Department of Energy

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August 24, 2023

Mr. Todd Hendricks   PPPO-02-10025291-23B
Division of Waste Management
Kentucky Department for Environmental Protection
300 Sower Boulevard, 2nd Floor
Frankfort, Kentucky 40601

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-U CONTAINED LANDFILL SECOND QUARTER CALENDAR YEAR 2023 (APRIL–JUNE) COMPLIANCE MONITORING REPORT, PADUCAH GASEOUS DIFFUSION PLANT, PADUCAH, KENTUCKY, FRNP-RPT-0295/V2, PERMIT NUMBER SW07300014, SW07300015, SW07300045, AGENCY INTEREST ID NO. 3059

The subject report for the second 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 e-mail distribution (see distribution list). This report is required in accordance with Permit Condition ACTV0006, Special Condition Number 3, of Solid Waste Landfill Permit Number SW07300014, SW07300015, SW07300045 (Permit). This report includes groundwater analytical data, a validation summary, groundwater flow rate and direction determination, figures depicting well locations, and methane monitoring results.

The statistical analyses on the second quarter CY 2023 monitoring well data collected from the C-746-U Landfill were performed in accordance with Monitoring Condition GSTR0001, Standard Requirement 3, using the U.S. Environmental Protection Agency guidance document, *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Final Guidance* (1989). This report also serves as the statistical exceedance notification for the second quarter CY 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
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13:52:31 -05'00'

April Ladd
Paducah Site Lead
Portsmouth/Paducah Project Office

Enclosure:

C-746-U Contained Landfill Second Quarter Calendar Year 2023 (April–June) Compliance Monitoring Report, Paducah Gaseous Diffusion Plant, Paducah, Kentucky, FRNP-RPT-0295/V2

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

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

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

Permit No: SW07300014,
               SW07300015,   Finds/Unit No: Quarter & Year   2nd Qtr. CY 2023
               SW07300045

Please check the following as applicable:

_____ Characterization   __X__ Quarterly   _____ Semiannual   _____ Annual   _____ Assessment

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

                                            _____ Leachate   __X__ Methane Monitoring

This form is to be utilized by those sites required by regulation (Kentucky Waste Management Regulations-401 *KAR* 48:300 and 45:160) or by statute (Kentucky Revised Statues Chapter 224) to conduct groundwater and surface water monitoring under the jurisdiction of the Division of Waste Management. **You must report any indication of contamination within forty-eight (48) hours of making the determination using statistical analyses, direct comparison, or other similar techniques. Submitting the lab report is <u>NOT</u> 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 REDFIELD (Affiliate)
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Date: 2023.08.24 16:52:45 -05'00'

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

APRIL LADD
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Date: 2023.08.24 16:58:54 -05'00'

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

C-746-U Contained Landfill
Second Quarter Calendar Year 2023
(April–June)
Compliance Monitoring Report,
Paducah Gaseous Diffusion Plant,
Paducah, Kentucky

FOUR RIVERS
NUCLEAR PARTNERSHIP, LLC

CLEARED FOR PUBLIC RELEASE

C-746-U Contained Landfill
Second Quarter Calendar Year 2023
(April–June)
Compliance Monitoring Report,
Paducah Gaseous Diffusion Plant,
Paducah, Kentucky

Date Issued—August 2023

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

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CONTENTS

FIGURES

TABLES

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ACRONYMS

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

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1. INTRODUCTION

This report, *C-746-U Contained Landfill Second Quarter Calendar Year 2023 (April–June) Compliance Monitoring Report, Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, is being submitted in accordance with Solid Waste Permit No. SW07300014, SW07300015, SW07300045.

The Groundwater, Surface Water, Leachate, and Methane Monitoring Sample Data Reporting Form is provided in Appendix A. The facility information sheet is provided in Appendix B. Groundwater analytical results are recorded on the Kentucky Division of Waste Management (KDWM) Groundwater Sample Analyses forms, which are presented in Appendix C. The statistical analyses and qualification statement are provided in Appendix D. The groundwater flow rate and direction determinations are provided in Appendix E. Appendix F contains the notifications for all permit required parameters whose concentrations exceed the maximum contaminant level (MCL) for Kentucky solid waste facilities provided in 401 *KAR* 47:030 § 6 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 MCL and historical background UTL exceedances that have occurred, beginning in the third quarter, calendar year (CY) 2002. Methane monitoring results are documented on the approved C-746-U Landfill Methane Monitoring Report form provided in Appendix H. The form includes pertinent remarks/observations as required by 401 *KAR* 48:090 § 5. Surface water analyses and written comments are provided in Appendix I. Analytical laboratory certification is provided in Appendix J. Laboratory analytical methods used to analyze the included data set are provided in Appendix K. Micro-purging stability parameter results are provided in Appendix L.

1.1 BACKGROUND

The C-746-U Landfill is an operating solid waste landfill located north of the Paducah Gaseous Diffusion Plant and north of the C-746-S&T Landfills. Construction and operation of the C-746-U Landfill were permitted in November 1996. The operation is regulated under Solid Waste Landfill Permit No. SW07300014, SW07300015, SW07300045. The permitted C-746-U Landfill area covers about 60 acres and includes a liner and leachate collection system. The C-746-U Landfill currently is operating in Phases 4, 5, and 6, with Phase 7 approved for receipt of waste as of September 27, 2019. A minor permit modification that included upgrades to the leachate storage capacity for Phases 6 and 7 was approved by KDWM on May 21, 2021 (FRNP 2021). Phases 1, 2, and 3 have long-term cover. Phases 8 through 23 have not been constructed.

1.2 MONITORING PERIOD ACTIVITIES

1.2.1 Groundwater Monitoring

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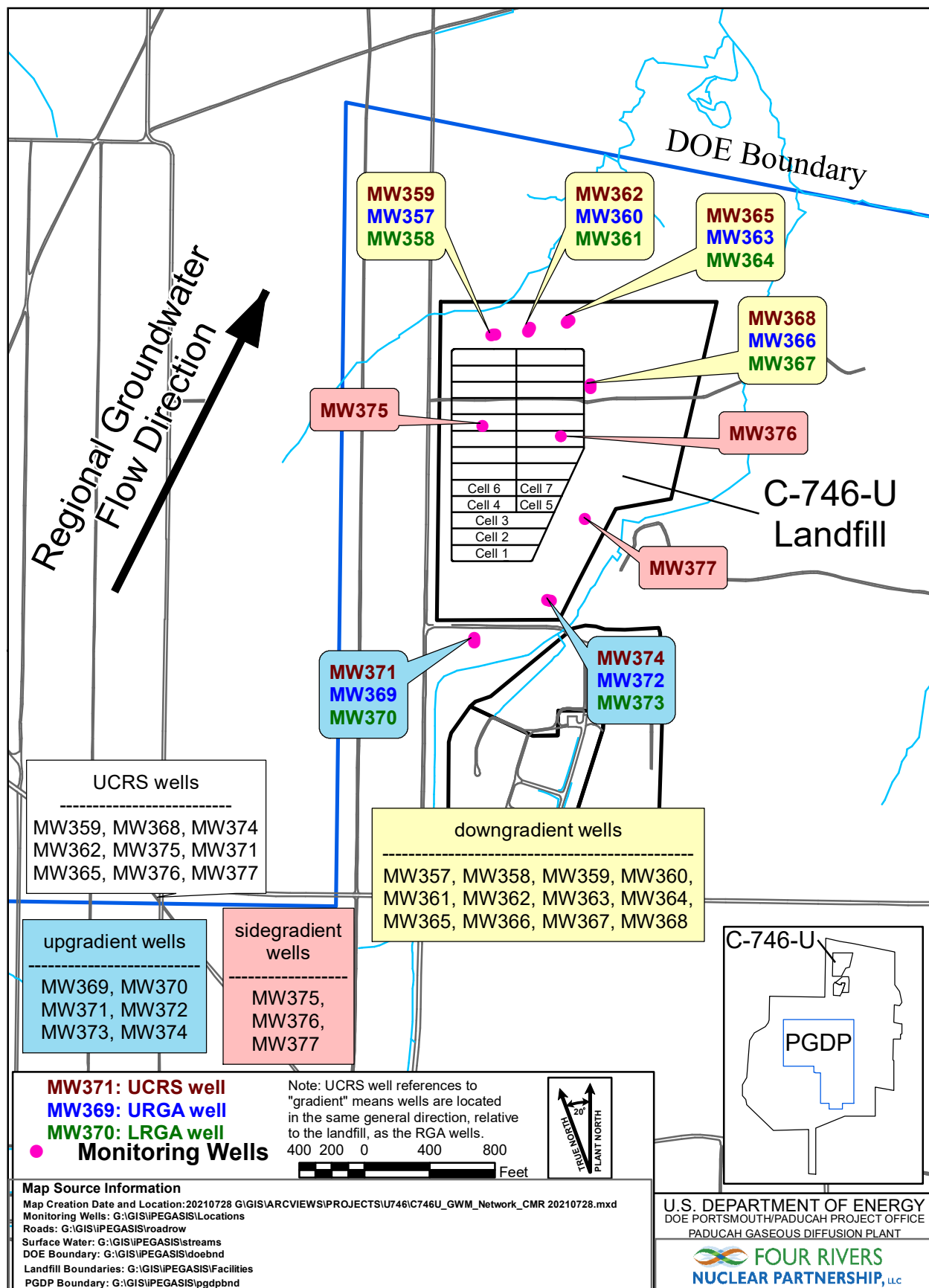
Figure 1. C-746-U Landfill Groundwater Monitoring Well Network

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

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

Groundwater sampling was conducted within the second quarter 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 second quarter 2023 was conducted on April 10 and April 24–25, 2023. The analytical laboratory used U.S. Environmental Protection Agency-approved methods, as applicable. Appropriate sample containers and preservatives were used. The parameters specified in Permit Condition GSTR0001, Special Condition 1, were analyzed for all locations sampled.

The groundwater flow rate and direction determination are provided in Appendix E. Depth-to-water was measured on April 24-25, 2023, in MWs of the C-746-U Landfill (see Appendix E, Table E.1), in MWs of the C-746-S&T Landfills, and in MWs of the surrounding region (shown on Appendix E, Figure E.4). Water level measurements in 39 vicinity wells define the potentiometric surface for the RGA. Typical regional flow in the RGA is northeastward, toward the Ohio River. During April, RGA groundwater flow in the area of the landfill was oriented northeast. The hydraulic gradient for the RGA in the vicinity of the C-746-U Landfill in April was 2.49×10^{-4} ft/ft (see Appendix E, Table E.2). The hydraulic gradients for the URGA and LRGA at the C-746-U Landfill were 3.92×10^{-4} ft/ft and 4.04×10^{-4} ft/ft, respectively (see Appendix E, Table E.2). Calculated groundwater flow rates (average linear velocity) at the C-746-U Landfill range from 0.667 to 1.14 ft/day for the URGA and 0.687 to 1.17 ft/day for the LRGA (see Appendix E, Table E.3).

1.2.2 Methane Monitoring

Methane monitoring was conducted in accordance with 401 *KAR* 48:090 § 5 and the approved Explosive Gas Monitoring Program (KEEC 2011), which is Technical Application Attachment 12, of the Solid Waste Permit. Industrial Hygiene staff monitored for the occurrence of methane in four on-site building locations and four locations along the landfill boundary on June 12, 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-U Landfill Methane Monitoring Report provided in Appendix H.

1.2.3 Surface Water Monitoring

Surface water was monitored, as specified in 401 *KAR* 48:300 § 2, and the approved *Surface Water Monitoring Plan for C-746-U and C-746-S&T Landfills Permit Number SW07300014, SW07300015, SW07300045, Paducah Gaseous Diffusion Plant, Paducah, Kentucky, Agency Interest Number 3059* (FRNP 2021), which is Technical Application Attachment 24 of the Solid Waste Permit. Surface water sampling was performed on May 8, 2023, at three locations monitored for the C-746-U Landfill: (1) instream location L154, (2) downstream location L351, and (3) instream location L150 (Figure 2). Surface water results are provided in Appendix I.

1.3 KEY RESULTS

Groundwater data were evaluated in accordance with the approved Groundwater Monitoring Plan (LATA Kentucky 2014), which is Technical Application Attachment 25, of the Solid Waste Permit. 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 do not have MCLs) with concentrations that exceeded the statistically derived historical background UTL[1] during the second quarter 2023, as well as parameters that exceeded their MCL and also exceeded their historical background UTL. Those constituents (present in downgradient wells) that exceed their historical background UTL were evaluated against their current UTL-derived background using the most recent eight quarters of data from wells considered to be background. Constituents in downgradient wells that exceeded current background UTL are shown on Table 3.

Table 1. Summary of MCL Exceedances

UCRS	URGA	LRGA
None	MW372: Trichloroethene	None

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[1] The UTL comparison for pH uses a two-sided test for both UTLs and LTLs. For the purposes of this report, the reference to "UTL exceedances" also includes the LTL for pH.
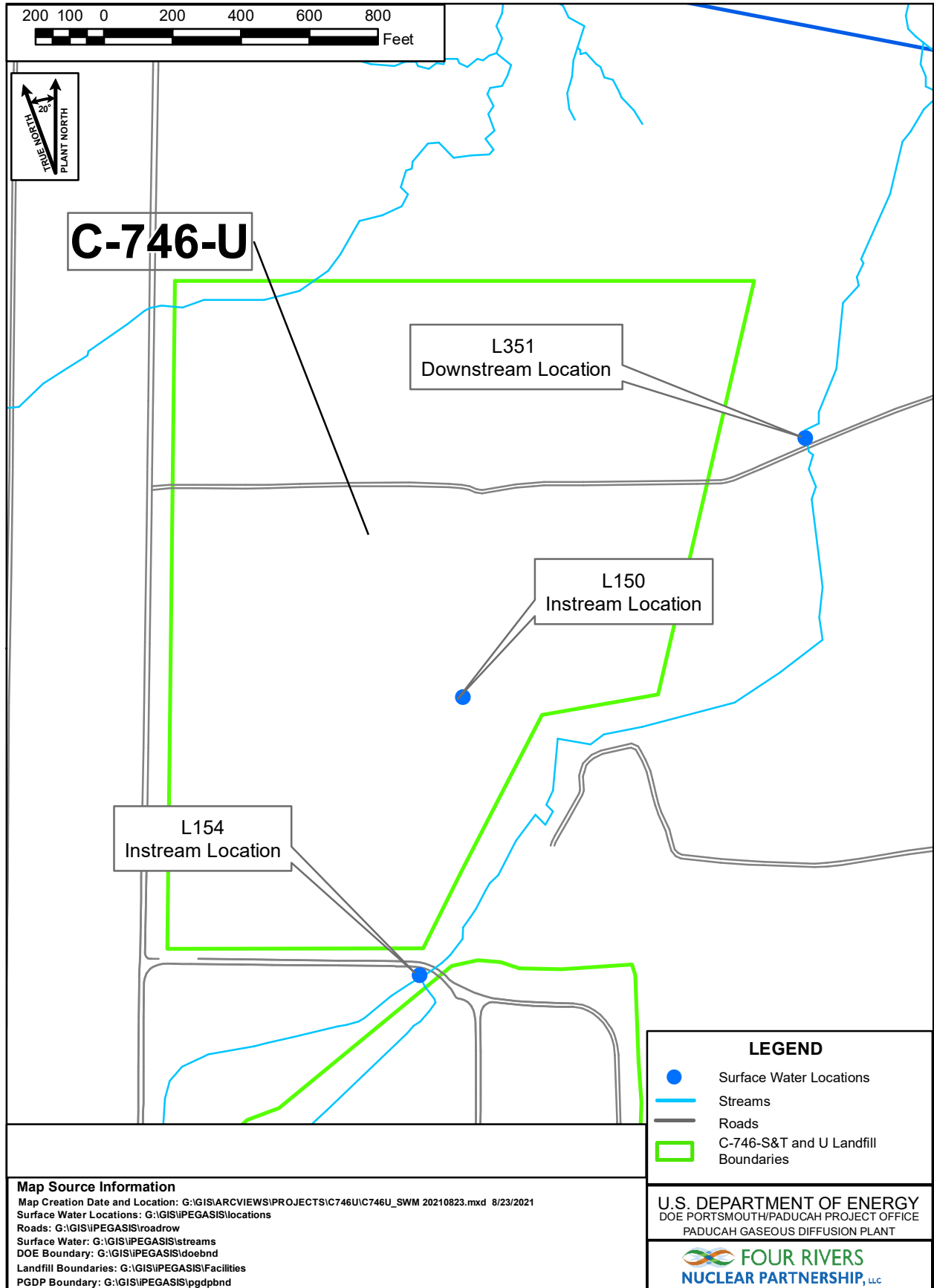
Figure 2. C-746-U Landfill Surface Water Monitoring Locations

Table 2. Exceedances of Statistically Derived Historical Background Concentrations

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

[a] Gradients in the UCRS are downward. UCRS gradient designations are identified using the same gradient reference (relative to the landfill) that is attributed to nearby RGA wells.
[b] Oxidation-reduction potential calibrated as Eh.
Sidegradient wells: MW375, MW376, MW377. Downgradient wells: MW357, MW358, MW359, MW360, MW361, MW362, MW363, MW364, MW365, MW366, MW367, MW368. Upgradient wells: MW369, MW370, MW371, MW372, MW373, MW374.

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

URGA	LRGA
None	MW358: Nickel
	MW364: Technetium-99

The notification of the parameter that exceeded its MCL was submitted electronically to the KDWM, in accordance with 401 *KAR* 48:300 § 7, prior to the submittal of this report.

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

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

The constituents that had exceedances of the statistically derived historical background UTL underwent additional statistical evaluation. The current quarter concentrations were compared to the current background UTLs that were developed using the most recent eight quarters of data from wells identified as background in order to determine if the current downgradient (compliance) well concentrations are consistent with current background values. Table 3 summarizes the evaluation against current background UTL for those constituents present in downgradient RGA wells with historical UTL exceedances. In accordance with the approved Groundwater Monitoring Plan, constituents in downgradient wells that exceed the historical UTL, but do not exceed the current UTL, are considered not to have a

C-746-U Landfill source; therefore, they are Type 1 exceedances—not attributable to the C-746-U Landfill. Except for nickel in MW358 and technetium-99 in MW364, all UTL exceedances reported for this quarter were evaluated and considered to be Type 1 exceedances—not attributable to the C-746-U Landfill.

Nickel in downgradient LRGA well MW358 and technetium-99 in downgradient LRGA well MW364 exceeded both the historical background UTL and the current background UTL; therefore, these results are preliminarily considered to be Type 2 exceedances. To evaluate the preliminary Type 2 exceedances further, the parameters were subjected to the Mann-Kendall statistical test for trends using the most recent eight quarters of data. The results are summarized in Table 4. Both nickel in MW358 and technetium-99 in MW364 indicated no trend and are considered to be Type 1 exceedances—not attributable to the C-746-U Landfill.

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

Location	Well ID	Parameter	Sample Size	Alpha[1]	p-Value[2]	S[3]	Decision[4]
C-746-U	MW358	Nickel	8	0.05	0.054	14	No Trend
Landfill	MW364	Technetium-99	8	0.05	0.36	5	No Trend

[1] An alpha of 0.05 represents a 95% confidence interval.
[2] The p-value represents the risk of acceptance the H_a hypothesis of a trend, in terms of a percentage.
[3] The initial value of the Mann-Kendall statistic, S, is assumed to be 0 (e.g., no trend). If a data value from a later time period is higher than a data value from an earlier time period, S is incremented by 1. On the other hand, if the data value from a later time period is lower than a data value sampled earlier, S is decremented by 1. The net result of all such increments and decrements yields the final value of S. A very high positive value of S is an indicator of an increasing trend, and a very low negative value indicates a decreasing trend.
[4] The Mann-Kendall decision operates on two hypotheses; the H_0 and H_a. H_0 assumes there is no trend in the data, whereas H_a assumes either a positive or negative trend.
Note: Statistics generated using ProUCL.

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

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2. DATA EVALUATION/STATISTICAL SYNOPSIS

The statistical analyses conducted on the second quarter 2023 groundwater data collected from the C-746-U Landfill MWs were performed in accordance with the Groundwater Monitoring Plan (LATA Kentucky 2014). The statistical analyses for this report use data from the first eight quarters that were sampled for each parameter, beginning with the baseline sampling events in 2002, when available. The sampling dates associated with background data are listed next to the result in the statistical analysis sheets in Appendix D (Attachments D1 and D2).

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

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

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

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

A stepwise list of the one-sided tolerance interval statistical procedures applied to the data is provided in Appendix D under Statistical Analysis Process. The statistical analysis was conducted separately for each parameter in each well. The MWs included in the statistical analyses are listed in Table 5.

Table 5. Monitoring Wells Included in Statistical Analysis

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

[a] Map showing the MW locations is shown on Figure 1.
[b] In the same direction (relative to the landfill) as RGA wells considered to be upgradient.
[c] Well had insufficient water to permit a water sample for laboratory analysis.

2.1 STATISTICAL ANALYSIS OF GROUNDWATER DATA

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

2.1.1 Upper Continental Recharge System

In this quarter, 25 parameters, including those with MCLs, required statistical analysis in the UCRS. During the second quarter, dissolved oxygen, oxidation-reduction potential, and sulfate displayed concentrations that exceeded their respective historical UTL and are listed in Table 2. Sulfate exceeded the current background UTL in downgradient UCRS well MW368.

2.1.2 Upper Regional Gravel Aquifer

In this quarter, 25 parameters, including those with MCLs, required statistical analysis in the URGA. During the second quarter, calcium, conductivity, dissolved solids, magnesium, oxidation-reduction potential, sulfate, and technetium-99 displayed concentrations that exceeded their respective historical UTL and are listed in Table 2. None of the parameters in downgradient URGA wells exceeded the current background UTLs.

2.1.3 Lower Regional Gravel Aquifer

In this quarter, 25 parameters, including those with MCLs, required statistical analysis in the LRGA. During the second quarter, dissolved oxygen, nickel, oxidation-reduction potential, and technetium-99 displayed concentrations that exceeded their respective historical UTL and are listed in Table 2. Nickel and technetium-99 in downgradient LRGA wells MW358 and MW364, respectively, exceeded the current background UTL.

2.2 DATA VERIFICATION AND VALIDATION

Data verification is the process of comparing a data set against a set standard or contractual requirements. In accordance with the approved Groundwater Monitoring Plan (LATA Kentucky 2014), data verification is performed for 100% of the data. Data are flagged as necessary.

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

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

Data verification and validation results for this data set indicated that all data were considered usable.

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3. PROFESSIONAL GEOLOGIST AUTHORIZATION

DOCUMENT IDENTIFICATION: *C-746-U Contained Landfill Second Quarter Calendar Year 2023 (April–June) Compliance Monitoring Report, Paducah Gaseous Diffusion Plant, Paducah, Kentucky (FRNP-RPT-0295/V2)*

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

Evan Clark

PG-265379

08/17/2023

Date

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4. REFERENCES

FRNP (Four Rivers Nuclear Partnership, LLC) 2021. *Surface Water Monitoring Plan for C-746-U and C-746-S&T Landfills Permit Number SW07300014, SW07300015, SW07300045, Paducah Gaseous Diffusion Plant, Paducah, Kentucky, Agency Interest Number 3059*, Solid Waste Landfill Permit No. SW07300014, SW07300015, SW07300045, Technical Application Attachment 24, Four Rivers Nuclear Partnership, LLC, Paducah, KY, March.

KEEC (Kentucky Energy and Environment Cabinet) 2011. Solid Waste Landfill Permit No. SW07300014, SW07300015, SW07300045, Division of Waste Management, Solid Waste Branch, Technical Application Attachment 12, "Explosive Gas Monitoring Program," January 21.

LATA Kentucky (LATA Environmental Services of Kentucky, LLC) 2014. *Groundwater Monitoring Plan for the Solid Waste Permitted Landfills (C-746-S Residential Landfill, C-746-T Inert Landfill, and C-746-U Contained Landfill) at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, PAD- PROJ-0139, Solid Waste Landfill Permit No. SW07300014, SW07300015, SW07300045, Technical Application Attachment 25, LATA Environmental Services of Kentucky, LLC, Kevil, KY, June.

APPENDIX A

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

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

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
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14 REILLY ROAD
FRANKFORT, KY 40601

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

Permit No: SW07300014, SW07300015, SW07300045   Finds/Unit No: Quarter & Year   2nd Qtr. CY 2023

Please check the following as applicable:

_____ Characterization   __X__ Quarterly   _____ Semiannual   _____ Annual   _____ Assessment

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

_____ Leachate   __X__ Methane Monitoring

This form is to be utilized by those sites required by regulation (Kentucky Waste Management Regulations-401 *KAR* 48:300 and 45:160) or by statute (Kentucky Revised Statues Chapter 224) to conduct groundwater and surface water monitoring under the jurisdiction of the Division of Waste Management. **You must report any indication of contamination within forty-eight (48) hours of making the determination using statistical analyses, direct comparison, or other similar techniques. Submitting the lab report is <u>NOT</u> 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 REDFIELD (Affiliate)
Digitally signed by MYRNA REDFIELD (Affiliate)
Date: 2023.08.24 16:52:45 -05'00'

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

APRIL LADD
Digitally signed by APRIL LADD
Date: 2023.08.24 16:58:54 -05'00'

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

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APPENDIX B

FACILITY INFORMATION SHEET

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FACILITY INFORMATION SHEET

Sampling Date: Groundwater: April 2023
Surface water: May 2023
Methane: June 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' 45"   Longitude: W 88° 47' 55"

OWNER INFORMATION

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

Contact Person: Bruce Ford   Phone No: (270) 441-5357

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

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

SAMPLING PERSONNEL
(IF OTHER THAN LANDFILL OR LABORATORY)

Company: GEO Consultants Corporation

Contact Person: Jason Boulton   Phone No: (270) 816-3415

Mailing Address: 199 Kentucky Avenue   Kevil, Kentucky   42053
Street   City/State   Zip

LABORATORY RECORD #1

Laboratory GEL Laboratories, LLC   Lab ID No: KY90129

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

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

LABORATORY RECORD #2

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

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

Mailing Address: N/A
Street   City/State   Zip

LABORATORY RECORD #3

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

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

Mailing Address: N/A
Street   City/State   Zip

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APPENDIX C

**GROUNDWATER SAMPLE ANALYSES
AND WRITTEN COMMENTS**

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Division of Waste Management
Solid Waste Branch
14 Reilly Road
Frankfort, KY 40601 (502)564-6716

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: SW07300014,SW07300015,SW07300045

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None

GROUNDWATER SAMPLE ANALYSIS(s)

AKGWA NUMBER[1], Facility Well/Spring Number				8004-4798		8004-4799		8004-0981		8004-4800	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)				357		358		359		360	
Sample Sequence #				1		1		1		1	
If sample is a Blank, specify Type: (F)ield, (T)rip, (M)ethod, or (E)quipment				NA		NA		NA		NA	
Sample Date and Time (Month/Day/Year hour: minutes)				4/10/2023 10:39		4/10/2023 11:23		4/10/2023 12:03		4/10/2023 07:51	
Duplicate ("Y" or "N")[2]				N		N		N		N	
Split ("Y" or "N")[3]				N		N		N		N	
Facility Sample ID Number (if applicable)				MW357UG3-23		MW358UG3-23		MW359UG3-23		MW360UG3-23	
Laboratory Sample ID Number (if applicable)				617594001		617594003		617594005		617594007	
Date of Analysis (Month/Day/Year) For Volatile Organics Analysis				4/12/2023		4/12/2023		4/12/2023		4/12/2023	
Gradient with respect to Monitored Unit (UP, DOWN, SIDE, UNKNOWN)				DOWN		DOWN		DOWN		DOWN	
CAS RN[4]	CONSTITUENT	T D [5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	F L A G S[7]	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S
24959-67-9	Bromide	T	mg/L	9056	0.35		0.255		<0.2		0.149	J
16887-00-6	Chloride(s)	T	mg/L	9056	32.3	*J	20.7	*J	0.774	*J	7.24	*J
16984-48-8	Fluoride	T	mg/L	9056	0.185	J	0.245	J	0.256	J	0.244	J
S0595- -	Nitrate & Nitrite	T	mg/L	9056	1.06	J	0.173	J	0.408	J	0.523	J
14808-79-8	Sulfate	T	mg/L	9056	38.2		35.9		39.1		11.4	
NS1894	Barometric Pressure Reading	T	Inches/Hg	Field	30.36		30.37		30.36		30.33	
S0145- -	Specific Conductance	T	μMHO/cm	Field	420		521		219		400	

[1]AKGWA # is 0000-0000 for any type of blank.
[2]Respond "Y" if the sample was a duplicate of another sample in this report.
[3]Respond "Y" if the sample was split and analyzed by separate laboratories.
[4]Chemical Abstracts Service Registry Number or unique identifier number assigned by agency.
[5]"T" = Total; "D" = Dissolved
[6]"<" indicates a non-detect; do not use "ND" or "BDL". Value shown is Practical Quantification Limit.
[7]Flags are as designated, do not use any other type. Use "*," then describe on "Written Comments Page."

STANDARD FLAGS:
* = See Comments
J = Estimated Value
B = Analyte found in blank
A = Average value
N = Presumptive ID
D = Concentration from analysis of a secondary dilution

C-3

Facility: US DOE - Paducah Gaseous Diffusion Plant FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045 LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-4798		8004-4799		8004-0981		8004-4800	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, BLANK-F, etc.)					357		358		359		360	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
S0906 - -		Static Water Level Elevation	T	Ft. MSL	Field	324.12		324.12		334.63		324.07	
N238		Dissolved Oxygen	T	mg/L	Field	4.83		1.25		5.18		2.1	
S0266- -		Total Dissolved Solids	T	mg/L	160.1	197		232		119		197	
S0296- -		pH	T	Units	Field	6.13		6.38		6.16		6.2	
NS215		Eh	T	mV	Field	367		150		252		354	
S0907 - -		Temperature	T	°C	Field	16		16		16.17		13.56	
7429-90-5		Aluminum	T	mg/L	6020	0.169		0.0427	J	0.0348	J	0.0541	
7440-36-0		Antimony	T	mg/L	6020	<0.003		<0.003		<0.003		<0.003	
7440-38-2		Arsenic	T	mg/L	6020	<0.005		0.00584		<0.005		<0.005	
7440-39-3		Barium	T	mg/L	6020	0.0715	B	0.0841	B	0.0223	B	0.194	B
7440-41-7		Beryllium	T	mg/L	6020	<0.0005		<0.0005		<0.0005		<0.0005	
7440-42-8		Boron	T	mg/L	6020	0.338		0.168		<0.015		0.029	
7440-43-9		Cadmium	T	mg/L	6020	<0.001		<0.001		<0.001		<0.001	
7440-70-2		Calcium	T	mg/L	6020	25.2		33.7		5.21		19.4	
7440-47-3		Chromium	T	mg/L	6020	<0.01		<0.01		<0.01		<0.01	
7440-48-4		Cobalt	T	mg/L	6020	0.000699	J	0.0274		<0.001		0.00148	
7440-50-8		Copper	T	mg/L	6020	0.00141	J	0.000982	J	0.000572	J	0.0021	
7439-89-6		Iron	T	mg/L	6020	0.44		12.4		0.0397	J	0.175	
7439-92-1		Lead	T	mg/L	6020	<0.002		<0.002		<0.002		<0.002	
7439-95-4		Magnesium	T	mg/L	6020	10.7		17.2		2.95		8.07	
7439-96-5		Manganese	T	mg/L	6020	0.0599		2.1		<0.005		0.018	
7439-97-6		Mercury	T	mg/L	7470	<0.0002		<0.0002		<0.0002		<0.0002	

Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-4798		8004-4799		8004-0981		8004-4800	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					357		358		359		360	
CAS RN[4]	CONSTITUENT	T D [5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S
7439-98-7	Molybdenum	T	mg/L	6020	<0.001		<0.001		<0.001		<0.001	
7440-02-0	Nickel	T	mg/L	6020	0.00131	J	0.0826		0.00123	J	0.00231	
7440-09-7	Potassium	T	mg/L	6020	1.63		3.13		0.0921	J	0.712	
7440-16-6	Rhodium	T	mg/L	6020	<0.005		<0.005		<0.005		<0.005	
7782-49-2	Selenium	T	mg/L	6020	<0.005		<0.005		<0.005		0.0016	J
7440-22-4	Silver	T	mg/L	6020	<0.001		<0.001		<0.001		<0.001	
7440-23-5	Sodium	T	mg/L	6020	39.4		32.2		32.3		58.3	
7440-25-7	Tantalum	T	mg/L	6020	<0.005		<0.005		<0.005		<0.005	
7440-28-0	Thallium	T	mg/L	6020	<0.002		<0.002		<0.002		<0.002	
7440-61-1	Uranium	T	mg/L	6020	0.000081	J	<0.0002		<0.0002		<0.0002	
7440-62-2	Vanadium	T	mg/L	6020	<0.02		0.00342	J	<0.02		<0.02	
7440-66-6	Zinc	T	mg/L	6020	0.00346	J	0.0104	J	<0.02		<0.02	
108-05-4	Vinyl acetate	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
67-64-1	Acetone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
107-02-8	Acrolein	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
107-13-1	Acrylonitrile	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
71-43-2	Benzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
108-90-7	Chlorobenzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
1330-20-7	Xylenes	T	mg/L	8260	<0.003		<0.003		<0.003		<0.003	
100-42-5	Styrene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
108-88-3	Toluene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-97-5	Chlorobromomethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	

Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-4798		8004-4799		8004-0981		8004-4800	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					357		358		359		360	
CAS RN[4]		CONSTITUENT	T D [5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S
75-27-4		Bromodichloromethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-25-2		Tribromomethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-83-9		Methyl bromide	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
78-93-3		Methyl ethyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
110-57-6		trans-1,4-Dichloro-2-butene	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
75-15-0		Carbon disulfide	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
75-00-3		Chloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
67-66-3		Chloroform	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-87-3		Methyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
156-59-2		cis-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-95-3		Methylene bromide	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-34-3		1,1-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
107-06-2		1,2-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-35-4		1,1-Dichloroethylene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
106-93-4		Ethane, 1,2-dibromo	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-34-5		Ethane, 1,1,2,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
71-55-6		Ethane, 1,1,1-Trichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-00-5		Ethane, 1,1,2-Trichloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
630-20-6		Ethane, 1,1,1,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-01-4		Vinyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
127-18-4		Ethene, Tetrachloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-01-6		Ethene, Trichloro-	T	mg/L	8260	0.00281		0.00111		0.00045	J	0.00186	

Facility: US DOE - Paducah Gaseous Diffusion Plant FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045 LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-4798		8004-4799		8004-0981		8004-4800	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					357		358		359		360	
CAS RN[4]	CONSTITUENT	T D [5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
100-41-4	Ethylbenzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
591-78-6	2-Hexanone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
74-88-4	Iodomethane	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
124-48-1	Methane, Dibromochloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
56-23-5	Carbon Tetrachloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-09-2	Dichloromethane	T	mg/L	8260	0.00063	BJ	0.00073	BJ	0.00076	BJ	0.00067	BJ
108-10-1	Methyl isobutyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
96-12-8	Propane, 1,2-Dibromo-3-chloro	T	mg/L	8011	<0.0000192		<0.0000191		<0.000019		<0.0000191	
78-87-5	Propane, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
10061-02-6	trans-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
10061-01-5	cis-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
156-60-5	trans-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-69-4	Trichlorofluoromethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
96-18-4	1,2,3-Trichloropropane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
95-50-1	Benzene, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
106-46-7	Benzene, 1,4-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
1336-36-3	PCB,Total	T	ug/L	8082	<0.103	*	<0.101	*	<0.0993	*	<0.1	*
12674-11-2	PCB-1016	T	ug/L	8082	<0.103	*	<0.101	*	<0.0993	*	<0.1	*
11104-28-2	PCB-1221	T	ug/L	8082	<0.103		<0.101		<0.0993		<0.1	
11141-16-5	PCB-1232	T	ug/L	8082	<0.103		<0.101		<0.0993		<0.1	
53469-21-9	PCB-1242	T	ug/L	8082	<0.103		<0.101		<0.0993		<0.1	
12672-29-6	PCB-1248	T	ug/L	8082	<0.103		<0.101		<0.0993		<0.1	

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-4798		8004-4799		8004-0981		8004-4800	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					357		358		359		360	
CAS RN[4]	CONSTITUENT	T D[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
11097-69-1	PCB-1254	T	ug/L	8082	<0.103		<0.101		<0.0993		<0.1	
11096-82-5	PCB-1260	T	ug/L	8082	<0.103	*	<0.101	*	<0.0993	*	<0.1	*
11100-14-4	PCB-1268	T	ug/L	8082	<0.103		<0.101		<0.0993		<0.1	
12587-46-1	Gross Alpha	T	pCi/L	9310	-0.847	*	1.19	*	4.87	*	1.08	*
12587-47-2	Gross Beta	T	pCi/L	9310	16.5	*	17.1	*	0.757	*	1.27	*
10043-66-0	Iodine-131	T	pCi/L			*		*		*		*
13982-63-3	Radium-226	T	pCi/L	AN-1418	0.00639	*	0.278	*	0.356	*	0.14	*
10098-97-2	Strontium-90	T	pCi/L	905.0	-0.514	*	-1.42	*	-0.288	*	-0.361	*
14133-76-7	Technetium-99	T	pCi/L	Tc-02-RC	32.1	*	40.2	*	-2.1	*	4.96	*
14269-63-7	Thorium-230	T	pCi/L	Th-01-RC	0.0163	*	-0.317	*	0.454	*	0.648	*
10028-17-8	Tritium	T	pCi/L	906.0	-1.81	*	226	*	190	*	-5.59	*
S0130- -	Chemical Oxygen Demand	T	mg/L	410.4	<20		<20		<20		<20	
57-12-5	Cyanide	T	mg/L	9012	<0.2		<0.2		<0.2		<0.2	
20461-54-5	Iodide	T	mg/L	300.0	<0.5		<0.5		<0.5		<0.5	
S0268- -	Total Organic Carbon	T	mg/L	9060	0.402	J	4.66		0.366	J	0.608	J
S0586- -	Total Organic Halides	T	mg/L	9020	0.00654	J	0.00704	J	0.00364	J	0.0119	

Division of Waste Management　　**RESIDENTIAL/CONTAINED-QUARTERLY**

Solid Waste Branch　　**Facility: US DOE - Paducah Gaseous Diffusion Plant**

14 Reilly Road　　**Permit Number: SW07300014,SW07300015,SW07300045**

Frankfort, KY 40601　(502)564-6716

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS(S)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-4795		8004-0986		8004-4796		8004-4797	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					361		362		363		364	
Sample Sequence #					1		1		1		1	
If sample is a Blank, specify Type: (F)ield, (T)rip, (M)ethod, or (E)quipment					NA		NA		NA		NA	
Sample Date and Time (Month/Day/Year hour: minutes)					4/10/2023 08:50		4/10/2023 09:55		4/24/2023 07:54		4/24/2023 08:56	
Duplicate ("Y" or "N")[2]					N		N		N		N	
Split ("Y" or "N")[3]					N		N		N		N	
Facility Sample ID Number (if applicable)					MW361UG3-23		MW362UG3-23		MW363UG3-23		MW364UG3-23	
Laboratory Sample ID Number (if applicable)					617594011		617594013		619428001		619428003	
Date of Analysis (Month/Day/Year) For Volatile Organics Analysis					4/12/2023		4/12/2023		4/27/2023		4/27/2023	
Gradient with respect to Monitored Unit (UP, DOWN, SIDE, UNKNOWN)					DOWN		DOWN		DOWN		DOWN	
CAS RN[4]	CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS[7]	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
24959-67-9	Bromide	T	mg/L	9056	0.382		<0.2		<0.2		0.471	
16887-00-6	Chloride(s)	T	mg/L	9056	34.5	*J	3.07	*J	23.6	J	37.2	J
16984-48-8	Fluoride	T	mg/L	9056	0.17	J	0.584	J	0.138	J	0.134	J
S0595- -	Nitrate & Nitrite	T	mg/L	9056	1.15	J	0.465	J	5.37	J	1.02	J
14808-79-8	Sulfate	T	mg/L	9056	52.5		21.5		29		70.4	
NS1894	Barometric Pressure Reading	T	Inches/Hg	Field	30.35		30.36		30.24		30.25	
S0145- -	Specific Conductance	T	μMHO/cm	Field	446		575		396		482	

[1]AKGWA # is 0000-0000 for any type of blank.
[2]Respond "Y" if the sample was a duplicate of another sample in this report.
[3]Respond "Y" if the sample was split and analyzed by separate laboratories.
[4]Chemical Abstracts Service Registry Number or unique identifier number assigned by agency.
[5]"T" = Total; "D" = Dissolved
[6]"<" indicates a non-detect; do not use "ND" or "BDL". Value shown is Practical Quantification Limit.
[7]Flags are as designated, do not use any other type. Use "*," then describe on "Written Comments Page."

STANDARD FLAGS:
* = See Comments
J = Estimated Value
B = Analyte found in blank
A = Average value
N = Presumptive ID
D = Concentration from analysis of a secondary dilution

RESIDENTIAL/CONTAINED-QUARTERLY

Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-4795		8004-0986		8004-4796		8004-4797	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, BLANK-F, etc.)					361		362		363		364	
CAS RN[4]	CONSTITUENT	T D [5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S
S0906 - -	Static Water Level Elevation	T	Ft. MSL	Field	324.11		336.77		324.17		323.39	
N238	Dissolved Oxygen	T	mg/L	Field	4.44		4.27		1.71		3.6	
S0266- -	Total Dissolved Solids	T	mg/L	160.1	227		342		221		244	
S0296- -	pH	T	Units	Field	6.09		6.94		6.16		6.02	
NS215	Eh	T	mV	Field	366		330		442		444	
S0907 - -	Temperature	T	°C	Field	14.28		14.83		14		15.33	
7429-90-5	Aluminum	T	mg/L	6020	<0.05		1.76		<0.05		<0.05	
7440-36-0	Antimony	T	mg/L	6020	<0.003		<0.003		<0.003		<0.003	
7440-38-2	Arsenic	T	mg/L	6020	<0.005		<0.005		<0.005		<0.005	
7440-39-3	Barium	T	mg/L	6020	0.0503	B	0.0784	B	0.137		0.0583	
7440-41-7	Beryllium	T	mg/L	6020	<0.0005		<0.0005		<0.0005		<0.0005	
7440-42-8	Boron	T	mg/L	6020	0.372		0.0288		0.0192		0.183	
7440-43-9	Cadmium	T	mg/L	6020	<0.001		<0.001		<0.001		<0.001	
7440-70-2	Calcium	T	mg/L	6020	28.6		14.8		25.7		32.7	
7440-47-3	Chromium	T	mg/L	6020	<0.01		0.00462	J	<0.01		<0.01	
7440-48-4	Cobalt	T	mg/L	6020	<0.001		0.000606	J	0.00122		<0.001	
7440-50-8	Copper	T	mg/L	6020	0.00145	J	0.00247		0.00153	J	0.00107	J
7439-89-6	Iron	T	mg/L	6020	0.0467	J	1.15		0.0376	J	<0.1	
7439-92-1	Lead	T	mg/L	6020	<0.002		0.00101	J	<0.002		<0.002	
7439-95-4	Magnesium	T	mg/L	6020	12.4		6.57		9.71		13.9	
7439-96-5	Manganese	T	mg/L	6020	0.00638		0.0122		0.196		0.00384	J
7439-97-6	Mercury	T	mg/L	7470	<0.0002		<0.0002		<0.0002		<0.0002	

RESIDENTIAL/CONTAINED-QUARTERLY

Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-4795		8004-0986		8004-4796		8004-4797	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					361		362		363		364	
CAS RN[4]	CONSTITUENT	T D [5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S
7439-98-7	Molybdenum	T	mg/L	6020	<0.001		0.00145		<0.001		<0.001	
7440-02-0	Nickel	T	mg/L	6020	0.000852	J	0.00253		0.0526		0.000698	J
7440-09-7	Potassium	T	mg/L	6020	1.88		0.425		2.04		2.04	
7440-16-6	Rhodium	T	mg/L	6020	<0.005		<0.005		<0.005		<0.005	
7782-49-2	Selenium	T	mg/L	6020	<0.005		<0.005		<0.005		<0.005	
7440-22-4	Silver	T	mg/L	6020	<0.001		<0.001		<0.001		<0.001	
7440-23-5	Sodium	T	mg/L	6020	39.5		121		39		48.7	
7440-25-7	Tantalum	T	mg/L	6020	<0.005		<0.005		<0.005		<0.005	
7440-28-0	Thallium	T	mg/L	6020	<0.002		<0.002		<0.002		<0.002	
7440-61-1	Uranium	T	mg/L	6020	<0.0002		0.00511		<0.0002		<0.0002	
7440-62-2	Vanadium	T	mg/L	6020	<0.02		0.00482	J	<0.02		<0.02	
7440-66-6	Zinc	T	mg/L	6020	<0.02		0.00388	J	<0.02		0.0183	J
108-05-4	Vinyl acetate	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
67-64-1	Acetone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
107-02-8	Acrolein	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
107-13-1	Acrylonitrile	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
71-43-2	Benzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
108-90-7	Chlorobenzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
1330-20-7	Xylenes	T	mg/L	8260	<0.003		<0.003		<0.003		<0.003	
100-42-5	Styrene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
108-88-3	Toluene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-97-5	Chlorobromomethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-4795		8004-0986		8004-4796		8004-4797	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					361		362		363		364	
CAS RN[4]	CONSTITUENT	T D [5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S
75-27-4	Bromodichloromethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-25-2	Tribromomethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-83-9	Methyl bromide	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
78-93-3	Methyl ethyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
110-57-6	trans-1,4-Dichloro-2-butene	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
75-15-0	Carbon disulfide	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
75-00-3	Chloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
67-66-3	Chloroform	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-87-3	Methyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
156-59-2	cis-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-95-3	Methylene bromide	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-34-3	1,1-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
107-06-2	1,2-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-35-4	1,1-Dichloroethylene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
106-93-4	Ethane, 1,2-dibromo	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-34-5	Ethane, 1,1,2,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
71-55-6	Ethane, 1,1,1-Trichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-00-5	Ethane, 1,1,2-Trichloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
630-20-6	Ethane, 1,1,1,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-01-4	Vinyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
127-18-4	Ethene, Tetrachloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-01-6	Ethene, Trichloro-	T	mg/L	8260	0.0026		0.00045	J	<0.001		0.00081	J

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-4795		8004-0986		8004-4796		8004-4797	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					361		362		363		364	
CAS RN[4]	CONSTITUENT	TDS[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
100-41-4	Ethylbenzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
591-78-6	2-Hexanone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
74-88-4	Iodomethane	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
124-48-1	Methane, Dibromochloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
56-23-5	Carbon Tetrachloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-09-2	Dichloromethane	T	mg/L	8260	0.00075	BJ	0.00068	BJ	<0.005		<0.005	
108-10-1	Methyl isobutyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
96-12-8	Propane, 1,2-Dibromo-3-chloro	T	mg/L	8011	<0.0000189		<0.0000191		<0.0000193		<0.000019	
78-87-5	Propane, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
10061-02-6	trans-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
10061-01-5	cis-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
156-60-5	trans-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-69-4	Trichlorofluoromethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
96-18-4	1,2,3-Trichloropropane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
95-50-1	Benzene, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
106-46-7	Benzene, 1,4-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
1336-36-3	PCB,Total	T	ug/L	8082	<0.102	*	<0.103	*	<0.1		<0.0987	
12674-11-2	PCB-1016	T	ug/L	8082	<0.102	*	<0.103	*	<0.1	*	<0.0987	*
11104-28-2	PCB-1221	T	ug/L	8082	<0.102		<0.103		<0.1		<0.0987	
11141-16-5	PCB-1232	T	ug/L	8082	<0.102		<0.103		<0.1		<0.0987	
53469-21-9	PCB-1242	T	ug/L	8082	<0.102		<0.103		<0.1		<0.0987	
12672-29-6	PCB-1248	T	ug/L	8082	<0.102		<0.103		<0.1		<0.0987	

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045 LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-4795		8004-0986		8004-4796		8004-4797	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					361		362		363		364	
CAS RN[4]		CONSTITUENT	T D [5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S
11097-69-1		PCB-1254	T	ug/L	8082	<0.102		<0.103		<0.1		<0.0987	
11096-82-5		PCB-1260	T	ug/L	8082	<0.102	*	<0.103	*	<0.1		<0.0987	
11100-14-4		PCB-1268	T	ug/L	8082	<0.102		<0.103		<0.1		<0.0987	
12587-46-1		Gross Alpha	T	pCi/L	9310	-0.26	*	3.49	*	-0.0657	*	3.09	*
12587-47-2		Gross Beta	T	pCi/L	9310	21.2	*	-0.15	*	8.01	*	28.2	*
10043-66-0		Iodine-131	T	pCi/L			*		*		*		*
13982-63-3		Radium-226	T	pCi/L	AN-1418	0.235	*	0.45	*	0.309	*	0.335	*
10098-97-2		Strontium-90	T	pCi/L	905.0	-0.0412	*	0.183	*	1.39	*	2.11	*
14133-76-7		Technetium-99	T	pCi/L	Tc-02-RC	32.9	*	0.95	*	-0.0914	*	53.6	*
14269-63-7		Thorium-230	T	pCi/L	Th-01-RC	0.285	*	-0.241	*	1.66	*	0.918	*
10028-17-8		Tritium	T	pCi/L	906.0	-7.66	*	-1.4	*	11	*	55.7	*
S0130- -		Chemical Oxygen Demand	T	mg/L	410.4	<20		19	J	<20		<20	
57-12-5		Cyanide	T	mg/L	9012	<0.2		<0.2		<0.2	*	<0.2	*
20461-54-5		Iodide	T	mg/L	300.0	<0.5		<0.5		<0.5	*	<0.5	*
S0268- -		Total Organic Carbon	T	mg/L	9060	0.943	J	2.09		0.981	J	0.632	J
S0586- -		Total Organic Halides	T	mg/L	9020	0.00856	J	0.0173		<0.01		0.00346	J

Division of Waste Management
Solid Waste Branch
14 Reilly Road
Frankfort, KY 40601 (502)564-6716

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: SW07300014,SW07300015,SW07300045

GROUNDWATER SAMPLE ANALYSIS(S)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-0984		8004-0982		8004-4793		8004-0983	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					365		366		367		368	
Sample Sequence #					1		1		1		1	
If sample is a Blank, specify Type: (F)ield, (T)rip, (M)ethod, or (E)quipment					NA		NA		NA		NA	
Sample Date and Time (Month/Day/Year hour: minutes)					4/24/2023 09:47		4/24/2023 10:29		4/24/2023 11:10		4/24/2023 11:50	
Duplicate ("Y" or "N")[2]					N		N		N		N	
Split ("Y" or "N")[3]					N		N		N		N	
Facility Sample ID Number (if applicable)					MW365UG3-23		MW366UG3-23		MW367UG3-23		MW368UG3-23	
Laboratory Sample ID Number (if applicable)					619428005		619428007		619428009		619428011	
Date of Analysis (Month/Day/Year) For Volatile Organics Analysis					4/27/2023		4/27/2023		4/27/2023		4/27/2023	
Gradient with respect to Monitored Unit (UP, DOWN, SIDE, UNKNOWN)					DOWN		DOWN		DOWN		DOWN	
CAS RN[4]	CONSTITUENT	T D[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS[7]	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
24959-67-9	Bromide	T	mg/L	9056	<0.2		0.498		0.315		<0.2	
16887-00-6	Chloride(s)	T	mg/L	9056	2.15	J	40.7	J	21.7	J	2.86	J
16984-48-8	Fluoride	T	mg/L	9056	0.278	J	0.161	J	0.0956	J	0.184	J
S0595- -	Nitrate & Nitrite	T	mg/L	9056	0.778	J	0.991	J	0.0589	J	<10	
14808-79-8	Sulfate	T	mg/L	9056	55.8		47.3		33		117	
NS1894	Barometric Pressure Reading	T	Inches/Hg	Field	30.25		30.26		30.26		30.26	
S0145- -	Specific Conductance	T	μMHO/cm	Field	425		495		321		614	

[1]AKGWA # is 0000-0000 for any type of blank.
[2]Respond "Y" if the sample was a duplicate of another sample in this report.
[3]Respond "Y" if the sample was split and analyzed by separate laboratories.
[4]Chemical Abstracts Service Registry Number or unique identifier number assigned by agency.
[5]"T" = Total; "D" = Dissolved
[6]"<" indicates a non-detect; do not use "ND" or "BDL". Value shown is Practical Quantification Limit.
[7]Flags are as designated, do not use any other type. Use "*," then describe on "Written Comments Page."

STANDARD FLAGS:
* = See Comments
J = Estimated Value
B = Analyte found in blank
A = Average value
N = Presumptive ID
D = Concentration from analysis
    of a secondary dilution

C-15

Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

C-16

AKGWA NUMBER[1], Facility Well/Spring Number					8004-0984		8004-0982		8004-4793		8004-0983	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, BLANK-F, etc.)					365		366		367		368	
CAS RN[4]	CONSTITUENT	T D [5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S
S0906 - -	Static Water Level Elevation	T	Ft. MSL	Field	332.23		324.16		324.15		350.3	
N238	Dissolved Oxygen	T	mg/L	Field	7.64		3.62		1.53		3.23	
S0266- -	Total Dissolved Solids	T	mg/L	160.1	257		263		160		374	
S0296- -	pH	T	Units	Field	6.39		6.11		5.91		6.39	
NS215	Eh	T	mV	Field	450		458		398		420	
S0907 - -	Temperature	T	°C	Field	15.28		15.83		15.94		15.78	
7429-90-5	Aluminum	T	mg/L	6020	0.0198	J	0.0266	J	<0.05		0.0884	
7440-36-0	Antimony	T	mg/L	6020	<0.003		<0.003		<0.003		<0.003	
7440-38-2	Arsenic	T	mg/L	6020	<0.005		<0.005		<0.005		0.00258	J
7440-39-3	Barium	T	mg/L	6020	0.0929		0.118		0.148		0.0593	
7440-41-7	Beryllium	T	mg/L	6020	<0.0005		<0.0005		<0.0005		<0.0005	
7440-42-8	Boron	T	mg/L	6020	0.00807	J	0.0645		0.0317		<0.015	
7440-43-9	Cadmium	T	mg/L	6020	<0.001		<0.001		<0.001		<0.001	
7440-70-2	Calcium	T	mg/L	6020	21.3		33.4		19.6		59.7	
7440-47-3	Chromium	T	mg/L	6020	<0.01		<0.01		<0.01		<0.01	
7440-48-4	Cobalt	T	mg/L	6020	0.00167		<0.001		0.00341		<0.001	
7440-50-8	Copper	T	mg/L	6020	0.00506		0.000866	J	0.000805	J	0.000612	J
7439-89-6	Iron	T	mg/L	6020	<0.1		<0.1		0.722		0.0822	J
7439-92-1	Lead	T	mg/L	6020	<0.002		<0.002		<0.002		<0.002	
7439-95-4	Magnesium	T	mg/L	6020	9.88		14.1		9.92		13.9	
7439-96-5	Manganese	T	mg/L	6020	0.00885		0.00464	J	0.941		0.00293	J
7439-97-6	Mercury	T	mg/L	7470	<0.0002		<0.0002		<0.0002		<0.0002	

Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-0984		8004-0982		8004-4793		8004-0983	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					365		366		367		368	
CAS RN[4]	CONSTITUENT	T D[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S
7439-98-7	Molybdenum	T	mg/L	6020	<0.001		<0.001		<0.001		0.000635	J
7440-02-0	Nickel	T	mg/L	6020	0.0055		0.000794	J	0.0018	J	0.000818	J
7440-09-7	Potassium	T	mg/L	6020	0.27	J	2.08		2.99		0.436	
7440-16-6	Rhodium	T	mg/L	6020	<0.005		<0.005		<0.005		<0.005	
7782-49-2	Selenium	T	mg/L	6020	<0.005		0.00262	J	<0.005		<0.005	
7440-22-4	Silver	T	mg/L	6020	<0.001		<0.001		<0.001		<0.001	
7440-23-5	Sodium	T	mg/L	6020	62.8		50.5		28.7		60.7	
7440-25-7	Tantalum	T	mg/L	6020	<0.005		<0.005		<0.005		<0.005	
7440-28-0	Thallium	T	mg/L	6020	<0.002		<0.002		<0.002		<0.002	
7440-61-1	Uranium	T	mg/L	6020	0.000371		<0.0002		<0.0002		0.000245	
7440-62-2	Vanadium	T	mg/L	6020	0.00366	J	<0.02		<0.02		0.00682	J
7440-66-6	Zinc	T	mg/L	6020	0.00484	J	0.0035	J	0.0093	J	0.00539	J
108-05-4	Vinyl acetate	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
67-64-1	Acetone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
107-02-8	Acrolein	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
107-13-1	Acrylonitrile	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
71-43-2	Benzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
108-90-7	Chlorobenzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
1330-20-7	Xylenes	T	mg/L	8260	<0.003		<0.003		<0.003		<0.003	
100-42-5	Styrene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
108-88-3	Toluene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-97-5	Chlorobromomethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	

RESIDENTIAL/CONTAINED-QUARTERLY

Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-0984		8004-0982		8004-4793		8004-0983	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					365		366		367		368	
CAS RN[4]	CONSTITUENT	T D [5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S
75-27-4	Bromodichloromethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-25-2	Tribromomethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-83-9	Methyl bromide	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
78-93-3	Methyl ethyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
110-57-6	trans-1,4-Dichloro-2-butene	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
75-15-0	Carbon disulfide	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
75-00-3	Chloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
67-66-3	Chloroform	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-87-3	Methyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
156-59-2	cis-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-95-3	Methylene bromide	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-34-3	1,1-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
107-06-2	1,2-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-35-4	1,1-Dichloroethylene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
106-93-4	Ethane, 1,2-dibromo	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-34-5	Ethane, 1,1,2,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
71-55-6	Ethane, 1,1,1-Trichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-00-5	Ethane, 1,1,2-Trichloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
630-20-6	Ethane, 1,1,1,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-01-4	Vinyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
127-18-4	Ethene, Tetrachloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-01-6	Ethene, Trichloro-	T	mg/L	8260	<0.001		0.00158		0.00161		<0.001	

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045 LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-0984		8004-0982		8004-4793		8004-0983	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					365		366		367		368	
CAS RN[4]	CONSTITUENT	TDS[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
100-41-4	Ethylbenzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
591-78-6	2-Hexanone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
74-88-4	Iodomethane	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
124-48-1	Methane, Dibromochloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
56-23-5	Carbon Tetrachloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-09-2	Dichloromethane	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
108-10-1	Methyl isobutyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
96-12-8	Propane, 1,2-Dibromo-3-chloro	T	mg/L	8011	<0.0000191		<0.0000191		<0.0000188		<0.0000189	
78-87-5	Propane, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
10061-02-6	trans-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
10061-01-5	cis-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
156-60-5	trans-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-69-4	Trichlorofluoromethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
96-18-4	1,2,3-Trichloropropane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
95-50-1	Benzene, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
106-46-7	Benzene, 1,4-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
1336-36-3	PCB,Total	T	ug/L	8082	<0.103		<0.0965		<0.102		<0.105	
12674-11-2	PCB-1016	T	ug/L	8082	<0.103	*	<0.0965	*	<0.102	*	<0.105	*
11104-28-2	PCB-1221	T	ug/L	8082	<0.103		<0.0965		<0.102		<0.105	
11141-16-5	PCB-1232	T	ug/L	8082	<0.103		<0.0965		<0.102		<0.105	
53469-21-9	PCB-1242	T	ug/L	8082	<0.103		<0.0965		<0.102		<0.105	
12672-29-6	PCB-1248	T	ug/L	8082	<0.103		<0.0965		<0.102		<0.105	

Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

C-20

AKGWA NUMBER[1], Facility Well/Spring Number					8004-0984		8004-0982		8004-4793		8004-0983	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					365		366		367		368	
CAS RN[4]		CONSTITUENT	T D [5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
11097-69-1		PCB-1254	T	ug/L	8082	<0.103		<0.0965		<0.102		<0.105	
11096-82-5		PCB-1260	T	ug/L	8082	<0.103		<0.0965		<0.102		<0.105	
11100-14-4		PCB-1268	T	ug/L	8082	<0.103		<0.0965		<0.102		<0.105	
12587-46-1		Gross Alpha	T	pCi/L	9310	1.97	*	-1.18	*	-1.17	*	6.53	*
12587-47-2		Gross Beta	T	pCi/L	9310	-4.4	*	29	*	9.13	*	21.6	*
10043-66-0		Iodine-131	T	pCi/L			*		*		*		*
13982-63-3		Radium-226	T	pCi/L	AN-1418	0.0218	*	0.317	*	0.532	*	0.226	*
10098-97-2		Strontium-90	T	pCi/L	905.0	3.05	*	0.843	*	4.59	*	2.48	*
14133-76-7		Technetium-99	T	pCi/L	Tc-02-RC	8.29	*	71.2	*	17.8	*	7.8	*
14269-63-7		Thorium-230	T	pCi/L	Th-01-RC	3.11	*	1.04	*	2.24	*	2.22	*
10028-17-8		Tritium	T	pCi/L	906.0	33.4	*	94.7	*	151	*	-57.1	*
S0130- -		Chemical Oxygen Demand	T	mg/L	410.4	<20		<20		<20		<20	
57-12-5		Cyanide	T	mg/L	9012	<0.2	*	<0.2	*	<0.2	*	<0.2	*
20461-54-5		Iodide	T	mg/L	300.0	<0.5	*	<0.5	*	<0.5	*	<0.5	*
S0268- -		Total Organic Carbon	T	mg/L	9060	1.36	J	0.881	J	0.681	J	1.35	J
S0586- -		Total Organic Halides	T	mg/L	9020	0.0193		0.00884	J	<0.01		<0.01	

Division of Waste Management   **RESIDENTIAL/CONTAINED-QUARTERLY**
Solid Waste Branch   **Facility: US DOE - Paducah Gaseous Diffusion Plant**
14 Reilly Road   **Permit Number: SW07300014,SW07300015,SW07300045**
Frankfort, KY 40601 (502)564-6716

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS(S)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-4820		8004-4818		8004-4819		8004-4808	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					369		370		371		372	
Sample Sequence #					1		1		1		1	
If sample is a Blank, specify Type: (F)ield, (T)rip, (M)ethod, or (E)quipment					NA		NA		NA		NA	
Sample Date and Time (Month/Day/Year hour: minutes)					4/24/2023 12:35		4/24/2023 13:17		4/25/2023 10:07		4/25/2023 07:49	
Duplicate ("Y" or "N")[2]					N		N		N		N	
Split ("Y" or "N")[3]					N		N		N		N	
Facility Sample ID Number (if applicable)					MW369UG3-23		MW370UG3-23		MW371UG3-23		MW372UG3-23	
Laboratory Sample ID Number (if applicable)					619428013		619428015		619620001		619620003	
Date of Analysis (Month/Day/Year) For Volatile Organics Analysis					4/27/2023		4/27/2023		4/29/2023		4/29/2023	
Gradient with respect to Monitored Unit (UP, DOWN, SIDE, UNKNOWN)					UP		UP		UP		UP	
CAS RN[4]	CONSTITUENT	T D [5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	F L A G S[7]	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S
24959-67-9	Bromide	T	mg/L	9056	0.325		0.568		<0.2		0.483	
16887-00-6	Chloride(s)	T	mg/L	9056	28.7	J	41.9	J	2.05	J	36.1	J
16984-48-8	Fluoride	T	mg/L	9056	0.188	J	0.162	J	0.184	J	0.199	J
S0595- -	Nitrate & Nitrite	T	mg/L	9056	0.571	J	0.966	J	<10		0.741	J
14808-79-8	Sulfate	T	mg/L	9056	7		20.2		56.9		151	
NS1894	Barometric Pressure Reading	T	Inches/Hg	Field	30.25		30.22		30.17		30.15	
S0145- -	Specific Conductance	T	μMHO/cm	Field	375		470		640		733	

[1]AKGWA # is 0000-0000 for any type of blank.
[2]Respond "Y" if the sample was a duplicate of another sample in this report.
[3]Respond "Y" if the sample was split and analyzed by separate laboratories.
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STANDARD FLAGS:
* = See Comments
J = Estimated Value
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A = Average value
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D = Concentration from analysis
    of a secondary dilution

Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-4820		8004-4818		8004-4819		8004-4808	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, BLANK-F, etc.)					369		370		371		372	
CAS RN[4]	CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
S0906 - -	Static Water Level Elevation	T	Ft. MSL	Field	324.76		324.74		341.75		324.86	
N238	Dissolved Oxygen	T	mg/L	Field	2.06		4.26		7.75		1.81	
S0266- -	Total Dissolved Solids	T	mg/L	160.1	193		235		232		428	
S0296- -	pH	T	Units	Field	6.18		6.12		6.72		6.03	
NS215	Eh	T	mV	Field	439		460		404		470	
S0907 - -	Temperature	T	°C	Field	17		16.39		15		14.56	
7429-90-5	Aluminum	T	mg/L	6020	0.0346	J	<0.05		0.372	*	<0.05	*
7440-36-0	Antimony	T	mg/L	6020	<0.003		<0.003		<0.003		<0.003	
7440-38-2	Arsenic	T	mg/L	6020	<0.005		<0.005		0.00212	J	0.00214	J
7440-39-3	Barium	T	mg/L	6020	0.39		0.225		0.0918		0.0573	
7440-41-7	Beryllium	T	mg/L	6020	<0.0005		<0.0005		<0.0005		<0.0005	
7440-42-8	Boron	T	mg/L	6020	0.0139	J	0.215		0.00898	J	1.66	
7440-43-9	Cadmium	T	mg/L	6020	<0.001		<0.001		<0.001		<0.001	
7440-70-2	Calcium	T	mg/L	6020	16		30.9		59.4		62	
7440-47-3	Chromium	T	mg/L	6020	<0.01		<0.01		<0.01		<0.01	
7440-48-4	Cobalt	T	mg/L	6020	0.0037		<0.001		<0.001		0.000346	J
7440-50-8	Copper	T	mg/L	6020	0.00103	J	0.000462	J	0.00118	J	0.000968	J
7439-89-6	Iron	T	mg/L	6020	0.0632	J	<0.1		0.234		0.0435	J
7439-92-1	Lead	T	mg/L	6020	<0.002		<0.002		<0.002		<0.002	
7439-95-4	Magnesium	T	mg/L	6020	6.87		13.2		9.13		23.5	
7439-96-5	Manganese	T	mg/L	6020	0.00923		0.00125	J	0.00502		0.00214	J
7439-97-6	Mercury	T	mg/L	7470	<0.0002		<0.0002		<0.0002		<0.0002	

Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT:_KY8-890-008-982_/_1_
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID:_None_

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

C-23

AKGWA NUMBER[1], Facility Well/Spring Number					8004-4820		8004-4818		8004-4819		8004-4808	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					369		370		371		372	
CAS RN[4]	CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
7439-98-7	Molybdenum	T	mg/L	6020	<0.001		<0.001		0.0003	J	0.000205	J
7440-02-0	Nickel	T	mg/L	6020	0.00349		<0.002		0.00142	J	0.000889	J
7440-09-7	Potassium	T	mg/L	6020	0.508		2.52		0.355		2.46	
7440-16-6	Rhodium	T	mg/L	6020	<0.005		<0.005		<0.005		<0.005	
7782-49-2	Selenium	T	mg/L	6020	0.0017	J	<0.005		<0.005		<0.005	
7440-22-4	Silver	T	mg/L	6020	<0.001		<0.001		<0.001		<0.001	
7440-23-5	Sodium	T	mg/L	6020	55.6		48.3		17.1		58.4	
7440-25-7	Tantalum	T	mg/L	6020	<0.005		<0.005		<0.005	*	<0.005	*
7440-28-0	Thallium	T	mg/L	6020	<0.002		<0.002		<0.002		<0.002	
7440-61-1	Uranium	T	mg/L	6020	<0.0002		<0.0002		0.000268		<0.0002	
7440-62-2	Vanadium	T	mg/L	6020	<0.02		<0.02		0.00614	BJ	0.00458	BJ
7440-66-6	Zinc	T	mg/L	6020	0.00659	J	<0.02		0.0043	J	<0.02	
108-05-4	Vinyl acetate	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
67-64-1	Acetone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
107-02-8	Acrolein	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
107-13-1	Acrylonitrile	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
71-43-2	Benzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
108-90-7	Chlorobenzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
1330-20-7	Xylenes	T	mg/L	8260	<0.003		<0.003		<0.003		<0.003	
100-42-5	Styrene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
108-88-3	Toluene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-97-5	Chlorobromomethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-4820		8004-4818		8004-4819		8004-4808	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					369		370		371		372	
CAS RN[4]	CONSTITUENT	T D [5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S
75-27-4	Bromodichloromethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-25-2	Tribromomethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-83-9	Methyl bromide	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
78-93-3	Methyl ethyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
110-57-6	trans-1,4-Dichloro-2-butene	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
75-15-0	Carbon disulfide	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
75-00-3	Chloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
67-66-3	Chloroform	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-87-3	Methyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
156-59-2	cis-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-95-3	Methylene bromide	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-34-3	1,1-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
107-06-2	1,2-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-35-4	1,1-Dichloroethylene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
106-93-4	Ethane, 1,2-dibromo	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-34-5	Ethane, 1,1,2,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
71-55-6	Ethane, 1,1,1-Trichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-00-5	Ethane, 1,1,2-Trichloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
630-20-6	Ethane, 1,1,1,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-01-4	Vinyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
127-18-4	Ethene, Tetrachloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-01-6	Ethene, Trichloro-	T	mg/L	8260	0.00073	J	0.00206		<0.001		0.00601	

RESIDENTIAL/CONTAINED-QUARTERLY

Facility: US DOE - Paducah Gaseous Diffusion Plant FINDS/UNIT: KY8-890-008-982 / 1

Permit Number: SW07300014, SW07300015, SW07300045 LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-4820		8004-4818		8004-4819		8004-4808	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					369		370		371		372	
CAS RN[4]	CONSTITUENT	T D [5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S
100-41-4	Ethylbenzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
591-78-6	2-Hexanone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
74-88-4	Iodomethane	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
124-48-1	Methane, Dibromochloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
56-23-5	Carbon Tetrachloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-09-2	Dichloromethane	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
108-10-1	Methyl isobutyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
96-12-8	Propane, 1,2-Dibromo-3-chloro	T	mg/L	8011	<0.0000192		<0.0000192		<0.0000189		<0.0000191	
78-87-5	Propane, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
10061-02-6	trans-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
10061-01-5	cis-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
156-60-5	trans-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-69-4	Trichlorofluoromethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
96-18-4	1,2,3-Trichloropropane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
95-50-1	Benzene, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
106-46-7	Benzene, 1,4-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
1336-36-3	PCB,Total	T	ug/L	8082	<0.0989		<0.103		<0.101		<0.1	
12674-11-2	PCB-1016	T	ug/L	8082	<0.0989	*	<0.103	*	<0.101		<0.1	
11104-28-2	PCB-1221	T	ug/L	8082	<0.0989		<0.103		<0.101		<0.1	
11141-16-5	PCB-1232	T	ug/L	8082	<0.0989		<0.103		<0.101		<0.1	
53469-21-9	PCB-1242	T	ug/L	8082	<0.0989		<0.103		<0.101		<0.1	
12672-29-6	PCB-1248	T	ug/L	8082	<0.0989		<0.103		<0.101		<0.1	

Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8004-4820		8004-4818		8004-4819		8004-4808	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						369		370		371		372	
CAS RN[4]		CONSTITUENT	T D [5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
11097-69-1		PCB-1254	T	ug/L	8082	<0.0989		<0.103		<0.101		<0.1	
11096-82-5		PCB-1260	T	ug/L	8082	<0.0989		<0.103		<0.101		<0.1	
11100-14-4		PCB-1268	T	ug/L	8082	<0.0989		<0.103		<0.101		<0.1	
12587-46-1		Gross Alpha	T	pCi/L	9310	2.11	*	-6.91	*	1.49	*	2.52	*
12587-47-2		Gross Beta	T	pCi/L	9310	13.1	*	-3.67	*	5.58	*	17.6	*
10043-66-0		Iodine-131	T	pCi/L			*		*		*		*
13982-63-3		Radium-226	T	pCi/L	AN-1418	0.293	*	0.427	*	0.216	*	0.278	*
10098-97-2		Strontium-90	T	pCi/L	905.0	2.38	*	0.612	*	0.107	*	-0.329	*
14133-76-7		Technetium-99	T	pCi/L	Tc-02-RC	39.1	*	28.3	*	8.43	*	36.3	*
14269-63-7		Thorium-230	T	pCi/L	Th-01-RC	2.17	*	1.6	*	2.02	*	1.17	*
10028-17-8		Tritium	T	pCi/L	906.0	130	*	78.9	*	51.9	*	3.95	*
S0130- -		Chemical Oxygen Demand	T	mg/L	410.4	<20		23.6		<20		<20	
57-12-5		Cyanide	T	mg/L	9012	<0.2	*	<0.2	*	<0.2		<0.2	
20461-54-5		Iodide	T	mg/L	300.0	<0.5	*	<0.5	*	<0.5		<0.5	
S0268- -		Total Organic Carbon	T	mg/L	9060	1.1	J	1	J	1.84	J	0.788	J
S0586- -		Total Organic Halides	T	mg/L	9020	0.0148		0.00514	J	0.0054	J*	0.045	*

Division of Waste Management
Solid Waste Branch
14 Reilly Road
Frankfort, KY 40601 (502)564-6716

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: SW07300014,SW07300015,SW07300045

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None

GROUNDWATER SAMPLE ANALYSIS(S)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-4792	8004-0990	8004-0985	8004-0988
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					373	374	375	376
Sample Sequence #					1	1	1	1
If sample is a Blank, specify Type: (F)ield, (T)rip, (M)ethod, or (E)quipment					NA	NA	NA	NA
Sample Date and Time (Month/Day/Year hour: minutes)					4/25/2023 08:47	4/25/2023 09:26	4/25/2023 13:41	NA
Duplicate ("Y" or "N")[2]					N	N	N	N
Split ("Y" or "N")[3]					N	N	N	N
Facility Sample ID Number (if applicable)					MW373UG3-23	MW374UG3-23	MW375UG3-23	NA
Laboratory Sample ID Number (if applicable)					619620005	619620007	619620009	NA
Date of Analysis (Month/Day/Year) For Volatile Organics Analysis					4/29/2023	4/29/2023	4/29/2023	NA
Gradient with respect to Monitored Unit (UP, DOWN, SIDE, UNKNOWN)					UP	UP	SIDE	SIDE
CAS RN[4]	CONSTITUENT	T D[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS[7]	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
24959-67-9	Bromide	T	mg/L	9056	0.484		0.519		<0.2			*
16887-00-6	Chloride(s)	T	mg/L	9056	34.8	J	46.5	J	3.16	J		*
16984-48-8	Fluoride	T	mg/L	9056	0.182	J	0.229	J	0.338	J		*
S0595- -	Nitrate & Nitrite	T	mg/L	9056	0.715	J	0.488	J	0.887	J		*
14808-79-8	Sulfate	T	mg/L	9056	170		16.5		23.3			*
NS1894	Barometric Pressure Reading	T	Inches/Hg	Field	30.16		30.16		30.14			*
S0145- -	Specific Conductance	T	μMHO/cm	Field	831		703		336			*

[1]AKGWA # is 0000-0000 for any type of blank.
[2]Respond "Y" if the sample was a duplicate of another sample in this report.
[3]Respond "Y" if the sample was split and analyzed by separate laboratories.
[4]Chemical Abstracts Service Registry Number or unique identifier number assigned by agency.
[5]"T" = Total; "D" = Dissolved
[6]"<" indicates a non-detect; do not use "ND" or "BDL". Value shown is Practical Quantification Limit.
[7]Flags are as designated, do not use any other type. Use "*," then describe on "Written Comments Page."

STANDARD FLAGS:
* = See Comments
J = Estimated Value
B = Analyte found in blank
A = Average value
N = Presumptive ID
D = Concentration from analysis of a secondary dilution

RESIDENTIAL/CONTAINED-QUARTERLY

Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-4792		8004-0990		8004-0985		8004-0988	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, BLANK-F, etc.)					373		374		375		376	
CAS RN[4]	CONSTITUENT	T D [5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S
S0906 - -	Static Water Level Elevation	T	Ft. MSL	Field	324.86		337.04		335.63			*
N238	Dissolved Oxygen	T	mg/L	Field	2		2.3		1.41			*
S0266- -	Total Dissolved Solids	T	mg/L	160.1	472		370		183			*
S0296- -	pH	T	Units	Field	6.12		6.8		6.44			*
NS215	Eh	T	mV	Field	457		421		366			*
S0907 - -	Temperature	T	°C	Field	15.06		15.33		16.89			*
7429-90-5	Aluminum	T	mg/L	6020	<0.05	*	<0.05	*	0.195	*		*
7440-36-0	Antimony	T	mg/L	6020	<0.003		<0.003		<0.003			*
7440-38-2	Arsenic	T	mg/L	6020	0.0023	J	0.0022	J	<0.005			*
7440-39-3	Barium	T	mg/L	6020	0.03		0.14		0.171			*
7440-41-7	Beryllium	T	mg/L	6020	<0.0005		<0.0005		<0.0005			*
7440-42-8	Boron	T	mg/L	6020	1.74		0.0463		0.0138	J		*
7440-43-9	Cadmium	T	mg/L	6020	<0.001		<0.001		<0.001			*
7440-70-2	Calcium	T	mg/L	6020	71.1		24.9		12.9			*
7440-47-3	Chromium	T	mg/L	6020	<0.01		<0.01		<0.01			*
7440-48-4	Cobalt	T	mg/L	6020	<0.001		<0.001		0.000572	J		*
7440-50-8	Copper	T	mg/L	6020	0.00055	J	0.000502	J	0.000728	J		*
7439-89-6	Iron	T	mg/L	6020	0.0394	J	0.371		0.163			*
7439-92-1	Lead	T	mg/L	6020	<0.002		<0.002		<0.002			*
7439-95-4	Magnesium	T	mg/L	6020	27.6		6.31		5.46			*
7439-96-5	Manganese	T	mg/L	6020	0.00775		0.0256		0.0107			*
7439-97-6	Mercury	T	mg/L	7470	<0.0002		<0.0002		<0.0002			*

Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-4792		8004-0990		8004-0985		8004-0988	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					373		374		375		376	
CAS RN[4]	CONSTITUENT	T D[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
7439-98-7	Molybdenum	T	mg/L	6020	<0.001		0.000233	J	<0.001			*
7440-02-0	Nickel	T	mg/L	6020	0.000829	J	<0.002		0.00109	J		*
7440-09-7	Potassium	T	mg/L	6020	2.76		0.477		0.289	J		*
7440-16-6	Rhodium	T	mg/L	6020	<0.005		<0.005		<0.005			*
7782-49-2	Selenium	T	mg/L	6020	<0.005		0.00632		0.00241	J		*
7440-22-4	Silver	T	mg/L	6020	<0.001		<0.001		<0.001			*
7440-23-5	Sodium	T	mg/L	6020	61.1		123		52.8			*
7440-25-7	Tantalum	T	mg/L	6020	<0.005	*	<0.005	*	<0.005	*		*
7440-28-0	Thallium	T	mg/L	6020	<0.002		<0.002		<0.002			*
7440-61-1	Uranium	T	mg/L	6020	<0.0002		0.000237		<0.0002			*
7440-62-2	Vanadium	T	mg/L	6020	0.00518	BJ	0.00419	BJ	0.00408	BJ		*
7440-66-6	Zinc	T	mg/L	6020	<0.02		<0.02		<0.02			*
108-05-4	Vinyl acetate	T	mg/L	8260	<0.005		<0.005		<0.005			*
67-64-1	Acetone	T	mg/L	8260	<0.005		<0.005		<0.005			*
107-02-8	Acrolein	T	mg/L	8260	<0.005		<0.005		<0.005			*
107-13-1	Acrylonitrile	T	mg/L	8260	<0.005		<0.005		<0.005			*
71-43-2	Benzene	T	mg/L	8260	<0.001		<0.001		<0.001			*
108-90-7	Chlorobenzene	T	mg/L	8260	<0.001		<0.001		<0.001			*
1330-20-7	Xylenes	T	mg/L	8260	<0.003		<0.003		<0.003			*
100-42-5	Styrene	T	mg/L	8260	<0.001		<0.001		<0.001			*
108-88-3	Toluene	T	mg/L	8260	<0.001		<0.001		<0.001			*
74-97-5	Chlorobromomethane	T	mg/L	8260	<0.001		<0.001		<0.001			*

Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-4792		8004-0990		8004-0985		8004-0988	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					373		374		375		376	
CAS RN[4]		CONSTITUENT	T D [5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S
75-27-4		Bromodichloromethane	T	mg/L	8260	<0.001		<0.001		<0.001			*
75-25-2		Tribromomethane	T	mg/L	8260	<0.001		<0.001		<0.001			*
74-83-9		Methyl bromide	T	mg/L	8260	<0.001		<0.001		<0.001			*
78-93-3		Methyl ethyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005			*
110-57-6		trans-1,4-Dichloro-2-butene	T	mg/L	8260	<0.005		<0.005		<0.005			*
75-15-0		Carbon disulfide	T	mg/L	8260	<0.005		<0.005		<0.005			*
75-00-3		Chloroethane	T	mg/L	8260	<0.001		<0.001		<0.001			*
67-66-3		Chloroform	T	mg/L	8260	<0.001		<0.001		<0.001			*
74-87-3		Methyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001			*
156-59-2		cis-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001			*
74-95-3		Methylene bromide	T	mg/L	8260	<0.001		<0.001		<0.001			*
75-34-3		1,1-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001			*
107-06-2		1,2-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001			*
75-35-4		1,1-Dichloroethylene	T	mg/L	8260	<0.001		<0.001		<0.001			*
106-93-4		Ethane, 1,2-dibromo	T	mg/L	8260	<0.001		<0.001		<0.001			*
79-34-5		Ethane, 1,1,2,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001			*
71-55-6		Ethane, 1,1,1-Trichloro-	T	mg/L	8260	<0.001		<0.001		<0.001			*
79-00-5		Ethane, 1,1,2-Trichloro	T	mg/L	8260	<0.001		<0.001		<0.001			*
630-20-6		Ethane, 1,1,1,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001			*
75-01-4		Vinyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001			*
127-18-4		Ethene, Tetrachloro-	T	mg/L	8260	<0.001		<0.001		<0.001			*
79-01-6		Ethene, Trichloro-	T	mg/L	8260	0.00499		0.00063	J	<0.001			*

Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-4792		8004-0990		8004-0985		8004-0988	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					373		374		375		376	
CAS RN[4]	CONSTITUENT	T D [5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S
100-41-4	Ethylbenzene	T	mg/L	8260	<0.001		<0.001		<0.001			*
591-78-6	2-Hexanone	T	mg/L	8260	<0.005		<0.005		<0.005			*
74-88-4	Iodomethane	T	mg/L	8260	<0.005		<0.005		<0.005			*
124-48-1	Methane, Dibromochloro-	T	mg/L	8260	<0.001		<0.001		<0.001			*
56-23-5	Carbon Tetrachloride	T	mg/L	8260	<0.001		<0.001		<0.001			*
75-09-2	Dichloromethane	T	mg/L	8260	<0.005		<0.005		<0.005			*
108-10-1	Methyl isobutyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005			*
96-12-8	Propane, 1,2-Dibromo-3-chloro	T	mg/L	8011	<0.0000193		<0.000019		<0.0000192			*
78-87-5	Propane, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001			*
10061-02-6	trans-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001			*
10061-01-5	cis-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001			*
156-60-5	trans-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001			*
75-69-4	Trichlorofluoromethane	T	mg/L	8260	<0.001		<0.001		<0.001			*
96-18-4	1,2,3-Trichloropropane	T	mg/L	8260	<0.001		<0.001		<0.001			*
95-50-1	Benzene, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001			*
106-46-7	Benzene, 1,4-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001			*
1336-36-3	PCB,Total	T	ug/L	8082	<0.104		<0.1		<0.0976			*
12674-11-2	PCB-1016	T	ug/L	8082	<0.104		<0.1		<0.0976			*
11104-28-2	PCB-1221	T	ug/L	8082	<0.104		<0.1		<0.0976			*
11141-16-5	PCB-1232	T	ug/L	8082	<0.104		<0.1		<0.0976			*
53469-21-9	PCB-1242	T	ug/L	8082	<0.104		<0.1		<0.0976			*
12672-29-6	PCB-1248	T	ug/L	8082	<0.104		<0.1		<0.0976			*

Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-4792		8004-0990		8004-0985		8004-0988	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					373		374		375		376	
CAS RN[4]		CONSTITUENT	T D[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
11097-69-1		PCB-1254	T	ug/L	8082	<0.104		<0.1		<0.0976			*
11096-82-5		PCB-1260	T	ug/L	8082	<0.104		<0.1		<0.0976			*
11100-14-4		PCB-1268	T	ug/L	8082	<0.104		<0.1		<0.0976			*
12587-46-1		Gross Alpha	T	pCi/L	9310	-2.75	*	-7.51	*	5.55	*		*
12587-47-2		Gross Beta	T	pCi/L	9310	6.44	*	3.92	*	2.85	*		*
10043-66-0		Iodine-131	T	pCi/L			*		*		*		*
13982-63-3		Radium-226	T	pCi/L	AN-1418	0.146	*	-0.106	*	0.131	*		*
10098-97-2		Strontium-90	T	pCi/L	905.0	-1.74	*	0.85	*	0.215	*		*
14133-76-7		Technetium-99	T	pCi/L	Tc-02-RC	14	*	2.41	*	0.823	*		*
14269-63-7		Thorium-230	T	pCi/L	Th-01-RC	-0.653	*	0.701	*	0.354	*		*
10028-17-8		Tritium	T	pCi/L	906.0	-63.2	*	-16.8	*	24.3	*		*
S0130- -		Chemical Oxygen Demand	T	mg/L	410.4	<20		27.9		<20			*
57-12-5		Cyanide	T	mg/L	9012	<0.2		<0.2		<0.2			*
20461-54-5		Iodide	T	mg/L	300.0	<0.5		<0.5		<0.5			*
S0268- -		Total Organic Carbon	T	mg/L	9060	1.22	J	2.22		0.912	J		*
S0586- -		Total Organic Halides	T	mg/L	9020	0.017	*	0.0568	*	0.0116	*		*

Division of Waste Management
Solid Waste Branch
14 Reilly Road
Frankfort, KY 40601   (502)564-6716

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: SW07300014,SW07300015,SW07300045

FINDS/UNIT: <u>KY8-890-008-982</u> / <u>1</u>
LAB ID: <u>None</u>

GROUNDWATER SAMPLE ANALYSIS(s)

		8004-0989	0000-0000	0000-0000	0000-0000
AKGWA NUMBER[1], Facility Well/Spring Number		8004-0989	0000-0000	0000-0000	0000-0000
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)		377	E. BLANK	F. BLANK	T. BLANK 1
Sample Sequence #		1	1	1	1
If sample is a Blank, specify Type: (F)ield, (T)rip, (M)ethod, or (E)quipment		NA	E	F	T
Sample Date and Time (Month/Day/Year hour: minutes)		NA	4/10/2023 06:50	4/10/2023 08:54	4/10/2023 06:45
Duplicate ("Y" or "N")[2]		N	N	N	N
Split ("Y" or "N")[3]		N	N	N	N
Facility Sample ID Number (if applicable)		NA	RI1UG3-23	FB1UG3-23	TB1UG3-23
Laboratory Sample ID Number (if applicable)		NA	617594016	617594015	617594017
Date of Analysis (Month/Day/Year) For Volatile Organics Analysis		NA	4/12/2023	4/12/2023	4/12/2023
Gradient with respect to Monitored Unit (UP, DOWN, SIDE, UNKNOWN)		SIDE	NA	NA	NA

CAS RN[4]	CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS[7]	DETECTED VALUE OR PQL[6]	FLAGS*	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
24959-67-9	Bromide	T	mg/L	9056		*		*		*		*
16887-00-6	Chloride(s)	T	mg/L	9056		*		*		*		*
16984-48-8	Fluoride	T	mg/L	9056		*		*		*		*
S0595- -	Nitrate & Nitrite	T	mg/L	9056		*		*		*		*
14808-79-8	Sulfate	T	mg/L	9056		*		*		*		*
NS1894	Barometric Pressure Reading	T	Inches/Hg	Field		*		*		*		*

[1] AKGWA # is 0000-0000 for any type of blank.
[2] Respond "Y" if the sample was a duplicate of another sample in this report.
[3] Respond "Y" if the sample was split and analyzed by separate laboratories.
[4] Chemical Abstracts Service Registry Number or unique identifier number assigned by agency.
[5] "T" = Total; "D" = Dissolved
[6] "<" indicates a non-detect; do not use "ND" or "BDL". Value shown is Practical Quantification Limit.
[7] Flags are as designated, <u>do not</u> use any other type. Use "*," then describe on "Written Comments Page."

STANDARD FLAGS:
* = See Comments
J = Estimated Value
B = Analyte found in blank
A = Average value
N = Presumptive ID
D = Concentration from analysis
    of a secondary dilution

Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number				8004-0989		0000-0000		0000-0000		0000-0000	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, BLANK-F, etc.)				377		E. BLANK		F. BLANK		T. BLANK 1	
CAS RN[4]	CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
S0906 - -	Static Water Level Elevation	T	Ft. MSL	Field		*		*		*		*
N238	Dissolved Oxygen	T	mg/L	Field		*		*		*		*
S0266- -	Total Dissolved Solids	T	mg/L	160.1		*		*		*		*
S0296- -	pH	T	Units	Field		*		*		*		*
NS215	Eh	T	mV	Field		*		*		*		*
S0907 - -	Temperature	T	°C	Field		*		*		*		*
7429-90-5	Aluminum	T	mg/L	6020		*	<0.05		<0.05			*
7440-36-0	Antimony	T	mg/L	6020		*	<0.003		<0.003			*
7440-38-2	Arsenic	T	mg/L	6020		*	<0.005		<0.005			*
7440-39-3	Barium	T	mg/L	6020		*	<0.004		<0.004			*
7440-41-7	Beryllium	T	mg/L	6020		*	<0.0005		<0.0005			*
7440-42-8	Boron	T	mg/L	6020		*	<0.015		<0.015			*
7440-43-9	Cadmium	T	mg/L	6020		*	<0.001		<0.001			*
7440-70-2	Calcium	T	mg/L	6020		*	<0.2		<0.2			*
7440-47-3	Chromium	T	mg/L	6020		*	<0.01		<0.01			*
7440-48-4	Cobalt	T	mg/L	6020		*	<0.001		<0.001			*
7440-50-8	Copper	T	mg/L	6020		*	<0.002		<0.002			*
7439-89-6	Iron	T	mg/L	6020		*	<0.1		<0.1			*
7439-92-1	Lead	T	mg/L	6020		*	<0.002		<0.002			*
7439-95-4	Magnesium	T	mg/L	6020		*	<0.03		<0.03			*
7439-96-5	Manganese	T	mg/L	6020		*	<0.005		<0.005			*
7439-97-6	Mercury	T	mg/L	7470		*	<0.0002		<0.0002			*

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045 LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-0989		0000-0000		0000-0000		0000-0000	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					377		E. BLANK		F. BLANK		T. BLANK 1	
CAS RN[4]	CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
7439-98-7	Molybdenum	T	mg/L	6020		*	<0.001		<0.001			*
7440-02-0	Nickel	T	mg/L	6020		*	<0.002		<0.002			*
7440-09-7	Potassium	T	mg/L	6020		*	<0.3		<0.3			*
7440-16-6	Rhodium	T	mg/L	6020		*	<0.005		<0.005			*
7782-49-2	Selenium	T	mg/L	6020		*	<0.005		<0.005			*
7440-22-4	Silver	T	mg/L	6020		*	<0.001		<0.001			*
7440-23-5	Sodium	T	mg/L	6020		*	<0.25		<0.25			*
7440-25-7	Tantalum	T	mg/L	6020		*	<0.005		<0.005			*
7440-28-0	Thallium	T	mg/L	6020		*	<0.002		<0.002			*
7440-61-1	Uranium	T	mg/L	6020		*	<0.0002		<0.0002			*
7440-62-2	Vanadium	T	mg/L	6020		*	<0.02		<0.02			*
7440-66-6	Zinc	T	mg/L	6020		*	<0.02		<0.02			*
108-05-4	Vinyl acetate	T	mg/L	8260		*	<0.005		<0.005		<0.005	
67-64-1	Acetone	T	mg/L	8260		*	0.00308	J	0.00355	J	0.00335	J
107-02-8	Acrolein	T	mg/L	8260		*	<0.005		<0.005		<0.005	
107-13-1	Acrylonitrile	T	mg/L	8260		*	<0.005		<0.005		<0.005	
71-43-2	Benzene	T	mg/L	8260		*	<0.001		<0.001		<0.001	
108-90-7	Chlorobenzene	T	mg/L	8260		*	0.00073	J	0.00041	J	0.00077	J
1330-20-7	Xylenes	T	mg/L	8260		*	<0.003		<0.003		<0.003	
100-42-5	Styrene	T	mg/L	8260		*	<0.001		<0.001		<0.001	
108-88-3	Toluene	T	mg/L	8260		*	<0.001		<0.001		<0.001	
74-97-5	Chlorobromomethane	T	mg/L	8260		*	<0.001		<0.001		<0.001	

Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-0989		0000-0000		0000-0000		0000-0000	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					377		E. BLANK		F. BLANK		T. BLANK 1	
CAS RN[4]	CONSTITUENT	TDS[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
75-27-4	Bromodichloromethane	T	mg/L	8260		*	<0.001		<0.001		<0.001	
75-25-2	Tribromomethane	T	mg/L	8260		*	<0.001		<0.001		<0.001	
74-83-9	Methyl bromide	T	mg/L	8260		*	<0.001		<0.001		<0.001	
78-93-3	Methyl ethyl ketone	T	mg/L	8260		*	<0.005		<0.005		<0.005	
110-57-6	trans-1,4-Dichloro-2-butene	T	mg/L	8260		*	<0.005		<0.005		<0.005	
75-15-0	Carbon disulfide	T	mg/L	8260		*	<0.005		<0.005		<0.005	
75-00-3	Chloroethane	T	mg/L	8260		*	<0.001		<0.001		<0.001	
67-66-3	Chloroform	T	mg/L	8260		*	<0.001		<0.001		<0.001	
74-87-3	Methyl chloride	T	mg/L	8260		*	<0.001		<0.001		<0.001	
156-59-2	cis-1,2-Dichloroethene	T	mg/L	8260		*	<0.001		<0.001		<0.001	
74-95-3	Methylene bromide	T	mg/L	8260		*	<0.001		<0.001		<0.001	
75-34-3	1,1-Dichloroethane	T	mg/L	8260		*	<0.001		<0.001		<0.001	
107-06-2	1,2-Dichloroethane	T	mg/L	8260		*	<0.001		<0.001		<0.001	
75-35-4	1,1-Dichloroethylene	T	mg/L	8260		*	<0.001		<0.001		<0.001	
106-93-4	Ethane, 1,2-dibromo	T	mg/L	8260		*	<0.001		<0.001		<0.001	
79-34-5	Ethane, 1,1,2,2-Tetrachloro	T	mg/L	8260		*	<0.001		<0.001		<0.001	
71-55-6	Ethane, 1,1,1-Trichloro-	T	mg/L	8260		*	<0.001		<0.001		<0.001	
79-00-5	Ethane, 1,1,2-Trichloro	T	mg/L	8260		*	<0.001		<0.001		<0.001	
630-20-6	Ethane, 1,1,1,2-Tetrachloro	T	mg/L	8260		*	<0.001		<0.001		<0.001	
75-01-4	Vinyl chloride	T	mg/L	8260		*	<0.001		<0.001		<0.001	
127-18-4	Ethene, Tetrachloro-	T	mg/L	8260		*	<0.001		<0.001		<0.001	
79-01-6	Ethene, Trichloro-	T	mg/L	8260		*	<0.001		<0.001		<0.001	

Facility: US DOE - Paducah Gaseous Diffusion Plant FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045 LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-0989		0000-0000		0000-0000		0000-0000	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					377		E. BLANK		F. BLANK		T. BLANK 1	
CAS RN[4]	CONSTITUENT	T D [5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S
100-41-4	Ethylbenzene	T	mg/L	8260		*	<0.001		<0.001		<0.001	
591-78-6	2-Hexanone	T	mg/L	8260		*	<0.005		<0.005		<0.005	
74-88-4	Iodomethane	T	mg/L	8260		*	<0.005		<0.005		<0.005	
124-48-1	Methane, Dibromochloro-	T	mg/L	8260		*	<0.001		<0.001		<0.001	
56-23-5	Carbon Tetrachloride	T	mg/L	8260		*	<0.001		<0.001		<0.001	
75-09-2	Dichloromethane	T	mg/L	8260		*	0.00068	BJ	0.00059	BJ	0.00073	BJ
108-10-1	Methyl isobutyl ketone	T	mg/L	8260		*	<0.005		<0.005		<0.005	
96-12-8	Propane, 1,2-Dibromo-3-chloro	T	mg/L	8011		*	<0.000019		<0.0000192		<0.000019	
78-87-5	Propane, 1,2-Dichloro-	T	mg/L	8260		*	<0.001		<0.001		<0.001	
10061-02-6	trans-1,3-Dichloro-1-propene	T	mg/L	8260		*	<0.001		<0.001		<0.001	
10061-01-5	cis-1,3-Dichloro-1-propene	T	mg/L	8260		*	<0.001		<0.001		<0.001	
156-60-5	trans-1,2-Dichloroethene	T	mg/L	8260		*	<0.001		<0.001		<0.001	
75-69-4	Trichlorofluoromethane	T	mg/L	8260		*	<0.001		<0.001		<0.001	
96-18-4	1,2,3-Trichloropropane	T	mg/L	8260		*	<0.001		<0.001		<0.001	
95-50-1	Benzene, 1,2-Dichloro-	T	mg/L	8260		*	<0.001		<0.001		<0.001	
106-46-7	Benzene, 1,4-Dichloro-	T	mg/L	8260		*	<0.001		<0.001		<0.001	
1336-36-3	PCB,Total	T	ug/L	8082		*	<0.0969	*	<0.0959	*		*
12674-11-2	PCB-1016	T	ug/L	8082		*	<0.0969	*	<0.0959	*		*
11104-28-2	PCB-1221	T	ug/L	8082		*	<0.0969		<0.0959			*
11141-16-5	PCB-1232	T	ug/L	8082		*	<0.0969		<0.0959			*
53469-21-9	PCB-1242	T	ug/L	8082		*	<0.0969		<0.0959			*
12672-29-6	PCB-1248	T	ug/L	8082		*	<0.0969		<0.0959			*

Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT: _KY8-890-008-982_ / _1_
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: _None_

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					8004-0989		0000-0000		0000-0000		0000-0000	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					377		E. BLANK		F. BLANK		T. BLANK 1	
CAS RN[4]		CONSTITUENT	T D[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S
11097-69-1		PCB-1254	T	ug/L	8082		*	<0.0969		<0.0959			*
11096-82-5		PCB-1260	T	ug/L	8082		*	<0.0969	*	<0.0959	*		*
11100-14-4		PCB-1268	T	ug/L	8082		*	<0.0969		<0.0959			*
12587-46-1		Gross Alpha	T	pCi/L	9310		*	-0.159	*	-3.31	*		*
12587-47-2		Gross Beta	T	pCi/L	9310		*	2.82	*	-3.06	*		*
10043-66-0		Iodine-131	T	pCi/L			*		*		*		*
13982-63-3		Radium-226	T	pCi/L	AN-1418		*	0.404	*	-0.0747	*		*
10098-97-2		Strontium-90	T	pCi/L	905.0		*	3.68	*	-1.71	*		*
14133-76-7		Technetium-99	T	pCi/L	Tc-02-RC		*	2.53	*	-3.89	*		*
14269-63-7		Thorium-230	T	pCi/L	Th-01-RC		*	0.215	*	1.38	*		*
10028-17-8		Tritium	T	pCi/L	906.0		*	-8.78	*	47.3	*		*
S0130- -		Chemical Oxygen Demand	T	mg/L	410.4		*		*		*		*
57-12-5		Cyanide	T	mg/L	9012		*		*		*		*
20461-54-5		Iodide	T	mg/L	300.0		*	<0.5		<0.5			*
S0268- -		Total Organic Carbon	T	mg/L	9060		*		*		*		*
S0586- -		Total Organic Halides	T	mg/L	9020		*		*		*		*

Division of Waste Management
Solid Waste Branch
14 Reilly Road
Frankfort, KY 40601 (502)564-6716

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: SW07300014,SW07300015,SW07300045

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None

GROUNDWATER SAMPLE ANALYSIS(S)

AKGWA NUMBER[1], Facility Well/Spring Number	0000-0000	0000-0000	8004-4795
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)	T. BLANK 2	T. BLANK 3	361
Sample Sequence #	1	1	2
If sample is a Blank, specify Type: (F)ield, (T)rip, (M)ethod, or (E)quipment	T	T	NA
Sample Date and Time (Month/Day/Year hour: minutes)	04/24/2023 07:00	04/25/2023 06:35	4/10/2023 08:50
Duplicate ("Y" or "N")[2]	N	N	Y
Split ("Y" or "N")[3]	N	N	N
Facility Sample ID Number (if applicable)	TB2UG3-23	TB3UG3-23	MW361DUG3-23
Laboratory Sample ID Number (if applicable)	619428017	619620011	617594009
Date of Analysis (Month/Day/Year) For Volatile Organics Analysis	4/27/2023	4/29/2023	4/12/2023
Gradient with respect to Monitored Unit (UP, DOWN, SIDE, UNKNOWN)	NA	NA	DOWN

CAS RN[4]	CONSTITUENT	T D[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS[7]	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
24959-67-9	Bromide	T	mg/L	9056		*		*	0.386			
16887-00-6	Chloride(s)	T	mg/L	9056		*		*	33.3	*J		
16984-48-8	Fluoride	T	mg/L	9056		*		*	0.184	J		
S0595- -	Nitrate & Nitrite	T	mg/L	9056		*		*	1.14	J		
14808-79-8	Sulfate	T	mg/L	9056		*		*	52			
NS1894	Barometric Pressure Reading	T	Inches/Hg	Field		*		*		*		

[1]AKGWA # is 0000-0000 for any type of blank.
[2]Respond "Y" if the sample was a duplicate of another sample in this report.
[3]Respond "Y" if the sample was split and analyzed by separate laboratories.
[4]Chemical Abstracts Service Registry Number or unique identifier number assigned by agency.
[5]"T" = Total; "D" = Dissolved
[6]"<" indicates a non-detect; do not use "ND" or "BDL". Value shown is Practical Quantification Limit.
[7]Flags are as designated, do not use any other type. Use "*," then describe on "Written Comments Page."

STANDARD FLAGS:
* = See Comments
J = Estimated Value
B = Analyte found in blank
A = Average value
N = Presumptive ID
D = Concentration from analysis
    of a secondary dilution

RESIDENTIAL/CONTAINED-QUARTERLY

Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number				0000-0000		0000-0000		8004-4795			
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, BLANK-F, etc.)				T. BLANK 2		T. BLANK 3		361			
CAS RN[4]	CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
S0906 - -	Static Water Level Elevation	T	Ft. MSL	Field		*		*		*		
N238	Dissolved Oxygen	T	mg/L	Field		*		*		*		
S0266- -	Total Dissolved Solids	T	mg/L	160.1		*		*	220			
S0296- -	pH	T	Units	Field		*		*		*		
NS215	Eh	T	mV	Field		*		*		*		
S0907 - -	Temperature	T	°C	Field		*		*		*		
7429-90-5	Aluminum	T	mg/L	6020		*		*	<0.05			
7440-36-0	Antimony	T	mg/L	6020		*		*	<0.003			
7440-38-2	Arsenic	T	mg/L	6020		*		*	<0.005			
7440-39-3	Barium	T	mg/L	6020		*		*	0.0528	B		
7440-41-7	Beryllium	T	mg/L	6020		*		*	<0.0005			
7440-42-8	Boron	T	mg/L	6020		*		*	0.382			
7440-43-9	Cadmium	T	mg/L	6020		*		*	<0.001			
7440-70-2	Calcium	T	mg/L	6020		*		*	29.1			
7440-47-3	Chromium	T	mg/L	6020		*		*	<0.01			
7440-48-4	Cobalt	T	mg/L	6020		*		*	<0.001			
7440-50-8	Copper	T	mg/L	6020		*		*	0.000967	J		
7439-89-6	Iron	T	mg/L	6020		*		*	0.0463	J		
7439-92-1	Lead	T	mg/L	6020		*		*	<0.002			
7439-95-4	Magnesium	T	mg/L	6020		*		*	12.7			
7439-96-5	Manganese	T	mg/L	6020		*		*	0.0111			
7439-97-6	Mercury	T	mg/L	7470		*		*	<0.0002			

Facility: US DOE - Paducah Gaseous Diffusion Plant FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045 LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					0000-0000		0000-0000		8004-4795			
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					T. BLANK 2		T. BLANK 3		361			
CAS RN[4]	CONSTITUENT	T D[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
7439-98-7	Molybdenum	T	mg/L	6020		*		*	<0.001			
7440-02-0	Nickel	T	mg/L	6020		*		*	0.000619	J		
7440-09-7	Potassium	T	mg/L	6020		*		*	1.89			
7440-16-6	Rhodium	T	mg/L	6020		*		*	<0.005			
7782-49-2	Selenium	T	mg/L	6020		*		*	<0.005			
7440-22-4	Silver	T	mg/L	6020		*		*	<0.001			
7440-23-5	Sodium	T	mg/L	6020		*		*	40.5			
7440-25-7	Tantalum	T	mg/L	6020		*		*	<0.005			
7440-28-0	Thallium	T	mg/L	6020		*		*	<0.002			
7440-61-1	Uranium	T	mg/L	6020		*		*	<0.0002			
7440-62-2	Vanadium	T	mg/L	6020		*		*	<0.02			
7440-66-6	Zinc	T	mg/L	6020		*		*	<0.02			
108-05-4	Vinyl acetate	T	mg/L	8260	<0.005		<0.005		<0.005			
67-64-1	Acetone	T	mg/L	8260	<0.005		<0.005		<0.005			
107-02-8	Acrolein	T	mg/L	8260	<0.005		<0.005		<0.005			
107-13-1	Acrylonitrile	T	mg/L	8260	<0.005		<0.005		<0.005			
71-43-2	Benzene	T	mg/L	8260	<0.001		<0.001		<0.001			
108-90-7	Chlorobenzene	T	mg/L	8260	<0.001		<0.001		<0.001			
1330-20-7	Xylenes	T	mg/L	8260	<0.003		<0.003		<0.003			
100-42-5	Styrene	T	mg/L	8260	<0.001		<0.001		<0.001			
108-88-3	Toluene	T	mg/L	8260	<0.001		<0.001		<0.001			
74-97-5	Chlorobromomethane	T	mg/L	8260	<0.001		<0.001		<0.001			

RESIDENTIAL/CONTAINED-QUARTERLY

Facility: US DOE – Paducah Gaseous Diffusion Plant   FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: None

GROUNDWATER SAMPLE ANALYSIS – (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					0000-0000		0000-0000		8004-4795			
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					T. BLANK 2		T. BLANK 3		361			
CAS RN[4]	CONSTITUENT	T D [5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S
75-27-4	Bromodichloromethane	T	mg/L	8260	<0.001		<0.001		<0.001			
75-25-2	Tribromomethane	T	mg/L	8260	<0.001		<0.001		<0.001			
74-83-9	Methyl bromide	T	mg/L	8260	<0.001		<0.001		<0.001			
78-93-3	Methyl ethyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005			
110-57-6	trans-1,4-Dichloro-2-butene	T	mg/L	8260	<0.005		<0.005		<0.005			
75-15-0	Carbon disulfide	T	mg/L	8260	<0.005		<0.005		<0.005			
75-00-3	Chloroethane	T	mg/L	8260	<0.001		<0.001		<0.001			
67-66-3	Chloroform	T	mg/L	8260	<0.001		<0.001		<0.001			
74-87-3	Methyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001			
156-59-2	cis-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001			
74-95-3	Methylene bromide	T	mg/L	8260	<0.001		<0.001		<0.001			
75-34-3	1,1-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001			
107-06-2	1,2-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001			
75-35-4	1,1-Dichloroethylene	T	mg/L	8260	<0.001		<0.001		<0.001			
106-93-4	Ethane, 1,2-dibromo	T	mg/L	8260	<0.001		<0.001		<0.001			
79-34-5	Ethane, 1,1,2,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001			
71-55-6	Ethane, 1,1,1-Trichloro-	T	mg/L	8260	<0.001		<0.001		<0.001			
79-00-5	Ethane, 1,1,2-Trichloro	T	mg/L	8260	<0.001		<0.001		<0.001			
630-20-6	Ethane, 1,1,1,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001			
75-01-4	Vinyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001			
127-18-4	Ethene, Tetrachloro-	T	mg/L	8260	<0.001		<0.001		<0.001			
79-01-6	Ethene, Trichloro-	T	mg/L	8260	<0.001		<0.001		0.00172			

RESIDENTIAL/CONTAINED-QUARTERLY

Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					0000-0000		0000-0000		8004-4795			
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					T. BLANK 2		T. BLANK 3		361			
CAS RN[4]	CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
100-41-4	Ethylbenzene	T	mg/L	8260	<0.001		<0.001		<0.001			
591-78-6	2-Hexanone	T	mg/L	8260	<0.005		<0.005		<0.005			
74-88-4	Iodomethane	T	mg/L	8260	<0.005		<0.005		<0.005			
124-48-1	Methane, Dibromochloro-	T	mg/L	8260	<0.001		<0.001		<0.001			
56-23-5	Carbon Tetrachloride	T	mg/L	8260	<0.001		<0.001		<0.001			
75-09-2	Dichloromethane	T	mg/L	8260	<0.005		<0.005		0.00072	BJ		
108-10-1	Methyl isobutyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005			
96-12-8	Propane, 1,2-Dibromo-3-chloro	T	mg/L	8011	<0.0000192		<0.000019		<0.000019			
78-87-5	Propane, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001			
10061-02-6	trans-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001			
10061-01-5	cis-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001			
156-60-5	trans-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001			
75-69-4	Trichlorofluoromethane	T	mg/L	8260	<0.001		<0.001		<0.001			
96-18-4	1,2,3-Trichloropropane	T	mg/L	8260	<0.001		<0.001		<0.001			
95-50-1	Benzene, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001			
106-46-7	Benzene, 1,4-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001			
1336-36-3	PCB,Total	T	ug/L	8082		*		*	<0.099	*		
12674-11-2	PCB-1016	T	ug/L	8082		*		*	<0.099	*		
11104-28-2	PCB-1221	T	ug/L	8082		*		*	<0.099			
11141-16-5	PCB-1232	T	ug/L	8082		*		*	<0.099			
53469-21-9	PCB-1242	T	ug/L	8082		*		*	<0.099			
12672-29-6	PCB-1248	T	ug/L	8082		*		*	<0.099			

Facility: US DOE - Paducah Gaseous Diffusion Plant   FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: SW07300014, SW07300015, SW07300045   LAB ID: None

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number					0000-0000		0000-0000		8004-4795			
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					T. BLANK 2		T. BLANK 3		361			
CAS RN[4]		CONSTITUENT	T D[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S	DETECTED VALUE OR PQL[6]	F L A G S
11097-69-1		PCB-1254	T	ug/L	8082		*		*	<0.099			
11096-82-5		PCB-1260	T	ug/L	8082		*		*	<0.099	*		
11100-14-4		PCB-1268	T	ug/L	8082		*		*	<0.099			
12587-46-1		Gross Alpha	T	pCi/L	9310		*		*	1.7	*		
12587-47-2		Gross Beta	T	pCi/L	9310		*		*	34.3	*		
10043-66-0		Iodine-131	T	pCi/L			*		*		*		
13982-63-3		Radium-226	T	pCi/L	AN-1418		*		*	0.293	*		
10098-97-2		Strontium-90	T	pCi/L	905.0		*		*	-0.475	*		
14133-76-7		Technetium-99	T	pCi/L	Tc-02-RC		*		*	37.8	*		
14269-63-7		Thorium-230	T	pCi/L	Th-01-RC		*		*	0.512	*		
10028-17-8		Tritium	T	pCi/L	906.0		*		*	110	*		
S0130- -		Chemical Oxygen Demand	T	mg/L	410.4		*		*	16.9	J		
57-12-5		Cyanide	T	mg/L	9012		*		*	<0.2			
20461-54-5		Iodide	T	mg/L	300.0		*		*	<0.5			
S0268- -		Total Organic Carbon	T	mg/L	9060		*		*	0.66	J		
S0586- -		Total Organic Halides	T	mg/L	9020		*		*	0.00538	J		

RESIDENTIAL/CONTAINED – QUARTERLY   Finds/Unit: <u>KY8-890-008-982</u> / 1
Facility: US DOE - Paducah Gaseous Diffusion Plant   LAB ID:<u>None</u>
Permit Number: SW07300014, SW07300015, SW07300045

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4798 MW357	MW357UG3-23	Chloride	W	Post-digestion spike recovery out of control limits.
		PCB, Total	Y2	MS/MSD RPD outside acceptance criteria.
		PCB-1016	Y2	MS/MSD RPD outside acceptance criteria.
		PCB-1260	Y2	MS/MSD RPD outside acceptance criteria.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.7. Rad error is 3.7.
		Gross beta		TPU is 7.57. Rad error is 7.08.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.457. Rad error is 0.457.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.37. Rad error is 1.37.
		Technetium-99		TPU is 11.7. Rad error is 11.1.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.669. Rad error is 0.668.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 130. Rad error is 130.
8004-4799 MW358	MW358UG3-23	Chloride	W	Post-digestion spike recovery out of control limits.
		PCB, Total	Y2	MS/MSD RPD outside acceptance criteria.
		PCB-1016	Y2	MS/MSD RPD outside acceptance criteria.
		PCB-1260	Y2	MS/MSD RPD outside acceptance criteria.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 4.44. Rad error is 4.44.
		Gross beta		TPU is 7.53. Rad error is 6.99.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.54. Rad error is 0.54.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.54. Rad error is 1.54.
		Technetium-99		TPU is 12.4. Rad error is 11.5.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.561. Rad error is 0.561.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 148. Rad error is 142.

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Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: SW07300014, SW07300015, SW07300045

Finds/Unit: <u>KY8-890-008-982 / 1</u>
LAB ID:<u>None   </u>

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-0981 MW359	MW359UG3-23	Chloride	W	Post-digestion spike recovery out of control limits.
		PCB, Total	Y2	MS/MSD RPD outside acceptance criteria.
		PCB-1016	Y2	MS/MSD RPD outside acceptance criteria.
		PCB-1260	Y2	MS/MSD RPD outside acceptance criteria.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 6.64. Rad error is 6.59.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 5.13. Rad error is 5.13.
		Iodine-131		During sampling, the well went dry; therefore, no sample was collected.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.62. Rad error is 0.62.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.24. Rad error is 2.24.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 8.66. Rad error is 8.66.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.864. Rad error is 0.857.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 142. Rad error is 138.
8004-4800 MW360	MW360UG3-23	Chloride	W	Post-digestion spike recovery out of control limits.
		PCB, Total	Y2	MS/MSD RPD outside acceptance criteria.
		PCB-1016	Y2	MS/MSD RPD outside acceptance criteria.
		PCB-1260	Y2	MS/MSD RPD outside acceptance criteria.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 5.13. Rad error is 5.12.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 7.62. Rad error is 7.62.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.444. Rad error is 0.444.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.26. Rad error is 1.26.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 9.56. Rad error is 9.54.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.19. Rad error is 1.18.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 129. Rad error is 129.

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4795 MW361	MW361UG3-23	Chloride	W	Post-digestion spike recovery out of control limits.
		PCB, Total	Y2	MS/MSD RPD outside acceptance criteria.
		PCB-1016	Y2	MS/MSD RPD outside acceptance criteria.
		PCB-1260	Y2	MS/MSD RPD outside acceptance criteria.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 4.08. Rad error is 4.08.
		Gross beta		TPU is 7.59. Rad error is 6.68.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.275. Rad error is 0.275.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.63. Rad error is 1.63.
		Technetium-99		TPU is 11.4. Rad error is 10.8.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.883. Rad error is 0.878.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 130. Rad error is 130.
8004-0986 MW362	MW362UG3-23	Chloride	W	Post-digestion spike recovery out of control limits.
		PCB, Total	Y2	MS/MSD RPD outside acceptance criteria.
		PCB-1016	Y2	MS/MSD RPD outside acceptance criteria.
		PCB-1260	Y2	MS/MSD RPD outside acceptance criteria.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 7.22. Rad error is 7.2.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 5.5. Rad error is 5.5.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.496. Rad error is 0.495.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.32. Rad error is 1.32.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 9.41. Rad error is 9.41.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.872. Rad error is 0.871.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 131. Rad error is 131.

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4796 MW363	MW363UG3-23	PCB-1016	L1	LCS/LCSD RPD outside acceptance criteria.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 6.18. Rad error is 6.18.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 7.72. Rad error is 7.61.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.377. Rad error is 0.376.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.41. Rad error is 1.4.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 11.1. Rad error is 11.1.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.06. Rad error is 2.04.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 83.9. Rad error is 83.9.
		Cyanide	N	Sample spike (MS/MSD) recovery not within control limits.
		Iodide	W	Post-digestion spike recovery out of control limits.
8004-4797 MW364	MW364UG3-23	PCB-1016	L1	LCS/LCSD RPD outside acceptance criteria.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 6.82. Rad error is 6.8.
		Gross beta		TPU is 9.62. Rad error is 8.46.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.383. Rad error is 0.383.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.9. Rad error is 1.87.
		Technetium-99		TPU is 13.7. Rad error is 12.4.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.81. Rad error is 1.8.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 93.1. Rad error is 92.5.
		Cyanide	N	Sample spike (MS/MSD) recovery not within control limits.
		Iodide	W	Post-digestion spike recovery out of control limits.
8004-0984 MW365	MW365UG3-23	PCB-1016	L1	LCS/LCSD RPD outside acceptance criteria.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 6.69. Rad error is 6.68.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 4.38. Rad error is 4.38.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.228. Rad error is 0.228.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.42. Rad error is 2.38.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 11.9. Rad error is 11.9.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.81. Rad error is 2.76.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 88.1. Rad error is 87.9.
		Cyanide	N	Sample spike (MS/MSD) recovery not within control limits.
		Iodide	W	Post-digestion spike recovery out of control limits.

RESIDENTIAL/CONTAINED – QUARTERLY

Facility: US DOE - Paducah Gaseous Diffusion Plant

Permit Number: SW07300014, SW07300015, SW07300045

Finds/Unit: <u>KY8-890-008-982 / 1</u>

LAB ID:<u>None</u>

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-0982 MW366	MW366UG3-23	PCB-1016	L1	LCS/LCSD RPD outside acceptance criteria.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 4.83. Rad error is 4.83.
		Gross beta		TPU is 9.56. Rad error is 8.23.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.363. Rad error is 0.362.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.21. Rad error is 2.21.
		Technetium-99		TPU is 16.1. Rad error is 13.9.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.73. Rad error is 1.72.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 103. Rad error is 101.
		Cyanide	N	Sample spike (MS/MSD) recovery not within control limits.
		Iodide	W	Post-digestion spike recovery out of control limits.
8004-4793 MW367	MW367UG3-23	PCB-1016	L1	LCS/LCSD RPD outside acceptance criteria.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 5.32. Rad error is 5.32.
		Gross beta		TPU is 5.62. Rad error is 5.41.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.693. Rad error is 0.692.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.31. Rad error is 3.23.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 12.4. Rad error is 12.3.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.08. Rad error is 2.04.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 117. Rad error is 113.
		Cyanide	N	Sample spike (MS/MSD) recovery not within control limits.
		Iodide	W	Post-digestion spike recovery out of control limits.
8004-0983 MW368	MW368UG3-23	PCB-1016	L1	LCS/LCSD RPD outside acceptance criteria.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 6.7. Rad error is 6.6.
		Gross beta		TPU is 7.92. Rad error is 7.
		Iodine-131		During sampling, the well went dry; therefore, no sample was collected.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.512. Rad error is 0.511.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.82. Rad error is 1.77.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 11.5. Rad error is 11.4.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.3. Rad error is 2.27.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 65.5. Rad error is 65.5.
		Cyanide	N	Sample spike (MS/MSD) recovery not within control limits.
		Iodide	W	Post-digestion spike recovery out of control limits.

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Finds/Unit: <u>KY8-890-008-982 / 1</u>

Facility: US DOE - Paducah Gaseous Diffusion Plant

LAB ID:<u>None</u>

Permit Number: SW07300014, SW07300015, SW07300045

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4820 MW369	MW369UG3-23	PCB-1016	L1	LCS/LCSD RPD outside acceptance criteria.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 7.21. Rad error is 7.19.
		Gross beta		TPU is 7.64. Rad error is 7.32.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.346. Rad error is 0.346.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.96. Rad error is 1.93.
		Technetium-99		TPU is 12. Rad error is 11.2.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.98. Rad error is 1.95.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 111. Rad error is 108.
		Cyanide	N	Sample spike (MS/MSD) recovery not within control limits.
		Iodide	W	Post-digestion spike recovery out of control limits.
8004-4818 MW370	MW370UG3-23	PCB-1016	L1	LCS/LCSD RPD outside acceptance criteria.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.2. Rad error is 3.2.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 4.09. Rad error is 4.09.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.711. Rad error is 0.711.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.04. Rad error is 2.03.
		Technetium-99		TPU is 12.3. Rad error is 11.9.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.16. Rad error is 2.14.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 98.7. Rad error is 97.5.
		Cyanide	N	Sample spike (MS/MSD) recovery not within control limits.
		Iodide	W	Post-digestion spike recovery out of control limits.
8004-4819 MW371	MW371UG3-23	Aluminum	*	Duplicate analysis not within control limits.
		Tantalum	N	Sample spike (MS/MSD) recovery not within control limits
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 5.01. Rad error is 5.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 5.65. Rad error is 5.57.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.859. Rad error is 0.859.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.47. Rad error is 1.47.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 11.5. Rad error is 11.5.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.58. Rad error is 2.55.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 102. Rad error is 102.
		Total Organic Halides	*	Duplicate analysis not within control limits.

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Permit Number: SW07300014, SW07300015, SW07300045

Finds/Unit: <u>KY8-890-008-982 / 1</u>
LAB ID:<u>None</u>

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4808 MW372	MW372UG3-23	Aluminum	*	Duplicate analysis not within control limits.
		Tantalum	N	Sample spike (MS/MSD) recovery not within control limits
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 5.57. Rad error is 5.56.
		Gross beta		TPU is 7.77. Rad error is 7.21.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.292. Rad error is 0.292.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.33. Rad error is 1.33.
		Technetium-99		TPU is 12.9. Rad error is 12.3.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.72. Rad error is 2.71.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 93.5. Rad error is 93.4.
		Total Organic Halides	*	Duplicate analysis not within control limits.
8004-4792 MW373	MW373UG3-23	Aluminum	*	Duplicate analysis not within control limits.
		Tantalum	N	Sample spike (MS/MSD) recovery not within control limits
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.73. Rad error is 3.72.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 5.32. Rad error is 5.2.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.313. Rad error is 0.313.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.39. Rad error is 1.39.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 11.1. Rad error is 10.9.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.87. Rad error is 0.868.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 79.9. Rad error is 79.9.
		Total Organic Halides	*	Duplicate analysis not within control limits.
8004-0990 MW374	MW374UG3-23	Aluminum	*	Duplicate analysis not within control limits.
		Tantalum	N	Sample spike (MS/MSD) recovery not within control limits
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 4.29. Rad error is 4.28.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 4.55. Rad error is 4.5.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.586. Rad error is 0.586.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.52. Rad error is 1.52.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 10.6. Rad error is 10.6.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.02. Rad error is 2.01.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 90.2. Rad error is 90.2.
		Total Organic Halides	*	Duplicate analysis not within control limits.

RESIDENTIAL/CONTAINED – QUARTERLY   Finds/Unit: <u>KY8-890-008-982 / 1</u>
Facility: US DOE - Paducah Gaseous Diffusion Plant   LAB ID:<u>None</u>
Permit Number: SW07300014, SW07300015, SW07300045

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-0985 MW375	MW375UG3-23	Aluminum	*	Duplicate analysis not within control limits.
		Tantalum	N	Sample spike (MS/MSD) recovery not within control limits
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 7.03. Rad error is 6.98.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 5.59. Rad error is 5.55.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.261. Rad error is 0.261.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.28. Rad error is 1.28.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 11. Rad error is 11.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.79. Rad error is 1.78.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 97.7. Rad error is 97.6.
		Total Organic Halides	*	Duplicate analysis not within control limits.

RESIDENTIAL/CONTAINED – QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: SW07300014, SW07300015, SW07300045

Finds/Unit: <u>KY8-890-008-982 / 1</u>
LAB ID:<u>None</u>

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-0988 MW376		Bromide		During sampling, the well went dry; therefore, no sample was collected.
		Chloride		During sampling, the well went dry; therefore, no sample was collected.
		Fluoride		During sampling, the well went dry; therefore, no sample was collected.
		Nitrate & Nitrite		During sampling, the well went dry; therefore, no sample was collected.
		Sulfate		During sampling, the well went dry; therefore, no sample was collected.
		Barometric Pressure Reading		During sampling, the well went dry; therefore, no sample was collected.
		Specific Conductance		During sampling, the well went dry; therefore, no sample was collected.
		Static Water Level Elevation		During sampling, the well went dry; therefore, no sample was collected.
		Dissolved Oxygen		During sampling, the well went dry; therefore, no sample was collected.
		Total Dissolved Solids		During sampling, the well went dry; therefore, no sample was collected.
		pH		During sampling, the well went dry; therefore, no sample was collected.
		Eh		During sampling, the well went dry; therefore, no sample was collected.
		Temperature		During sampling, the well went dry; therefore, no sample was collected.
		Aluminum		During sampling, the well went dry; therefore, no sample was collected.
		Antimony		During sampling, the well went dry; therefore, no sample was collected.
		Arsenic		During sampling, the well went dry; therefore, no sample was collected.
		Barium		During sampling, the well went dry; therefore, no sample was collected.
		Beryllium		During sampling, the well went dry; therefore, no sample was collected.
		Boron		During sampling, the well went dry; therefore, no sample was collected.
		Cadmium		During sampling, the well went dry; therefore, no sample was collected.
		Calcium		During sampling, the well went dry; therefore, no sample was collected.
		Chromium		During sampling, the well went dry; therefore, no sample was collected.
		Cobalt		During sampling, the well went dry; therefore, no sample was collected.
		Copper		During sampling, the well went dry; therefore, no sample was collected.
		Iron		During sampling, the well went dry; therefore, no sample was collected.
		Lead		During sampling, the well went dry; therefore, no sample was collected.
		Magnesium		During sampling, the well went dry; therefore, no sample was collected.
		Manganese		During sampling, the well went dry; therefore, no sample was collected.
		Mercury		During sampling, the well went dry; therefore, no sample was collected.

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-0988	MW376	Molybdenum		During sampling, the well went dry; therefore, no sample was collected.
		Nickel		During sampling, the well went dry; therefore, no sample was collected.
		Potassium		During sampling, the well went dry; therefore, no sample was collected.
		Rhodium		During sampling, the well went dry; therefore, no sample was collected.
		Selenium		During sampling, the well went dry; therefore, no sample was collected.
		Silver		During sampling, the well went dry; therefore, no sample was collected.
		Sodium		During sampling, the well went dry; therefore, no sample was collected.
		Tantalum		During sampling, the well went dry; therefore, no sample was collected.
		Thallium		During sampling, the well went dry; therefore, no sample was collected.
		Uranium		During sampling, the well went dry; therefore, no sample was collected.
		Vanadium		During sampling, the well went dry; therefore, no sample was collected.
		Zinc		During sampling, the well went dry; therefore, no sample was collected.
		Vinyl acetate		During sampling, the well went dry; therefore, no sample was collected.
		Acetone		During sampling, the well went dry; therefore, no sample was collected.
		Acrolein		During sampling, the well went dry; therefore, no sample was collected.
		Acrylonitrile		During sampling, the well went dry; therefore, no sample was collected.
		Benzene		During sampling, the well went dry; therefore, no sample was collected.
		Chlorobenzene		During sampling, the well went dry; therefore, no sample was collected.
		Xylenes		During sampling, the well went dry; therefore, no sample was collected.
		Styrene		During sampling, the well went dry; therefore, no sample was collected.
		Toluene		During sampling, the well went dry; therefore, no sample was collected.
		Chlorobromomethane		During sampling, the well went dry; therefore, no sample was collected.
		Bromodichloromethane		During sampling, the well went dry; therefore, no sample was collected.
		Tribromomethane		During sampling, the well went dry; therefore, no sample was collected.
		Methyl bromide		During sampling, the well went dry; therefore, no sample was collected.
		Methyl Ethyl Ketone		During sampling, the well went dry; therefore, no sample was collected.
		trans-1,4-Dichloro-2-butene		During sampling, the well went dry; therefore, no sample was collected.
		Carbon disulfide		During sampling, the well went dry; therefore, no sample was collected.
		Chloroethane		During sampling, the well went dry; therefore, no sample was collected.

RESIDENTIAL/CONTAINED – QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: SW07300014, SW07300015, SW07300045

Finds/Unit: <u>KY8-890-008-982 / 1</u>
LAB ID:<u>None</u>

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-0988	MW376	Chloroform		During sampling, the well went dry; therefore, no sample was collected.
		Methyl chloride		During sampling, the well went dry; therefore, no sample was collected.
		cis-1,2-Dichloroethene		During sampling, the well went dry; therefore, no sample was collected.
		Methylene bromide		During sampling, the well went dry; therefore, no sample was collected.
		1,1-Dichloroethane		During sampling, the well went dry; therefore, no sample was collected.
		1,2-Dichloroethane		During sampling, the well went dry; therefore, no sample was collected.
		1,1-Dichloroethylene		During sampling, the well went dry; therefore, no sample was collected.
		1,2-Dibromoethane		During sampling, the well went dry; therefore, no sample was collected.
		1,1,2,2-Tetrachloroethane		During sampling, the well went dry; therefore, no sample was collected.
		1,1,1-Trichloroethane		During sampling, the well went dry; therefore, no sample was collected.
		1,1,2-Trichloroethane		During sampling, the well went dry; therefore, no sample was collected.
		1,1,1,2-Tetrachloroethane		During sampling, the well went dry; therefore, no sample was collected.
		Vinyl chloride		During sampling, the well went dry; therefore, no sample was collected.
		Tetrachloroethene		During sampling, the well went dry; therefore, no sample was collected.
		Trichloroethene		During sampling, the well went dry; therefore, no sample was collected.
		Ethylbenzene		During sampling, the well went dry; therefore, no sample was collected.
		2-Hexanone		During sampling, the well went dry; therefore, no sample was collected.
		Iodomethane		During sampling, the well went dry; therefore, no sample was collected.
		Dibromochloromethane		During sampling, the well went dry; therefore, no sample was collected.
		Carbon tetrachloride		During sampling, the well went dry; therefore, no sample was collected.
		Dichloromethane		During sampling, the well went dry; therefore, no sample was collected.
		Methyl Isobutyl Ketone		During sampling, the well went dry; therefore, no sample was collected.
		1,2-Dibromo-3-chloropropane		During sampling, the well went dry; therefore, no sample was collected.
		1,2-Dichloropropane		During sampling, the well went dry; therefore, no sample was collected.
		trans-1,3-Dichloropropene		During sampling, the well went dry; therefore, no sample was collected.
		cis-1,3-Dichloropropene		During sampling, the well went dry; therefore, no sample was collected.
		trans-1,2-Dichloroethene		During sampling, the well went dry; therefore, no sample was collected.
		Trichlorofluoromethane		During sampling, the well went dry; therefore, no sample was collected.
		1,2,3-Trichloropropane		During sampling, the well went dry; therefore, no sample was collected.

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-0988 MW376		1,2-Dichlorobenzene		During sampling, the well went dry; therefore, no sample was collected.
		1,4-Dichlorobenzene		During sampling, the well went dry; therefore, no sample was collected.
		PCB, Total		During sampling, the well went dry; therefore, no sample was collected.
		PCB-1016		During sampling, the well went dry; therefore, no sample was collected.
		PCB-1221		During sampling, the well went dry; therefore, no sample was collected.
		PCB-1232		During sampling, the well went dry; therefore, no sample was collected.
		PCB-1242		During sampling, the well went dry; therefore, no sample was collected.
		PCB-1248		During sampling, the well went dry; therefore, no sample was collected.
		PCB-1254		During sampling, the well went dry; therefore, no sample was collected.
		PCB-1260		During sampling, the well went dry; therefore, no sample was collected.
		PCB-1268		During sampling, the well went dry; therefore, no sample was collected.
		Gross alpha		During sampling, the well went dry; therefore, no sample was collected.
		Gross beta		During sampling, the well went dry; therefore, no sample was collected.
		Iodine-131		During sampling, the well went dry; therefore, no sample was collected.
		Radium-226		During sampling, the well went dry; therefore, no sample was collected.
		Strontium-90		During sampling, the well went dry; therefore, no sample was collected.
		Technetium-99		During sampling, the well went dry; therefore, no sample was collected.
		Thorium-230		During sampling, the well went dry; therefore, no sample was collected.
		Tritium		During sampling, the well went dry; therefore, no sample was collected.
		Chemical Oxygen Demand		During sampling, the well went dry; therefore, no sample was collected.
		Cyanide		During sampling, the well went dry; therefore, no sample was collected.
		Iodide		During sampling, the well went dry; therefore, no sample was collected.
		Total Organic Carbon		During sampling, the well went dry; therefore, no sample was collected.
		Total Organic Halides		During sampling, the well went dry; therefore, no sample was collected.

RESIDENTIAL/CONTAINED – QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: SW07300014, SW07300015, SW07300045

Finds/Unit: <u>KY8-890-008-982 / 1</u>
LAB ID:<u>None   </u>

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-0989 MW377		Bromide		During sampling, the well went dry; therefore, no sample was collected.
		Chloride		During sampling, the well went dry; therefore, no sample was collected.
		Fluoride		During sampling, the well went dry; therefore, no sample was collected.
		Nitrate & Nitrite		During sampling, the well went dry; therefore, no sample was collected.
		Sulfate		During sampling, the well went dry; therefore, no sample was collected.
		Barometric Pressure Reading		During sampling, the well went dry; therefore, no sample was collected.
		Specific Conductance		During sampling, the well went dry; therefore, no sample was collected.
		Static Water Level Elevation		During sampling, the well went dry; therefore, no sample was collected.
		Dissolved Oxygen		During sampling, the well went dry; therefore, no sample was collected.
		Total Dissolved Solids		During sampling, the well went dry; therefore, no sample was collected.
		pH		During sampling, the well went dry; therefore, no sample was collected.
		Eh		During sampling, the well went dry; therefore, no sample was collected.
		Temperature		During sampling, the well went dry; therefore, no sample was collected.
		Aluminum		During sampling, the well went dry; therefore, no sample was collected.
		Antimony		During sampling, the well went dry; therefore, no sample was collected.
		Arsenic		During sampling, the well went dry; therefore, no sample was collected.
		Barium		During sampling, the well went dry; therefore, no sample was collected.
		Beryllium		During sampling, the well went dry; therefore, no sample was collected.
		Boron		During sampling, the well went dry; therefore, no sample was collected.
		Cadmium		During sampling, the well went dry; therefore, no sample was collected.
		Calcium		During sampling, the well went dry; therefore, no sample was collected.
		Chromium		During sampling, the well went dry; therefore, no sample was collected.
		Cobalt		During sampling, the well went dry; therefore, no sample was collected.
		Copper		During sampling, the well went dry; therefore, no sample was collected.
		Iron		During sampling, the well went dry; therefore, no sample was collected.
		Lead		During sampling, the well went dry; therefore, no sample was collected.
		Magnesium		During sampling, the well went dry; therefore, no sample was collected.
		Manganese		During sampling, the well went dry; therefore, no sample was collected.
		Mercury		During sampling, the well went dry; therefore, no sample was collected.

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-0989	MW377	Molybdenum		During sampling, the well went dry; therefore, no sample was collected.
		Nickel		During sampling, the well went dry; therefore, no sample was collected.
		Potassium		During sampling, the well went dry; therefore, no sample was collected.
		Rhodium		During sampling, the well went dry; therefore, no sample was collected.
		Selenium		During sampling, the well went dry; therefore, no sample was collected.
		Silver		During sampling, the well went dry; therefore, no sample was collected.
		Sodium		During sampling, the well went dry; therefore, no sample was collected.
		Tantalum		During sampling, the well went dry; therefore, no sample was collected.
		Thallium		During sampling, the well went dry; therefore, no sample was collected.
		Uranium		During sampling, the well went dry; therefore, no sample was collected.
		Vanadium		During sampling, the well went dry; therefore, no sample was collected.
		Zinc		During sampling, the well went dry; therefore, no sample was collected.
		Vinyl acetate		During sampling, the well went dry; therefore, no sample was collected.
		Acetone		During sampling, the well went dry; therefore, no sample was collected.
		Acrolein		During sampling, the well went dry; therefore, no sample was collected.
		Acrylonitrile		During sampling, the well went dry; therefore, no sample was collected.
		Benzene		During sampling, the well went dry; therefore, no sample was collected.
		Chlorobenzene		During sampling, the well went dry; therefore, no sample was collected.
		Xylenes		During sampling, the well went dry; therefore, no sample was collected.
		Styrene		During sampling, the well went dry; therefore, no sample was collected.
		Toluene		During sampling, the well went dry; therefore, no sample was collected.
		Chlorobromomethane		During sampling, the well went dry; therefore, no sample was collected.
		Bromodichloromethane		During sampling, the well went dry; therefore, no sample was collected.
		Tribromomethane		During sampling, the well went dry; therefore, no sample was collected.
		Methyl bromide		During sampling, the well went dry; therefore, no sample was collected.
		Methyl Ethyl Ketone		During sampling, the well went dry; therefore, no sample was collected.
		trans-1,4-Dichloro-2-butene		During sampling, the well went dry; therefore, no sample was collected.
		Carbon disulfide		During sampling, the well went dry; therefore, no sample was collected.
		Chloroethane		During sampling, the well went dry; therefore, no sample was collected.

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-0989	MW377	Chloroform		During sampling, the well went dry; therefore, no sample was collected.
		Methyl chloride		During sampling, the well went dry; therefore, no sample was collected.
		cis-1,2-Dichloroethene		During sampling, the well went dry; therefore, no sample was collected.
		Methylene bromide		During sampling, the well went dry; therefore, no sample was collected.
		1,1-Dichloroethane		During sampling, the well went dry; therefore, no sample was collected.
		1,2-Dichloroethane		During sampling, the well went dry; therefore, no sample was collected.
		1,1-Dichloroethylene		During sampling, the well went dry; therefore, no sample was collected.
		1,2-Dibromoethane		During sampling, the well went dry; therefore, no sample was collected.
		1,1,2,2-Tetrachloroethane		During sampling, the well went dry; therefore, no sample was collected.
		1,1,1-Trichloroethane		During sampling, the well went dry; therefore, no sample was collected.
		1,1,2-Trichloroethane		During sampling, the well went dry; therefore, no sample was collected.
		1,1,1,2-Tetrachloroethane		During sampling, the well went dry; therefore, no sample was collected.
		Vinyl chloride		During sampling, the well went dry; therefore, no sample was collected.
		Tetrachloroethene		During sampling, the well went dry; therefore, no sample was collected.
		Trichloroethene		During sampling, the well went dry; therefore, no sample was collected.
		Ethylbenzene		During sampling, the well went dry; therefore, no sample was collected.
		2-Hexanone		During sampling, the well went dry; therefore, no sample was collected.
		Iodomethane		During sampling, the well went dry; therefore, no sample was collected.
		Dibromochloromethane		During sampling, the well went dry; therefore, no sample was collected.
		Carbon tetrachloride		During sampling, the well went dry; therefore, no sample was collected.
		Dichloromethane		During sampling, the well went dry; therefore, no sample was collected.
		Methyl Isobutyl Ketone		During sampling, the well went dry; therefore, no sample was collected.
		1,2-Dibromo-3-chloropropane		During sampling, the well went dry; therefore, no sample was collected.
		1,2-Dichloropropane		During sampling, the well went dry; therefore, no sample was collected.
		trans-1,3-Dichloropropene		During sampling, the well went dry; therefore, no sample was collected.
		cis-1,3-Dichloropropene		During sampling, the well went dry; therefore, no sample was collected.
		trans-1,2-Dichloroethene		During sampling, the well went dry; therefore, no sample was collected.
		Trichlorofluoromethane		During sampling, the well went dry; therefore, no sample was collected.
		1,2,3-Trichloropropane		During sampling, the well went dry; therefore, no sample was collected.

RESIDENTIAL/CONTAINED – QUARTERLY   Finds/Unit: <u>KY8-890-008-982 / 1</u>
Facility: US DOE - Paducah Gaseous Diffusion Plant   LAB ID:<u>None</u>
Permit Number: SW07300014, SW07300015, SW07300045

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-0989 MW377		1,2-Dichlorobenzene		During sampling, the well went dry; therefore, no sample was collected.
		1,4-Dichlorobenzene		During sampling, the well went dry; therefore, no sample was collected.
		PCB, Total		During sampling, the well went dry; therefore, no sample was collected.
		PCB-1016		During sampling, the well went dry; therefore, no sample was collected.
		PCB-1221		During sampling, the well went dry; therefore, no sample was collected.
		PCB-1232		During sampling, the well went dry; therefore, no sample was collected.
		PCB-1242		During sampling, the well went dry; therefore, no sample was collected.
		PCB-1248		During sampling, the well went dry; therefore, no sample was collected.
		PCB-1254		During sampling, the well went dry; therefore, no sample was collected.
		PCB-1260		During sampling, the well went dry; therefore, no sample was collected.
		PCB-1268		During sampling, the well went dry; therefore, no sample was collected.
		Gross alpha		During sampling, the well went dry; therefore, no sample was collected.
		Gross beta		During sampling, the well went dry; therefore, no sample was collected.
		Iodine-131		During sampling, the well went dry; therefore, no sample was collected.
		Radium-226		During sampling, the well went dry; therefore, no sample was collected.
		Strontium-90		During sampling, the well went dry; therefore, no sample was collected.
		Technetium-99		During sampling, the well went dry; therefore, no sample was collected.
		Thorium-230		During sampling, the well went dry; therefore, no sample was collected.
		Tritium		During sampling, the well went dry; therefore, no sample was collected.
		Chemical Oxygen Demand		During sampling, the well went dry; therefore, no sample was collected.
		Cyanide		During sampling, the well went dry; therefore, no sample was collected.
		Iodide		During sampling, the well went dry; therefore, no sample was collected.
		Total Organic Carbon		During sampling, the well went dry; therefore, no sample was collected.
		Total Organic Halides		During sampling, the well went dry; therefore, no sample was collected.

RESIDENTIAL/CONTAINED – QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: SW07300014, SW07300015, SW07300045

Finds/Unit: <u>KY8-890-008-982 / 1</u>
LAB ID:<u>None</u>

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
0000-0000 QC	RI1UG3-23	Bromide		Analysis of constituent not required and not performed.
		Chloride		Analysis of constituent not required and not performed.
		Fluoride		Analysis of constituent not required and not performed.
		Nitrate & Nitrite		Analysis of constituent not required and not performed.
		Sulfate		Analysis of constituent not required and not performed.
		Barometric Pressure Reading		Analysis of constituent not required and not performed.
		Specific Conductance		Analysis of constituent not required and not performed.
		Static Water Level Elevation		Analysis of constituent not required and not performed.
		Dissolved Oxygen		Analysis of constituent not required and not performed.
		Total Dissolved Solids		Analysis of constituent not required and not performed.
		pH		Analysis of constituent not required and not performed.
		Eh		Analysis of constituent not required and not performed.
		Temperature		Analysis of constituent not required and not performed.
		PCB, Total	Y2	MS/MSD RPD outside acceptance criteria.
		PCB-1016	Y2	MS/MSD RPD outside acceptance criteria.
		PCB-1260	Y2	MS/MSD RPD outside acceptance criteria.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.96. Rad error is 3.96.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 6.31. Rad error is 6.29.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.459. Rad error is 0.458.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.49. Rad error is 2.42.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 10.8. Rad error is 10.8.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.78. Rad error is 0.777.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 131. Rad error is 131.
		Chemical Oxygen Demand		Analysis of constituent not required and not performed.
		Cyanide		Analysis of constituent not required and not performed.
		Total Organic Carbon		Analysis of constituent not required and not performed.
		Total Organic Halides		Analysis of constituent not required and not performed.

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
0000-0000 QC	FB1UG3-23	Bromide		Analysis of constituent not required and not performed.
		Chloride		Analysis of constituent not required and not performed.
		Fluoride		Analysis of constituent not required and not performed.
		Nitrate & Nitrite		Analysis of constituent not required and not performed.
		Sulfate		Analysis of constituent not required and not performed.
		Barometric Pressure Reading		Analysis of constituent not required and not performed.
		Specific Conductance		Analysis of constituent not required and not performed.
		Static Water Level Elevation		Analysis of constituent not required and not performed.
		Dissolved Oxygen		Analysis of constituent not required and not performed.
		Total Dissolved Solids		Analysis of constituent not required and not performed.
		pH		Analysis of constituent not required and not performed.
		Eh		Analysis of constituent not required and not performed.
		Temperature		Analysis of constituent not required and not performed.
		PCB, Total	Y2	MS/MSD RPD outside acceptance criteria.
		PCB-1016	Y2	MS/MSD RPD outside acceptance criteria.
		PCB-1260	Y2	MS/MSD RPD outside acceptance criteria.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.4. Rad error is 3.4.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 6.3. Rad error is 6.3.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.213. Rad error is 0.213.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.35. Rad error is 2.35.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 10.9. Rad error is 10.9.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.76. Rad error is 1.74.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 133. Rad error is 133.
		Chemical Oxygen Demand		Analysis of constituent not required and not performed.
		Cyanide		Analysis of constituent not required and not performed.
		Total Organic Carbon		Analysis of constituent not required and not performed.
		Total Organic Halides		Analysis of constituent not required and not performed.

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
0000-0000 QC	TB1UG3-23	Bromide		Analysis of constituent not required and not performed.
		Chloride		Analysis of constituent not required and not performed.
		Fluoride		Analysis of constituent not required and not performed.
		Nitrate & Nitrite		Analysis of constituent not required and not performed.
		Sulfate		Analysis of constituent not required and not performed.
		Barometric Pressure Reading		Analysis of constituent not required and not performed.
		Specific Conductance		Analysis of constituent not required and not performed.
		Static Water Level Elevation		Analysis of constituent not required and not performed.
		Dissolved Oxygen		Analysis of constituent not required and not performed.
		Total Dissolved Solids		Analysis of constituent not required and not performed.
		pH		Analysis of constituent not required and not performed.
		Eh		Analysis of constituent not required and not performed.
		Temperature		Analysis of constituent not required and not performed.
		Aluminum		Analysis of constituent not required and not performed.
		Antimony		Analysis of constituent not required and not performed.
		Arsenic		Analysis of constituent not required and not performed.
		Barium		Analysis of constituent not required and not performed.
		Beryllium		Analysis of constituent not required and not performed.
		Boron		Analysis of constituent not required and not performed.
		Cadmium		Analysis of constituent not required and not performed.
		Calcium		Analysis of constituent not required and not performed.
		Chromium		Analysis of constituent not required and not performed.
		Cobalt		Analysis of constituent not required and not performed.
		Copper		Analysis of constituent not required and not performed.
		Iron		Analysis of constituent not required and not performed.
		Lead		Analysis of constituent not required and not performed.
		Magnesium		Analysis of constituent not required and not performed.
		Manganese		Analysis of constituent not required and not performed.
		Mercury		Analysis of constituent not required and not performed.
		Molybdenum		Analysis of constituent not required and not performed.
		Nickel		Analysis of constituent not required and not performed.
		Potassium		Analysis of constituent not required and not performed.
		Rhodium		Analysis of constituent not required and not performed.
		Selenium		Analysis of constituent not required and not performed.
		Silver		Analysis of constituent not required and not performed.
		Sodium		Analysis of constituent not required and not performed.
		Tantalum		Analysis of constituent not required and not performed.
		Thallium		Analysis of constituent not required and not performed.
		Uranium		Analysis of constituent not required and not performed.
		Vanadium		Analysis of constituent not required and not performed.

RESIDENTIAL/CONTAINED – QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: SW07300014, SW07300015, SW07300045

Finds/Unit: <u>KY8-890-008-982 / 1</u>
LAB ID:<u>None</u>

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
0000-0000 QC	TB1UG3-23	Zinc		Analysis of constituent not required and not performed.
		PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha		Analysis of constituent not required and not performed.
		Gross beta		Analysis of constituent not required and not performed.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226		Analysis of constituent not required and not performed.
		Strontium-90		Analysis of constituent not required and not performed.
		Technetium-99		Analysis of constituent not required and not performed.
		Thorium-230		Analysis of constituent not required and not performed.
		Tritium		Analysis of constituent not required and not performed.
		Chemical Oxygen Demand		Analysis of constituent not required and not performed.
		Cyanide		Analysis of constituent not required and not performed.
		Iodide		Analysis of constituent not required and not performed.
		Total Organic Carbon		Analysis of constituent not required and not performed.
		Total Organic Halides		Analysis of constituent not required and not performed.

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
0000-0000 QC	TB2UG3-23	Bromide		Analysis of constituent not required and not performed.
		Chloride		Analysis of constituent not required and not performed.
		Fluoride		Analysis of constituent not required and not performed.
		Nitrate & Nitrite		Analysis of constituent not required and not performed.
		Sulfate		Analysis of constituent not required and not performed.
		Barometric Pressure Reading		Analysis of constituent not required and not performed.
		Specific Conductance		Analysis of constituent not required and not performed.
		Static Water Level Elevation		Analysis of constituent not required and not performed.
		Dissolved Oxygen		Analysis of constituent not required and not performed.
		Total Dissolved Solids		Analysis of constituent not required and not performed.
		pH		Analysis of constituent not required and not performed.
		Eh		Analysis of constituent not required and not performed.
		Temperature		Analysis of constituent not required and not performed.
		Aluminum		Analysis of constituent not required and not performed.
		Antimony		Analysis of constituent not required and not performed.
		Arsenic		Analysis of constituent not required and not performed.
		Barium		Analysis of constituent not required and not performed.
		Beryllium		Analysis of constituent not required and not performed.
		Boron		Analysis of constituent not required and not performed.
		Cadmium		Analysis of constituent not required and not performed.
		Calcium		Analysis of constituent not required and not performed.
		Chromium		Analysis of constituent not required and not performed.
		Cobalt		Analysis of constituent not required and not performed.
		Copper		Analysis of constituent not required and not performed.
		Iron		Analysis of constituent not required and not performed.
		Lead		Analysis of constituent not required and not performed.
		Magnesium		Analysis of constituent not required and not performed.
		Manganese		Analysis of constituent not required and not performed.
		Mercury		Analysis of constituent not required and not performed.
		Molybdenum		Analysis of constituent not required and not performed.
		Nickel		Analysis of constituent not required and not performed.
		Potassium		Analysis of constituent not required and not performed.
		Rhodium		Analysis of constituent not required and not performed.
		Selenium		Analysis of constituent not required and not performed.
		Silver		Analysis of constituent not required and not performed.
		Sodium		Analysis of constituent not required and not performed.
		Tantalum		Analysis of constituent not required and not performed.
		Thallium		Analysis of constituent not required and not performed.
		Uranium		Analysis of constituent not required and not performed.
		Vanadium		Analysis of constituent not required and not performed.

RESIDENTIAL/CONTAINED – QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: SW07300014, SW07300015, SW07300045

Finds/Unit: <u>KY8-890-008-982 / 1</u>
LAB ID:<u>None</u>

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
0000-0000 QC	TB2UG3-23	Zinc		Analysis of constituent not required and not performed.
		PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha		Analysis of constituent not required and not performed.
		Gross beta		Analysis of constituent not required and not performed.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226		Analysis of constituent not required and not performed.
		Strontium-90		Analysis of constituent not required and not performed.
		Technetium-99		Analysis of constituent not required and not performed.
		Thorium-230		Analysis of constituent not required and not performed.
		Tritium		Analysis of constituent not required and not performed.
		Chemical Oxygen Demand		Analysis of constituent not required and not performed.
		Cyanide		Analysis of constituent not required and not performed.
		Iodide		Analysis of constituent not required and not performed.
		Total Organic Carbon		Analysis of constituent not required and not performed.
		Total Organic Halides		Analysis of constituent not required and not performed.

RESIDENTIAL/CONTAINED – QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: SW07300014, SW07300015, SW07300045

Finds/Unit: <u>KY8-890-008-982 / 1</u>
LAB ID:<u>None</u>

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
0000-0000 QC	TB3UG3-23	Bromide		Analysis of constituent not required and not performed.
		Chloride		Analysis of constituent not required and not performed.
		Fluoride		Analysis of constituent not required and not performed.
		Nitrate & Nitrite		Analysis of constituent not required and not performed.
		Sulfate		Analysis of constituent not required and not performed.
		Barometric Pressure Reading		Analysis of constituent not required and not performed.
		Specific Conductance		Analysis of constituent not required and not performed.
		Static Water Level Elevation		Analysis of constituent not required and not performed.
		Dissolved Oxygen		Analysis of constituent not required and not performed.
		Total Dissolved Solids		Analysis of constituent not required and not performed.
		pH		Analysis of constituent not required and not performed.
		Eh		Analysis of constituent not required and not performed.
		Temperature		Analysis of constituent not required and not performed.
		Aluminum		Analysis of constituent not required and not performed.
		Antimony		Analysis of constituent not required and not performed.
		Arsenic		Analysis of constituent not required and not performed.
		Barium		Analysis of constituent not required and not performed.
		Beryllium		Analysis of constituent not required and not performed.
		Boron		Analysis of constituent not required and not performed.
		Cadmium		Analysis of constituent not required and not performed.
		Calcium		Analysis of constituent not required and not performed.
		Chromium		Analysis of constituent not required and not performed.
		Cobalt		Analysis of constituent not required and not performed.
		Copper		Analysis of constituent not required and not performed.
		Iron		Analysis of constituent not required and not performed.
		Lead		Analysis of constituent not required and not performed.
		Magnesium		Analysis of constituent not required and not performed.
		Manganese		Analysis of constituent not required and not performed.
		Mercury		Analysis of constituent not required and not performed.
		Molybdenum		Analysis of constituent not required and not performed.
		Nickel		Analysis of constituent not required and not performed.
		Potassium		Analysis of constituent not required and not performed.
		Rhodium		Analysis of constituent not required and not performed.
		Selenium		Analysis of constituent not required and not performed.
		Silver		Analysis of constituent not required and not performed.
		Sodium		Analysis of constituent not required and not performed.
		Tantalum		Analysis of constituent not required and not performed.
		Thallium		Analysis of constituent not required and not performed.
		Uranium		Analysis of constituent not required and not performed.
		Vanadium		Analysis of constituent not required and not performed.

RESIDENTIAL/CONTAINED – QUARTERLY   Finds/Unit: <u>KY8-890-008-982 / 1</u>

Facility: US DOE - Paducah Gaseous Diffusion Plant   LAB ID:<u>None</u>

Permit Number: SW07300014, SW07300015, SW07300045

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
0000-0000 QC	TB3UG3-23	Zinc		Analysis of constituent not required and not performed.
		PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha		Analysis of constituent not required and not performed.
		Gross beta		Analysis of constituent not required and not performed.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226		Analysis of constituent not required and not performed.
		Strontium-90		Analysis of constituent not required and not performed.
		Technetium-99		Analysis of constituent not required and not performed.
		Thorium-230		Analysis of constituent not required and not performed.
		Tritium		Analysis of constituent not required and not performed.
		Chemical Oxygen Demand		Analysis of constituent not required and not performed.
		Cyanide		Analysis of constituent not required and not performed.
		Iodide		Analysis of constituent not required and not performed.
		Total Organic Carbon		Analysis of constituent not required and not performed.
		Total Organic Halides		Analysis of constituent not required and not performed.

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4795 MW361	MW361DUG3-23	Chloride	W	Post-digestion spike recovery out of control limits.
		Barometric Pressure Reading		Analysis of constituent not required and not performed.
		Specific Conductance		Analysis of constituent not required and not performed.
		Static Water Level Elevation		Analysis of constituent not required and not performed.
		Dissolved Oxygen		Analysis of constituent not required and not performed.
		pH		Analysis of constituent not required and not performed.
		Eh		Analysis of constituent not required and not performed.
		Temperature		Analysis of constituent not required and not performed.
		PCB, Total	Y2	MS/MSD RPD outside acceptance criteria.
		PCB-1016	Y2	MS/MSD RPD outside acceptance criteria.
		PCB-1260	Y2	MS/MSD RPD outside acceptance criteria.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 5.09. Rad error is 5.09.
		Gross beta		TPU is 11.3. Rad error is 9.7.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.4. Rad error is 0.4.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.88. Rad error is 1.88.
		Technetium-99		TPU is 12.1. Rad error is 11.4.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.929. Rad error is 0.922.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 139. Rad error is 137.

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APPENDIX D

**STATISTICAL ANALYSES AND
QUALIFICATION STATEMENT**

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GROUNDWATER
STATISTICAL COMMENTS

Introduction

The statistical analyses conducted on the second quarter 2023 groundwater data collected from the C-746-U Landfill monitoring wells (MWs) were performed in accordance with Permit GSTR0001, Standard Requirement 3, using the U.S. Environmental Protection Agency (EPA) guidance document, *EPA Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Interim Final Guidance* (1989). A statistician qualification statement has been provided for this analysis.

The statistical evaluation was conducted separately for the three groundwater systems: the Upper Continental Recharge System (UCRS), the Upper Regional Gravel Aquifer (URGA), and the Lower Regional Gravel Aquifer (LRGA). For each groundwater system, data from wells considered to represent background conditions were compared with test wells (downgradient or sidegradient wells) (Exhibit D.1). The second quarter 2023 data used to conduct the statistical analyses were collected in April 2023. The statistical analyses for this report first used data from the first eight quarters that had been sampled for each parameter to develop the historical background value, beginning with the first two baseline sampling events in 2002, when available. Then a second set of statistical analyses, using the last eight quarters, was run on analytes that had at least one downgradient well that had exceeded the historical background. The sampling dates associated with both the historical and the current background data are listed next to the result in the statistical analysis sheets of this appendix.

Statistical Analysis Process

Constituents of concern that have Kentucky maximum contaminant levels (MCLs) and results that do not exceed their respective MCL are not included in the statistical evaluation. Parameters that have MCLs can be found in 401 *KAR* 47:030 § 6. For parameters with no established MCL and those parameters that exceed their MCLs, the most recent results are compared to historical background concentrations, as follows: the data are divided into censored and uncensored observations. The one-sided tolerance interval statistical test is conducted only on parameters that have at least one uncensored (detected) observation. The current result is compared to the results of the one-sided tolerance interval statistical test to determine if the current data exceed the historical background concentration calculated using the first eight quarters of data. The tolerance interval statistical analysis is conducted separately for each parameter in each well (no pooling of downgradient data).

For the statistical analysis of pH, a two-sided tolerance interval statistical test is conducted. The test well results are compared to both an upper and lower tolerance limit (TL) to determine if statistically significant deviations in concentrations exist with respect to upgradient (background) well data from the first eight quarters.

Statistical analyses are performed on the first eight quarters of historical background data, not on the data for the current quarter. Once a statistical result is obtained using the background data, the result for the current quarter is compared to that value. If the value is exceeded, the well is considered to have an exceedance of the statistically derived historical background concentration.

Exhibit D.1. Station Identification for Monitoring Wells Analyzed

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

[a] The gradients in UCRS wells are downward and, hydrogeologically, UCRS wells are not considered upgradient, downgradient, or sidegradient from the C-746-U Landfill. The UCRS wells identified as upgradient, sidegradient, or downgradient are those wells located in the same general direction as the RGA wells considered to be upgradient, sidegradient, or downgradient.
[b] Well was dry this quarter, and a groundwater sample could not be collected.
BG: upgradient or background wells
TW: downgradient or test wells
SG: sidegradient wells

For those parameters that are determined to exceed the historical background concentration, a second one-sided tolerance interval statistical test, or a two-sided tolerance interval statistical test in the case of pH, is conducted. The second one-sided tolerance interval statistical test is conducted to determine whether the current concentration in downgradient wells exceeds the current background, as determined by a comparison against the statistically derived upper TL using the most recent eight quarters of data for the relevant background wells. For the statistical analysis of pH, a two-sided tolerance interval statistical test is conducted, if required. The test well pH results are compared to both an upper and lower TL to determine if the current pH is different from the current background level to a statistically significant level. The tolerance interval statistical analysis is conducted separately for each parameter in each well (no pooling of downgradient data).

Statistical analyses are performed on the last eight quarters of current background data, not on the data for the current quarter. Once a statistical result is obtained using the background data, the result for the current quarter is compared to that value. If the value is exceeded, the well has an exceedance of the statistically derived current background concentration.

A stepwise list of the one-sided tolerance interval statistical procedure applied to the data is summarized below.[1]

1. The TL is calculated for the background data (first using the first eight quarters, then using the last eight quarters, if required).

    • For each parameter, the background data are used to establish a baseline. On this data set, the mean (X) and the standard deviation (S) are computed.

    • The data set is checked for normality using coefficient of variation (CV). If CV ≤ 1.0, then the data are assumed to be normally distributed. Data sets with CV > 1.0 are assumed to be log-normally distributed; for data sets with CV > 1.0, the data are log-transformed and analyzed.

    • The factor (K) for one-sided upper TL with 95% minimum coverage is determined (Table 5, Appendix B, *EPA Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Interim Final Guidance*, 1989) based on the number of background data points.

    • The one-sided upper TL is calculated using the following equation:

    $$TL = X + (K \times S)$$

2. Each observation from downgradient wells is compared to the calculated one-sided upper TL in Step 1. If an observation value exceeds the TL, then there is statistically significant evidence that the well concentration exceeds the historical background.

Type of Data Used

Exhibit D.1 presents the upgradient or background wells (identified as "BG"), the downgradient or test wells (identified as "TW"), and the sidegradient wells (identified as "SG") for the C-746-U Contained Landfill. Exhibit D.2 presents the parameters from the available data set for which a statistical test was performed using the one-sided tolerance interval.

Exhibits D.3, D.4, and D.5 list the number of analyses (observations), nondetects (censored observations), and detects (uncensored observations), by parameter in the UCRS, the URGA, and the LRGA, respectively. Those parameters displayed with bold-face type indicate the one-sided tolerance interval statistical test was performed. The data presented in Exhibits D.3, D.4, and D.5 were collected during the current quarter, second quarter 2023. The observations are representative of the current quarter data. Background data are presented in Attachments D1 and D2. The sampling dates associated with background data are listed next to the result in Attachments D1 and D2. When field duplicate data are available, the higher of the two readings is retained for further evaluation. When a data point has been rejected following data validation or data assessment, this result is not used, and the next available data point is used for the background or current quarter data.

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

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
Dissolved Oxygen
Dissolved Solids
Iron
Magnesium
Manganese
Molybdenum
Nickel
Oxidation-Reduction Potential[a]
pH[b]
Potassium
Sodium
Sulfate
Technetium-99
Total Organic Carbon (TOC)
Total Organic Halides (TOX)
Trichloroethene
Vanadium
Zinc

[a] Oxidation-Reduction Potential calibrated as Eh.
[b] For pH, the test well results were compared to both an upper and lower TL to determine if the current result differs to a statistically significant degree from the historical background values.

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

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
1,1,1,2-Tetrachloroethane	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**	**1**	**6**	**Yes**
Antimony	7	7	0	No
Beryllium	7	7	0	No
Boron	**7**	**2**	**5**	**Yes**
Bromide	**7**	**6**	**1**	**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
Chemical Oxygen Demand (COD)	**7**	**5**	**2**	**Yes**
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
cis-1,2-Dichloroethene	7	7	0	No
cis-1,3-Dichloropropene	7	7	0	No
Cobalt	**7**	**4**	**3**	**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**	**1**	**6**	**Yes**
Magnesium	**7**	**0**	**7**	**Yes**
Manganese	**7**	**1**	**6**	**Yes**
Methylene chloride	7	7	0	No
Molybdenum	**7**	**3**	**4**	**Yes**

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
Nickel	**7**	**1**	**6**	**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	7	0	No
Tetrachloroethene	7	7	0	No
Thallium	7	7	0	No
Thorium-230	7	7	0	No
Toluene	7	7	0	No
Total Organic Carbon (TOC)	**7**	**0**	**7**	**Yes**
Total Organic Halides (TOX)	**7**	**1**	**6**	**Yes**
trans-1,2-Dichloroethene	7	7	0	No
trans-1,3-Dichloropropene	7	7	0	No
trans-1,4-Dichloro-2-Butene	7	7	0	No
Trichlorofluoromethane	7	7	0	No
Vanadium	**7**	**4**	**3**	**Yes**
Vinyl Acetate	7	7	0	No
Zinc	**7**	**3**	**4**	**Yes**

Bold denotes parameters with at least one uncensored observation.

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

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
1,1,1,2-Tetrachloroethane	6	6	0	No
1,1,2,2-Tetrachloroethane	6	6	0	No
1,1,2-Trichloroethane	6	6	0	No
1,1-Dichloroethane	6	6	0	No
1,2,3-Trichloropropane	6	6	0	No
1,2-Dibromo-3-chloropropane	6	6	0	No
1,2-Dibromoethane	6	6	0	No
1,2-Dichlorobenzene	6	6	0	No
1,2-Dichloropropane	6	6	0	No
2-Butanone	6	6	0	No
2-Hexanone	6	6	0	No
4-Methyl-2-pentanone	6	6	0	No
Acetone	6	6	0	No
Acrolein	6	6	0	No
Acrylonitrile	6	6	0	No
Aluminum	**6**	**2**	**4**	**Yes**
Antimony	6	6	0	No
Beryllium	6	6	0	No
Boron	**6**	**0**	**6**	**Yes**
Bromide	**6**	**1**	**5**	**Yes**
Bromochloromethane	6	6	0	No
Bromodichloromethane	6	6	0	No
Bromoform	6	6	0	No
Bromomethane	6	6	0	No
Calcium	**6**	**0**	**6**	**Yes**
Carbon disulfide	6	6	0	No
Chemical Oxygen Demand (COD)	6	6	0	No
Chloride	**6**	**0**	**6**	**Yes**
Chlorobenzene	6	6	0	No
Chloroethane	6	6	0	No
Chloroform	6	6	0	No
Chloromethane	6	6	0	No
cis-1,2-Dichloroethene	6	6	0	No
cis-1,3-Dichloropropene	6	6	0	No
Cobalt	**6**	**1**	**5**	**Yes**
Conductivity	**6**	**0**	**6**	**Yes**
Copper	**6**	**2**	**4**	**Yes**
Cyanide	6	6	0	No
Dibromochloromethane	6	6	0	No
Dibromomethane	6	6	0	No
Dimethylbenzene, Total	6	6	0	No
Dissolved Oxygen	**6**	**0**	**6**	**Yes**
Dissolved Solids	**6**	**0**	**6**	**Yes**
Ethylbenzene	6	6	0	No
Iodide	6	6	0	No
Iodomethane	6	6	0	No
Iron	**6**	**1**	**5**	**Yes**
Magnesium	**6**	**0**	**6**	**Yes**
Manganese	**6**	**0**	**6**	**Yes**
Methylene chloride	6	6	0	No
Molybdenum	**6**	**5**	**1**	**Yes**

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
Nickel	**6**	**0**	**6**	**Yes**
Oxidation-Reduction Potential	**6**	**0**	**6**	**Yes**
PCB, Total	6	6	0	No
PCB-1016	6	6	0	No
PCB-1221	6	6	0	No
PCB-1232	6	6	0	No
PCB-1242	6	6	0	No
PCB-1248	6	6	0	No
PCB-1254	6	6	0	No
PCB-1260	6	6	0	No
PCB-1268	6	6	0	No
pH	**6**	**0**	**6**	**Yes**
Potassium	**6**	**0**	**6**	**Yes**
Radium-226	6	6	0	No
Rhodium	6	6	0	No
Sodium	**6**	**0**	**6**	**Yes**
Styrene	6	6	0	No
Sulfate	**6**	**0**	**6**	**Yes**
Tantalum	6	6	0	No
Technetium-99	**6**	**2**	**4**	**Yes**
Tetrachloroethene	6	6	0	No
Thallium	6	6	0	No
Thorium-230	6	6	0	No
Toluene	6	6	0	No
Total Organic Carbon (TOC)	**6**	**0**	**6**	**Yes**
Total Organic Halides (TOX)	**6**	**1**	**5**	**Yes**
trans-1,2-Dichloroethene	6	6	0	No
trans-1,3-Dichloropropene	6	6	0	No
trans-1,4-Dichloro-2-Butene	6	6	0	No
Trichloroethene	**6**	**1**	**5**	**Yes**
Trichlorofluoromethane	6	6	0	No
Vanadium	6	6	0	No
Vinyl Acetate	6	6	0	No
Zinc	**6**	**3**	**3**	**Yes**

Bold denotes parameters with at least one uncensored observation.

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

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
1,1,1,2-Tetrachloroethane	6	6	0	No
1,1,2,2-Tetrachloroethane	6	6	0	No
1,1,2-Trichloroethane	6	6	0	No
1,1-Dichloroethane	6	6	0	No
1,2,3-Trichloropropane	6	6	0	No
1,2-Dibromo-3-chloropropane	6	6	0	No
1,2-Dibromoethane	6	6	0	No
1,2-Dichlorobenzene	6	6	0	No
1,2-Dichloropropane	6	6	0	No
2-Butanone	6	6	0	No
2-Hexanone	6	6	0	No
4-Methyl-2-pentanone	6	6	0	No
Acetone	6	6	0	No
Acrolein	6	6	0	No
Acrylonitrile	6	6	0	No
Aluminum	**6**	**5**	**1**	**Yes**
Antimony	6	6	0	No
Beryllium	6	6	0	No
Boron	**6**	**0**	**6**	**Yes**
Bromide	**6**	**0**	**6**	**Yes**
Bromochloromethane	6	6	0	No
Bromodichloromethane	6	6	0	No
Bromoform	6	6	0	No
Bromomethane	6	6	0	No
Calcium	**6**	**0**	**6**	**Yes**
Carbon disulfide	6	6	0	No
Chemical Oxygen Demand (COD)	**6**	**4**	**2**	**Yes**
Chloride	**6**	**0**	**6**	**Yes**
Chlorobenzene	6	6	0	No
Chloroethane	6	6	0	No
Chloroform	6	6	0	No
Chloromethane	6	6	0	No
cis-1,2-Dichloroethene	6	6	0	No
cis-1,3-Dichloropropene	6	6	0	No
Cobalt	**6**	**4**	**2**	**Yes**
Conductivity	**6**	**0**	**6**	**Yes**
Copper	**6**	**2**	**4**	**Yes**
Cyanide	6	6	0	No
Dibromochloromethane	6	6	0	No
Dibromomethane	6	6	0	No
Dimethylbenzene, Total	6	6	0	No
Dissolved Oxygen	**6**	**0**	**6**	**Yes**
Dissolved Solids	**6**	**0**	**6**	**Yes**
Ethylbenzene	6	6	0	No
Iodide	6	6	0	No
Iodomethane	6	6	0	No
Iron	**6**	**2**	**4**	**Yes**
Magnesium	**6**	**0**	**6**	**Yes**
Manganese	**6**	**0**	**6**	**Yes**
Methylene chloride	6	6	0	No
Molybdenum	6	6	0	No

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
Nickel	**6**	**1**	**5**	**Yes**
Oxidation-Reduction Potential	**6**	**0**	**6**	**Yes**
PCB, Total	6	6	0	No
PCB-1016	6	6	0	No
PCB-1221	6	6	0	No
PCB-1232	6	6	0	No
PCB-1242	6	6	0	No
PCB-1248	6	6	0	No
PCB-1254	6	6	0	No
PCB-1260	6	6	0	No
PCB-1268	6	6	0	No
pH	**6**	**0**	**6**	**Yes**
Potassium	**6**	**0**	**6**	**Yes**
Radium-226	6	6	0	No
Rhodium	6	6	0	No
Sodium	**6**	**0**	**6**	**Yes**
Styrene	6	6	0	No
Sulfate	**6**	**0**	**6**	**Yes**
Tantalum	6	6	0	No
Technetium-99	**6**	**2**	**4**	**Yes**
Tetrachloroethene	6	6	0	No
Thallium	6	6	0	No
Thorium-230	6	6	0	No
Toluene	6	6	0	No
Total Organic Carbon (TOC)	**6**	**0**	**6**	**Yes**
Total Organic Halides (TOX)	**6**	**1**	**5**	**Yes**
trans-1,2-Dichloroethene	6	6	0	No
trans-1,3-Dichloropropene	6	6	0	No
trans-1,4-Dichloro-2-Butene	6	6	0	No
Trichlorofluoromethane	6	6	0	No
Vanadium	**6**	**5**	**1**	**Yes**
Vinyl Acetate	6	6	0	No
Zinc	**6**	**3**	**3**	**Yes**

Bold denotes parameters with at least one uncensored observation.

Discussion of Results from Historical Background Comparison

For the UCRS, URGA, and LRGA, the concentrations of this quarter were compared to the results of the one-sided tolerance interval test calculated using historical background and are presented in Attachment D1. The statistician qualification statement is presented in Attachment D3. For the UCRS, URGA, and LRGA, the test was applied to 25, 25, and 25 parameters, respectively, including those listed in bold print in Exhibits D.3, D.4, and D.5, which includes those constituents that exceeded their MCL. A summary of exceedances when compared to statistically derived historical upgradient background by well number is shown in Exhibit D.6.

UCRS

This quarter's results identified historical background exceedances for dissolved oxygen, oxidation-reduction potential, and sulfate.

URGA

This quarter's results identified historical background exceedances for calcium, conductivity, dissolved solids, magnesium, oxidation-reduction potential, sulfate, and technetium-99.

LRGA

This quarter's results identified historical background exceedances for dissolved oxygen, nickel, oxidation-reduction potential, and technetium-99.

Statistical Summary

Summaries of the results of the statistical tests conducted on data obtained from wells in the UCRS, the URGA, and in the LRGA in comparison to historical data are presented in Exhibit D.7, Exhibit D.8, and Exhibit D.9, respectively.

Exhibit D.6. Summary of Exceedances of Statistically Derived Historical Background Concentrations

UCRS	URGA	LRGA
MW359: Dissolved Oxygen, Oxidation-Reduction Potential,* and Sulfate	**MW357:** Oxidation-Reduction Potential*	**MW358:** Nickel and Oxidation-Reduction Potential*
MW362: Dissolved Oxygen, Oxidation-Reduction Potential,* and Sulfate	**MW360:** Oxidation-Reduction Potential*	**MW361:** Dissolved Oxygen and Oxidation-Reduction Potential*
MW365: Dissolved Oxygen, Oxidation-Reduction Potential,* and Sulfate	**MW363:** Oxidation-Reduction Potential*	**MW364:** Oxidation-Reduction Potential* and Technetium-99
MW368: Dissolved Oxygen, Oxidation-Reduction Potential,* and Sulfate	**MW366:** Oxidation-Reduction Potential* and Technetium-99	**MW367:** Oxidation-Reduction Potential*
MW371: Dissolved Oxygen, Oxidation-Reduction Potential,* and Sulfate	**MW369:** Oxidation-Reduction Potential*	**MW370:** Oxidation-Reduction Potential*
MW374: Oxidation-Reduction Potential* and Sulfate	**MW372:** Calcium, Conductivity, Dissolved Solids, Magnesium, Oxidation-Reduction Potential,* and Sulfate	**MW373:** Oxidation-Reduction Potential*
MW375: Oxidation-Reduction Potential* and Sulfate		

*Oxidation-Reduction Potential calibrated as Eh.

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

Parameter	Performed Test	CV Normality Test[a]	Results of Tolerance Interval Test Conducted
Aluminum	Tolerance Interval	2.08	No exceedance of statistically derived historical background concentration.
Boron	Tolerance Interval	1.24	No exceedance of statistically derived historical background concentration.
Bromide	Tolerance Interval	0.34	No exceedance of statistically derived historical background concentration.
Calcium	Tolerance Interval	0.40	No exceedance of statistically derived historical background concentration.
COD	Tolerance Interval	0.97	No exceedance of statistically derived historical background concentration.
Chloride	Tolerance Interval	0.95	No exceedance of statistically derived historical background concentration.
Cobalt	Tolerance Interval	1.31	No exceedance of statistically derived historical background concentration.
Conductivity	Tolerance Interval	0.45	No exceedance of statistically derived historical background concentration.
Copper	Tolerance Interval	1.27	No exceedance of statistically derived historical background concentration.
Dissolved Oxygen	Tolerance Interval	0.55	Current results exceed statistically derived historical background concentration in MW359, MW362, MW365, MW368, and MW371.
Dissolved Solids	Tolerance Interval	0.42	No exceedance of statistically derived historical background concentration.
Iron	Tolerance Interval	0.98	No exceedance of statistically derived historical background concentration.
Magnesium	Tolerance Interval	0.27	No exceedance of statistically derived historical background concentration.
Manganese	Tolerance Interval	0.89	No exceedance of statistically derived historical background concentration.
Molybdenum	Tolerance Interval	1.65	No exceedance of statistically derived historical background concentration.
Nickel	Tolerance Interval	0.98	No exceedance of statistically derived historical background concentration.
Oxidation-Reduction Potential[b]	Tolerance Interval	3.54	Current results exceed statistically derived historical background concentration in MW359, MW362, MW365, MW368, MW371, MW374, and MW375.
pH	Tolerance Interval	0.04	No exceedance of statistically derived historical background concentration.
Potassium	Tolerance Interval	0.72	No exceedance of statistically derived historical background concentration.
Sodium	Tolerance Interval	0.40	No exceedance of statistically derived historical background concentration.
Sulfate	Tolerance Interval	0.49	Current results exceed statistically derived historical background concentration in MW359, MW362, MW365, MW368, MW371, MW374, and MW375.
TOC	Tolerance Interval	1.38	No exceedance of statistically derived historical background concentration.
TOX	Tolerance Interval	1.08	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
Vanadium	Tolerance Interval	1.32	No exceedance of statistically derived historical background concentration.
Zinc	Tolerance Interval	1.38	No exceedance of statistically derived historical background concentration.

CV: coefficient of variation

[a] If CV > 1.0, used log-transformed data.

[b] Oxidation-Reduction Potential calibrated as Eh.

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

Parameter	Performed Test	CV Normality Test[a]	Results of Tolerance Interval Test Conducted
Aluminum	Tolerance Interval	1.24	No exceedance of statistically derived historical background concentration.
Boron	Tolerance Interval	0.84	No exceedance of statistically derived historical background concentration.
Bromide	Tolerance Interval	0.00	No exceedance of statistically derived historical background concentration.
Calcium	Tolerance Interval	0.29	Current results exceed statistically derived historical background concentration in MW372.
Chloride	Tolerance Interval	0.10	No exceedance of statistically derived historical background concentration.
Cobalt	Tolerance Interval	0.84	No exceedance of statistically derived historical background concentration.
Conductivity	Tolerance Interval	0.12	Current results exceed statistically derived historical background concentration in MW372.
Copper	Tolerance Interval	0.40	No exceedance of statistically derived historical background concentration.
Dissolved Oxygen	Tolerance Interval	0.76	No exceedance of statistically derived historical background concentration.
Dissolved Solids	Tolerance Interval	0.16	Current results exceed statistically derived historical background concentration in MW372.
Iron	Tolerance Interval	0.95	No exceedance of statistically derived historical background concentration.
Magnesium	Tolerance Interval	0.27	Current results exceed statistically derived historical background concentration in MW372.
Manganese	Tolerance Interval	0.66	No exceedance of statistically derived historical background concentration.
Molybdenum	Tolerance Interval	1.20	No exceedance of statistically derived historical background concentration.
Nickel	Tolerance Interval	0.91	No exceedance of statistically derived historical background concentration.
Oxidation-Reduction Potential[b]	Tolerance Interval	1.26	Current results exceed statistically derived historical background concentration in MW357, MW360, MW363, MW366, MW369, and MW372.

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
pH	Tolerance Interval	0.03	No exceedance of statistically derived historical background concentration.
Potassium	Tolerance Interval	0.29	No exceedance of statistically derived historical background concentration.
Sodium	Tolerance Interval	0.26	No exceedance of statistically derived historical background concentration.
Sulfate	Tolerance Interval	0.75	Current results exceed statistically derived historical background concentration in MW372.
Technetium-99	Tolerance Interval	0.87	Current results exceed statistically derived historical background concentration in MW366.
TOC	Tolerance Interval	1.23	No exceedance of statistically derived historical background concentration.
TOX	Tolerance Interval	0.95	No exceedance of statistically derived historical background concentration.
Trichloroethene	Tolerance Interval	0.64	No exceedance of statistically derived historical background concentration.
Zinc	Tolerance Interval	1.49	No exceedance of statistically derived historical background concentration.

CV: coefficient of variation

[a] If CV > 1.0, used log-transformed data.

[b] Oxidation-Reduction Potential calibrated as Eh.

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

Parameter	Performed Test	CV Normality Test[a]	Results of Tolerance Interval Test Conducted
Aluminum	Tolerance Interval	2.78	No exceedance of statistically derived historical background concentration.
Boron	Tolerance Interval	0.68	No exceedance of statistically derived historical background concentration.
Bromide	Tolerance Interval	0.00	No exceedance of statistically derived historical background concentration.
Calcium	Tolerance Interval	0.31	No exceedance of statistically derived historical background concentration.
COD	Tolerance Interval	0.59	No exceedance of statistically derived historical background concentration.
Chloride	Tolerance Interval	0.16	No exceedance of statistically derived historical background concentration.
Cobalt	Tolerance Interval	1.16	No exceedance of statistically derived historical background concentration.
Conductivity	Tolerance Interval	0.26	No exceedance of statistically derived historical background concentration.
Copper	Tolerance Interval	0.40	No exceedance of statistically derived historical background concentration.
Dissolved Oxygen	Tolerance Interval	0.83	Current results exceed statistically derived historical background concentration in MW361.
Dissolved Solids	Tolerance Interval	0.30	No exceedance of statistically derived historical background concentration.
Iron	Tolerance Interval	0.96	No exceedance of statistically derived historical background concentration.
Magnesium	Tolerance Interval	0.34	No exceedance of statistically derived historical background concentration.
Manganese	Tolerance Interval	0.62	No exceedance of statistically derived historical background concentration.
Nickel	Tolerance Interval	0.90	Current results exceed statistically derived historical background concentration in MW358.
Oxidation-Reduction Potential[b]	Tolerance Interval	1.31	Current results exceed statistically derived historical background concentration in MW358, MW361, MW364, MW367, MW370, and MW373.
pH	Tolerance Interval	0.03	No exceedance of statistically derived historical background concentration.
Potassium	Tolerance Interval	0.18	No exceedance of statistically derived historical background concentration.
Sodium	Tolerance Interval	0.30	No exceedance of statistically derived historical background concentration.
Sulfate	Tolerance Interval	1.59	No exceedance of statistically derived historical background concentration.
Technetium-99	Tolerance Interval	1.73	Current results exceed statistically derived historical background concentration in MW364.
TOC	Tolerance Interval	1.96	No exceedance of statistically derived historical background concentration.
TOX	Tolerance Interval	0.98	No exceedance of statistically derived historical background concentration.
Vanadium	Tolerance Interval	0.32	No exceedance of statistically derived historical background concentration.
Zinc	Tolerance Interval	0.67	No exceedance of statistically derived historical background concentration.

CV: coefficient of variation
[a] If CV > 1.0, used log-transformed data.
[b] Oxidation-Reduction Potential calibrated as Eh.

Discussion of Results from Current Background Comparison

For concentrations in wells in the UCRS, URGA, and LRGA that exceeded the TL test using historical background, the concentrations were compared to the results of the one-sided tolerance interval test compared to current background, and are presented in Attachment D2. The statistician qualification statement is presented in Attachment D3. For the UCRS, URGA, and LRGA, the test was applied to 3, 7, and 4 parameters, respectively, because these parameter concentrations exceeded the historical background TL.

UCRS

Because gradients in the UCRS are downward (vertical), there are no hydrogeologically downgradient UCRS wells. It should be noted; however, that sulfate in MW368 exceeded the current TL this quarter.

URGA

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

LRGA

This quarter's results showed statistically significant exceedances of current background TL for nickel and technetium-99 in downgradient LRGA wells MW358 and MW364, respectively.

Statistical Summary

Summaries of the statistical tests conducted on data obtained from wells in the UCRS, the URGA, and the LRGA are presented in Exhibit D.10, Exhibit D.11, and Exhibit D.12, respectively.

Exhibit D.10. Test Summaries for Qualified Parameters for Current Background—UCRS

Parameter	Performed Test	CV Normality Test	Results of Tolerance Interval Test Conducted
Dissolved Oxygen	Tolerance Interval	0.67	None of the test wells exceeded the upper TL, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically significant level.
Oxidation-Reduction Potential*	Tolerance Interval	0.23	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	0.98	Because gradients in UCRS wells are downward, there are no UCRS wells that are hydrogeologically downgradient of the landfill; however, MW368 exceeded the upper TL, which is evidence of elevated concentration with respect to current background data.

CV: coefficient of variation
*Oxidation-Reduction Potential calibrated as Eh.

Exhibit D.11. Test Summaries for Qualified Parameters for Current Background—URGA

Parameter	Performed Test	CV Normality Test	Results of Tolerance Interval Test Conducted
Calcium	Tolerance Interval	0.62	None of the test wells exceeded the upper TL, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically significant level.
Conductivity	Tolerance Interval	0.37	None of the test wells exceeded the upper TL, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically significant level.
Dissolved Solids	Tolerance Interval	0.41	None of the test wells exceeded the upper TL, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically significant level.
Magnesium	Tolerance Interval	0.56	None of the test wells exceeded the upper TL, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically significant level.
Oxidation-Reduction Potential*	Tolerance Interval	0.08	None of the test wells exceeded the upper TL, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically significant level.
Sulfate	Tolerance Interval	0.92	None of the test wells exceeded the upper TL, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically significant level.
Technetium-99	Tolerance Interval	0.17	None of the test wells exceeded the upper TL, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically significant level.

CV: coefficient of variation
*Oxidation-Reduction Potential calibrated as Eh.

Exhibit D.12. Test Summaries for Qualified Parameters for Current Background—LRGA

Parameter	Performed Test	CV Normality Test	Results of Tolerance Interval Test Conducted
Dissolved Oxygen	Tolerance Interval	0.35	None of the test wells exceeded the upper TL, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically significant level.
Nickel	Tolerance Interval	0.47	MW358 exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.
Oxidation-Reduction Potential*	Tolerance Interval	0.07	None of the test wells exceeded the upper TL, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically significant level.
Technetium-99	Tolerance Interval	0.60	MW364 exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

CV: coefficient of variation

*Oxidation-Reduction Potential calibrated as Eh.

ATTACHMENT D1

**COMPARISON OF CURRENT DATA TO
ONE-SIDED UPPER TOLERANCE INTERVAL TEST
CALCULATED USING
HISTORICAL BACKGROUND DATA**

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C-746-U Second Quarter 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=** 3.300	**S=** 6.859	**CV(1)=** 2.078	**K factor**=** 2.523	**TL(1)=** 2.06E+01	**LL(1)=** N/A
Statistics-Transformed Background Data	**X=** -0.371	**S=** 1.678	**CV(2)=** -4.521	**K factor**=** 2.523	**TL(2)=** 3.86E+00	**LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	2.24E+00	8.06E-01
4/22/2002	2.00E-01	-1.61E+00
7/15/2002	2.00E-01	-1.61E+00
10/8/2002	2.00E-01	-1.61E+00
1/8/2003	2.00E-01	-1.61E+00
4/3/2003	2.00E-01	-1.61E+00
7/9/2003	2.00E-01	-1.61E+00
10/6/2003	2.00E-01	-1.61E+00

Well Number: MW374

Date Collected	Result	LN(Result)
10/8/2002	2.13E+01	3.06E+00
1/7/2003	2.00E+01	3.00E+00
4/2/2003	4.11E+00	1.41E+00
7/9/2003	1.41E+00	3.44E-01
10/7/2003	1.09E+00	8.62E-02
1/6/2004	8.54E-01	-1.58E-01
4/7/2004	2.00E-01	-1.61E+00
7/14/2004	2.00E-01	-1.61E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	3.48E-02	N/A	-3.36E+00	NO
MW362	Downgradient	Yes	1.76E+00	N/A	5.65E-01	NO
MW365	Downgradient	Yes	1.98E-02	N/A	-3.92E+00	NO
MW368	Downgradient	Yes	8.84E-02	N/A	-2.43E+00	NO
MW371	Upgradient	Yes	3.72E-01	N/A	-9.89E-01	NO
MW374	Upgradient	No	5.00E-02	N/A	-3.00E+00	N/A
MW375	Sidegradient	Yes	1.95E-01	N/A	-1.63E+00	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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= 0.805	**CV(1)**=1.238	**K factor****= 2.523	**TL(1)**= 2.68E+00 **LL(1)**=N/A
Statistics-Transformed Background Data	X= -1.034	S= 1.030	**CV(2)**=-0.996	**K factor****= 2.523	**TL(2)**= 1.56E+00 **LL(2)**=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	2.00E+00	6.93E-01
4/22/2002	2.00E+00	6.93E-01
7/15/2002	2.00E+00	6.93E-01
10/8/2002	2.00E-01	-1.61E+00
1/8/2003	2.00E-01	-1.61E+00
4/3/2003	2.00E-01	-1.61E+00
7/9/2003	2.00E-01	-1.61E+00
10/6/2003	2.00E-01	-1.61E+00

Well Number: MW374

Date Collected	Result	LN(Result)
10/8/2002	2.00E+00	6.93E-01
1/7/2003	2.00E-01	-1.61E+00
4/2/2003	2.00E-01	-1.61E+00
7/9/2003	2.00E-01	-1.61E+00
10/7/2003	2.00E-01	-1.61E+00
1/6/2004	2.00E-01	-1.61E+00
4/7/2004	2.00E-01	-1.61E+00
7/14/2004	2.00E-01	-1.61E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	No	1.50E-02	N/A	-4.20E+00	N/A
MW362	Downgradient	Yes	2.88E-02	N/A	-3.55E+00	NO
MW365	Downgradient	Yes	8.07E-03	N/A	-4.82E+00	NO
MW368	Downgradient	No	1.50E-02	N/A	-4.20E+00	N/A
MW371	Upgradient	Yes	8.98E-03	N/A	-4.71E+00	NO
MW374	Upgradient	Yes	4.63E-02	N/A	-3.07E+00	NO
MW375	Sidegradient	Yes	1.38E-02	N/A	-4.28E+00	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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= 1.394	S= 0.474	**CV(1)**=0.340	**K factor****= 2.523	**TL(1)**= 2.59E+00	**LL(1)**=N/A
Statistics-Transformed Background Data	X= 0.279	S= 0.332	**CV(2)**=1.190	**K factor****= 2.523	**TL(2)**= 1.12E+00	**LL(2)**=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	1.00E+00	0.00E+00
4/22/2002	1.00E+00	0.00E+00
7/15/2002	1.00E+00	0.00E+00
10/8/2002	1.00E+00	0.00E+00
1/8/2003	1.00E+00	0.00E+00
4/3/2003	1.00E+00	0.00E+00
7/9/2003	1.00E+00	0.00E+00
10/6/2003	1.00E+00	0.00E+00

Well Number: MW374

Date Collected	Result	LN(Result)
10/8/2002	2.10E+00	7.42E-01
1/7/2003	2.10E+00	7.42E-01
4/2/2003	1.90E+00	6.42E-01
7/9/2003	1.00E+00	0.00E+00
10/7/2003	1.90E+00	6.42E-01
1/6/2004	1.90E+00	6.42E-01
4/7/2004	1.80E+00	5.88E-01
7/14/2004	1.60E+00	4.70E-01

Dry/Partially Dry Wells

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	No	2.00E-01	N/A	-1.61E+00	N/A
MW362	Downgradient	No	2.00E-01	N/A	-1.61E+00	N/A
MW365	Downgradient	No	2.00E-01	N/A	-1.61E+00	N/A
MW368	Downgradient	No	2.00E-01	N/A	-1.61E+00	N/A
MW371	Upgradient	No	2.00E-01	N/A	-1.61E+00	N/A
MW374	Upgradient	Yes	5.19E-01	NO	-6.56E-01	N/A
MW375	Sidegradient	No	2.00E-01	N/A	-1.61E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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 $X=$ 34.100 $S=$ 13.637   **CV(1)=** 0.400   **K factor**=** 2.523   **TL(1)=** 6.85E+01   **LL(1)=** N/A

Statistics-Transformed Background Data $X=$ 3.466 $S=$ 0.356   **CV(2)=** 0.103   **K factor**=** 2.523   **TL(2)=** 4.36E+00   **LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	1.72E+01	2.84E+00
4/22/2002	2.24E+01	3.11E+00
7/15/2002	2.55E+01	3.24E+00
10/8/2002	2.64E+01	3.27E+00
1/8/2003	2.72E+01	3.30E+00
4/3/2003	3.03E+01	3.41E+00
7/9/2003	2.59E+01	3.25E+00
10/6/2003	2.70E+01	3.30E+00

Well Number: MW374

Date Collected	Result	LN(Result)
10/8/2002	6.73E+01	4.21E+00
1/7/2003	6.06E+01	4.10E+00
4/2/2003	4.72E+01	3.85E+00
7/9/2003	3.47E+01	3.55E+00
10/7/2003	3.71E+01	3.61E+00
1/6/2004	3.77E+01	3.63E+00
4/7/2004	3.22E+01	3.47E+00
7/14/2004	2.69E+01	3.29E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	5.21E+00	NO	1.65E+00	N/A
MW362	Downgradient	Yes	1.48E+01	NO	2.69E+00	N/A
MW365	Downgradient	Yes	2.13E+01	NO	3.06E+00	N/A
MW368	Downgradient	Yes	5.97E+01	NO	4.09E+00	N/A
MW371	Upgradient	Yes	5.94E+01	NO	4.08E+00	N/A
MW374	Upgradient	Yes	2.49E+01	NO	3.21E+00	N/A
MW375	Sidegradient	Yes	1.29E+01	NO	2.56E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 2023 Statistical Analysis   Historical Background Comparison
Chemical Oxygen Demand (COD)   UNITS: mg/L   UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X**= 72.938	**S**= 70.749	**CV(1)**=0.970	**K factor****= 2.523	**TL(1)**= 2.51E+02 **LL(1)**=N/A
Statistics-Transformed Background Data	**X**= 4.000	**S**= 0.702	**CV(2)**=0.175	**K factor****= 2.523	**TL(2)**= 5.77E+00 **LL(2)**=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	3.50E+01	3.56E+00
4/22/2002	3.50E+01	3.56E+00
7/15/2002	3.50E+01	3.56E+00
10/8/2002	3.50E+01	3.56E+00
1/8/2003	3.50E+01	3.56E+00
4/3/2003	3.50E+01	3.56E+00
7/9/2003	3.50E+01	3.56E+00
10/6/2003	3.50E+01	3.56E+00

Well Number: MW374

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

Dry/Partially Dry Wells

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	No	2.00E+01	N/A	3.00E+00	N/A
MW362	Downgradient	Yes	1.90E+01	NO	2.94E+00	N/A
MW365	Downgradient	No	2.00E+01	N/A	3.00E+00	N/A
MW368	Downgradient	No	2.00E+01	N/A	3.00E+00	N/A
MW371	Upgradient	No	2.00E+01	N/A	3.00E+00	N/A
MW374	Upgradient	Yes	2.79E+01	NO	3.33E+00	N/A
MW375	Sidegradient	No	2.00E+01	N/A	3.00E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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= 91.300	S= 86.959	CV(1)=0.952	K factor**= 2.523	TL(1)= 3.11E+02 LL(1)=N/A
Statistics-Transformed Background Data	X= 3.620	S= 1.590	CV(2)=0.439	K factor**= 2.523	TL(2)= 7.63E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Dry/Partially Dry Wells

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

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

Well Number: MW371

Date Collected	Result	LN(Result)
7/15/2002	8.30E+00	2.12E+00
10/8/2002	7.60E+00	2.03E+00
1/8/2003	7.70E+00	2.04E+00
4/3/2003	8.80E+00	2.17E+00
7/9/2003	8.10E+00	2.09E+00
10/6/2003	8.60E+00	2.15E+00
1/7/2004	7.60E+00	2.03E+00
4/6/2004	7.60E+00	2.03E+00

Well Number: MW374

Date Collected	Result	LN(Result)
10/8/2002	1.99E+02	5.29E+00
1/7/2003	2.00E+02	5.30E+00
4/2/2003	1.72E+02	5.15E+00
7/9/2003	1.79E+02	5.19E+00
10/7/2003	1.76E+02	5.17E+00
1/6/2004	1.70E+02	5.14E+00
4/7/2004	1.56E+02	5.05E+00
7/14/2004	1.45E+02	4.97E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	7.74E-01	NO	-2.56E-01	N/A
MW362	Downgradient	Yes	3.07E+00	NO	1.12E+00	N/A
MW365	Downgradient	Yes	2.15E+00	NO	7.65E-01	N/A
MW368	Downgradient	Yes	2.86E+00	NO	1.05E+00	N/A
MW371	Upgradient	Yes	2.05E+00	NO	7.18E-01	N/A
MW374	Upgradient	Yes	4.65E+01	NO	3.84E+00	N/A
MW375	Sidegradient	Yes	3.16E+00	NO	1.15E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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=** 0.007   **S=** 0.009   **CV(1)=**1.314   **K factor**=** 2.523   **TL(1)=** 3.12E-02   **LL(1)=**N/A

Statistics-Transformed Background Data   **X=** -5.843   **S=** 1.392   **CV(2)=** -0.238   **K factor**=** 2.523   **TL(2)=** -2.33E+00   **LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Dry/Partially Dry Wells	
Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	2.50E-02	-3.69E+00
4/22/2002	2.50E-02	-3.69E+00
7/15/2002	2.50E-02	-3.69E+00
10/8/2002	1.00E-03	-6.91E+00
1/8/2003	1.00E-03	-6.91E+00
4/3/2003	1.00E-03	-6.91E+00
7/9/2003	1.00E-03	-6.91E+00
10/6/2003	1.00E-03	-6.91E+00

Well Number: MW374

Date Collected	Result	LN(Result)
10/8/2002	1.00E-02	-4.61E+00
1/7/2003	1.00E-02	-4.61E+00
4/2/2003	1.00E-02	-4.61E+00
7/9/2003	1.61E-03	-6.43E+00
10/7/2003	1.00E-03	-6.91E+00
1/6/2004	1.00E-03	-6.91E+00
4/7/2004	1.00E-03	-6.91E+00
7/14/2004	1.00E-03	-6.91E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW362	Downgradient	Yes	6.06E-04	N/A	-7.41E+00	NO
MW365	Downgradient	Yes	1.67E-03	N/A	-6.39E+00	NO
MW368	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW371	Upgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW374	Upgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW375	Sidegradient	Yes	5.72E-04	N/A	-7.47E+00	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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= 918.744 S= 417.257 CV(1)=0.454   K factor**= 2.523   TL(1)= 1.97E+03 LL(1)=N/A

Statistics-Transformed Background Data   X= 6.705   S= 0.550   CV(2)=0.082   K factor**= 2.523   TL(2)= 8.09E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	5.41E+02	6.29E+00
4/22/2002	6.43E+02	6.47E+00
7/15/2002	6.32E+02	6.45E+00
10/8/2002	6.31E+02	6.45E+00
1/8/2003	6.80E+02	6.52E+00
4/3/2003	7.49E+02	6.62E+00
7/9/2003	7.34E+02	6.60E+00
10/6/2003	7.53E+02	6.62E+00

Well Number: MW374

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

Dry/Partially Dry Wells

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	2.19E+02	NO	5.39E+00	N/A
MW362	Downgradient	Yes	5.75E+02	NO	6.35E+00	N/A
MW365	Downgradient	Yes	4.25E+02	NO	6.05E+00	N/A
MW368	Downgradient	Yes	6.14E+02	NO	6.42E+00	N/A
MW371	Upgradient	Yes	6.40E+02	NO	6.46E+00	N/A
MW374	Upgradient	Yes	7.03E+02	NO	6.56E+00	N/A
MW375	Sidegradient	Yes	3.36E+02	NO	5.82E+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.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data   **X**= 0.056   **S**= 0.072   **CV(1)**=1.275   **K factor****= 2.523   **TL(1)**= 2.37E-01   **LL(1)**=N/A

Statistics-Transformed Background Data   **X**= -3.395   **S**= 0.915   **CV(2)**=-0.270   **K factor****= 2.523   **TL(2)**= -1.09E+00   **LL(2)**=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW371	
Date Collected	Result	LN(Result)
3/18/2002	2.50E-02	-3.69E+00
4/22/2002	2.50E-02	-3.69E+00
7/15/2002	5.00E-02	-3.00E+00
10/8/2002	2.00E-02	-3.91E+00
1/8/2003	2.00E-02	-3.91E+00
4/3/2003	2.00E-02	-3.91E+00
7/9/2003	2.00E-02	-3.91E+00
10/6/2003	2.00E-02	-3.91E+00

Well Number:	MW374	
Date Collected	Result	LN(Result)
10/8/2002	2.00E-01	-1.61E+00
1/7/2003	2.00E-01	-1.61E+00
4/2/2003	2.00E-01	-1.61E+00
7/9/2003	2.00E-02	-3.91E+00
10/7/2003	2.00E-02	-3.91E+00
1/6/2004	2.00E-02	-3.91E+00
4/7/2004	2.00E-02	-3.91E+00
7/14/2004	2.00E-02	-3.91E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	5.72E-04	N/A	-7.47E+00	NO
MW362	Downgradient	Yes	2.47E-03	N/A	-6.00E+00	NO
MW365	Downgradient	Yes	5.06E-03	N/A	-5.29E+00	NO
MW368	Downgradient	Yes	6.12E-04	N/A	-7.40E+00	NO
MW371	Upgradient	Yes	1.18E-03	N/A	-6.74E+00	NO
MW374	Upgradient	Yes	5.02E-04	N/A	-7.60E+00	NO
MW375	Sidegradient	Yes	7.28E-04	N/A	-7.23E+00	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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=** 1.138	**S=** 0.621	**CV(1)=** 0.546	**K factor**=** 2.523	**TL(1)=** 2.70E+00 **LL(1)=** N/A
Statistics-Transformed Background Data	**X=** -0.013	**S=** 0.577	**CV(2)=** -43.069	**K factor**=** 2.523	**TL(2)=** 1.44E+00 **LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	2.26E+00	8.15E-01
4/22/2002	1.15E+00	1.40E-01
7/15/2002	9.40E-01	-6.19E-02
10/8/2002	7.40E-01	-3.01E-01
1/8/2003	2.62E+00	9.63E-01
4/3/2003	1.50E+00	4.05E-01
7/9/2003	1.66E+00	5.07E-01
10/6/2003	1.28E+00	2.47E-01

Well Number: MW374

Date Collected	Result	LN(Result)
3/18/2002	6.00E-01	-5.11E-01
10/8/2002	6.70E-01	-4.00E-01
1/7/2003	2.30E-01	-1.47E+00
4/2/2003	6.50E-01	-4.31E-01
7/9/2003	9.20E-01	-8.34E-02
10/7/2003	9.90E-01	-1.01E-02
1/6/2004	1.11E+00	1.04E-01
4/7/2004	8.80E-01	-1.28E-01

Dry/Partially Dry Wells

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	5.18E+00	YES	1.64E+00	N/A
MW362	Downgradient	Yes	4.27E+00	YES	1.45E+00	N/A
MW365	Downgradient	Yes	7.64E+00	YES	2.03E+00	N/A
MW368	Downgradient	Yes	3.23E+00	YES	1.17E+00	N/A
MW371	Upgradient	Yes	7.75E+00	YES	2.05E+00	N/A
MW374	Upgradient	Yes	2.30E+00	NO	8.33E-01	N/A
MW375	Sidegradient	Yes	1.41E+00	NO	3.44E-01	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW359
MW362
MW365
MW368
MW371

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second 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= 590.000 S= 248.068 CV(1)=0.420   K factor**= 2.523   **TL(1)**= 1.22E+03 **LL(1)**=N/A

Statistics-Transformed Background Data   X= 6.308   S= 0.383   CV(2)=0.061   K factor**= 2.523   **TL(2)**= 7.27E+00 **LL(2)**=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	2.74E+02	5.61E+00
4/22/2002	4.09E+02	6.01E+00
7/15/2002	4.18E+02	6.04E+00
10/8/2002	4.24E+02	6.05E+00
1/8/2003	4.31E+02	6.07E+00
4/3/2003	4.44E+02	6.10E+00
7/9/2003	4.45E+02	6.10E+00
10/6/2003	4.38E+02	6.08E+00

Well Number: MW374

Date Collected	Result	LN(Result)
10/8/2002	1.14E+03	7.04E+00
1/7/2003	1.10E+03	7.00E+00
4/2/2003	8.63E+02	6.76E+00
7/9/2003	6.82E+02	6.53E+00
10/7/2003	5.89E+02	6.38E+00
1/6/2004	6.03E+02	6.40E+00
4/7/2004	6.01E+02	6.40E+00
7/14/2004	5.82E+02	6.37E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	1.19E+02	NO	4.78E+00	N/A
MW362	Downgradient	Yes	3.42E+02	NO	5.83E+00	N/A
MW365	Downgradient	Yes	2.57E+02	NO	5.55E+00	N/A
MW368	Downgradient	Yes	3.74E+02	NO	5.92E+00	N/A
MW371	Upgradient	Yes	2.32E+02	NO	5.45E+00	N/A
MW374	Upgradient	Yes	3.70E+02	NO	5.91E+00	N/A
MW375	Sidegradient	Yes	1.83E+02	NO	5.21E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	X= 6.612	S= 6.487	**CV(1)**=0.981	**K factor****= 2.523	**TL(1)**= 2.30E+01	**LL(1)**=N/A
Statistics-Transformed Background Data	X= 1.363	S= 1.147	**CV(2)**=0.841	**K factor****= 2.523	**TL(2)**= 4.26E+00	**LL(2)**=N/A

Historical Background Data from Upgradient Wells with Transformed Result		

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	1.31E+00	2.70E-01
4/22/2002	9.13E-01	-9.10E-02
7/15/2002	8.81E-01	-1.27E-01
10/8/2002	3.86E+00	1.35E+00
1/8/2003	1.88E+00	6.31E-01
4/3/2003	3.18E+00	1.16E+00
7/9/2003	4.84E-01	-7.26E-01
10/6/2003	2.72E+00	1.00E+00

Well Number: MW374

Date Collected	Result	LN(Result)
10/8/2002	2.30E+01	3.14E+00
1/7/2003	1.39E+01	2.63E+00
4/2/2003	1.40E+01	2.64E+00
7/9/2003	1.42E+01	2.65E+00
10/7/2003	7.92E+00	2.07E+00
1/6/2004	7.86E+00	2.06E+00
4/7/2004	4.82E+00	1.57E+00
7/14/2004	4.87E+00	1.58E+00

Dry/Partially Dry Wells	

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

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

Current Quarter Data						
Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	3.97E-02	NO	-3.23E+00	N/A
MW362	Downgradient	Yes	1.15E+00	NO	1.40E-01	N/A
MW365	Downgradient	No	1.00E-01	N/A	-2.30E+00	N/A
MW368	Downgradient	Yes	8.22E-02	NO	-2.50E+00	N/A
MW371	Upgradient	Yes	2.34E-01	NO	-1.45E+00	N/A
MW374	Upgradient	Yes	3.71E-01	NO	-9.92E-01	N/A
MW375	Sidegradient	Yes	1.63E-01	NO	-1.81E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

**   *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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=** 11.347	**S=** 3.019	**CV(1)=**0.266	**K factor**=** 2.523	**TL(1)=** 1.90E+01 **LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 2.401	**S=** 0.237	**CV(2)=**0.099	**K factor**=** 2.523	**TL(2)=** 3.00E+00 **LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Dry/Partially Dry Wells

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

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	7.10E+00	1.96E+00
4/22/2002	9.77E+00	2.28E+00
7/15/2002	1.04E+01	2.34E+00
10/8/2002	1.02E+01	2.32E+00
1/8/2003	1.07E+01	2.37E+00
4/3/2003	1.19E+01	2.48E+00
7/9/2003	1.08E+01	2.38E+00
10/6/2003	1.09E+01	2.39E+00

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

Well Number: MW374

Date Collected	Result	LN(Result)
10/8/2002	2.00E+01	3.00E+00
1/7/2003	1.61E+01	2.78E+00
4/2/2003	1.31E+01	2.57E+00
7/9/2003	1.03E+01	2.33E+00
10/7/2003	1.11E+01	2.41E+00
1/6/2004	1.10E+01	2.40E+00
4/7/2004	9.69E+00	2.27E+00
7/14/2004	8.49E+00	2.14E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	2.95E+00	NO	1.08E+00	N/A
MW362	Downgradient	Yes	6.57E+00	NO	1.88E+00	N/A
MW365	Downgradient	Yes	9.88E+00	NO	2.29E+00	N/A
MW368	Downgradient	Yes	1.39E+01	NO	2.63E+00	N/A
MW371	Upgradient	Yes	9.13E+00	NO	2.21E+00	N/A
MW374	Upgradient	Yes	6.31E+00	NO	1.84E+00	N/A
MW375	Sidegradient	Yes	5.46E+00	NO	1.70E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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= 0.248 | S= 0.222 | CV(1)=0.894 | K factor**= 2.523 | TL(1)= 8.09E-01 | LL(1)=N/A |

| Statistics-Transformed Background Data | X= -1.873 | S= 1.068 | CV(2)= -0.570 | K factor**= 2.523 | TL(2)= 8.21E-01 | LL(2)=N/A |

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	6.30E-02	-2.76E+00
4/22/2002	6.70E-02	-2.70E+00
7/15/2002	7.40E-02	-2.60E+00
10/8/2002	5.21E-02	-2.95E+00
1/8/2003	3.85E-02	-3.26E+00
4/3/2003	5.51E-02	-2.90E+00
7/9/2003	5.46E-02	-2.91E+00
10/6/2003	5.43E-02	-2.91E+00

Well Number: MW374

Date Collected	Result	LN(Result)
10/8/2002	5.96E-01	-5.18E-01
1/7/2003	5.65E-01	-5.71E-01
4/2/2003	6.75E-01	-3.93E-01
7/9/2003	3.97E-01	-9.24E-01
10/7/2003	3.12E-01	-1.16E+00
1/6/2004	2.99E-01	-1.21E+00
4/7/2004	3.29E-01	-1.11E+00
7/14/2004	3.42E-01	-1.07E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	No	5.00E-03	N/A	-5.30E+00	N/A
MW362	Downgradient	Yes	1.22E-02	NO	-4.41E+00	N/A
MW365	Downgradient	Yes	8.85E-03	NO	-4.73E+00	N/A
MW368	Downgradient	Yes	2.93E-03	NO	-5.83E+00	N/A
MW371	Upgradient	Yes	5.02E-03	NO	-5.29E+00	N/A
MW374	Upgradient	Yes	2.56E-02	NO	-3.67E+00	N/A
MW375	Sidegradient	Yes	1.07E-02	NO	-4.54E+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

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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=** 0.006	**S=** 0.010	**CV(1)=**1.650	**K factor**=** 2.523	**TL(1)=** 2.99E-02	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -6.108	**S=** 1.239	**CV(2)=** -0.203	**K factor**=** 2.523	**TL(2)=** -2.98E+00	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	2.50E-02	-3.69E+00
4/22/2002	2.50E-02	-3.69E+00
7/15/2002	2.50E-02	-3.69E+00
10/8/2002	1.00E-03	-6.91E+00
1/8/2003	1.21E-03	-6.72E+00
4/3/2003	1.00E-03	-6.91E+00
7/9/2003	1.11E-03	-6.80E+00
10/6/2003	1.00E-03	-6.91E+00

Well Number: MW374

Date Collected	Result	LN(Result)
10/8/2002	2.22E-03	-6.11E+00
1/7/2003	2.01E-03	-6.21E+00
4/2/2003	1.59E-03	-6.44E+00
7/9/2003	2.42E-03	-6.02E+00
10/7/2003	1.00E-03	-6.91E+00
1/6/2004	1.00E-03	-6.91E+00
4/7/2004	1.00E-03	-6.91E+00
7/14/2004	1.00E-03	-6.91E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW362	Downgradient	Yes	1.45E-03	N/A	-6.54E+00	NO
MW365	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW368	Downgradient	Yes	6.35E-04	N/A	-7.36E+00	NO
MW371	Upgradient	Yes	3.00E-04	N/A	-8.11E+00	NO
MW374	Upgradient	Yes	2.33E-04	N/A	-8.36E+00	NO
MW375	Sidegradient	No	1.00E-03	N/A	-6.91E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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=** 0.023   **S=** 0.022   **CV(1)=**0.980   **K factor**=** 2.523   **TL(1)=** 7.82E-02   **LL(1)=**N/A

Statistics-Transformed Background Data   **X=** -4.349   **S=** 1.109   **CV(2)=** -0.255   **K factor**=** 2.523   **TL(2)=** -1.55E+00   **LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result		

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	5.00E-02	-3.00E+00
4/22/2002	5.00E-02	-3.00E+00
7/15/2002	5.00E-02	-3.00E+00
10/8/2002	1.24E-02	-4.39E+00
1/8/2003	5.00E-03	-5.30E+00
4/3/2003	5.00E-03	-5.30E+00
7/9/2003	5.00E-03	-5.30E+00
10/6/2003	5.00E-03	-5.30E+00

Well Number: MW374

Date Collected	Result	LN(Result)
10/8/2002	5.00E-02	-3.00E+00
1/7/2003	5.00E-02	-3.00E+00
4/2/2003	5.00E-02	-3.00E+00
7/9/2003	7.94E-03	-4.84E+00
10/7/2003	5.00E-03	-5.30E+00
1/6/2004	5.00E-03	-5.30E+00
4/7/2004	5.00E-03	-5.30E+00
7/14/2004	5.00E-03	-5.30E+00

Dry/Partially Dry Wells	

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

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

Current Quarter Data						
Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	1.23E-03	NO	-6.70E+00	N/A
MW362	Downgradient	Yes	2.53E-03	NO	-5.98E+00	N/A
MW365	Downgradient	Yes	5.50E-03	NO	-5.20E+00	N/A
MW368	Downgradient	Yes	8.18E-04	NO	-7.11E+00	N/A
MW371	Upgradient	Yes	1.42E-03	NO	-6.56E+00	N/A
MW374	Upgradient	No	2.00E-03	N/A	-6.21E+00	N/A
MW375	Sidegradient	Yes	1.09E-03	NO	-6.82E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 2023 Statistical Analysis Historical Background Comparison
Oxidation-Reduction Potential   UNITS: mV   UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data   **X=** 22.281 **S=** 78.889 **CV(1)=** 3.541   **K factor**=** 2.523   **TL(1)=** 2.21E+02 **LL(1)=** N/A

Statistics-Transformed Background Data   **X=** 3.642 **S=** 1.729 **CV(2)=** 0.475   **K factor**=** 2.523   **TL(2)=** 5.11E+00 **LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result		

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	7.50E+01	4.32E+00
4/22/2002	1.65E+02	5.11E+00
7/15/2002	6.50E+01	4.17E+00
4/3/2003	-1.90E+01	#Func!
7/9/2003	1.14E+02	4.74E+00
10/6/2003	-2.20E+01	#Func!
1/7/2004	2.05E+01	3.02E+00
4/6/2004	1.13E+02	4.73E+00

Well Number: MW374

Date Collected	Result	LN(Result)
3/18/2002	1.35E+02	4.91E+00
4/2/2003	-5.60E+01	#Func!
7/9/2003	-6.80E+01	#Func!
10/7/2003	-5.00E+01	#Func!
1/6/2004	-8.50E+01	#Func!
4/7/2004	6.00E+00	1.79E+00
7/14/2004	-3.80E+01	#Func!
10/7/2004	1.00E+00	0.00E+00

Dry/Partially Dry Wells	

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

#Because the natural log was not possible for all background values, the TL was considered equal to the maximum background value.

Current Quarter Data							
Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	2.52E+02	N/A	5.53E+00	YES
MW362	Downgradient	Yes	3.30E+02	N/A	5.80E+00	YES
MW365	Downgradient	Yes	4.50E+02	N/A	6.11E+00	YES
MW368	Downgradient	Yes	4.20E+02	N/A	6.04E+00	YES
MW371	Upgradient	Yes	4.04E+02	N/A	6.00E+00	YES
MW374	Upgradient	Yes	4.21E+02	N/A	6.04E+00	YES
MW375	Sidegradient	Yes	3.66E+02	N/A	5.90E+00	YES

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data	

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances
MW359
MW362
MW365
MW368
MW371
MW374
MW375

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X**= 6.619	**S**= 0.295	**CV(1)**=0.045	**K factor****= 2.904	**TL(1)**=7.48E+00 **LL(1)**=5.76E+00
Statistics-Transformed Background Data	**X**= 1.889	**S**= 0.046	**CV(2)**=0.024	**K factor****= 2.904	**TL(2)**=2.02E+00 **LL(2)**=1.75E+00

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	6.30E+00	1.84E+00
4/22/2002	6.50E+00	1.87E+00
7/15/2002	6.50E+00	1.87E+00
10/8/2002	6.60E+00	1.89E+00
1/8/2003	6.60E+00	1.89E+00
4/3/2003	6.90E+00	1.93E+00
7/9/2003	6.70E+00	1.90E+00
10/6/2003	7.00E+00	1.95E+00

Well Number: MW374

Date Collected	Result	LN(Result)
3/18/2002	5.75E+00	1.75E+00
10/8/2002	6.60E+00	1.89E+00
1/7/2003	6.82E+00	1.92E+00
4/2/2003	6.86E+00	1.93E+00
7/9/2003	6.70E+00	1.90E+00
10/7/2003	6.60E+00	1.89E+00
1/6/2004	6.90E+00	1.93E+00
4/7/2004	6.58E+00	1.88E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)? Result <LL(1)?	LN(Result)	LN(Result) >TL(2)? LN(Result) <LL(2)?
MW359	Downgradient	Yes	6.16E+00	NO	1.82E+00	N/A
MW362	Downgradient	Yes	6.94E+00	NO	1.94E+00	N/A
MW365	Downgradient	Yes	6.39E+00	NO	1.85E+00	N/A
MW368	Downgradient	Yes	6.39E+00	NO	1.85E+00	N/A
MW371	Upgradient	Yes	6.72E+00	NO	1.91E+00	N/A
MW374	Upgradient	Yes	6.80E+00	NO	1.92E+00	N/A
MW375	Sidegradient	Yes	6.44E+00	NO	1.86E+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 = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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= 1.262	S= 0.907	**CV(1)**=0.718	**K factor****= 2.523	**TL(1)**= 3.55E+00 **LL(1)**=N/A
Statistics-Transformed Background Data	X= -0.023	S= 0.752	**CV(2)**=-32.218	**K factor****= 2.523	**TL(2)**= 1.87E+00 **LL(2)**=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	2.00E+00	6.93E-01
4/22/2002	2.00E+00	6.93E-01
7/15/2002	2.00E+00	6.93E-01
10/8/2002	4.08E-01	-8.96E-01
1/8/2003	3.84E-01	-9.57E-01
4/3/2003	3.68E-01	-1.00E+00
7/9/2003	5.87E-01	-5.33E-01
10/6/2003	3.82E-01	-9.62E-01

Well Number: MW374

Date Collected	Result	LN(Result)
10/8/2002	3.04E+00	1.11E+00
1/7/2003	2.83E+00	1.04E+00
4/2/2003	2.00E+00	6.93E-01
7/9/2003	1.09E+00	8.62E-02
10/7/2003	8.02E-01	-2.21E-01
1/6/2004	8.97E-01	-1.09E-01
4/7/2004	6.89E-01	-3.73E-01
7/14/2004	7.16E-01	-3.34E-01

Dry/Partially Dry Wells

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	9.21E-02	NO	-2.38E+00	N/A
MW362	Downgradient	Yes	4.25E-01	NO	-8.56E-01	N/A
MW365	Downgradient	Yes	2.70E-01	NO	-1.31E+00	N/A
MW368	Downgradient	Yes	4.36E-01	NO	-8.30E-01	N/A
MW371	Upgradient	Yes	3.55E-01	NO	-1.04E+00	N/A
MW374	Upgradient	Yes	4.77E-01	NO	-7.40E-01	N/A
MW375	Sidegradient	Yes	2.89E-01	NO	-1.24E+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.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data   X= 183.063 S= 73.222 **CV(1)**=0.400   **K factor****= 2.523   **TL(1)**= 3.68E+02 **LL(1)**=N/A

Statistics-Transformed Background Data   X= 5.146   S= 0.356   **CV(2)**=0.069   **K factor****= 2.523   **TL(2)**= 6.04E+00 **LL(2)**=N/A

Historical Background Data from Upgradient Wells with Transformed Result		

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	1.29E+02	4.86E+00
4/22/2002	1.31E+02	4.88E+00
7/15/2002	1.27E+02	4.84E+00
10/8/2002	1.23E+02	4.81E+00
1/8/2003	1.28E+02	4.85E+00
4/3/2003	1.44E+02	4.97E+00
7/9/2003	1.26E+02	4.84E+00
10/6/2003	1.20E+02	4.79E+00

Well Number: MW374

Date Collected	Result	LN(Result)
10/8/2002	3.36E+02	5.82E+00
1/7/2003	3.29E+02	5.80E+00
4/2/2003	2.87E+02	5.66E+00
7/9/2003	1.81E+02	5.20E+00
10/7/2003	1.82E+02	5.20E+00
1/6/2004	2.06E+02	5.33E+00
4/7/2004	1.82E+02	5.20E+00
7/14/2004	1.98E+02	5.29E+00

Dry/Partially Dry Wells	

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

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

Current Quarter Data						
Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	3.23E+01	NO	3.48E+00	N/A
MW362	Downgradient	Yes	1.21E+02	NO	4.80E+00	N/A
MW365	Downgradient	Yes	6.28E+01	NO	4.14E+00	N/A
MW368	Downgradient	Yes	6.07E+01	NO	4.11E+00	N/A
MW371	Upgradient	Yes	1.71E+01	NO	2.84E+00	N/A
MW374	Upgradient	Yes	1.23E+02	NO	4.81E+00	N/A
MW375	Sidegradient	Yes	5.28E+01	NO	3.97E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data   **X**= 6.469   **S**= 3.153   **CV(1)**=0.487   **K factor****= 2.523   **TL(1)**= 1.44E+01 **LL(1)**=N/A

Statistics-Transformed Background Data   **X**= 1.794   **S**= 0.357   **CV(2)**=0.199   **K factor****= 2.523   **TL(2)**= 2.69E+00 **LL(2)**=N/A

Historical Background Data from Upgradient Wells with Transformed Result		

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	1.63E+01	2.79E+00
4/22/2002	8.60E+00	2.15E+00
7/15/2002	6.70E+00	1.90E+00
10/8/2002	5.00E+00	1.61E+00
1/8/2003	5.00E+00	1.61E+00
4/3/2003	5.00E+00	1.61E+00
7/9/2003	5.00E+00	1.61E+00
10/6/2003	5.00E+00	1.61E+00

Well Number: MW374

Date Collected	Result	LN(Result)
10/8/2002	5.00E+00	1.61E+00
1/7/2003	5.00E+00	1.61E+00
4/2/2003	5.00E+00	1.61E+00
7/9/2003	5.60E+00	1.72E+00
10/7/2003	5.00E+00	1.61E+00
1/6/2004	5.00E+00	1.61E+00
4/7/2004	1.13E+01	2.42E+00
7/14/2004	5.00E+00	1.61E+00

Dry/Partially Dry Wells	

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

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

Current Quarter Data						
Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	3.91E+01	YES	3.67E+00	N/A
MW362	Downgradient	Yes	2.15E+01	YES	3.07E+00	N/A
MW365	Downgradient	Yes	5.58E+01	YES	4.02E+00	N/A
MW368	Downgradient	Yes	1.17E+02	YES	4.76E+00	N/A
MW371	Upgradient	Yes	5.69E+01	YES	4.04E+00	N/A
MW374	Upgradient	Yes	1.65E+01	YES	2.80E+00	N/A
MW375	Sidegradient	Yes	2.33E+01	YES	3.15E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances
MW359
MW362
MW365
MW368
MW371
MW374
MW375

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second 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= 17.631   S= 24.314   **CV(1)**=1.379   **K factor****= 2.523   **TL(1)**= 7.90E+01   **LL(1)**=N/A

Statistics-Transformed Background Data   X= 2.318   S= 0.979   **CV(2)**=0.422   **K factor****= 2.523   **TL(2)**= 4.79E+00   **LL(2)**=N/A

| **Historical Background Data from Upgradient Wells with Transformed Result** |

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	1.11E+01	2.41E+00
4/22/2002	7.00E+00	1.95E+00
7/15/2002	4.10E+00	1.41E+00
10/8/2002	6.00E+00	1.79E+00
1/8/2003	5.30E+00	1.67E+00
4/3/2003	5.30E+00	1.67E+00
7/9/2003	2.90E+00	1.06E+00
10/6/2003	3.20E+00	1.16E+00

Well Number: MW374

Date Collected	Result	LN(Result)
10/8/2002	9.00E+01	4.50E+00
1/7/2003	6.40E+01	4.16E+00
4/2/2003	2.50E+01	3.22E+00
7/9/2003	1.60E+01	2.77E+00
10/7/2003	1.30E+01	2.56E+00
1/6/2004	1.00E+01	2.30E+00
4/7/2004	7.20E+00	1.97E+00
7/14/2004	1.20E+01	2.48E+00

| **Dry/Partially Dry Wells** |

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Current Quarter Data						
Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	3.66E-01	N/A	-1.01E+00	NO
MW362	Downgradient	Yes	2.09E+00	N/A	7.37E-01	NO
MW365	Downgradient	Yes	1.36E+00	N/A	3.07E-01	NO
MW368	Downgradient	Yes	1.35E+00	N/A	3.00E-01	NO
MW371	Upgradient	Yes	1.84E+00	N/A	6.10E-01	NO
MW374	Upgradient	Yes	2.22E+00	N/A	7.98E-01	NO
MW375	Sidegradient	Yes	9.12E-01	N/A	-9.21E-02	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

| **Conclusion of Statistical Analysis on Historical Data** |

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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= 214.094 S= 231.089 CV(1)=1.079   K factor**= 2.523   TL(1)= 7.97E+02 LL(1)=N/A

Statistics-Transformed Background Data   X= 4.867   S= 1.065   CV(2)= 0.219   K factor**= 2.523   TL(2)= 7.55E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW371	
Date Collected	Result	LN(Result)
3/18/2002	5.00E+01	3.91E+00
4/22/2002	1.05E+02	4.65E+00
7/15/2002	7.00E+01	4.25E+00
10/8/2002	5.20E+01	3.95E+00
1/8/2003	2.02E+01	3.01E+00
4/3/2003	1.04E+02	4.64E+00
7/9/2003	3.42E+01	3.53E+00
10/6/2003	4.61E+01	3.83E+00

Well Number:	MW374	
Date Collected	Result	LN(Result)
10/8/2002	9.03E+02	6.81E+00
1/7/2003	5.39E+02	6.29E+00
4/2/2003	2.95E+02	5.69E+00
7/9/2003	2.72E+02	5.61E+00
10/7/2003	1.97E+02	5.28E+00
1/6/2004	3.30E+02	5.80E+00
4/7/2004	1.83E+02	5.21E+00
7/14/2004	2.25E+02	5.42E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	3.64E+00	N/A	1.29E+00	NO
MW362	Downgradient	Yes	1.73E+01	N/A	2.85E+00	NO
MW365	Downgradient	Yes	1.93E+01	N/A	2.96E+00	NO
MW368	Downgradient	No	1.00E+01	N/A	2.30E+00	N/A
MW371	Upgradient	Yes	5.40E+00	N/A	1.69E+00	NO
MW374	Upgradient	Yes	5.68E+01	N/A	4.04E+00	NO
MW375	Sidegradient	Yes	1.16E+01	N/A	2.45E+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.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data   X= 0.055   S= 0.072   **CV(1)=** 1.319   **K factor**=** 2.523   **TL(1)=** 2.37E-01   **LL(1)=** N/A

Statistics-Transformed Background Data   X= -3.438   S= 0.912   **CV(2)=** -0.265   **K factor**=** 2.523   **TL(2)=** -1.14E+00   **LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	2.50E-02	-3.69E+00
4/22/2002	2.50E-02	-3.69E+00
7/15/2002	2.50E-02	-3.69E+00
10/8/2002	2.00E-02	-3.91E+00
1/8/2003	2.00E-02	-3.91E+00
4/3/2003	2.00E-02	-3.91E+00
7/9/2003	2.00E-02	-3.91E+00
10/6/2003	2.00E-02	-3.91E+00

Well Number: MW374

Date Collected	Result	LN(Result)
10/8/2002	2.00E-01	-1.61E+00
1/7/2003	2.00E-01	-1.61E+00
4/2/2003	2.00E-01	-1.61E+00
7/9/2003	2.00E-02	-3.91E+00
10/7/2003	2.00E-02	-3.91E+00
1/6/2004	2.00E-02	-3.91E+00
4/7/2004	2.00E-02	-3.91E+00
7/14/2004	2.00E-02	-3.91E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	No	2.00E-02	N/A	-3.91E+00	N/A
MW362	Downgradient	Yes	4.82E-03	N/A	-5.33E+00	NO
MW365	Downgradient	Yes	3.66E-03	N/A	-5.61E+00	NO
MW368	Downgradient	Yes	6.82E-03	N/A	-4.99E+00	NO
MW371	Upgradient	No	6.14E-03	N/A	-5.09E+00	N/A
MW374	Upgradient	No	4.19E-03	N/A	-5.48E+00	N/A
MW375	Sidegradient	No	4.08E-03	N/A	-5.50E+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-U Second 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= 0.060   S= 0.083   CV(1)=1.380   K factor**= 2.523   TL(1)= 2.70E-01   LL(1)=N/A

Statistics-Transformed Background Data   X= -3.259   S= 0.840   CV(2)= -0.258   K factor**= 2.523   TL(2)= -1.14E+00   LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW371

Date Collected	Result	LN(Result)
3/18/2002	1.00E-01	-2.30E+00
4/22/2002	1.00E-01	-2.30E+00
7/15/2002	1.00E-01	-2.30E+00
10/8/2002	2.50E-02	-3.69E+00
1/8/2003	3.50E-02	-3.35E+00
4/3/2003	3.50E-02	-3.35E+00
7/9/2003	3.76E-02	-3.28E+00
10/6/2003	2.00E-02	-3.91E+00

Well Number: MW374

Date Collected	Result	LN(Result)
10/8/2002	2.50E-02	-3.69E+00
1/7/2003	3.50E-01	-1.05E+00
4/2/2003	3.50E-02	-3.35E+00
7/9/2003	2.00E-02	-3.91E+00
10/7/2003	2.00E-02	-3.91E+00
1/6/2004	2.00E-02	-3.91E+00
4/7/2004	2.00E-02	-3.91E+00
7/14/2004	2.00E-02	-3.91E+00

Dry/Partially Dry Wells

Well No.	Gradient
MW376	Sidegradient
MW377	Sidegradient

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	No	2.00E-02	N/A	-3.91E+00	N/A
MW362	Downgradient	Yes	3.88E-03	N/A	-5.55E+00	NO
MW365	Downgradient	Yes	4.84E-03	N/A	-5.33E+00	NO
MW368	Downgradient	Yes	5.39E-03	N/A	-5.22E+00	NO
MW371	Upgradient	Yes	4.30E-03	N/A	-5.45E+00	NO
MW374	Upgradient	No	2.00E-02	N/A	-3.91E+00	N/A
MW375	Sidegradient	No	2.00E-02	N/A	-3.91E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second 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=** 0.625   **S=** 0.774   **CV(1)=** 1.239   **K factor**=** 2.523   **TL(1)=** 2.58E+00   **LL(1)=** N/A

Statistics-Transformed Background Data   **X=** -0.973   **S=** 0.935   **CV(2)=** -0.961   **K factor**=** 2.523   **TL(2)=** 1.39E+00   **LL(2)=** N/A

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	2.55E-01	-1.37E+00
4/22/2002	2.00E-01	-1.61E+00
7/15/2002	3.22E-01	-1.13E+00
10/8/2002	2.00E-01	-1.61E+00
1/8/2003	2.00E-01	-1.61E+00
4/3/2003	2.00E-01	-1.61E+00
7/8/2003	2.00E-01	-1.61E+00
10/6/2003	6.89E-01	-3.73E-01

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	2.61E+00	9.59E-01
4/23/2002	2.00E-01	-1.61E+00
7/16/2002	1.14E+00	1.31E-01
10/8/2002	8.62E-01	-1.49E-01
1/7/2003	2.32E+00	8.42E-01
4/2/2003	2.00E-01	-1.61E+00
7/9/2003	2.00E-01	-1.61E+00
10/7/2003	2.00E-01	-1.61E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	1.69E-01	N/A	-1.78E+00	NO
MW360	Downgradient	Yes	5.41E-02	N/A	-2.92E+00	NO
MW363	Downgradient	No	5.00E-02	N/A	-3.00E+00	N/A
MW366	Downgradient	Yes	2.66E-02	N/A	-3.63E+00	NO
MW369	Upgradient	Yes	3.46E-02	N/A	-3.36E+00	NO
MW372	Upgradient	No	5.00E-02	N/A	-3.00E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

**   *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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= 0.985	S= 0.825	CV(1)=0.838	K factor**= 2.523	TL(1)= 3.07E+00 LL(1)=N/A
Statistics-Transformed Background Data	X= -0.430	S= 0.990	CV(2)=-2.302	K factor**= 2.523	TL(2)= 2.07E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	2.00E+00	6.93E-01
4/22/2002	2.00E+00	6.93E-01
7/15/2002	2.00E+00	6.93E-01
10/8/2002	2.00E-01	-1.61E+00
1/8/2003	2.00E-01	-1.61E+00
4/3/2003	2.00E-01	-1.61E+00
7/8/2003	2.00E-01	-1.61E+00
10/6/2003	2.00E-01	-1.61E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	3.38E-01	NO	-1.08E+00	N/A
MW360	Downgradient	Yes	2.90E-02	NO	-3.54E+00	N/A
MW363	Downgradient	Yes	1.92E-02	NO	-3.95E+00	N/A
MW366	Downgradient	Yes	6.45E-02	NO	-2.74E+00	N/A
MW369	Upgradient	Yes	1.39E-02	NO	-4.28E+00	N/A
MW372	Upgradient	Yes	1.66E+00	NO	5.07E-01	N/A

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	2.00E+00	6.93E-01
4/23/2002	2.00E+00	6.93E-01
7/16/2002	2.00E+00	6.93E-01
10/8/2002	4.92E-01	-7.09E-01
1/7/2003	4.92E-01	-7.09E-01
4/2/2003	6.00E-01	-5.11E-01
7/9/2003	5.70E-01	-5.62E-01
10/7/2003	6.04E-01	-5.04E-01

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.

C-746-U Second Quarter 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

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	1.00E+00	0.00E+00
4/22/2002	1.00E+00	0.00E+00
7/15/2002	1.00E+00	0.00E+00
10/8/2002	1.00E+00	0.00E+00
1/8/2003	1.00E+00	0.00E+00
4/3/2003	1.00E+00	0.00E+00
7/8/2003	1.00E+00	0.00E+00
10/6/2003	1.00E+00	0.00E+00

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	1.00E+00	0.00E+00
4/23/2002	1.00E+00	0.00E+00
7/16/2002	1.00E+00	0.00E+00
10/8/2002	1.00E+00	0.00E+00
1/7/2003	1.00E+00	0.00E+00
4/2/2003	1.00E+00	0.00E+00
7/9/2003	1.00E+00	0.00E+00
10/7/2003	1.00E+00	0.00E+00

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	3.50E-01	NO	-1.05E+00	N/A
MW360	Downgradient	Yes	1.49E-01	NO	-1.90E+00	N/A
MW363	Downgradient	No	2.00E-01	N/A	-1.61E+00	N/A
MW366	Downgradient	Yes	4.98E-01	NO	-6.97E-01	N/A
MW369	Upgradient	Yes	3.25E-01	NO	-1.12E+00	N/A
MW372	Upgradient	Yes	4.83E-01	NO	-7.28E-01	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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= 32.763   S= 9.391   **CV(1)**=0.287   **K factor****= 2.523   **TL(1)**= 5.65E+01   **LL(1)**=N/A

Statistics-Transformed Background Data   X= 3.449   S= 0.299   **CV(2)**=0.087   **K factor****= 2.523   **TL(2)**= 4.20E+00   **LL(2)**=N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	2.95E+01	3.38E+00
4/22/2002	2.98E+01	3.39E+00
7/15/2002	2.53E+01	3.23E+00
10/8/2002	2.19E+01	3.09E+00
1/8/2003	2.09E+01	3.04E+00
4/3/2003	2.22E+01	3.10E+00
7/8/2003	2.29E+01	3.13E+00
10/6/2003	2.17E+01	3.08E+00

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	4.15E+01	3.73E+00
4/23/2002	4.36E+01	3.78E+00
7/16/2002	4.04E+01	3.70E+00
10/8/2002	3.88E+01	3.66E+00
1/7/2003	4.11E+01	3.72E+00
4/2/2003	4.29E+01	3.76E+00
7/9/2003	3.51E+01	3.56E+00
10/7/2003	4.66E+01	3.84E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	2.52E+01	NO	3.23E+00	N/A
MW360	Downgradient	Yes	1.94E+01	NO	2.97E+00	N/A
MW363	Downgradient	Yes	2.57E+01	NO	3.25E+00	N/A
MW366	Downgradient	Yes	3.34E+01	NO	3.51E+00	N/A
MW369	Upgradient	Yes	1.60E+01	NO	2.77E+00	N/A
MW372	Upgradient	Yes	6.20E+01	YES	4.13E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances
MW372

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.
CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.
S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5
TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)
X   Mean, X = (sum of background results)/(count of background results)
**   *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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= 44.119   S= 4.554   **CV(1)**=0.103   **K factor****= 2.523   **TL(1)**= 5.56E+01   **LL(1)**=N/A

Statistics-Transformed Background Data   X= 3.782   S= 0.099   **CV(2)**=0.026   **K factor****= 2.523   **TL(2)**= 4.03E+00   **LL(2)**=N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW369

Date Collected	Result	LN(Result)
7/15/2002	4.83E+01	3.88E+00
10/8/2002	4.77E+01	3.86E+00
1/8/2003	4.57E+01	3.82E+00
4/3/2003	4.74E+01	3.86E+00
7/8/2003	5.59E+01	4.02E+00
10/6/2003	4.74E+01	3.86E+00
1/7/2004	4.55E+01	3.82E+00
4/7/2004	4.34E+01	3.77E+00

Well Number: MW372

Date Collected	Result	LN(Result)
7/16/2002	3.98E+01	3.68E+00
10/8/2002	4.10E+01	3.71E+00
1/7/2003	3.94E+01	3.67E+00
4/2/2003	3.92E+01	3.67E+00
7/9/2003	3.98E+01	3.68E+00
10/7/2003	4.00E+01	3.69E+00
1/5/2004	4.34E+01	3.77E+00
4/5/2004	4.20E+01	3.74E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	3.23E+01	NO	3.48E+00	N/A
MW360	Downgradient	Yes	7.24E+00	NO	1.98E+00	N/A
MW363	Downgradient	Yes	2.36E+01	NO	3.16E+00	N/A
MW366	Downgradient	Yes	4.07E+01	NO	3.71E+00	N/A
MW369	Upgradient	Yes	2.87E+01	NO	3.36E+00	N/A
MW372	Upgradient	Yes	3.61E+01	NO	3.59E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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=** 0.025 **S=** 0.021 **CV(1)=** 0.845 **K factor**=** 2.523 **TL(1)=** 7.73E-02 **LL(1)=** N/A

Statistics-Transformed Background Data **X=** -4.090 **S=** 1.006 **CV(2)=** -0.246 **K factor**=** 2.523 **TL(2)=** -1.55E+00 **LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	2.50E-02	-3.69E+00
4/22/2002	2.50E-02	-3.69E+00
7/15/2002	2.50E-02	-3.69E+00
10/8/2002	9.38E-03	-4.67E+00
1/8/2003	5.48E-03	-5.21E+00
4/3/2003	5.87E-03	-5.14E+00
7/8/2003	5.41E-02	-2.92E+00
10/6/2003	6.89E-02	-2.68E+00

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	2.50E-02	-3.69E+00
4/23/2002	2.50E-02	-3.69E+00
7/16/2002	2.50E-02	-3.69E+00
10/8/2002	1.58E-03	-6.45E+00
1/7/2003	1.47E-02	-4.22E+00
4/2/2003	1.16E-02	-4.46E+00
7/9/2003	6.53E-02	-2.73E+00
10/7/2003	7.88E-03	-4.84E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	6.99E-04	NO	-7.27E+00	N/A
MW360	Downgradient	Yes	1.48E-03	NO	-6.52E+00	N/A
MW363	Downgradient	Yes	1.22E-03	NO	-6.71E+00	N/A
MW366	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW369	Upgradient	Yes	3.70E-03	NO	-5.60E+00	N/A
MW372	Upgradient	Yes	3.46E-04	NO	-7.97E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data   X= 482.856 S= 57.603   CV(1)=0.119   K factor**= 2.523   TL(1)= 6.28E+02 LL(1)=N/A

Statistics-Transformed Background Data X= 6.173   S= 0.123   CV(2)=0.020   K factor**= 2.523   TL(2)= 6.48E+00 LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	3.88E+02	5.96E+00
4/22/2002	4.04E+02	6.00E+00
7/15/2002	3.94E+02	5.98E+00
10/8/2002	4.03E+02	6.00E+00
1/8/2003	5.20E+02	6.25E+00
4/3/2003	4.87E+02	6.19E+00
7/8/2003	4.78E+02	6.17E+00
10/6/2003	4.76E+02	6.17E+00

Well Number: MW372

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	4.20E+02	NO	6.04E+00	N/A
MW360	Downgradient	Yes	4.00E+02	NO	5.99E+00	N/A
MW363	Downgradient	Yes	3.96E+02	NO	5.98E+00	N/A
MW366	Downgradient	Yes	4.95E+02	NO	6.20E+00	N/A
MW369	Upgradient	Yes	3.75E+02	NO	5.93E+00	N/A
MW372	Upgradient	Yes	7.33E+02	YES	6.60E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

Wells with Exceedances

MW372

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

**   *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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**= 0.025   **S**= 0.010   **CV(1)**=0.400   **K factor****= 2.523   **TL(1)**= 5.02E-02   **LL(1)**=N/A

Statistics-Transformed Background Data   **X**= -3.742   **S**= 0.307   **CV(2)**=-0.082   **K factor****= 2.523   **TL(2)**= -2.97E+00   **LL(2)**=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	2.50E-02	-3.69E+00
4/22/2002	2.50E-02	-3.69E+00
7/15/2002	5.00E-02	-3.00E+00
10/8/2002	2.00E-02	-3.91E+00
1/8/2003	2.00E-02	-3.91E+00
4/3/2003	2.00E-02	-3.91E+00
7/8/2003	2.00E-02	-3.91E+00
10/6/2003	2.00E-02	-3.91E+00

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	2.50E-02	-3.69E+00
4/23/2002	2.50E-02	-3.69E+00
7/16/2002	5.00E-02	-3.00E+00
10/8/2002	2.00E-02	-3.91E+00
1/7/2003	2.00E-02	-3.91E+00
4/2/2003	2.00E-02	-3.91E+00
7/9/2003	2.00E-02	-3.91E+00
10/7/2003	2.00E-02	-3.91E+00

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	1.41E-03	NO	-6.56E+00	N/A
MW360	Downgradient	Yes	2.10E-03	NO	-6.17E+00	N/A
MW363	Downgradient	Yes	1.53E-03	NO	-6.48E+00	N/A
MW366	Downgradient	No	8.66E-04	N/A	-7.05E+00	N/A
MW369	Upgradient	No	1.03E-03	N/A	-6.88E+00	N/A
MW372	Upgradient	Yes	9.68E-04	NO	-6.94E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second 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 $X=$ 1.781 $S=$ 1.351   **CV(1)=**0.759   **K factor**=** 2.523   **TL(1)=** 5.19E+00   **LL(1)=**N/A

Statistics-Transformed Background Data $X=$ 0.228 $S=$ 1.065   **CV(2)=**4.665   **K factor**=** 2.523   **TL(2)=** 2.92E+00   **LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	5.41E+00	1.69E+00
4/22/2002	1.57E+00	4.51E-01
7/15/2002	8.00E-01	-2.23E-01
10/8/2002	1.09E+00	8.62E-02
1/8/2003	2.69E+00	9.90E-01
4/3/2003	2.04E+00	7.13E-01
7/8/2003	1.19E+00	1.74E-01
10/6/2003	1.78E+00	5.77E-01

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	3.89E+00	1.36E+00
4/23/2002	5.00E-02	-3.00E+00
7/16/2002	1.33E+00	2.85E-01
10/8/2002	2.66E+00	9.78E-01
1/7/2003	4.00E-01	-9.16E-01
4/2/2003	9.10E-01	-9.43E-02
7/9/2003	1.42E+00	3.51E-01
10/7/2003	1.26E+00	2.31E-01

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	4.83E+00	NO	1.57E+00	N/A
MW360	Downgradient	Yes	2.10E+00	NO	7.42E-01	N/A
MW363	Downgradient	Yes	1.71E+00	NO	5.36E-01	N/A
MW366	Downgradient	Yes	3.62E+00	NO	1.29E+00	N/A
MW369	Upgradient	Yes	2.06E+00	NO	7.23E-01	N/A
MW372	Upgradient	Yes	1.81E+00	NO	5.93E-01	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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= 285.188	S= 44.908	CV(1)=0.157	K factor**= 2.523	TL(1)= 3.98E+02	LL(1)=N/A
Statistics-Transformed Background Data	X= 5.640	S= 0.175	CV(2)=0.031	K factor**= 2.523	TL(2)= 6.08E+00	LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	1.73E+02	5.15E+00
4/22/2002	2.46E+02	5.51E+00
7/15/2002	2.32E+02	5.45E+00
10/8/2002	2.75E+02	5.62E+00
1/8/2003	2.69E+02	5.59E+00
4/3/2003	2.50E+02	5.52E+00
7/8/2003	2.95E+02	5.69E+00
10/6/2003	2.76E+02	5.62E+00

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	2.95E+02	5.69E+00
4/23/2002	3.22E+02	5.77E+00
7/16/2002	3.29E+02	5.80E+00
10/8/2002	2.90E+02	5.67E+00
1/7/2003	3.16E+02	5.76E+00
4/2/2003	3.11E+02	5.74E+00
7/9/2003	3.47E+02	5.85E+00
10/7/2003	3.37E+02	5.82E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	1.97E+02	NO	5.28E+00	N/A
MW360	Downgradient	Yes	1.97E+02	NO	5.28E+00	N/A
MW363	Downgradient	Yes	2.21E+02	NO	5.40E+00	N/A
MW366	Downgradient	Yes	2.63E+02	NO	5.57E+00	N/A
MW369	Upgradient	Yes	1.93E+02	NO	5.26E+00	N/A
MW372	Upgradient	Yes	4.28E+02	YES	6.06E+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

Wells with Exceedances

MW372

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the 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.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data   X= 7.385   S= 6.991   **CV(1)**=0.947   **K factor****= 2.523   **TL(1)**= 2.50E+01   **LL(1)**=N/A

Statistics-Transformed Background Data   X= 1.358   S= 1.323   **CV(2)**=0.974   **K factor****= 2.523   **TL(2)**= 4.70E+00   **LL(2)**=N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	6.56E-01	-4.22E-01
4/22/2002	6.95E-01	-3.64E-01
7/15/2002	7.10E+00	1.96E+00
10/8/2002	2.15E+01	3.07E+00
1/8/2003	1.85E+01	2.92E+00
4/3/2003	1.49E+01	2.70E+00
7/8/2003	1.13E+01	2.42E+00
10/6/2003	1.49E+01	2.70E+00

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	5.95E+00	1.78E+00
4/23/2002	7.92E-01	-2.33E-01
7/16/2002	1.78E+00	5.77E-01
10/8/2002	7.76E-01	-2.54E-01
1/7/2003	3.55E+00	1.27E+00
4/2/2003	5.02E+00	1.61E+00
7/9/2003	1.00E+01	2.30E+00
10/7/2003	7.33E-01	-3.11E-01

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	4.40E-01	NO	-8.21E-01	N/A
MW360	Downgradient	Yes	1.75E-01	NO	-1.74E+00	N/A
MW363	Downgradient	Yes	3.76E-02	NO	-3.28E+00	N/A
MW366	Downgradient	No	1.00E-01	N/A	-2.30E+00	N/A
MW369	Upgradient	Yes	6.32E-02	NO	-2.76E+00	N/A
MW372	Upgradient	Yes	4.35E-02	NO	-3.13E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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= 12.864 S= 3.505   **CV(1)**=0.272   **K factor****= 2.523   **TL(1)**= 2.17E+01   **LL(1)**=N/A

Statistics-Transformed Background Data X= 2.517 S= 0.290   **CV(2)**=0.115   **K factor****= 2.523   **TL(2)**= 3.25E+00   **LL(2)**=N/A

| Historical Background Data from Upgradient Wells with Transformed Result |

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

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	1.14E+01	2.43E+00
4/22/2002	1.20E+01	2.48E+00
7/15/2002	1.00E+01	2.30E+00
10/8/2002	8.62E+00	2.15E+00
1/8/2003	7.89E+00	2.07E+00
4/3/2003	7.97E+00	2.08E+00
7/8/2003	1.03E+01	2.33E+00
10/6/2003	9.14E+00	2.21E+00

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	1.57E+01	2.75E+00
4/23/2002	1.66E+01	2.81E+00
7/16/2002	1.54E+01	2.73E+00
10/8/2002	1.58E+01	2.76E+00
1/7/2003	1.58E+01	2.76E+00
4/2/2003	1.64E+01	2.80E+00
7/9/2003	1.52E+01	2.72E+00
10/7/2003	1.76E+01	2.87E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	1.07E+01	NO	2.37E+00	N/A
MW360	Downgradient	Yes	8.07E+00	NO	2.09E+00	N/A
MW363	Downgradient	Yes	9.71E+00	NO	2.27E+00	N/A
MW366	Downgradient	Yes	1.41E+01	NO	2.65E+00	N/A
MW369	Upgradient	Yes	6.87E+00	NO	1.93E+00	N/A
MW372	Upgradient	Yes	2.35E+01	YES	3.16E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

| Conclusion of Statistical Analysis on Historical Data |

| Wells with Exceedances |
| MW372 |

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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=** 0.413   **S=** 0.274   **CV(1)=** 0.664   **K factor**=** 2.523   **TL(1)=** 1.11E+00   **LL(1)=** N/A

Statistics-Transformed Background Data   **X=** -1.226   **S=** 1.008   **CV(2)=** -0.822   **K factor**=** 2.523   **TL(2)=** 1.32E+00   **LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	3.40E-02	-3.38E+00
4/22/2002	6.20E-02	-2.78E+00
7/15/2002	4.36E-01	-8.30E-01
10/8/2002	8.67E-01	-1.43E-01
1/8/2003	8.28E-01	-1.89E-01
4/3/2003	6.72E-01	-3.97E-01
7/8/2003	3.21E-01	-1.14E+00
10/6/2003	7.14E-01	-3.37E-01

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	2.05E-01	-1.58E+00
4/23/2002	3.45E-01	-1.06E+00
7/16/2002	2.10E-01	-1.56E+00
10/8/2002	5.39E-02	-2.92E+00
1/7/2003	5.37E-01	-6.22E-01
4/2/2003	4.15E-01	-8.79E-01
7/9/2003	6.54E-01	-4.25E-01
10/7/2003	2.54E-01	-1.37E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	5.99E-02	NO	-2.82E+00	N/A
MW360	Downgradient	Yes	1.80E-02	NO	-4.02E+00	N/A
MW363	Downgradient	Yes	1.96E-01	NO	-1.63E+00	N/A
MW366	Downgradient	Yes	4.64E-03	NO	-5.37E+00	N/A
MW369	Upgradient	Yes	9.23E-03	NO	-4.69E+00	N/A
MW372	Upgradient	Yes	2.14E-03	NO	-6.15E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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=** 0.010   **S=** 0.012   **CV(1)=** 1.199   **K factor**=** 2.523   **TL(1)=** 4.03E-02   **LL(1)=** N/A

Statistics-Transformed Background Data   **X=** -5.698   **S=** 1.607   **CV(2)=** -0.282   **K factor**=** 2.523   **TL(2)=** -1.64E+00   **LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	2.50E-02	-3.69E+00
4/22/2002	2.50E-02	-3.69E+00
7/15/2002	2.50E-02	-3.69E+00
10/8/2002	1.00E-03	-6.91E+00
1/8/2003	1.00E-03	-6.91E+00
4/3/2003	1.00E-03	-6.91E+00
7/8/2003	1.00E-03	-6.91E+00
10/6/2003	1.00E-03	-6.91E+00

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	2.50E-02	-3.69E+00
4/23/2002	2.50E-02	-3.69E+00
7/16/2002	2.50E-02	-3.69E+00
10/8/2002	1.00E-03	-6.91E+00
1/7/2003	1.00E-03	-6.91E+00
4/2/2003	1.00E-03	-6.91E+00
7/9/2003	1.05E-03	-6.86E+00
10/7/2003	1.00E-03	-6.91E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW360	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW363	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW366	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW369	Upgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW372	Upgradient	Yes	2.05E-04	N/A	-8.49E+00	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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= 0.024   S= 0.021   **CV(1)**=0.910   **K factor****= 2.523   **TL(1)**= 7.77E-02   **LL(1)**=N/A

Statistics-Transformed Background Data   X= -4.246   S= 1.075   **CV(2)**=-0.253   **K factor****= 2.523   **TL(2)**= -1.53E+00   **LL(2)**=N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	5.00E-02	-3.00E+00
4/22/2002	5.00E-02	-3.00E+00
7/15/2002	5.00E-02	-3.00E+00
10/8/2002	5.00E-03	-5.30E+00
1/8/2003	5.00E-03	-5.30E+00
4/3/2003	5.00E-03	-5.30E+00
7/8/2003	1.30E-02	-4.34E+00
10/6/2003	1.04E-02	-4.57E+00

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	5.00E-02	-3.00E+00
4/23/2002	5.00E-02	-3.00E+00
7/16/2002	5.00E-02	-3.00E+00
10/8/2002	5.00E-03	-5.30E+00
1/7/2003	5.00E-03	-5.30E+00
4/2/2003	5.00E-03	-5.30E+00
7/9/2003	1.90E-02	-3.96E+00
10/7/2003	5.00E-03	-5.30E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	1.31E-03	NO	-6.64E+00	N/A
MW360	Downgradient	Yes	2.31E-03	NO	-6.07E+00	N/A
MW363	Downgradient	Yes	5.26E-02	NO	-2.95E+00	N/A
MW366	Downgradient	Yes	7.94E-04	NO	-7.14E+00	N/A
MW369	Upgradient	Yes	3.49E-03	NO	-5.66E+00	N/A
MW372	Upgradient	Yes	8.89E-04	NO	-7.03E+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 = [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.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data   **X=** 74.563 **S=** 94.243 **CV(1)=**1.264   **K factor**=** 2.523   **TL(1)=** 3.12E+02 **LL(1)=**N/A

Statistics-Transformed Background Data   **X=** 4.554   **S=** 0.784   **CV(2)=**0.172   **K factor**=** 2.523   **TL(2)=** 5.37E+00 **LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	2.15E+02	5.37E+00
4/22/2002	1.10E+02	4.70E+00
7/15/2002	2.00E+01	3.00E+00
1/8/2003	-5.00E+00	#Func!
4/3/2003	-1.80E+01	#Func!
7/8/2003	-6.70E+01	#Func!
10/6/2003	-1.00E+00	#Func!
1/7/2004	5.50E+01	4.01E+00

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	2.10E+02	5.35E+00
4/23/2002	6.50E+01	4.17E+00
7/16/2002	2.15E+02	5.37E+00
10/8/2002	1.85E+02	5.22E+00
1/7/2003	4.50E+01	3.81E+00
4/2/2003	6.50E+01	4.17E+00
7/9/2003	-3.90E+01	#Func!
10/7/2003	1.38E+02	4.93E+00

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

#Because the natural log was not possible for all background values, the TL was considered equal to the maximum background value.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	3.67E+02	N/A	5.91E+00	YES
MW360	Downgradient	Yes	3.54E+02	N/A	5.87E+00	YES
MW363	Downgradient	Yes	4.42E+02	N/A	6.09E+00	YES
MW366	Downgradient	Yes	4.58E+02	N/A	6.13E+00	YES
MW369	Upgradient	Yes	4.39E+02	N/A	6.08E+00	YES
MW372	Upgradient	Yes	4.70E+02	N/A	6.15E+00	YES

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW357
MW360
MW363
MW366
MW369
MW372

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X**= 6.274	**S**= 0.194	**CV(1)**=0.031	**K factor****= 2.904	**TL(1)**= 6.84E+00	**LL(1)**=5.71E+00
Statistics-Transformed Background Data	**X**= 1.836	**S**= 0.031	**CV(2)**=0.017	**K factor****= 2.904	**TL(2)**= 1.93E+00	**LL(2)**=1.75E+00

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	6.10E+00	1.81E+00
4/22/2002	6.10E+00	1.81E+00
7/15/2002	6.10E+00	1.81E+00
10/8/2002	6.50E+00	1.87E+00
1/8/2003	6.50E+00	1.87E+00
4/3/2003	6.60E+00	1.89E+00
7/8/2003	6.50E+00	1.87E+00
10/6/2003	6.50E+00	1.87E+00

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	6.10E+00	1.81E+00
4/23/2002	6.12E+00	1.81E+00
7/16/2002	6.10E+00	1.81E+00
10/8/2002	6.06E+00	1.80E+00
1/7/2003	6.26E+00	1.83E+00
4/2/2003	6.15E+00	1.82E+00
7/9/2003	6.30E+00	1.84E+00
10/7/2003	6.40E+00	1.86E+00

Current Quarter Data						
Well No.	Gradient	Detected?	Result	Result >TL(1)? Result <LL(1)?	LN(Result)	LN(Result) >TL(2)? LN(Result) <LL(2)?
MW357	Downgradient	Yes	6.13E+00	NO	1.81E+00	N/A
MW360	Downgradient	Yes	6.20E+00	NO	1.82E+00	N/A
MW363	Downgradient	Yes	6.16E+00	NO	1.82E+00	N/A
MW366	Downgradient	Yes	6.11E+00	NO	1.81E+00	N/A
MW369	Upgradient	Yes	6.18E+00	NO	1.82E+00	N/A
MW372	Upgradient	Yes	6.03E+00	NO	1.80E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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=** 1.663   **S=** 0.488   **CV(1)=** 0.293   **K factor**=** 2.523   **TL(1)=** 2.89E+00   **LL(1)=** N/A

Statistics-Transformed Background Data   **X=** 0.456   **S=** 0.362   **CV(2)=** 0.794   **K factor**=** 2.523   **TL(2)=** 1.37E+00   **LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	2.00E+00	6.93E-01
4/22/2002	2.21E+00	7.93E-01
7/15/2002	2.00E+00	6.93E-01
10/8/2002	9.66E-01	-3.46E-02
1/8/2003	7.27E-01	-3.19E-01
4/3/2003	8.00E-01	-2.23E-01
7/8/2003	1.62E+00	4.82E-01
10/6/2003	1.14E+00	1.31E-01

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	2.04E+00	7.13E-01
4/23/2002	2.03E+00	7.08E-01
7/16/2002	2.00E+00	6.93E-01
10/8/2002	1.54E+00	4.32E-01
1/7/2003	1.88E+00	6.31E-01
4/2/2003	2.09E+00	7.37E-01
7/9/2003	1.78E+00	5.77E-01
10/7/2003	1.79E+00	5.82E-01

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	1.63E+00	NO	4.89E-01	N/A
MW360	Downgradient	Yes	7.12E-01	NO	-3.40E-01	N/A
MW363	Downgradient	Yes	2.04E+00	NO	7.13E-01	N/A
MW366	Downgradient	Yes	2.08E+00	NO	7.32E-01	N/A
MW369	Upgradient	Yes	5.08E-01	NO	-6.77E-01	N/A
MW372	Upgradient	Yes	2.46E+00	NO	9.00E-01	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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=** 45.100   **S=** 11.875   **CV(1)=** 0.263   **K factor**=** 2.523   **TL(1)=** 7.51E+01   **LL(1)=** N/A

Statistics-Transformed Background Data   **X=** 3.780   **S=** 0.242   **CV(2)=** 0.064   **K factor**=** 2.523   **TL(2)=** 4.39E+00   **LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	3.57E+01	3.58E+00
4/22/2002	3.76E+01	3.63E+00
7/15/2002	4.24E+01	3.75E+00
10/8/2002	6.69E+01	4.20E+00
1/8/2003	6.79E+01	4.22E+00
4/3/2003	6.18E+01	4.12E+00
7/8/2003	4.56E+01	3.82E+00
10/6/2003	5.91E+01	4.08E+00

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	3.72E+01	3.62E+00
4/23/2002	3.86E+01	3.65E+00
7/16/2002	3.56E+01	3.57E+00
10/8/2002	3.75E+01	3.62E+00
1/7/2003	3.41E+01	3.53E+00
4/2/2003	3.44E+01	3.54E+00
7/9/2003	4.41E+01	3.79E+00
10/7/2003	4.31E+01	3.76E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	3.94E+01	NO	3.67E+00	N/A
MW360	Downgradient	Yes	5.83E+01	NO	4.07E+00	N/A
MW363	Downgradient	Yes	3.90E+01	NO	3.66E+00	N/A
MW366	Downgradient	Yes	5.05E+01	NO	3.92E+00	N/A
MW369	Upgradient	Yes	5.56E+01	NO	4.02E+00	N/A
MW372	Upgradient	Yes	5.84E+01	NO	4.07E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/, 2009.*

C-746-U Second Quarter 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=** 45.031 **S=** 33.919 **CV(1)=** 0.753   **K factor**=** 2.523   **TL(1)=** 1.31E+02 **LL(1)=** N/A

Statistics-Transformed Background Data **X=** 3.420 **S=** 0.981 **CV(2)=** 0.287   **K factor**=** 2.523   **TL(2)=** 5.89E+00 **LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	1.55E+01	2.74E+00
4/22/2002	1.58E+01	2.76E+00
7/15/2002	1.38E+01	2.62E+00
10/8/2002	6.90E+00	1.93E+00
1/8/2003	1.05E+01	2.35E+00
4/3/2003	1.05E+01	2.35E+00
7/8/2003	1.09E+01	2.39E+00
10/6/2003	1.63E+01	2.79E+00

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	7.17E+01	4.27E+00
4/23/2002	7.47E+01	4.31E+00
7/16/2002	7.41E+01	4.31E+00
10/8/2002	7.05E+01	4.26E+00
1/7/2003	7.58E+01	4.33E+00
4/2/2003	8.18E+01	4.40E+00
7/9/2003	8.36E+01	4.43E+00
10/7/2003	8.81E+01	4.48E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	3.82E+01	NO	3.64E+00	N/A
MW360	Downgradient	Yes	1.14E+01	NO	2.43E+00	N/A
MW363	Downgradient	Yes	2.90E+01	NO	3.37E+00	N/A
MW366	Downgradient	Yes	4.73E+01	NO	3.86E+00	N/A
MW369	Upgradient	Yes	7.00E+00	NO	1.95E+00	N/A
MW372	Upgradient	Yes	1.51E+02	YES	5.02E+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.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data   X= 20.821   S= 18.044   **CV(1)**=0.867   **K factor****= 2.523   **TL(1)**= 6.63E+01 **LL(1)**=N/A

Statistics-Transformed Background Data   X= 2.770   S= 1.150   **CV(2)**=0.415   **K factor****= 2.523   **TL(2)**= 3.97E+00 **LL(2)**=N/A

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

#Because the natural log was not possible for all background values, the TL was considered equal to the maximum background value.

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	4.17E+01	3.73E+00
4/22/2002	5.31E+01	3.97E+00
7/15/2002	1.81E+01	2.90E+00
10/8/2002	1.64E+01	2.80E+00
1/8/2003	3.49E+00	1.25E+00
4/3/2003	9.34E+00	2.23E+00
7/8/2003	1.75E+01	2.86E+00
10/6/2003	1.70E+01	2.83E+00

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	4.48E+01	3.80E+00
4/23/2002	8.02E-01	-2.21E-01
7/16/2002	1.98E+01	2.99E+00
10/8/2002	4.61E+01	3.83E+00
1/7/2003	-9.73E-01	#Func!
4/2/2003	9.07E+00	2.20E+00
7/9/2003	0.00E+00	#Func!
10/7/2003	3.69E+01	3.61E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	3.21E+01	NO	3.47E+00	N/A
MW360	Downgradient	No	4.96E+00	N/A	1.60E+00	N/A
MW363	Downgradient	No	-9.14E-02	N/A	#Error	N/A
MW366	Downgradient	Yes	7.12E+01	YES	4.27E+00	N/A
MW369	Upgradient	Yes	3.91E+01	NO	3.67E+00	N/A
MW372	Upgradient	Yes	3.63E+01	NO	3.59E+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

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW366

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 2023 Statistical Analysis   Historical Background Comparison
Total Organic Carbon (TOC)   UNITS: mg/L   URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data   **X**= 3.513 **S**= 4.307 **CV(1)**=1.226   **K factor****= 2.523   **TL(1)**= 1.44E+01 **LL(1)**=N/A

Statistics-Transformed Background Data   **X**= 0.851 **S**= 0.828 **CV(2)**=0.973   **K factor****= 2.523   **TL(2)**= 2.94E+00 **LL(2)**=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	1.70E+00	5.31E-01
4/22/2002	1.60E+00	4.70E-01
7/15/2002	3.10E+00	1.13E+00
10/8/2002	1.77E+01	2.87E+00
1/8/2003	9.00E+00	2.20E+00
4/3/2003	4.00E+00	1.39E+00
7/8/2003	4.90E+00	1.59E+00
10/6/2003	2.40E+00	8.75E-01

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	1.00E+00	0.00E+00
4/23/2002	1.20E+00	1.82E-01
7/16/2002	1.00E+00	0.00E+00
10/8/2002	1.00E+00	0.00E+00
1/7/2003	1.60E+00	4.70E-01
4/2/2003	1.50E+00	4.05E-01
7/9/2003	3.00E+00	1.10E+00
10/7/2003	1.50E+00	4.05E-01

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	4.02E-01	N/A	-9.11E-01	NO
MW360	Downgradient	Yes	6.08E-01	N/A	-4.98E-01	NO
MW363	Downgradient	Yes	9.81E-01	N/A	-1.92E-02	NO
MW366	Downgradient	Yes	8.81E-01	N/A	-1.27E-01	NO
MW369	Upgradient	Yes	1.10E+00	N/A	9.53E-02	NO
MW372	Upgradient	Yes	7.88E-01	N/A	-2.38E-01	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.
CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.
S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5
TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)
X   Mean, X = (sum of background results)/(count of background results)
** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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=** 67.963	**S=** 64.316	**CV(1)=** 0.946	**K factor**=** 2.523	**TL(1)=** 2.30E+02	**LL(1)=** N/A
Statistics-Transformed Background Data	**X=** 3.772	**S=** 1.023	**CV(2)=** 0.271	**K factor**=** 2.523	**TL(2)=** 6.35E+00	**LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	5.00E+01	3.91E+00
4/22/2002	5.00E+01	3.91E+00
7/15/2002	8.10E+01	4.39E+00
10/8/2002	2.02E+02	5.31E+00
1/8/2003	1.77E+02	5.18E+00
4/3/2003	9.31E+01	4.53E+00
7/8/2003	1.75E+01	2.86E+00
10/6/2003	3.75E+01	3.62E+00

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	1.84E+02	5.21E+00
4/23/2002	5.00E+01	3.91E+00
7/16/2002	5.00E+01	3.91E+00
10/8/2002	5.00E+01	3.91E+00
1/7/2003	1.00E+01	2.30E+00
4/2/2003	1.27E+01	2.54E+00
7/9/2003	1.00E+01	2.30E+00
10/7/2003	1.26E+01	2.53E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	6.54E+00	NO	1.88E+00	N/A
MW360	Downgradient	Yes	1.19E+01	NO	2.48E+00	N/A
MW363	Downgradient	No	1.00E+01	N/A	2.30E+00	N/A
MW366	Downgradient	Yes	8.84E+00	NO	2.18E+00	N/A
MW369	Upgradient	Yes	1.48E+01	NO	2.69E+00	N/A
MW372	Upgradient	Yes	4.50E+01	NO	3.81E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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=** 5.625   **S=** 3.594   **CV(1)=** 0.639   **K factor**=** 2.523   **TL(1)=** 1.47E+01   **LL(1)=** N/A

Statistics-Transformed Background Data   **X=** 1.571   **S=** 0.565   **CV(2)=** 0.360   **K factor**=** 2.523   **TL(2)=** 3.00E+00   **LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	1.10E+01	2.40E+00
4/22/2002	1.60E+01	2.77E+00
7/15/2002	8.00E+00	2.08E+00
10/8/2002	3.00E+00	1.10E+00
1/8/2003	2.00E+00	6.93E-01
4/3/2003	3.00E+00	1.10E+00
7/8/2003	3.00E+00	1.10E+00
10/6/2003	2.00E+00	6.93E-01

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	5.00E+00	1.61E+00
4/23/2002	5.00E+00	1.61E+00
7/16/2002	4.00E+00	1.39E+00
10/8/2002	6.00E+00	1.79E+00
1/7/2003	5.00E+00	1.61E+00
4/2/2003	6.00E+00	1.79E+00
7/9/2003	5.00E+00	1.61E+00
10/7/2003	6.00E+00	1.79E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	2.81E+00	N/A	1.03E+00	N/A
MW360	Downgradient	Yes	1.86E+00	N/A	6.21E-01	N/A
MW363	Downgradient	No	1.00E+00	N/A	0.00E+00	N/A
MW366	Downgradient	Yes	1.58E+00	N/A	4.57E-01	N/A
MW369	Upgradient	Yes	7.30E-01	N/A	-3.15E-01	N/A
MW372	Upgradient	Yes	6.01E+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-U Second 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= 0.116	S= 0.173	CV(1)=1.490	K factor**= 2.523	TL(1)= 5.52E-01	LL(1)=N/A
Statistics-Transformed Background Data	X= -2.729	S= 1.014	CV(2)=-0.371	K factor**= 2.523	TL(2)= -1.72E-01	LL(2)=N/A

<table>
<tr><td colspan="3">Historical Background Data from Upgradient Wells with Transformed Result</td></tr>
</table>

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Well Number: MW369

Date Collected	Result	LN(Result)
3/18/2002	1.00E-01	-2.30E+00
4/22/2002	1.00E-01	-2.30E+00
7/15/2002	1.00E-01	-2.30E+00
10/8/2002	2.50E-02	-3.69E+00
1/8/2003	3.50E-02	-3.35E+00
4/3/2003	3.50E-02	-3.35E+00
7/8/2003	2.00E-02	-3.91E+00
10/6/2003	2.00E-02	-3.91E+00

Well Number: MW372

Date Collected	Result	LN(Result)
3/19/2002	7.25E-01	-3.22E-01
4/23/2002	1.00E-01	-2.30E+00
7/16/2002	1.00E-01	-2.30E+00
10/8/2002	2.50E-02	-3.69E+00
1/7/2003	3.50E-02	-3.35E+00
4/2/2003	3.50E-02	-3.35E+00
7/9/2003	2.00E-01	-1.61E+00
10/7/2003	2.00E-01	-1.61E+00

<table>
<tr><td colspan="7">Current Quarter Data</td></tr>
<tr><td>Well No.</td><td>Gradient</td><td>Detected?</td><td>Result</td><td>Result >TL(1)?</td><td>LN(Result)</td><td>LN(Result) >TL(2)</td></tr>
<tr><td>MW357</td><td>Downgradient</td><td>Yes</td><td>3.46E-03</td><td>N/A</td><td>-5.67E+00</td><td>NO</td></tr>
<tr><td>MW360</td><td>Downgradient</td><td>No</td><td>2.00E-02</td><td>N/A</td><td>-3.91E+00</td><td>N/A</td></tr>
<tr><td>MW363</td><td>Downgradient</td><td>No</td><td>2.00E-02</td><td>N/A</td><td>-3.91E+00</td><td>N/A</td></tr>
<tr><td>MW366</td><td>Downgradient</td><td>Yes</td><td>3.50E-03</td><td>N/A</td><td>-5.65E+00</td><td>NO</td></tr>
<tr><td>MW369</td><td>Upgradient</td><td>Yes</td><td>6.59E-03</td><td>N/A</td><td>-5.02E+00</td><td>NO</td></tr>
<tr><td>MW372</td><td>Upgradient</td><td>No</td><td>2.00E-02</td><td>N/A</td><td>-3.91E+00</td><td>N/A</td></tr>
</table>

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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=** 2.026	**S=** 5.626	**CV(1)=** 2.777	**K factor**=** 2.523	**TL(1)=** 1.62E+01 **LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -0.803	**S=** 1.380	**CV(2)=** -1.718	**K factor**=** 2.523	**TL(2)=** 2.68E+00 **LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	4.66E+00	1.54E+00
4/23/2002	2.00E-01	-1.61E+00
7/15/2002	2.00E-01	-1.61E+00
10/8/2002	2.00E-01	-1.61E+00
1/8/2003	2.00E-01	-1.61E+00
4/3/2003	2.00E-01	-1.61E+00
7/9/2003	2.00E-01	-1.61E+00
10/6/2003	2.00E-01	-1.61E+00

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	2.27E+01	3.12E+00
4/23/2002	1.46E+00	3.78E-01
7/16/2002	2.53E-01	-1.37E+00
10/8/2002	4.82E-01	-7.30E-01
1/7/2003	6.08E-01	-4.98E-01
4/2/2003	4.46E-01	-8.07E-01
7/9/2003	2.00E-01	-1.61E+00
10/7/2003	2.00E-01	-1.61E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	4.27E-02	N/A	-3.15E+00	NO
MW361	Downgradient	No	5.00E-02	N/A	-3.00E+00	N/A
MW364	Downgradient	No	5.00E-02	N/A	-3.00E+00	N/A
MW367	Downgradient	No	5.00E-02	N/A	-3.00E+00	N/A
MW370	Upgradient	No	5.00E-02	N/A	-3.00E+00	N/A
MW373	Upgradient	No	5.00E-02	N/A	-3.00E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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=** 1.140   **S=** 0.780   **CV(1)=**0.684   **K factor**=** 2.523   **TL(1)=** 3.11E+00   **LL(1)=**N/A

Statistics-Transformed Background Data   **X=** -0.235   **S=** 1.006   **CV(2)=** -4.287   **K factor**=** 2.523   **TL(2)=** 2.30E+00   **LL(2)=**N/A

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

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	2.00E+00	6.93E-01
4/23/2002	2.00E+00	6.93E-01
7/15/2002	2.00E+00	6.93E-01
10/8/2002	2.00E-01	-1.61E+00
1/8/2003	2.00E-01	-1.61E+00
4/3/2003	2.00E-01	-1.61E+00
7/9/2003	2.00E-01	-1.61E+00
10/6/2003	2.00E-01	-1.61E+00

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	2.00E+00	6.93E-01
4/23/2002	2.00E+00	6.93E-01
7/16/2002	2.00E+00	6.93E-01
10/8/2002	7.90E-01	-2.36E-01
1/7/2003	8.07E-01	-2.14E-01
4/2/2003	1.13E+00	1.22E-01
7/9/2003	1.28E+00	2.47E-01
10/7/2003	1.24E+00	2.15E-01

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	1.68E-01	NO	-1.78E+00	N/A
MW361	Downgradient	Yes	3.82E-01	NO	-9.62E-01	N/A
MW364	Downgradient	Yes	1.83E-01	NO	-1.70E+00	N/A
MW367	Downgradient	Yes	3.17E-02	NO	-3.45E+00	N/A
MW370	Upgradient	Yes	2.15E-01	NO	-1.54E+00	N/A
MW373	Upgradient	Yes	1.74E+00	NO	5.54E-01	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data   **X=** 1.000   **S=** 0.000   **CV(1)=** 0.000   **K factor**=** 2.523   **TL(1)=** 1.00E+00 **LL(1)=** N/A

Statistics-Transformed Background Data   **X=** 0.000   **S=** 0.000   **CV(2)=** #Num!   **K factor**=** 2.523   **TL(2)=** 0.00E+00 **LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	1.00E+00	0.00E+00
4/23/2002	1.00E+00	0.00E+00
7/15/2002	1.00E+00	0.00E+00
10/8/2002	1.00E+00	0.00E+00
1/8/2003	1.00E+00	0.00E+00
4/3/2003	1.00E+00	0.00E+00
7/9/2003	1.00E+00	0.00E+00
10/6/2003	1.00E+00	0.00E+00

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	1.00E+00	0.00E+00
4/23/2002	1.00E+00	0.00E+00
7/16/2002	1.00E+00	0.00E+00
10/8/2002	1.00E+00	0.00E+00
1/7/2003	1.00E+00	0.00E+00
4/2/2003	1.00E+00	0.00E+00
7/9/2003	1.00E+00	0.00E+00
10/7/2003	1.00E+00	0.00E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	2.55E-01	NO	-1.37E+00	N/A
MW361	Downgradient	Yes	3.86E-01	NO	-9.52E-01	N/A
MW364	Downgradient	Yes	4.71E-01	NO	-7.53E-01	N/A
MW367	Downgradient	Yes	3.15E-01	NO	-1.16E+00	N/A
MW370	Upgradient	Yes	5.68E-01	NO	-5.66E-01	N/A
MW373	Upgradient	Yes	4.84E-01	NO	-7.26E-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-U Second 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**= 43.413 **S**= 13.444 **CV(1)**=0.310 **K factor****= 2.523 **TL(1)**= 7.73E+01 **LL(1)**=N/A

Statistics-Transformed Background Data **X**= 3.723 **S**= 0.323 **CV(2)**=0.087 **K factor****= 2.523 **TL(2)**= 4.54E+00 **LL(2)**=N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	3.48E+01	3.55E+00
4/23/2002	4.34E+01	3.77E+00
7/15/2002	3.32E+01	3.50E+00
10/8/2002	2.92E+01	3.37E+00
1/8/2003	3.13E+01	3.44E+00
4/3/2003	3.24E+01	3.48E+00
7/9/2003	2.29E+01	3.13E+00
10/6/2003	2.80E+01	3.33E+00

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	6.19E+01	4.13E+00
4/23/2002	5.92E+01	4.08E+00
7/16/2002	4.76E+01	3.86E+00
10/8/2002	4.61E+01	3.83E+00
1/7/2003	4.92E+01	3.90E+00
4/2/2003	5.78E+01	4.06E+00
7/9/2003	5.27E+01	3.96E+00
10/7/2003	6.49E+01	4.17E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	3.37E+01	NO	3.52E+00	N/A
MW361	Downgradient	Yes	2.91E+01	NO	3.37E+00	N/A
MW364	Downgradient	Yes	3.27E+01	NO	3.49E+00	N/A
MW367	Downgradient	Yes	1.96E+01	NO	2.98E+00	N/A
MW370	Upgradient	Yes	3.09E+01	NO	3.43E+00	N/A
MW373	Upgradient	Yes	7.11E+01	NO	4.26E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 2023 Statistical Analysis   Historical Background Comparison
Chemical Oxygen Demand (COD)   UNITS: mg/L   LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data   **X=** 41.938 **S=** 24.732 **CV(1)=** 0.590   **K factor**=** 2.523   **TL(1)=** 1.04E+02 **LL(1)=** N/A

Statistics-Transformed Background Data **X=** 3.658 **S=** 0.339 **CV(2)=** 0.093   **K factor**=** 2.523   **TL(2)=** 4.51E+00 **LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result		

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

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	3.50E+01	3.56E+00
4/23/2002	1.34E+02	4.90E+00
7/15/2002	3.50E+01	3.56E+00
10/8/2002	3.50E+01	3.56E+00
1/8/2003	3.50E+01	3.56E+00
4/3/2003	3.50E+01	3.56E+00
7/9/2003	3.50E+01	3.56E+00
10/6/2003	3.50E+01	3.56E+00

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	3.50E+01	3.56E+00
4/23/2002	4.70E+01	3.85E+00
7/16/2002	3.50E+01	3.56E+00
10/8/2002	3.50E+01	3.56E+00
1/7/2003	3.50E+01	3.56E+00
4/2/2003	3.50E+01	3.56E+00
7/9/2003	3.50E+01	3.56E+00
10/7/2003	3.50E+01	3.56E+00

Current Quarter Data						
Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	No	2.00E+01	N/A	3.00E+00	N/A
MW361	Downgradient	Yes	1.69E+01	NO	2.83E+00	N/A
MW364	Downgradient	No	2.00E+01	N/A	3.00E+00	N/A
MW367	Downgradient	No	2.00E+01	N/A	3.00E+00	N/A
MW370	Upgradient	Yes	2.36E+01	NO	3.16E+00	N/A
MW373	Upgradient	No	2.00E+01	N/A	3.00E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data   **X=** 45.919 **S=** 7.524   **CV(1)=**0.164   **K factor**=** 2.523   **TL(1)=** 6.49E+01 **LL(1)=**N/A

Statistics-Transformed Background Data   **X=** 3.814   **S=** 0.165   **CV(2)=**0.043   **K factor**=** 2.523   **TL(2)=** 4.23E+00 **LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW370

Date Collected	Result	LN(Result)
7/15/2002	5.55E+01	4.02E+00
10/8/2002	5.36E+01	3.98E+00
1/8/2003	5.29E+01	3.97E+00
4/3/2003	5.36E+01	3.98E+00
7/9/2003	5.19E+01	3.95E+00
10/6/2003	5.30E+01	3.97E+00
1/7/2004	5.30E+01	3.97E+00
4/7/2004	5.16E+01	3.94E+00

Well Number: MW373

Date Collected	Result	LN(Result)
7/16/2002	4.06E+01	3.70E+00
10/8/2002	3.88E+01	3.66E+00
1/7/2003	3.90E+01	3.66E+00
4/2/2003	3.84E+01	3.65E+00
7/9/2003	3.81E+01	3.64E+00
10/7/2003	3.80E+01	3.64E+00
1/6/2004	3.79E+01	3.63E+00
4/7/2004	3.88E+01	3.66E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	2.07E+01	NO	3.03E+00	N/A
MW361	Downgradient	Yes	3.45E+01	NO	3.54E+00	N/A
MW364	Downgradient	Yes	3.72E+01	NO	3.62E+00	N/A
MW367	Downgradient	Yes	2.17E+01	NO	3.08E+00	N/A
MW370	Upgradient	Yes	4.19E+01	NO	3.74E+00	N/A
MW373	Upgradient	Yes	3.48E+01	NO	3.55E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.027	**S=** 0.032	**CV(1)=** 1.165	**K factor**=** 2.523	**TL(1)=** 1.08E-01 **LL(1)=** N/A
Statistics-Transformed Background Data	**X=** -4.058	**S=** 1.011	**CV(2)=** -0.249	**K factor**=** 2.523	**TL(2)=** -1.51E+00 **LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	2.50E-02	-3.69E+00
4/23/2002	2.50E-02	-3.69E+00
7/15/2002	2.50E-02	-3.69E+00
10/8/2002	1.74E-02	-4.05E+00
1/8/2003	1.05E-02	-4.56E+00
4/3/2003	9.31E-03	-4.68E+00
7/9/2003	1.37E-01	-1.99E+00
10/6/2003	4.63E-02	-3.07E+00

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	2.50E-02	-3.69E+00
4/23/2002	3.40E-02	-3.38E+00
7/16/2002	2.50E-02	-3.69E+00
10/8/2002	4.11E-03	-5.49E+00
1/7/2003	3.44E-03	-5.67E+00
4/2/2003	3.68E-03	-5.60E+00
7/9/2003	4.05E-02	-3.21E+00
10/7/2003	8.43E-03	-4.78E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	2.74E-02	N/A	-3.60E+00	NO
MW361	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW364	Downgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW367	Downgradient	Yes	3.41E-03	N/A	-5.68E+00	NO
MW370	Upgradient	No	1.00E-03	N/A	-6.91E+00	N/A
MW373	Upgradient	No	1.00E-03	N/A	-6.91E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

**   *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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= 608.719 S= 156.157 CV(1)=0.257   **K factor****= 2.523   **TL(1)**= 1.00E+03 **LL(1)**=N/A

Statistics-Transformed Background Data   X= 6.380   S= 0.260   **CV(2)**=0.041   **K factor****= 2.523   **TL(2)**= 7.04E+00 **LL(2)**=N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	4.06E+02	6.01E+00
4/23/2002	5.43E+02	6.30E+00
7/15/2002	4.76E+02	6.17E+00
10/8/2002	4.41E+02	6.09E+00
1/8/2003	4.86E+02	6.19E+00
4/3/2003	4.66E+02	6.14E+00
7/9/2003	4.79E+02	6.17E+00
10/6/2003	4.35E+02	6.08E+00

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	6.61E+02	6.49E+00
4/23/2002	8.01E+02	6.69E+00
7/16/2002	7.74E+02	6.65E+00
10/8/2002	6.80E+02	6.52E+00
1/7/2003	6.87E+02	6.53E+00
4/2/2003	7.63E+02	6.64E+00
7/9/2003	8.28E+02	6.72E+00
10/7/2003	8.14E+02	6.70E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	5.21E+02	NO	6.26E+00	N/A
MW361	Downgradient	Yes	4.46E+02	NO	6.10E+00	N/A
MW364	Downgradient	Yes	4.82E+02	NO	6.18E+00	N/A
MW367	Downgradient	Yes	3.21E+02	NO	5.77E+00	N/A
MW370	Upgradient	Yes	4.70E+02	NO	6.15E+00	N/A
MW373	Upgradient	Yes	8.31E+02	NO	6.72E+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.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.025	**S=** 0.010	**CV(1)=** 0.399	**K factor**=** 2.523	**TL(1)=** 5.03E-02	**LL(1)=** N/A
Statistics-Transformed Background Data	**X=** -3.739	**S=** 0.308	**CV(2)=** -0.082	**K factor**=** 2.523	**TL(2)=** -2.96E+00	**LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	2.50E-02	-3.69E+00
4/23/2002	2.50E-02	-3.69E+00
7/15/2002	5.00E-02	-3.00E+00
10/8/2002	2.00E-02	-3.91E+00
1/8/2003	2.00E-02	-3.91E+00
4/3/2003	2.00E-02	-3.91E+00
7/9/2003	2.00E-02	-3.91E+00
10/6/2003	2.00E-02	-3.91E+00

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	2.60E-02	-3.65E+00
4/23/2002	2.50E-02	-3.69E+00
7/16/2002	5.00E-02	-3.00E+00
10/8/2002	2.00E-02	-3.91E+00
1/7/2003	2.00E-02	-3.91E+00
4/2/2003	2.00E-02	-3.91E+00
7/9/2003	2.00E-02	-3.91E+00
10/7/2003	2.00E-02	-3.91E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	9.82E-04	NO	-6.93E+00	N/A
MW361	Downgradient	Yes	1.45E-03	NO	-6.54E+00	N/A
MW364	Downgradient	No	1.07E-03	N/A	-6.84E+00	N/A
MW367	Downgradient	No	8.05E-04	N/A	-7.12E+00	N/A
MW370	Upgradient	Yes	4.62E-04	NO	-7.68E+00	N/A
MW373	Upgradient	Yes	5.50E-04	NO	-7.51E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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=** 1.387	**S=** 1.153	**CV(1)=** 0.831	**K factor**=** 2.523	**TL(1)=** 4.30E+00 **LL(1)=** N/A
Statistics-Transformed Background Data	**X=** -0.115	**S=** 1.207	**CV(2)=** -10.514	**K factor**=** 2.523	**TL(2)=** 2.93E+00 **LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	4.32E+00	1.46E+00
4/23/2002	1.24E+00	2.15E-01
7/15/2002	7.50E-01	-2.88E-01
10/8/2002	9.40E-01	-6.19E-02
1/8/2003	3.08E+00	1.12E+00
4/3/2003	1.45E+00	3.72E-01
7/9/2003	1.22E+00	1.99E-01
10/6/2003	1.07E+00	6.77E-02

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	3.04E+00	1.11E+00
4/23/2002	3.00E-02	-3.51E+00
7/16/2002	2.30E-01	-1.47E+00
10/8/2002	8.60E-01	-1.51E-01
1/7/2003	2.10E-01	-1.56E+00
4/2/2003	1.19E+00	1.74E-01
7/9/2003	1.10E+00	9.53E-02
10/7/2003	1.46E+00	3.78E-01

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	1.25E+00	NO	2.23E-01	N/A
MW361	Downgradient	Yes	4.44E+00	YES	1.49E+00	N/A
MW364	Downgradient	Yes	3.60E+00	NO	1.28E+00	N/A
MW367	Downgradient	Yes	1.53E+00	NO	4.25E-01	N/A
MW370	Upgradient	Yes	4.26E+00	NO	1.45E+00	N/A
MW373	Upgradient	Yes	2.00E+00	NO	6.93E-01	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW361

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second 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=** 356.188 **S=** 106.752 **CV(1)=** 0.300   **K factor**=** 2.523   **TL(1)=** 6.26E+02 **LL(1)=** N/A

Statistics-Transformed Background Data   **X=** 5.831   **S=** 0.311   **CV(2)=** 0.053   **K factor**=** 2.523   **TL(2)=** 6.62E+00 **LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	2.36E+02	5.46E+00
4/23/2002	3.37E+02	5.82E+00
7/15/2002	2.66E+02	5.58E+00
10/8/2002	2.40E+02	5.48E+00
1/8/2003	2.82E+02	5.64E+00
4/3/2003	2.38E+02	5.47E+00
7/9/2003	2.48E+02	5.51E+00
10/6/2003	2.24E+02	5.41E+00

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	4.27E+02	6.06E+00
4/23/2002	5.07E+02	6.23E+00
7/16/2002	4.64E+02	6.14E+00
10/8/2002	4.08E+02	6.01E+00
1/7/2003	4.04E+02	6.00E+00
4/2/2003	4.50E+02	6.11E+00
7/9/2003	4.87E+02	6.19E+00
10/7/2003	4.81E+02	6.18E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	2.32E+02	NO	5.45E+00	N/A
MW361	Downgradient	Yes	2.27E+02	NO	5.42E+00	N/A
MW364	Downgradient	Yes	2.44E+02	NO	5.50E+00	N/A
MW367	Downgradient	Yes	1.60E+02	NO	5.08E+00	N/A
MW370	Upgradient	Yes	2.35E+02	NO	5.46E+00	N/A
MW373	Upgradient	Yes	4.72E+02	NO	6.16E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second 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=** 9.230	**S=** 8.841	**CV(1)=** 0.958	**K factor**=** 2.523	**TL(1)=** 3.15E+01 **LL(1)=** N/A
Statistics-Transformed Background Data	**X=** 1.942	**S=** 0.713	**CV(2)=** 0.367	**K factor**=** 2.523	**TL(2)=** 3.74E+00 **LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	9.34E+00	2.23E+00
4/23/2002	4.33E+00	1.47E+00
7/15/2002	3.52E+00	1.26E+00
10/8/2002	7.45E+00	2.01E+00
1/8/2003	7.04E+00	1.95E+00
4/3/2003	4.64E+00	1.53E+00
7/9/2003	1.58E+01	2.76E+00
10/6/2003	6.49E+00	1.87E+00

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	3.76E+01	3.63E+00
4/23/2002	1.90E+01	2.94E+00
7/16/2002	1.07E+01	2.37E+00
10/8/2002	3.75E+00	1.32E+00
1/7/2003	3.87E+00	1.35E+00
4/2/2003	3.50E+00	1.25E+00
7/9/2003	7.72E+00	2.04E+00
10/7/2003	2.93E+00	1.08E+00

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	1.24E+01	NO	2.52E+00	N/A
MW361	Downgradient	Yes	4.67E-02	NO	-3.06E+00	N/A
MW364	Downgradient	No	1.00E-01	N/A	-2.30E+00	N/A
MW367	Downgradient	Yes	7.22E-01	NO	-3.26E-01	N/A
MW370	Upgradient	No	1.00E-01	N/A	-2.30E+00	N/A
MW373	Upgradient	Yes	3.94E-02	NO	-3.23E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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=** 17.544   **S=** 5.911   **CV(1)=** 0.337   **K factor**=** 2.523   **TL(1)=** 3.25E+01   **LL(1)=** N/A

Statistics-Transformed Background Data   **X=** 2.810   **S=** 0.343   **CV(2)=** 0.122   **K factor**=** 2.523   **TL(2)=** 3.68E+00   **LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	1.21E+01	2.49E+00
4/23/2002	1.51E+01	2.71E+00
7/15/2002	1.24E+01	2.52E+00
10/8/2002	1.22E+01	2.50E+00
1/8/2003	1.15E+01	2.44E+00
4/3/2003	1.23E+01	2.51E+00
7/9/2003	1.00E+01	2.30E+00
10/6/2003	1.21E+01	2.49E+00

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	2.48E+01	3.21E+00
4/23/2002	2.27E+01	3.12E+00
7/16/2002	1.88E+01	2.93E+00
10/8/2002	2.11E+01	3.05E+00
1/7/2003	1.99E+01	2.99E+00
4/2/2003	2.55E+01	3.24E+00
7/9/2003	2.33E+01	3.15E+00
10/7/2003	2.69E+01	3.29E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	1.72E+01	NO	2.84E+00	N/A
MW361	Downgradient	Yes	1.27E+01	NO	2.54E+00	N/A
MW364	Downgradient	Yes	1.39E+01	NO	2.63E+00	N/A
MW367	Downgradient	Yes	9.92E+00	NO	2.29E+00	N/A
MW370	Upgradient	Yes	1.32E+01	NO	2.58E+00	N/A
MW373	Upgradient	Yes	2.76E+01	NO	3.32E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second 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=** 1.080   **S=** 0.674   **CV(1)=** 0.624   **K factor**=** 2.523   **TL(1)=** 2.78E+00   **LL(1)=**N/A

Statistics-Transformed Background Data   **X=** -0.114   **S=** 0.658   **CV(2)=** -5.762   **K factor**=** 2.523   **TL(2)=** 1.55E+00   **LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	2.44E-01	-1.41E+00
4/23/2002	1.82E+00	5.99E-01
7/15/2002	1.22E+00	1.99E-01
10/8/2002	9.88E-01	-1.21E-02
1/8/2003	7.29E-01	-3.16E-01
4/3/2003	6.37E-01	-4.51E-01
7/9/2003	2.51E+00	9.20E-01
10/6/2003	1.05E+00	4.88E-02

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	3.55E-01	-1.04E+00
4/23/2002	2.16E+00	7.70E-01
7/16/2002	1.39E+00	3.29E-01
10/8/2002	7.17E-01	-3.33E-01
1/7/2003	5.87E-01	-5.33E-01
4/2/2003	5.45E-01	-6.07E-01
7/9/2003	1.76E+00	5.65E-01
10/7/2003	5.70E-01	-5.62E-01

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	2.10E+00	NO	7.42E-01	N/A
MW361	Downgradient	Yes	1.11E-02	NO	-4.50E+00	N/A
MW364	Downgradient	Yes	3.84E-03	NO	-5.56E+00	N/A
MW367	Downgradient	Yes	9.41E-01	NO	-6.08E-02	N/A
MW370	Upgradient	Yes	1.25E-03	NO	-6.68E+00	N/A
MW373	Upgradient	Yes	7.75E-03	NO	-4.86E+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 = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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=** 0.024 **S=** 0.022 **CV(1)=** 0.901 **K factor**=** 2.523 **TL(1)=** 7.82E-02 **LL(1)=** N/A

Statistics-Transformed Background Data **X=** -4.239 **S=** 1.087 **CV(2)=** -0.256 **K factor**=** 2.523 **TL(2)=** -1.50E+00 **LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	5.00E-02	-3.00E+00
4/23/2002	5.00E-02	-3.00E+00
7/15/2002	5.00E-02	-3.00E+00
10/8/2002	5.00E-03	-5.30E+00
1/8/2003	5.00E-03	-5.30E+00
4/3/2003	5.00E-03	-5.30E+00
7/9/2003	2.64E-02	-3.63E+00
10/6/2003	9.71E-03	-4.63E+00

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	5.00E-02	-3.00E+00
4/23/2002	5.00E-02	-3.00E+00
7/16/2002	5.00E-02	-3.00E+00
10/8/2002	5.00E-03	-5.30E+00
1/7/2003	5.00E-03	-5.30E+00
4/2/2003	5.00E-03	-5.30E+00
7/9/2003	1.12E-02	-4.49E+00
10/7/2003	5.00E-03	-5.30E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	8.26E-02	YES	-2.49E+00	N/A
MW361	Downgradient	Yes	8.52E-04	NO	-7.07E+00	N/A
MW364	Downgradient	Yes	6.98E-04	NO	-7.27E+00	N/A
MW367	Downgradient	Yes	1.80E-03	NO	-6.32E+00	N/A
MW370	Upgradient	No	2.00E-03	N/A	-6.21E+00	N/A
MW373	Upgradient	Yes	8.29E-04	NO	-7.10E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances
MW358

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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= 46.688	S= 60.986	CV(1)=1.306	K factor**= 2.523	TL(1)= 2.01E+02	LL(1)=N/A
Statistics-Transformed Background Data	X= 3.829	S= 1.151	CV(2)=0.301	K factor**= 2.523	TL(2)= 4.94E+00	LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	1.40E+02	4.94E+00
4/23/2002	-1.50E+01	#Func!
7/15/2002	5.00E+00	1.61E+00
4/3/2003	4.90E+01	3.89E+00
7/9/2003	-3.50E+01	#Func!
10/6/2003	4.00E+01	3.69E+00
1/7/2004	1.01E+02	4.62E+00
4/7/2004	1.05E+02	4.65E+00

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	1.40E+02	4.94E+00
4/23/2002	-2.00E+01	#Func!
10/8/2002	1.00E+01	2.30E+00
1/7/2003	1.00E+01	2.30E+00
4/2/2003	6.70E+01	4.20E+00
7/9/2003	-2.90E+01	#Func!
10/7/2003	1.27E+02	4.84E+00
1/6/2004	5.20E+01	3.95E+00

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

#Because the natural log was not possible for all background values, the TL was considered equal to the maximum background value.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	1.50E+02	N/A	5.01E+00	YES
MW361	Downgradient	Yes	3.66E+02	N/A	5.90E+00	YES
MW364	Downgradient	Yes	4.44E+02	N/A	6.10E+00	YES
MW367	Downgradient	Yes	3.98E+02	N/A	5.99E+00	YES
MW370	Upgradient	Yes	4.60E+02	N/A	6.13E+00	YES
MW373	Upgradient	Yes	4.57E+02	N/A	6.12E+00	YES

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW358
MW361
MW364
MW367
MW370
MW373

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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**= 6.283   **S**= 0.159   **CV(1)**=0.025   **K factor****= 2.904   **TL(1)**=6.74E+00   **LL(1)**=5.82E+00

Statistics-Transformed Background Data   **X**= 1.837   **S**= 0.025   **CV(2)**=0.014   **K factor****= 2.904   **TL(2)**=1.91E+00   **LL(2)**=1.76E+00

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	6.30E+00	1.84E+00
4/23/2002	6.40E+00	1.86E+00
7/15/2002	6.30E+00	1.84E+00
10/8/2002	6.30E+00	1.84E+00
1/8/2003	6.40E+00	1.86E+00
4/3/2003	6.50E+00	1.87E+00
7/9/2003	6.30E+00	1.84E+00
10/6/2003	6.50E+00	1.87E+00

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	6.00E+00	1.79E+00
4/23/2002	6.30E+00	1.84E+00
7/16/2002	6.45E+00	1.86E+00
10/8/2002	6.18E+00	1.82E+00
1/7/2003	6.35E+00	1.85E+00
4/2/2003	6.14E+00	1.81E+00
7/9/2003	6.10E+00	1.81E+00
10/7/2003	6.00E+00	1.79E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)? Result <LL(1)?	LN(Result)	LN(Result) >TL(2)? LN(Result) <LL(2)?
MW358	Downgradient	Yes	6.38E+00	NO	1.85E+00	N/A
MW361	Downgradient	Yes	6.09E+00	NO	1.81E+00	N/A
MW364	Downgradient	Yes	6.02E+00	NO	1.80E+00	N/A
MW367	Downgradient	Yes	5.91E+00	NO	1.78E+00	N/A
MW370	Upgradient	Yes	6.12E+00	NO	1.81E+00	N/A
MW373	Upgradient	Yes	6.12E+00	NO	1.81E+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.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data   **X**= 2.823   **S**= 0.522   **CV(1)**=0.185   **K factor****= 2.523   **TL(1)**= 4.14E+00   **LL(1)**=N/A

Statistics-Transformed Background Data   **X**= 1.024   **S**= 0.167   **CV(2)**=0.163   **K factor****= 2.523   **TL(2)**= 1.45E+00   **LL(2)**=N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	3.22E+00	1.17E+00
4/23/2002	3.43E+00	1.23E+00
7/15/2002	2.98E+00	1.09E+00
10/8/2002	2.46E+00	9.00E-01
1/8/2003	2.41E+00	8.80E-01
4/3/2003	2.43E+00	8.88E-01
7/9/2003	2.44E+00	8.92E-01
10/6/2003	2.48E+00	9.08E-01

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	4.34E+00	1.47E+00
4/23/2002	3.04E+00	1.11E+00
7/16/2002	2.93E+00	1.08E+00
10/8/2002	2.30E+00	8.33E-01
1/7/2003	2.45E+00	8.96E-01
4/2/2003	2.70E+00	9.93E-01
7/9/2003	2.68E+00	9.86E-01
10/7/2003	2.88E+00	1.06E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	3.13E+00	NO	1.14E+00	N/A
MW361	Downgradient	Yes	1.89E+00	NO	6.37E-01	N/A
MW364	Downgradient	Yes	2.04E+00	NO	7.13E-01	N/A
MW367	Downgradient	Yes	2.99E+00	NO	1.10E+00	N/A
MW370	Upgradient	Yes	2.52E+00	NO	9.24E-01	N/A
MW373	Upgradient	Yes	2.76E+00	NO	1.02E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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Sodium   **UNITS: mg/L**   **LRGA**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data   X= 51.544   S= 15.227   CV(1)=0.295   K factor**= 2.523   TL(1)= 9.00E+01   LL(1)=N/A

Statistics-Transformed Background Data   X= 3.906   S= 0.272   CV(2)=0.070   K factor**= 2.523   TL(2)= 4.59E+00   LL(2)=N/A

| Historical Background Data from Upgradient Wells with Transformed Result |

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

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	3.18E+01	3.46E+00
4/23/2002	5.00E+01	3.91E+00
7/15/2002	4.47E+01	3.80E+00
10/8/2002	4.00E+01	3.69E+00
1/8/2003	4.46E+01	3.80E+00
4/3/2003	4.19E+01	3.74E+00
7/9/2003	4.00E+01	3.69E+00
10/6/2003	3.81E+01	3.64E+00

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	4.34E+01	3.77E+00
4/23/2002	7.98E+01	4.38E+00
7/16/2002	8.77E+01	4.47E+00
10/8/2002	6.16E+01	4.12E+00
1/7/2003	5.93E+01	4.08E+00
4/2/2003	6.21E+01	4.13E+00
7/9/2003	5.01E+01	3.91E+00
10/7/2003	4.96E+01	3.90E+00

Current Quarter Data						
Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	3.22E+01	NO	3.47E+00	N/A
MW361	Downgradient	Yes	4.05E+01	NO	3.70E+00	N/A
MW364	Downgradient	Yes	4.87E+01	NO	3.89E+00	N/A
MW367	Downgradient	Yes	2.87E+01	NO	3.36E+00	N/A
MW370	Upgradient	Yes	4.83E+01	NO	3.88E+00	N/A
MW373	Upgradient	Yes	6.11E+01	NO	4.11E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

| Conclusion of Statistical Analysis on Historical Data |

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data   X= 122.381 S= 195.095 **CV(1)=**1.594   **K factor**=** 2.523   **TL(1)=** 6.15E+02 **LL(1)=**N/A

Statistics-Transformed Background Data   X= 3.985   S= 1.323   **CV(2)=** 0.332   **K factor**=** 2.523   **TL(2)=** 7.32E+00 **LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	1.74E+01	2.86E+00
4/23/2002	3.79E+01	3.63E+00
7/15/2002	1.57E+01	2.75E+00
10/8/2002	1.34E+01	2.60E+00
1/8/2003	1.44E+01	2.67E+00
4/3/2003	1.81E+01	2.90E+00
7/9/2003	9.60E+00	2.26E+00
10/6/2003	1.65E+01	2.80E+00

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	1.63E+02	5.10E+00
4/23/2002	8.10E+02	6.70E+00
7/16/2002	1.09E+02	4.70E+00
10/8/2002	1.11E+02	4.71E+00
1/7/2003	1.14E+02	4.73E+00
4/2/2003	1.33E+02	4.89E+00
7/9/2003	1.82E+02	5.20E+00
10/7/2003	1.93E+02	5.26E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	3.59E+01	N/A	3.58E+00	NO
MW361	Downgradient	Yes	5.25E+01	N/A	3.96E+00	NO
MW364	Downgradient	Yes	7.04E+01	N/A	4.25E+00	NO
MW367	Downgradient	Yes	3.30E+01	N/A	3.50E+00	NO
MW370	Upgradient	Yes	2.02E+01	N/A	3.01E+00	NO
MW373	Upgradient	Yes	1.70E+02	N/A	5.14E+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.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data   **X=** 7.655   **S=** 13.274   **CV(1)=** 1.734   **K factor**=** 2.523   **TL(1)=** 4.11E+01   **LL(1)=** N/A

Statistics-Transformed Background Data   **X=** 1.946   **S=** 0.939   **CV(2)=** 0.483   **K factor**=** 2.523   **TL(2)=** 3.83E+00   **LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	1.08E+01	2.38E+00
4/23/2002	8.53E+00	2.14E+00
7/15/2002	5.09E+00	1.63E+00
10/8/2002	4.78E+00	1.56E+00
1/8/2003	-5.12E+00	#Func!
4/3/2003	5.11E+00	1.63E+00
7/9/2003	4.25E+00	1.45E+00
10/6/2003	6.54E+00	1.88E+00

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	1.65E+01	2.80E+00
4/23/2002	3.49E+00	1.25E+00
7/16/2002	1.42E+00	3.51E-01
10/8/2002	-6.06E+00	#Func!
1/7/2003	-8.41E+00	#Func!
4/2/2003	2.63E+01	3.27E+00
7/9/2003	3.06E+00	1.12E+00
10/7/2003	4.62E+01	3.83E+00

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

#Because the natural log was not possible for all background values, the TL was considered equal to the maximum background value.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	4.02E+01	N/A	3.69E+00	NO
MW361	Downgradient	Yes	3.78E+01	N/A	3.63E+00	NO
MW364	Downgradient	Yes	5.36E+01	N/A	3.98E+00	YES
MW367	Downgradient	No	1.78E+01	N/A	2.88E+00	N/A
MW370	Upgradient	Yes	2.83E+01	N/A	3.34E+00	NO
MW373	Upgradient	No	1.40E+01	N/A	2.64E+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

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances
MW364

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 6.169	**S=** 12.072	**CV(1)=** 1.957	**K factor**=** 2.523	**TL(1)=** 3.66E+01 **LL(1)=** N/A
Statistics-Transformed Background Data	**X=** 1.069	**S=** 1.014	**CV(2)=** 0.948	**K factor**=** 2.523	**TL(2)=** 3.63E+00 **LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	1.20E+00	1.82E-01
4/23/2002	4.30E+00	1.46E+00
7/15/2002	2.60E+00	9.56E-01
10/8/2002	2.30E+00	8.33E-01
1/8/2003	3.00E+00	1.10E+00
4/3/2003	1.20E+00	1.82E-01
7/9/2003	2.60E+00	9.56E-01
10/6/2003	1.70E+00	5.31E-01

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	1.10E+00	9.53E-02
4/23/2002	1.75E+01	2.86E+00
7/16/2002	4.90E+01	3.89E+00
10/8/2002	2.90E+00	1.06E+00
1/7/2003	3.90E+00	1.36E+00
4/2/2003	2.50E+00	9.16E-01
7/9/2003	1.70E+00	5.31E-01
10/7/2003	1.20E+00	1.82E-01

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	4.66E+00	N/A	1.54E+00	NO
MW361	Downgradient	Yes	9.43E-01	N/A	-5.87E-02	NO
MW364	Downgradient	Yes	6.32E-01	N/A	-4.59E-01	NO
MW367	Downgradient	Yes	6.81E-01	N/A	-3.84E-01	NO
MW370	Upgradient	Yes	1.00E+00	N/A	0.00E+00	NO
MW373	Upgradient	Yes	1.22E+00	N/A	1.99E-01	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

**   *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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=** 79.819 **S=** 78.470 **CV(1)=**0.983   **K factor**=** 2.523   **TL(1)=** 2.78E+02 **LL(1)=**N/A

Statistics-Transformed Background Data   **X=** 3.971 **S=** 0.950 **CV(2)=**0.239   **K factor**=** 2.523   **TL(2)=** 6.37E+00 **LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	5.00E+01	3.91E+00
4/23/2002	2.28E+02	5.43E+00
7/15/2002	8.80E+01	4.48E+00
10/8/2002	5.80E+01	4.06E+00
1/8/2003	7.24E+01	4.28E+00
4/3/2003	2.66E+01	3.28E+00
7/9/2003	1.64E+01	2.80E+00
10/6/2003	3.11E+01	3.44E+00

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	5.00E+01	3.91E+00
4/23/2002	2.76E+02	5.62E+00
7/16/2002	1.77E+02	5.18E+00
10/8/2002	7.60E+01	4.33E+00
1/7/2003	4.59E+01	3.83E+00
4/2/2003	5.78E+01	4.06E+00
7/9/2003	1.00E+01	2.30E+00
10/7/2003	1.39E+01	2.63E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	7.04E+00	NO	1.95E+00	N/A
MW361	Downgradient	Yes	8.56E+00	NO	2.15E+00	N/A
MW364	Downgradient	Yes	3.46E+00	NO	1.24E+00	N/A
MW367	Downgradient	No	1.00E+01	N/A	2.30E+00	N/A
MW370	Upgradient	Yes	5.14E+00	NO	1.64E+00	N/A
MW373	Upgradient	Yes	1.70E+01	NO	2.83E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 2023 Statistical Analysis   Historical Background Comparison

Vanadium   UNITS: mg/L   LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	X= 0.024	S= 0.008	CV(1)=0.324	K factor**= 2.523	TL(1)= 4.44E-02	LL(1)=N/A
Statistics-Transformed Background Data	X= -3.749	S= 0.265	CV(2)=-0.071	K factor**= 2.523	TL(2)= -3.08E+00	LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	3.50E-02	-3.35E+00
4/23/2002	3.30E-02	-3.41E+00
7/15/2002	2.50E-02	-3.69E+00
10/8/2002	2.00E-02	-3.91E+00
1/8/2003	2.00E-02	-3.91E+00
4/3/2003	2.00E-02	-3.91E+00
7/9/2003	2.00E-02	-3.91E+00
10/6/2003	2.00E-02	-3.91E+00

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	4.80E-02	-3.04E+00
4/23/2002	2.50E-02	-3.69E+00
7/16/2002	2.50E-02	-3.69E+00
10/8/2002	2.00E-02	-3.91E+00
1/7/2003	2.00E-02	-3.91E+00
4/2/2003	2.00E-02	-3.91E+00
7/9/2003	2.00E-02	-3.91E+00
10/7/2003	2.00E-02	-3.91E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	3.42E-03	NO	-5.68E+00	N/A
MW361	Downgradient	No	2.00E-02	N/A	-3.91E+00	N/A
MW364	Downgradient	No	2.00E-02	N/A	-3.91E+00	N/A
MW367	Downgradient	No	2.00E-02	N/A	-3.91E+00	N/A
MW370	Upgradient	No	2.00E-02	N/A	-3.91E+00	N/A
MW373	Upgradient	No	5.18E-03	N/A	-5.26E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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= 0.055   S= 0.037   CV(1)=0.673   K factor**= 2.523   TL(1)= 1.47E-01   LL(1)=N/A

Statistics-Transformed Background Data   X= -3.131   S= 0.691   CV(2)=-0.221   K factor**= 2.523   TL(2)= -1.39E+00   LL(2)=N/A

Historical Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW370

Date Collected	Result	LN(Result)
3/17/2002	1.00E-01	-2.30E+00
4/23/2002	1.00E-01	-2.30E+00
7/15/2002	1.00E-01	-2.30E+00
10/8/2002	2.50E-02	-3.69E+00
1/8/2003	3.50E-02	-3.35E+00
4/3/2003	3.50E-02	-3.35E+00
7/9/2003	2.00E-02	-3.91E+00
10/6/2003	2.00E-02	-3.91E+00

Well Number: MW373

Date Collected	Result	LN(Result)
3/18/2002	1.00E-01	-2.30E+00
4/23/2002	1.00E-01	-2.30E+00
7/16/2002	1.00E-01	-2.30E+00
10/8/2002	2.50E-02	-3.69E+00
1/7/2003	3.50E-02	-3.35E+00
4/2/2003	3.50E-02	-3.35E+00
7/9/2003	2.34E-02	-3.76E+00
10/7/2003	2.00E-02	-3.91E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	1.04E-02	NO	-4.57E+00	N/A
MW361	Downgradient	No	2.00E-02	N/A	-3.91E+00	N/A
MW364	Downgradient	Yes	1.83E-02	NO	-4.00E+00	N/A
MW367	Downgradient	Yes	9.30E-03	NO	-4.68E+00	N/A
MW370	Upgradient	No	2.00E-02	N/A	-3.91E+00	N/A
MW373	Upgradient	No	2.00E-02	N/A	-3.91E+00	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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ATTACHMENT D2

**COMPARISON OF CURRENT DATA TO
ONE-SIDED UPPER TOLERANCE INTERVAL TEST
CALCULATED USING
CURRENT BACKGROUND DATA**

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The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X**= 3.004	**S**= 2.011	**CV(1)**=0.669	**K factor****= 2.523	**TL(1)**= 8.08E+00	**LL(1)**=N/A
Statistics-Transformed Background Data	**X**= 0.858	**S**= 0.770	**CV(2)**=0.897	**K factor****= 2.523	**TL(2)**= 2.80E+00	**LL(2)**=N/A

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

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW371

Date Collected	Result	LN(Result)
4/13/2021	6.07E+00	1.80E+00
7/20/2021	5.52E+00	1.71E+00
10/12/2021	3.36E+00	1.21E+00
1/12/2022	3.82E+00	1.34E+00
4/12/2022	7.49E+00	2.01E+00
7/14/2022	4.25E+00	1.45E+00
10/11/2022	2.87E+00	1.05E+00
1/19/2023	1.24E+00	2.15E-01

Well Number: MW374

Date Collected	Result	LN(Result)
4/13/2021	2.80E+00	1.03E+00
7/14/2021	9.90E-01	-1.01E-02
10/13/2021	4.40E-01	-8.21E-01
1/13/2022	1.80E+00	5.88E-01
4/12/2022	2.86E+00	1.05E+00
7/14/2022	1.74E+00	5.54E-01
10/11/2022	1.92E+00	6.52E-01
1/19/2023	9.00E-01	-1.05E-01

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	5.18E+00	NO	1.64E+00	N/A
MW362	Downgradient	Yes	4.27E+00	NO	1.45E+00	N/A
MW365	Downgradient	Yes	7.64E+00	NO	2.03E+00	N/A
MW368	Downgradient	Yes	3.23E+00	NO	1.17E+00	N/A
MW371	Upgradient	Yes	7.75E+00	NO	2.05E+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.

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test 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**= 338.000 **S**= 78.399　**CV(1)**=0.232　**K factor****= 2.523　**TL(1)**= 5.36E+02　**LL(1)**=N/A

Statistics-Transformed Background Data　　**X**= 5.790　**S**= 0.284　**CV(2)**=0.049　**K factor****= 2.523　**TL(2)**= 6.51E+00　**LL(2)**=N/A

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

Current Background Data from Upgradient Wells with Transformed Result

Well Number:　MW371

Date Collected	Result	LN(Result)
4/13/2021	3.88E+02	5.96E+00
7/20/2021	4.01E+02	5.99E+00
10/12/2021	3.44E+02	5.84E+00
1/12/2022	3.89E+02	5.96E+00
4/12/2022	3.75E+02	5.93E+00
7/14/2022	3.78E+02	5.93E+00
10/11/2022	4.09E+02	6.01E+00
1/19/2023	4.20E+02	6.04E+00

Well Number:　MW374

Date Collected	Result	LN(Result)
4/13/2021	3.61E+02	5.89E+00
7/14/2021	3.49E+02	5.86E+00
10/13/2021	2.02E+02	5.31E+00
1/13/2022	1.92E+02	5.26E+00
4/12/2022	3.53E+02	5.87E+00
7/14/2022	3.45E+02	5.84E+00
10/11/2022	3.30E+02	5.80E+00
1/19/2023	1.72E+02	5.15E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	2.52E+02	NO	5.53E+00	N/A
MW362	Downgradient	Yes	3.30E+02	NO	5.80E+00	N/A
MW365	Downgradient	Yes	4.50E+02	NO	6.11E+00	N/A
MW368	Downgradient	Yes	4.20E+02	NO	6.04E+00	N/A
MW371	Upgradient	Yes	4.04E+02	NO	6.00E+00	N/A
MW374	Upgradient	Yes	4.21E+02	NO	6.04E+00	N/A
MW375	Sidegradient	Yes	3.66E+02	NO	5.90E+00	N/A

Conclusion of Statistical Analysis on Current Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV　Coefficient-of-Variation, CV = S/X　If CV is less than or equal to 1 assume normal distribution.

S　Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL　Upper Tolerance Limit, TL = X + (K * S),　　　LL　Lower Tolerance Limit, LL = X - (K * S)

X　Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 2023 Statistical Analysis   Current Background Comparison
Sulfate   UNITS: mg/L   UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X**= 24.413 **S**= 23.904	**CV(1)**=0.979	**K factor****= 2.523	**TL(1)**= 8.47E+01	**LL(1)**=N/A
Statistics-Transformed Background Data	**X**= 2.928 **S**= 0.657	**CV(2)**=0.224	**K factor****= 2.523	**TL(2)**= 4.58E+00	**LL(2)**=N/A

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

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW371

Date Collected	Result	LN(Result)
4/13/2021	9.07E+01	4.51E+00
7/20/2021	3.41E+01	3.53E+00
10/12/2021	1.19E+01	2.48E+00
1/12/2022	1.43E+01	2.66E+00
4/12/2022	7.54E+01	4.32E+00
7/14/2022	2.87E+01	3.36E+00
10/11/2022	1.18E+01	2.47E+00
1/19/2023	1.20E+01	2.48E+00

Well Number: MW374

Date Collected	Result	LN(Result)
4/13/2021	1.30E+01	2.56E+00
7/14/2021	1.34E+01	2.60E+00
10/13/2021	1.27E+01	2.54E+00
1/13/2022	1.24E+01	2.52E+00
4/12/2022	1.64E+01	2.80E+00
7/14/2022	1.67E+01	2.82E+00
10/11/2022	1.32E+01	2.58E+00
1/19/2023	1.39E+01	2.63E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW359	Downgradient	Yes	3.91E+01	NO	3.67E+00	N/A
MW362	Downgradient	Yes	2.15E+01	NO	3.07E+00	N/A
MW365	Downgradient	Yes	5.58E+01	NO	4.02E+00	N/A
MW368	Downgradient	Yes	1.17E+02	YES	4.76E+00	N/A
MW371	Upgradient	Yes	5.69E+01	NO	4.04E+00	N/A
MW374	Upgradient	Yes	1.65E+01	NO	2.80E+00	N/A
MW375	Sidegradient	Yes	2.33E+01	NO	3.15E+00	N/A

Conclusion of Statistical Analysis on Current Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

Wells with Exceedances
MW368

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.
CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.
S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5
TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)
X   Mean, X = (sum of background results)/(count of background results)
** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*   D2-5

C-746-U Second 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**= 39.575	**S**= 24.449	**CV(1)**=0.618	**K factor****= 2.523	**TL(1)**= 1.01E+02	**LL(1)**=N/A
Statistics-Transformed Background Data	**X**= 3.457	**S**= 0.712	**CV(2)**=0.206	**K factor****= 2.523	**TL(2)**= 5.25E+00	**LL(2)**=N/A

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

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW369

Date Collected	Result	LN(Result)
4/13/2021	1.67E+01	2.82E+00
7/13/2021	1.53E+01	2.73E+00
10/12/2021	1.51E+01	2.71E+00
1/12/2022	1.63E+01	2.79E+00
4/12/2022	1.65E+01	2.80E+00
7/14/2022	1.57E+01	2.75E+00
10/11/2022	1.60E+01	2.77E+00
1/19/2023	1.60E+01	2.77E+00

Well Number: MW372

Date Collected	Result	LN(Result)
4/13/2021	6.23E+01	4.13E+00
7/14/2021	6.50E+01	4.17E+00
10/13/2021	6.48E+01	4.17E+00
1/13/2022	6.70E+01	4.20E+00
4/12/2022	6.11E+01	4.11E+00
7/14/2022	6.26E+01	4.14E+00
10/11/2022	6.22E+01	4.13E+00
1/19/2023	6.06E+01	4.10E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Upgradient	Yes	6.20E+01	NO	4.13E+00	N/A

Conclusion of Statistical Analysis on Current Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.

C-746-U Second Quarter 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= 558.125 **S=** 206.756 **CV(1)**=0.370   **K factor**=** 2.523   **TL(1)**= 1.08E+03   **LL(1)**=N/A

Statistics-Transformed Background Data   X= 6.259   **S=** 0.376   **CV(2)**=0.060   **K factor**=** 2.523   **TL(2)**= 7.21E+00   **LL(2)**=N/A

Current Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW369

Date Collected	Result	LN(Result)
4/13/2021	3.83E+02	5.95E+00
7/13/2021	3.78E+02	5.93E+00
10/12/2021	3.05E+02	5.72E+00
1/12/2022	3.59E+02	5.88E+00
4/12/2022	3.78E+02	5.93E+00
7/14/2022	3.71E+02	5.92E+00
10/11/2022	4.85E+02	6.18E+00
1/19/2023	3.59E+02	5.88E+00

Well Number: MW372

Date Collected	Result	LN(Result)
4/13/2021	7.95E+02	6.68E+00
7/14/2021	7.60E+02	6.63E+00
10/13/2021	4.84E+02	6.18E+00
1/13/2022	7.52E+02	6.62E+00
4/12/2022	7.38E+02	6.60E+00
7/14/2022	7.15E+02	6.57E+00
10/11/2022	9.14E+02	6.82E+00
1/19/2023	7.54E+02	6.63E+00

Current Quarter Data						
Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Upgradient	Yes	7.33E+02	NO	6.60E+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.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test 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= 333.875   **S**= 138.395   **CV(1)**=0.415   **K factor****= 2.523   **TL(1)**= 6.83E+02   **LL(1)**=N/A

Statistics-Transformed Background Data X= 5.723   **S**= 0.440   **CV(2)**=0.077   **K factor****= 2.523   **TL(2)**= 6.83E+00   **LL(2)**=N/A

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

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW369

Date Collected	Result	LN(Result)
4/13/2021	2.09E+02	5.34E+00
7/13/2021	1.94E+02	5.27E+00
10/12/2021	1.79E+02	5.19E+00
1/12/2022	2.00E+02	5.30E+00
4/12/2022	2.34E+02	5.46E+00
7/14/2022	1.96E+02	5.28E+00
10/11/2022	2.12E+02	5.36E+00
1/19/2023	1.86E+02	5.23E+00

Well Number: MW372

Date Collected	Result	LN(Result)
4/13/2021	4.83E+02	6.18E+00
7/14/2021	4.81E+02	6.18E+00
10/13/2021	4.61E+02	6.13E+00
1/13/2022	5.06E+02	6.23E+00
4/12/2022	4.57E+02	6.12E+00
7/14/2022	4.61E+02	6.13E+00
10/11/2022	4.55E+02	6.12E+00
1/19/2023	4.28E+02	6.06E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Upgradient	Yes	4.28E+02	NO	6.06E+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.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	X= 14.708	S= 8.222	CV(1)=0.559	K factor**= 2.523	TL(1)= 3.55E+01	LL(1)=N/A
Statistics-Transformed Background Data	X= 2.516	S= 0.625	CV(2)=0.248	K factor**= 2.523	TL(2)= 4.09E+00	LL(2)=N/A

Current Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW369

Date Collected	Result	LN(Result)
4/13/2021	6.97E+00	1.94E+00
7/13/2021	6.41E+00	1.86E+00
10/12/2021	6.77E+00	1.91E+00
1/12/2022	6.84E+00	1.92E+00
4/12/2022	6.89E+00	1.93E+00
7/14/2022	6.84E+00	1.92E+00
10/11/2022	6.84E+00	1.92E+00
1/19/2023	6.56E+00	1.88E+00

Well Number: MW372

Date Collected	Result	LN(Result)
4/13/2021	2.32E+01	3.14E+00
7/14/2021	2.41E+01	3.18E+00
10/13/2021	2.28E+01	3.13E+00
1/13/2022	2.28E+01	3.13E+00
4/12/2022	2.20E+01	3.09E+00
7/14/2022	2.27E+01	3.12E+00
10/11/2022	2.17E+01	3.08E+00
1/19/2023	2.19E+01	3.09E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Upgradient	Yes	2.35E+01	NO	3.16E+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.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test 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**= 399.813 **S**= 32.931 **CV(1)**=0.082   **K factor****= 2.523   **TL(1)**= 4.83E+02 **LL(1)**=N/A

Statistics-Transformed Background Data   **X**= 5.988   **S**= 0.081   **CV(2)**=0.014   **K factor****= 2.523   **TL(2)**= 6.19E+00 **LL(2)**=N/A

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

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW369

Date Collected	Result	LN(Result)
4/13/2021	4.44E+02	6.10E+00
7/13/2021	3.52E+02	5.86E+00
10/12/2021	3.43E+02	5.84E+00
1/12/2022	3.92E+02	5.97E+00
4/12/2022	3.82E+02	5.95E+00
7/14/2022	4.20E+02	6.04E+00
10/11/2022	4.06E+02	6.01E+00
1/19/2023	4.80E+02	6.17E+00

Well Number: MW372

Date Collected	Result	LN(Result)
4/13/2021	4.11E+02	6.02E+00
7/14/2021	3.78E+02	5.93E+00
10/13/2021	3.90E+02	5.97E+00
1/13/2022	3.76E+02	5.93E+00
4/12/2022	4.02E+02	6.00E+00
7/14/2022	4.02E+02	6.00E+00
10/11/2022	4.16E+02	6.03E+00
1/19/2023	4.03E+02	6.00E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW357	Downgradient	Yes	3.67E+02	NO	5.91E+00	N/A
MW360	Downgradient	Yes	3.54E+02	NO	5.87E+00	N/A
MW363	Downgradient	Yes	4.42E+02	NO	6.09E+00	N/A
MW366	Downgradient	Yes	4.58E+02	NO	6.13E+00	N/A
MW369	Upgradient	Yes	4.39E+02	NO	6.08E+00	N/A
MW372	Upgradient	Yes	4.70E+02	NO	6.15E+00	N/A

Conclusion of Statistical Analysis on Current Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 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= 76.060	S= 70.248	CV(1)=0.924	K factor**= 2.523	TL(1)= 2.53E+02	LL(1)=N/A
Statistics-Transformed Background Data	X= 3.538	S= 1.478	CV(2)=0.418	K factor**= 2.523	TL(2)= 7.27E+00	LL(2)=N/A

Current Background Data from Upgradient Wells with Transformed Result

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

Well Number: MW369

Date Collected	Result	LN(Result)
4/13/2021	7.59E+00	2.03E+00
7/13/2021	8.66E+00	2.16E+00
10/12/2021	8.82E+00	2.18E+00
1/12/2022	7.80E+00	2.05E+00
4/12/2022	8.93E+00	2.19E+00
7/14/2022	8.16E+00	2.10E+00
10/11/2022	8.07E+00	2.09E+00
1/19/2023	7.93E+00	2.07E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Upgradient	Yes	1.51E+02	NO	5.02E+00	N/A

Well Number: MW372

Date Collected	Result	LN(Result)
4/13/2021	1.57E+02	5.06E+00
7/14/2021	1.47E+02	4.99E+00
10/13/2021	1.47E+02	4.99E+00
1/13/2022	1.45E+02	4.98E+00
4/12/2022	1.44E+02	4.97E+00
7/14/2022	1.45E+02	4.98E+00
10/11/2022	1.31E+02	4.88E+00
1/19/2023	1.35E+02	4.91E+00

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.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test 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**= 62.294 **S**= 10.777 **CV(1)**=0.173 **K factor****= 2.523 **TL(1)**= 8.95E+01 **LL(1)**=N/A

Statistics-Transformed Background Data **X**= 4.118 **S**= 0.168 **CV(2)**=0.041 **K factor****= 2.523 **TL(2)**= 4.54E+00 **LL(2)**=N/A

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

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW369

Date Collected	Result	LN(Result)
4/13/2021	6.03E+01	4.10E+00
7/13/2021	6.77E+01	4.22E+00
10/12/2021	5.98E+01	4.09E+00
1/12/2022	5.28E+01	3.97E+00
4/12/2022	5.72E+01	4.05E+00
7/14/2022	5.08E+01	3.93E+00
10/11/2022	5.64E+01	4.03E+00
1/19/2023	6.16E+01	4.12E+00

Well Number: MW372

Date Collected	Result	LN(Result)
4/13/2021	5.13E+01	3.94E+00
7/14/2021	6.66E+01	4.20E+00
10/13/2021	5.59E+01	4.02E+00
1/13/2022	4.76E+01	3.86E+00
4/12/2022	7.94E+01	4.37E+00
7/14/2022	7.42E+01	4.31E+00
10/11/2022	6.97E+01	4.24E+00
1/19/2023	8.54E+01	4.45E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW366	Downgradient	Yes	7.12E+01	NO	4.27E+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.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	X= 3.248	S= 1.136	CV(1)=0.350	K factor**= 2.523	TL(1)= 6.11E+00	LL(1)=N/A
Statistics-Transformed Background Data	X= 1.114	S= 0.382	CV(2)=0.343	K factor**= 2.523	TL(2)= 2.08E+00	LL(2)=N/A

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

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW370

Date Collected	Result	LN(Result)
4/13/2021	3.57E+00	1.27E+00
7/13/2021	4.47E+00	1.50E+00
10/12/2021	4.60E+00	1.53E+00
1/12/2022	4.36E+00	1.47E+00
4/12/2022	3.45E+00	1.24E+00
7/14/2022	4.73E+00	1.55E+00
10/11/2022	4.80E+00	1.57E+00
1/19/2023	4.00E+00	1.39E+00

Well Number: MW373

Date Collected	Result	LN(Result)
4/13/2021	1.33E+00	2.85E-01
7/14/2021	2.30E+00	8.33E-01
10/13/2021	2.00E+00	6.93E-01
1/13/2022	2.72E+00	1.00E+00
4/12/2022	2.79E+00	1.03E+00
7/14/2022	2.42E+00	8.84E-01
10/11/2022	2.31E+00	8.37E-01
1/19/2023	2.11E+00	7.47E-01

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW361	Downgradient	Yes	4.44E+00	NO	1.49E+00	N/A

Conclusion of Statistical Analysis on Current Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-U Second Quarter 2023 Statistical Analysis   Current 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 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= 0.001	S= 0.001	CV(1)=0.474	K factor**= 2.523	TL(1)= 2.98E-03	LL(1)=N/A
Statistics-Transformed Background Data	X= -6.699	S= 0.442	CV(2)=-0.066	K factor**= 2.523	TL(2)= -5.58E+00	LL(2)=N/A

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

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW370

Date Collected	Result	LN(Result)
4/13/2021	1.28E-03	-6.66E+00
7/13/2021	7.26E-04	-7.23E+00
10/12/2021	2.00E-03	-6.21E+00
1/12/2022	7.92E-04	-7.14E+00
4/12/2022	8.34E-04	-7.09E+00
7/14/2022	9.09E-04	-7.00E+00
10/11/2022	1.00E-03	-6.91E+00
1/19/2023	7.91E-04	-7.14E+00

Well Number: MW373

Date Collected	Result	LN(Result)
4/13/2021	1.31E-03	-6.64E+00
7/14/2021	1.53E-03	-6.48E+00
10/13/2021	9.59E-04	-6.95E+00
1/13/2022	2.48E-03	-6.00E+00
4/12/2022	7.96E-04	-7.14E+00
7/14/2022	2.66E-03	-5.93E+00
10/11/2022	2.18E-03	-6.13E+00
1/19/2023	1.45E-03	-6.54E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	8.26E-02	YES	-2.49E+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
MW358

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the 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.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test 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**= 398.500 **S**= 28.265 **CV(1)**=0.071 **K factor****= 2.523 **TL(1)**= 4.70E+02 **LL(1)**=N/A

Statistics-Transformed Background Data   **X**= 5.985 **S**= 0.069 **CV(2)**=0.012 **K factor****= 2.523 **TL(2)**= 6.16E+00 **LL(2)**=N/A

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

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW370

Date Collected	Result	LN(Result)
4/13/2021	4.35E+02	6.08E+00
7/13/2021	3.64E+02	5.90E+00
10/12/2021	3.59E+02	5.88E+00
1/12/2022	4.02E+02	6.00E+00
4/12/2022	3.90E+02	5.97E+00
7/14/2022	4.15E+02	6.03E+00
10/11/2022	4.27E+02	6.06E+00
1/19/2023	4.68E+02	6.15E+00

Well Number: MW373

Date Collected	Result	LN(Result)
4/13/2021	4.07E+02	6.01E+00
7/14/2021	3.80E+02	5.94E+00
10/13/2021	3.72E+02	5.92E+00
1/13/2022	3.76E+02	5.93E+00
4/12/2022	3.99E+02	5.99E+00
7/14/2022	3.82E+02	5.95E+00
10/11/2022	4.01E+02	5.99E+00
1/19/2023	3.99E+02	5.99E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW358	Downgradient	Yes	1.50E+02	NO	5.01E+00	N/A
MW361	Downgradient	Yes	3.66E+02	NO	5.90E+00	N/A
MW364	Downgradient	Yes	4.44E+02	NO	6.10E+00	N/A
MW367	Downgradient	Yes	3.98E+02	NO	5.99E+00	N/A
MW370	Upgradient	Yes	4.60E+02	NO	6.13E+00	N/A
MW373	Upgradient	Yes	4.57E+02	NO	6.12E+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.*

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test 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**= 20.758	**S**= 12.549	**CV(1)**=0.605	**K factor****= 2.523	**TL(1)**= 5.24E+01	**LL(1)**=N/A
Statistics-Transformed Background Data	**X**= 2.976	**S**= 0.528	**CV(2)**=0.178	**K factor****= 2.523	**TL(2)**= 3.79E+00	**LL(2)**=N/A

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

#Because the natural log was not possible for all background values, the TL was considered equal to the maximum background value.

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW370

Date Collected	Result	LN(Result)
4/13/2021	4.42E+01	3.79E+00
7/13/2021	3.79E+01	3.63E+00
10/12/2021	3.92E+01	3.67E+00
1/12/2022	2.56E+01	3.24E+00
4/12/2022	2.34E+01	3.15E+00
7/14/2022	2.40E+01	3.18E+00
10/11/2022	2.09E+01	3.04E+00
1/19/2023	3.07E+01	3.42E+00

Well Number: MW373

Date Collected	Result	LN(Result)
4/13/2021	1.75E+01	2.86E+00
7/14/2021	1.42E+01	2.65E+00
10/13/2021	8.12E+00	2.09E+00
1/13/2022	1.12E+01	2.42E+00
4/12/2022	1.48E+01	2.69E+00
7/14/2022	9.69E+00	2.27E+00
10/11/2022	-1.78E+00	#Func!
1/19/2023	1.25E+01	2.53E+00

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW364	Downgradient	Yes	5.36E+01	YES	3.98E+00	N/A

Conclusion of Statistical Analysis on Current Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

Wells with Exceedances

MW364

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV   Coefficient-of-Variation, CV = S/X   If CV is less than or equal to 1 assume normal distribution.

S   Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL   Upper Tolerance Limit, TL = X + (K * S),   LL   Lower Tolerance Limit, LL = X - (K * S)

X   Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

ATTACHMENT D3

STATISTICIAN QUALIFICATION STATEMENT

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July 17, 2023

Mr. Dennis Greene
Four Rivers Nuclear Partnership, LLC
5511 Hobbs Road
Kevil, KY 42053

Dear Mr. Greene:

As an Environmental Scientist, with a bachelor's degree in Earth Sciences/Geology, I have over 30 years of experience in reviewing and assessing laboratory analytical results associated with environmental sampling and investigation activities. For the generation of these statistical analyses, my work was reviewed by a qualified independent technical reviewer with Four Rivers Nuclear Partnership, LLC.

For this project, the statistical analyses conducted on the second quarter 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

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APPENDIX E

GROUNDWATER FLOW RATE AND DIRECTION

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RESIDENTIAL/CONTAINED—QUARTERLY, 2nd CY 2023   Finds/Unit: <u>KY8-890-008-982/1</u>
Facility: U.S. DOE—Paducah Gaseous Diffusion Plant   LAB ID: <u> None   </u>
Permit Number: SW07300014, SW07300015, SW07300045   <u>For Official Use Only</u>

GROUNDWATER
FLOW RATE AND DIRECTION

Determination of groundwater flow rate and direction of flow in the uppermost aquifer whenever the monitoring wells (MWs) are sampled is a requirement of 401 *KAR* 48.300, Section 11. The uppermost aquifer below the C-746-U Landfill is the Regional Gravel Aquifer (RGA). Water level measurements currently are recorded in several wells at the landfill on a quarterly basis. These measurements were used to plot the potentiometric surface of the RGA for the second quarter 2023 and determine groundwater flow rate and direction.

Water levels during this reporting period were measured on April 24-25, 2023. As shown on Figure E.1, all Upper Continental Recharge System (UCRS) wells had sufficient water to permit water level measurement; however, UCRS wells MW376 and MW377 had insufficient water for sampling for laboratory analysis during this reporting period.

The UCRS has a strong vertical hydraulic gradient; therefore, the available UCRS wells screened over different elevations are not sufficient for mapping the potentiometric surface. As shown in Table E.1, the RGA data were converted to elevations to plot the potentiometric surfaces within the Upper Regional Gravel Aquifer (URGA) and Lower Regional Gravel Aquifer (LRGA). (At the request of the Commonwealth of Kentucky, the RGA is differentiated into two zones, the URGA and LRGA.) Based on the potentiometric maps (Figures E.2 and E.3), the hydraulic gradients for the URGA and LRGA at the C-746-U Landfill, as measured along the defined groundwater flow directions, were 3.92×10^{-4} ft/ft and 4.04×10^{-4} ft/ft, respectively. Water level measurements in wells at the C-746-U Landfill and in wells of the surrounding region (MW98, MW100, MW125, MW139, MW165A, MW173, MW193, MW197, and MW200), along with the C-746-S&T Landfill wells, were used to contour the general RGA potentiometric surface (Figure E.4). The hydraulic gradient for the RGA, as a whole, in the vicinity of the C-746-U Landfill was 2.49×10^{-4} ft/ft. The hydraulic gradients are shown in Table E.2.

The average linear groundwater flow velocity (v) is determined by multiplying the hydraulic gradient (i) by the hydraulic conductivity (K) [resulting in the specific discharge (q)] and dividing by the effective porosity (n_e). The RGA hydraulic conductivity values used are reported in the Administrative Application for the New Solid Waste Landfill Permit No. SW07300045NWC1 and range from 425 to 725 ft/day (0.150 to 0.256 cm/s). RGA (both URGA and LRGA) effective porosity is assumed to be 25%. Flow velocities were calculated for the URGA and LRGA using the low and high values for hydraulic conductivity, as shown in the Table E.3.

Groundwater flow beneath the C-746-U Landfill typically trends northeastward toward the Ohio River. As demonstrated on the potentiometric maps for April 2023, the groundwater flow direction in the immediate area of the landfill was to the northeast.

Geological conditions in the UCRS indicate that permeable zones are discontinuous across the plant site. In the vicinity of the C-746-U Landfill, several wells (MW368, MW376, and MW377) are often dry (or have low water levels that prevent sample collection), while others have recordable water levels. The UCRS contains a strong vertical gradient; therefore, the limited number of UCRS wells is not sufficient to map the potentiometric surface.

Figure E.1. Potentiometric Measurements of the Upper Continental Recharge System at the C-746-U Landfill, April 24, 2023

Table E.1. C-746-U Landfill Second Quarter 2023 (April) Water Levels

							Raw Data		*Corrected Data	
Date	Time	Well	Aquifer	Datum Elev (ft amsl)	BP (in Hg)	Delta BP (ft H20)	DTW (ft)	Elev (ft amsl)	DTW (ft)	Elev (ft amsl)
4/24/2023	15:37	MW357	URGA	368.77	30.19	0.01	44.52	324.25	44.53	324.24
4/24/2023	15:39	MW358	LRGA	368.92	30.19	0.01	44.65	324.27	44.66	324.26
4/24/2023	15:38	MW359	UCRS	368.91	30.19	0.01	33.92	334.99	33.93	334.98
4/24/2023	15:35	MW360	URGA	362.07	30.19	0.01	37.84	324.23	37.85	324.22
4/24/2023	15:33	MW361	LRGA	361.32	30.19	0.01	37.11	324.21	37.12	324.20
4/24/2023	15:34	MW362	UCRS	361.85	30.19	0.01	24.78	337.07	24.79	337.06
4/24/2023	13:40	MW363	URGA	368.56	30.22	-0.02	44.46	324.10	44.44	324.12
4/24/2023	13:38	MW364	LRGA	368.17	30.22	-0.02	44.20	323.97	44.18	323.99
4/24/2023	13:39	MW365	UCRS	368.14	30.22	-0.02	37.18	330.96	37.16	330.98
4/24/2023	13:48	MW366	URGA	368.95	30.22	-0.02	44.84	324.11	44.82	324.13
4/24/2023	13:47	MW367	LRGA	369.37	30.22	-0.02	45.27	324.10	45.25	324.12
4/24/2023	13:46	MW368	UCRS	368.98	30.22	-0.02	20.25	348.73	20.23	348.75
4/24/2023	15:09	MW369	URGA	364.23	30.19	0.01	39.47	324.76	39.48	324.75
4/24/2023	15:07	MW370	LRGA	365.12	30.19	0.01	40.34	324.78	40.35	324.77
4/24/2023	15:08	MW371	UCRS	364.64	30.19	0.01	22.90	341.74	22.91	341.73
4/24/2023	15:14	MW372	URGA	359.42	30.19	0.01	34.65	324.77	34.66	324.76
4/24/2023	15:12	MW373	LRGA	359.73	30.19	0.01	34.97	324.76	34.98	324.75
4/24/2023	15:13	MW374	UCRS	359.44	30.19	0.01	22.48	336.96	22.49	336.95
4/24/2023	15:26	MW375	UCRS	370.36	30.19	0.01	35.60	334.76	35.61	334.75
4/24/2023	15:23	MW376	UCRS	370.39	30.19	0.01	39.79	330.60	39.80	330.59
4/24/2023	15:19	MW377	UCRS	365.74	30.19	0.01	37.90	327.84	37.91	327.83

Reference Barometric Pressure   **30.20**

Elev = elevation
amsl = above mean sea level
BP = barometric pressure
DTW = depth to water in feet below datum
URGA = Upper Regional Gravel Aquifer
LRGA = Lower Regional Gravel Aquifer
UCRS = Upper Continental Recharge System
*Assumes a barometric efficiency of 1.0
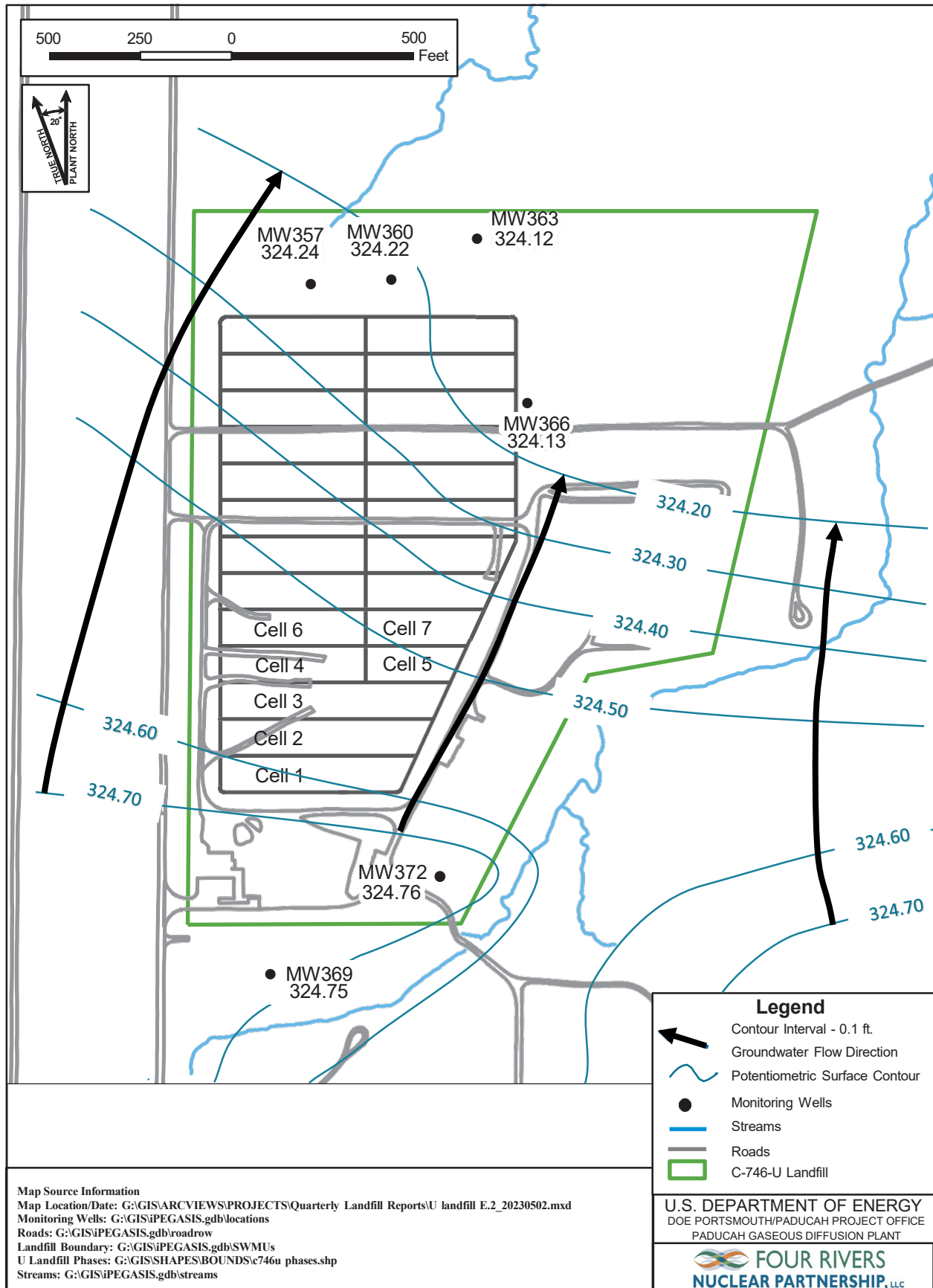
Figure E.2. Potentiometric Surface of the Upper Regional Gravel Aquifer at the C-746-U Landfill, April 24, 2023
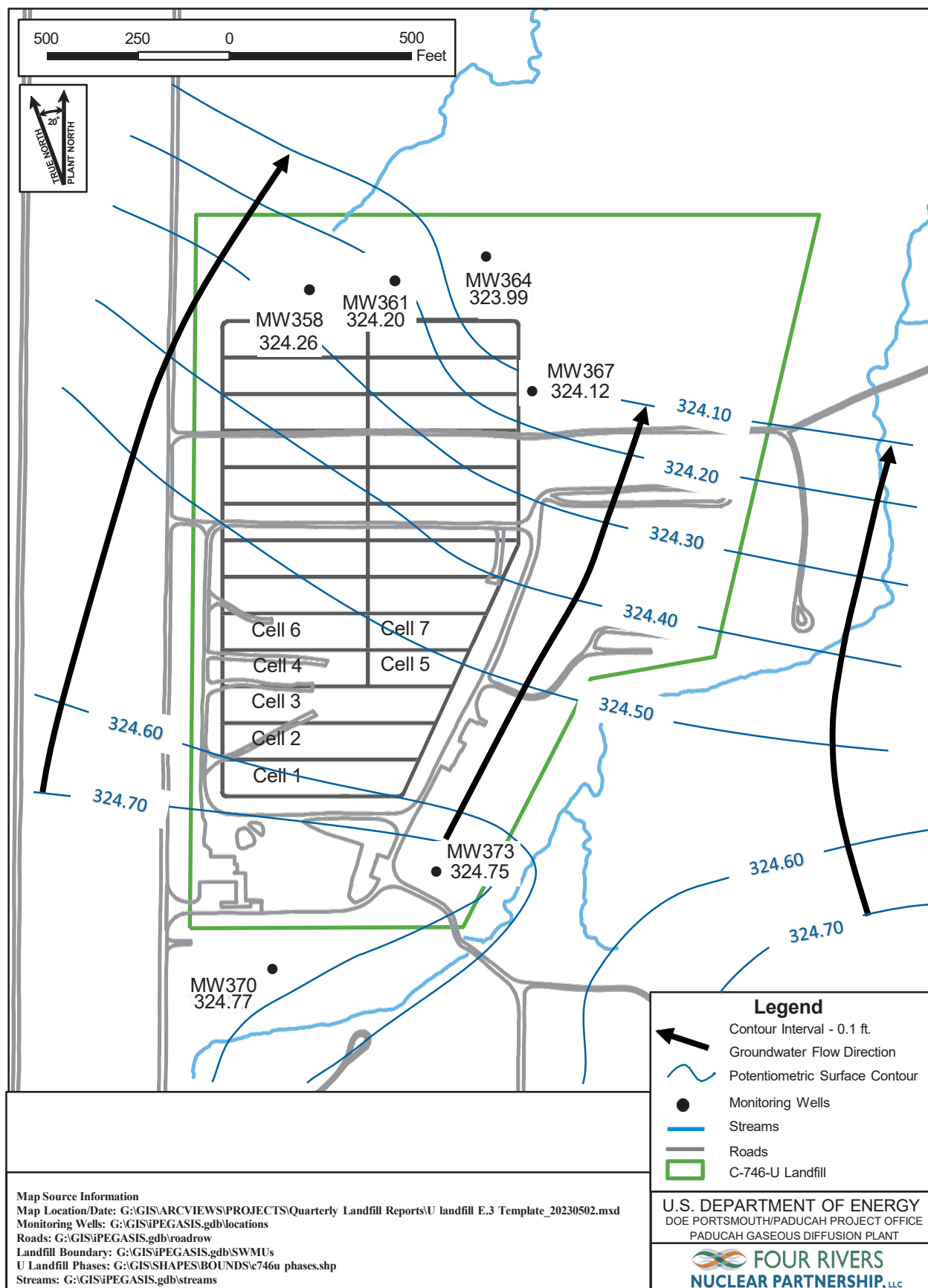
Figure E.3. Potentiometric Surface of the Lower Regional Gravel Aquifer at the C-746-U Landfill, April 24, 2023
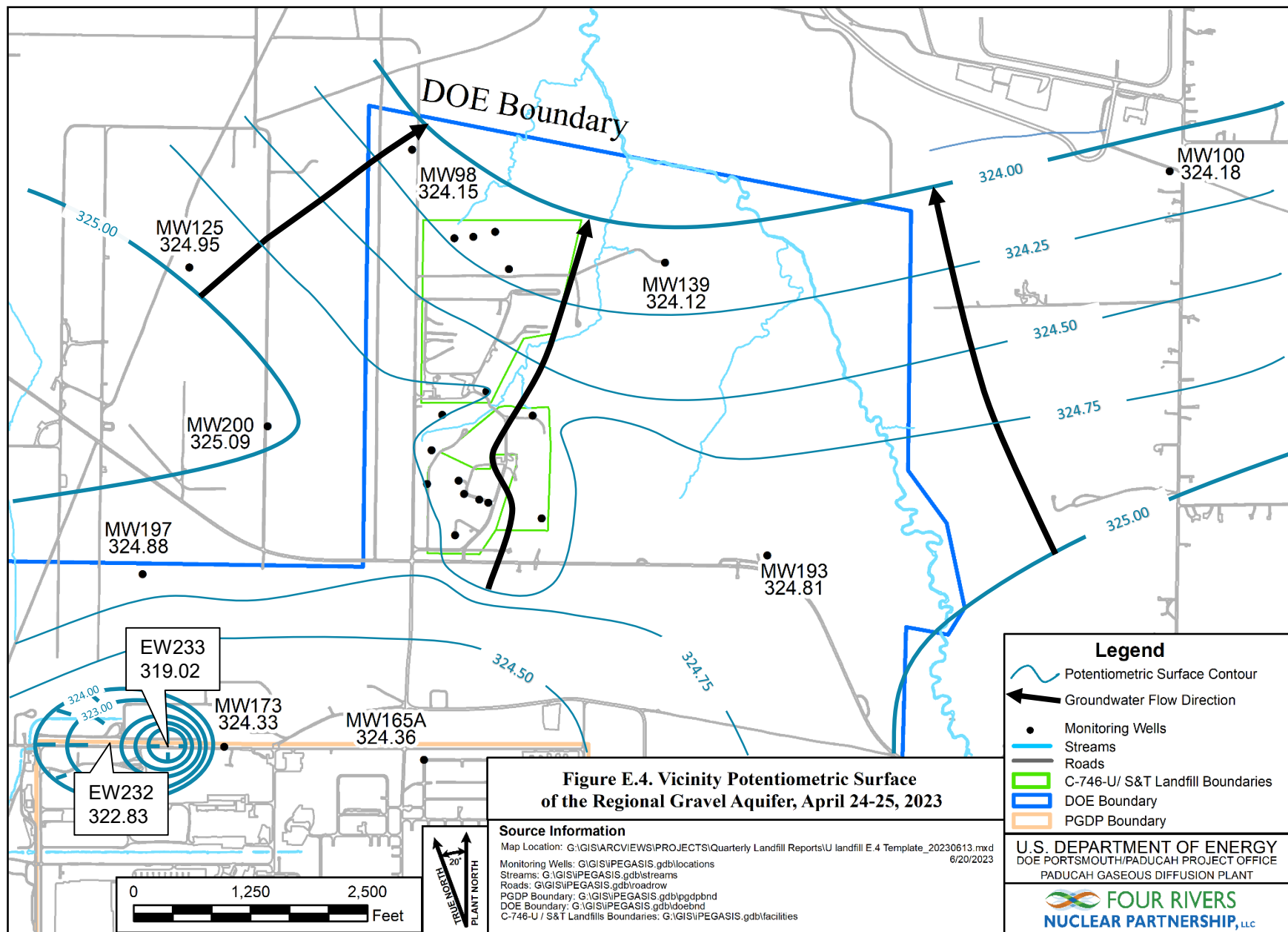
Figure E.4. Vicinity Potentiometric Surface of the Regional Gravel Aquifer, April 24–25, 2023

Table E.2. C-746-U Landfill Hydraulic Gradients

	ft/ft
Beneath Landfill—Upper RGA	3.92×10^{-4}
Beneath Landfill—Lower RGA	4.04×10^{-4}
Vicinity	2.49×10^{-4}

Table E.3. C-746-U Landfill Groundwater Flow Rate

Hydraulic Conductivity (K)		Specific Discharge (q)		Average Linear Velocity (v)	
ft/day	cm/s	ft/day	cm/s	ft/day	cm/s
Upper RGA					
725	0.256	0.284	1.00×10^{-4}	1.14	4.02×10^{-4}
425	0.150	0.167	5.89×10^{-5}	0.667	2.35×10^{-4}
Lower RGA					
725	0.256	0.293	1.03×10^{-4}	1.17	4.14×10^{-4}
425	0.150	0.172	6.06×10^{-5}	0.687	2.43×10^{-4}

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APPENDIX F

NOTIFICATIONS

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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 submitted are listed on page F-4. The notification for parameters that do not have MCLs, but had statistically significant increased concentrations relative to historical background concentrations, is provided below.

Statistical Analysis of Parameters Notification

The statistical analyses conducted on the second quarter 2023 groundwater data collected from the C-746-U Landfill monitoring wells were performed in accordance with *Groundwater Monitoring Plan for the Solid Waste Permitted Landfills (C-746-S Residential Landfill, C-746-T Inert Landfill, and C-746-U Contained Landfill) at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (LATA Kentucky 2014).

The following are the permit required parameters in 40 *CFR* § 302.4, Appendix A, which had statistically significant, increased concentrations relative to historical background concentrations.

	Parameter	**Monitoring Well**
Upper Continental Recharge System	None	
Upper Regional Gravel Aquifer	Technetium-99	MW366
Lower Regional Gravel Aquifer	Nickel	MW358
	Technetium-99	MW364

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.

Four Rivers Nuclear Partnership, LLC
PROJECT ENVIRONMENTAL MEASUREMENTS SYSTEM
C-746-U LANDFILL
SOLID WASTE PERMIT NUMBER SW07300014, SW07300015, SW07300045
MAXIMUM CONTAMINANT LEVEL (MCL) EXCEEDANCE REPORT
Quarterly Groundwater Sampling

AKGWA	Station	Analysis	Method	Results	Units	MCL
8004-4808	MW372	Trichloroethene	8260D	6.01	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

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Chart of MCL and Historical UTL Exceedances
for the C-746-U Contained Landfill

Groundwater Flow System	UCRS									URGA						LRGA					
Gradient	D	S	S	S	D	D	D	U	U	D	D	D	D	U	U	D	D	D	D	U	U
Monitoring Well	368	375	376	377	359	362	365	371	374	366	360	363	357	369	372	367	361	364	358	370	373
ACETONE																					
Quarter 3, 2002										✱	✱	✱									
Quarter 4, 2002										✱	✱	✱									
Quarter 1, 2003											✱	✱									
Quarter 2, 2003											✱	✱									
Quarter 3, 2003	✱						✱			✱	✱	✱			✱			✱			
Quarter 4, 2003						✱	✱				✱			✱							
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Quarter 4, 2020																				■	
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Quarter 2, 2004													✱								

Chart of MCL and Historical UTL Exceedances
for the C-746-U Contained Landfill (Continued)

Groundwater Flow System	UCRS									URGA						LRGA					
Gradient	D	S	S	S	D	D	D	U	U	D	D	D	D	U	U	D	D	D	D	U	U
Monitoring Well	368	375	376	377	359	362	365	371	374	366	360	363	357	369	372	367	361	364	358	370	373
CALCIUM																					
Quarter 3, 2003										✳											
Quarter 2, 2005																					✳
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Quarter 3, 2021															✳						
Quarter 4, 2021															✳						
Quarter 1, 2022															✳						
Quarter 2, 2022															✳						
Quarter 3, 2022															✳						
Quarter 4, 2022															✳						
Quarter 1, 2023															✳						
Quarter 2, 2023															✳						
CARBON DISULFIDE																					
Quarter 3, 2003										✳											
Quarter 2, 2005						✳															
Quarter 3, 2005					✳																
Quarter 4, 2005					✳																
Quarter 1, 2006					✳																
Quarter 2, 2006					✳																
Quarter 3, 2010		✳									✳										
Quarter 4, 2010														✳							
Quarter 1, 2011															✳						
CHEMICAL OXYGEN DEMAND																					
Quarter 3, 2002										✳	✳	✳	✳	✳	✳						
Quarter 4, 2002										✳	✳										
Quarter 1, 2003										✳	✳										
Quarter 2, 2003										✳	✳	✳									
Quarter 3, 2003	✳									✳	✳					✳					
Quarter 4, 2003					✳					✳	✳										
Quarter 3, 2004										✳											
Quarter 3, 2005					✳					✳					✳	✳		✳			
Quarter 4, 2005					✳													✳	✳		
Quarter 1, 2006																			✳		
Quarter 4, 2016																		✳			
Quarter 1, 2017											✳										
Quarter 2, 2019												✳			✳						
Quarter 3, 2019															✳						✳
Quarter 4, 2019															✳						
CHLORIDE																					
Quarter 1, 2006																				✳	
Quarter 2, 2014															✳						
COBALT																					
Quarter 3, 2003	✳						✳			✳	✳			✳	✳	✳	✳	✳		✳	
Quarter 1, 2004														✳							
Quarter 2, 2016														✳							

Groundwater Flow System	UCRS									URGA						LRGA					
Gradient	D	S	S	S	D	D	D	U	U	D	D	D	D	U	U	D	D	D	D	U	U
Monitoring Well	368	375	376	377	359	362	365	371	374	366	360	363	357	369	372	367	361	364	358	370	373
CONDUCTIVITY																					
Quarter 4, 2002										∗											
Quarter 1, 2003										∗											
Quarter 2, 2003										∗	∗										
Quarter 4, 2003										∗											
Quarter 1, 2004										∗											
Quarter 2, 2004										∗											
Quarter 3, 2004										∗											
Quarter 1, 2005															∗						
Quarter 2, 2005															∗						
Quarter 3, 2005					∗															∗	
Quarter 4, 2005															∗			∗			
Quarter 1, 2006															∗						
Quarter 2, 2006															∗						
Quarter 3, 2006															∗						
Quarter 1, 2007															∗						
Quarter 2, 2007															∗						
Quarter 3, 2007															∗						
Quarter 4, 2007															∗						
Quarter 1, 2008															∗						
Quarter 2, 2008															∗						
Quarter 3, 2008															∗						
Quarter 4, 2008															∗						
Quarter 1, 2009															∗						
Quarter 2, 2009															∗						
Quarter 3, 2009															∗						
Quarter 4, 2009															∗						
Quarter 1, 2010															∗						
Quarter 2, 2010															∗						
Quarter 3, 2010															∗						
Quarter 4, 2010															∗						
Quarter 1, 2011															∗						
Quarter 2, 2011															∗						
Quarter 3, 2011															∗						
Quarter 4, 2011															∗						
Quarter 1, 2012														∗	∗						
Quarter 2, 2012															∗						
Quarter 3, 2012															∗						
Quarter 4, 2012															∗						
Quarter 1, 2013															∗						
Quarter 2, 2013															∗						
Quarter 3, 2013															∗						
Quarter 4, 2013															∗						
Quarter 1, 2014															∗						
Quarter 2, 2014															∗						
Quarter 3, 2014															∗						
Quarter 4, 2014															∗						
Quarter 1, 2015															∗						
Quarter 2, 2015															∗						
Quarter 3, 2015															∗						
Quarter 4, 2015															∗						
Quarter 1, 2016															∗						
Quarter 2, 2016															∗						
Quarter 3, 2016															∗						
Quarter 2, 2019															∗						
Quarter 3, 2019															∗						
Quarter 4, 2019															∗						
Quarter 1, 2020															∗						
Quarter 2, 2020															∗						
Quarter 3, 2020															∗						
Quarter 4, 2020															∗						
Quarter 1, 2021															∗						
Quarter 2, 2021															∗						
Quarter 3, 2021															∗						
Quarter 1, 2022															∗						
Quarter 2, 2022															∗						
Quarter 3, 2022															∗						
Quarter 4, 2022															∗						
Quarter 1, 2023															∗						
Quarter 2, 2023															∗						
DISSOLVED OXYGEN																					
Quarter 1, 2003					∗	∗				∗											
Quarter 3, 2003					∗					∗											
Quarter 4, 2003					∗																
Quarter 1, 2004					∗																
Quarter 2, 2004								∗								∗					
Quarter 1, 2005					∗																
Quarter 2, 2005								∗													
Quarter 1, 2006					∗																
Quarter 2, 2006					∗			∗													
Quarter 3, 2006					∗			∗													
Quarter 4, 2006					∗				∗												
Quarter 2, 2007					∗			∗													
Quarter 3, 2007					∗			∗	∗												
Quarter 1, 2008					∗														∗		
Quarter 2, 2008								∗	∗												
Quarter 3, 2008								∗													

Groundwater Flow System	UCRS									URGA						LRGA					
Gradient	D	S	S	S	D	D	D	U	U	D	D	D	D	U	U	D	D	D	D	U	U
Monitoring Well	368	375	376	377	359	362	365	371	374	366	360	363	357	369	372	367	361	364	358	370	373
DISSOLVED OXYGEN																					
Quarter 1, 2009							*														
Quarter 2, 2009					*			*	*												
Quarter 3, 2009						*		*	*												
Quarter 1, 2010					*		*														
Quarter 2, 2010					*	*		*	*											*	*
Quarter 3, 2010					*	*															
Quarter 4, 2010							*					*								*	
Quarter 1, 2011						*															
Quarter 2, 2011					*	*	*	*	*					*							
Quarter 3, 2011						*			*												
Quarter 1, 2012							*		*												
Quarter 2, 2012	*			*	*	*		*	*												
Quarter 3, 2012						*															
Quarter 4, 2012									*												
Quarter 1, 2013						*			*												
Quarter 2, 2013							*		*												
Quarter 3, 2013	*				*		*	*	*												
Quarter 4, 2013									*											*	
Quarter 2, 2014	*				*	*	*	*	*								*				
Quarter 3, 2014	*				*	*	*														
Quarter 4, 2014						*															
Quarter 2, 2015					*	*	*	*													
Quarter 3, 2015					*	*		*													
Quarter 4, 2015	*					*	*														
Quarter 1, 2016	*				*		*														
Quarter 2, 2016	*	*			*	*	*	*	*											*	*
Quarter 3, 2016					*	*	*	*				*									
Quarter 4, 2016							*		*												
Quarter 1, 2017						*								*							
Quarter 2, 2017	*				*	*	*	*													
Quarter 3, 2017	*	*			*	*	*	*									*				
Quarter 4, 2017					*	*											*				
Quarter 1, 2018					*	*	*	*										*			
Quarter 2, 2018					*	*	*	*													
Quarter 3, 2018	*				*	*	*	*													
Quarter 4, 2018						*															
Quarter 1, 2019					*	*	*	*													
Quarter 2, 2019					*	*		*													
Quarter 3, 2019	*				*	*	*	*													
Quarter 4, 2019					*	*		*													
Quarter 1, 2020							*	*	*												
Quarter 2, 2020					*	*		*													
Quarter 3, 2020	*				*	*															
Quarter 4, 2020	*						*														
Quarter 1, 2021					*		*											*			
Quarter 2, 2021					*	*	*	*	*												
Quarter 3, 2021	*				*	*	*	*										*			
Quarter 4, 2021					*	*	*	*										*			
Quarter 1, 2022	*				*	*	*	*				*					*	*			
Quarter 2, 2022	*				*	*	*	*	*												
Quarter 3, 2022	*	*			*	*	*	*				*					*	*			
Quarter 4, 2022		*					*	*										*			
Quarter 2, 2023	*				*	*	*	*									*				
DISSOLVED SOLIDS																					
Quarter 4, 2002										*											
Quarter 1, 2003										*											
Quarter 2, 2003										*											
Quarter 3, 2003							*			*	*										
Quarter 4, 2003										*											
Quarter 3, 2005						*															
Quarter 4, 2006															*						
Quarter 1, 2007															*						
Quarter 2, 2007															*						
Quarter 4, 2008															*						
Quarter 1, 2009															*						
Quarter 2, 2009															*						
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															*						

Groundwater Flow System	UCRS									URGA						LRGA					
Gradient	D	S	S	S	D	D	D	U	U	D	D	D	D	U	U	D	D	D	D	U	U
Monitoring Well	368	375	376	377	359	362	365	371	374	366	360	363	357	369	372	367	361	364	358	370	373
DISSOLVED SOLIDS																					
Quarter 1, 2014															✱						
Quarter 2, 2014															✱						
Quarter 4, 2014															✱						
Quarter 2, 2015															✱						
Quarter 3, 2015															✱						
Quarter 4, 2015															✱						
Quarter 1, 2016															✱						
Quarter 3, 2019															✱						
Quarter 4, 2019															✱						
Quarter 1, 2020															✱						
Quarter 2, 2020															✱						
Quarter 3, 2020															✱						
Quarter 4, 2020															✱						
Quarter 1, 2021															✱						
Quarter 2, 2021															✱						
Quarter 3, 2021															✱						
Quarter 4, 2021															✱						
Quarter 1, 2022															✱						
Quarter 2, 2022															✱						
Quarter 3, 2022															✱						
Quarter 4, 2022															✱						
Quarter 1, 2023															✱						
Quarter 2, 2023															✱						
IODIDE																					
Quarter 2, 2003																✱					
Quarter 3, 2003	✱									✱											
Quarter 4, 2003						✱															
Quarter 3, 2010					✱			✱				✱					✱				
IODINE-131																					
Quarter 3, 2010																				■	
IODOMETHANE																					
Quarter 4, 2003						✱															
IRON																					
Quarter 4, 2002						✱															
Quarter 3, 2003																✱					
Quarter 4, 2003										✱						✱					
Quarter 1, 2004										✱						✱					
Quarter 2, 2004										✱											
Quarter 3, 2004										✱											
Quarter 3, 2005																✱					
MAGNESIUM																					
Quarter 2, 2005															✱						✱
Quarter 3, 2005						✱															✱
Quarter 2, 2006															✱						✱
Quarter 3, 2006															✱						
Quarter 1, 2007															✱						
Quarter 2, 2008															✱						
Quarter 2, 2009															✱						
Quarter 3, 2009															✱						
Quarter 4, 2009															✱						
Quarter 1, 2010															✱						
Quarter 2, 2010															✱						
Quarter 3, 2010															✱						
Quarter 1, 2011															✱						
Quarter 2, 2011															✱						
Quarter 3, 2011															✱						
Quarter 4, 2011															✱						
Quarter 1, 2012															✱						
Quarter 2, 2012															✱						
Quarter 3, 2012															✱						
Quarter 4, 2012															✱						
Quarter 1, 2013															✱						
Quarter 2, 2013															✱						
Quarter 3, 2013															✱						
Quarter 4, 2013															✱						
Quarter 2, 2014															✱						
Quarter 4, 2014															✱						
Quarter 2, 2015															✱						
Quarter 3, 2015															✱						
Quarter 4, 2015															✱						
Quarter 1, 2016															✱						
Quarter 2, 2016															✱						
Quarter 3, 2016	✱																				
Quarter 4, 2016	✱																				
Quarter 2, 2017	✱																				
Quarter 3, 2017	✱																				
Quarter 1, 2018	✱																				
Quarter 3, 2018	✱																				
Quarter 3, 2019	✱																				
Quarter 4, 2019															✱						
Quarter 2, 2020															✱						
Quarter 4, 2020															✱						
Quarter 1, 2021															✱						
Quarter 2, 2021															✱						
Quarter 3, 2021															✱						
Quarter 4, 2021															✱						
Quarter 1, 2022															✱						
Quarter 2, 2022															✱						
Quarter 3, 2022								✱							✱						
Quarter 1, 2023								✱							✱						
Quarter 2, 2023															✱						

Chart of MCL and Historical UTL Exceedances
for the C-746-U Contained Landfill (Continued)

Groundwater Flow System	UCRS									URGA						LRGA					
Gradient	D	S	S	S	D	D	D	U	U	D	D	D	D	U	U	D	D	D	D	U	U
Monitoring Well	368	375	376	377	359	362	365	371	374	366	360	363	357	369	372	367	361	364	358	370	373
MANGANESE																					
Quarter 3, 2002										*		*									
Quarter 4, 2002		*				*	*			*		*	*								
Quarter 2, 2003										*		*									
Quarter 3, 2003										*		*	*			*	*	*	*		
Quarter 4, 2003										*	*	*	*				*	*			
Quarter 1, 2004										*	*	*				*	*	*			
Quarter 2, 2004							*			*	*	*						*			
Quarter 3, 2004							*			*	*	*				*					
Quarter 4, 2004										*		*				*					
Quarter 1, 2005										*		*									
Quarter 2, 2005										*		*									
Quarter 3, 2005										*		*				*					
Quarter 4, 2005										*						*					
Quarter 1, 2006										*											
Quarter 2, 2006							*			*		*									
Quarter 3, 2006										*						*					
Quarter 4, 2006										*											
Quarter 1, 2007										*											
Quarter 2, 2007							*			*											
Quarter 3, 2007							*														
Quarter 3, 2008							*														
Quarter 4, 2008							*														
Quarter 3, 2009							*														
Quarter 3, 2011							*														
Quarter 2, 2016														*							
Quarter 3, 2016									*												
Quarter 1, 2022																				*	
NICKEL																					
Quarter 3, 2003										*											
Quarter 1, 2022																				*	
Quarter 4, 2022																				*	
Quarter 1, 2023																				*	
Quarter 2, 2023																				*	
NITRATE AS NITROGEN																					
Quarter 4, 2021												■									
OXIDATION-REDUCTION POTENTIAL																					
Quarter 4, 2002																*		*			
Quarter 1, 2003																*		*			
Quarter 2, 2003																		*			
Quarter 3, 2003	*																				
Quarter 4, 2003					*																
Quarter 2, 2004												*				*					*
Quarter 3, 2004					*			*				*	*	*		*				*	*
Quarter 4, 2004												*									*
Quarter 1, 2005								*					*			*				*	*
Quarter 2, 2005							*						*			*				*	
Quarter 3, 2005					*	*		*			*	*	*			*			*	*	*
Quarter 4, 2005		*						*					*			*				*	
Quarter 1, 2006					*			*	*							*					*
Quarter 2, 2006					*		*	*					*			*				*	
Quarter 3, 2006					*			*					*			*				*	
Quarter 4, 2006					*		*	*		*		*	*			*				*	*
Quarter 1, 2007		*			*			*					*			*				*	*
Quarter 2, 2007					*								*			*				*	*
Quarter 3, 2007					*			*								*				*	
Quarter 4, 2007																*				*	*
Quarter 1, 2008					*			*				*	*							*	*
Quarter 2, 2008					*			*		*		*	*				*			*	*
Quarter 3, 2008					*		*	*	*	*		*	*	*		*	*	*		*	*
Quarter 4, 2008								*		*		*	*			*	*			*	
Quarter 1, 2009							*	*		*		*	*				*			*	
Quarter 2, 2009					*		*	*		*		*	*			*	*			*	*
Quarter 3, 2009		*			*	*	*	*	*	*		*	*	*		*	*	*		*	*
Quarter 4, 2009		*				*	*	*	*	*		*	*			*	*	*		*	*
Quarter 1, 2010		*			*		*	*		*			*			*	*	*		*	
Quarter 2, 2010					*	*		*		*	*	*	*			*	*	*	*	*	*
Quarter 3, 2010		*			*	*	*	*	*	*		*	*	*	*	*	*	*	*	*	*
Quarter 4, 2010		*				*	*	*	*	*	*	*	*	*		*	*	*	*	*	*
Quarter 1, 2011					*			*		*	*	*	*	*		*	*	*		*	
Quarter 2, 2011		*			*	*	*	*	*	*	*	*	*	*		*	*	*	*	*	*
Quarter 3, 2011		*					*	*	*	*		*	*	*		*	*	*	*	*	*
Quarter 4, 2011		*					*	*	*	*	*	*	*			*	*	*		*	*
Quarter 1, 2012		*			*	*	*	*	*	*	*	*	*			*	*	*	*	*	*
Quarter 2, 2012	*	*		*	*	*	*	*	*	*	*	*	*			*	*	*	*	*	*
Quarter 3, 2012		*					*	*		*	*	*	*			*	*	*	*	*	*
Quarter 4, 2012		*					*	*	*	*	*	*	*	*		*	*	*	*	*	*
Quarter 1, 2013		*					*	*	*	*	*	*	*	*		*	*	*		*	
Quarter 2, 2013		*						*	*	*	*	*	*	*		*	*	*	*	*	*
Quarter 3, 2013	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 4, 2013		*				*		*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 1, 2014		*						*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 2, 2014	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 3, 2014	*	*			*	*	*	*	*	*		*	*	*		*	*	*	*	*	*
Quarter 4, 2014		*					*	*	*	*		*	*	*		*	*	*	*	*	*
Quarter 1, 2015		*					*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 2, 2015	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 3, 2015		*			*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 4, 2015	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

G-8

Chart of MCL and Historical UTL Exceedances
for the C-746-U Contained Landfill (Continued)

Groundwater Flow System	UCRS									URGA						LRGA					
Gradient	D	S	S	S	D	D	D	U	U	D	D	D	D	U	U	D	D	D	D	U	U
Monitoring Well	368	375	376	377	359	362	365	371	374	366	360	363	357	369	372	367	361	364	358	370	373
OXIDATION-REDUCTION POTENTIAL																					
Quarter 1, 2016	*	*			*		*	*		*		*	*	*	*	*	*	*	*	*	*
Quarter 2, 2016	*	*			*	*	*	*	*	*		*	*	*	*	*	*	*	*	*	*
Quarter 3, 2016	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 4, 2016	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 1, 2017	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 2, 2017	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 3, 2017	*	*			*	*	*	*	*	*		*	*	*	*	*	*	*	*	*	*
Quarter 4, 2017		*			*	*	*	*	*	*		*	*	*	*		*	*		*	*
Quarter 1, 2018	*	*			*	*	*	*	*	*		*	*	*	*	*	*	*		*	*
Quarter 2, 2018	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 3, 2018	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 4, 2018		*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 1, 2019	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 2, 2019	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 3, 2019	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*		*	*
Quarter 4, 2019	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 1, 2020	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*		*	*
Quarter 2, 2020	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*		*	*
Quarter 3, 2020	*	*			*	*	*	*	*	*	*		*	*	*	*	*	*		*	*
Quarter 4, 2020	*	*				*	*	*	*	*	*		*	*	*	*	*	*		*	*
Quarter 1, 2021	*	*			*	*	*	*		*	*	*	*	*	*	*	*	*		*	*
Quarter 2, 2021	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 3, 2021	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 4, 2021	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 1, 2022	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 2, 2022	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 3, 2022	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 4, 2022		*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 1, 2023		*				*		*	*	*	*	*	*	*	*	*	*	*		*	*
Quarter 2, 2023	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
PCB, TOTAL																					
Quarter 4, 2003																	*				
Quarter 3, 2004												*									
Quarter 3, 2005							*														
Quarter 2, 2006							*														
Quarter 3, 2006							*														
Quarter 1, 2007							*														
Quarter 2, 2007							*														
Quarter 3, 2007							*														
Quarter 1, 2008							*														
Quarter 2, 2008							*														
Quarter 4, 2008							*														
Quarter 3, 2009							*														
Quarter 1, 2010							*														
Quarter 2, 2010							*														
Quarter 4, 2010							*														
PCB-1016																					
Quarter 3, 2004												*									
Quarter 2, 2006							*					*									
Quarter 1, 2007							*														
Quarter 2, 2007							*														
Quarter 3, 2007							*														
Quarter 2, 2008							*														
Quarter 4, 2008							*														
Quarter 3, 2009							*														
Quarter 1, 2010							*														
Quarter 2, 2010							*														
Quarter 4, 2010							*														
PCB-1242																					
Quarter 3, 2006							*					*									
Quarter 4, 2006										*											
Quarter 1, 2008							*														
Quarter 2, 2012							*														
PCB-1248																					
Quarter 2, 2008							*														
PCB-1260																					
Quarter 2, 2006							*														
pH																					
Quarter 3, 2002										*											
Quarter 4, 2002										*											
Quarter 1, 2003										*											
Quarter 2, 2003										*											
Quarter 3, 2003	*						*			*											
Quarter 4, 2003							*									*					
Quarter 1, 2004							*									*					
Quarter 3, 2005						*												*	*		
Quarter 4, 2005						*													*		
Quarter 3, 2006																*					
Quarter 2, 2011														*							
Quarter 3, 2011														*							
Quarter 4, 2011														*							
Quarter 1, 2012																*	*				
Quarter 2, 2012												*									
Quarter 1, 2013							*					*				*					
Quarter 3, 2015																	*				
Quarter 2, 2016																				*	*
Quarter 3, 2016																				*	
Quarter 2, 2017																*					

Groundwater Flow System	UCRS									URGA						LRGA					
Gradient	D	S	S	S	D	D	D	U	U	D	D	D	D	U	U	D	D	D	D	U	U
Monitoring Well	368	375	376	377	359	362	365	371	374	366	360	363	357	369	372	367	361	364	358	370	373
pH																					
Quarter 3, 2018				*						*	*						*	*	*		
Quarter 4, 2018																	*		*		
Quarter 3, 2019																*					
Quarter 1, 2021																*		*		*	
Quarter 3, 2021																					*
Quarter 4, 2021																*					*
POTASSIUM																					
Quarter 1, 2014																*					
RADIUM-228																					
Quarter 2, 2005													■								
Quarter 4, 2005						■						■						■			
SELENIUM																					
Quarter 4, 2003									■												
SODIUM																					
Quarter 3, 2002										*	*		*								
Quarter 4, 2002										*	*			*							
Quarter 1, 2003										*											
Quarter 2, 2003										*	*										
Quarter 3, 2003											*										
Quarter 1, 2007											*										
Quarter 1, 2012														*							
Quarter 1, 2014															*						
Quarter 3, 2014											*										
Quarter 4, 2014											*										
Quarter 4, 2015											*										
Quarter 1, 2016											*										
Quarter 2, 2016											*										
Quarter 3, 2016											*										
Quarter 4, 2016											*										
Quarter 1, 2017											*										
Quarter 2, 2017											*										
Quarter 3, 2017											*										
Quarter 4, 2017											*										
Quarter 1, 2018											*										
Quarter 3, 2018											*										
STRONTIUM-90																					
Quarter 4, 2008						■															
SULFATE																					
Quarter 1, 2003						*															
Quarter 2, 2003					*	*															
Quarter 3, 2003	*					*															
Quarter 4, 2003					*		*														
Quarter 1, 2004					*	*	*														
Quarter 2, 2004					*	*	*														
Quarter 3, 2004					*	*	*														
Quarter 1, 2005					*	*			*												
Quarter 2, 2005					*		*		*						*						
Quarter 3, 2005					*	*	*														
Quarter 4, 2005															*						
Quarter 1, 2006					*				*												
Quarter 2, 2006						*	*		*						*						
Quarter 3, 2006							*														
Quarter 1, 2007							*														
Quarter 2, 2007							*														
Quarter 3, 2007							*														
Quarter 4, 2007		*																			
Quarter 1, 2008		*			*		*		*												
Quarter 2, 2008		*			*	*	*														
Quarter 3, 2008		*			*	*	*														
Quarter 4, 2008		*				*	*														
Quarter 1, 2009		*					*														
Quarter 2, 2009		*			*	*	*														
Quarter 3, 2009		*			*	*	*								*						
Quarter 4, 2009		*			*	*									*						
Quarter 1, 2010		*			*	*	*								*						
Quarter 2, 2010		*			*	*	*								*						
Quarter 3, 2010		*			*	*	*								*						
Quarter 4, 2010		*				*	*								*						
Quarter 1, 2011		*																			
Quarter 2, 2011		*			*	*	*								*						
Quarter 3, 2011		*				*	*	*							*						
Quarter 4, 2011		*				*									*						
Quarter 1, 2012		*					*	*							*						
Quarter 2, 2012	*	*		*	*	*	*	*	*						*						
Quarter 3, 2012		*				*									*						
Quarter 4, 2012		*													*						
Quarter 1, 2013		*				*									*						
Quarter 2, 2013		*													*						
Quarter 3, 2013	*	*		*	*	*	*								*						
Quarter 4, 2013		*													*						
Quarter 1, 2014		*													*						
Quarter 2, 2014	*	*			*		*	*							*						
Quarter 3, 2014	*	*			*	*	*	*							*						
Quarter 4, 2014		*				*															
Quarter 1, 2015		*																			

Groundwater Flow System	UCRS									URGA						LRGA					
Gradient	D	S	S	S	D	D	D	U	U	D	D	D	D	U	U	D	D	D	D	U	U
Monitoring Well	368	375	376	377	359	362	365	371	374	366	360	363	357	369	372	367	361	364	358	370	373
SULFATE																					
Quarter 2, 2015	✱	✱			✱		✱								✱						
Quarter 3, 2015		✱			✱	✱		✱							✱						
Quarter 4, 2015	✱	✱				✱	✱	✱													
Quarter 1, 2016	✱	✱			✱	✱	✱														
Quarter 2, 2016	✱	✱			✱	✱	✱														
Quarter 3, 2016	✱	✱			✱	✱	✱	✱													
Quarter 4, 2016	✱	✱				✱	✱	✱													
Quarter 1, 2017	✱	✱				✱	✱														
Quarter 2, 2017	✱	✱			✱	✱	✱														
Quarter 3, 2017	✱	✱			✱	✱	✱														
Quarter 4, 2017		✱				✱	✱														
Quarter 1, 2018	✱	✱			✱	✱	✱														
Quarter 2, 2018	✱	✱			✱	✱	✱	✱													
Quarter 3, 2018	✱	✱			✱	✱	✱	✱													
Quarter 4, 2018		✱				✱	✱	✱													
Quarter 1, 2019	✱	✱			✱	✱	✱														
Quarter 2, 2019	✱	✱			✱	✱	✱	✱													
Quarter 3, 2019	✱	✱			✱	✱	✱	✱													
Quarter 4, 2019	✱	✱			✱	✱	✱	✱													
Quarter 1, 2020	✱	✱			✱	✱	✱	✱													
Quarter 2, 2020	✱	✱			✱	✱	✱	✱													
Quarter 3, 2020	✱	✱			✱	✱	✱	✱													
Quarter 4, 2020	✱	✱				✱	✱	✱													
Quarter 1, 2021	✱	✱			✱	✱	✱	✱							✱						
Quarter 2, 2021	✱	✱			✱	✱	✱	✱							✱						
Quarter 3, 2021	✱	✱			✱	✱	✱	✱							✱						
Quarter 4, 2021	✱	✱			✱	✱	✱								✱						
Quarter 1, 2022	✱	✱			✱	✱	✱								✱						
Quarter 2, 2022	✱	✱			✱	✱	✱	✱	✱						✱						
Quarter 3, 2022	✱	✱			✱	✱	✱	✱	✱						✱						
Quarter 4, 2022		✱				✱	✱														
Quarter 1, 2023		✱				✱									✱						
Quarter 2, 2023	✱	✱			✱	✱	✱	✱	✱						✱						
TECHNETIUM-99																					
Quarter 4, 2002																✱	✱	✱			
Quarter 2, 2003							✱						✱			✱	✱	✱	✱		✱
Quarter 3, 2003																	✱				
Quarter 4, 2003																	✱				✱
Quarter 1, 2004															✱		✱				✱
Quarter 2, 2004															✱						✱
Quarter 3, 2004															✱						✱
Quarter 4, 2004															✱		✱				✱
Quarter 3, 2005																	✱				
Quarter 1, 2006															✱						✱
Quarter 2, 2006		✱						✱													✱
Quarter 3, 2006																					✱
Quarter 4, 2006															✱						✱
Quarter 1, 2007																					✱
Quarter 2, 2007													✱		✱					✱	
Quarter 3, 2007															✱		✱	✱			
Quarter 4, 2007										✱					✱				✱		✱
Quarter 1, 2008															✱					✱	✱
Quarter 2, 2008						✱	✱							✱		✱			✱		
Quarter 3, 2008															✱						
Quarter 4, 2008										✱							✱		✱		
Quarter 1, 2009										✱											
Quarter 2, 2009																	✱				
Quarter 3, 2009								✱		✱					✱						
Quarter 4, 2009										✱					✱			✱	✱		
Quarter 2, 2010										✱						✱	✱	✱	✱		
Quarter 3, 2010										✱					✱						
Quarter 4, 2010																	✱				
Quarter 1, 2011		✱								✱							✱				
Quarter 2, 2011																✱	✱	✱	✱		
Quarter 1, 2012																	✱	✱			
Quarter 2, 2012							✱										✱				
Quarter 3, 2012																	✱	✱			
Quarter 4, 2012															✱		✱				✱
Quarter 1, 2013																	✱				✱
Quarter 2, 2013																					✱
Quarter 3, 2013										✱											✱
Quarter 4, 2013															✱		✱	✱			✱
Quarter 1, 2014															✱		✱	✱			
Quarter 2, 2014																	✱				
Quarter 3, 2014																	✱	✱	✱		
Quarter 4, 2014															✱						
Quarter 1, 2015															✱		✱				
Quarter 2, 2015																✱					
Quarter 3, 2015																		✱	✱	✱	
Quarter 4, 2015															✱					✱	
Quarter 1, 2016																✱	✱	✱	✱		✱
Quarter 2, 2016																✱	✱	✱	✱	✱	
Quarter 3, 2016																	✱			✱	✱
Quarter 4, 2016										✱				✱			✱	✱			
Quarter 1, 2017																	✱		✱	✱	
Quarter 2, 2017																					✱
Quarter 3, 2017																		✱		✱	
Quarter 4, 2017														✱	✱		✱	✱		✱	
Quarter 1, 2018																				✱	

Chart of MCL and Historical UTL Exceedances
for the C-746-U Contained Landfill (Continued)

Groundwater Flow System	UCRS									URGA						LRGA					
Gradient	D	S	S	S	D	D	D	U	U	D	D	D	D	U	U	D	D	D	D	U	U
Monitoring Well	368	375	376	377	359	362	365	371	374	366	360	363	357	369	372	367	361	364	358	370	373
TECHNETIUM-99																					
Quarter 2, 2018														✳		✳				✳	
Quarter 3, 2018															✳					✳	
Quarter 4, 2018															✳		✳	✳	✳	✳	
Quarter 1, 2019																✳				✳	
Quarter 2, 2019														✳						✳	
Quarter 3, 2019															✳			✳		✳	
Quarter 4, 2019															✳		✳	✳		✳	
Quarter 1, 2020															✳		✳	✳		✳	
Quarter 2, 2020																✳		✳	✳	✳	
Quarter 3, 2020															✳		✳	✳	✳	✳	
Quarter 4, 2020															✳		✳	✳		✳	
Quarter 1, 2021																				✳	
Quarter 2, 2021										✳						✳	✳	✳	✳		
Quarter 3, 2021														✳	✳			✳			
Quarter 4, 2021																	✳	✳			
Quarter 1, 2022										✳							✳	✳			
Quarter 2, 2022										✳					✳			✳			
Quarter 3, 2022															✳		✳	✳			
Quarter 4, 2022															✳						
Quarter 1, 2023										✳					✳		✳	✳			
Quarter 2, 2023										✳								✳			
THORIUM-230																					
Quarter 4, 2015																✳					
Quarter 2, 2016										✳											
Quarter 4, 2016	✳											✳				✳		✳			
Quarter 4, 2017													✳								
Quarter 2, 2018										✳			✳								
Quarter 2, 2021									✳												
TOLUENE																					
Quarter 2, 2014										✳				✳							
TOTAL ORGANIC CARBON																					
Quarter 3, 2002										✳	✳	✳		✳							✳
Quarter 4, 2002										✳	✳			✳							
Quarter 1, 2003											✳										
Quarter 3, 2003	✳									✳	✳					✳					
Quarter 4, 2003										✳	✳										
Quarter 1, 2004											✳										
Quarter 3, 2005						✳				✳					✳	✳			✳		
Quarter 4, 2005						✳												✳	✳		
Quarter 1, 2006																			✳		
TOTAL ORGANIC HALIDES																					
Quarter 4, 2002										✳											
Quarter 1, 2003										✳											
Quarter 2, 2003										✳											
Quarter 1, 2004																✳					
TRICHLOROETHENE																					
Quarter 3, 2002														■						■	
Quarter 4, 2002															■					■	
Quarter 1, 2003																				■	■
Quarter 2, 2003															■					■	
Quarter 3, 2003							■													■	■
Quarter 4, 2003															■					■	■
Quarter 1, 2004															■					■	■
Quarter 2, 2004															■					■	■
Quarter 3, 2004															■					■	■
Quarter 4, 2004															■					■	■
Quarter 1, 2005															■					■	■
Quarter 2, 2005															■					■	■
Quarter 3, 2005															■					■	■
Quarter 4, 2005															■					■	■
Quarter 1, 2006															■					■	■
Quarter 2, 2006															■					■	■
Quarter 3, 2006															■					■	■
Quarter 4, 2006															■						■
Quarter 1, 2007															■					■	■
Quarter 2, 2007															■						■
Quarter 3, 2007															■						■
Quarter 4, 2007															■						■
Quarter 1, 2008															■						■
Quarter 2, 2008															■				■		■
Quarter 3, 2008															■						■
Quarter 4, 2008															■						■
Quarter 1, 2009															■						■
Quarter 2, 2009															■						■
Quarter 3, 2009															■						■
Quarter 4, 2009						■	■			■		■	■		■		■				■
Quarter 1, 2010													■		■						■
Quarter 2, 2010													■		■						■
Quarter 3, 2010													■		■						■
Quarter 4, 2010													■		■						■
Quarter 2, 2011															■				■		■
Quarter 3, 2011												■			■				■		■
Quarter 4, 2011												■			■						■
Quarter 1, 2012												■			■		■		▨		■
Quarter 2, 2012															■						■

Groundwater Flow System	UCRS									URGA						LRGA					
Gradient	D	S	S	S	D	D	D	U	U	D	D	D	D	U	U	D	D	D	D	U	U
Monitoring Well	368	375	376	377	359	362	365	371	374	366	360	363	357	369	372	367	361	364	358	370	373
TRICHLOROETHENE																					
Quarter 3, 2012															■						■
Quarter 4, 2012														■	■						■
Quarter 1, 2013													■		■						■
Quarter 2, 2013													■		■		■	■			■
Quarter 3, 2013																	■	■			
Quarter 3, 2013													■		■						■
Quarter 4, 2013													■		■				■		■
Quarter 1, 2014													■		■				■		■
Quarter 2, 2014															■		■		■		
Quarter 3, 2014													■		■				■		■
Quarter 4, 2014													■		■				■		■
Quarter 1, 2015													■		■						■
Quarter 2, 2015					■										■				■		■
Quarter 3, 2015													■		■		■				■
Quarter 4, 2015													■		■						■
Quarter 1, 2016													■		■		■	■			■
Quarter 2, 2016												■	■		■		■		■		■
Quarter 3, 2016													■		■		■	■			■
Quarter 4, 2016													■		■		■	■	■		■
Quarter 1, 2017													■		■			■			■
Quarter 2, 2017															■		■	■			■
Quarter 3, 2017															■		■	■			■
Quarter 4, 2017										■			■	■			■	■			■
Quarter 1, 2018															■		■	■			■
Quarter 2, 2018													■		■	■	■	■	■		■
Quarter 3, 2018										■					■		■	■			■
Quarter 4, 2018										■		■			■		■	■	■		■
Quarter 1, 2019										■					■	■	■	■			
Quarter 2, 2019										■						■	■	■			■
Quarter 3, 2019																	■	■	■		
Quarter 4, 2019																	■	■			
Quarter 1, 2020															■		■	■			
Quarter 2, 2020																■		■			
Quarter 3, 2020																	■	■			
Quarter 4, 2020																	■	■			
Quarter 1, 2021																	■	■			
Quarter 2, 2021																		■			■
Quarter 3, 2021																	■	■			
Quarter 4, 2021																	■	■			■
Quarter 1, 2022																		■			■
Quarter 2, 2022																		■			■
Quarter 3, 2022																		■			
Quarter 1, 2023												■		■	■		■				■
Quarter 2, 2023															■						
TURBIDITY																					
Quarter 1, 2003										✶											
URANIUM																					
Quarter 4, 2002		✶			✶	✶	✶			✶	✶	✶	✶	✶	✶	✶		✶	✶	✶	✶
Quarter 4, 2006																					✶
ZINC																					
Quarter 3, 2005																		✶			

✶ Statistical test results indicate an elevated concentration (i.e., a statistical exceedance).
■ MCL Exceedance
■ Previously reported as an MCL exceedance; however, result was equal to MCL
UCRS Upper Continental Recharge System
URGA Upper Regional Gravel Aquifer
LRGA Lower Regional Gravel Aquifer

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APPENDIX H

METHANE MONITORING DATA
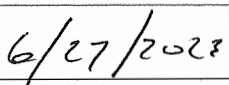
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CP3-WM-0017-F04 - C-746-U LANDFILL METHANE MONITORING REPORT

PADUCAH GASEOUS DIFFUSION PLANT

Permit #: 073-00045

McCracken County, Kentucky

Date:	June 12, 2023	Time:	0900	Monitor:	Michael Hideg	

Weather Conditions: Mostly sunny, slight wind, humidity: 69%

Monitoring Equipment: Multi RAE – Serial # 11882

Monitoring Location		Reading (% LEL)
C-746-U1	Checked at close to ground level	0
C-746-U2	Checked at close to ground level	0
C-746-U-T-14	Checked at close to ground level	0
C-746-U15	Checked at close to ground level	0
MG1	Checked inside casing	0
MG2	Checked inside casing	0
MG3	Checked inside casing	0
MG4	Checked inside casing	0
Suspect or Problem Areas	No problems noted	None
Remarks:	N/A	

Performed by:	_Michael Hideg_ (Signature)	6/27/2023 (Date)

Figure H.1. C-746-U Landfill Methane Monitoring Locations

APPENDIX I

SURFACE WATER ANALYSES AND WRITTEN COMMENTS

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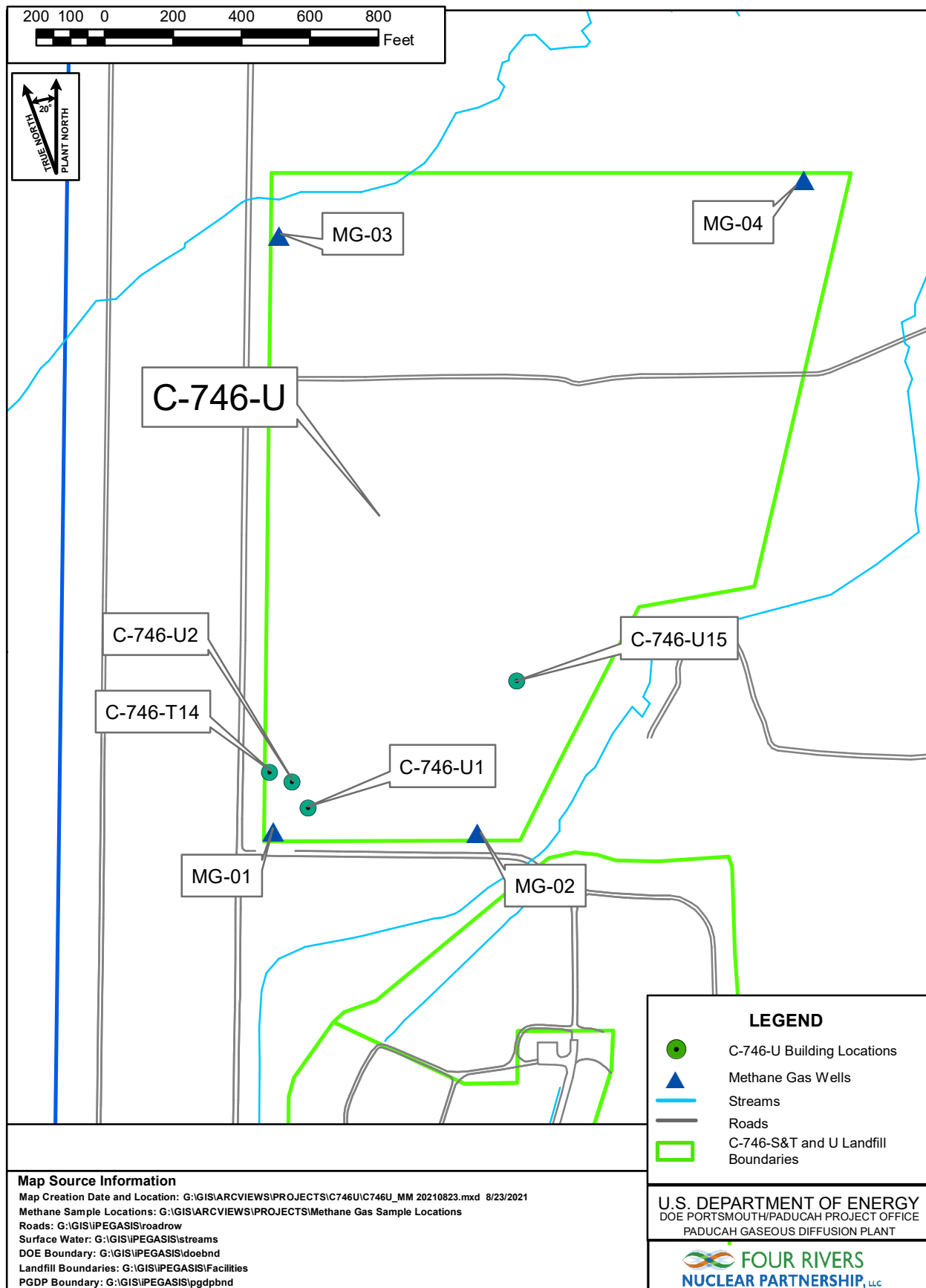**Division of Waste Management**   **RESIDENTIAL/CONTAINED-QUARTERLY**
Solid Waste Branch   **Facility: US DOE - Paducah Gaseous Diffusion Plant**
14 Reilly Road   **Permit Number: SW07300014, SW07300015, SW07300045**
Frankfort, KY 40601 (502)564-6716

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

SURFACE WATER SAMPLE ANALYSIS (S)

Monitoring Point (KPDES Discharge Number, or "UPSTREAM", or "DOWNSTREAM")					L150 INSTREAM		L154 INSTREAM		L351 DOWNSTREAM			
Sample Sequence #					1		1		1			
If sample is a Blank, specify Type: (F)ield, (T)rip, (M)ethod, or (E)quipment					NA		NA		NA			
Sample Date and Time (Month/Day/Year hour: minutes)					5/8/2023 08:02		5/8/2023 08:14		5/8/2023 07:45			
Duplicate ("Y" or "N")[1]					N		N		N			
Split ('Y' or "N")[2]					N		N		N			
Facility Sample ID Number (if applicable)					L150US3-23		L154US3-23		L351US3-23			
Laboratory Sample ID Number (if applicable)					621205001		621205002		621205003			
Date of Analysis (Month/Day/Year)					6/5/2023		5/31/2023		5/31/2023			
CAS RN[3]		CONSTITUENT	T D[4]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[5]	FLAGS[7]	DETECTED VALUE OR PQL[5]	FLAGS[7]	DETECTED VALUE OR PQL[5]	FLAGS[7]	DETECTED VALUE OR PQL[5]	FLAGS[7]
A200-00-0	0	Flow	T	MGD	Field		*		*		*		
16887-00-6	2	Chloride(s)	T	mg/L	300.0	4.42		2.04		3.16			
14808-79-8	0	Sulfate	T	mg/L	300.0	18.3		2.11		8.7			
7439-89-6	0	Iron	T	mg/L	200.8	51.6		2.66		2.12			
7440-23-5	0	Sodium	T	mg/L	200.8	5.94		2.69		5.19			
S0268- -	0	Organic Carbon[6]	T	mg/L	9060	10.1		16.6		13.6			
S0097- -	0	BOD[6]	T	mg/L	not applicable		*		*		*		
S0130- -	0	Chemical Oxygen Demand	T	mg/L	410.4	<20		30.3		30.3			

[1]Respond "Y" if the sample was a duplicate of another sample in this report
[2]Respond "Y" if the sample was split and analyzed by separate laboratories.
[3]Chemical Abstracts Service Registry Number or unique identifier number assigned by agency.
[4]"T" = Total; "D" = Dissolved
[5]"<" indicates a non-detect; do not use "ND" or "BDL". Value then shown is Practical Quantification Limit
[6]Facility has either/or option on Organic Carbon and (BOD) Biochemical Oxygen Demand - both are not required
[7]Flags are as designated, do not use any other type. Use "*," then describe on "Written Comments" page.

STANDARD FLAGS:
* = See Comments
J = Estimated Value
B = Analyte found in blank
A = Average value
N = Presumptive ID
D = Concentration from analysis of
     a secondary dilution factor

SURFACE WATER – QUARTERLY
Facility: **US DOE – Paducah Gaseous Diffusion Plant**
Permit Number: **SW07300015, SW07300015, SW07300045**

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None

SURFACE WATER SAMPLE ANALYSIS – (Cont.)

Monitoring Point (KPDES Discharge Number, or "UPSTREAM" or "DOWNSTREAM")						L150 INSTREAM		L154 INSTREAM		L351 DOWNSTREAM			
CAS RN[3]		CONSTITUENT	TD[4]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[5]	FLAGS[7]	DETECTED VALUE OR PQL[5]	FLAGS[7]	DETECTED VALUE OR PQL[5]	FLAGS[7]	DETECTED VALUE OR PQL[5]	FLAGS[7]
S0145- -	1	Specific Conductance	T	μmho/cm	Field	180		96		125			
S0270- -	0	Total Suspended Solids	T	mg/L	160.2	863		32.3		38			
S0266- -	0	Total Dissolved Solids	T	mg/L	160.1	475	*	103	*	111	*		
S0269- -	0	Total Solids	T	mg/L	SM-2540 B 17	1330		143		160			
S0296- -	0	pH	T	Units	Field	7.46		7.12		6.95			
7440-61-1		Uranium	T	mg/L	200.8	0.00238		0.00214		0.00299			
12587-46-1		Gross Alpha (α)	T	pCi/L	9310	24.5	*	3.73	*	3.06	*		
12587-47-2		Gross Beta (β)	T	pCi/L	9310	26.6	*	11.7	*	-6.57	*		

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RESIDENTIAL/CONTAINED – QUARTERLY

Facility: US DOE - Paducah Gaseous Diffusion Plant

Permit Number: SW07300014, SW07300015, SW07300045

Finds/Unit: <u>KY8-890-008-982 / 1</u>

LAB ID:<u>   None   </u>

SURFACE WATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
L150	L150US3-23	Flow Rate		Analysis of constituent not required and not performed.
		Biochemical Oxygen Demand (BOD)		Analysis of constituent not required and not performed.
		Dissolved Solids	*	Duplicate analysis not within control limits.
		Alpha activity		TPU is 11.5. Rad error is 10.8.
		Beta activity		TPU is 9.18. Rad error is 7.99.
L154	L154US3-23	Flow Rate		Analysis of constituent not required and not performed.
		Biochemical Oxygen Demand (BOD)		Analysis of constituent not required and not performed.
		Dissolved Solids	*	Duplicate analysis not within control limits.
		Alpha activity	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 4.93. Rad error is 4.88.
		Beta activity		TPU is 6.68. Rad error is 6.39.
L351	L351US3-23	Flow Rate		Analysis of constituent not required and not performed.
		Biochemical Oxygen Demand (BOD)		Analysis of constituent not required and not performed.
		Dissolved Solids	*	Duplicate analysis not within control limits.
		Alpha activity	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 4.96. Rad error is 4.94.
		Beta activity	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 6.08. Rad error is 6.08.

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APPENDIX J

ANALYTICAL LABORATORY CERTIFICATION

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Accredited Laboratory

A2LA has accredited

GEL LABORATORIES, LLC

Charleston, SC

for technical competence in the field of

Environmental Testing

In recognition of the successful completion of the A2LA evaluation process that includes an assessment of the laboratory's compliance with ISO/IEC 17025:2017, the 2009 and 2016 TNI Environmental Testing Laboratory Standard, the requirements of the Department of Defense Environmental Laboratory Accreditation Program (DoD ELAP), and the requirements of the Department of Energy Consolidated Audit Program (DOECAP) as detailed in Version 5.3 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 16th day of June 2021.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2567.01
Valid to June 30, 2023

For the tests to which this accreditation applies, please refer to the laboratory's Environmental Scope of Accreditation.

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APPENDIX K

LABORATORY ANALYTICAL METHODS

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LABORATORY ANALYTICAL METHODS

Analytical Method	Preparation Method	Product
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 410.4		COD
Eichrom Industries, AN-1418		AlphaSpec Ra226, Liquid
DOE EML HASL-300, Th-01-RC Modified		Th-01-RC M, Th Isotopes, Liquid
EPA 904.0 Modified		904.0Mod, Ra228, Liquid
SW846 9310		9310, Alpha/Beta Activity, liquid
EPA 905.0 Modified		905.0Mod, Sr90, liquid
DOE EML HASL-300, Tc-02-RC Modified		Tc-02-RC-MOD, Tc99, Liquid
EPA 906.0 Modified		906.0M, Tritium Dist, Liquid
SW846 9020B		Total Organic Halogens (TOX)

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APPENDIX L

MICRO-PURGING STABILITY PARAMETERS

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Micro-Purge Stability Parameters
for the C-746-U Contained Landfill

MW357	Temperature (°F)	Conductivity (umho/cm)	pH (Std Unit)	Dissolved oxygen (mg/L)	Turbidity (NTU)	MW358	Temperature (°F)	Conductivity (umho/cm)	pH (Std Unit)	Dissolved oxygen (mg/L)	Turbidity (NTU)
Date Collected:4/10/2023						**Date Collected:4/10/2023**					
1032	60.5	421	6.32	5.02	11.89	1116	60.5	520	6.45	1.47	6.90
1035	60.7	422	6.15	4.87	10.67	1119	60.7	520	6.40	1.22	6.77
1038	60.8	420	6.13	4.83	10.33	1122	60.8	521	6.38	1.25	6.70
MW359						**MW360**					
Date Collected: 4/10/2023						**Date Collected:4/10/2023**					
1156	60.9	226	6.36	5.64	5.41	0744	56.3	401	6.22	2.70	5.48
1159	61.0	220	6.18	5.22	5.36	0747	56.3	400	6.21	2.15	5.56
1202	61.1	219	6.16	5.18	5.30	0750	56.4	400	6.20	2.10	5.33
MW361						**MW362**					
Date Collected: 4/10/2023						**Date Collected:4/10/2023**					
0843	57.6	446	6.15	4.68	3.35	0948	58.6	572	6.92	4.40	50.06
0846	57.7	447	6.10	4.47	3.20	0951	58.7	574	6.93	4.21	48.13
0849	57.7	446	6.09	4.44	3.13	0954	58.7	575	6.94	4.27	47.77
MW363						**MW364**					
Date Collected: 4/24/2023						**Date Collected:4/24/2023**					
0747	56.8	395	6.16	1.65	0.00	0849	59.5	479	6.10	4.20	1.14
0750	57.0	395	6.15	1.69	0.00	0852	59.6	480	6.04	3.66	1.01
0753	57.2	396	6.16	1.71	0.00	0855	59.6	482	6.02	3.60	0.99
MW365						**MW366**					
Date Collected:4/24/2023						**Date Collected: 4/24/2023**					
0940	59.1	424	6.42	7.70	0.00	1022	60.5	494	6.12	4.20	0.00
0943	59.3	424	6.40	7.63	0.00	1025	60.6	494	6.10	3.67	0.00
0946	59.5	425	6.39	7.64	0.00	1028	60.5	495	6.11	3.62	0.00
MW367						**MW368**					
Date Collected:4/24/2023						**Date Collected: 4/24/2023**					
1103	60.4	324	5.95	2.07	14.10	1143	60.2	611	6.42	3.48	3.48
1106	60.5	322	5.91	1.61	13.71	1146	60.3	613	6.39	3.17	2.78
1109	60.7	321	5.91	1.53	13.89	1149	60.4	614	6.39	3.23	2.56
MW369						**MW370**					
Date Collected: 4/24/2023						**Date Collected: 4/24/2023**					
1228	62.4	374	6.19	2.22	1.44	1310	61.2	469	6.13	4.20	0.00
1231	62.6	375	6.18	2.02	1.27	1313	61.4	471	6.12	4.25	0.00
1234	62.6	375	6.18	2.06	1.16	1316	61.5	470	6.12	4.26	0.00
MW371						**MW372**					
Date Collected:4/25/2023						**Date Collected:4/25/2023**					
1000	58.8	650	6.80	8.11	5.55	0742	58.1	735	6.04	1.99	1.72
1003	59.1	645	6.72	7.78	5.61	0745	58.2	734	6.02	1.78	1.66
1006	59.0	640	6.72	7.75	5.43	0748	58.2	733	6.03	1.81	1.60
MW373						**MW374**					
Date Collected: 4/25/2023						**Date Collected: 4/25/2023**					
0840	58.9	825	6.25	3.80	1.58	0919	59.9	711	6.88	2.66	5.91
0843	59.1	830	6.18	2.07	1.47	0922	59.7	706	6.81	2.38	5.30
0846	59.1	831	6.12	2.00	1.51	0925	59.6	703	6.80	2.30	5.09
MW375											
Date Collected:4/25/2023											
1334	62.6	340	6.50	1.94	2.66						
1337	62.5	338	6.45	1.48	2.50						
1340	62.4	336	6.44	1.41	2.44						

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