73E+00	NO	1.91E+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-S/T Fourth Quarter 2023 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= 219.250 S= 34.107 CV(1)=0.156 **K factor**= 2.523** TL(1)= 3.05E+02 LL(1)=N/A

Statistics-Transformed Background Data X= 5.379 S= 0.152 CV(2)=0.028 **K factor**= 2.523** TL(2)= 5.76E+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: MW395

Date Collected	Result	LN(Result)
8/13/2002	2.49E+02	5.52E+00
9/16/2002	2.72E+02	5.61E+00
10/16/2002	2.55E+02	5.54E+00
1/13/2003	2.11E+02	5.35E+00
4/10/2003	2.89E+02	5.67E+00
7/16/2003	2.36E+02	5.46E+00
10/14/2003	2.24E+02	5.41E+00
1/13/2004	2.35E+02	5.46E+00

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	1.87E+02	5.23E+00
9/16/2002	1.97E+02	5.28E+00
10/17/2002	1.83E+02	5.21E+00
1/13/2003	1.82E+02	5.20E+00
4/8/2003	2.17E+02	5.38E+00
7/16/2003	1.96E+02	5.28E+00
10/14/2003	1.98E+02	5.29E+00
1/13/2004	1.77E+02	5.18E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	2.30E+02	NO	5.44E+00	N/A
MW373	Downgradient	Yes	5.29E+02	YES	6.27E+00	N/A
MW385	Sidegradient	Yes	1.82E+02	NO	5.20E+00	N/A
MW388	Downgradient	Yes	1.91E+02	NO	5.25E+00	N/A
MW392	Downgradient	Yes	1.36E+02	NO	4.91E+00	N/A
MW395	Upgradient	Yes	1.76E+02	NO	5.17E+00	N/A
MW397	Upgradient	Yes	1.65E+02	NO	5.11E+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

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-S/T Fourth Quarter 2023 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= 0.400 S= 0.514 CV(1)=1.286 K factor**= 2.523 TL(1)= 1.70E+00 LL(1)=N/A

Statistics-Transformed Background Data X= -2.197 S= 2.634 CV(2)=-1.199 K factor**= 2.523 TL(2)= 4.45E+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: MW395

Date Collected	Result	LN(Result)
8/13/2002	2.94E-01	-1.22E+00
9/16/2002	2.00E-01	-1.61E+00
10/16/2002	2.00E-04	-8.52E+00
1/13/2003	1.33E+00	2.85E-01
4/10/2003	1.31E+00	2.70E-01
7/16/2003	2.00E-01	-1.61E+00
10/14/2003	1.00E-01	-2.30E+00
1/13/2004	1.00E-01	-2.30E+00

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	1.58E+00	4.57E-01
9/16/2002	2.32E-01	-1.46E+00
10/17/2002	2.00E-04	-8.52E+00
1/13/2003	4.53E-01	-7.92E-01
4/8/2003	2.00E-01	-1.61E+00
7/16/2003	2.00E-01	-1.61E+00
10/14/2003	1.00E-01	-2.30E+00
1/13/2004	1.00E-01	-2.30E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	6.22E-02	N/A	-2.78E+00	NO
MW373	Downgradient	Yes	9.56E-02	N/A	-2.35E+00	NO
MW385	Sidegradient	Yes	1.05E-01	N/A	-2.25E+00	NO
MW388	Downgradient	Yes	3.41E-01	N/A	-1.08E+00	NO
MW392	Downgradient	Yes	3.12E-01	N/A	-1.16E+00	NO
MW395	Upgradient	Yes	5.56E-02	N/A	-2.89E+00	NO
MW397	Upgradient	Yes	1.36E+00	N/A	3.07E-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-S/T Fourth Quarter 2023 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= 9.102 S= 4.685 CV(1)=0.515 K factor**= 2.523 TL(1)= 2.09E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 1.423 S= 2.408 CV(2)=1.692 K factor**= 2.523 TL(2)= 7.50E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	1.25E+01	2.53E+00
9/16/2002	1.30E+01	2.56E+00
10/16/2002	1.27E-02	-4.37E+00
1/13/2003	1.12E+01	2.42E+00
4/10/2003	1.75E+01	2.86E+00
7/16/2003	1.29E+01	2.56E+00
10/14/2003	1.34E+01	2.60E+00
1/13/2004	1.24E+01	2.52E+00

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	7.83E+00	2.06E+00
9/16/2002	7.64E+00	2.03E+00
10/17/2002	6.58E-03	-5.02E+00
1/13/2003	6.69E+00	1.90E+00
4/8/2003	7.28E+00	1.99E+00
7/16/2003	7.82E+00	2.06E+00
10/14/2003	7.94E+00	2.07E+00
1/13/2004	7.51E+00	2.02E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	1.21E+01	NO	2.49E+00	N/A
MW373	Downgradient	Yes	2.78E+01	YES	3.33E+00	N/A
MW385	Sidegradient	Yes	9.75E+00	NO	2.28E+00	N/A
MW388	Downgradient	Yes	1.05E+01	NO	2.35E+00	N/A
MW392	Downgradient	Yes	1.02E+01	NO	2.32E+00	N/A
MW395	Upgradient	Yes	1.15E+01	NO	2.44E+00	N/A
MW397	Upgradient	Yes	7.83E+00	NO	2.06E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 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= 0.131 S= 0.195 CV(1)=1.487 K factor**= 2.523 TL(1)= 6.24E-01 LL(1)=N/A

Statistics-Transformed Background Data X= -3.104 S= 1.529 CV(2)=-0.493 K factor**= 2.523 TL(2)= 7.55E-01 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	3.61E-01	-1.02E+00
9/16/2002	2.80E-02	-3.58E+00
10/16/2002	2.60E-02	-3.65E+00
1/13/2003	7.13E-02	-2.64E+00
4/10/2003	6.29E-01	-4.64E-01
7/16/2003	2.97E-01	-1.21E+00
10/14/2003	1.98E-02	-3.92E+00
1/13/2004	1.26E-02	-4.37E+00

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	4.66E-01	-7.64E-01
9/16/2002	7.70E-02	-2.56E+00
10/17/2002	2.80E-02	-3.58E+00
1/13/2003	1.64E-02	-4.11E+00
4/8/2003	4.07E-02	-3.20E+00
7/16/2003	1.67E-02	-4.09E+00
10/14/2003	5.55E-03	-5.19E+00
1/13/2004	5.00E-03	-5.30E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	6.96E-03	N/A	-4.97E+00	NO
MW373	Downgradient	Yes	7.09E-02	N/A	-2.65E+00	NO
MW385	Sidegradient	Yes	4.20E-03	N/A	-5.47E+00	NO
MW388	Downgradient	Yes	2.19E-03	N/A	-6.12E+00	NO
MW392	Downgradient	Yes	2.31E-01	N/A	-1.47E+00	NO
MW395	Upgradient	Yes	9.73E-03	N/A	-4.63E+00	NO
MW397	Upgradient	Yes	2.83E-02	N/A	-3.56E+00	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum [(background result-X)^2]/[count of background results -1]]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 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= 5.625 S= 3.074 CV(1)=0.547 K factor**= 2.523 TL(1)= 1.34E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 1.614 S= 0.483 CV(2)=0.300 K factor**= 2.523 TL(2)= 2.83E+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: MW395

Date Collected	Result	LN(Result)
8/13/2002	1.40E+01	2.64E+00
9/30/2002	2.00E+00	6.93E-01
10/16/2002	5.00E+00	1.61E+00
1/13/2003	5.00E+00	1.61E+00
4/10/2003	5.00E+00	1.61E+00
7/16/2003	5.00E+00	1.61E+00
10/14/2003	5.00E+00	1.61E+00
1/13/2004	5.00E+00	1.61E+00

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	1.20E+01	2.48E+00
9/30/2002	2.00E+00	6.93E-01
10/17/2002	5.00E+00	1.61E+00
1/13/2003	5.00E+00	1.61E+00
4/8/2003	5.00E+00	1.61E+00
7/16/2003	5.00E+00	1.61E+00
10/14/2003	5.00E+00	1.61E+00
1/13/2004	5.00E+00	1.61E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW373	Downgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW385	Sidegradient	Yes	1.05E+00	NO	4.88E-02	N/A
MW388	Downgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW392	Downgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW395	Upgradient	No	5.00E+00	N/A	1.61E+00	N/A
MW397	Upgradient	Yes	3.00E+00	NO	1.10E+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

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-S/T Fourth Quarter 2023 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= 0.007 S= 0.011 CV(1)=1.451 K factor**= 2.523 TL(1)= 3.41E-02 LL(1)=N/A

Statistics-Transformed Background Data X= -5.990 S= 1.443 CV(2)=-0.241 K factor**= 2.523 TL(2)= -2.35E+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: MW395		
Date Collected	Result	LN(Result)
8/13/2002	2.50E-02	-3.69E+00
9/16/2002	2.50E-02	-3.69E+00
10/16/2002	1.00E-03	-6.91E+00
1/13/2003	6.09E-03	-5.10E+00
4/10/2003	1.00E-03	-6.91E+00
7/16/2003	1.00E-03	-6.91E+00
10/14/2003	1.00E-03	-6.91E+00
1/13/2004	1.00E-03	-6.91E+00
Well Number: MW397		
Date Collected	Result	LN(Result)
8/13/2002	2.50E-02	-3.69E+00
9/16/2002	2.50E-02	-3.69E+00
10/17/2002	1.00E-03	-6.91E+00
1/13/2003	1.00E-03	-6.91E+00
4/8/2003	1.00E-03	-6.91E+00
7/16/2003	1.00E-03	-6.91E+00
10/14/2003	1.00E-03	-6.91E+00
1/13/2004	1.00E-03	-6.91E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW373	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW385	Sidegradient	Yes	2.37E-04	N/A	-8.35E+00	NO
MW388	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW392	Downgradient	Yes	2.26E-04	N/A	-8.39E+00	NO
MW395	Upgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW397	Upgradient	No	4.83E-04	N/A	-7.64E+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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$
 TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$
 X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 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= 0.018 S= 0.020 CV(1)=1.089 K factor**= 2.523 TL(1)= 6.83E-02 LL(1)=N/A

Statistics-Transformed Background Data X= -4.540 S= 1.020 CV(2)=-0.225 K factor**= 2.523 TL(2)= -1.97E+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: MW395

Date Collected	Result	LN(Result)
8/13/2002	5.00E-02	-3.00E+00
9/16/2002	5.00E-02	-3.00E+00
10/16/2002	7.02E-03	-4.96E+00
1/13/2003	2.90E-02	-3.54E+00
4/10/2003	9.10E-03	-4.70E+00
7/16/2003	6.27E-03	-5.07E+00
10/14/2003	5.00E-03	-5.30E+00
1/13/2004	5.00E-03	-5.30E+00

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	5.00E-02	-3.00E+00
9/16/2002	5.00E-02	-3.00E+00
10/17/2002	5.00E-03	-5.30E+00
1/13/2003	5.02E-03	-5.29E+00
4/8/2003	5.00E-03	-5.30E+00
7/16/2003	5.00E-03	-5.30E+00
10/14/2003	5.00E-03	-5.30E+00
1/13/2004	5.00E-03	-5.30E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	No	2.00E-03	N/A	-6.21E+00	N/A
MW373	Downgradient	Yes	1.79E-03	N/A	-6.33E+00	NO
MW385	Sidegradient	Yes	1.26E-03	N/A	-6.68E+00	NO
MW388	Downgradient	No	2.00E-03	N/A	-6.21E+00	N/A
MW392	Downgradient	Yes	4.31E-03	N/A	-5.45E+00	NO
MW395	Upgradient	Yes	1.02E-03	N/A	-6.89E+00	NO
MW397	Upgradient	Yes	2.24E-03	N/A	-6.10E+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-S/T Fourth Quarter 2023 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= 157.250 S= 52.376 CV(1)=0.333 K factor**= 2.523 TL(1)= 2.89E+02 LL(1)=N/A

Statistics-Transformed Background Data X= 5.003 S= 0.348 CV(2)=0.069 K factor**= 2.523 TL(2)= 5.88E+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: MW395

Date Collected	Result	LN(Result)
8/13/2002	8.00E+01	4.38E+00
9/16/2002	1.45E+02	4.98E+00
10/16/2002	1.25E+02	4.83E+00
1/13/2003	8.50E+01	4.44E+00
4/10/2003	1.59E+02	5.07E+00
7/16/2003	9.80E+01	4.58E+00
10/14/2003	1.38E+02	4.93E+00
1/13/2004	2.33E+02	5.45E+00

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	1.15E+02	4.74E+00
9/30/2002	1.40E+02	4.94E+00
10/17/2002	1.85E+02	5.22E+00
1/13/2003	2.30E+02	5.44E+00
4/8/2003	1.55E+02	5.04E+00
7/16/2003	1.88E+02	5.24E+00
10/14/2003	1.87E+02	5.23E+00
1/13/2004	2.53E+02	5.53E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	3.27E+02	YES	5.79E+00	N/A
MW373	Downgradient	Yes	3.57E+02	YES	5.88E+00	N/A
MW385	Sidegradient	Yes	3.68E+02	YES	5.91E+00	N/A
MW388	Downgradient	Yes	4.57E+02	YES	6.12E+00	N/A
MW392	Downgradient	Yes	4.77E+02	YES	6.17E+00	N/A
MW395	Upgradient	Yes	4.09E+02	YES	6.01E+00	N/A
MW397	Upgradient	Yes	4.87E+02	YES	6.19E+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

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

- MW370
- MW373
- MW385
- MW388
- MW392
- MW395
- MW397

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-S/T Fourth Quarter 2023 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= 6.048 S= 0.248 CV(1)=0.041 **K factor**= 2.904** TL(1)= 6.77E+00 LL(1)=5.33E+00

Statistics-Transformed Background Data X= 1.799 S= 0.042 CV(2)=0.023 **K factor**= 2.904** TL(2)= 1.92E+00 LL(2)=1.68E+00

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	5.80E+00	1.76E+00
9/16/2002	6.00E+00	1.79E+00
10/16/2002	5.47E+00	1.70E+00
1/13/2003	6.00E+00	1.79E+00
4/10/2003	6.18E+00	1.82E+00
7/16/2003	6.00E+00	1.79E+00
10/14/2003	6.31E+00	1.84E+00
1/13/2004	6.24E+00	1.83E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)? Result <LL(1)?	LN(Result)	LN(Result) >TL(2)? LN(Result) <LL(2)?
MW370	Downgradient	Yes	6.10E+00	NO	1.81E+00	N/A
MW373	Downgradient	Yes	6.14E+00	NO	1.81E+00	N/A
MW385	Sidegradient	Yes	6.46E+00	NO	1.87E+00	N/A
MW388	Downgradient	Yes	6.08E+00	NO	1.81E+00	N/A
MW392	Downgradient	Yes	6.00E+00	NO	1.79E+00	N/A
MW395	Upgradient	Yes	6.02E+00	NO	1.80E+00	N/A
MW397	Upgradient	Yes	6.04E+00	NO	1.80E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	5.84E+00	1.76E+00
9/30/2002	6.00E+00	1.79E+00
10/17/2002	5.75E+00	1.75E+00
1/13/2003	6.00E+00	1.79E+00
4/8/2003	6.30E+00	1.84E+00
7/16/2003	6.20E+00	1.82E+00
10/14/2003	6.36E+00	1.85E+00
1/13/2004	6.32E+00	1.84E+00

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum [(background result-X)^2]/[count of background results -1]]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 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= 1.590 S= 0.642 CV(1)=0.404 K factor**= 2.523 TL(1)= 3.21E+00 LL(1)=N/A

Statistics-Transformed Background Data X= -0.306 S= 2.457 CV(2)=-8.028 K factor**= 2.523 TL(2)= 5.89E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	2.00E+00	6.93E-01
9/16/2002	2.00E+00	6.93E-01
10/16/2002	1.29E-03	-6.65E+00
1/13/2003	1.51E+00	4.12E-01
4/10/2003	1.67E+00	5.13E-01
7/16/2003	1.73E+00	5.48E-01
10/14/2003	1.70E+00	5.31E-01
1/13/2004	1.58E+00	4.57E-01

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	2.03E+00	7.08E-01
9/16/2002	2.00E+00	6.93E-01
10/17/2002	1.45E-03	-6.54E+00
1/13/2003	1.69E+00	5.25E-01
4/8/2003	1.73E+00	5.48E-01
7/16/2003	2.00E+00	6.93E-01
10/14/2003	1.92E+00	6.52E-01
1/13/2004	1.87E+00	6.26E-01

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	2.55E+00	NO	9.36E-01	N/A
MW373	Downgradient	Yes	2.70E+00	NO	9.93E-01	N/A
MW385	Sidegradient	Yes	1.49E+00	NO	3.99E-01	N/A
MW388	Downgradient	Yes	1.71E+00	NO	5.36E-01	N/A
MW392	Downgradient	Yes	2.06E+00	NO	7.23E-01	N/A
MW395	Upgradient	Yes	1.57E+00	NO	4.51E-01	N/A
MW397	Upgradient	Yes	1.86E+00	NO	6.21E-01	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, $CV = S/X$ If CV is less than or equal to 1 assume normal distribution.
 S Standard Deviation, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$
 TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$
 X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 2009.

C-746-S/T Fourth Quarter 2023 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= 29.560 S= 13.894 CV(1)=0.470 K factor**= 2.523 TL(1)= 6.46E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 2.615 S= 2.411 CV(2)=0.922 K factor**= 2.523 TL(2)= 8.70E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	2.70E+01	3.30E+00
9/16/2002	2.72E+01	3.30E+00
10/16/2002	2.53E-02	-3.68E+00
1/13/2003	2.26E+01	3.12E+00
4/10/2003	5.39E+01	3.99E+00
7/16/2003	3.00E+01	3.40E+00
10/14/2003	2.91E+01	3.37E+00
1/13/2004	2.64E+01	3.27E+00

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	3.52E+01	3.56E+00
9/16/2002	3.43E+01	3.54E+00
10/17/2002	3.36E-02	-3.39E+00
1/13/2003	3.13E+01	3.44E+00
4/8/2003	4.61E+01	3.83E+00
7/16/2003	3.84E+01	3.65E+00
10/14/2003	3.71E+01	3.61E+00
1/13/2004	3.43E+01	3.54E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	4.33E+01	NO	3.77E+00	N/A
MW373	Downgradient	Yes	6.46E+01	NO	4.17E+00	N/A
MW385	Sidegradient	Yes	3.97E+01	NO	3.68E+00	N/A
MW388	Downgradient	Yes	4.41E+01	NO	3.79E+00	N/A
MW392	Downgradient	Yes	2.49E+01	NO	3.21E+00	N/A
MW395	Upgradient	Yes	3.06E+01	NO	3.42E+00	N/A
MW397	Upgradient	Yes	3.15E+01	NO	3.45E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

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-S/T Fourth Quarter 2023 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= 10.756 S= 2.147 CV(1)=0.200 K factor**= 2.523 TL(1)= 1.62E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 2.356 S= 0.203 CV(2)=0.086 K factor**= 2.523 TL(2)= 2.87E+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: MW395

Date Collected	Result	LN(Result)
8/13/2002	1.03E+01	2.33E+00
9/16/2002	9.10E+00	2.21E+00
10/16/2002	8.80E+00	2.17E+00
1/13/2003	9.00E+00	2.20E+00
4/10/2003	8.30E+00	2.12E+00
7/16/2003	8.20E+00	2.10E+00
10/14/2003	8.30E+00	2.12E+00
1/13/2004	8.20E+00	2.10E+00

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	1.40E+01	2.64E+00
9/16/2002	1.28E+01	2.55E+00
10/17/2002	1.23E+01	2.51E+00
1/13/2003	1.27E+01	2.54E+00
4/8/2003	1.28E+01	2.55E+00
7/16/2003	1.31E+01	2.57E+00
10/14/2003	1.21E+01	2.49E+00
1/13/2004	1.21E+01	2.49E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	1.88E+01	YES	2.93E+00	N/A
MW373	Downgradient	Yes	1.77E+02	YES	5.18E+00	N/A
MW385	Sidegradient	Yes	1.90E+01	YES	2.94E+00	N/A
MW388	Downgradient	Yes	1.86E+01	YES	2.92E+00	N/A
MW392	Downgradient	Yes	7.76E+00	NO	2.05E+00	N/A
MW395	Upgradient	Yes	1.10E+01	NO	2.40E+00	N/A
MW397	Upgradient	Yes	1.15E+01	NO	2.44E+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

- MW370
- MW373
- MW385
- MW388

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-S/T Fourth Quarter 2023 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= 1.544 S= 0.856 CV(1)=0.554 K factor**= 2.523 TL(1)= 3.70E+00 LL(1)=N/A

Statistics-Transformed Background Data X= 0.325 S= 0.452 CV(2)=1.393 K factor**= 2.523 TL(2)= 1.46E+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: MW395

Date Collected	Result	LN(Result)
8/13/2002	1.60E+00	4.70E-01
9/16/2002	1.10E+00	9.53E-02
10/16/2002	1.00E+00	0.00E+00
1/13/2003	2.00E+00	6.93E-01
4/10/2003	3.40E+00	1.22E+00
7/16/2003	2.00E+00	6.93E-01
10/14/2003	1.00E+00	0.00E+00
1/13/2004	1.00E+00	0.00E+00

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	1.00E+00	0.00E+00
9/16/2002	1.00E+00	0.00E+00
10/17/2002	1.00E+00	0.00E+00
1/13/2003	3.60E+00	1.28E+00
4/8/2003	1.90E+00	6.42E-01
7/16/2003	1.10E+00	9.53E-02
10/14/2003	1.00E+00	0.00E+00
1/13/2004	1.00E+00	0.00E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	8.46E-01	NO	-1.67E-01	N/A
MW373	Downgradient	Yes	1.33E+00	NO	2.85E-01	N/A
MW385	Sidegradient	Yes	8.83E-01	NO	-1.24E-01	N/A
MW388	Downgradient	Yes	1.03E+00	NO	2.96E-02	N/A
MW392	Downgradient	Yes	7.07E-01	NO	-3.47E-01	N/A
MW395	Upgradient	Yes	9.70E-01	NO	-3.05E-02	N/A
MW397	Upgradient	Yes	7.62E-01	NO	-2.72E-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-S/T Fourth Quarter 2023 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= 31.513 S= 18.609 CV(1)=0.591 K factor**= 2.523 TL(1)= 7.85E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 3.240 S= 0.707 CV(2)=0.218 K factor**= 2.523 TL(2)= 5.02E+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: MW395

Date Collected	Result	LN(Result)
8/13/2002	5.00E+01	3.91E+00
9/16/2002	5.00E+01	3.91E+00
10/16/2002	5.00E+01	3.91E+00
1/13/2003	1.83E+01	2.91E+00
4/10/2003	5.12E+01	3.94E+00
7/16/2003	4.26E+01	3.75E+00
10/14/2003	1.23E+01	2.51E+00
1/13/2004	1.00E+01	2.30E+00

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	5.00E+01	3.91E+00
9/16/2002	5.00E+01	3.91E+00
10/17/2002	5.00E+01	3.91E+00
1/13/2003	1.20E+01	2.48E+00
4/8/2003	1.99E+01	2.99E+00
7/16/2003	1.79E+01	2.88E+00
10/14/2003	1.00E+01	2.30E+00
1/13/2004	1.00E+01	2.30E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	1.02E+01	NO	2.32E+00	N/A
MW373	Downgradient	Yes	1.30E+01	NO	2.56E+00	N/A
MW385	Sidegradient	Yes	4.76E+00	NO	1.56E+00	N/A
MW388	Downgradient	No	1.00E+01	N/A	2.30E+00	N/A
MW392	Downgradient	Yes	9.86E+00	NO	2.29E+00	N/A
MW395	Upgradient	Yes	8.22E+00	NO	2.11E+00	N/A
MW397	Upgradient	Yes	8.52E+00	NO	2.14E+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-S/T Fourth Quarter 2023 Statistical Analysis Historical Background Comparison

Trichloroethene

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= 7.313 S= 5.701 CV(1)=0.780 K factor**= 2.523 TL(1)= 2.17E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 1.467 S= 1.213 CV(2)=0.827 K factor**= 2.523 TL(2)= 4.53E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	1.10E+01	2.40E+00
9/30/2002	1.40E+01	2.64E+00
10/16/2002	1.20E+01	2.48E+00
1/13/2003	1.40E+01	2.64E+00
4/10/2003	1.40E+01	2.64E+00
7/16/2003	1.30E+01	2.56E+00
10/14/2003	1.20E+01	2.48E+00
1/13/2004	1.10E+01	2.40E+00

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	5.00E+00	1.61E+00
9/30/2002	5.00E+00	1.61E+00
10/17/2002	1.00E+00	0.00E+00
1/13/2003	1.00E+00	0.00E+00
4/8/2003	1.00E+00	0.00E+00
7/16/2003	1.00E+00	0.00E+00
10/14/2003	1.00E+00	0.00E+00
1/13/2004	1.00E+00	0.00E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	2.84E+00	N/A	1.04E+00	N/A
MW373	Downgradient	Yes	3.50E+00	N/A	1.25E+00	N/A
MW385	Sidegradient	Yes	2.92E+00	N/A	1.07E+00	N/A
MW388	Downgradient	No	1.00E+00	N/A	0.00E+00	N/A
MW392	Downgradient	Yes	9.43E+00	NO	2.24E+00	N/A
MW395	Upgradient	Yes	4.93E+00	N/A	1.60E+00	N/A
MW397	Upgradient	No	1.00E+00	N/A	0.00E+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-S/T Fourth Quarter 2023 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= 0.044 S= 0.034 CV(1)=0.760 K factor**= 2.523 TL(1)= 1.29E-01 LL(1)=N/A

Statistics-Transformed Background Data X= -3.342 S= 0.659 CV(2)=-0.197 K factor**= 2.523 TL(2)= -1.68E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	1.00E-01	-2.30E+00
9/16/2002	1.00E-01	-2.30E+00
10/16/2002	2.50E-02	-3.69E+00
1/13/2003	3.50E-02	-3.35E+00
4/10/2003	3.50E-02	-3.35E+00
7/16/2003	2.00E-02	-3.91E+00
10/14/2003	2.00E-02	-3.91E+00
1/13/2004	2.00E-02	-3.91E+00

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	1.00E-01	-2.30E+00
9/16/2002	1.00E-01	-2.30E+00
10/17/2002	2.50E-02	-3.69E+00
1/13/2003	3.50E-02	-3.35E+00
4/8/2003	3.50E-02	-3.35E+00
7/16/2003	2.00E-02	-3.91E+00
10/14/2003	2.00E-02	-3.91E+00
1/13/2004	2.00E-02	-3.91E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	9.63E-03	NO	-4.64E+00	N/A
MW373	Downgradient	Yes	4.86E-03	NO	-5.33E+00	N/A
MW385	Sidegradient	Yes	4.71E-03	NO	-5.36E+00	N/A
MW388	Downgradient	No	2.00E-02	N/A	-3.91E+00	N/A
MW392	Downgradient	Yes	7.22E-03	NO	-4.93E+00	N/A
MW395	Upgradient	Yes	4.37E-03	NO	-5.43E+00	N/A
MW397	Upgradient	Yes	7.37E-03	NO	-4.91E+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.

THIS PAGE INTENTIONALLY LEFT BLANK

ATTACHMENT D2

**COMPARISON OF CURRENT DATA TO
ONE-SIDED UPPER TOLERANCE INTERVAL TEST
CALCULATED USING
CURRENT BACKGROUND DATA**

THIS PAGE INTENTIONALLY LEFT BLANK

C-746-S/T Fourth Quarter 2023 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= 264.125 S= 72.845 CV(1)=0.276 K factor**= 3.188 TL(1)= 4.96E+02 LL(1)=N/A

Statistics-Transformed Background Data X= 5.544 S= 0.272 CV(2)=0.049 K factor**= 3.188 TL(2)= 6.41E+00 LL(2)=N/A

Current Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW396

Date Collected	Result	LN(Result)
10/18/2021	1.81E+02	5.20E+00
1/13/2022	1.91E+02	5.25E+00
4/19/2022	3.36E+02	5.82E+00
7/20/2022	3.83E+02	5.95E+00
10/17/2022	2.17E+02	5.38E+00
1/25/2023	2.40E+02	5.48E+00
4/27/2023	2.50E+02	5.52E+00
7/27/2023	3.15E+02	5.75E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	Yes	2.60E+02	NO	5.56E+00	N/A
MW393	Downgradient	Yes	3.25E+02	NO	5.78E+00	N/A
MW396	Upgradient	Yes	2.62E+02	NO	5.57E+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-S/T Fourth Quarter 2023 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= 24.681 S= 3.117 CV(1)=0.126 K factor**= 2.523 TL(1)= 3.25E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 3.198 S= 0.129 CV(2)=0.040 K factor**= 2.523 TL(2)= 3.52E+00 LL(2)=N/A

Current Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW220

Date Collected	Result	LN(Result)
10/27/2021	2.13E+01	3.06E+00
1/19/2022	2.20E+01	3.09E+00
4/13/2022	2.91E+01	3.37E+00
7/18/2022	2.04E+01	3.02E+00
10/18/2022	2.05E+01	3.02E+00
1/23/2023	2.01E+01	3.00E+00
5/1/2023	2.82E+01	3.34E+00
7/28/2023	2.21E+01	3.10E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Downgradient	Yes	6.46E+01	YES	4.17E+00	N/A

Well Number: MW394

Date Collected	Result	LN(Result)
10/18/2021	2.46E+01	3.20E+00
1/13/2022	2.54E+01	3.23E+00
4/19/2022	2.82E+01	3.34E+00
7/20/2022	2.61E+01	3.26E+00
10/17/2022	2.66E+01	3.28E+00
1/25/2023	2.69E+01	3.29E+00
4/27/2023	2.69E+01	3.29E+00
7/27/2023	2.65E+01	3.28E+00

Conclusion of Statistical Analysis on Current Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

Wells with Exceedances

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-S/T Fourth Quarter 2023 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= 386.438 S= 34.051 CV(1)=0.088 K factor***= 2.523 TL(1)= 4.72E+02 LL(1)=N/A

Statistics-Transformed Background Data X= 5.953 S= 0.090 CV(2)=0.015 K factor***= 2.523 TL(2)= 6.18E+00 LL(2)=N/A

Current Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW220

Date Collected	Result	LN(Result)
10/27/2021	3.41E+02	5.83E+00
1/19/2022	3.76E+02	5.93E+00
4/13/2022	4.36E+02	6.08E+00
7/18/2022	3.50E+02	5.86E+00
10/18/2022	3.32E+02	5.81E+00
1/23/2023	3.34E+02	5.81E+00
5/1/2023	4.20E+02	6.04E+00
7/31/2023	3.54E+02	5.87E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Downgradient	Yes	7.47E+02	YES	6.62E+00	N/A

Well Number: MW394

Date Collected	Result	LN(Result)
10/18/2021	3.94E+02	5.98E+00
1/13/2022	4.01E+02	5.99E+00
4/19/2022	4.13E+02	6.02E+00
7/20/2022	3.87E+02	5.96E+00
10/17/2022	4.17E+02	6.03E+00
1/25/2023	4.04E+02	6.00E+00
4/27/2023	4.09E+02	6.01E+00
7/27/2023	4.15E+02	6.03E+00

Conclusion of Statistical Analysis on Current Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

Wells with Exceedances

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-S/T Fourth Quarter 2023 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= 197.875 S= 23.435 CV(1)=0.118 **K factor**= 2.523** TL(1)= 2.57E+02 LL(1)=N/A

Statistics-Transformed Background Data X= 5.281 S= 0.116 CV(2)=0.022 **K factor**= 2.523** TL(2)= 5.57E+00 LL(2)=N/A

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
10/27/2021	1.94E+02	5.27E+00
1/19/2022	1.79E+02	5.19E+00
4/13/2022	2.36E+02	5.46E+00
7/18/2022	1.64E+02	5.10E+00
10/18/2022	1.79E+02	5.19E+00
1/23/2023	1.72E+02	5.15E+00
5/1/2023	2.02E+02	5.31E+00
7/31/2023	1.76E+02	5.17E+00

Well Number: MW394

Date Collected	Result	LN(Result)
10/18/2021	2.19E+02	5.39E+00
1/13/2022	2.30E+02	5.44E+00
4/19/2022	2.43E+02	5.49E+00
7/20/2022	1.93E+02	5.26E+00
10/17/2022	1.98E+02	5.29E+00
1/25/2023	1.84E+02	5.21E+00
4/27/2023	1.96E+02	5.28E+00
7/27/2023	2.01E+02	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)
MW372	Downgradient	Yes	4.47E+02	YES	6.10E+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

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-S/T Fourth Quarter 2023 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= 10.293 S= 1.430 CV(1)=0.139 K factor**= 2.523 TL(1)= 1.39E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 2.322 S= 0.143 CV(2)=0.062 K factor**= 2.523 TL(2)= 2.68E+00 LL(2)=N/A

Current Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW220

Date Collected	Result	LN(Result)
10/27/2021	8.31E+00	2.12E+00
1/19/2022	9.20E+00	2.22E+00
4/13/2022	1.21E+01	2.49E+00
7/18/2022	8.67E+00	2.16E+00
10/18/2022	8.36E+00	2.12E+00
1/23/2023	8.28E+00	2.11E+00
5/1/2023	1.19E+01	2.48E+00
7/28/2023	8.97E+00	2.19E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Downgradient	Yes	2.16E+01	YES	3.07E+00	N/A
MW387	Downgradient	Yes	1.62E+01	YES	2.79E+00	N/A

Well Number: MW394

Date Collected	Result	LN(Result)
10/18/2021	1.03E+01	2.33E+00
1/13/2022	1.05E+01	2.35E+00
4/19/2022	1.18E+01	2.47E+00
7/20/2022	1.17E+01	2.46E+00
10/17/2022	1.12E+01	2.42E+00
1/25/2023	1.14E+01	2.43E+00
4/27/2023	1.13E+01	2.42E+00
7/27/2023	1.07E+01	2.37E+00

Conclusion of Statistical Analysis on Current Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

Wells with Exceedances

MW372
MW387

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-S/T Fourth Quarter 2023 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= 420.750 S= 45.851 CV(1)=0.109 K factor**= 2.523 TL(1)= 5.36E+02 LL(1)=N/A

Statistics-Transformed Background Data X= 6.036 S= 0.109 CV(2)=0.018 K factor**= 2.523 TL(2)= 6.31E+00 LL(2)=N/A

Current Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW220

Date Collected	Result	LN(Result)
10/27/2021	4.43E+02	6.09E+00
1/19/2022	4.06E+02	6.01E+00
4/13/2022	4.12E+02	6.02E+00
7/18/2022	4.11E+02	6.02E+00
10/18/2022	3.98E+02	5.99E+00
1/23/2023	3.66E+02	5.90E+00
5/1/2023	4.77E+02	6.17E+00
7/31/2023	3.77E+02	5.93E+00

Well Number: MW394

Date Collected	Result	LN(Result)
10/18/2021	3.70E+02	5.91E+00
1/13/2022	3.93E+02	5.97E+00
4/19/2022	4.32E+02	6.07E+00
7/20/2022	4.87E+02	6.19E+00
10/17/2022	3.46E+02	5.85E+00
1/25/2023	4.69E+02	6.15E+00
4/27/2023	4.51E+02	6.11E+00
7/27/2023	4.94E+02	6.20E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	4.06E+02	NO	6.01E+00	N/A
MW221	Sidegradient	Yes	4.68E+02	NO	6.15E+00	N/A
MW222	Sidegradient	Yes	4.65E+02	NO	6.14E+00	N/A
MW223	Sidegradient	Yes	4.62E+02	NO	6.14E+00	N/A
MW224	Sidegradient	Yes	4.87E+02	NO	6.19E+00	N/A
MW384	Sidegradient	Yes	4.65E+02	NO	6.14E+00	N/A
MW387	Downgradient	Yes	4.78E+02	NO	6.17E+00	N/A
MW391	Downgradient	Yes	4.90E+02	NO	6.19E+00	N/A
MW394	Upgradient	Yes	4.61E+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-S/T Fourth Quarter 2023 Statistical Analysis Current 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 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= 37.350 S= 5.725 CV(1)=0.153 K factor**= 2.523 TL(1)= 5.18E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 3.610 S= 0.141 CV(2)=0.039 K factor**= 2.523 TL(2)= 3.97E+00 LL(2)=N/A

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
10/27/2021	3.92E+01	3.67E+00
1/19/2022	4.16E+01	3.73E+00
4/13/2022	4.62E+01	3.83E+00
7/18/2022	3.81E+01	3.64E+00
10/18/2022	3.72E+01	3.62E+00
1/23/2023	3.77E+01	3.63E+00
5/1/2023	5.30E+01	3.97E+00
7/28/2023	3.85E+01	3.65E+00

Well Number: MW394

Date Collected	Result	LN(Result)
10/18/2021	3.24E+01	3.48E+00
1/13/2022	3.16E+01	3.45E+00
4/19/2022	3.53E+01	3.56E+00
7/20/2022	3.41E+01	3.53E+00
10/17/2022	3.37E+01	3.52E+00
1/25/2023	3.40E+01	3.53E+00
4/27/2023	3.32E+01	3.50E+00
7/27/2023	3.18E+01	3.46E+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)
MW372	Downgradient	Yes	5.90E+01	YES	4.08E+00	N/A
MW384	Sidegradient	Yes	6.01E+01	YES	4.10E+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

MW372
MW384

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-S/T Fourth Quarter 2023 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= 15.313 S= 4.000 CV(1)=0.261 K factor***= 2.523 TL(1)= 2.54E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 2.699 S= 0.247 CV(2)=0.091 K factor***= 2.523 TL(2)= 3.32E+00 LL(2)=N/A

Current Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW220

Date Collected	Result	LN(Result)
10/27/2021	1.69E+01	2.83E+00
1/19/2022	1.92E+01	2.95E+00
4/13/2022	2.49E+01	3.21E+00
7/18/2022	1.85E+01	2.92E+00
10/18/2022	1.57E+01	2.75E+00
1/23/2023	1.64E+01	2.80E+00
5/1/2023	2.00E+01	3.00E+00
7/31/2023	1.78E+01	2.88E+00

Well Number: MW394

Date Collected	Result	LN(Result)
10/18/2021	1.19E+01	2.48E+00
1/13/2022	1.17E+01	2.46E+00
4/19/2022	1.17E+01	2.46E+00
7/20/2022	1.22E+01	2.50E+00
10/17/2022	1.21E+01	2.49E+00
1/25/2023	1.21E+01	2.49E+00
4/27/2023	1.17E+01	2.46E+00
7/27/2023	1.22E+01	2.50E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Downgradient	Yes	1.43E+02	YES	4.96E+00	N/A
MW384	Sidegradient	Yes	2.40E+01	NO	3.18E+00	N/A
MW387	Downgradient	Yes	2.67E+01	YES	3.28E+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

MW372
MW387

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-S/T Fourth Quarter 2023 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= 10.859 S= 6.596 CV(1)=0.607 K factor***= 2.523 TL(1)= 2.75E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 2.067 S= 1.031 CV(2)=0.499 K factor***= 2.523 TL(2)= 4.67E+00 LL(2)=N/A

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
10/27/2021	1.27E+01	2.54E+00
1/19/2022	1.74E+01	2.86E+00
4/13/2022	1.60E+01	2.77E+00
7/18/2022	1.92E+01	2.95E+00
10/18/2022	2.13E+01	3.06E+00
1/23/2023	1.42E+01	2.65E+00
5/1/2023	1.13E+01	2.42E+00
7/28/2023	1.91E+01	2.95E+00

Well Number: MW394

Date Collected	Result	LN(Result)
10/18/2021	6.06E+00	1.80E+00
1/13/2022	5.46E+00	1.70E+00
4/19/2022	4.38E-01	-8.26E-01
7/20/2022	6.73E+00	1.91E+00
10/17/2022	1.11E+01	2.41E+00
1/25/2023	1.64E+00	4.95E-01
4/27/2023	6.79E+00	1.92E+00
7/27/2023	4.32E+00	1.46E+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)
MW369	Downgradient	Yes	7.67E+01	YES	4.34E+00	N/A
MW384	Sidegradient	Yes	7.96E+01	YES	4.38E+00	N/A
MW387	Downgradient	Yes	5.14E+01	YES	3.94E+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

MW369
MW384
MW387

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-S/T Fourth Quarter 2023 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= 22.163 S= 4.058 CV(1)=0.183 K factor**= 2.523 TL(1)= 3.24E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 3.083 S= 0.184 CV(2)=0.060 K factor**= 2.523 TL(2)= 3.55E+00 LL(2)=N/A

Current Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW395

Date Collected	Result	LN(Result)
10/18/2021	2.43E+01	3.19E+00
1/13/2022	2.55E+01	3.24E+00
4/19/2022	2.64E+01	3.27E+00
7/20/2022	2.49E+01	3.21E+00
10/17/2022	2.69E+01	3.29E+00
1/25/2023	2.69E+01	3.29E+00
4/27/2023	2.71E+01	3.30E+00
7/27/2023	2.62E+01	3.27E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW373	Downgradient	Yes	7.90E+01	YES	4.37E+00	N/A

Well Number: MW397

Date Collected	Result	LN(Result)
10/14/2021	1.81E+01	2.90E+00
1/13/2022	1.82E+01	2.90E+00
4/19/2022	1.85E+01	2.92E+00
7/18/2022	1.85E+01	2.92E+00
10/18/2022	1.87E+01	2.93E+00
1/23/2023	1.81E+01	2.90E+00
5/1/2023	1.87E+01	2.93E+00
7/27/2023	1.76E+01	2.87E+00

Conclusion of Statistical Analysis on Current Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

Wells with Exceedances

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-S/T Fourth Quarter 2023 Statistical Analysis Current 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 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= 353.188 S= 35.206 CV(1)=0.100 K factor**= 2.523 TL(1)= 4.42E+02 LL(1)=N/A

Statistics-Transformed Background Data X= 5.862 S= 0.101 CV(2)=0.017 K factor**= 2.523 TL(2)= 6.12E+00 LL(2)=N/A

Current Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW395

Date Collected	Result	LN(Result)
10/18/2021	3.75E+02	5.93E+00
1/13/2022	3.76E+02	5.93E+00
4/19/2022	3.83E+02	5.95E+00
7/20/2022	3.80E+02	5.94E+00
10/17/2022	3.88E+02	5.96E+00
1/25/2023	3.93E+02	5.97E+00
4/27/2023	4.05E+02	6.00E+00
7/27/2023	3.85E+02	5.95E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW373	Downgradient	Yes	8.98E+02	YES	6.80E+00	N/A

Well Number: MW397

Date Collected	Result	LN(Result)
10/14/2021	2.95E+02	5.69E+00
1/13/2022	3.40E+02	5.83E+00
4/19/2022	3.26E+02	5.79E+00
7/18/2022	3.20E+02	5.77E+00
10/18/2022	3.24E+02	5.78E+00
1/23/2023	3.22E+02	5.77E+00
5/1/2023	3.20E+02	5.77E+00
7/27/2023	3.19E+02	5.77E+00

Conclusion of Statistical Analysis on Current Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

Wells with Exceedances

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-S/T Fourth Quarter 2023 Statistical Analysis Current 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 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= 174.375 S= 24.875 CV(1)=0.143 **K factor**= 2.523** TL(1)= 2.37E+02 LL(1)=N/A

Statistics-Transformed Background Data X= 5.151 S= 0.148 CV(2)=0.029 **K factor**= 2.523** TL(2)= 5.52E+00 LL(2)=N/A

Current Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW395

Date Collected	Result	LN(Result)
10/18/2021	1.94E+02	5.27E+00
1/13/2022	2.01E+02	5.30E+00
4/19/2022	2.10E+02	5.35E+00
7/20/2022	1.99E+02	5.29E+00
10/17/2022	1.96E+02	5.28E+00
1/25/2023	1.80E+02	5.19E+00
4/27/2023	1.94E+02	5.27E+00
7/27/2023	1.88E+02	5.24E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW373	Downgradient	Yes	5.29E+02	YES	6.27E+00	N/A

Well Number: MW397

Date Collected	Result	LN(Result)
10/14/2021	1.66E+02	5.11E+00
1/13/2022	1.41E+02	4.95E+00
4/19/2022	1.80E+02	5.19E+00
7/18/2022	1.46E+02	4.98E+00
10/18/2022	1.57E+02	5.06E+00
1/23/2023	1.58E+02	5.06E+00
5/1/2023	1.28E+02	4.85E+00
7/27/2023	1.52E+02	5.02E+00

Conclusion of Statistical Analysis on Current Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

Wells with Exceedances

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-S/T Fourth Quarter 2023 Statistical Analysis Current 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 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= 9.301 S= 1.751 CV(1)=0.188 K factor**= 2.523 TL(1)= 1.37E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 2.213 S= 0.190 CV(2)=0.086 K factor**= 2.523 TL(2)= 2.69E+00 LL(2)=N/A

Current Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW395

Date Collected	Result	LN(Result)
10/18/2021	1.03E+01	2.33E+00
1/13/2022	1.06E+01	2.36E+00
4/19/2022	1.10E+01	2.40E+00
7/20/2022	1.12E+01	2.42E+00
10/17/2022	1.13E+01	2.42E+00
1/25/2023	1.14E+01	2.43E+00
4/27/2023	1.14E+01	2.43E+00
7/27/2023	1.05E+01	2.35E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW373	Downgradient	Yes	2.78E+01	YES	3.33E+00	N/A

Well Number: MW397

Date Collected	Result	LN(Result)
10/14/2021	7.57E+00	2.02E+00
1/13/2022	7.53E+00	2.02E+00
4/19/2022	7.79E+00	2.05E+00
7/18/2022	7.71E+00	2.04E+00
10/18/2022	7.84E+00	2.06E+00
1/23/2023	7.66E+00	2.04E+00
5/1/2023	7.95E+00	2.07E+00
7/27/2023	7.07E+00	1.96E+00

Conclusion of Statistical Analysis on Current Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

Wells with Exceedances

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-S/T Fourth Quarter 2023 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= 376.063 S= 68.331 CV(1)=0.182 K factor***= 2.523 TL(1)= 5.48E+02 LL(1)=N/A

Statistics-Transformed Background Data X= 5.910 S= 0.216 CV(2)=0.037 K factor***= 2.523 TL(2)= 6.46E+00 LL(2)=N/A

Current Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW395

Date Collected	Result	LN(Result)
10/18/2021	3.91E+02	5.97E+00
1/13/2022	3.95E+02	5.98E+00
4/19/2022	4.12E+02	6.02E+00
7/20/2022	4.25E+02	6.05E+00
10/17/2022	3.26E+02	5.79E+00
1/25/2023	4.25E+02	6.05E+00
4/27/2023	1.90E+02	5.25E+00
7/27/2023	3.02E+02	5.71E+00

Well Number: MW397

Date Collected	Result	LN(Result)
10/14/2021	3.15E+02	5.75E+00
1/13/2022	3.52E+02	5.86E+00
4/19/2022	4.40E+02	6.09E+00
7/18/2022	4.15E+02	6.03E+00
10/18/2022	3.71E+02	5.92E+00
1/23/2023	3.77E+02	5.93E+00
5/1/2023	4.76E+02	6.17E+00
7/27/2023	4.05E+02	6.00E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	3.27E+02	NO	5.79E+00	N/A
MW373	Downgradient	Yes	3.57E+02	NO	5.88E+00	N/A
MW385	Sidegradient	Yes	3.68E+02	NO	5.91E+00	N/A
MW388	Downgradient	Yes	4.57E+02	NO	6.12E+00	N/A
MW392	Downgradient	Yes	4.77E+02	NO	6.17E+00	N/A
MW395	Upgradient	Yes	4.09E+02	NO	6.01E+00	N/A
MW397	Upgradient	Yes	4.87E+02	NO	6.19E+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-S/T Fourth Quarter 2023 Statistical Analysis Current 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 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= 11.744 S= 0.287 CV(1)=0.024 K factor**= 2.523 TL(1)= 1.25E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 2.463 S= 0.025 CV(2)=0.010 K factor**= 2.523 TL(2)= 2.53E+00 LL(2)=N/A

Current Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW395

Date Collected	Result	LN(Result)
10/18/2021	1.19E+01	2.48E+00
1/13/2022	1.16E+01	2.45E+00
4/19/2022	1.16E+01	2.45E+00
7/20/2022	1.19E+01	2.48E+00
10/17/2022	1.17E+01	2.46E+00
1/25/2023	1.17E+01	2.46E+00
4/27/2023	1.10E+01	2.40E+00
7/27/2023	1.15E+01	2.44E+00

Well Number: MW397

Date Collected	Result	LN(Result)
10/14/2021	1.20E+01	2.48E+00
1/13/2022	1.17E+01	2.46E+00
4/19/2022	1.18E+01	2.47E+00
7/18/2022	1.19E+01	2.48E+00
10/18/2022	1.14E+01	2.43E+00
1/23/2023	1.20E+01	2.48E+00
5/1/2023	1.21E+01	2.49E+00
7/27/2023	1.21E+01	2.49E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	1.88E+01	YES	2.93E+00	N/A
MW373	Downgradient	Yes	1.77E+02	YES	5.18E+00	N/A
MW385	Sidegradient	Yes	1.90E+01	YES	2.94E+00	N/A
MW388	Downgradient	Yes	1.86E+01	YES	2.92E+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

- MW370
- MW373
- MW385
- MW388

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-S/T Fourth Quarter 2023 Statistical Analysis Current Background Comparison

Technetium-99

UNITS: pCi/L

LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data X= 12.000 S= 6.836 CV(1)=0.570 K factor**= 2.523 TL(1)= 2.92E+01 LL(1)=N/A

Statistics-Transformed Background Data X= 2.316 S= 0.637 CV(2)=0.275 K factor**= 2.523 TL(2)= 3.92E+00 LL(2)=N/A

Current Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW395

Date Collected	Result	LN(Result)
10/18/2021	8.55E+00	2.15E+00
1/13/2022	5.03E+00	1.62E+00
4/19/2022	1.74E+01	2.86E+00
7/20/2022	1.11E+01	2.41E+00
10/17/2022	8.43E+00	2.13E+00
1/25/2023	1.25E+01	2.53E+00
4/27/2023	2.51E+00	9.20E-01
7/27/2023	3.76E+00	1.32E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW385	Sidegradient	Yes	5.26E+01	YES	3.96E+00	N/A

Well Number: MW397

Date Collected	Result	LN(Result)
10/14/2021	1.28E+01	2.55E+00
1/13/2022	1.81E+01	2.90E+00
4/19/2022	8.11E+00	2.09E+00
7/18/2022	1.04E+01	2.34E+00
10/18/2022	2.30E+01	3.14E+00
1/23/2023	8.51E+00	2.14E+00
5/1/2023	1.41E+01	2.65E+00
7/27/2023	2.77E+01	3.32E+00

Conclusion of Statistical Analysis on Current Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

Wells with Exceedances

MW385

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

THIS PAGE INTENTIONALLY LEFT BLANK

January 15, 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 fourth quarter 2023 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

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX E
GROUNDWATER FLOW RATE AND DIRECTION

THIS PAGE INTENTIONALLY LEFT BLANK

GROUNDWATER FLOW RATE AND DIRECTION

Whenever monitoring wells (MWs) are sampled, 401 KAR 48:300, Section 11, requires determination of groundwater flow rate and direction of flow in the uppermost aquifer. The uppermost aquifer below the C-746-S&T Landfills 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 fourth quarter 2023 and to determine the groundwater flow rate and direction.

Water levels during this reporting period were measured on October 23, 2023. As shown on Figure E.1, MW389, screened in the Upper Continental Recharge System (UCRS), is usually dry, while other UCRS wells have recordable water levels. During this reporting period, MW389 had sufficient water for a water level measurement.

The UCRS has a strong vertical hydraulic gradient; therefore, the limited number of available UCRS wells, screened over different elevations, is not sufficient for mapping the potentiometric surface. Figure E.1 shows the location of UCRS MWs. The Upper Regional Gravel Aquifer (URGA) and Lower Regional Gravel Aquifer (LRGA) data were corrected for barometric pressure, if necessary, and converted to elevations to plot the potentiometric surface of the RGA, as a whole, as shown on Table E.1. Figure E.2 is a composite or average map of the URGA and LRGA elevations where well clusters exist. The contour lines are placed based on the average water level elevations of the clusters.¹ During October, RGA groundwater flow was directed inward and then north towards the Ohio River. Based on the site potentiometric map (Figure E.2), the hydraulic gradient beneath the landfill, as measured along the defined groundwater flow directions, is 2.60×10^{-4} ft/ft. Additional water level measurements in October (Figure E.3) document the vicinity groundwater hydraulic gradient for the RGA to be 3.08×10^{-4} ft/ft, northward. 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. 073-00045NWC1 and range from 425 to 725 ft/day (0.150 to 0.256 cm/s). RGA effective porosity is assumed to be 25%. Vicinity and site flow velocities were calculated using the low and high values for hydraulic conductivity, as shown in Table E.3.

Regional groundwater flow near the C-746-S&T Landfills typically trends northeastward toward the Ohio River. As demonstrated on the potentiometric map for October 2023, RGA groundwater flow from the landfill area was directed to the north.

¹ Additional water level measurements, in wells at the C-746-U Landfill and in wells of the surrounding region (MW98, MW100, MW125, MW139, MW165A, MW173, MW193, MW197, and MW200), were used to contour the RGA potentiometric surface.

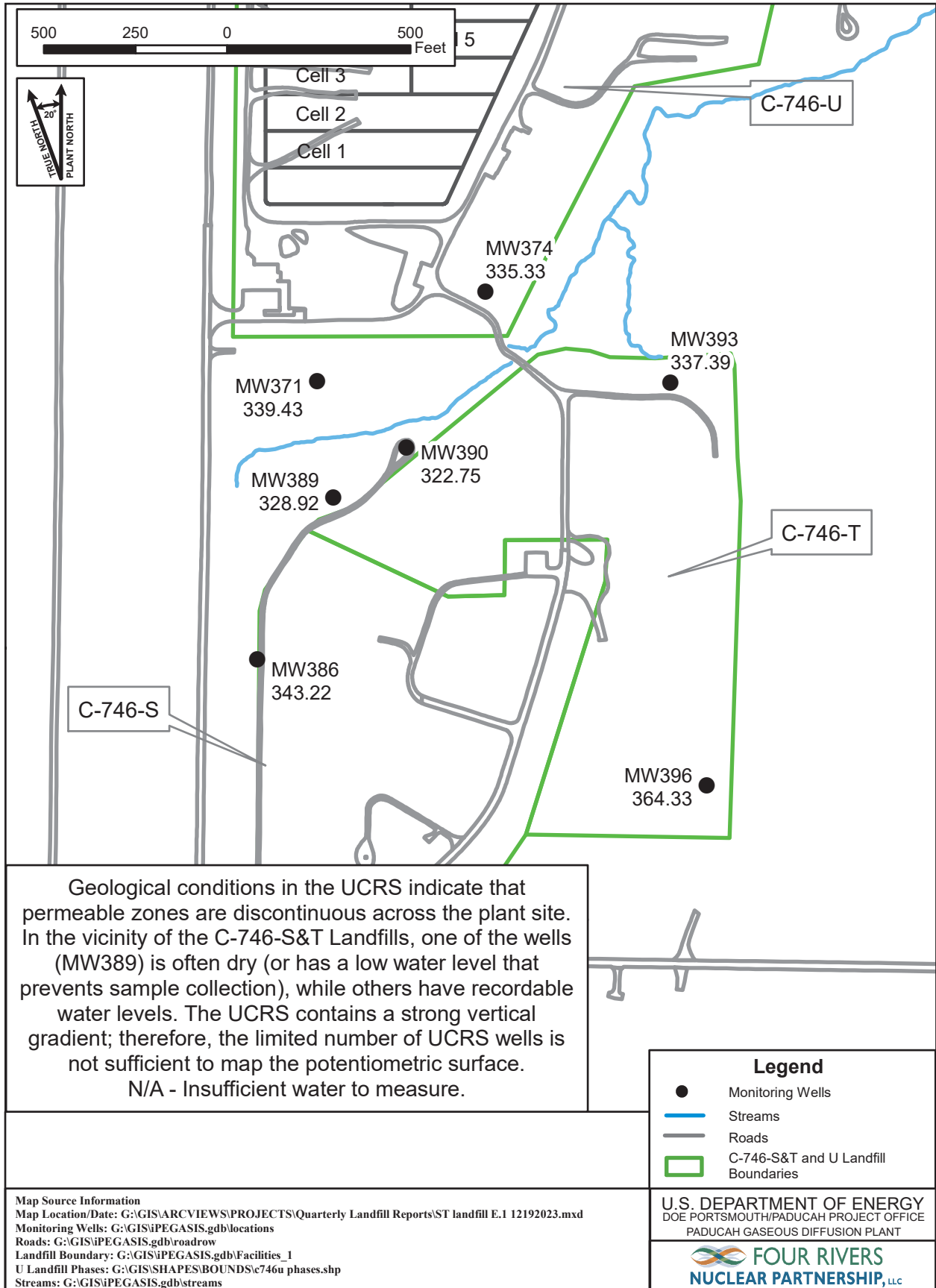


Figure E.1. Potentiometric Measurements of the Upper Continental Recharge System at the C-746-S&T Landfills, October 23, 2023

Table E.1. C-746-S&T Landfills Fourth Quarter 2023 (October) Water Levels

C-746-S&T Landfills (October 2023) Water Levels										
Date	Time	Well	Formation	Datum Elev (ft amsl)	BP (in Hg)	Delta BP (ft H2O)	Raw Data		*Corrected Data	
							DTW (ft)	Elev (ft amsl)	DTW (ft)	Elev (ft amsl)
10/23/2023	10:02	MW220	URGA	382.01	30.16	-0.01	59.05	322.96	59.04	322.97
10/23/2023	9:52	MW221	URGA	391.38	30.15	0.00	68.64	322.74	68.64	322.74
10/23/2023	9:57	MW222	URGA	395.27	30.16	-0.01	72.51	322.76	72.50	322.77
10/23/2023	9:54	MW223	URGA	394.38	30.16	-0.01	71.63	322.75	71.62	322.76
10/23/2023	9:59	MW224	URGA	395.69	30.16	-0.01	72.85	322.84	72.84	322.85
10/23/2023	10:04	MW225	URGA	385.73	30.16	-0.01	62.87	322.86	62.86	322.87
10/23/2023	8:15	MW353	LRGA	375.05	30.13	0.02	51.72	323.33	51.74	323.31
10/23/2023	9:46	MW369	URGA	364.23	30.15	0.00	41.42	322.81	41.42	322.81
10/23/2023	9:48	MW370	LRGA	365.12	30.15	0.00	42.31	322.81	42.31	322.81
10/23/2023	9:47	MW371	UCRS	364.64	30.15	0.00	25.21	339.43	25.21	339.43
10/23/2023	9:42	MW372	URGA	359.42	30.15	0.00	36.61	322.81	36.61	322.81
10/23/2023	9:44	MW373	LRGA	359.73	30.15	0.00	36.92	322.81	36.92	322.81
10/23/2023	9:43	MW374	UCRS	359.44	30.15	0.00	24.11	335.33	24.11	335.33
10/23/2023	10:16	MW384	URGA	365.29	30.16	-0.01	42.48	322.81	42.47	322.82
10/23/2023	10:18	MW385	LRGA	365.74	30.16	-0.01	42.86	322.88	42.85	322.89
10/23/2023	10:17	MW386	UCRS	365.32	30.16	-0.01	22.11	343.21	22.10	343.22
10/23/2023	10:14	MW387	URGA	363.48	30.16	-0.01	40.71	322.77	40.70	322.78
10/23/2023	10:15	MW388	LRGA	363.45	30.16	-0.01	40.70	322.75	40.69	322.76
10/23/2023	10:11	MW389	UCRS	364.11	30.16	-0.01	35.20	328.91	35.19	328.92
10/23/2023	10:09	MW390	UCRS	360.39	30.16	-0.01	37.65	322.74	37.64	322.75
10/23/2023	12:56	MW391	URGA	366.67	30.12	0.03	43.90	322.77	43.93	322.74
10/23/2023	12:58	MW392	LRGA	365.85	30.12	0.03	43.09	322.76	43.12	322.73
10/23/2023	12:57	MW393	UCRS	366.62	30.12	0.03	29.20	337.42	29.23	337.39
10/23/2023	12:43	MW394	URGA	378.46	30.15	0.00	55.42	323.04	55.42	323.04
10/23/2023	12:46	MW395	LRGA	379.12	30.15	0.00	56.12	323.00	56.12	323.00
10/23/2023	12:45	MW396	UCRS	378.75	30.15	0.00	14.42	364.33	14.42	364.33
10/23/2023	12:39	MW397	LRGA	387.00	30.15	0.00	63.94	323.06	63.94	323.06
10/23/2023	12:50	MW418	URGA	367.21	30.15	0.00	44.32	322.89	44.32	322.89
10/23/2023	12:51	MW419	LRGA	367.05	30.15	0.00	44.18	322.87	44.18	322.87
Reference Barometric Pressure					30.15					
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										

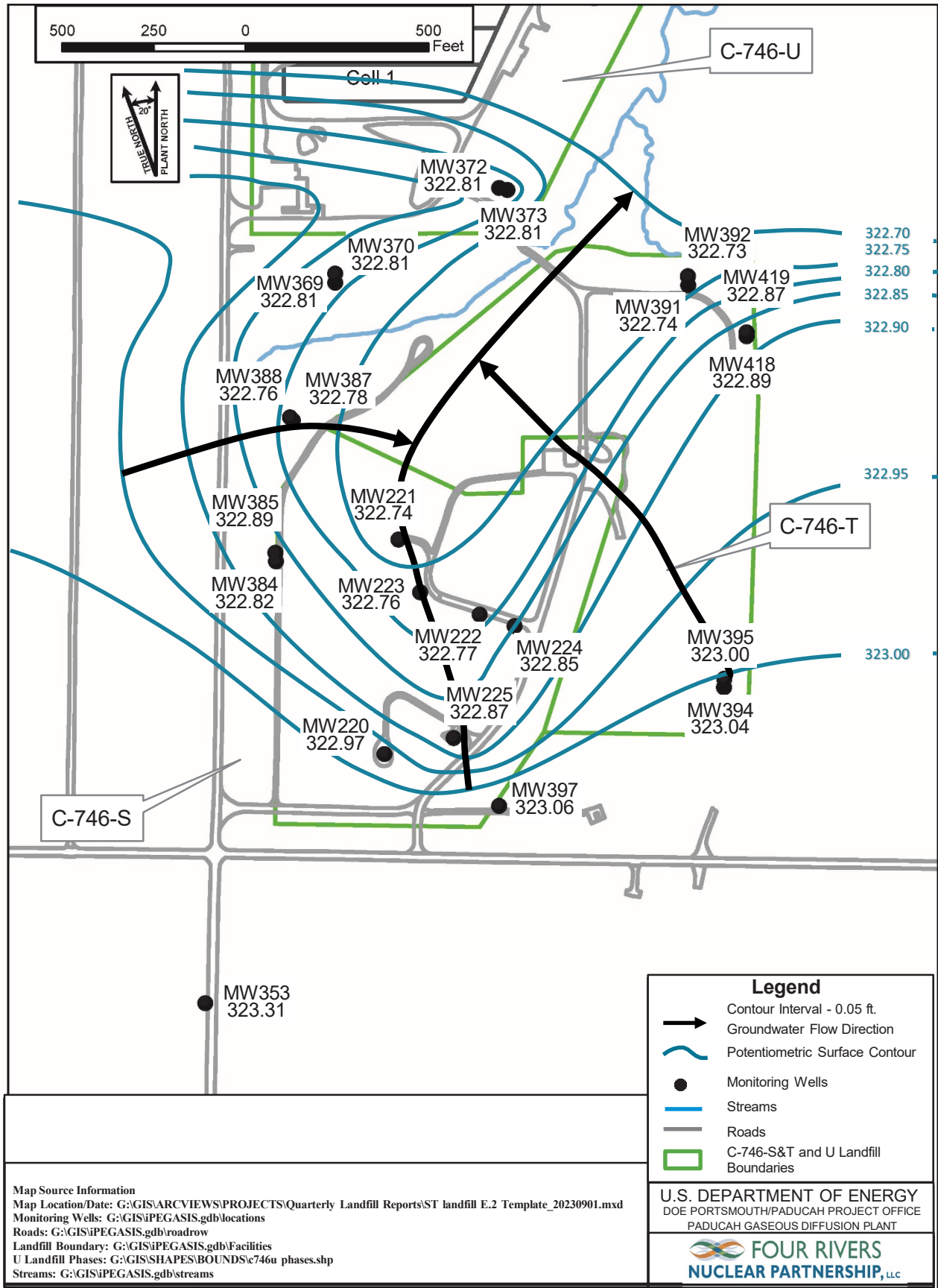


Figure E.2. Composite Potentiometric Surface of the Regional Gravel Aquifer at the C-746-S&T Landfills, October 23, 2023

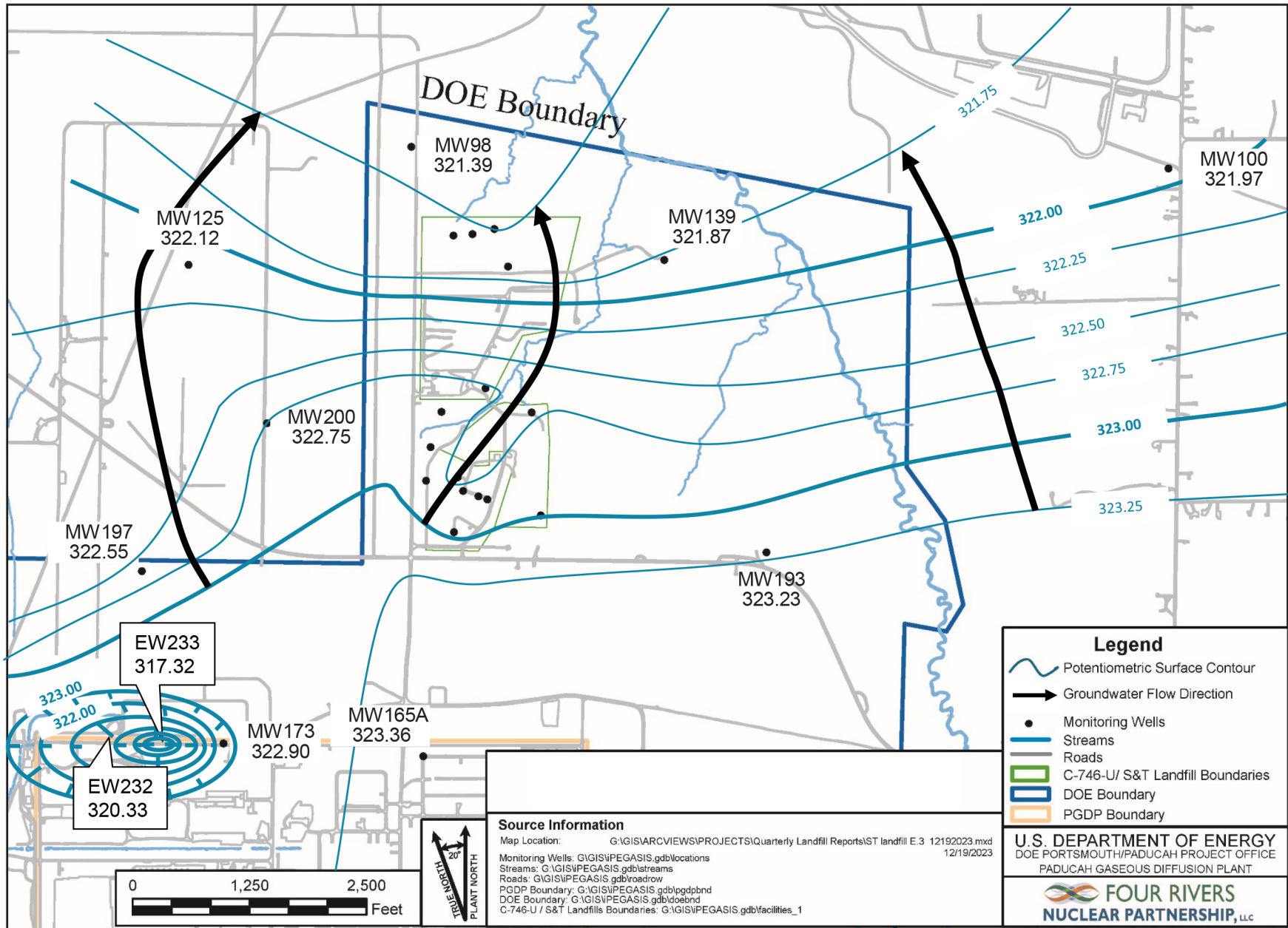


Figure E.3. Vicinity Potentiometric Surface of the Regional Gravel Aquifer, October 23, 2023

Table E.2. C-746-S&T Landfills Hydraulic Gradients

	ft/ft
Beneath Landfill Mound	2.60×10^{-4}
Vicinity	3.08×10^{-4}

Table E.3. C-746-S&T Landfills Groundwater Flow Rate

Hydraulic Conductivity (K)		Specific Discharge (q)		Average Linear Velocity (v)	
ft/day	cm/s	ft/day	cm/s	ft/day	cm/s
<u>Beneath Landfill Mound</u>					
725	0.256	0.188	6.65E-05	0.753	2.66E-04
425	0.150	0.110	3.89E-05	0.441	1.56E-05
<u>Vicinity</u>					
725	0.256	0.224	7.90E-05	0.895	3.16E-04
425	0.150	0.131	4.63E-05	0.524	1.85E-04

APPENDIX F
NOTIFICATIONS

THIS PAGE INTENTIONALLY LEFT BLANK

NOTIFICATIONS

In accordance with 401 KAR 48:300 § 7, the notification for parameters that exceed the maximum contaminant level (MCL) has been submitted to the Kentucky Division of Waste Management. The parameters 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 fourth quarter 2023 groundwater data collected from the C-746-S&T Landfills monitoring wells were performed in accordance with *Groundwater Monitoring Plan for the Solid Waste Permitted Landfills (C-746-S Residential Landfill, C-746-T Inert Landfill, and C-746-U Contained Landfill) at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (LATA Kentucky 2014).

The following are the permit required parameters in 40 CFR § 302.4, Appendix A, which had statistically significant, increased concentrations relative to historical background concentrations.

	<u>Parameter</u>	<u>Monitoring Well</u>
Upper Continental Recharge System	None	
Upper Regional Gravel Aquifer	Sodium Technetium-99	MW372, MW384 MW369, MW384, MW387
Lower Regional Gravel Aquifer	Technetium-99	MW385

NOTE: Although technetium-99 is not cited in 40 CFR § 302.4, Appendix A, this radionuclide is being reported along with the parameters of this regulation.

11/14/2023

**Four Rivers Nuclear Partnership, LLC
PROJECT ENVIRONMENTAL MEASUREMENTS SYSTEM
C-746-S&T LANDFILLS
SOLID WASTE PERMIT NUMBER SW07300014, SW07300015, SW07300045
MAXIMUM CONTAMINANT LEVEL (MCL) EXCEEDANCE REPORT
Quarterly Groundwater Sampling**

AKGWA	Station	Analysis	Method	Results	Units	MCL
8004-4809	MW384	Trichloroethene	8260D	6.03	ug/L	5
8004-4806	MW392	Trichloroethene	8260D	9.43	ug/L	5
8004-4802	MW394	Trichloroethene	8260D	5.25	ug/L	5

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

THIS PAGE INTENTIONALLY LEFT BLANK

Chart of MCL and Historical UTL Exceedances for the C-746-S&T Landfills

Groundwater Flow System	UCRS					URGA										LRGA							
	S	D	D	U		S	S	S	S	S	D	D	D	D	U	U	S	D	D	D	D	U	U
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
ACETONE																							
Quarter 3, 2003							*					*											
Quarter 4, 2003											*								*				
Quarter 1, 2005									*														
Quarter 4, 2019															*								
ALPHA ACTIVITY																							
Quarter 4, 2002				■	■								■										
Quarter 4, 2008											■												
Quarter 4, 2010											■												
ALUMINUM																							
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 4, 2008							*																
Quarter 1, 2009			*				*				*												
Quarter 1, 2010			*				*				*												
Quarter 2, 2010			*				*				*												
Quarter 3, 2010			*								*			*		*		*		*			
Quarter 1, 2011							*				*												
Quarter 2, 2011			*								*												
Quarter 2, 2012			*																				
Quarter 3, 2012							*																
Quarter 1, 2013							*				*												
Quarter 3, 2013			*																				
Quarter 1, 2014							*																
Quarter 2, 2014											*												
Quarter 4, 2014			*																				
Quarter 1, 2016							*																
Quarter 2, 2016														*									
Quarter 1, 2017							*																
Quarter 4, 2017																							*
Quarter 1, 2018							*																
Quarter 1, 2020												*											
BARIUM																							
Quarter 3, 2003							■	■															
Quarter 4, 2003							■	■															
BETA ACTIVITY																							
Quarter 4, 2002												■											
Quarter 1, 2003												■							■				

Chart of MCL and Historical UTL Exceedances for the C-746-S&T Landfills (Continued)

Groundwater Flow System	UCRS					URGA										LRGA							
	S	D	D	U	U	S	S	S	S	S	D	D	D	D	U	U	S	D	D	D	D	U	U
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
BETA ACTIVITY																							
Quarter 2, 2003			■	■																			
Quarter 3, 2003			■									■						■					
Quarter 4, 2003			■							■		■											
Quarter 1, 2004			■									■						■					
Quarter 2, 2004			■									■	■					■	■				
Quarter 3, 2004			■									■	■					■					
Quarter 4, 2004			■									■	■					■					
Quarter 1, 2005			■							■		■						■					
Quarter 2, 2005			■									■						■					
Quarter 3, 2005										■		■						■					
Quarter 4, 2005										■		■	■					■					
Quarter 1, 2006										■		■	■					■	■	■			
Quarter 2, 2006			■							■		■						■	■	■			
Quarter 3, 2006										■		■	■					■	■	■			
Quarter 4, 2006	■		■							■		■	■					■	■	■			
Quarter 1, 2007			■							■		■	■					■	■	■			
Quarter 2, 2007			■							■		■	■					■	■	■			
Quarter 3, 2007										■		■	■					■	■	■			
Quarter 4, 2007			■							■		■	■					■	■	■			
Quarter 1, 2008			■							■		■	■					■	■	■			
Quarter 2, 2008			■							■	■	■						■	■	■			
Quarter 3, 2008										■		■	■					■	■	■			
Quarter 4, 2008										■		■	■					■	■	■			
Quarter 1, 2009			■							■		■	■					■	■	■			
Quarter 2, 2009										■		■	■					■	■	■			
Quarter 3, 2009										■		■	■					■	■	■			
Quarter 4, 2009										■		■	■					■	■	■			
Quarter 1, 2010												■	■					■	■	■			
Quarter 2, 2010			■							■		■	■					■	■	■			
Quarter 3, 2010										■		■	■					■	■	■			
Quarter 4, 2010										■		■	■					■	■	■			
Quarter 1, 2011										■		■	■					■	■	■			
Quarter 2, 2011			■							■		■	■					■	■	■			
Quarter 3, 2011										■		■	■					■	■	■			
Quarter 4, 2011										■		■	■					■	■	■			
Quarter 1, 2012			■							■		■	■					■	■	■			
Quarter 2, 2012			■							■		■	■					■	■	■			
Quarter 3, 2012										■		■	■					■	■	■			
Quarter 4, 2012										■		■	■					■	■	■			
Quarter 1, 2013										■		■	■					■	■	■			
Quarter 2, 2013										■		■	■					■	■	■			
Quarter 3, 2013										■		■	■					■	■	■			
Quarter 4, 2013										■		■	■					■	■	■			
Quarter 1, 2014			■							■		■	■					■	■	■			
Quarter 2, 2014										■		■	■					■	■	■			
Quarter 3, 2014										■		■	■					■	■	■			
Quarter 4, 2014										■		■	■					■	■	■			
Quarter 1, 2015										■		■	■					■	■	■			
Quarter 2, 2015										■		■	■					■	■	■			
Quarter 3, 2015										■		■	■					■	■	■			
Quarter 4, 2015										■		■	■					■	■	■			
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			■							■		■	■					■	■	■			

Chart of MCL and Historical UTL Exceedances for the C-746-S&T Landfills (Continued)

Groundwater Flow System	UCRS					URGA										LRGA							
	S	D	D	D	U	S	S	S	S	S	S	D	D	D	U	U	S	D	D	D	U	U	
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
BETA ACTIVITY																							
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													■	■					■	■		■	
BROMIDE																							
Quarter 1, 2003			*																				
Quarter 4, 2003			*																				
Quarter 1, 2004			*																				
Quarter 2, 2004			*																				
Quarter 3, 2004			*																				
Quarter 4, 2004			*																				
Quarter 1, 2005			*																				
Quarter 3, 2006			*																				
CALCIUM																							
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 1, 2011												*	*						*				
Quarter 2, 2011												*	*	*					*				
Quarter 3, 2011												*	*	*					*				
Quarter 4, 2011												*	*	*					*				
Quarter 1, 2012												*	*	*					*				
Quarter 2, 2012												*	*	*					*				
Quarter 3, 2012												*	*	*					*				

Chart of MCL and Historical UTL Exceedances for the C-746-S&T Landfills (Continued)

Groundwater Flow System	UCRS					URGA										LRGA							
	S	D	D	U	U	S	S	S	S	S	D	D	D	U	U	S	D	D	D	U	U		
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
CALCIUM																							
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												*						*	*				
Quarter 2, 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												*	*					*	*				
CARBON DISULFIDE																							
Quarter 4, 2010												*											
Quarter 1, 2011												*									*		
Quarter 2, 2017												*	*					*	*				
CHEMICAL OXYGEN DEMAND																							
Quarter 1, 2003				*																			
Quarter 2, 2003				*																			
Quarter 3, 2003				*		*			*														
Quarter 4, 2003				*																			
Quarter 1, 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	*																						

Chart of MCL and Historical UTL Exceedances for the C-746-S&T Landfills (Continued)

Groundwater Flow System	UCRS					URGA										LRGA							
	S	D	D	D	U	S	S	S	S	S	D	D	D	D	U	U	S	D	D	D	U	U	
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
CHEMICAL OXYGEN DEMAND																							
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 3, 2011	*																						
Quarter 4, 2011	*																						
Quarter 1, 2012	*																						
Quarter 1, 2013	*																						
Quarter 3, 2013	*																						
Quarter 3, 2014	*								*			*						*					
Quarter 4, 2014							*																
Quarter 2, 2015															*								
Quarter 3, 2015															*								
Quarter 3, 2016			*								*												
Quarter 4, 2016																	*						
Quarter 2, 2017							*																
Quarter 3, 2017	*														*								
Quarter 4, 2017							*																
Quarter 2, 2018													*									*	
Quarter 3, 2018												*											
Quarter 4, 2018														*								*	
Quarter 2, 2019					*						*	*					*						
Quarter 3, 2019										*	*	*					*			*	*	*	
Quarter 4, 2019	*			*			*		*	*	*				*								
Quarter 1, 2020				*			*		*											*			
Quarter 2, 2020															*								
Quarter 4, 2020																*							
Quarter 1, 2021												*											
Quarter 2, 2021							*								*								
Quarter 4, 2021	*																						
Quarter 1, 2022							*	*	*				*	*				*	*				
Quarter 2, 2022							*						*										
Quarter 4, 2022	*																						
Quarter 1, 2023																	*						
Quarter 2, 2023					*							*											
CHLORIDE																							
Quarter 1, 2003			*																				
Quarter 4, 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			*																				

Chart of MCL and Historical UTL Exceedances for the C-746-S&T Landfills (Continued)

Groundwater Flow System	UCRS					URGA										LRGA							
	S	D	D	U	U	S	S	S	S	S	D	D	D	U	U	S	D	D	D	U	U		
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
CHLORIDE																							
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 3, 2012			*																				
Quarter 3, 2013			*																				
Quarter 4, 2013			*																				
Quarter 4, 2014			*																				
Quarter 2, 2019																					*		
CHROMIUM																							
Quarter 4, 2002									■														
Quarter 1, 2003									■														■
Quarter 2, 2003								■	■														
Quarter 3, 2009							■																
Quarter 1, 2019							■																
COBALT																							
Quarter 3, 2003								*															
CONDUCTIVITY																							
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 1, 2011										*								*	*				
Quarter 2, 2011											*							*	*				
Quarter 3, 2011											*							*	*				
Quarter 4, 2011											*							*	*				
Quarter 1, 2012											*	*						*	*				
Quarter 2, 2012											*	*						*	*				
Quarter 3, 2012											*	*						*	*				

Chart of MCL and Historical UTL Exceedances for the C-746-S&T Landfills (Continued)

Groundwater Flow System	UCRS					URGA										LRGA							
	S	D	D	U	U	S	S	S	S	S	D	D	D	U	U	S	D	D	D	U	U		
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
CONDUCTIVITY																							
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											*							*					
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											*							*					
DISSOLVED OXYGEN																							
Quarter 3, 2006			*					*															
DISSOLVED SOLIDS										*										*			
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										*	*									*			

Chart of MCL and Historical UTL Exceedances for the C-746-S&T Landfills (Continued)

Groundwater Flow System	UCRS					URGA										LRGA							
	S	D	D	U	U	S	S	S	S	S	S	D	D	D	U	U	S	D	D	D	U	U	
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
DISSOLVED SOLIDS																							
Quarter 1, 2008												*							*				
Quarter 2, 2008												*							*				
Quarter 3, 2008												*							*				
Quarter 4, 2008										*		*							*				
Quarter 1, 2009												*							*				
Quarter 2, 2009												*	*						*				
Quarter 3, 2009												*	*						*				
Quarter 4, 2009												*	*						*				
Quarter 1, 2010												*	*						*				
Quarter 2, 2010											*	*	*						*				
Quarter 3, 2010											*	*	*						*				
Quarter 4, 2010											*	*	*						*				
Quarter 1, 2011											*	*	*						*				
Quarter 2, 2011												*	*						*				
Quarter 3, 2011												*	*						*				
Quarter 4, 2011												*	*						*				
Quarter 1, 2012												*	*	*					*				
Quarter 2, 2012												*	*	*					*				
Quarter 3, 2012											*	*	*						*				
Quarter 4, 2012											*	*	*						*				
Quarter 1, 2013											*	*	*						*				
Quarter 2, 2013											*	*	*						*				
Quarter 3, 2013											*	*	*						*				
Quarter 4, 2013											*	*	*						*				
Quarter 1, 2014											*	*	*						*				
Quarter 2, 2014											*	*	*						*				
Quarter 3, 2014									*		*	*	*						*				
Quarter 4, 2014									*		*	*	*						*				
Quarter 1, 2015											*	*	*						*				
Quarter 2, 2015											*	*	*						*				
Quarter 3, 2015											*	*	*						*				
Quarter 4, 2015									*		*	*	*					*	*				
Quarter 1, 2016											*	*	*						*				
Quarter 2, 2016											*	*	*	*					*				
Quarter 3, 2016											*	*	*						*				
Quarter 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 2, 2022											*	*	*	*	*				*				
Quarter 2, 2022											*	*	*	*	*				*				
Quarter 3, 2022											*	*	*	*	*				*				
Quarter 4, 2022											*	*	*	*	*				*				
Quarter 1, 2023											*	*	*	*	*				*				
Quarter 2, 2023											*	*	*	*	*				*				
Quarter 3, 2023											*	*	*	*	*				*				
Quarter 4, 2023											*	*	*	*	*				*				
IODIDE																							
Quarter 4, 2002																						*	
Quarter 2, 2003							*																
Quarter 3, 2003													*										
Quarter 1, 2004				*																			*
Quarter 3, 2010																						*	
Quarter 2, 2013										*													

Chart of MCL and Historical UTL Exceedances for the C-746-S&T Landfills (Continued)

Groundwater Flow System	UCRS					URGA										LRGA							
	S	D	D	D	U	S	S	S	S	S	D	D	D	D	U	U	S	D	D	D	U	U	
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
IRON																							
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 1, 2006							*					*											
Quarter 2, 2006												*											
Quarter 3, 2006											*												
Quarter 1, 2007											*	*											
Quarter 2, 2007											*												
Quarter 2, 2008												*											
Quarter 3, 2008												*											
MAGNESIUM																							
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 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																		*	*				

Chart of MCL and Historical UTL Exceedances for the C-746-S&T Landfills (Continued)

Groundwater Flow System	UCRS					URGA										LRGA							
	S	D	D	U	U	S	S	S	S	S	S	D	D	D	U	U	S	D	D	D	U	U	
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
MAGNESIUM																							
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 4, 2022												*	*						*				
Quarter 1, 2023												*	*						*				
Quarter 2, 2023												*	*						*				
Quarter 3, 2023												*	*						*				
Quarter 4, 2023												*	*						*				
MANGANESE																							
Quarter 4, 2002																							*
Quarter 3, 2003								*	*														
Quarter 4, 2003								*	*														
Quarter 1, 2004								*															
Quarter 2, 2004								*															
Quarter 4, 2004								*	*														
Quarter 1, 2005								*															
Quarter 3, 2005																							*
Quarter 3, 2009		*																					
Quarter 1, 2022		*																					
OXIDATION-REDUCTION POTENTIAL																							
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 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				*	*			*	*	*	*	*				*	*	*	*	*			

Chart of MCL and Historical UTL Exceedances for the C-746-S&T Landfills (Continued)

Groundwater Flow System	UCRS					URGA										LRGA							
	S	D	D	D	U	S	S	S	S	S	D	D	D	D	U	U	S	D	D	D	U	U	
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
OXIDATION-REDUCTION POTENTIAL																							
Quarter 1, 2009			*				*	*	*				*	*				*	*	*	*		
Quarter 3, 2009			*	*		*											*	*	*	*			
Quarter 4, 2009			*			*			*									*		*			
Quarter 1, 2010	*		*														*	*		*			
Quarter 2, 2010	*		*	*					*			*					*	*	*	*			
Quarter 3, 2010	*		*	*		*											*	*	*	*			
Quarter 4, 2010			*					*			*		*				*	*	*	*			
Quarter 1, 2011	*		*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Quarter 2, 2011	*		*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Quarter 3, 2011	*		*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Quarter 4, 2011	*		*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Quarter 1, 2012	*		*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Quarter 2, 2012	*		*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Quarter 3, 2012	*		*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Quarter 4, 2012			*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Quarter 1, 2013			*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Quarter 2, 2013	*		*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Quarter 3, 2013	*		*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Quarter 4, 2013			*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Quarter 1, 2014			*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Quarter 2, 2014	*		*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Quarter 3, 2014	*		*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Quarter 4, 2014	*		*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Quarter 1, 2015	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Quarter 2, 2015	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Quarter 3, 2015	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Quarter 4, 2015	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Quarter 1, 2016	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Quarter 2, 2016	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Quarter 3, 2016	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Quarter 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	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
PCB-1016																							
Quarter 4, 2003							*	*	*	*							*						
Quarter 3, 2004										*								*					
Quarter 3, 2005							*			*													
Quarter 1, 2006										*													
Quarter 2, 2006										*													
Quarter 4, 2006										*													
Quarter 1, 2007										*		*											
Quarter 2, 2007										*		*											
Quarter 3, 2007										*		*											
Quarter 2, 2008										*		*											
Quarter 3, 2008										*		*											
Quarter 4, 2008										*		*											

Chart of MCL and Historical UTL Exceedances for the C-746-S&T Landfills (Continued)

Groundwater Flow System	UCRS					URGA										LRGA							
	S	D	D	U	U	S	S	S	S	S	D	D	D	U	U	S	D	D	D	U	U		
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
PCB-1016																							
Quarter 1, 2009											*												
Quarter 2, 2009											*												
Quarter 3, 2009											*												
Quarter 4, 2009											*												
Quarter 1, 2010											*												
Quarter 2, 2010											*												
Quarter 3, 2010											*												
Quarter 4, 2010											*												
PCB-1232																							
Quarter 1, 2011											*												
PCB-1248																							
Quarter 2, 2008											*												
PCB-1260																							
Quarter 2, 2006																		*					
pH																							
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 4, 2005										*								*					
Quarter 1, 2006																		*					
Quarter 2, 2006																		*					
Quarter 3, 2006																		*					
Quarter 3, 2007																		*					
Quarter 4, 2007																		*					
Quarter 4, 2008																		*					
Quarter 1, 2009																		*					
Quarter 1, 2011											*							*					
Quarter 2, 2011											*							*					
Quarter 3, 2011											*							*					
Quarter 1, 2012													*					*					
Quarter 1, 2013										*		*						*					
Quarter 4, 2014																		*			*		
Quarter 2, 2016																		*	*				
POTASSIUM																							
Quarter 4, 2002																		*	*				
Quarter 3, 2004																		*					
Quarter 2, 2005																		*					
Quarter 3, 2005																		*					
Quarter 4, 2005																		*					
Quarter 2, 2006																		*					
Quarter 3, 2006																		*					
Quarter 4, 2006																		*					
Quarter 4, 2008																		*					
Quarter 3, 2012																		*					
Quarter 1, 2013																		*					
Quarter 2, 2013																		*					
Quarter 3, 2013																		*					
RADIUM-226																							
Quarter 4, 2002			*									*	*								*		
Quarter 2, 2004																			*				
Quarter 2, 2005									*														
Quarter 1, 2009											*												
Quarter 3, 2014									*		*												
Quarter 4, 2014			*							*								*					
Quarter 1, 2015			*				*			*	*							*					
Quarter 2, 2015			*				*		*	*	*							*					
Quarter 3, 2015			*				*		*	*	*							*					

Chart of MCL and Historical UTL Exceedances for the C-746-S&T Landfills (Continued)

Groundwater Flow System	UCRS					URGA										LRGA							
	S	D	D	D	U	S	S	S	S	S	D	D	D	D	U	U	S	D	D	D	U	U	
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
RADIUM-226																							
Quarter 4, 2015					*	*									*	*	*					*	*
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 4, 2018													*				*						
Quarter 1, 2020																	*						
Quarter 2, 2020															*								
RADIUM-228																							
Quarter 2, 2005																							
Quarter 3, 2005																							
Quarter 4, 2005																							
Quarter 1, 2006																							
SELENIUM																							
Quarter 4, 2002																							
Quarter 1, 2003																							
Quarter 2, 2003																							
Quarter 3, 2003																							
Quarter 4, 2003																							
SODIUM																							
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 3, 2008																							
Quarter 4, 2008																							
Quarter 1, 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 4, 2011																							
Quarter 1, 2012																							
Quarter 3, 2012																							
Quarter 4, 2012																							

Chart of MCL and Historical UTL Exceedances for the C-746-S&T Landfills (Continued)

Groundwater Flow System	UCRS					URGA										LRGA							
	S	D	D	D	U	S	S	S	S	S	S	D	D	D	U	U	S	D	D	D	U	U	
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
SODIUM																							
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 2, 2016												*											
Quarter 3, 2016												*										*	
Quarter 1, 2017											*	*	*	*					*				
Quarter 2, 2017									*	*	*	*											
Quarter 2, 2018												*	*										
Quarter 3, 2018													*	*									
Quarter 1, 2019												*	*										
Quarter 2, 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 4, 2023											*	*	*										
STRONTIUM-90																							
Quarter 2, 2003											■												
Quarter 1, 2004											■												
SULFATE																							
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	*								*	*	*	*	*			*	*	*	*	*	*		

Chart of MCL and Historical UTL Exceedances for the C-746-S&T Landfills (Continued)

Groundwater Flow System	UCRS					URGA										LRGA							
	S	D	D	D	U	S	S	S	S	S	S	D	D	D	D	U	U	S	D	D	D	U	U
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
SULFATE																							
Quarter 2, 2010									*	*	*	*					*	*	*	*			
Quarter 3, 2010										*	*	*					*	*	*	*			
Quarter 4, 2010	*									*	*	*					*	*	*	*			
Quarter 1, 2011	*									*	*	*					*	*	*	*			
Quarter 2, 2011	*									*	*	*	*				*	*	*	*			
Quarter 3, 2011	*									*	*	*	*				*	*	*	*			
Quarter 4, 2011	*									*	*	*					*	*	*	*			
Quarter 1, 2012	*									*	*	*					*	*	*	*			
Quarter 2, 2012	*									*	*	*					*	*	*	*			
Quarter 3, 2012	*									*	*	*					*	*	*	*			
Quarter 4, 2012										*	*	*					*	*	*	*			
Quarter 1, 2013										*	*	*					*	*	*	*			
Quarter 2, 2013										*	*	*	*				*	*	*	*			
Quarter 3, 2013										*	*	*	*				*	*	*	*			
Quarter 4, 2013										*	*	*					*	*	*	*			
Quarter 1, 2014								*		*	*	*					*	*	*	*			
Quarter 2, 2014										*	*	*	*				*	*	*	*			
Quarter 3, 2014										*	*	*	*				*	*	*	*			
Quarter 4, 2014										*	*	*					*	*	*	*			
Quarter 1, 2015										*	*	*					*	*	*	*			
Quarter 2, 2015										*	*	*	*	*	*		*	*	*	*			
Quarter 3, 2015								*		*	*	*	*	*	*		*	*	*	*			
Quarter 4, 2015										*	*	*	*				*	*	*	*			
Quarter 1, 2016								*		*	*	*	*				*	*	*	*			
Quarter 2, 2016								*		*	*	*	*	*	*		*	*	*	*			
Quarter 3, 2016								*		*	*	*	*	*	*		*	*	*	*			
Quarter 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										*	*	*	*	*	*		*	*	*	*		*	
TECHNETIUM-99																							
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			*							*	*	*							*	*	*		

Chart of MCL and Historical UTL Exceedances for the C-746-S&T Landfills (Continued)

Groundwater Flow System	UCRS					URGA										LRGA							
	S	D	D	U		S	S	S	S	S	S	D	D	D	U	U	S	D	D	D	U	U	
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
TECHNETIUM-99																							
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			*							*	*	*	*				*	*	*	*			
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			*							*	*	*	*				*	*	*	*			

Chart of MCL and Historical UTL Exceedances for the C-746-S&T Landfills (Continued)

Groundwater Flow System	UCRS					URGA										LRGA							
	S	D	D	D	U	S	S	S	S	S	D	D	D	D	U	U	S	D	D	D	U	U	
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
TECHNETIUM-99																							
Quarter 1, 2022			*								*	*	*	*									
Quarter 2, 2022			*								*	*	*	*						*			
Quarter 3, 2022			*								*	*	*										
Quarter 4, 2022			*								*	*	*							*			
Quarter 1, 2023											*	*	*	*									
Quarter 2, 2023			*								*	*	*	*						*			
Quarter 3, 2023			*								*	*	*	*						*			
Quarter 4, 2023											*	*	*	*						*			
THORIUM-230																							
Quarter 1, 2012	*									*					*								
Quarter 4, 2014	*		*							*													
Quarter 3, 2015	*									*	*				*								
Quarter 1, 2017			*							*													
THORIUM-234																							
Quarter 2, 2003						*				*					*								
Quarter 4, 2007										*													
TOLUENE																							
Quarter 2, 2014										*	*		*										
TOTAL ORGANIC CARBON																							
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 4, 2006																				*			*
Quarter 1, 2007	*									*													*
Quarter 3, 2007	*					*	*	*	*	*			*	*						*			*
Quarter 2, 2011											*												*
Quarter 3, 2012	*																						*
Quarter 3, 2016																				*			*
TOTAL ORGANIC HALIDES																							
Quarter 4, 2002																				*	*		*
Quarter 1, 2003				*																*	*		*
Quarter 3, 2003				*																			*
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 4, 2006																				*			*
Quarter 1, 2007	*																						*
Quarter 2, 2007	*																						*
Quarter 3, 2007	*																						*
Quarter 4, 2007	*																						*
Quarter 1, 2008	*																						*
Quarter 4, 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	*																						*

Chart of MCL and Historical UTL Exceedances for the C-746-S&T Landfills (Continued)

Groundwater Flow System	UCRS					URGA										LRGA							
	S	D	D	D	U	S	S	S	S	S	S	D	D	D	D	U	U	S	D	D	D	D	U
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
TOTAL ORGANIC HALIDES																							
Quarter 4, 2010	*																						
Quarter 1, 2011	*																						
Quarter 3, 2013																					*		
TRICHLOROETHENE																							
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 2, 2007																							
Quarter 3, 2007																							
Quarter 4, 2007																							
Quarter 1, 2008																							
Quarter 2, 2008																							
Quarter 3, 2008																							
Quarter 4, 2008																							
Quarter 1, 2009																							
Quarter 2, 2009																							
Quarter 3, 2009																							
Quarter 4, 2009																							
Quarter 1, 2010																							
Quarter 2, 2010																							
Quarter 3, 2010																							
Quarter 4, 2010																							
Quarter 1, 2011																							
Quarter 2, 2011																							
Quarter 3, 2011																							
Quarter 4, 2011																							
Quarter 1, 2012																							
Quarter 2, 2012																							
Quarter 3, 2012																							
Quarter 4, 2012																							
Quarter 1, 2013																							
Quarter 2, 2013																							
Quarter 3, 2013																							
Quarter 4, 2013																							
Quarter 1, 2014																							
Quarter 2, 2014																							
Quarter 3, 2014																							
Quarter 4, 2014																							
Quarter 1, 2015																							
Quarter 2, 2015																							
Quarter 3, 2015																							
Quarter 4, 2015																							
Quarter 1, 2016																							
Quarter 2, 2016																							
Quarter 3, 2016																							
Quarter 4, 2016																							

Chart of MCL and Historical UTL Exceedances for the C-746-S&T Landfills (Continued)

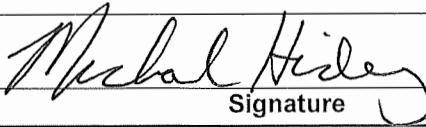
Groundwater Flow System	UCRS					URGA										LRGA							
	S	D	D	D	U	S	S	S	S	S	D	D	D	D	U	U	S	D	D	D	D	U	U
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
TRICHLOROETHENE																							
Quarter 1, 2017												■		■		■			■		■		
Quarter 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											■				■				■		■	■	
TURBIDITY																							
Quarter 4, 2002																						*	
Quarter 1, 2003								*				*	*										
URANIUM																							
Quarter 4, 2002																		*	*				
Quarter 1, 2003																		*	*				
Quarter 4, 2003								*		*									*				
Quarter 1, 2004								*	*	*			*				*						
Quarter 4, 2004																	*						
Quarter 4, 2006																		*		*			
ZINC																							
Quarter 3, 2003												*											
Quarter 4, 2003								*		*		*											
Quarter 4, 2004								*															
Quarter 4, 2007								*	*	*													
* Statistical test results indicate an elevated concentration (i.e., a statistically significant increase).																							
■ 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																							
S = Sidegradient; D = Downgradient; U = Upgradient																							

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX H
METHANE MONITORING DATA

THIS PAGE INTENTIONALLY LEFT BLANK

CP3-WM-0017-F03 - C-746-S & T LANDFILL METHANE MONITORING REPORT

Date:	November 7, 2023	Time:	1300	Monitor:	Michael Hideg													
Weather Conditions: Mostly Sunny, Approximately 78° F, humidity: 56%																		
Monitoring Equipment: Multi RAE – Serial # 4495																		
Monitoring Location					Reading (% LEL)													
Ogden Landing Road Entrance	Checked at ground level				0													
North Landfill Gate	Checked at ground level				0													
West Side of Landfill: North 37° 07.652' West 88° 48.029'	Checked at ground level				0													
East Side of Landfill: North 37° 07.628' West 88° 47.798'	Checked at ground level				0													
Cell 1 Gas Vent (17)	1 0	2 0	3 0	4 0	5 0	6 0	7 0	8 0	9 0	10 0	11 0	12 0	13 0	14 0	15 0	16 0	17 0	0
Cell 2 Gas Vent (3)	1 0	2 0	3 0															0
Cell 3 Gas Vent (7)	1 0	2 0	3 0	4 0	5 0	6 0	7 0											0
Landfill Office	Checked at ground level				0													
Suspect or Problem Areas	None noted				N/A													
Remarks: All gas vents checked 1" from opening.																		
Performed by:					11/13/23 Date													
	Signature																	

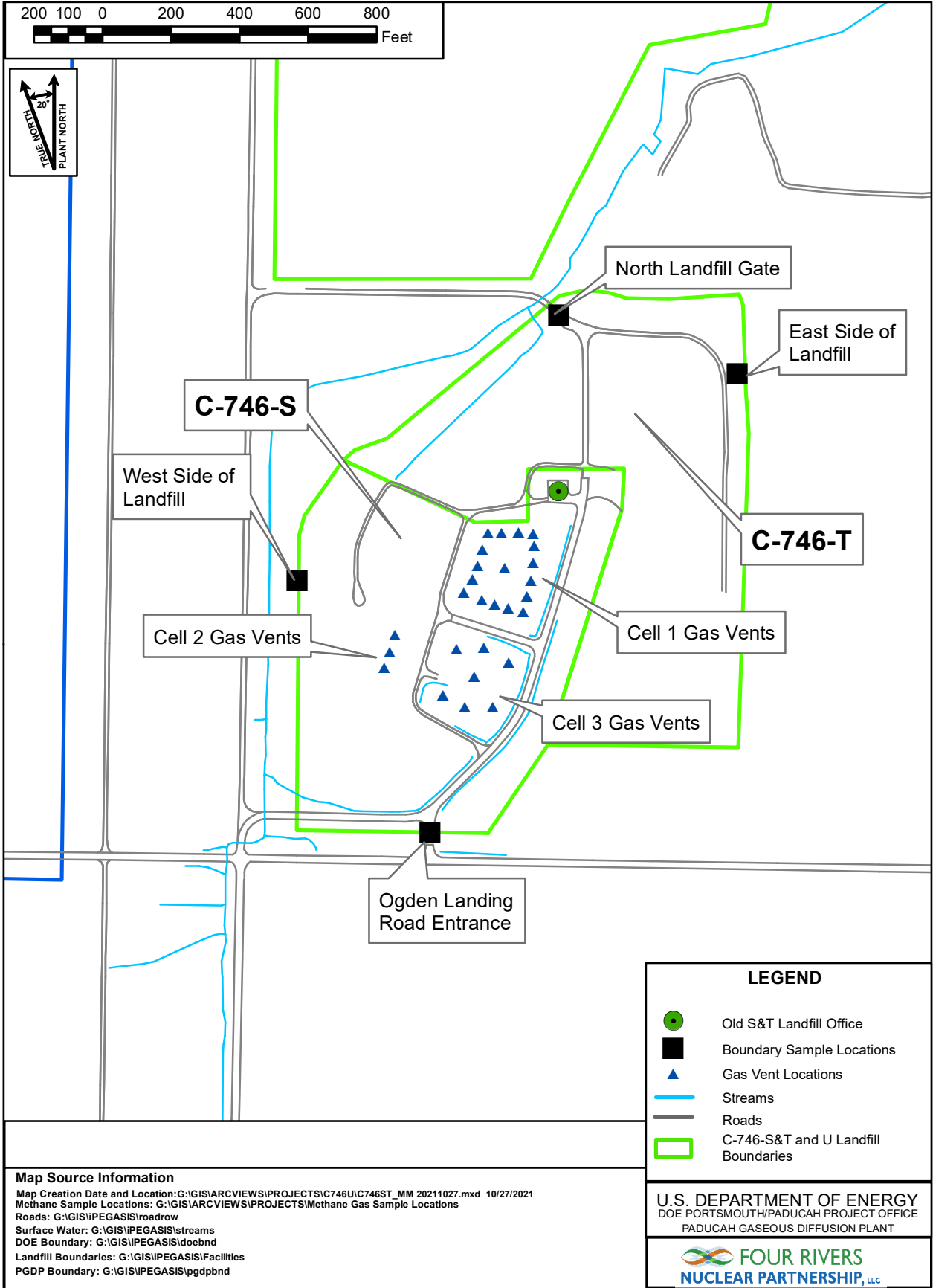


Figure H.1. C-746-S&T Landfill Methane Monitoring Locations

APPENDIX I

SURFACE WATER ANALYSES AND LABORATORY REPORTS

THIS PAGE INTENTIONALLY LEFT BLANK

**Paducah OREIS
SURFACE WATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045

Sampling Point: L135 UPSTREAM **Period:** 4th Quarter 2023

SAMPLE ID: L135DSS1-24 Sample Type: FR

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Chloride	W	9.93	mg/L	0.2	10/29/2023			EPA-300.0	X
Sulfate	W	19.2	mg/L	0.4	10/29/2023			EPA-300.0	X
Iron		0.668	mg/L	0.1	10/29/2023			EPA-200.8	X
Sodium		8.49	mg/L	0.25	10/29/2023			EPA-200.8	X
Uranium		0.00672	mg/L	0.0002	10/29/2023			EPA-200.8	X
Alpha activity	U	4.65	pCi/L	8.16	10/29/2023	5.12	5.17	SW846-9310	X
Beta activity		25.3	pCi/L	10.3	10/29/2023	8.31	9.29	SW846-9310	X
Dissolved Solids		155	mg/L	10	10/29/2023			EPA-160.1	X
Suspended Solids		38.5	mg/L	2.5	10/29/2023			EPA-160.2	X
Chemical Oxygen Demand (COD)		63.6	mg/L	20	10/29/2023			EPA-410.4	X
Total Solids		218	mg/L	10	10/29/2023			SM-2540 B 17	X
Total Organic Carbon (TOC)		16.7	mg/L	2	10/29/2023			SW846-9060A	X

**Paducah OREIS
SURFACE WATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045

Sampling Point: L135 UPSTREAM **Period:** 4th Quarter 2023

SAMPLE ID: L135SS1-24 Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Chloride	W	9.91	mg/L	0.2	10/29/2023			EPA-300.0	X
Sulfate	W	19	mg/L	0.4	10/29/2023			EPA-300.0	X
Conductivity		253	µmhos/cm		10/29/2023				X
pH		7.55	Std Unit		10/29/2023				X
Iron		0.748	mg/L	0.1	10/29/2023			EPA-200.8	X
Sodium		7.75	mg/L	0.25	10/29/2023			EPA-200.8	X
Uranium		0.00671	mg/L	0.0002	10/29/2023			EPA-200.8	X
Alpha activity	U	6	pCi/L	9.45	10/29/2023	6.04	6.12	SW846-9310	X
Beta activity		22	pCi/L	14.2	10/29/2023	9.75	10.4	SW846-9310	X
Dissolved Solids		173	mg/L	10	10/29/2023			EPA-160.1	X
Suspended Solids		36.2	mg/L	2.5	10/29/2023			EPA-160.2	X
Chemical Oxygen Demand (COD)		54.5	mg/L	20	10/29/2023			EPA-410.4	X
Total Solids		216	mg/L	10	10/29/2023			SM-2540 B 17	X
Total Organic Carbon (TOC)		17.1	mg/L	2	10/29/2023			SW846-9060A	X

**Paducah OREIS
SURFACE WATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045

Sampling Point: L136 INSTREAM **Period:** 4th Quarter 2023

SAMPLE ID: L136SS1-24 Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Chloride	W	3.57	mg/L	0.2	10/29/2023			EPA-300.0	X
Sulfate	W	14.6	mg/L	0.4	10/29/2023			EPA-300.0	X
Conductivity		266	µmhos/cm		10/29/2023				X
pH		7.51	Std Unit		10/29/2023				X
Iron	J	0.0658	mg/L	0.1	10/29/2023			EPA-200.8	X
Sodium		1.53	mg/L	0.25	10/29/2023			EPA-200.8	X
Uranium		0.000598	mg/L	0.0002	10/29/2023			EPA-200.8	X
Alpha activity	U	0.351	pCi/L	8.88	10/29/2023	3.93	3.93	SW846-9310	X
Beta activity		15.8	pCi/L	7.07	10/29/2023	6.02	6.55	SW846-9310	X
Dissolved Solids		166	mg/L	10	10/29/2023			EPA-160.1	X
Suspended Solids	J	2.4	mg/L	2.5	10/29/2023			EPA-160.2	X
Chemical Oxygen Demand (COD)		63.6	mg/L	20	10/29/2023			EPA-410.4	X
Total Solids		202	mg/L	10	10/29/2023			SM-2540 B 17	X
Total Organic Carbon (TOC)		23.1	mg/L	5	10/29/2023			SW846-9060A	X

**Paducah OREIS
SURFACE WATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045

Sampling Point: L154 INSTREAM **Period:** 4th Quarter 2023

SAMPLE ID: L154US1-24 Sample Type: REG

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Chloride	W	5.77	mg/L	0.2	10/29/2023			EPA-300.0	X
Sulfate	W	5.5	mg/L	0.4	10/29/2023			EPA-300.0	X
Conductivity		261	µmhos/cm		10/29/2023				X
pH		6.94	Std Unit		10/29/2023				X
Iron		0.676	mg/L	0.1	10/29/2023			EPA-200.8	X
Sodium		2.3	mg/L	0.25	10/29/2023			EPA-200.8	X
Uranium		0.00101	mg/L	0.0002	10/29/2023			EPA-200.8	X
Alpha activity	U	-0.465	pCi/L	8.19	10/29/2023	3.28	3.28	SW846-9310	X
Beta activity		26.3	pCi/L	10.2	10/29/2023	8.22	9.32	SW846-9310	X
Dissolved Solids		159	mg/L	10	10/29/2023			EPA-160.1	X
Suspended Solids		10	mg/L	6.25	10/29/2023			EPA-160.2	X
Chemical Oxygen Demand (COD)		139	mg/L	20	10/29/2023			EPA-410.4	X
Total Solids		171	mg/L	10	10/29/2023			SM-2540 B 17	X
Total Organic Carbon (TOC)		44.3	mg/L	10	10/29/2023			SW846-9060A	X

**Paducah OREIS
SURFACE WATER MONITORING REPORT**

Facility: C-746-S&T Landfill **County:** McCracken **Permit #:** SW07300014,SW07300015,SW07300045

Sampling Point: QC **Period:** 4th Quarter 2023

SAMPLE ID: FB1SS1-24 **Sample Typ** FB

Parameter	Qualifier	Result	Units	Reporting Limit	Date Collected	Counting Error (+/-)	TPU	Method	Validation
Iron	U	0.1	mg/L	0.1	10/29/2023			EPA-200.8	X
Sodium	U	0.25	mg/L	0.25	10/29/2023			EPA-200.8	X
Uranium	U	0.0002	mg/L	0.0002	10/29/2023			EPA-200.8	X
Alpha activity	U	1.37	pCi/L	7.21	10/29/2023	3.59	3.59	SW846-9310	X
Beta activity	U	-0.187	pCi/L	8.44	10/29/2023	4.33	4.33	SW846-9310	X

Qualifier Code Definitions	
B	Analyte found in the associated blank
H	Analysis performed outside holding time requirement
J	Estimated value
L	LCS 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 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	Analyte analyzed for but not detected at or below the lowest concentration reported.
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	

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

THIS PAGE INTENTIONALLY LEFT BLANK

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

Company : Four Rivers Nuclear Partnership, LLC
 Address : 5600 Hobbs Road
 Kevil, Kentucky 42053
 Contact: Ms. Jaime Morrow
 Project: C-746-S&T Landfill Surface Water Quarterly(SS24-01)

Client Sample ID: L135DSS1-24	Project: FRNP00515
Sample ID: 643249001	Client ID: FRNP005
Matrix: WS	
Collect Date: 29-OCT-23 12:23	
Receive Date: 31-OCT-23	
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		16.7	0.330	2.00	mg/L		1	RM3	11/04/23	0624	2517921	1
Ion Chromatography												
EPA 300.0 Anions (Chloride and Sulfate) "As Received"												
Chloride	W	9.93	0.0670	0.200	mg/L		1	HXC1	10/31/23	2134	2517328	2
Sulfate	W	19.2	0.133	0.400	mg/L		1					
Metals Analysis-ICP-MS												
200.8/200.2 MIMICP Metals- Fe Na U "As Received"												
Iron		0.668	0.0330	0.100	mg/L	1.00	1	RM4	11/16/23	2205	2517370	3
Sodium		8.49	0.0800	0.250	mg/L	1.00	1					
Uranium		0.00672	0.0000670	0.000200	mg/L	1.00	1					
Solids Analysis												
EPA 160.1 Solids, Dissolved "As Received"												
Total Dissolved Solids		155	2.38	10.0	mg/L			CH6	11/01/23	1313	2517443	4
EPA 160.2 Total Suspended Liq "As Received"												
Total Suspended Solids		38.5	0.570	2.50	mg/L			CH6	11/03/23	1015	2518322	5
SM 2540 B Solids, Total "As Received"												
Total Solids		218	6.29	10.0	mg/L			CH6	11/02/23	0844	2518320	6
Spectrometric Analysis												
EPA 410.4 Chem. Oxygen Demand "As Received"												
COD		63.6	8.95	20.0	mg/L		1	JW2	10/31/23	1629	2517168	7

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 200.2	ICP-MS 200.2 PREP	JD2	11/14/23	0740	2517369

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Surface Water Quarterly(SS24-01)

Client Sample ID: L135DSS1-24 Project: FRNP00515
Sample ID: 643249001 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 160.1										
5	EPA 160.2										
6	SM 2540B										
7	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: February 1, 2024

Company : Four Rivers Nuclear Partnership, LLC
Address : 5600 Hobbs Road
Kevil, Kentucky 42053
Contact: Ms. Jaime Morrow
Project: C-746-S&T Landfill Surface Water Quarterly(SS24-01)

Client Sample ID: L135SS1-24 Project: FRNP00515
Sample ID: 643249002 Client ID: FRNP005
Matrix: WS
Collect Date: 29-OCT-23 12:23
Receive Date: 31-OCT-23
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		17.1	0.330	2.00	mg/L		1	RM3	11/04/23	0704	2517921	1
Ion Chromatography												
EPA 300.0 Anions (Chloride and Sulfate) "As Received"												
Chloride	W	9.91	0.0670	0.200	mg/L		1	HXC1	10/31/23	2205	2517328	2
Sulfate	W	19.0	0.133	0.400	mg/L		1					
Metals Analysis-ICP-MS												
200.8/200.2 MIMICP Metals- Fe Na U "As Received"												
Iron		0.748	0.0330	0.100	mg/L	1.00	1	RM4	11/16/23	2209	2517370	3
Sodium		7.75	0.0800	0.250	mg/L	1.00	1					
Uranium		0.00671	0.0000670	0.000200	mg/L	1.00	1					
Solids Analysis												
EPA 160.1 Solids, Dissolved "As Received"												
Total Dissolved Solids		173	2.38	10.0	mg/L			CH6	11/01/23	1313	2517443	4
EPA 160.2 Total Suspended Liq "As Received"												
Total Suspended Solids		36.2	0.570	2.50	mg/L			CH6	11/03/23	1015	2518322	5
SM 2540 B Solids, Total "As Received"												
Total Solids		216	6.29	10.0	mg/L			CH6	11/02/23	0844	2518320	6
Spectrometric Analysis												
EPA 410.4 Chem. Oxygen Demand "As Received"												
COD		54.5	8.95	20.0	mg/L		1	JW2	10/31/23	1629	2517168	7

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 200.2	ICP-MS 200.2 PREP	JD2	11/14/23	0740	2517369

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Surface Water Quarterly(SS24-01)

Client Sample ID: L136SS1-24

Project: FRNP00515

Sample ID: 643249003

Client ID: FRNP005

Matrix: WS

Collect Date: 29-OCT-23 12:34

Receive Date: 31-OCT-23

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		23.1	1.65	5.00	mg/L		5	RM3	11/04/23	0744	2517921	1
Ion Chromatography												
EPA 300.0 Anions (Chloride and Sulfate) "As Received"												
Chloride	W	3.57	0.0670	0.200	mg/L		1	HXC1	10/31/23	2337	2517328	2
Sulfate	W	14.6	0.133	0.400	mg/L		1					
Metals Analysis-ICP-MS												
200.8/200.2 MIMICP Metals- Fe Na U "As Received"												
Iron	J	0.0658	0.0330	0.100	mg/L	1.00	1	RM4	11/16/23	2231	2517370	3
Sodium		1.53	0.0800	0.250	mg/L	1.00	1					
Uranium		0.000598	0.0000670	0.000200	mg/L	1.00	1					
Solids Analysis												
EPA 160.1 Solids, Dissolved "As Received"												
Total Dissolved Solids		166	2.38	10.0	mg/L			CH6	11/01/23	1313	2517443	4
EPA 160.2 Total Suspended Liq "As Received"												
Total Suspended Solids	J	2.40	0.570	2.50	mg/L			CH6	11/03/23	1015	2518322	5
SM 2540 B Solids, Total "As Received"												
Total Solids		202	6.29	10.0	mg/L			CH6	11/02/23	0844	2518320	6
Spectrometric Analysis												
EPA 410.4 Chem. Oxygen Demand "As Received"												
COD		63.6	8.95	20.0	mg/L		1	JW2	10/31/23	1629	2517168	7

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 200.2	ICP-MS 200.2 PREP	JD2	11/14/23	0740	2517369

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 1, 2024

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

Kevil, Kentucky 42053

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Surface Water Quarterly(SS24-01)

Client Sample ID: FB1SS1-24

Project: FRNP00515

Sample ID: 643249004

Client ID: FRNP005

Matrix: WATER

Collect Date: 29-OCT-23 12:28

Receive Date: 31-OCT-23

Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS												
200.8/200.2 MIMICP Metals- Fe Na U "As Received"												
Iron	U	0.100	0.0330	0.100	mg/L	1.00	1	RM4	11/16/23	2235	2517370	1
Sodium	U	0.250	0.0800	0.250	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 200.2	ICP-MS 200.2 PREP	JD2	11/14/23	0740	2517369

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 200.8	

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

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

Kevil, Kentucky 42053

Report Date: January 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Surface Water Quarterly(SS24-01)

Client Sample ID: L135DSS1-24
Sample ID: 643249001
Matrix: WS
Collect Date: 29-OCT-23
Receive Date: 31-OCT-23
Collector: Client

Project: FRNP00515
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	4.65	+/-5.12	8.16	+/-5.17	15.0	pCi/L			KP1	11/15/23	1209	2520317	1
Beta		25.3	+/-8.31	10.3	+/-9.29	50.0	pCi/L							

The following Analytical Methods were performed

Method	Description
--------	-------------

1	EPA 900.0/SW846 9310
---	----------------------

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
---------------------------	------	----------	-----------	-------------------

Notes:
The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Mtd.: Method
DL: Detection Limit	PF: Prep Factor
Lc/LC: Critical Level	RL: Reporting Limit
MDA: Minimum Detectable Activity	TPU: Total Propagated Uncertainty
MDC: Minimum Detectable Concentration	

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Kevil, Kentucky 42053

Report Date: January 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Surface Water Quarterly(SS24-01)

Client Sample ID: L135SS1-24

Project: FRNP00515

Sample ID: 643249002

Client ID: FRNP005

Matrix: WS

Collect Date: 29-OCT-23

Receive Date: 31-OCT-23

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A/B, liquid "As Received"</i>														
Alpha	U	6.00	+/-6.04	9.45	+/-6.12	15.0	pCi/L			KP1	11/15/23	1209	2520317	1
Beta		22.0	+/-9.75	14.2	+/-10.4	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: January 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Surface Water Quarterly(SS24-01)

Client Sample ID: L136SS1-24

Project: FRNP00515

Sample ID: 643249003

Client ID: FRNP005

Matrix: WS

Collect Date: 29-OCT-23

Receive Date: 31-OCT-23

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A/B, liquid "As Received"</i>														
Alpha	U	0.351	+/-3.93	8.88	+/-3.93	15.0	pCi/L			KP1	11/15/23	1209	2520317	1
Beta		15.8	+/-6.02	7.07	+/-6.55	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: January 31, 2024

Contact: Ms. Jaime Morrow

Project: C-746-S&T Landfill Surface Water Quarterly(SS24-01)

Client Sample ID: FB1SS1-24

Project: FRNP00515

Sample ID: 643249004

Client ID: FRNP005

Matrix: WATER

Collect Date: 29-OCT-23

Receive Date: 31-OCT-23

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A/B, liquid "As Received"</i>														
Alpha	U	1.37	+/-3.59	7.21	+/-3.59	15.0	pCi/L			KP1	11/15/23	1209	2520317	1
Beta	U	-0.187	+/-4.33	8.44	+/-4.33	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

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX J

ANALYTICAL LABORATORY CERTIFICATION

THIS PAGE INTENTIONALLY LEFT BLANK



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.

A blue ink signature of Mr. Trace McInturff, written over a horizontal line.

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.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX K
LABORATORY ANALYTICAL METHODS

THIS PAGE INTENTIONALLY LEFT BLANK

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)

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX L

MICRO-PURGING STABILITY PARAMETERS

THIS PAGE INTENTIONALLY LEFT BLANK

**Micro-Purge Stability Parameters
for the C-746-S&T Landfills**

	Temperature (°F)	Conductivity (umho/cm)	pH (Std. Unit)	Dissolved oxygen (mg/L)	Turbidity (NTU)		Temperature (°F)	Conductivity (umho/cm)	pH (Std. Unit)	Dissolved oxygen (mg/L)	Turbidity (NTU)
MW220						MW221					
Date Collected:10/16/23						Date Collected:10/16/23					
1157	61.7	321	6.15	6.07	3.65	0727	57.4	375	6.13	5.84	2.80
1200	61.8	325	6.13	6.17	3.50	0730	57.3	372	6.14	5.71	2.66
1203	61.9	323	6.12	6.14	3.41	0733	57.1	371	6.14	5.76	2.44
MW222						MW223					
Date Collected:10/16/23						Date Collected:10/16/23					
0904	60.3	311	6.17	3.78	3.01	0818	59.7	363	6.16	3.66	2.62
0907	60.2	314	6.19	3.69	3.06	0821	58.1	362	6.19	3.53	2.40
0910	60.3	313	6.20	3.71	3.24	0824	58.5	362	6.19	3.59	2.37
MW224						MW369					
Date Collected:10/16/23						Date Collected:10/11/23					
0956	61.8	398	6.19	2.77	2.98	0734	58.7	339	6.17	6.56	7.01
0959	62.1	400	6.17	2.30	3.22	0737	58.8	341	6.04	3.53	6.98
1002	62.2	401	6.14	2.24	2.99	0740	58.7	345	6.02	3.49	6.84
MW370						MW372					
Date Collected:10/11/23						Date Collected:10/11/23					
0821	59.7	449	6.07	5.98	4.79	1010	60.4	738	6.27	5.84	4.54
0824	59.6	449	6.12	4.62	4.70	1013	60.6	743	6.17	3.29	4.10
0827	59.7	450	6.10	4.64	4.66	1016	60.6	747	6.13	3.24	4.00
MW373						MW384					
Date Collected:10/11/23						Date Collected:10/19/23					
1228	64.8	895	6.30	2.69	3.76	0703	59.9	508	6.14	5.16	18.12
1231	64.9	897	6.20	2.06	3.61	0706	59.8	507	6.11	4.24	20.96
1234	64.7	898	6.14	2.00	3.68	0709	59.9	508	6.10	4.26	21.84
MW385						MW386					
Date Collected:10/19/23						Date Collected:10/19/23					
0754	59.9	463	6.44	1.79	5.49	0856	61.3	580	6.73	1.50	4.02
0757	59.8	464	6.49	1.41	4.56	0859	61.3	580	6.70	1.16	3.95
0800	59.7	462	6.46	1.37	4.33	0902	61.4	579	6.69	1.11	3.87
MW387						MW388					
Date Collected:10/18/23						Date Collected:10/18/23					
1222	66.3	544	6.30	5.11	9.30	1311	64.8	413	6.13	5.56	8.03
1225	66.4	547	6.32	5.03	8.73	1314	65.6	413	6.10	5.50	7.55
1228	66.7	550	6.28	4.97	7.96	1317	66.0	412	6.08	5.42	7.19
MW391						MW392					
Date Collected:10/17/23						Date Collected:10/17/23					
0845	55.7	372	6.00	5.96	5.34	0934	58.6	332	6.03	2.11	5.92
0848	56.0	373	5.93	5.64	5.54	0937	58.7	334	5.99	1.89	5.46
0851	56.1	372	5.90	5.58	5.61	0940	58.9	334	6.00	1.86	5.37
MW393						MW394					
Date Collected:10/17/23						Date Collected:10/17/23					
1224	64.6	440	6.30	4.01	11.44	1314	61.0	406	6.00	6.11	5.56
1227	64.1	442	6.28	2.66	11.11	1317	61.6	404	5.99	5.32	5.36
1230	64.0	440	6.29	2.60	11.07	1320	62.1	403	6.00	5.26	5.24
MW395						MW396					
Date Collected:10/18/23						Date Collected:10/18/23					
0930	59.9	382	6.01	3.91	3.76	0836	59.6	702	6.47	1.77	8.61
0933	60.1	382	6.02	4.13	3.67	0839	59.9	701	6.45	1.08	8.37
0936	60.4	383	6.02	4.19	3.70	0842	59.7	700	6.46	1.00	8.55
MW397											
Date Collected:10/16/23											
1253	61.5	305	6.09	6.99	57.83						
1256	61.6	306	6.07	6.80	57.75						
1259	61.5	309	6.04	6.73	56.91						

THIS PAGE INTENTIONALLY LEFT BLANK