SCS ENGINEERS

Transmittal

West Des Moines, IA

PROJECT:	Ottumwa,FY25 Env Comp,IA 27223157.25	DATE:	3/3/2025
SUBJECT:	Ottumwa-Wapello County Landfill,West Unit - 90-SDP-01-75P - 2024 Annual Water Quality Report, Leachate Control System Performance Evaluation Report, and Landfill Gas Annual Report	TRANSMITTAL ID:	00001
PURPOSE:	For your approval	VIA:	Info Exchange

FROM

NAME	COMPANY	EMAIL	PHONE
Nathan Ohrt West Des Moines, IA	SCS Engineers	NOhrt@scsengineers.com	+1-515-415-9220

TO

NAME	COMPANY	EMAIL	PHONE
Mick Leat United States		mick.leat@dnr.iowa.gov	

REMARKS:

Good morning Mick-

SCS Engineers, on behalf of the Ottumwa-Wapello County Solid Waste Commission, is submitting the 2024 Annual Water Quality Report, Leachate Control System Performance Evaluation Report, and Landfill Gas Annual Report for the West MSWLF unit at the Ottumwa-Wapello County Landfill. If you have any questions or comments regarding these reports, please contact me at the number below. Thank you.

Nathan Ohrt
Senior Project Professional
SCS Engineers
West Des Moines, Iowa
319-331-9613 (M)
nohrt@scsengineers.com

www.scsengineers.com

Transmittal

DATE: 3/3/2025
TRANSMITTAL ID: 00001

DESCRIPTION OF CONTENTS

QTY	DATED	TITLE	NOTES
1	2/28/2025	Ottumwa-Wapello County Landfill,West Unit-90-SDP-01-75P-2024 Annual Water Quality Report, Leachate Control System Performance Evaluation Report, and Landfill Gas Annual Report.pdf	

COPIES:

Zach Simonson	(Ottumwa-Wapello County)
Nathan Ohrt	(SCS Engineers)
Tim Buelow	(SCS Engineers)
Becky Jolly	

February 28, 2025
File No. 27223157.25

Mr. Mick Leat
Iowa Department of Natural Resources
Land Quality Bureau
6200 Park Avenue
Des Moines, Iowa 50321

Subject: 2024 Annual Water Quality Report, Leachate Control System Performance Evaluation Report, and Landfill Gas Annual Report
Ottumwa-Wapello County Landfill
West MSWLF Unit
Permit No. 90-SDP-01-75P

Dear Mick:

SCS Engineers, on behalf of the Ottumwa–Wapello County Solid Waste Commission, has completed the required groundwater monitoring and statistical evaluation for the West municipal solid waste landfill (MSWLF) unit at the Ottumwa-Wapello County Landfill (Landfill) for the year 2024. Services were performed in general accordance with Iowa Administrative Code (IAC) 567-113.10 and the current requirements for implementation of the Hydrologic Monitoring System Plan for the Landfill. Please find enclosed a copy of the 2024 Annual Water Quality Report (AWQR).

An evaluation of the leachate control system for the West MSWLF unit is included in accordance with IAC 567-113.7(5)"b"(14). The 2024 Leachate Control System Performance Evaluation Report is included as an appendix to the AWQR.

The gas monitoring results for the West MSWLF unit are included in accordance with IAC 567-113.9(2)"d". The 2024 Landfill Gas Annual Report is included as an appendix to the AWQR.

If you have any questions regarding these reports, please contact Nathan Ohrt at (319) 331-9613.

Sincerely,

Nathan Ohrt
Senior Project Professional
SCS Engineers

Timothy C. Buelow, P.E.
Senior Project Advisor
SCS Engineers

NPO/TCB

Copies: Mr. Zach Simonson, Ottumwa-Wapello County Solid Waste Commission
Ms. Lori Creech, Ottumwa-Wapello County Landfill

2024 ANNUAL WATER QUALITY REPORT, LEACHATE CONTROL SYSTEM PERFORMANCE EVALUATION REPORT, & LANDFILL GAS ANNUAL REPORT

FOR

OTTUMWA-WAPELLO COUNTY LANDFILL
WEST MSWLF UNIT

OTTUMWA, IOWA

SOLID WASTE PERMIT NO. 90-SDP-01-75P

SUBMITTAL DATE: FEBRUARY 2025

PREPARED FOR:

OTTUMWA-WAPELLO COUNTY SOLID WASTE COMMISSION

PREPARED BY:

SCS ENGINEERS

Certification

Prepared by: _____ Date: 2/28/2025

Typed: Nathan Ohrt

Reviewed by: _____ Date: 2/28/2025

Typed: Timothy C. Buelow, P.E.

Certification page (PE or ground water scientist signature) **113.10(1)"d"**

For the purposes of this rule, a "qualified groundwater scientist" means a scientist or an engineer who has received a baccalaureate or postgraduate degree in the natural sciences or engineering and has sufficient training and experience in groundwater hydrology and related fields demonstrated by state registration, professional certifications, or completion of accredited university programs that enable that individual to make sound professional judgments regarding groundwater monitoring, contaminant fate and transport, and corrective action.

Executive Summary

ES.1 Period of Report Coverage

The period of report coverage is January through December 2024 and includes the sampling events summarized in Table 2.

ES.2 Report Priority

The following summarizes report priorities associated with groundwater compliance at the West municipal solid waste landfill unit (West MSWLF unit):

- Department review urgency: None.
- Department review impact on rules schedule: None.
- Actions or activities on hold pending Department review or comment: None.
- Actions and/or permit amendments needed: It is requested that semi-annual sampling for sulfide in monitoring well MW-39R be discontinued as the parameter has not been detected in the most recent eight samples.

ES.3 Site Status and Applicable Rules

- Landfill Status: Active.
- Types of waste accepted: Municipal solid waste, construction and demolition waste, special waste.
- Applicable IAC rules: 2009 IAC 567-113.10.

ES.4 Comments

The Hydrologic Monitoring System Plan (HMSP) monitoring network for the West MSWLF unit includes monitoring points divided into multiple statistical monitoring programs, each with specific evaluation methods. The monitoring points and their current monitoring program are included in Table 1. A brief summary of the statistical methods and findings is included below, and a more detailed discussion of the results is included in Section 6.0 of this report. The statistical method and statistical software output are included in the attached Appendix D, Statistical Method and Output. Sampling during this reporting period was performed as outlined in the current permit and is summarized in Table 2.

Detection Monitoring

Detection monitoring points are evaluated for statistically significant increases (SSIs) above background using prediction limits for inorganic constituents detected in background and the double quantification rule for organic compounds and inorganic constituents not detected in background. Interwell statistical methods are used for monitoring wells, where downgradient monitoring wells are compared to the background dataset, which includes data from background monitoring wells MW-53 and MW-54. Intrawell statistical methods are used for groundwater underdrains GU-6 and GU-7, where the most recent sampling data is compared to the historical data from the same monitoring point. No SSIs were identified for detection monitoring well 91-MW-14 or groundwater underdrain discharge point GU-7 during this reporting period. Groundwater underdrain discharge point GU-6 was dry during both 2024 sampling events so prediction limits were not calculated.

Assessment Monitoring

Assessment monitoring wells are evaluated using confidence intervals, or confidence bands if a statistically significant trend is present, to identify SSLs above the GWPSs. No SSLs above the GWPS were measured in the assessment monitoring wells MW-62 and 93-MW-32.

Attenuation Zone Point of Compliance (AZPOC)/Corrective Action

AZPOC monitoring well MW-81 is evaluated using confidence intervals, or confidence bands if a statistically significant trend is present, to identify SSLs above the GWPSs. No SSLs above the GWPS were measured in the AZPOC monitoring well MW-81. As monitoring well MW-81 has satisfied the exit requirements of 567 IAC 113.10(9)*e*(2), the monitoring well will be moved from the corrective action monitoring program into the assessment monitoring program. Full set Appendix II analysis was performed for the monitoring well in 2022 and 2023 (see Table 2).

Acid Mine Drainage Monitoring

Acid mine drainage (AMD) monitoring wells are considered to be impacted by previous coal strip mining activities. The AMD wells serve the dual purpose of monitoring the effect of AMD near the West MSWLF unit while also monitoring for groundwater impact from the West MSWLF unit. The inorganic data is evaluated by both interwell and intrawell prediction limits to evaluate SSIs. If an SSI is indicated using both interwell and intrawell methods, the AMD data for the monitoring well will be reviewed. Zinc in monitoring well 04-MW-56 during the 1st 2024 statistical evaluation and barium in monitoring well MW-65 during the 2nd 2024 statistical evaluation had SSIs indicated using both interwell and intrawell evaluations. Organic data for the AMD wells are evaluated using confidence intervals. No SSLs above the GWPS were identified for the organic parameters in the AMD monitoring wells. Additional parameters are collected from the AMD wells to evaluate the change in AMD conditions near the West MSWLF unit. An evaluation of the status of AMD conditions is included in Section 6.3 of this report.

Source Characterization

Source characterization monitoring wells are evaluated using statistical trending to evaluate the change in Appendix I parameter concentrations. Additional parameters are collected from the source wells to evaluate the continuation of natural attenuation of the groundwater impact in their vicinity. An evaluation of natural attenuation is included in Section 6.4 of this report.

Corrective Action

Corrective action monitoring wells were sampled during this reporting period for parameters previously identified as SSLs to monitor the area of impact. The concentration range of constituents detected during this reporting period is included in Figure 5.

Other

Due to the dry weather conditions, corrective action monitoring wells MW-67, MW-71, MW-74, and MW-80 had insufficient water to produce samples during the June 2024 sampling event. Groundwater underdrain monitoring point GU-6 was dry during the June and October 2024 sampling events and groundwater underdrain monitoring point GU-7 was dry during the October 2024 sampling event.

Table of Contents

EXECUTIVE SUMMARY I
ES.1 Period of Report Coverage i
ES.2 Report Priority i
ES.3 Site Status and Applicable Rules i
ES.4 Comments i
SECTION 1.0 ACRONYMS/ABBREVIATIONS 1
SECTION 2.0 SITE BACKGROUND 2
2.1 Site Location 2
2.2 Geology and Hydrogeology of the Site 2
SECTION 3.0 FIGURES DISCUSSION 4
3.1 Figure 1 - Approved Monitoring Network 4
3.2 Figure 2 - Groundwater Contours 4
3.3 Figure 3 - Groundwater and Leachate Contours 4
3.4 Figure 4 - Reporting Period Detection Summary – HMSP 4
3.5 Figure 5 - Reporting Period Detection Summary – Corrective Action 4
3.6 Figure 6 - Arsenic Concentration Map 4
3.7 Figure 7 - Cobalt Concentration Map 5
3.8 Figure 8 - cis-1,2-Dichloroethene Concentration Map 5
3.9 Figure 9 - Tetrachloroethene Concentration Map 5
3.10 Figure 10 - Trichloroethene Concentration Map 6
3.11 Figure 11 - Vinyl Chloride Concentration Map 6
SECTION 4.0 STANDARDS HISTORY GRAPHS 7
SECTION 5.0 QA/QC SUMMARY 8
SECTION 6.0 DATA EVALUATION AND SUMMARY 9
6.1 Statistical Evaluation 9
6.2 Data Evaluation 11
6.3 Acid Mine Drainage Evaluation 11
6.4 Natural Attenuation Evaluation 12
SECTION 7.0 RECOMMENDATIONS 18
7.1 Site Impact on Groundwater 18
7.2 Proposed Monitoring 18
7.3 Proposed Monitoring Well Changes 18

Tables

TABLE 1	MONITORING PROGRAM SUMMARY
TABLE 2	MONITORING PROGRAM IMPLEMENTATION SCHEDULE
TABLE 3	MONITORING WELL MAINTENANCE AND PERFORMANCE RE-EVALUATION SCHEDULE
TABLE 4	MONITORING WELL PERFORMANCE AND MAINTENANCE SUMMARY
TABLE 5	BACKGROUND AND GWPS SUMMARY
TABLE 6	SUMMARY OF WELL/DETECTED CONSTITUENT PAIRS WITH NO PREVIOUS SSIS
TABLE 7	SUMMARY TABLE OF ONGOING AND NEWLY IDENTIFIED SSIS
TABLE 8	SUMMARY TABLE OF ONGOING AND NEWLY IDENTIFIED SSLS
TABLE 9	SUMMARY OF GROUNDWATER CHEMISTRY
TABLE 10	HISTORICAL SSIS AND SSLS
TABLE 11	CORRECTIVE ACTION TREND ANALYSIS

Figures

FIGURE 1	APPROVED MONITORING NETWORK
FIGURE 2	GROUNDWATER CONTOURS
FIGURE 3	GROUNDWATER AND LEACHATE CONTOURS
FIGURE 4	REPORTING PERIOD DETECTION SUMMARY – HMSP
FIGURE 5	REPORTING PERIOD DETECTION SUMMARY – CORRECTIVE ACTION
FIGURE 6	ARSENIC CONCENTRATION MAP
FIGURE 7	COBALT CONCENTRATION MAP
FIGURE 8	CIS-1,2-DICHLOROETHENE CONCENTRATION MAP
FIGURE 9	TETRACHLOROETHENE CONCENTRATION MAP
FIGURE 10	TRICHLOROETHENE CONCENTRATION MAP
FIGURE 11	VINYL CHLORIDE CONCENTRATION MAP

Appendices

APPENDIX A	FIELD SAMPLING FORMS
APPENDIX B-1	LABORATORY ANALYTICAL DATA SHEETS
APPENDIX B-2	DATA VALIDATION DOCUMENTATION
APPENDIX C-1	SUMMARY OF GROUNDWATER CHEMISTRY – HMSP
APPENDIX C-2	SUMMARY OF GROUNDWATER CHEMISTRY – SOURCE
APPENDIX C-3	SUMMARY OF GROUNDWATER CHEMISTRY – CORRECTIVE ACTION
APPENDIX C-4	SUMMARY OF GROUNDWATER CHEMISTRY – ACID MINE DRAINAGE
APPENDIX D	STATISTICAL METHOD AND OUTPUT
APPENDIX E	2024 LEACHATE CONTROL SYSTEM PERFORMANCE EVALUATION REPORT
APPENDIX F	2024 LANDFILL GAS ANNUAL REPORT
APPENDIX G	STANDARDS HISTORY GRAPHS
APPENDIX H	SOURCE WELL MANN-KENDALL TRENDING SUMMARY ($\alpha = 0.01$)
APPENDIX I	ACID MINE DRAINAGE MANN-KENDALL TRENDING SUMMARY ($\alpha = 0.2$)

Section 1.0
Acronyms/Abbreviations

ACM = Assessment of Corrective Measures
AZPOC= Attenuation Zone Point of Compliance
CAMP = Corrective Action Groundwater Monitoring Program
CL = Control Limit - Mean plus Two Standard Deviations
DNR = Iowa Department of Natural Resources
DO = Dissolved Oxygen
DQR = Double Quantification Rule
GWPS = Groundwater Protection Standard
HMSP = Hydrologic Monitoring System Plan
LEL = Lower Explosive Limit
LCL = Lower Confidence Limit
LN = Lognormal
MCL = EPA Maximum Contaminant Level
MSW = Municipal Solid Waste
N = Normal
NC = No Change
NM = Not Measured
NP = Non-Parametric
ORP = Oxidation-Reduction Potential
P = Parametric
PL = Prediction Limit
RL = Reporting Limit
SWS = DNR Statewide Standard for a protected groundwater source
SSI = Statistically Significant Increase above background
SSL = Statistically Significant Level above groundwater protection standard
SSS = Site-Specific Standard (Site-Specific GWPS)
TSS = Total Suspended Solids
UCL = Upper Confidence Limit
VOC = Volatile Organic Compound

Section 2.0
Site Background

2.1 Site Location

The Landfill property is depicted in Figure 1, Approved Monitoring Network, and is located along 165th Avenue, approximately 1.5 miles north of State Highway 23 in Wapello County, Iowa. The Landfill property consists of approximately 250 acres and is located within the SE ¼; the E 30 acres of the S ½, S ½, NE ¼; and a portion of the W 10 acres of the S ½, S ½, NE ¼; all in Section 33, T73N, R14W, Wapello County, Iowa, as well as approximately 30 acres in the W ½ of the NE Fractional Quarter of Section 4, T72N, R14W, Wapello County, Iowa.

2.2 Geology and Hydrogeology of the Site

Previous hydrologic investigations of the Landfill were conducted by Barker Lemar Engineering Consultants (November 1999 and June/July 2003), by Foth & Van Dyke (June 1997), and by Green Environmental Services (GES), Inc. (March 1992 and April 1993). Information from these reports was compiled to create the summary below.

The Landfill is located in the Southern Iowa Drift Plain in an area of moderately well-drained rolling terrain. The surficial material generally consists of loess and glacial drift of Pleistocene age and colluvial and alluvial deposits of Holocene age. Landfilled areas are on either side of the valley of an unnamed and generally intermittent creek, which flows from northeast to southwest across the Landfill property and separates the West MSWLF unit from the East MSWLF unit. Holocene alluvial and colluvial deposits are found along this creek as it extends through the Landfill property.

Coal–bearing Cherokee Group bedrock of Pennsylvanian age is also exposed at the Landfill. The west and northeast sides of the Landfill were used for strip mining coal between 1956 and 1976 and consequently have been extensively disturbed by that activity (GES, 1992). Much of the Landfill was developed by excavating coal mine spoils or the glacial till down to bedrock. In many places, the base of the West MSWLF unit was determined by depths of the coal-mine excavation or the West MSWLF unit was established on coal-mine spoils, which were also used as daily cover.

The two areas of highest natural elevation at the Landfill are on the northwest and east central perimeter areas with elevations ranging from 800 to 810 feet above sea level (ASL). The lowest natural elevation at the Landfill is approximately 670 feet ASL along the creek bed on the southern perimeter of the property. The majority of the Landfill property slopes toward the intermittent creek that divides the property. Drainage from the Landfill is generally to the intermittent creek and is conducted via sheet runoff and numerous natural drainage ways.

The Bedrock Map of Iowa (Iowa Geological Survey, 1969) indicates that bedrock in the vicinity of the Landfill is comprised of Pennsylvanian-age shale deposits of the lower Cherokee Group or the primarily carbonate deposits of the Mississippian-age Meramec Series. Previous studies conducted at the Landfill indicated that the bedrock beneath the unconsolidated deposits is comprised of thick Pennsylvanian-age shales of the Cherokee Group with minor facies changes to limestone, sandstone, and coal within the shale matrix.

Surface mining of coal was performed in the Ottumwa area beginning in the mid-1800s. The coal was mined from Pennsylvanian-age rocks of the lower Cherokee Group. The sedimentary strata were deposited nearly horizontally with lateral facies changes. As such, contemporaneous deposits are generally present at approximately the same elevation beneath the Landfill. According to the GES report (1992) research indicates that the mined coal deposit on the Landfill property was on the order of four feet thick and occurred at an elevation of approximately 710 feet above mean sea level (ASL).

The shallower geologic materials at the Landfill would not qualify as aquifers for water supply wells because of low transmissivities (GES, 1992). However, the shallow materials are 100- to 1000-fold more conductive to groundwater flow than the deep shale. These shallow materials include mine spoils, alluvium (silt, sand, and gravel), shallow till with sand lenses, and weathered shale. The higher in-situ hydraulic conductivities show that these materials constitute the uppermost aquifer for monitoring purposes.

GES (1992) did not consider small, discontinuous beds of sandstone, limestone, and coal to function as aquifers, due to lack of continuity, even though these may be more permeable. The Mississippian limestone was also not thought to function as an aquifer due to low hydraulic conductivity.

The deeper part of the Pennsylvanian shale is considered to be an aquitard. This is shown by the low in-situ hydraulic conductivities, vertical flow rates, and transmissivities. The steep vertical flow paths also show that the shale is an aquitard. Over 50 feet of shale protects the underlying Mississippian bedrock (GES, 1992).

According to the GES report (1992), the water table is located in the uppermost aquifer, which consists of mine spoils, alluvium (silt, sand, and gravel), shallow till with sand lenses, and weathered shale. The depth to the water table across the Landfill property as measured in previous assessments varied from an average of 1 to 11 feet below ground surface (bgs) in the valley to 18 to 24 feet bgs on the hilltops. The deepest water table depths of 33 and 36 feet bgs measured during previous assessments were observed in the southwest corner of the Landfill property and are associated with sands in a buried channel.

The stratigraphy in the eastern portion of the Landfill property where coal mining does not appear to have occurred can generally be described as an overlying mantle of brown lean to sandy lean clay ranging in thickness from 0 to up to 30 feet, however, generally less than 10 feet in thickness, underlain by shale bedrock. The shallower shales are typically weathered and range in color from red to brown to gray. With depth, the bedrock becomes predominantly shale of varying shades of gray. Within the shale mass are intermittent layers of sandstone, limestone, and coal with limestone being the more predominant intermittent layer encountered. Coal was generally encountered associated with limestone layers, however, not in all cases. The interbedded limestone, sandstone, and coal layers did not appear sufficiently consistent throughout the borings to indicate a continuous layer beneath the Landfill property.

Section 3.0
Figures Discussion

The following figures are included in the Figures section of this report.

3.1 Figure 1 - Approved Monitoring Network

The Landfill property, hydrologic monitoring system plan (HMSP) monitoring network, source characterization monitoring wells, and corrective action monitoring wells are depicted in Figure 1. Figure 1 indicates the respective monitoring programs of the HMSP monitoring points as of the beginning of this reporting period. A summary table of the HMSP monitoring network is included in Table 1.

3.2 Figure 2 - Groundwater Contours

A groundwater contour map based on groundwater levels measured during the June 2024 sampling event is included in Figure 2. Groundwater flow is generally to the southeast beneath both the active and closed portions of the West MSWLF unit. The flow direction is consistent with previous groundwater contour maps. It does not appear that significant change to the hydrologic setting or flow paths has occurred. Groundwater levels measured during this reporting period are included in Table 4.

3.3 Figure 3 - Groundwater and Leachate Contours

A groundwater contour map based on groundwater levels and leachate levels measured in June 2024 is included in Figure 3. The predominant flow path is to the south/southeast; however, the contour gradient becomes somewhat varied, more generally to the south beneath the western $^{2}/_{3}^{rd}$ of the closed area and generally to the east beneath the eastern $^{1}/_{3}^{rd}$ of the closed area of the West MSWLF unit when leachate elevations are considered in the contours.

3.4 Figure 4 - Reporting Period Detection Summary – HMSP

Figure 4 shows the range of measured concentrations by monitoring point for the HMSP monitoring wells during this reporting period. Further discussion of the detected constituents is included in Section 6.0 – Data Evaluation and Summary of this report.

3.5 Figure 5 - Reporting Period Detection Summary – Corrective Action

Figure 5 shows the range of measured concentrations by monitoring wells for the source characterization and corrective action monitoring wells during this reporting period. Further discussion of the detected constituents is included in Section 6.0 – Data Evaluation and Summary of this report.

3.6 Figure 6 - Arsenic Concentration Map

A groundwater concentration map for SSL parameter arsenic is included in Figure 6. Arsenic has a background concentration of 0.00208 mg/L. Arsenic impact is generally confined to the southwest boundary of the West MSWLF unit near monitoring wells MW-74 and 93-MW-31R. The apparent elevated concentration boundary is shown in Figure 6.

Elevated TSS concentrations in monitoring well MW-71 to the west do not allow a clear determination of impact definition in that area. However, MW-78 to the northwest defines the elevated concentrations in that direction. Concentrations above background are present to the north at monitoring well MW-73 and to the east at monitoring wells MW-61R and MW-74.

During the 2021 reporting period, monitoring well 93-MW-31R was replaced in the HMSP monitoring program by attenuation zone point of compliance (AZPOC) monitoring well MW-

81. Arsenic has not had a quantified detection in monitoring well MW-81 since sampling began in 2021.

3.7 Figure 7 - Cobalt Concentration Map

A groundwater concentration map for SSL parameter cobalt is included in Figure 7. Cobalt has a background concentration of 0.01581 mg/L. Cobalt impact is generally confined to the southwest boundary of the West MSWLF unit near monitoring well MW-73. The elevated concentration boundary is shown in Figure 7.

Monitoring well MW-61R had measured cobalt concentrations below background during the 2020-2024 sampling events. Monitoring well MW-73 had two samples above background in 2024, while monitoring well MW-78 had a concentration above background in June 2024 and below background in October 2024, indicating the area of elevated concentrations is generally defined. The monitoring well MW-78 cobalt background exceedance in the June 2024 sample was likely the result of elevated TSS.

During the 2021 reporting period, monitoring wells MW-61R and MW-73 were replaced in the HMSP monitoring program by AZPOC monitoring well MW-81. Cobalt has not been measured above background in monitoring well MW-81 since sampling began in 2021.

3.8 Figure 8 - cis-1,2-Dichloroethene Concentration Map

A groundwater concentration map for SSL parameter cis-1,2-dichlorethene is included in Figure 8. cis-1,2-dichlorethene impact near SSL monitoring well MW-61R is generally defined. No exceedances of the GWPS were measured 2020-2024. The elevated concentration boundary is shown in Figure 8.

During the 2021 reporting period, monitoring well MW-61R was replaced in the HMSP monitoring program by AZPOC monitoring well MW-81. There have been four quantified concentrations of cis-1,2-dichlorethene measured in monitoring well MW-81, with the highest concentration being less than 3.5% of the GWPS.

3.9 Figure 9 - Tetrachloroethene Concentration Map

A groundwater concentration map for SSL parameter tetrachloroethene is included in Figure 9. Tetrachloroethene impact near SSL monitoring wells MW-61R and MW-73 is generally defined. The elevated concentration boundary is shown in Figure 9.

Monitoring wells MW-73 and MW-78 were the only two wells with quantified detections during this reporting period. Measured concentrations have generally decreased since the expansion of the subsurface venting system installed in October 2016, with the 2024 concentrations measured in MW-73 the lowest in the period of record dating to 2014. Additionally, monitoring well MW-61R has not had a quantified detection in the thirteen most recent sampling events. Tetrachloroethene at monitoring well MW-73 had a statistically significant declining trend at 99% confidence ($\alpha = 0.01$) during this reporting period.

During the 2021 reporting period, monitoring wells MW-61R and MW-73 were replaced in the monitoring program by AZPOC monitoring well MW-81. There were historically four quantified concentrations of tetrachloroethene in monitoring well MW-81, with the highest concentration approximately 25% of the GWPS. During 2024, the two tetrachloroethene concentrations in monitoring well MW-81 were J flags.

3.10 Figure 10 - Trichloroethene Concentration Map

A groundwater concentration map for SSL parameter trichloroethene is included in Figure 10. Trichloroethene impact is generally defined near SSL monitoring wells MW-61R and MW-73. The elevated concentration boundary is shown in Figure 10.

No quantified concentrations for trichloroethene were measured outside of monitoring wells MW-73 and MW-74 during this reporting period. Measured concentrations have generally decreased since the expansion of the subsurface venting system installed in October 2016, with the 2024 concentrations measured in MW-73 the lowest in the period of record dating to 2014. Monitoring well MW-61R has not had a quantified detection in the thirteen most recent sampling events. Trichloroethene at monitoring well MW-73 had a statistically significant declining trend at 99% confidence ($\alpha = 0.01$) during this reporting period.

During the 2021 reporting period, monitoring wells MW-61R and MW-73 were replaced in the monitoring program by AZPOC monitoring well MW-81. Trichloroethene has not been measured at a quantified concentration in monitoring well MW-81 since sampling began in 2021.

3.11 Figure 11 - Vinyl Chloride Concentration Map

A groundwater concentration map for SSL parameter vinyl chloride is included in Figure 11. Vinyl chloride impact is generally defined near monitoring wells MW-61R, MW-73, and MW-79. The elevated concentration boundary is shown in Figure 11.

Monitoring well MW-73 is bracketed by monitoring well MW-62 to the north, monitoring well MW-78 to the west, and monitoring well MW-71 to the southwest.

Monitoring well MW-79 is bracketed by monitoring well MW-62 to the north and monitoring well MW-71 to the southwest. Monitoring well MW-80, to the west of MW-79, had quantified detections in the two most recent samples.

Monitoring well MW-61R has not had a detection in the thirteen most recent sampling events. During the 2021 reporting period, monitoring wells MW-61R, MW-73, and MW-79 were replaced in the monitoring program by AZPOC monitoring well MW-81. Vinyl chloride has not been detected in monitoring well MW-81 since sampling began in 2021.

Methylene chloride was identified as an SSL in monitoring well MW-61 beginning in 2011. Methylene chloride has not been detected in the entire West MSWLF unit HMSP monitoring network since 2011 including in monitoring well MW-61R. Therefore, as stated in the 2023 AWQR, a methylene chloride map is not included herein.

Section 4.0
Standards History Graphs

Standards history graphs for Appendix I metals are included in Appendix G. The prediction limits were generally below the associated statewide standards with the exception of cobalt and thallium.

A site-specific GWPS of 0.01691 mg/L for cobalt was established in the 2017 Annual Water Quality Report (Doc #91647) and approved in correspondence dated May 1, 2018 (Doc #92224).

The prediction limit for thallium increased during the 2022 reporting period after the first detection in the background dataset; the concentration in the March 2022 sampling event was 0.00078 mg/L above the GWPS. Thallium was not detected in the HMSP monitoring network during the 2023 reporting period and this reporting period. Additional information regarding the prediction limits and GWPSs can be found in Table 5.

Section 5.0
QA/QC Summary

The quality assurance/quality control (QA/QC) program for the West MSWLF unit follows similar protocols as included in the HMSP. Data validation procedures were performed on analytical results for laboratory quality control samples and a quality assurance assessment of the data was conducted as the data was generated. The QA review procedure provided documentation of the accuracy and precision of the analytical data and confirmed that the analyses were sufficiently sensitive to detect constituents at levels below regulatory standards when technically feasible with the laboratory method utilized. SCS then conducted QA/QC data validation of the produced data, which included a review of sample handling, analytical sensitivity, blanks, accuracy, and precision. A summary of the laboratory QA/QC and data validation can be found in Appendix B-1, Laboratory Analytical Data Sheets, and Appendix B-2, Data Validation Documentation, respectively.

Section 6.0
Data Evaluation and Summary

6.1 Statistical Evaluation

Detection Monitoring

Detection monitoring well 91-MW-14 is sampled annually and was sampled in June 2024 and statistically evaluated using interwell prediction limits compared to data from background monitoring wells MW-53 and MW-54. No SSIs were indicated.

Groundwater underdrain discharge monitoring point GU-6 was dry during the 2024 sampling events and groundwater underdrain discharge monitoring point GU-7 was dry during the October 2024 sampling events. No SSIs were indicated for GU-7 following the June 2024 sampling event.

Prediction limit summary tables and graphs for the 1st 2024 statistical evaluation are included in Attachment A of Appendix D, Statistical Method and Output. Current and historical analytical results are included in Attachment C-1.

Assessment Monitoring

Assessment monitoring wells 93-MW-32 and MW-62 are sampled annually and were sampled during the June 2024 sampling event. Monitoring wells 93-MW-32 and MW-62 were statistically evaluated using confidence intervals or confidence bands, as appropriate, and Mann-Kendall trend testing. No SSLs above the GWPS were identified. Summary tables and graphs for confidence intervals for the 1st 2024 statistical evaluation are included in Appendix D, Statistical Method and Output. Current and historical analytical results are included in Attachment C-1.

Attenuation Zone Point of Compliance (AZPOC)/Corrective Action

AZPOC monitoring well MW-81 was sampled during the 2024 sampling events. Monitoring well MW-81 was statistically evaluated using confidence intervals or confidence bands, as appropriate, and Mann-Kendall trend testing. No SSLs above the GWPS were identified. Summary tables and graphs for confidence intervals and Mann-Kendall trend testing for the 1st 2024 and 2nd 2024 statistical evaluation are included in Appendix D, Statistical Method and Output. Current and historical analytical results are included in Attachment C-1.

AMD Monitoring

An approved alternative source demonstration established that acid mine drainage (AMD), created by historical coal mining at the site, was the cause of elevated metals concentration for monitoring wells on the east side of the West MSWLF unit. To evaluate both the effect of the AMD and monitor for groundwater impact from the West MSWLF unit, samples from monitoring wells MW-39R, MW-40, 04-MW-56, MW-58, MW-59, MW-63R, MW-64, and MW-65 were analyzed for Appendix I, TSS, and AMD parameters during the June 2024 sampling event and Appendix I and TSS during the October 2024 sampling event.

Appendix I metals were analyzed by interwell and intrawell prediction limits for the AMD monitoring wells. If an SSI is indicated using both interwell and intrawell methods, the AMD data for the monitoring well will be reviewed. Zinc in monitoring well 04-MW-56 and barium in monitoring well MW-65 were indicated as SSIs using both interwell and intrawell evaluations.

For the AMD monitoring wells, organic parameters and sulfide were analyzed by confidence intervals or confidence bands, as appropriate, based on diagnostic statistical evaluation. No SSLs above the GWPS were identified. Summary tables and graphs for confidence intervals for the 1st and 2nd 2024

statistical evaluations are included in Appendix D, Statistical Method and Output. Current and historical analytical results for Appendix II parameters are included in Attachment C-1.

Historical and 2024 data for the AMD parameters alkalinity, aluminum, iron, manganese, pH, and sulfate are presented in Appendix C-4. An evaluation of AMD data is included in Section 6.3 below.

Source Characterization Monitoring

Monitoring wells 93-MW-31R, MW-61R, MW-73, and MW-79 were designated as source characterization monitoring wells and replaced as points of compliance in the HMSP monitoring network with AZPOC monitoring well MW-81. The source characterization monitoring wells were analyzed for Appendix I, TSS, and natural attenuation parameters total organic carbon, total iron, total manganese during the June 2024 sampling event and Appendix I, TSS, and natural attenuation parameter nitrate during the October 2024 sampling event. Trending of the Appendix I parameters was evaluated by Mann-Kendall evaluation. The evaluation indicated tetrachloroethene and trichloroethene in monitoring well MW-73 were decreasing at statistically significant rates at 99% confidence ($\alpha = 0.01$). Nickel in monitoring well MW-61R and cis-1,2-dichlorethene in monitoring well MW-81 were increasing at statistically significant rates at 99% confidence ($\alpha = 0.01$).

As shown on Table 11, there were 25 increasing trends indicated by a positive calculated Mann-Kendall statistic and 35 stable or decreasing trends indicated by a Mann-Kendall statistic of zero or less, which calculated to over 58% of the constituent-monitoring wells trends being stable or decreasing. A summary table and graphs of the Mann-Kendall trending evaluation are included in Appendix H. A summary of current and historical analytical results for the source wells is included in Appendix C-2.

Monitoring well MW-61R had historical SSLs for cobalt, cis-1,2-dichlorethene, methylene chloride, tetrachloroethene, trichloroethene, and vinyl chloride. During this reporting period, only cobalt and cis-1,2-dichloroethene of that list were detected, both at concentrations below the GWPSs.

Historical and 2024 data for natural attenuation parameters total organic carbon, nitrate, iron, manganese, and sulfate are presented in Appendix C-2. An evaluation of natural attenuation data is included in Section 6.4 below.

Corrective Action Monitoring

Eight corrective action monitoring wells, located near the southwest side of the West MSWLF unit, are sampled for selected parameters to monitor the status of the groundwater impact in the area. Corrective action monitoring wells MW-67, MW-71, MW-74, and MW-80 had insufficient water to produce samples during the June 2024 sampling event.

Arsenic is regularly detected in monitoring wells MW-71 and MW-74. Arsenic concentrations were above the GWPS in monitoring well MW-74 and below the GWPS in monitoring well MW-71 during the October 2024 sampling event. Arsenic has not been detected in monitoring wells MW-66, MW-67, and MW-68 since regular sampling began in 2020.

Cobalt detections are widespread, but no concentrations measured in 2022-2024 were greater than the 0.01691 mg/L site-specific GWPS.

Measured concentrations of VOCs above the GWPS have been generally infrequent. Monitoring well MW-80 had a concentration of vinyl chloride above the GWPS during the October 2024 sampling event; MW-80 did not produce a sample during the June 2024 sampling event.

The range of measured concentrations for the detected constituents in the corrective action monitoring wells during this reporting period is shown in Figure 5, Reporting Period Detection Summary – Corrective Action. Current and historical analytical results are included in Appendix C-3.

6.2 Data Evaluation

Groundwater monitoring for the West MSWLF unit consists of samples from monitoring wells encompassing the downgradient perimeters of the unit and two groundwater underdrain discharge points. Background monitoring well MW-53 is located east of the West MSWLF unit. The range of measured concentrations for the detected constituents in the HMSP monitoring wells during this reporting period is shown in Figure 4, Reporting Period Detection Summary – HMSP. The range of measured concentrations for the detected constituents in the source characterization and corrective action monitoring wells during this reporting period is shown in Figure 5, Reporting Period Detection Summary – Corrective Action.

The Monitoring Well Maintenance and Performance Revaluation Schedule is shown on the attached Table 3. Water levels and well depths measured during this reporting period, and whether the screened intervals of the monitoring wells were submerged or exposed to the atmosphere, are included in Table 4, Monitoring Well Performance and Maintenance Summary. A comparison of the change in flow rates is included in Table 4. An evaluation of groundwater/waste separation is also included in Table 4.

Monitoring wells 93-MW-32, MW-62, and MW-81 were statistically evaluated using interwell prediction limits, and AMD monitoring wells MW-39R, MW-40, 04-MW-56, MW-58, MW-59, MW-63R, MW-64, and MW-65 were statistically evaluated using interwell and intrawell prediction limits to establish background concentrations of the metal parameters for the monitoring network. The background concentrations are summarized in Table 5 and included in Tables 6 and 7 to compare to measured concentrations.

During this reporting period, site-wide maximum concentrations for two inorganic parameters each were measured in monitoring wells MW-40, MW-63R, MW-65, and MW-81. VOCs were measured in monitoring wells MW-40, MW-65, and MW-81. The detected VOCs did not exceed the GWPSs.

No site-wide maximum concentrations or VOCs were measured in monitoring wells 91-MW-14, 93-MW-32, MW-39R, 04-MW-56, MW-53, MW-58, MW-59, MW-62, and MW-64. Source characterization monitoring well analytical data was not considered in the identification of site-wide maximum concentrations.

6.3 Acid Mine Drainage Evaluation

Releases of AMD have low pH, high specific conductivity, high concentrations of iron, aluminum, and manganese, and low concentration of toxic heavy metals (Akcil and Koldas, 2004).

As included in the permit, most recently revised dated May 11, 2023 (Doc #106563), monitoring wells MW-39R, MW-40, 04-MW-56, MW-58, MW-59, MW-63R, MW-64, and MW-65 are analyzed on an annual basis for alkalinity, aluminum, iron, manganese, pH, and sulfate. The data indicated that iron, manganese, and sulfate were elevated, which is typical of AMD impact. Elevated aluminum concentrations are also typical of AMD impact; however, the aluminum concentrations were low, with only monitoring well MW-63R having a quantified detection during this reporting period. Alkalinity appeared to separate into two groups of wells. The lower concentration group, containing monitoring wells MW-40 and MW-58, had alkalinity concentrations 212 mg/L or less, while the higher concentration group, comprised of monitoring wells MW-39R, 04-MW-56, MW-59, MW-63R, MW-64, and MW-65, had concentrations greater than 421 mg/L.

Mann-Kendall trend evaluation at 80% confidence (α=0.2) was performed for AMD parameters alkalinity, aluminum, iron, manganese, sulfate, and pH. Apparent impact from acid mine drainage (AMD) conditions remained during this reporting period. The majority of trends for AMD indicator parameters were calculated to be stable at 80% confidence (α = 0.2), although there were also eight statistically significant decreasing trends and five statistically significant increasing trends at this low trend threshold.

Zinc in monitoring well 04-MW-56 was indicated as an SSI using both interwell and intrawell methods during the 1st 2024 statistical evaluation. However, it should be noted that the concentration measured during the June 2024 sampling event was the first quantified detection since 2020, and the October 2024 concentration was significantly lower than the June value and within the historical range. It is recommended to review future zinc values in monitoring well 04-MW-56. If elevated concentrations continue, an evaluation of the potential AMD impact on the measured concentration will be performed. The AMD parameters indicated a statistically significant increasing trend for alkalinity and statistically significant decreasing trends for iron and manganese. Sulfate and pH were generally stable.

Barium in monitoring well MW-65 was indicated as an SSI using both interwell and intrawell methods during the 2nd 2024 statistical evaluation. Although the 2024 barium concentrations in monitoring well MW-65 were elevated, it is recommended that additional data be collected to determine if the barium concentrations in monitoring well MW-65 remain elevated. If the barium concentrations remain elevated, then further review of potential AMD impact on the measured concentrations will be performed. The AMD parameters indicated a statistically significant increasing trend for alkalinity and a statistically significant decreasing trend for sulfate. Aluminum, iron, manganese, and pH were generally stable.

Annual sampling for the AMD parameters will continue as specified in the permit. The Mann-Kendall summary table is included in Appendix I.

6.4 Natural Attenuation Evaluation

Natural attenuation is frequently viewed in terms of primary lines of evidence and secondary lines of evidence. Primary lines of evidence are generally based on concentration trends of constituent data defined as declining, stable, or increasing. Declining or stable concentration trends would be an indication that natural attenuation is occurring. Secondary lines of evidence use geochemical indicators that monitor terminal electron acceptors. Both primary and secondary lines of evidence are discussed below.

Primary Evidence

Source monitoring wells 93-MW-31R, MW-61R, and MW-79 were analyzed for Appendix I, TSS, and natural attenuation parameters total organic carbon, iron, manganese, and sulfate during the June 2024 sampling event and Appendix I, TSS, and natural attenuation parameter nitrate during the October 2024 sampling event.

The trending of the Appendix I parameters in the source wells and AZPOC monitoring well MW-81 was evaluated using Mann-Kendall evaluation. The evaluation indicated tetrachloroethene and trichloroethene in monitoring well MW-73 were decreasing at statistically significant rates at 99% confidence ($\alpha = 0.01$). Nickel in monitoring well MW-61R and cis-1,2-dichlorethene in monitoring well MW-81 were increasing at statistically significant rates at 99% confidence ($\alpha = 0.01$). As shown in Table 11, there were 25 increasing trends indicated by a positive calculated Mann-Kendall statistic and 35 stable or decreasing trends indicated by a Mann-Kendall statistic of zero or less, which calculated to over 58% of the constituent-monitoring wells trends stable or decreasing. A summary of current and historical analytical results for the source wells is included in Appendix C-2.

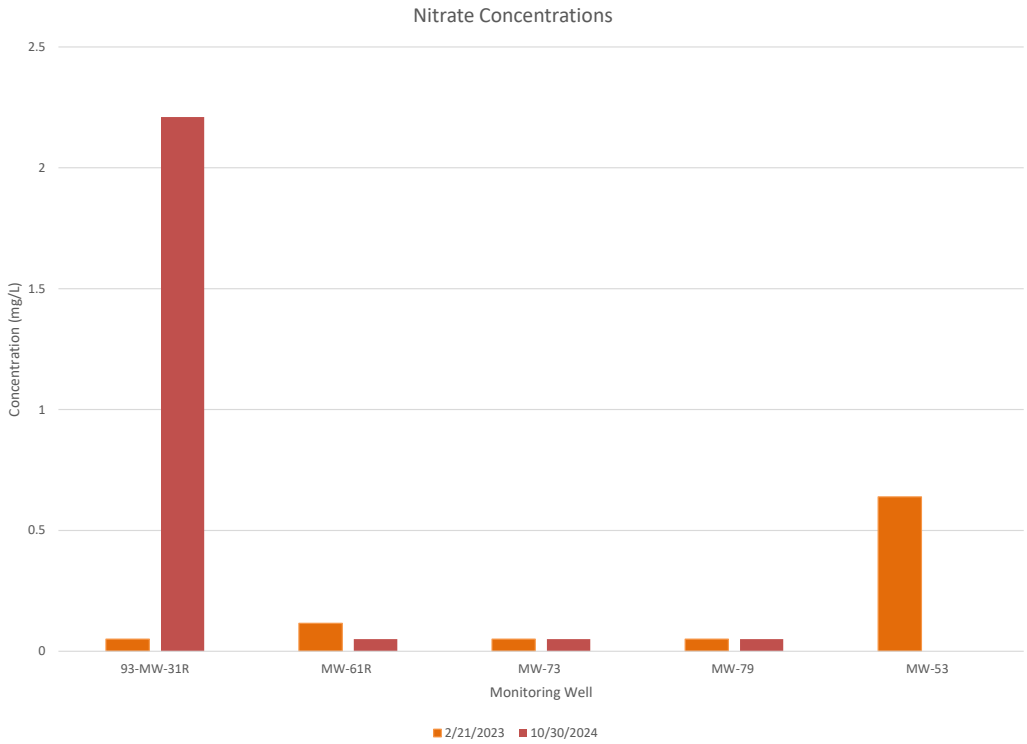
The two concentrations measured in 2024 for tetrachloroethene and trichloroethene in monitoring well MW-73 were the two lowest concentrations measured in the monitoring well in the period of record dating to 2014. With over 58% of the trends in the source characterization monitoring wells declining, and with the declining concentrations of several organic parameters as shown in the graphs in Appendix J, the primary evidence supports that natural attenuation is still occurring.

Secondary Evidence

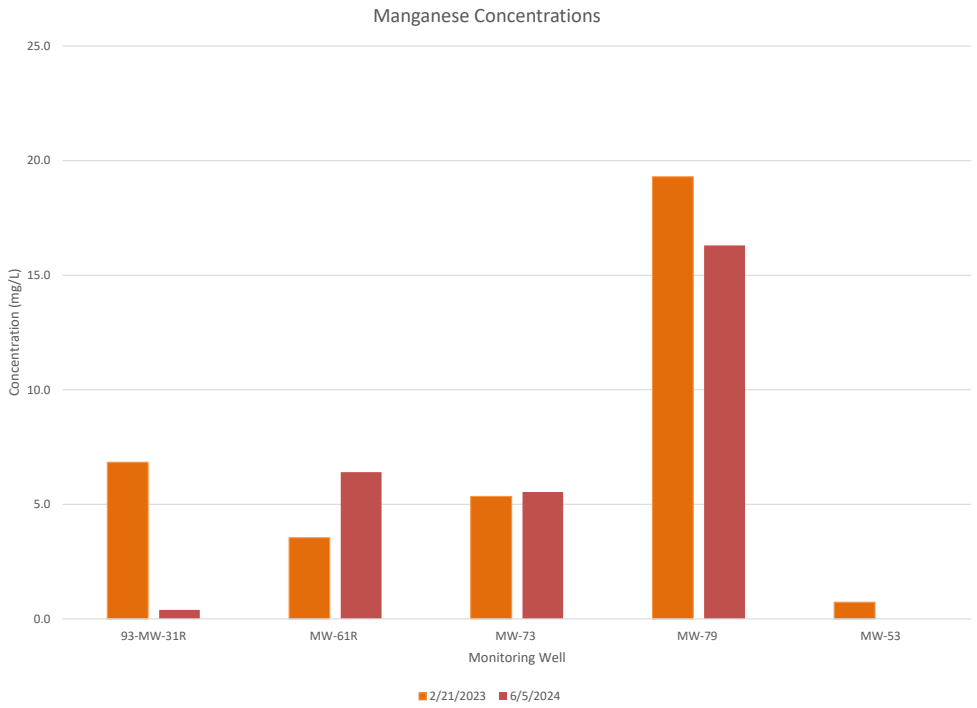
Nitrate, total manganese, total iron, sulfate, and total organic carbon (TOC) concentrations were utilized to evaluate secondary evidence of natural attenuation. These constituents, less TOC, constitute four electron acceptors that would be consumed by microbial activity in the presence of organics. The order of usage in terms of energy provided would be nitrate, manganese, iron, then sulfate. Their use as electron acceptors would result in increased concentrations of total manganese and total iron as their reduced forms are more soluble and decreased concentrations of nitrate and sulfate.

The following graphs illustrate the total manganese, total iron, and sulfate concentrations by well for the source characterization monitoring wells measured in June 2024 for 93-MW-31R, MW-61R, MW-73, and MW-79, nitrate data from October 2024, and the average of historical data for background monitoring well MW-53.

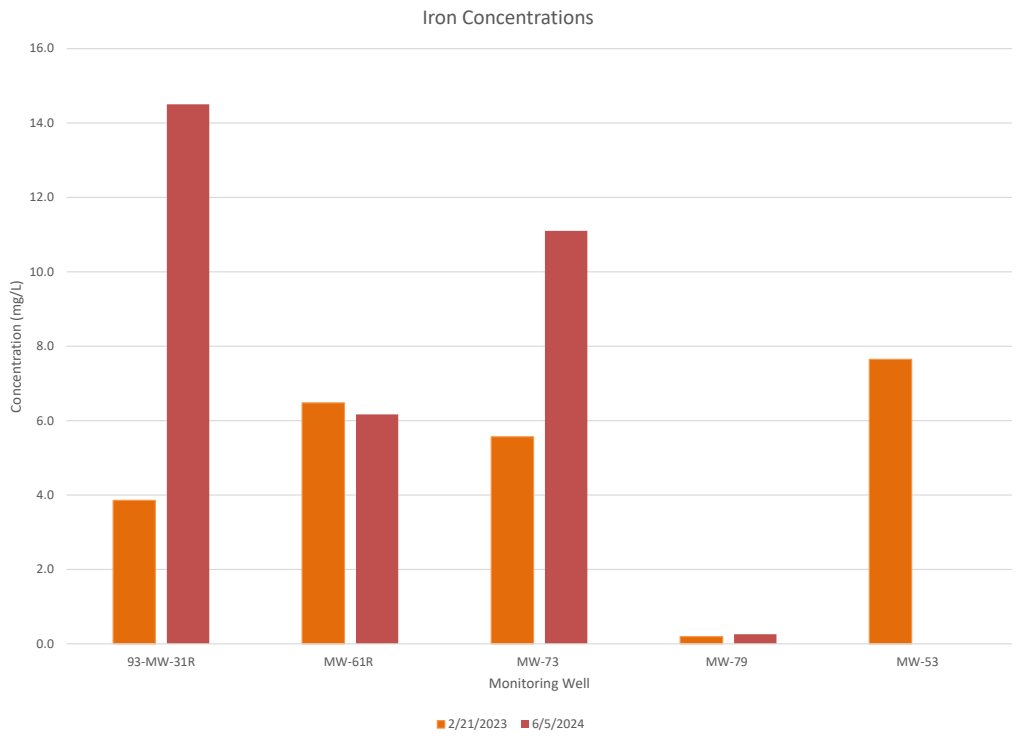
As mentioned above, nitrate would be the first electron acceptor used of the four evaluated. Generally, groundwater impacted with biodegradable compounds would be expected to have little to no nitrate present, if nitrate were originally present prior to the groundwater becoming impacted. The graph below indicates that nitrate is present in the background as represented here by monitoring well MW-53. The nitrate concentrations in the source characterization monitoring wells had non-detect nitrate concentrations with the exception of a trace concentration measured in monitoring well MW-61R in 2023 and a significantly elevated concentration measured in monitoring well 93-MW-31R during the 2024 sampling event. As the nitrate concentration during the 2023 sampling event in monitoring well 93-MW-31R was non-detect, it is unclear which sample is more representative; future sampling will help determine if one of the concentrations may be anomalous. Apart from the unexpected elevated concentration for 93-MW-31R, the results are as expected, as the monitoring wells with impact have less nitrate than background, indicating the nitrate is likely being consumed as an electron acceptor.



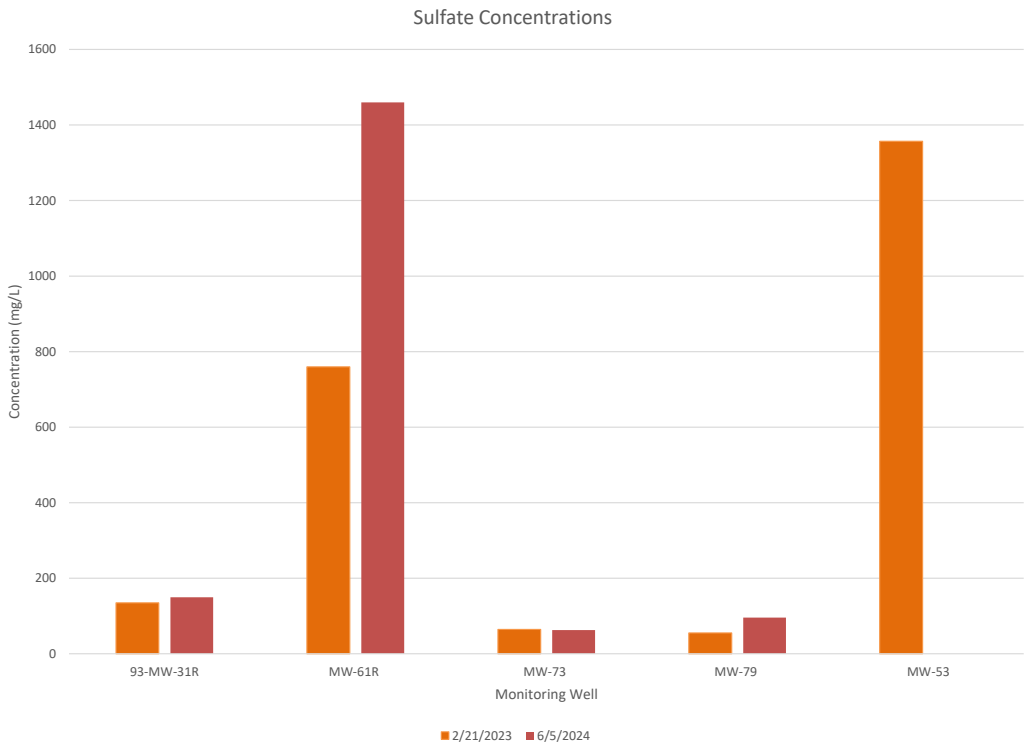
Manganese would be the second electron acceptor used of the four evaluated. The graph below indicates the elevated concentrations of total manganese in the source characterization monitoring wells that would be expected if microorganisms were using manganese as an electron acceptor. Each of the source monitoring wells had concentrations higher than background except for a lower concentration in the 2024 sample from monitoring well 93-MW-31R.



Iron would be the third electron acceptor used of the four evaluated. The graph below did not have the significant difference between background and source characterization monitoring wells seen for manganese. However, the 2024 measurements in monitoring wells 93-MW-31R and MW-73 were higher than background. These concentrations may increase as natural attenuation continues.

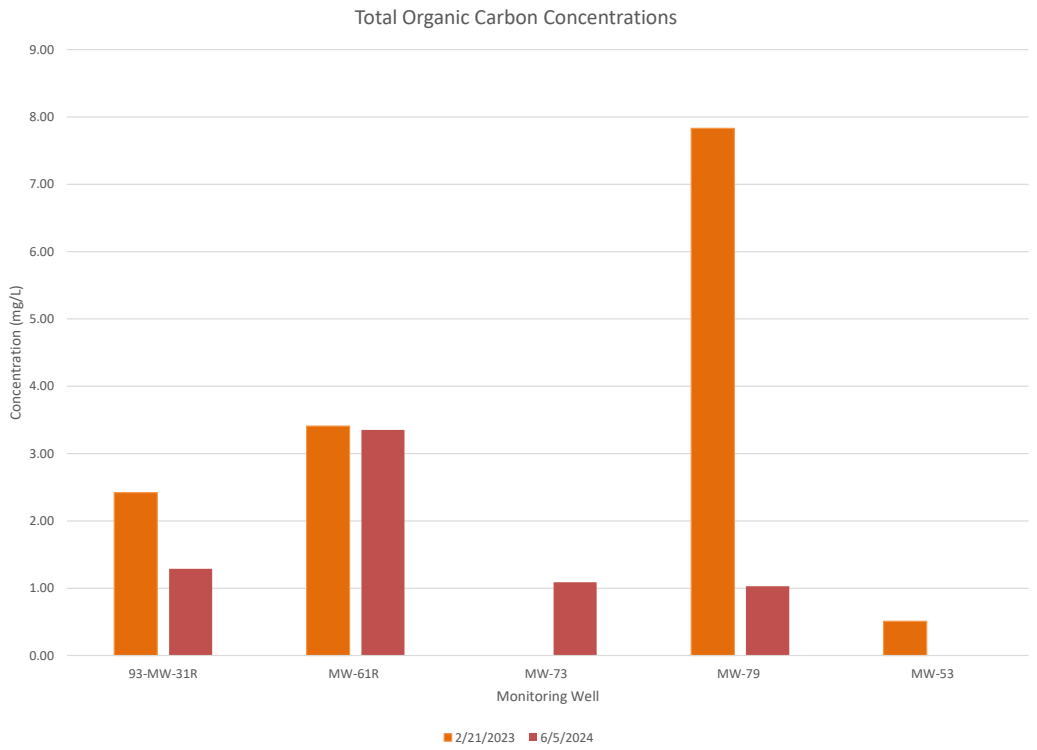


Sulfate would be the fourth electron acceptor used of the four evaluated. The graph below indicates sulfate concentrations below background in each of the source monitoring wells with the exception of the 2024 sample from monitoring well MW-61R. The lowered sulfate concentrations were the expectation as sulfate concentrations would be decreased if sulfate was being used as an electron acceptor.



The generally low concentrations of nitrate and sulfate and generally elevated concentrations of manganese and iron are the expected results of ongoing natural attenuation. The secondary evidence supports that natural attenuation is still occurring and generally stable.

Total organic carbon concentrations were analyzed. Concentrations above background indicate a carbon source present in the groundwater, primarily from landfill gas migration at the West MSWLF unit. Concentrations measured in 2023 and 2024 were within the range of historical concentrations for the source characterization monitoring wells except for the 2023 sample in monitoring well MW-79.


Total Organic Carbon Concentrations
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Concentration (mg/L)
93-MW-31R
MW-61R
MW-73
MW-79
MW-53
Monitoring Well
2/21/2023
6/5/2024

Section 7.0
Recommendations

7.1 Site Impact on Groundwater

Detection Monitoring

No SSIs were measured in detection monitoring well 91-MW-14 or groundwater underdrain discharge point GU-7 during this reporting period. Groundwater underdrain discharge point GU-6 was dry during both sampling events this reporting period and GU-7 was dry during the October 2024 sampling event.

Assessment Monitoring

No SSLs were measured in assessment monitoring wells 93-MW-32 and MW-62 during this reporting period.

AZPOC/Corrective Action Monitoring

Confidence intervals calculated for monitoring well MW-81 for each of the historical SSLs demonstrate that the upper confidence limit for each parameter is below the corresponding GWPS and the data represent that the upper confidence limit was likely below the GWPS for each parameter for the past four consecutive years. Confidence intervals were not calculated for those historical SSLs that have not been detected in MW-81: arsenic, methylene chloride, and vinyl chloride. As monitoring well MW-81 has satisfied the exit requirements of 567 IAC 113.10(9)*e*(2), the monitoring well will be moved from the corrective action monitoring program into the assessment monitoring program.

AMD Monitoring

No SSLs were measured for the organic parameters and sulfide in monitoring wells MW-39R, MW-40, 04-MW-56, MW-58, MW-59, MW-63R, MW-64, and MW-65 during this reporting period. Apparent impact from acid mine drainage (AMD) conditions remained during this reporting period. Zinc in monitoring well 04-MW-56 and barium in monitoring well MW-65 had SSIs indicated using both intrawell and interwell prediction limits. Continued monitoring is recommended to determine if the recent elevated zinc and barium concentrations continue to be observed.

Source Characterization Monitoring

Trending in the source wells indicated two statistically significant decreasing trends and two statistically significant increasing trends. Overall, over 58% of the analyzed trends were decreasing.

Corrective Action

Corrective action wells showed no clear trending for metal parameters, while VOC detections were largely infrequent. The only GWPS exceedance for a VOC during this reporting period was vinyl chloride in monitoring well MW-80.

7.2 Proposed Monitoring

Anticipated groundwater sampling for the 2025 reporting period is shown in Table 2.

7.3 Proposed Monitoring Well Changes

There are no proposed changes to the monitoring well network at this time.

Tables

Table 1
Monitoring Program Summary Table
2024 Annual Water Quality Report
West MSWLF Unit
Ottumwa-Wapello County Landfill
Permit No. 90-SDP-01-75P

Monitoring Well	Formation[1]	Current Monitoring Program (Fall 2023)	Change for next sampling event	Constituents with SSIs during the 2024 Reporting Period	Constituents with SSLs	Total # of Samples in each monitoring program		
						Detection inorganic #/organic #	Assessment inorganic #/organic #	Corrective Action inorganic #/organic #
Detection Monitoring Wells								
MW-53	Shale	Background	No change	None	Not applicable	14/16	-	-
91-MW-14	Clayey silt, shale	Detection	No change	None	Not applicable	14/28	-	-
GU-6	Not applicable	Detection	No change	None	Not applicable	8/8	-	-
GU-7	Not applicable	Detection	No change	None	Not applicable	8/8	-	-
Assessment Monitoring Wells								
91-MW-32	Clayey silt, clayey silty sand	Assessment	No change	Arsenic, Barium, Cadmium, Nickel	None	-	14/29	-
MW-62	Sandy clay	Assessment	No change	None	None	-	14/27	-
Attenuation Zone Point of Compliance (AZPOC)/Corrective Action Monitoring Well								
MW-81 (AZPOC)	Sand	Corrective Action	Assessment	Barium, Cadmium, Vanadium, Zinc, cis-1,2-Dichloroethene	None		9/9	-
Acid Mine Drainage Monitoring Wells								
MW-39R	Sandy silty clay, shale	AMD Detection	No change	None	None	-	19/37	-
MW-40	Sandy silty clay, shale	AMD Detection	No change	Acetone, Benzene, cis-1,2-Dichloroethene	None	-	19/37	-
04-MW-56	Sandy lean clay	AMD Detection	No change	Zinc	None	-	20/36	-
MW-58	Sandy silty clay, shale	AMD Detection	No change	None	None	-	19/36	-
MW-59	Sandy clay with sand and gravel seams	AMD Detection	No change	None	None	-	14/29	-
MW-63R	Shale	AMD Detection	No change	None	None	-	20/33	-
MW-64	Weathered shale	AMD Detection	No change	None	None	-	14/25	-
MW-65	Silty sandy clay, clayey sand	AMD Detection	No change	Barium, Benzene	None	-	18/36	-
Source Wells								
93-MW-31R	Sand	Source Characterization	No change	Not applicable	Not applicable	-	-	38/37
MW-61R	Sandy silty clay, silty sand	Source Characterization	No change	Not applicable	Not applicable	-	-	15/29
MW-73	Clayey sand, sandy clay	Source Characterization	No change	Not applicable	Not applicable	-	-	9/9
MW-79	Sandy silty clay, shale	Source Characterization	No change	Not applicable	Not applicable	-	-	11/11
Corrective Action Monitoring Wells								
MW-66	Sandy silty clay	Corrective Action						
MW-67	Clayey sand, sand	Corrective Action						
MW-68	Clayey sand, sand	Corrective Action						
MW-71	Clayey sand, silty sand, sand	Corrective Action						
MW-74	Clayey sand, sand	Corrective Action						
MW-75	Clayey sand, shale and sand	Corrective Action						
MW-78	Sandy silty clay, sand, sandy clay, shale	Corrective Action						
MW-80	Clayey sand, sandy clay, sand	Corrective Action						

Table 1
Monitoring Program Summary Table
2024 Annual Water Quality Report
West MSWLF Unit
Ottumwa-Wapello County Landfill
Permit No. 90-SDP-01-75P

Monitoring Well	Formation[1]	Current Monitoring Program (Fall 2023)	Change for next sampling event	Constituents with SSIs during the 2024 Reporting Period	Constituents with SSLs	Total # of Samples in each monitoring program		
						Detection inorganic #/organic #	Assessment inorganic #/organic #	Corrective Action inorganic #/organic #
Other monitoring points								
GWP-1	Not applicable	Groundwater/Waste Separation						
GWP-2	Not applicable	Groundwater/Waste Separation						
GWP-3	Not applicable	Groundwater/Waste Separation						
91-MW-6	Shale, sandstone	Water Level						
91-MW-7	Shale	Water Level						
MW-37	Unknown	Water Level						
91-MW-25	Unknown	Water Level						

(1) Obtained from screened interval on boring logs.

Notes:
SSI = Statistically Significant Increase above background.
SSL = Statistically Significant Level above groundwater protection standard.
AZPOC = Attenuation Zone Point of Compliance.

Comments:

1) As directed in Iowa DNR correspondence dated April 28, 2017 (Doc #89288), this report was prepared with non-low-flow inorganic data removed from statistical consideration. Samples collected since the beginning of low-flow sampling (which began with the August 2015 semi-annual sampling event) were used for analysis beginning with the 2nd 2017 semi-annual statistical evaluation.

2) The "Total # of Samples in each monitoring program" column represents inorganic samples collected since the initiation of low-flow sampling and the total samples collected for organic parameters. The samples are listed under the monitoring program of the monitoring point as of the end of this reporting period.

Table 2
Monitoring Program Implementation Schedule
2024 Annual Water Quality Report
West MSWLF Unit
Ottumwa-Wapello County Landfill
Permit No. 90-SDP-01-75P

Monitoring Point	Recent Sampling Dates and Constituents				Full Appendix II Sample Dates	
	June 2024 (1st 2024 Semi-Annual)	October 2024 (2nd 2024 Semi-Annual)	1st 2025 Semi-Annual	2nd 2025 Semi-Annual	Previously Collected	Next Event
Detection Monitoring Points						
MW-53	Appendix I, TSS		Appendix I, TSS		Not applicable	Not applicable
91-MW-14	Appendix I metals list, TSS		Appendix I metals list, TSS		Not applicable	Not applicable
GU-6	Not sampled (dry)	Not sampled (dry)	Appendix I, TSS	Appendix I, TSS	Not applicable	Not applicable
GU-7	Appendix I, TSS	Not sampled (dry)	Appendix I, TSS	Appendix I, TSS	Not applicable	Not applicable
Assessment Monitoring Wells						
93-MW-32	Appendix I metals list, TSS		Appendix I metals list, TSS		5/29/2012, 8/19/2013, 3/5/2018, 2/22/2023	2028
MW-62	Appendix II, TSS		Appendix I metals list, TSS		8/19/2013, 8/21/2014, 4/2/2019, 6/6/2024	2029
MW-81 (AZPOC)	Appendix I, TSS	Appendix I, TSS	Appendix I, TSS	Appendix I, TSS	10/31/2022, 7/26/2023	2028
Acid-Mine Drainage Monitoring Wells						
MW-39R	Appendix I, TSS, Sulfide, AMD	Appendix I, TSS Sulfide	Appendix I, TSS, Sulfide, AMD	Appendix I, TSS, Sulfide	5/29/2012, 8/19/2013, 3/6/2018, 2/22/2023	2028
MW-40	Appendix I, TSS, AMD	Appendix I, TSS	Appendix I, TSS, AMD	Appendix I, TSS	8/27/2009, 10/14/2010, 2/24/2011, 1/9/2017, 4/7/2021	2026
04-MW-56	Appendix I metals list, TSS, AMD	Appendix I metals list, TSS	Appendix I metals list, TSS, Appendix I VOCs, AMD	Appendix I metals list, TSS, Appendix I VOCs	5/29/2012, 8/19/2013, 3/5/2018, 2/22/2023	2028
MW-58	Appendix I, TSS, AMD	Appendix I, TSS	Appendix I, TSS, AMD	Appendix I, TSS	5/29/2012, 8/19/2013, 6/6/2018, 2/21/2023	2028
MW-59	Appendix I metals list, TSS, Sulfide, AMD		Appendix I metals list, TSS, Appendix I VOCs, Sulfide, AMD		12/21/2009, 10/14/2010, 2/24/2011, 1/9/2017, 4/7/2021	2026
MW-63R	Appendix I, TSS, Sulfide, AMD	Appendix I, TSS, Sulfide	Appendix I, TSS, Sulfide, AMD	Appendix I, TSS, Sulfide	2/6/2020, 4/7/2021	2026
MW-64	Appendix I metals list, TSS, AMD		Appendix I metals list, TSS, Appendix I VOCs, AMD		8/27/2009, 10/13/2011, 1/9/2017, 4/6/2021	2026
MW-65	Appendix I, TSS, Sulfide, AMD	Appendix I metals list, TSS, Appendix I VOCs, Sulfide	Appendix I metals list, TSS, Appendix I VOCs, Sulfide, AMD	Appendix I metals list, TSS, Appendix I VOCs, Sulfide	5/29/2012, 8/19/2013, 3/6/2018, 2/21/2023	2028
Source Monitoring Wells						
93-MW-31R	Appendix I, TSS, Natural Attenuation	Appendix I, TSS, Nitrate	Appendix I, TSS, Natural Attenuation	Appendix I, TSS	8/27/2009, 10/14/2010, 10/13/2011, 1/9/2017	Not applicable
MW-61R	Appendix I, TSS, Endosulfan I, Natural Attenuation	Appendix I, TSS, Nitrate	Appendix I, TSS, Natural Attenuation	Appendix I, TSS	8/27/2009, 10/14/2010, 2/24/2011, 10/22/2018	Not applicable
MW-73	Appendix I, TSS, Natural Attenuation	Appendix I, TSS, Nitrate	Appendix I, TSS, Natural Attenuation	Appendix I, TSS	Not applicable	Not applicable
MW-79	Appendix I, TSS, Natural Attenuation	Appendix I, TSS, Nitrate	Appendix I, TSS, Natural Attenuation	Appendix I, TSS	Not applicable	Not applicable

Table 2
Monitoring Program Implementation Schedule
2024 Annual Water Quality Report
West MSWLF Unit
Ottumwa-Wapello County Landfill
Permit No. 90-SDP-01-75P

Monitoring Point	Recent Sampling Dates and Constituents				Full Appendix II Sample Dates	
	June 2024 (1st 2024 Semi-Annual)	October 2024 (2nd 2024 Semi-Annual)	1st 2025 Semi-Annual	2nd 2025 Semi-Annual	Previously Collected	Next Event
Corrective Action Monitoring Wells						
MW-66	Arsenic, cobalt, TSS		Arsenic, cobalt, TSS		Not applicable	Not applicable
MW-67	Not sampled (insufficient water)	Arsenic, cobalt, TSS, PCE	Arsenic, cobalt, TSS, PCE	Arsenic, cobalt, TSS, PCE	Not applicable	Not applicable
MW-68	Arsenic, cobalt, TSS		Arsenic, cobalt, TSS		Not applicable	Not applicable
MW-71	Not sampled (insufficient water)	Arsenic, cobalt, TSS, cis-1,2-DCE, TCE	Arsenic, cobalt, TSS, cis-1,2-DCE, TCE	Arsenic, cobalt, TSS, cis-1,2-DCE, TCE	Not applicable	Not applicable
MW-74	Not sampled (insufficient water)	Arsenic, cobalt, TSS, benzene, cis-1,2-DCE, PCE, TCE, vinyl chloride	Arsenic, cobalt, TSS, benzene, cis-1,2-DCE, PCE, TCE, vinyl chloride	Arsenic, cobalt, TSS, benzene, cis-1,2-DCE, PCE, TCE, vinyl chloride	Not applicable	Not applicable
MW-75	Benzene, cis-1,2-DCE, PCE, TCE, vinyl chloride		Benzene, cis-1,2-DCE, PCE, TCE, vinyl chloride		Not applicable	Not applicable
MW-78	Cobalt, TSS, cis-1,2-DCE, TCE, PCE, vinyl chloride	Cobalt, TSS, cis-1,2-DCE, TCE, PCE, vinyl chloride	Cobalt, TSS, cis-1,2-DCE, TCE, PCE, vinyl chloride	Cobalt, TSS, cis-1,2-DCE, TCE, PCE, vinyl chloride	Not applicable	Not applicable
MW-80	Not sampled (insufficient water)	cis-1,2-DCE, vinyl chloride	cis-1,2-DCE, vinyl chloride	cis-1,2-DCE, vinyl chloride	Not applicable	Not applicable

TSS - Total Suspended Solids.
Appendix I metals list includes arsenic, barium, cadmium, copper, cobalt, lead, nickel, and zinc.
Natural Attenuation includes total organic carbon, nitrate, total iron, total manganese, and sulfate.
AMD - Acid Mine Drainage includes total alkalinity, total iron, total manganese, sulfate, and total aluminum.
cis-1,2-DCE - cis-1,2-Dichloroethene
TCE - Trichloroethene
PCE - Tetrachloroethene (perchloroethene)

Table 3
Monitoring Well Maintenance and Performance Re-Evaluation Schedule
2024 Annual Water Quality Report
West MSWLF Unit
Ottumwa-Wapello County Landfill
Permit No. 90-SDP-01-75P

Compliance with:	2021	2023	2024	2025	2026
567 IAC 113.10(2)"f"(1) high and low water levels	Completed	Completed	Included	Scheduled	Scheduled
567 IAC 113.10(2)"f"(2) changes in the hydrologic setting and flow paths	Completed	Completed	Included	Scheduled	Scheduled
567 IAC 113.10(2)"f"(3) well depths	Completed	Completed	Included	Scheduled	Scheduled
567 IAC 113.10(2)"f"(4) well recharge rates and chemistry			Included		Scheduled
Waste separation from ground water 113.6(2)i	Completed	Completed	Included	Scheduled	Scheduled

Table 4
Monitoring Well Performance and Maintenance Summary
2024 Annual Water Quality Report
West MSWLF Unit
Ottumwa-Wapello County Landfill
Permit No. 90-SDP-01-75P

Well	Top of casing	Top of Screen	Total Depth		Date of Measurements		Maximum Depth Discrepancy (ft)	Initial Flow Rate (L/min) Date	Recent Flow Rate (L/min) Date	% Change
					6/2024	10/2024				
MW-53	702.55	684.7	25.4	Groundwater Level (ft)	12.29	Not Sampled	-3.0			
				Groundwater Elevation (Ft MSL)	690.26	NA		0.080	0.133	66%
				Measured Well Depth (ft)	28.4	NA		8/14/2015	6/4/2024	
				Submerged screen	Y	NA				
MW-91-14	688.64	678.8	19.3	Groundwater Level (ft)	8.53	Not sampled	-0.3			
				Groundwater Elevation (Ft MSL)	680.11	NA		0.080	0.113	41%
				Measured Well Depth (ft)	19.6	NA		8/12/2015	6/4/2024	
				Submerged screen	Y	NA				
93-MW-31R	726.26	679.7	57.2	Groundwater Level (ft)	48.11	48.52	0.0			
				Groundwater Elevation (Ft MSL)	678.15	677.74		0.158	0.233	47%
				Measured Well Depth (ft)	57.2	57.2		10/4/2018	10/30/2024	
				Submerged screen	N	N				
93-MW-32	690.56	677.5	23.0	Groundwater Level (ft)	12.99	Not sampled	1.0			
				Groundwater Elevation (Ft MSL)	677.57	NA		0.150	0.133	-11%
				Measured Well Depth (ft)	22.0	NA		8/12/2015	6/4/2024	
				Submerged screen	Y	NA				
MW-39R	733.81	721.3	22.5	Groundwater Level (ft)	17.42	19.41	0.4			
				Groundwater Elevation (Ft MSL)	716.39	714.40		0.125	0.142	14%
				Measured Well Depth (ft)	22.1	22.3		8/12/2015	10/15/2024	
				Submerged screen	N	N				
MW-40	728.76	712.8	26.4	Groundwater Level (ft)	19.17	20.56	-0.1			
				Groundwater Elevation (Ft MSL)	709.59	708.20		0.080	0.142	78%
				Measured Well Depth (ft)	26.3	26.5		8/12/2015	10/15/2024	
				Submerged screen	N	N				
04-MW-56	691.00	683.5	17.5	Groundwater Level (ft)	12.19	12.88	-0.1			
				Groundwater Elevation (Ft MSL)	678.81	678.12		0.140	0.158	13%
				Measured Well Depth (ft)	17.4	17.6		8/12/2015	10/14/2024	
				Submerged screen	N	N				
MW-58	702.61	692.3	20.3	Groundwater Level (ft)	10.30	12.21	3.0			
				Groundwater Elevation (Ft MSL)	692.31	690.40		0.125	0.167	34%
				Measured Well Depth (ft)	17.3	17.6		8/12/2015	10/15/2024	
				Submerged screen	Y	N				
MW-59	699.36	689.0	20.4	Groundwater Level (ft)	13.00	Not sampled	3.0			
				Groundwater Elevation (Ft MSL)	686.36	NA		0.125	0.120	-4%
				Measured Well Depth (ft)	17.4	NA		8/12/2015	6/4/2024	
				Submerged screen	N	NA				
MW-61R	710.05	683.0	41.5	Groundwater Level (ft)	31.22	31.62	-0.8			
				Groundwater Elevation (Ft MSL)	678.83	678.43		0.150	0.167	11%
				Measured Well Depth (ft)	42.0	42.3		4/5/2016	10/30/2024	
				Submerged screen	N	N				
MW-62	747.29	732.4	24.9	Groundwater Level (ft)	4.10	Not sampled	-0.1			
				Groundwater Elevation (Ft MSL)	743.19	NA		0.100	0.120	20%
				Measured Well Depth (ft)	25.0	NA		8/13/2015	6/6/2024	
				Submerged screen	Y	NA				
MW-63R	735.06	717.1	27.8	Groundwater Level (ft)	12.95	13.72	0.1			
				Groundwater Elevation (Ft MSL)	722.11	721.34		0.080	0.150	88%
				Measured Well Depth (ft)	27.7	27.8		8/14/2015	10/15/2024	
				Submerged screen	Y	Y				
MW-64	697.76	669.8	43.0	Groundwater Level (ft)	16.50	Not sampled	1.2			
				Groundwater Elevation (Ft MSL)	681.26	NA		0.100	0.127	27%
				Measured Well Depth (ft)	41.8	NA		8/12/2015	6/4/2024	
				Submerged screen	Y	NA				
MW-65	698.09	678.2	17.9	Groundwater Level (ft)	9.16	11.64	-3.1			
				Groundwater Elevation (Ft MSL)	688.93	686.45		0.080	0.150	88%
				Measured Well Depth (ft)	20.8	21.0		8/12/2015	10/15/2024	
				Submerged screen	Y	Y				
MW-73	729.57	687.7	51.9	Groundwater Level (ft)	40.81	40.41	1.1			
				Groundwater Elevation (Ft MSL)	688.76	689.16		0.100	0.225	125%
				Measured Well Depth (ft)	50.8	50.8		8/12/2015	10/30/2024	
				Submerged screen	Y	Y				
MW-79	737.22	689.0	63.2	Groundwater Level (ft)	36.30	36.86	10.8			
				Groundwater Elevation (Ft MSL)	700.92	700.36		0.125	0.150	20%
				Measured Well Depth (ft)	52.4	52.9		8/12/2015	10/30/2024	
				Submerged screen	Y	Y				
MW-81	699.60	679.3	35.3	Groundwater Level (ft)	22.49	23.10	2.2			
				Groundwater Elevation (Ft MSL)	677.11	676.50		0.158	0.142	-10%
				Measured Well Depth (ft)	33.1	33.4		11/5/2020	10/14/2024	
				Submerged screen	N	N				

Notes:

1) Well depths are measured every 5 years for wells with dedicated sampling pumps. The next measurement for monitoring wells 93-MW-31R, MW-61R, and MW-73 will occur in 2025.

2) The change in flow rates is likely due to adjustment of pumping rates as provided in the groundwater SOP for low-flow sampling rather than a change in well functionality.

3) The monitoring wells generally produced samples during this reporting period, although the drought did result in some wells with insufficient water to sample. However, it appears unlikely siltation is affecting the ability of the wells to consistently produce samples.

NM: Not measured. Monitoring well depth is measured every five years.

NA: Not Available.

Table 4
Monitoring Well Performance and Maintenance Summary
2024 Annual Water Quality Report
West MSWLF Unit
Ottumwa-Wapello County Landfill
Permit No. 90-SDP-01-75P

Groundwater/Waste Separation

Well		Date of Measurements	
		6/2024	10/2024
GWP-1	Bottom of waste (feet MSL)	737.45	
	Groundwater Elevation (feet MSL)	Dry	Dry
	Separation distance compliant?	Yes	Yes
GWP-2	Bottom of waste (feet MSL)	738.88	
	Groundwater Elevation (feet MSL)	Dry	Dry
	Separation distance compliant?	Yes	Yes
GWP-3	Bottom of waste (feet MSL)	738.88	
	Groundwater Elevation (feet MSL)	Dry	Dry
	Separation distance compliant?	Yes	Yes

Groundwater piezometer GWP-1 was dry during the June and October 2024 sampling events, indicating the required groundwater separation was maintained.

The engineered groundwater separation distance for the Phase 2 Cell monitored by GWP-2 is approximately 3 feet. The analysis to calculate the separation was included in correspondence dated April 29, 2013 (Doc #76776). As the piezometer was dry during this reporting period, the required separation distance was maintained.

Groundwater piezometer GWP-3 was dry during the June and October 2024 sampling events, indicating the required groundwater separation was maintained.

Table 5
Background and GWPS Summary Tables
2024 Annual Water Quality Report
West MSWLF Unit
Ottumwa-Wapello County Landfill
Permit No. 90-SDP-01-75P

Interwell Background/GWPS (MW-53/MW-54)

Constituent	Units	Samples	Detections	Min	Max	Mean	Background Level	Statistical Test	GWPS	Source
Antimony (Sb)	mg/L	23	3	0.000184*	0.00256	0.00072	0.00256	PL (NP)	0.006	MCL
Arsenic (As)	mg/L	23	4	0.000455*	0.00208	0.00100	0.00208	PL (NP)	0.01	MCL
Barium (Ba)	mg/L	23	23	0.01120	0.02920	0.02019	0.03158	PL (P)	2	MCL
Beryllium (Be)	mg/L	23	3	0.000167*	0.000864*	0.00049	0.00086	PL (NP)	0.004	MCL
Cadmium (Cd)	mg/L	23	13	0.000042*	0.00100	0.00024	0.00089	PL (P)	0.005	MCL
Chromium (Cr)	mg/L	23	1	0.0025 (1/2 RL)	0.00339*	0.00254	0.00339	PL (NP)	0.1	MCL
Cobalt (Co)	mg/L	23	20	0.000046*	0.01200	0.00229	0.01581	PL (P)	0.01671	SSS
Copper (Cu)	mg/L	23	7	0.000562*	0.00837	0.00257	0.00837	PL (NP)	1.3	MCL
Lead (Pb)	mg/L	23	6	0.000218*	0.00232	0.00049	0.00232	PL (NP)	0.015	MCL
Nickel (Ni)	mg/L	23	20	0.00175*	0.03200	0.00747	0.03050	PL (P)	0.1	SWS
Selenium (Se)	mg/L	23	2	0.000985*	0.0044*	0.00241	0.00440	PL (NP)	0.05	MCL
Silver (Ag)	mg/L	23	3	0.000207*	0.000958*	0.00047	0.00096	PL (NP)	0.1	SWS
Thallium (Tl)	mg/L	23	1	0.0005 (1/2 RL)	0.00278	0.00064	0.00278	PL (NP)	0.00278	SSS
Vanadium (V)	mg/L	23	1	0.000637*	0.0025 (1/2 RL)	0.00242	0.00250	PL (NP)	0.035	SWS
Zinc (Zn)	mg/L	23	3	0.005 (1/2 RL)	0.03770	0.00972	0.03770	PL (NP)	2	SWS

Intrawell Background/GWPS (GU-6)

Constituent	Units	Samples	Detections	Min	Max	Mean	Background Level	Statistical Test	GWPS	Source
Antimony (Sb)	mg/L	8	2	0.0005 (1/2 RL)	0.00245	0.00118	0.00245	PL (NP)	0.006	MCL
Arsenic (As)	mg/L	8	4	0.001 (1/2 RL)	0.00670	0.00220	0.01054	PL (P)	0.01054	SSS
Barium (Ba)	mg/L	8	8	0.03490	0.14800	0.06226	0.14800	PL (NP)	2	MCL
Beryllium (Be)	mg/L	8	2	0.000362*	0.00156	0.00062	0.00156	PL (NP)	0.004	MCL
Cadmium (Cd)	mg/L	8	8	0.00013	0.00081	0.00033	0.00124	PL (P)	0.005	MCL
Chromium (Cr)	mg/L	8	2	0.0025 (1/2 RL)	0.01400	0.00473	0.01400	PL (NP)	0.1	MCL
Cobalt (Co)	mg/L	8	8	0.00200	0.01320	0.00953	0.02649	PL (P)	0.02649	SSS
Copper (Cu)	mg/L	8	3	0.0025 (1/2 RL)	0.01140	0.00422	0.01140	PL (NP)	1.3	MCL
Lead (Pb)	mg/L	8	4	0.000152*	0.00498	0.00141	0.01354	PL (P)	0.015	MCL
Nickel (Ni)	mg/L	8	8	0.02460	0.08090	0.04300	0.12500	PL (P)	0.125	SSS
Selenium (Se)	mg/L	8	8	0.00115*	0.00754	0.00382	0.01079	PL (P)	0.05	MCL
Silver (Ag)	mg/L	8	1	0.0005 (1/2 RL)	0.00101	0.00056	0.00101	PL (NP)	0.1	SWS
Thallium (Tl)	mg/L	8	1	0.0005 (1/2 RL)	0.00306	0.00082	0.00306	PL (NP)	0.00306	SSS
Vanadium (V)	mg/L	8	3	0.0025 (1/2 RL)	0.02230	0.00641	0.02230	PL (NP)	0.035	SWS
Zinc (Zn)	mg/L	8	8	0.0157*	0.06980	0.03654	0.11870	PL (P)	2	SWS

Intrawell Background/GWPS (GU-7)

Constituent	Units	Samples	Detections	Min	Max	Mean	Background Level	Statistical Test	GWPS	Source
Antimony (Sb)	mg/L	8	1	0.0005 (1/2 RL)	0.004 (1/2 RL)	0.00139	0.00400	PL (NP)	0.006	MCL
Arsenic (As)	mg/L	8	7	0.000854*	0.00424	0.00254	0.00814	PL (P)	0.01	MCL
Barium (Ba)	mg/L	8	8	0.01350	0.03340	0.02073	0.04650	PL (P)	2	MCL
Beryllium (Be)	mg/L	8	1	0.0005 (1/2 RL)	0.002 (1/2 RL)	0.00076	0.00200	PL (NP)	0.004	MCL
Cadmium (Cd)	mg/L	8	3	0.00005 (1/2 RL)	0.00075	0.00024	0.00075	PL (NP)	0.005	MCL
Chromium (Cr)	mg/L	8	1	0.00135*	0.01 (1/2 RL)	0.00329	0.01000	PL (NP)	0.1	MCL
Cobalt (Co)	mg/L	8	8	0.00846	0.24700	0.06173	0.47310	PL (P)	0.4731	SSS
Copper (Cu)	mg/L	8	1	0.00219*	0.01 (1/2 RL)	0.00340	0.01000	PL (NP)	1.3	MCL
Lead (Pb)	mg/L	8	1	0.00018	0.00025 (1/2 RL)	0.00024	0.00025	PL (NP)	0.015	MCL
Nickel (Ni)	mg/L	8	8	0.03350	0.48300	0.12788	1.01300	PL (P)	1.013	SSS
Selenium (Se)	mg/L	8	1	0.0025 (1/2 RL)	0.01 (1/2 RL)	0.00428	0.01000	PL (NP)	0.05	MCL
Silver (Ag)	mg/L	8	1	0.0005 (1/2 RL)	0.002 (1/2 RL)	0.00083	0.00200	PL (NP)	0.1	SWS
Thallium (Tl)	mg/L	8	1	0.0005 (1/2 RL)	0.00302	0.00082	0.00302	PL (NP)	0.00302	SSS
Vanadium (V)	mg/L	8	1	0.0015*	0.01 (1/2 RL)	0.00363	0.01000	PL (NP)	0.035	SWS
Zinc (Zn)	mg/L	8	4	0.01 (1/2 RL)	0.25700	0.05416	0.58490	PL (P)	2	SWS

Notes:

Background levels based on calculated prediction limits or the reporting limit, as applicable. Table information based on the 2nd 2024 statistical evaluation.

* - Indicates J flag. The concentration is above the method detection limit but below the reporting limit. The concentration is estimated.

Acronyms/Abbreviations:

RL = Reporting Limit
GWPS = Groundwater Protection Standard
DQR = Double Quantification Rule
SSS = Site-Specific GWPS
SWS = Statewide Standard
PL = Prediction Limit
MCL = EPA Maximum Contaminant Level
NP = Non-Parametric
P = Parametric

1) Water quality results and effectiveness of the statistical data evaluation criteria: Statistical evaluations consist of prediction limits, double quantification rule, and confidence intervals/confidence bands, as appropriate. Data from the background wells is not used for development of the confidence intervals or confidence bands.

2) Changes to the previous statistical method during reporting period: There were no changes to the statistical method during this reporting period.

3) Justification for data exclusion: Inorganic data collected prior to the implementation of low-flow sampling in August 2015 was excluded from statistical consideration beginning with the 2nd 2017 statistical evaluation.

Table 6
Summary of Well/Detected Constituent Pairs With No Previous SSIs
2024 Annual Water Quality Report
West MSWLF Unit
Ottumwa-Wapello County Landfill
Permit No. 90-SDP-01-75P

Well	Constituent	Units	Most recent result	Background Standard
93-MW-32	Cadmium	mg/L	0.0011	0.00089
MW-81	Cadmium	mg/L	0.000197*	0.00089
	Vanadium	mg/L	0.00519	0.00250
	Zinc	mg/L	0.0611	0.03770
MW-40	Acetone	µg/L	<10	<10
04-MW-56	Zinc	mg/L	0.0238	0.03770
MW-65	Barium	mg/L	0.399	0.03158

Comments:

* J flag - Concentration is below the reporting limit but above the method detection limit; the concentration is estimated.

This table represents constituent/well pairs with indicated SSIs during the 2024 reporting period that did not have indicated SSIs during the 2023 reporting period.

1) Problems with the current detection network: None.

2) Schedule to implement remedies: Not applicable - completed.

3) Alternative constituent or sample frequency changes: The corrective action groundwater monitoring program (CAMP) was approved in the permit renewal dated January 15, 2021 (Doc #99596). The CAMP specified alternative constituent lists and sampling frequencies.

4) Significant changes to calculated prediction limits: None.

5) Resampling strategy: Retesting is performed on a 1-of-2 retesting scheme.

6) Data exclusion justification: Inorganic data collected prior to the implementation of low-flow sampling in August 2015 was excluded from statistical consideration beginning with the 2nd 2017 statistical evaluation.

Table 7
Summary Table of Ongoing and Newly Identified SSIs
2024 Annual Water Quality Report
West MSWLF Unit
Ottumwa-Wapello County Landfill
Permit No. 90-SDP-01-75P

							Sample Dates		
Well	**Constituent**	**Units**	**Most Recent Result**	**Background Standard**	**Lower Confidence Limit**	**GWPS**	**Initial Exceedance**	**Resample(s)**	**5th Background Sample**
93-MW-32	Arsenic	mg/L	0.0039	0.00208	0.0021	0.01	6/4/2024	NA	12/16/2008
	Barium	mg/L	0.0627	0.03158	0.0538	2	6/4/2024	NA	12/16/2008
	Cadmium	mg/L	0.0011	0.00089	0.0001655	0.005	6/4/2024	NA	12/16/2008
	Nickel	mg/L	0.0802	0.03050	0.004385	0.1	6/4/2024	NA	12/16/2008
MW-81	Barium	mg/L	0.0735	0.03158	0.0579	2	6/4/2024	NA	10/31/2022
	Cadmium	mg/L	0.000197*	0.00089	0.000062	0.005	6/4/2024	NA	10/31/2022
	cis-1,2-Dichloroethene	µg/L	1.72	<1	Theil-Sen	70	2/21/2023	NA	10/31/2022
	Vanadium	mg/L	0.00519	0.00250	0.0025	0.035	6/4/2024	NA	10/31/2022
	Zinc	mg/L	0.0611	0.03770	0.01	2	6/4/2024	NA	10/31/2022
MW-40	Acetone	µg/L	<10	<10	4.56	6300	6/4/2024	NA	12/16/2008
	Benzene	µg/L	0.882	<0.5	0.7184	5	8/27/2009	NA	12/16/2008
	cis-1,2-Dichloroethene	µg/L	4.17	<1	3.337	70	8/27/2009	NA	12/16/2008
04-MW-56	Zinc	mg/L	0.0238	0.03770	AMD	2	6/4/2024	NA	12/16/2008
MW-65	Barium	mg/L	0.399	0.03158	AMD	2	10/14/2024	NA	12/16/2008
	Benzene	µg/L	2.06	<0.5	0.6148	5	8/8/2012	NA	12/16/2008

Shaded rows denote constituent/well pairs with SSIs indicated in 2024 but not in 2023. Unshaded rows denote constituent/well pairs with SSIs indicated during both the 2023 and 2024 reporting periods.

* J flag - Concentration is below the reporting limit but above the method detection limit; the concentration is estimated.

Theil-Sen - The confidence limits were not calculated due to a statistically significant trend.

AMD - Confidence intervals not calculated for inorganic parameters due to an alternative source demonstration of impact from acid mine drainage on inorganic concentrations.

NA - Not applicable. Retesting is not applicable to monitoring wells in this monitoring program.

1) Problems with the current assessment network: None.
2) Proposed remedies: Not applicable - completed.
3) Approved alternative constituent or sample frequency changes: Alternative constituents and frequencies are summarized in Table 2 (Doc #98166).
4) Plume delineation strategies: Impact delineation monitoring wells are shown on Figure 1.
5) Property owner notifications: Property owners west of 165th Avenue across from the West MSWLF unit were notified in October 2013 and May 2020 of detected chlorinated VOCs adjacent to their properties.

Table 8
Summary Table of Ongoing and Newly Identified SSLs
2024 Annual Water Quality Report
West MSWLF Unit
Ottumwa-Wapello County Landfill
Permit No. 90-SDP-01-75P

Well	Constituent	Units	Most recent result	Upper Confidence Limit	GWPS	Initial Exceedance	Upper Confidence Limit Below GWPS					
							1st Year		2nd Year		3rd Year	
MW-81												
	Arsenic	mg/L	<0.002	NA	0.01	2018	4/2021	8/2021	3/2022	6/2022	2/2023	7/2023
	Cobalt	mg/L	0.000074	0.00324	0.01671	2009, 2019*	4/2021	8/2021	3/2022	6/2022	2/2023	7/2023
	Benzene	µg/L	<0.5	NA	5	2009	4/2021	8/2021	3/2022	6/2022	2/2023	7/2023
	cis-1,2-Dichloroethene	µg/L	1.72	TS	70	2009	4/2021	8/2021	3/2022	6/2022	2/2023	7/2023
	Methylene Chloride	µg/L	<5	NA	5	2011	4/2021	8/2021	3/2022	6/2022	2/2023	7/2023
	Tetrachloroethene	µg/L	0.483*	1.127	5	2009, 2019*	4/2021	8/2021	3/2022	6/2022	2/2023	7/2023
	Trichloroethene	µg/L	0.617*	NA	5	2009, 2019*	4/2021	8/2021	3/2022	6/2022	2/2023	7/2023
	Vinyl Chloride	µg/L	<1	NA	2	2009, 2019*	4/2021	8/2021	3/2022	6/2022	2/2023	7/2023

Notes:

1) Previous SSLs in monitoring wells 93-MW-31R, MW-61R, MW-73, and MW-79 are no longer present as these source wells have been replaced in the HMSP by attenuation zone point of compliance monitoring well MW-81.

2) * - The initial exceedances occurred in MW-61R in 2009 and in monitoring well MW-73 (and MW-79 for vinyl chloride) in 2019.

3) As specified in IAC 567-113.10(9)*e* (2), concentrations of Appendix II constituents have not exceeded the groundwater protection standard(s) for a period of three consecutive years in monitoring well MW-81 as shown in the table.

4) The requirements of IAC 567-113.10(9)*e* (1) of compliance with the GWPSs at all points within the plume of contamination that lie beyond the groundwater monitoring well system are not complete due to measured concentrations above the GWPS for vinyl chloride in corrective action monitoring well MW-80 (Appendix C-3).

5) NA - Not applicable. Confidence limits were not calculated as the constituent was not detected quantitatively in MW-81 in the period shown.

6) TS - Theil-Sen. The confidence limits were not calculated due to a statistically significant trend. The entire upper confidence band is below the GWPS.

Table 9
Summary of Groundwater Chemistry
2024 Annual Water Quality Report
West MSWLF Unit
Ottumwa-Wapello County Landfill
Permit No. 90-SDP-01-75P

The Summary of Groundwater Chemistry for the HMSP monitoring wells is located in Appendix C-1.

The Summary of Groundwater Chemistry for the source monitoring wells is located in Appendix C-2.

The Summary of Groundwater Chemistry for the corrective action monitoring wells is located in Appendix C-3.

The Summary of Groundwater Chemistry for acid mine drainage parameters is located in Appendix C-4.

Table 10
Historical SSI and SSL
2024 Annual Water Quality Report
West MSWLF Unit
Ottumwa-Wapello County Landfill
Permit No. 90-SDP-01-75P

Key

SSI - Statistically Significant Increase above background
SSL - Statistically Significant Level above groundwater protection standards

Well	Constituent	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020	Spring 2021	Fall 2021	Spring 2022	Fall 2022	Spring 2023	Fall 2023	Spring 2024	Fall 2024
Detection Monitoring Points															
91-MW-14*	None														NS
GU-6**	None													NS	NS
GU-7**	Benzene														NS
	cis-1,2-Dichloroethene														NS
Assessment Monitoring Wells															
93-MW-32*	Arsenic														NS
	Barium														NS
	Cadmium														NS
	Nickel														NS
	2-Butanone														NS
	Acetone														NS
	Toluene														NS
MW-62*	None														NS
Acid Mine Drainage Monitoring Wells															
MW-39R	Cobalt														
MW-40	Cobalt														
	1,1-Dichloroethane														
	Acetone														
	Benzene														
	cis-1,2-Dichloroethene														
	Vinyl Chloride														
04-MW-56	Cobalt														
MW-58	None														
MW-59	1,1-Dichloroethane														
	Acetone														
	Benzene														
MW-63R	Cadmium														
	Cobalt														
	Nickel														
	Zinc														
MW-64	1,1-Dichloroethane														
MW-65	Arsenic														
	Barium														
	1,1-Dichloroethane														
	Benzene														
	Chloroethane														
	cis-1,2-Dichloroethene														
AZPOC Monitoring Well															
MW-81	Barium														
	Cadmium														
	Vanadium														
	Zinc														
	cis-1,2-Dichloroethene														
	Tetrachloroethene														

Table 10
Historical SSI and SSL
2024 Annual Water Quality Report
West MSWLF Unit
Ottumwa-Wapello County Landfill
Permit No. 90-SDP-01-75P

Key

SSI - Statistically Significant Increase above background

SSL - Statistically Significant Level above groundwater protection standards

Well	Constituent	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020	Spring 2021	Fall 2021	Spring 2022	Fall 2022	Spring 2023	Fall 2023	Spring 2024	Fall 2024
Source Characterization Monitoring Wells															
93-MW-31R	Arsenic	■	■	■	■	■	■								
MW-61R	Cobalt			■	■	■	■								
	Benzene	■	■	■	■	■	■								
	cis-1,2-Dichloroethene	■	■	■	■	■	■								
	Methylene Chloride	■	■	■	■	■	■								
	Tetrachloroethene	■	■	■	■	■	■								
	Trichloroethene	■	■	■	■	■	■								
	Vinyl Chloride	■	■	■	■	■	■								
MW-73	Cobalt				■	■	■								
	Tetrachloroethene				■	■	■								
	Trichloroethene				■	■	■								
	Vinyl Chloride				■	■	■								
MW-79	Vinyl Chloride				■	■	■								

Comments:

Before 2024, indicated SSIs for inorganic parameters that were not confirmed were not included in this table. Beginning in 2024. indicated SSIs that were not confirmed are included on this table.

A detected organic parameter is considered an SSI for the purposes of this table.

NS - Not sampled. Beginning in 2024, monitoring points were marked as NS if they were dry or are sampled annually.

* - Monitoring well is sampled annually.

** - Groundwater underdrain discharge monitoring points are frequently dry.

Table 11
Corrective Action Trend Analysis
2024 Annual Water Quality Report
West MSWLF Unit
Ottumwa-Wapello County Landfill
Permit No. 90-SDP-01-75P

Well	Constituent	Trend	Calculated S	Critical S	Total N
Statistically Significant Trends in Source Wells (including AZPOC well MW-81)					
MW-61R	Nickel	Increasing	27	21	8
MW-73	Tetrachloroethene	Decreasing	-24	-21	8
	Trichloroethene	Decreasing	-28	-21	8
MW-81 (AZPOC)	cis-1,2-Dichloroethene	Increasing	24	21	8

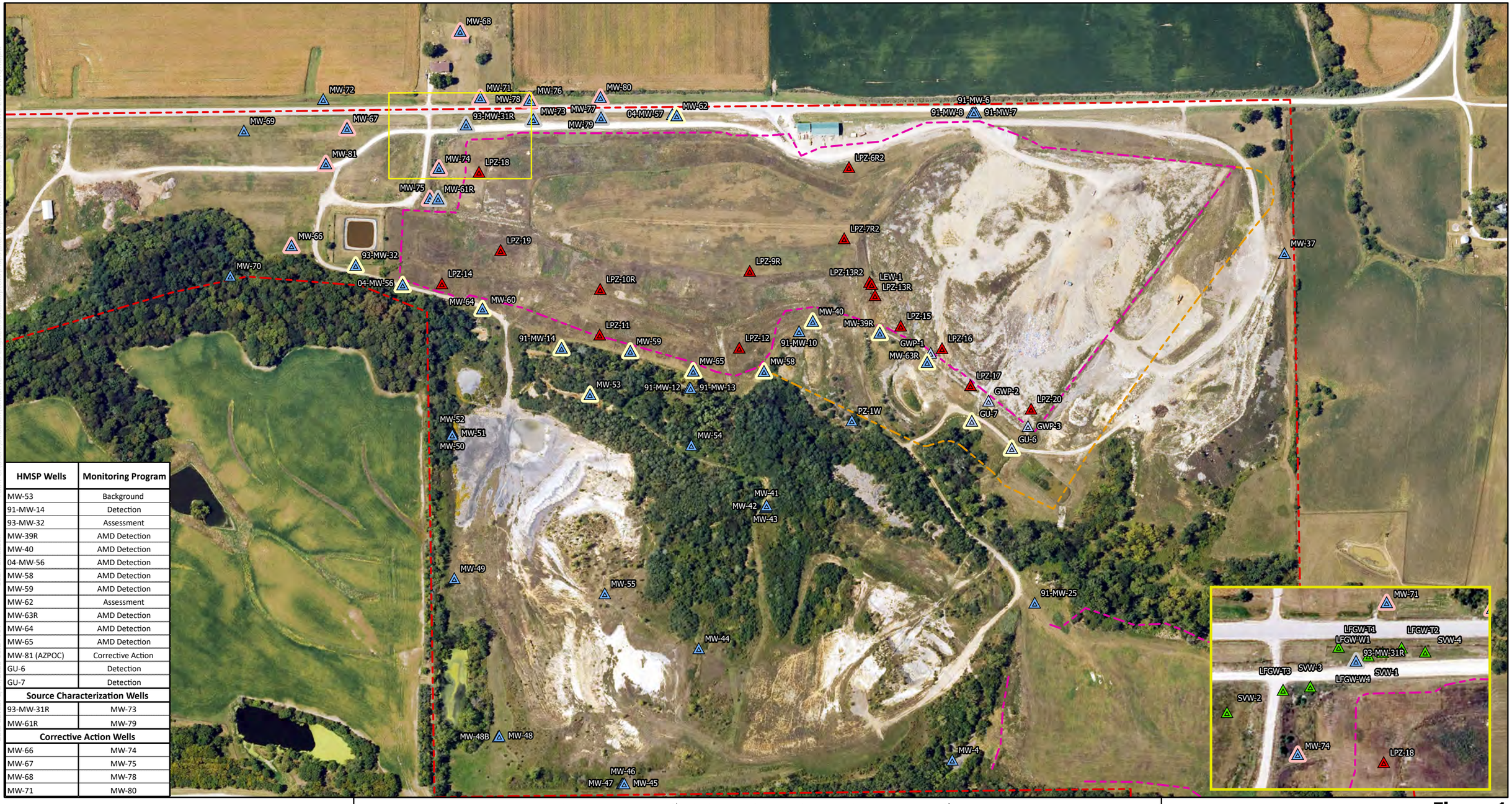
Overall Trends of Detected Appendix I Constituents in Source Wells						
	93-MW-31R	MW-61R	MW-73	MW-79	MW-81 (AZPOC)	Total
Increasing (S = >0):	2	8	3	4	8	25
Decreasing (S = ≤0):	9	2	13	10	1	35

Over 58% of the trends are stable or decreasing.
A summary table and graphs are included in Appendix K.

Notes:
N - Number of Samples
S - Mann-Kendall Statistic

Comments:
1) The approved remedy is monitored natural attenuation and subsurface gas venting (Doc #98166).
2) A subsurface landfill gas venting system in the southwestern corner of the site is addressing organic groundwater impact.

Figures



HMSP Wells	Monitoring Program
MW-53	Background
91-MW-14	Detection
93-MW-32	Assessment
MW-39R	AMD Detection
MW-40	AMD Detection
04-MW-56	AMD Detection
MW-58	AMD Detection
MW-59	AMD Detection
MW-62	Assessment
MW-63R	AMD Detection
MW-64	AMD Detection
MW-65	AMD Detection
MW-81 (AZPOC)	Corrective Action
GU-6	Detection
GU-7	Detection
Source Characterization Wells	
93-MW-31R	MW-73
MW-61R	MW-79
Corrective Action Wells	
MW-66	MW-74
MW-67	MW-75
MW-68	MW-78
MW-71	MW-80

SCS ENGINEERS
environmental consultants and contractors

Approved Monitoring Network

Figure 1

Legend

- HMSP Monitoring Well
- Corrective Action Monitoring Well
- Source Monitoring Well
- HMSP Groundwater Underdrain
- Monitoring Well
- Groundwater Underdrain
- Leachate Monitoring Point
- Approximate Property Boundary
- Approximate Waste Boundary
- Approximate Future Waste Boundary

Ottumwa-Wapello County Landfill
Ottumwa, IA
Project No: 27223157.25
Drawing Date: February 2025

Overview Map Scale

0 80 160 320 Feet

0 287.5 575 1,150 Feet

W S N E

Esri, CGIAR, USGS, Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS, USDA NAIP, Iowa State University GIS Facility

Groundwater Contours

Figure 2

Legend

- Approximate Groundwater Contours Based on Measurments Taken June 4-6, 2024
- Monitoring Well
- Groundwater Underdrain
- Leachate Monitoring Point
- Approximate Property Boundary
- Approximate Waste Boundary
- Approximate Future Waste Boundary
- Groundwater Underdrain

Ottumwa-Wapello County Landfill
Ottumwa, IA
Project No: 27223157.25
Drawing Date: February 2025

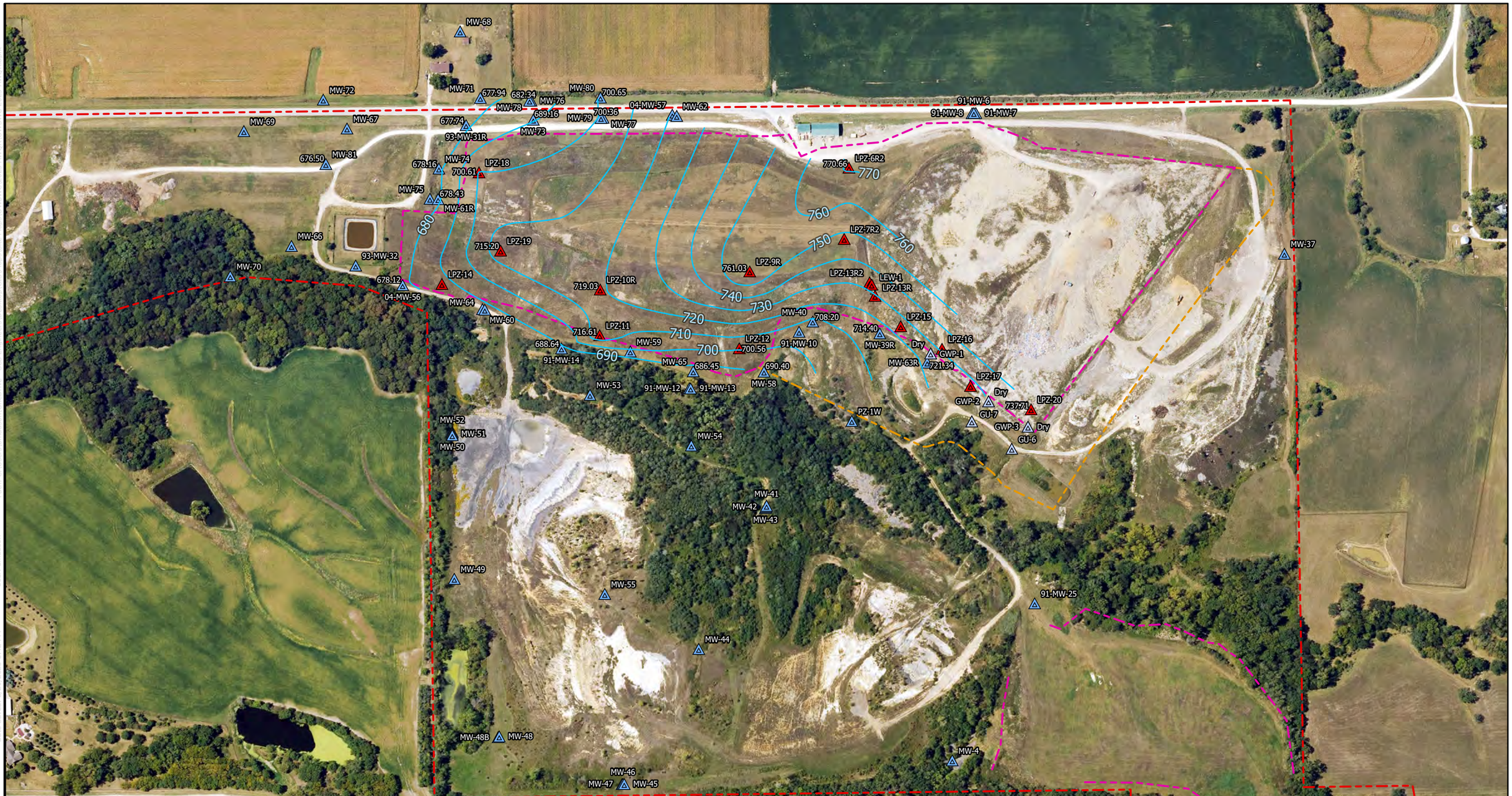
W S N E

0 287.5 575 1,150 Feet

SCS ENGINEERS
environmental consultants and contractors

Esri, CGIAR, USGS, Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS, USDA NAIP, Iowa State University GIS Facility

Path: C:\Users\lmadison\OneDrive - SCS Engineers\Desktop\GIS\Maps\Site Maps\OWSWC\2023 AWOR\OWSWC-2023-AWOR.aprx
User: lmadison
Date Saved: 2/24/2025 10:37 AM



Groundwater and Leachate Contours

Figure 3

Legend

- Approximate Groundwater/ Leachate Contours Based on Measurments Taken on October 14-15, 2024 and October 30-31, 2024
- Monitoring Well
- Groundwater Underdrain
- Leachate Monitoring Point
- Approximate Property Boundary
- Approximate Waste Boundary
- Approximate Future Waste Boundary

Ottumwa-Wapello County Landfill
Ottumwa, IA
Project No: 27223157.25
Drawing Date: February 2025

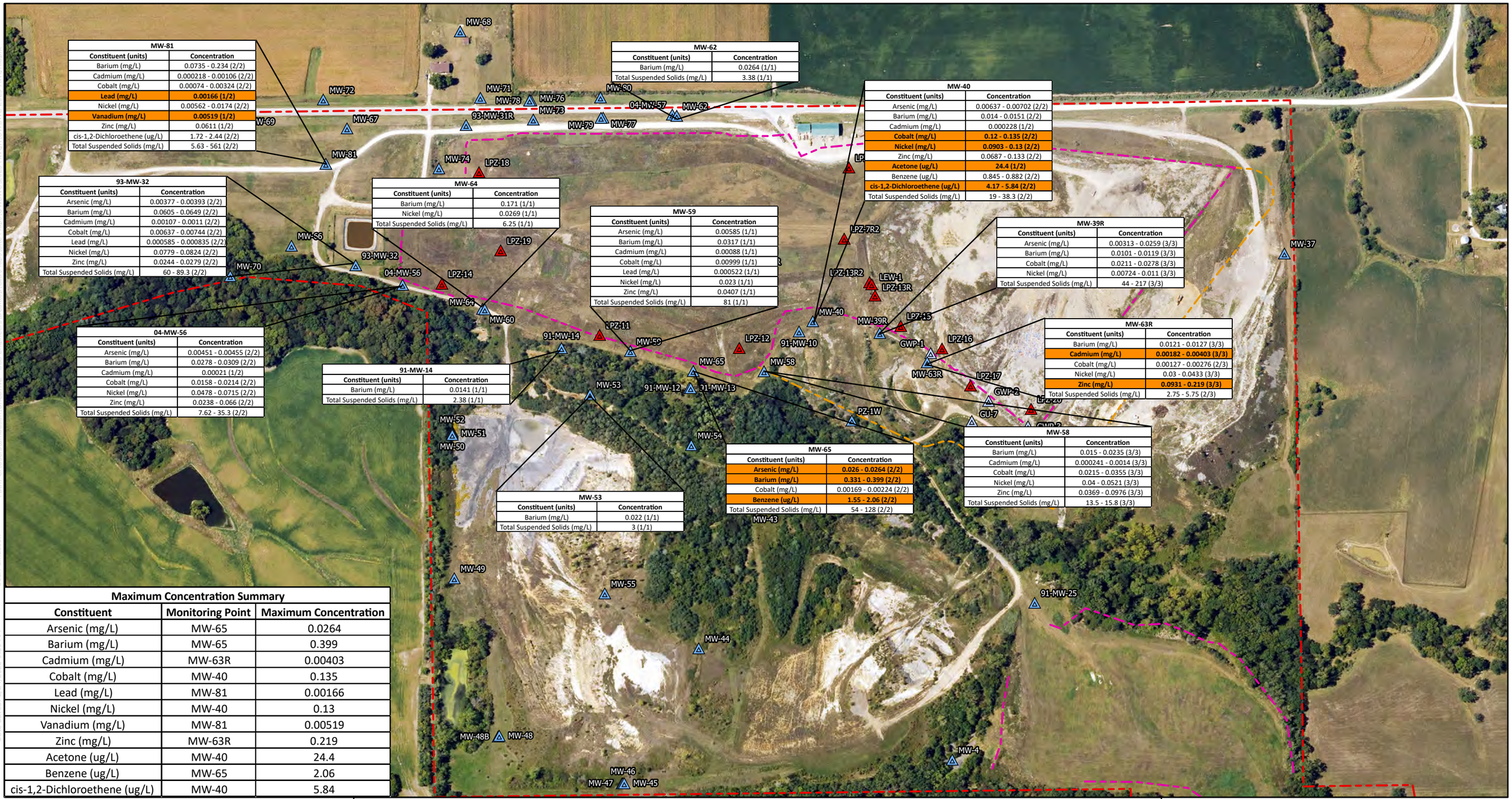
W S N E

0 287.5 575 1,150 Feet

SCS ENGINEERS
environmental consultants and contractors

Esri, CGIAR, USGS, Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS, USDA NAIP, Iowa State University GIS Facility

Path: C:\Users\lmadison\OneDrive - SCS Engineers\Desktop\GIS\Maps\SWC\2023 AWOR\SWC-2023-AWOR.aprx
User: lmadison
Date Saved: 2/21/2025 6:42 PM



MW-81	
Constituent (units)	**Concentration**
Barium (mg/L)	0.0735 - 0.234 (2/2)
Cadmium (mg/L)	0.000218 - 0.00106 (2/2)
Cobalt (mg/L)	0.00074 - 0.00324 (2/2)
Lead (mg/L)	**0.00166 (1/2)**
Nickel (mg/L)	0.00562 - 0.0174 (2/2)
Vanadium (mg/L)	**0.00519 (1/2)**
Zinc (mg/L)	0.0611 (1/2)
cis-1,2-Dichloroethene (ug/L)	1.72 - 2.44 (2/2)
Total Suspended Solids (mg/L)	5.63 - 561 (2/2)

MW-62	
Constituent (units)	**Concentration**
Barium (mg/L)	0.0264 (1/1)
Total Suspended Solids (mg/L)	3.38 (1/1)

MW-40	
Constituent (units)	**Concentration**
Arsenic (mg/L)	0.00637 - 0.00702 (2/2)
Barium (mg/L)	0.014 - 0.0151 (2/2)
Cadmium (mg/L)	0.000228 (1/2)
Cobalt (mg/L)	**0.12 - 0.135 (2/2)**
Nickel (mg/L)	**0.0903 - 0.13 (2/2)**
Zinc (mg/L)	0.0687 - 0.133 (2/2)
Acetone (ug/L)	**24.4 (1/2)**
Benzene (ug/L)	0.845 - 0.882 (2/2)
cis-1,2-Dichloroethene (ug/L)	**4.17 - 5.84 (2/2)**
Total Suspended Solids (mg/L)	19 - 38.3 (2/2)

93-MW-32	
Constituent (units)	**Concentration**
Arsenic (mg/L)	0.00377 - 0.00393 (2/2)
Barium (mg/L)	0.0605 - 0.0649 (2/2)
Cadmium (mg/L)	0.00107 - 0.0011 (2/2)
Cobalt (mg/L)	0.00637 - 0.00744 (2/2)
Lead (mg/L)	0.000585 - 0.000835 (2/2)
Nickel (mg/L)	0.0779 - 0.0824 (2/2)
Zinc (mg/L)	0.0244 - 0.0279 (2/2)
Total Suspended Solids (mg/L)	60 - 89.3 (2/2)

MW-64	
Constituent (units)	**Concentration**
Barium (mg/L)	0.171 (1/1)
Nickel (mg/L)	0.0269 (1/1)
Total Suspended Solids (mg/L)	6.25 (1/1)

MW-59	
Constituent (units)	**Concentration**
Arsenic (mg/L)	0.00585 (1/1)
Barium (mg/L)	0.0317 (1/1)
Cadmium (mg/L)	0.00088 (1/1)
Cobalt (mg/L)	0.00999 (1/1)
Lead (mg/L)	0.000522 (1/1)
Nickel (mg/L)	0.023 (1/1)
Zinc (mg/L)	0.0407 (1/1)
Total Suspended Solids (mg/L)	81 (1/1)

MW-39R	
Constituent (units)	**Concentration**
Arsenic (mg/L)	0.00313 - 0.0259 (3/3)
Barium (mg/L)	0.0101 - 0.0119 (3/3)
Cobalt (mg/L)	0.0211 - 0.0278 (3/3)
Nickel (mg/L)	0.00724 - 0.011 (3/3)
Total Suspended Solids (mg/L)	44 - 217 (3/3)

04-MW-56	
Constituent (units)	**Concentration**
Arsenic (mg/L)	0.00451 - 0.00455 (2/2)
Barium (mg/L)	0.0278 - 0.0309 (2/2)
Cadmium (mg/L)	0.00021 (1/2)
Cobalt (mg/L)	0.0158 - 0.0214 (2/2)
Nickel (mg/L)	0.0478 - 0.0715 (2/2)
Zinc (mg/L)	0.0238 - 0.066 (2/2)
Total Suspended Solids (mg/L)	7.62 - 35.3 (2/2)

MW-63R	
Constituent (units)	**Concentration**
Barium (mg/L)	0.0121 - 0.0127 (3/3)
Cadmium (mg/L)	**0.00182 - 0.00403 (3/3)**
Cobalt (mg/L)	0.00127 - 0.00276 (2/3)
Nickel (mg/L)	0.03 - 0.0433 (3/3)
Zinc (mg/L)	**0.0931 - 0.219 (3/3)**
Total Suspended Solids (mg/L)	2.75 - 5.75 (2/3)

91-MW-14	
Constituent (units)	**Concentration**
Barium (mg/L)	0.0141 (1/1)
Total Suspended Solids (mg/L)	2.38 (1/1)

MW-65	
Constituent (units)	**Concentration**
Arsenic (mg/L)	**0.026 - 0.0264 (2/2)**
Barium (mg/L)	**0.331 - 0.399 (2/2)**
Cobalt (mg/L)	0.00169 - 0.00224 (2/2)
Benzene (ug/L)	**1.55 - 2.06 (2/2)**
Total Suspended Solids (mg/L)	54 - 128 (2/2)

MW-58	
Constituent (units)	**Concentration**
Barium (mg/L)	0.015 - 0.0235 (3/3)
Cadmium (mg/L)	0.000241 - 0.0014 (3/3)
Cobalt (mg/L)	0.0215 - 0.0355 (3/3)
Nickel (mg/L)	0.04 - 0.0521 (3/3)
Zinc (mg/L)	0.0369 - 0.0976 (3/3)
Total Suspended Solids (mg/L)	13.5 - 15.8 (3/3)

MW-53	
Constituent (units)	**Concentration**
Barium (mg/L)	0.022 (1/1)
Total Suspended Solids (mg/L)	3 (1/1)

Maximum Concentration Summary		
Constituent	**Monitoring Point**	**Maximum Concentration**
Arsenic (mg/L)	MW-65	0.0264
Barium (mg/L)	MW-65	0.399
Cadmium (mg/L)	MW-63R	0.00403
Cobalt (mg/L)	MW-40	0.135
Lead (mg/L)	MW-81	0.00166
Nickel (mg/L)	MW-40	0.13
Vanadium (mg/L)	MW-81	0.00519
Zinc (mg/L)	MW-63R	0.219
Acetone (ug/L)	MW-40	24.4
Benzene (ug/L)	MW-65	2.06
cis-1,2-Dichloroethene (ug/L)	MW-40	5.84

Reporting Period Detection Summary

Legend

- Monitoring Well
- Groundwater Underdrain
- Leachate Monitoring Point
- Approximate Property Boundary
- Approximate Waste Boundary
- Approximate Future Waste Boundary

Ottumwa-Wapello County Landfill
Ottumwa, IA
Project No: 27223157.25
Drawing Date: February 2025

Figure 4

W S N E

0 287.5 575 1,150 Feet

SCS ENGINEERS
environmental consultants and contractors

Earl, COMAR, USGS, Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS, USDA/NAIP, Iowa State University GIS Facility

Path: C:\Users\bmadson\OneDrive - SCS Engineers\Desktop\GIS\Maps\Site Maps\OWSWC\2023 AWOR\OWSWC-2023-AWOR.aprx
User: bmadson
Date Saved: 2/24/2025 9:39 AM

MW-68	
Constituent (units)	Concentration
Cobalt (mg/L)	0.00298 (1/1)
Total Suspended Solids (mg/L)	15.5 (1/1)

MW-71	
Constituent (units)	Concentration
Arsenic (mg/L)	0.00406 (1/1)
Cobalt (mg/L)	0.00305 (1/1)
Total Suspended Solids (mg/L)	153 (1/1)

MW-78	
Constituent (units)	Concentration
Cobalt (mg/L)	0.0122 - 0.0171 (2/2)
cis-1,2-Dichloroethene (ug/L)	1.34 - 2.34 (2/2)
Tetrachloroethene (ug/L)	1.01 - 1.05 (2/2)
Total Suspended Solids (mg/L)	13.3 - 164 (2/2)

93-MW-31R	
Constituent (units)	Concentration
Arsenic (mg/L)	0.0131 (1/2)
Barium (mg/L)	0.0577 - 0.0598 (2/2)
Cadmium (mg/L)	0.000515 - 0.000736 (2/2)
Cobalt (mg/L)	0.00187 - 0.00309 (2/2)
Lead (mg/L)	0.000937 - 0.00151 (2/2)
Nickel (mg/L)	0.0109 (1/2)
cis-1,2-Dichloroethene (ug/L)	1.5 (1/2)
Total Suspended Solids (mg/L)	65.7 - 85 (2/2)

MW-80	
Constituent (units)	Concentration
cis-1,2-Dichloroethene (ug/L)	12.5 (1/1)
Vinyl chloride (ug/L)	7.56 (1/1)

MW-74	
Constituent (units)	Concentration
Arsenic (mg/L)	0.0299 (1/1)
Cobalt (mg/L)	0.0108 (1/1)
Benzene (ug/L)	0.778 (1/1)
cis-1,2-Dichloroethene (ug/L)	52.9 (1/1)
Trichloroethene (ug/L)	2.97 (1/1)
Vinyl chloride (ug/L)	1.51 (1/1)
Total Suspended Solids (mg/L)	42 (1/1)

MW-73	
Constituent (units)	Concentration
Arsenic (mg/L)	0.00519 - 0.0116 (2/2)
Barium (mg/L)	0.0812 - 0.0995 (2/2)
Cadmium (mg/L)	0.024 - 0.107 (2/2)
Cobalt (mg/L)	0.0546 - 0.0639 (2/2)
Copper (mg/L)	0.00518 - 0.0165 (2/2)
Lead (mg/L)	0.00111 - 0.00283 (2/2)
Nickel (mg/L)	0.0263 - 0.0275 (2/2)
Zinc (mg/L)	0.0824 - 0.383 (2/2)
1,1-Dichloroethane (ug/L)	3.32 - 3.5 (2/2)
Benzene (ug/L)	0.514 (1/2)
cis-1,2-Dichloroethene (ug/L)	37.5 - 38.7 (2/2)
Tetrachloroethene (ug/L)	1.77 - 2.36 (2/2)
Trichloroethene (ug/L)	4.2 - 5.02 (2/2)
Vinyl chloride (ug/L)	3.18 - 3.66 (2/2)
Total Suspended Solids (mg/L)	81 - 239 (2/2)

MW-79	
Constituent (units)	Concentration
Barium (mg/L)	0.113 - 0.114 (2/2)
Cadmium (mg/L)	0.0108 - 0.0235 (2/2)
Cobalt (mg/L)	0.00324 - 0.00371 (2/2)
Lead (mg/L)	0.000839 - 0.00127 (2/2)
Nickel (mg/L)	0.0304 - 0.0309 (2/2)
Zinc (mg/L)	0.0606 - 0.175 (2/2)
1,1-Dichloroethane (ug/L)	2.89 - 3.65 (2/2)
cis-1,2-Dichloroethene (ug/L)	35.7 - 38.2 (2/2)
Vinyl chloride (ug/L)	5.19 - 6.36 (2/2)
Total Suspended Solids (mg/L)	21.3 - 60 (2/2)

MW-66	
Constituent (units)	Concentration
Total Suspended Solids (mg/L)	2.75 (1/1)

MW-61R	
Constituent (units)	Concentration
Arsenic (mg/L)	0.007 - 0.00754 (2/2)
Barium (mg/L)	0.0147 - 0.0171 (2/2)
Cadmium (mg/L)	0.000277 - 0.000484 (2/2)
Cobalt (mg/L)	0.0103 - 0.0135 (2/2)
Copper (mg/L)	0.00711 (1/2)
Lead (mg/L)	0.00172 - 0.00314 (2/2)
Nickel (mg/L)	0.0335 - 0.0434 (2/2)
Zinc (mg/L)	0.0233 - 0.0332 (2/2)
cis-1,2-Dichloroethene (ug/L)	12.5 - 16 (2/2)
Total Suspended Solids (mg/L)	139 - 292 (2/2)

MW-68, MW-71, MW-78, MW-72, MW-67, MW-91, MW-74, LPZ-18, MW-75, MW-61R, MW-66, MW-70, MW-14, MW-64, MW-60, 93-MW-31R, MW-73, MW-76, MW-80, 94-MW-57, MW-62, MW-79, MW-77, 91-MW-6, 91-MW-8, 91-MW-7, LPZ-9R, LPZ-13R2, LEW-1, LPZ-13R, MW-37, MW-40, MW-39R, LPZ-15, LPZ-12, 91-MW-10, GWP-1, LPZ-16, MW-63R, LPZ-17, GWP-2, LPZ-20, GU-7, GWP-3, GU-6, PZ-1W, 91-MW-14, LPZ-11, MW-59, MW-65, MW-58, MW-53, 91-MW-12, 91-MW-13, MW-54, MW-52, MW-51, MW-50, MW-41, MW-42, MW-43, MW-49, MW-55, 91-MW-25, MW-44, MW-48B, MW-48, MW-4, MW-46, MW-47, MW-45

Esri, CGIAR, USGS, Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS, USDA NAIP, Iowa State University GIS Facility

Path: C:\Users\bmadison\OneDrive - SCS Engineers\Desktop\GIS\Maps\Site Maps\OWSWC\2023 AWOR\OWSWC-2023-AWOR.aprx
User: bmadison
Date Saved: 2/24/2025 10:37 AM

SCS ENGINEERS
environmental consultants and contractors

Reporting Period Detection Summary - Corrective Action

Legend

- Monitoring Well
- Groundwater Underdrain
- Leachate Monitoring Point
- Approximate Property Boundary
- Approximate Waste Boundary
- Approximate Future Waste Boundary
- Source Well
- Corrective Action Well

Ottumwa-Wapello County Landfill
Ottumwa, IA
Project No: 27223157.25
Drawing Date: February 2025

N

0 287.5 575 1,150 Feet

Figure 5

MW-71	Arsenic (mg/L)	TSS (mg/L)
3/8/2022	0.00905	532
6/22/2022	0.0122	568
2/21/2023	0.00762	216
10/14/2024	0.00406	153

MW-78	Arsenic (mg/L)	TSS (mg/L)
4/1/2019	<0.002	21
8/26/2019	<0.002	24.3
8/20/2020	0.00213	118
6/22/2022	<0.002	9.87

MW-67	Arsenic (mg/L)	TSS (mg/L)
8/25/2021	<0.002	1.63*
3/8/2022	<0.002	4.33*
6/22/2022	<0.002	<1.88
10/14/2024	0.000772*	3.63

MW-79	Arsenic (mg/L)	TSS (mg/L)
2/21/2023	<0.002	2
7/25/2023	<0.002	5.75
6/4/2024	<0.002	21.3
10/14/2024	<0.002	60

MW-73	Arsenic (mg/L)	TSS (mg/L)
3/8/2022	0.00653	6
6/22/2022	0.0115	15.7
6/4/2024	0.0116	239
10/14/2024	0.00519	81

MW-81	Arsenic (mg/L)	TSS (mg/L)
2/21/2023	<0.002	<1.88
7/25/2023	<0.002	<1.88
6/4/2024	0.00158*	561
10/14/2024	<0.002	5.63

93-MW-31R	Arsenic (mg/L)	TSS (mg/L)
2/21/2023	0.00498	8.63
7/25/2023	0.00123*	3.5*
6/4/2024	0.0131	85
10/14/2024	0.00166*	65.7

MW-74	Arsenic (mg/L)	TSS (mg/L)
3/8/2022	0.0264	85
6/22/2022	0.0161	61
2/21/2023	0.0288	16
10/14/2024	0.0299	42

MW-61R	Arsenic (mg/L)	TSS (mg/L)
2/21/2023	0.00649	378
7/25/2023	0.00456	86
6/4/2024	0.00754	139
10/14/2024	0.007	292

MW-68, MW-72, MW-71, MW-78, MW-76, MW-80, MW-73, 04-MW-57, MW-62, MW-79, MW-77, 93-MW-31R, MW-67, MW-81, MW-74, LPZ-18, MW-75, MW-61R, MW-66, 93-MW-32, 04-MW-56, LPZ-14, MW-64, MW-60, LPZ-19, 91-MW-6, 91-MW-8, 91-MW-7, LPZ-7R2, LPZ-9R, LPZ-13R2, LEW-1, LPZ-13R, MW-37, MW-40, MW-39R, LPZ-15, LPZ-11, 91-MW-14, MW-59, LPZ-12, 91-MW-10, GWP-1, LPZ-16, MW-65, MW-58, MW-63R, LPZ-17, MW-53, 91-MW-12, 91-MW-13, GWP-2, LPZ-20, PZ-1W, GU-7, GWP-3, MW-54, GU-6, MW-52, MW-51, MW-50, MW-41, MW-42, MW-43, MW-49, MW-55, 91-MW-25, MW-44, MW-48B, MW-48, MW-4, MW-46, MW-47, MW-45

Arsenic Concentration Map

Figure 6

Legend

- Monitoring Well
- Groundwater Underdrain
- Leachate Monitoring Point
- Approximate Property Boundary
- SSL Well
- Approximate Waste Boundary
- Approximate Future Waste Boundary
- Approximate Extent of Impact

Arsenic Prediction Limit = 0.00208 mg/L

* J Flag concentrations are not included in the lists of detected parameters

Ottumwa-Wapello County Landfill
Ottumwa, IA
Project No: 27223157.25
Drawing Date: February 2025

W S N E

0 287.5 575 1,150 Feet

SCS ENGINEERS
environmental consultants and contractors

Esri, CGIAR, USGS, Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS, USDA NAIP, Iowa State University GIS Facility

Path: C:\Users\lmadison\OneDrive - SCS Engineers\Desktop\GIS\Maps\Site Maps\OWSWC\2023 AWOR\OWSWC-2023-AWOR.aprx
User: lmadison
Date Saved: 2/24/2025 9:39 AM

MW-68	Cobalt (mg/L)	TSS (mg/L)
4/5/2021	0.00105	66.3
3/8/2022	0.000665	12.7
2/21/2023	0.000255*	1.75*
6/4/2024	0.00298	15.5

MW-78	Cobalt (mg/L)	TSS (mg/L)
2/21/2023	0.00342	10.4
7/25/2023	0.00559	16.5
6/4/2024	0.0171	164
10/14/2024	0.0122	13.3

MW-71	Cobalt (mg/L)	TSS (mg/L)
3/8/2022	0.00464	532
6/22/2022	0.00605	568
2/21/2023	0.002	216
10/14/2024	0.00305	153

MW-79	Cobalt (mg/L)	TSS (mg/L)
2/21/2023	0.00245	2
7/25/2023	0.0028	5.75
6/4/2024	0.00324	21.3
10/14/2024	0.00371	60

MW-67	Cobalt (mg/L)	TSS (mg/L)
8/25/2021	0.000375*	1.63*
3/8/2022	0.00105	4.33*
6/22/2022	0.000199*	<1.88
10/14/2024	0.00131	3.63

MW-73	Cobalt (mg/L)	TSS (mg/L)
3/8/2022	0.0552	6
6/22/2022	0.0512	15.7
6/4/2024	0.0639	239
10/14/2024	0.0546	81

MW-81	Cobalt (mg/L)	TSS (mg/L)
2/21/2023	0.000193*	<1.88
7/25/2023	0.00022*	<1.88
6/4/2024	0.00324	561
10/14/2024	0.00074	5.63

93-MW-31R	Cobalt (mg/L)	TSS (mg/L)
2/21/2023	0.00679	8.63
7/25/2023	0.00738	3.5*
6/4/2024	0.00187	85
10/14/2024	0.00309	65.7

MW-74	Cobalt (mg/L)	TSS (mg/L)
3/8/2022	0.0018	85
6/22/2022	0.00377	61
2/21/2023	0.00587	16
10/14/2024	0.0108	42

MW-61R	Cobalt (mg/L)	TSS (mg/L)
2/21/2023	0.0117	378
7/25/2023	0.00986	86
6/4/2024	0.0103	139
10/14/2024	0.0135	292

MW-68 MW-71 MW-72 MW-78 MW-76 MW-60 MW-73 04-MW-57 MW-62 MW-79 MW-77 91-MW-6 91-MW-8 91-MW-7 93-MW-31R MW-67 MW-69 MW-81 MW-74 LPZ-18 MW-75 MW-61R LPZ-6R2 LPZ-19 MW-66 93-MW-32 LPZ-7R2 MW-37 LPZ-9R 04-MW-56 LFZ-14 LPZ-13R2 LEW-1 LPZ-13R MW-64 MW-60 MW-40 MW-39R LPZ-15 LPZ-12 91-MW-10 GWP-1 LPZ-16 MW-59 MW-65 MW-58 MW-63R LPZ-17 91-MW-12 91-MW-13 GWP-2 LPZ-20 PZ-1W GU-7 GWP-3 MW-52 MW-51 MW-50 MW-54 GU-6 MW-41 MW-42 MW-43 MW-49 MW-55 91-MW-25 MW-44 MW-48B MW-48 MW-4 MW-46 MW-47 MW-45

Cobalt Concentration Map

Figure 7

Legend

- Monitoring Well
- Groundwater Underdrain
- Leachate Monitoring Point
- Approximate Property Boundary
- SSL Well
- Approximate Waste Boundary
- Approximate Future Waste Boundary
- Approximate Extent of Impact

Cobalt Prediction Limit = 0.01581 mg/L

* J Flag concentrations are not included in the lists of detected parameters

Ottumwa-Wapello County Landfill
Ottumwa, IA
Project No: 27223157.25
Drawing Date: February 2025

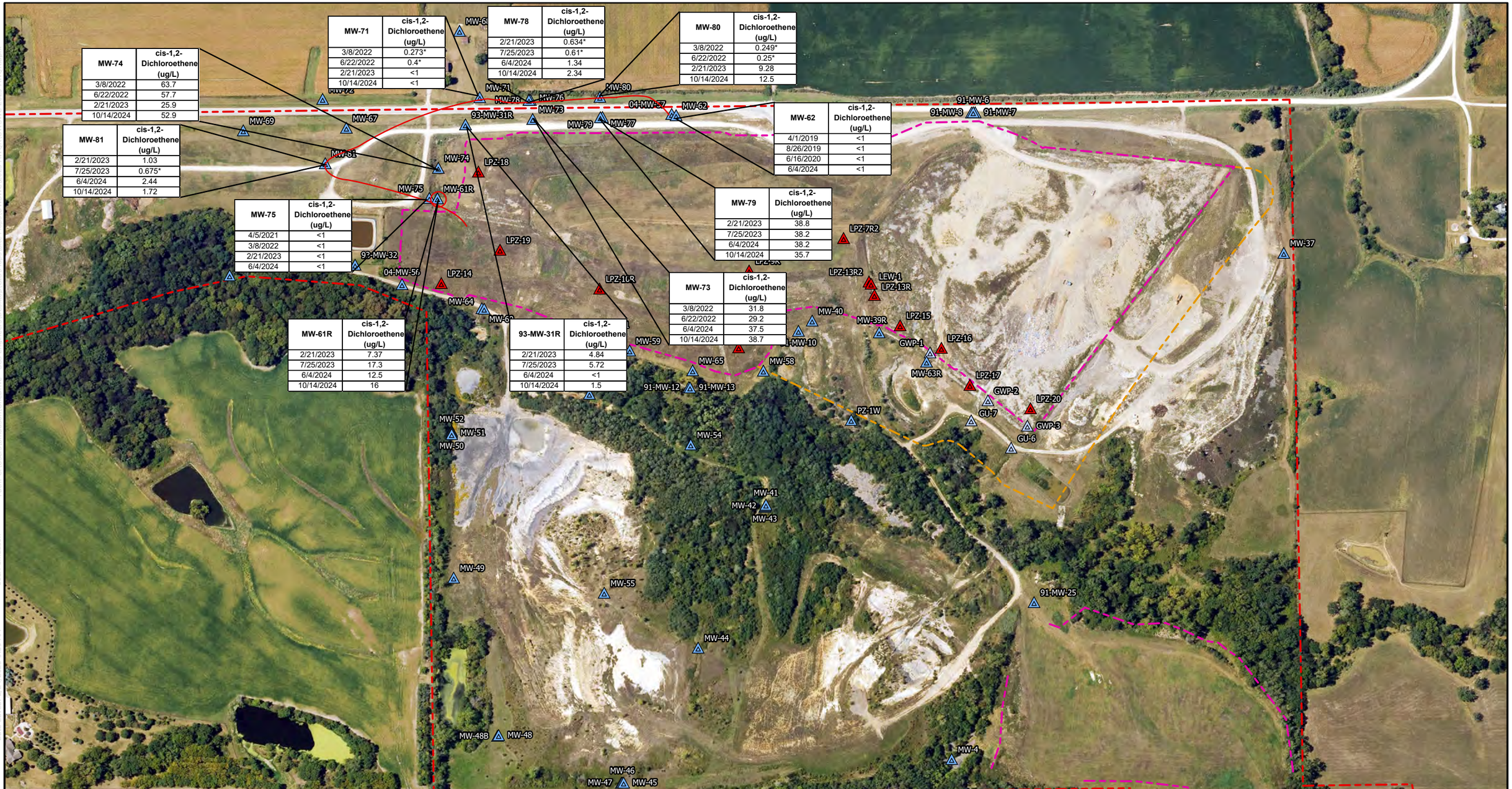
W S N E

0 287.5 575 1,150 Feet

SCS ENGINEERS
environmental consultants and contractors

Esri, CGIAR, USGS, Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS, USDA NAIP, Iowa State University GIS Facility

Path: C:\Users\lmadison\OneDrive - SCS Engineers\Desktop\GIS\Maps\Site Maps\OWSWC\2023 AWOR\OWSWC-2023-AWOR.aprx
User: lmadison
Date Saved: 2/24/2025 9:39 AM



cis-1,2-Dichloroethene Concentration Map

Figure 8

SCS ENGINEERS
environmental consultants and contractors

Legend

- Monitoring Well
- Groundwater Underdrain
- Leachate Monitoring Point
- Approximate Property Boundary
- SSL Well
- Approximate Waste Boundary
- Approximate Future Waste Boundary
- Approximate Extent of Impact

cis-1,2-Dichloroethene Prediction Limit = < 1 ug/L

* J Flag concentrations are not included in the lists of detected parameters

Ottumwa-Wapello County Landfill
Ottumwa, IA
Project No: 27223157.25
Drawing Date: February 2025

W S N E

0 287.5 575 1,150 Feet

Esri, CGIAR, USGS, Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS, USDA NAIP, Iowa State University GIS Facility

MW-72	Tetrachloroethene (ug/L)
9/13/2016	<1
4/19/2017	<1
10/3/2018	<1
8/26/2019	<1

MW-71	Tetrachloroethene (ug/L)
10/22/2018	<1
4/1/2019	<1
8/26/2019	0.83*
8/20/2020	<1

MW-78	Tetrachloroethene (ug/L)
2/21/2023	0.788*
7/25/2023	1.24
6/4/2024	1.05
10/14/2024	1.01

MW-69	Tetrachloroethene (ug/L)
4/4/2016	<1
9/13/2016	<1
4/19/2017	0.66*
8/26/2019	<1

MW-79	Tetrachloroethene (ug/L)
2/21/2023	<1
7/25/2023	<1
6/4/2024	<1
10/14/2024	<1

MW-67	Tetrachloroethene (ug/L)
8/25/2021	<1
3/8/2022	0.5*
6/22/2022	0.615*
10/14/2024	<1

MW-73	Tetrachloroethene (ug/L)
3/8/2022	2.9
6/22/2022	2.98
6/4/2024	2.36
10/14/2024	1.77

MW-81	Tetrachloroethene (ug/L)
2/21/2023	<1
7/25/2023	0.797*
6/4/2024	0.843*
10/14/2024	0.483*

93-MW-31R	Tetrachloroethene (ug/L)
2/21/2023	<1
7/25/2023	<1
6/4/2024	<1
10/14/2024	<1

MW-66	Tetrachloroethene (ug/L)
8/21/2014	<1
8/12/2015	<1
10/3/2018	<1
8/26/2019	<1

MW-74	Tetrachloroethene (ug/L)
3/8/2022	<1
6/22/2022	<1
2/21/2023	<1
10/14/2024	<1

MW-75	Tetrachloroethene (ug/L)
4/5/2021	<1
3/8/2022	<1
2/21/2023	<1
6/4/2024	<1

MW-61R	Tetrachloroethene (ug/L)
2/21/2023	<1
7/25/2023	<1
6/4/2024	<1
10/14/2024	<1

MW-72 MW-71 MW-78 MW-76 MW-80 MW-73 04-MW-57 MW-62 91-MW-6 91-MW-8 91-MW-7 MW-69 MW-67 93-MW-31R MW-79 MW-77 MW-81 MW-74 LPZ-18 LPZ-6R2 MW-75 MW-51R MW-66 LPZ-19 LPZ-7R2 MW-37 93-MW-32 LPZ-9 MW-70 04-MW-56 LPZ-14 LPZ-10R MW-64 MW-60 MW-40 MW-39R LPZ-15 LPZ-11 91-MW-14 MW-59 GWP-1 LPZ-16 MW-65 MW-63R LPZ-17 MW-53 91-MW-12 91-MW-13 GWP-2 LPZ-20 PZ-1W GU-7 GWP-3 MW-52 MW-54 GU-6 MW-50 MW-41 MW-42 MW-43 MW-49 MW-55 91-MW-25 MW-44 MW-48B MW-48 MW-4 MW-46 MW-47 MW-45

Tetrachloroethene Concentration Map

Figure 9

Legend

- Monitoring Well
- Groundwater Underdrain
- Leachate Monitoring Point
- Approximate Property Boundary
- SSL Well
- Approximate Waste Boundary
- Approximate Future Waste Boundary
- Approximate Extent of Impact

Tetrachloroethene Prediction Limit = < 1 ug/L

* J Flag concentrations are not included in the lists of detected parameters

Ottumwa-Wapello County Landfill
Ottumwa, IA
Project No: 27223157.25
Drawing Date: February 2025

W S N E

0 287.5 575 1,150 Feet

SCS ENGINEERS
environmental consultants and contractors

Esri, CGIAR, USGS, Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS, USDA NAIP, Iowa State University GIS Facility

Path: C:\Users\lmadison\OneDrive - SCS Engineers\Desktop\GIS\Maps\Site Maps\OWSWC\2023 AWOR\OWSWC-2023-AWOR.aprx
User: lmadison
Date Saved: 2/24/2025 9:39 AM

MW-71	Trichloroethene (ug/L)
3/8/2022	<1
6/22/2022	<1
2/21/2023	<1
10/14/2024	<1

MW-78	Trichloroethene (ug/L)
2/21/2023	<1
7/25/2023	<1
6/4/2024	0.556*
10/14/2024	0.661*

MW-79	Trichloroethene (ug/L)
2/21/2023	<1
7/25/2023	<1
6/4/2024	<1
10/14/2024	<1

MW-67	Trichloroethene (ug/L)
8/13/2015	<1
4/4/2016	<1
9/13/2016	<1
4/19/2017	<1

MW-62	Trichloroethene (ug/L)
4/1/2019	<1
8/26/2019	<1
6/16/2020	<1
6/4/2024	<1

MW-81	Trichloroethene (ug/L)
2/21/2023	0.73*
7/25/2023	0.658*
6/4/2024	0.887*
10/14/2024	0.617*

MW-73	Trichloroethene (ug/L)
3/8/2022	6.15
6/22/2022	5.78
6/4/2024	5.02
10/14/2024	4.2

MW-74	Trichloroethene (ug/L)
3/8/2022	<1
6/22/2022	0.926*
2/21/2023	1.07
10/14/2024	2.97

MW-66	Trichloroethene (ug/L)
8/8/2012	<1
12/27/2012	<1
2/13/2014	<1
8/21/2014	<1

MW-61R	Trichloroethene (ug/L)
2/21/2023	<1
7/25/2023	<1
6/4/2024	<1
10/14/2024	<1

MW-75	Trichloroethene (ug/L)
4/5/2021	<1
3/8/2022	<1
2/21/2023	<1
6/4/2024	<1

MW-72 MW-68 MW-71 MW-78 MW-76 MW-80 MW-73 MW-79 MW-77 04-MW-57 MW-62 91-MW-6 91-MW-8 91-MW-7 MW-67 93-MW-31R MW-81 MW-74 LPZ-18 LPZ-6R2 MW-75 MW-61R LPZ-7R2 MW-37 MW-66 LPZ-19 93-MW-32 LPZ-9R MW-70 04-MW-56 LPZ-14 LPZ-13R2 LEW-1 LPZ-13R MW-64 MW-40 MW-39R LPZ-15 MW-60 LPZ-11 LPZ-12 LPZ-16 91-MW-14 MW-59 91-MW-10 GWP-1 MW-65 MW-58 MW-63R LPZ-17 MW-53 91-MW-12 91-MW-13 GWP-2 LPZ-20 PZ-1W GU-7 MW-52 MW-51 GWP-3 MW-54 MW-50 GU-6 MW-41 MW-42 MW-43 MW-49 MW-55 91-MW-25 MW-44 MW-48B MW-48 MW-4 MW-46 MW-47 MW-45

Path: C:\Users\bmadson\OneDrive - SCS Engineers\Desktop\GIS\Maps\Site Maps\OWSWC\2023 AWOR\OWSWC-2023-AWOR.aprx
User: bmadson
Date Saved: 2/24/2025 10:37 AM

SCS ENGINEERS
environmental consultants and contractors

Trichloroethene Concentration Map

Figure 10

Legend

- Monitoring Well
- Groundwater Underdrain
- Leachate Monitoring Point
- Approximate Property Boundary
- SSL Well
- Approximate Waste Boundary
- Approximate Future Waste Boundary
- Approximate Extent of Impact

Trichloroethene Prediction Limit = < 1 ug/L

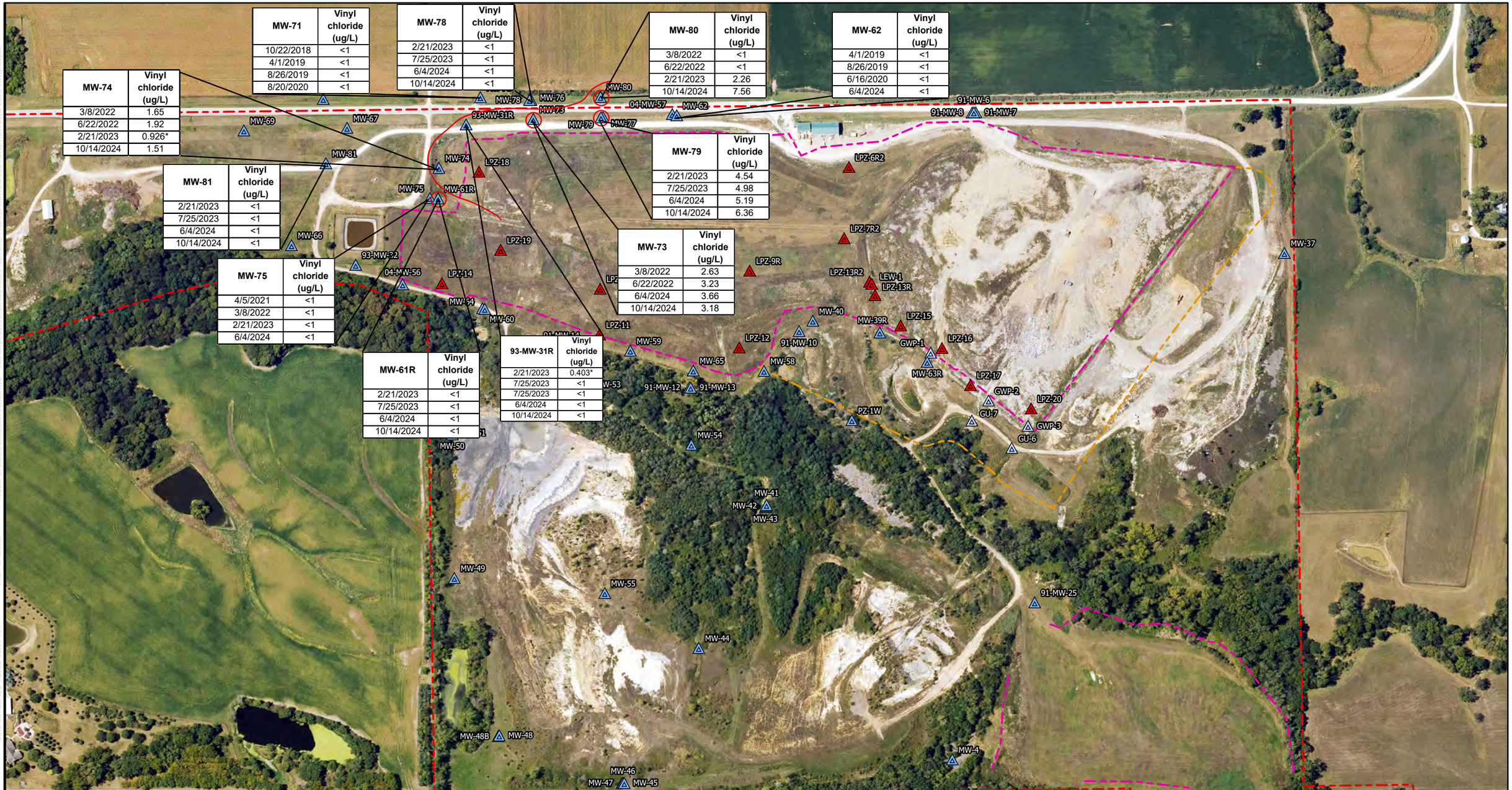
* J Flag concentrations are not included in the lists of detected parameters

Ottumwa-Wapello County Landfill
Ottumwa, IA
Project No: 27223157.25
Drawing Date: February 2025

W S N E

0 287.5 575 1,150 Feet

Esri, CGIAR, USGS, Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS, USDA NAIP, Iowa State University GIS Facility



MW-71	Vinyl chloride (ug/L)
10/22/2018	<1
4/1/2019	<1
8/26/2019	<1
8/20/2020	<1

MW-78	Vinyl chloride (ug/L)
2/21/2023	<1
7/25/2023	<1
6/4/2024	<1
10/14/2024	<1

MW-80	Vinyl chloride (ug/L)
3/8/2022	<1
6/22/2022	<1
2/21/2023	2.26
10/14/2024	7.56

MW-62	Vinyl chloride (ug/L)
4/1/2019	<1
8/26/2019	<1
6/16/2020	<1
6/4/2024	<1

MW-74	Vinyl chloride (ug/L)
3/8/2022	1.65
6/22/2022	1.92
2/21/2023	0.926*
10/14/2024	1.51

MW-79	Vinyl chloride (ug/L)
2/21/2023	4.54
7/25/2023	4.98
6/4/2024	5.19
10/14/2024	6.36

MW-81	Vinyl chloride (ug/L)
2/21/2023	<1
7/25/2023	<1
6/4/2024	<1
10/14/2024	<1

MW-73	Vinyl chloride (ug/L)
3/8/2022	2.63
6/22/2022	3.23
6/4/2024	3.66
10/14/2024	3.18

MW-75	Vinyl chloride (ug/L)
4/5/2021	<1
3/8/2022	<1
2/21/2023	<1
6/4/2024	<1

93-MW-31R	Vinyl chloride (ug/L)
2/21/2023	0.403*
7/25/2023	<1
7/25/2023	<1
6/4/2024	<1
10/14/2024	<1

MW-61R	Vinyl chloride (ug/L)
2/21/2023	<1
7/25/2023	<1
6/4/2024	<1
10/14/2024	<1

Vinyl Chloride Concentration Map

Figure 11

SCS ENGINEERS
environmental consultants and contractors

Legend

- Monitoring Well
- Groundwater Underdrain
- Leachate Monitoring Point
- Approximate Property Boundary
- SSL Well
- Approximate Waste Boundary
- Approximate Future Waste Boundary
- Approximate Extent of Impact

Vinyl Chloride Prediction Limit = < 1 ug/L

* J Flag concentrations are not included in the lists of detected parameters

Ottumwa-Wapello County Landfill
Ottumwa, IA
Project No: 27223157.25
Drawing Date: February 2025

W S N E

0 287.5 575 1,150 Feet

Esri, CGIAR, USGS, Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS, USDA NAIP, Iowa State University GIS Facility

Appendix A

Field Sampling Forms

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill**		
Monitoring Well/Piezometer ID:	**04-MW-56**	Date:	**6/6/2024**
Gradient:	Down	Sampler:	Tyler Stirling

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	17.4
Initial Static Water Level (feet):	12.19
Initial Groundwater Elevation (ft-amsl):	678.81
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
11:04 AM	Purging start time.						
11:07 AM	14.9	1.1	2031.3	6.03	-2.9	103.2	
11:10 AM	16.6	0.6	2015.5	5.97	-7.2	77.1	
11:13 AM	16.9	0.4	2035.7	5.97	-12.0	66.5	
11:16 AM	16.9	0.4	2054.6	5.97	-16.1	62.6	
11:19 AM	17.0	0.3	2055.3	5.97	-19.2	61.6	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	1.9
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	126.67

D. WELL MAINTENANCE

Does the well require any future maintenance?	No
If yes, explain:	

Additional Comments:	Color: Clear Odor: None

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill**		
Monitoring Well/Piezometer ID:	**91-MW-14**	Date:	**6/4/2024**
Gradient:	Down	Sampler:	Tyler Stirling

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	19.6
Initial Static Water Level (feet):	8.53
Initial Groundwater Elevation (ft-amsl):	680.11
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
2:16 PM	Purging start time.						
2:19 PM	14.2	0.8	1983.2	6.75	68.0	37.2	
2:22 PM	14.3	0.5	1989.9	6.72	64.9	46.0	
2:25 PM	14.3	0.4	1986.4	6.71	61.8	57.4	
2:28 PM	14.4	0.3	1978.0	6.70	58.8	67.7	
2:31 PM	14.6	0.3	1982.6	6.69	56.1	79.1	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	1.7
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	113.33

D. WELL MAINTENANCE

Does the well require any future maintenance?	No
If yes, explain:	

Additional Comments:	Color: Clear Odor: None

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill**		
Monitoring Well/Piezometer ID:	**93-MW-31R**	Date:	**6/5/2024**
Gradient:	Down	Sampler:	Tyler Stirling

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	57.2
Initial Static Water Level (feet):	48.11
Initial Groundwater Elevation (ft-amsl):	678.15
Equipment Used:	Non-Dedicated Submersible

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
2:04 PM	Purging start time.						
2:07 PM	16.1	1.9	755.4	6.55	41.4	260.4	
2:10 PM	16.7	1.6	761.3	6.36	46.2	243.0	
2:13 PM	18.6	1.5	765.1	6.28	48.6	292.5	
2:16 PM	18.4	1.4	761.4	6.27	49.4	227.4	
2:19 PM	19.4	1.5	757.9	6.23	51.5	186.6	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	2.1
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	140.00

D. WELL MAINTENANCE

Does the well require any future maintenance?	No	
If yes, explain:		

Additional Comments:	Color: Light brown with orangish tint Odor: None

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill**		
Monitoring Well/Piezometer ID:	**93-MW-32**	Date:	**6/4/2024**
Gradient:	Down	Sampler:	Tyler Stirling

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	22.0
Initial Static Water Level (feet):	12.99
Initial Groundwater Elevation (ft-amsl):	674.57
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
4:02 PM	Purging start time.						
4:05 PM	18.4	0.7	1030.6	5.77	84.7	54.2	
4:08 PM	18.2	0.5	1015.7	5.53	103.5	60.5	
4:11 PM	17.1	0.4	1016.6	5.47	112.4	71.0	
4:14 PM	18.2	0.3	1010.2	5.45	116.3	77.2	
4:17 PM	18.1	0.3	1012.9	5.43	118.9	90.2	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	2.0
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	133.33

D. WELL MAINTENANCE

Does the well require any future maintenance?	No	
If yes, explain:		

Additional Comments:	Color: Very light brown Odor: None

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill**		
Monitoring Well/Piezometer ID:	**MW-39R**	Date:	**6/5/2024**
Gradient:	Down	Sampler:	Tyler Stirling

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	22.1
Initial Static Water Level (feet):	17.42
Initial Groundwater Elevation (ft-amsl):	716.39
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
4:59 PM	Purging start time.						
5:02 PM	15.9	0.9	5521.6	5.88	-71.0	40.9	
5:05 PM	16.2	0.5	5539.3	5.88	-74.4	32.1	
5:08 PM	15.9	0.3	5457.9	5.90	-77.0	32.6	
5:11 PM	16.6	0.3	5375.1	5.93	-79.9	29.6	
5:14 PM	15.6	0.2	5382.8	5.94	-81.6	31.8	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	1.8
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	120.00

D. WELL MAINTENANCE

Does the well require any future maintenance?	No	
If yes, explain:		

Additional Comments:	Color: Clear Odor: None

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill**		
Monitoring Well/Piezometer ID:	**MW-40**	Date:	**6/4/2024**
Gradient:	Down	Sampler:	Tyler Stirling

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	26.3
Initial Static Water Level (feet):	19.17
Initial Groundwater Elevation (ft-amsl):	709.59
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
10:19 AM	Purging start time.						
10:22 AM	17.3	0.6	1733.2	5.32	24.8	32.7	
10:25 AM	17.4	0.3	1733.0	5.30	18.2	32.5	
10:28 AM	17.2	0.3	1727.4	5.29	15.2	34.6	
10:31 AM	17.4	0.2	1706.7	5.27	15.3	39.2	
10:34 AM	17.3	0.2	1698.8	5.27	15.5	37.1	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	1.8
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	120.00

D. WELL MAINTENANCE

Does the well require any future maintenance?	No
If yes, explain:	

Additional Comments:	Color: Clear Odor: None

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill**		
Monitoring Well/Piezometer ID:	**MW-53**	Date:	**6/4/2024**
Gradient:	Up	Sampler:	Tyler Stirling

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	28.4
Initial Static Water Level (feet):	12.29
Initial Groundwater Elevation (ft-amsl):	690.26
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
1:07 PM	Purging start time.						
1:10 PM	14.3	0.9	3241.3	6.79	28.5	30.8	
1:13 PM	14.1	0.5	3230.3	6.76	26.8	31.1	
1:16 PM	14.1	0.3	3231.1	6.74	25.9	36.1	
1:19 PM	14.1	0.3	3228.8	6.72	26.7	27.8	
1:22 PM	15.4	0.3	3180.2	6.71	26.4	29.2	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	2.0
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	133.33

D. WELL MAINTENANCE

Does the well require any future maintenance?	No
If yes, explain:	

Additional Comments:	Color: Clear Odor: None

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill**		
Monitoring Well/Piezometer ID:	**MW-58**	Date:	**6/4/2024**
Gradient:	Down	Sampler:	Tyler Stirling

A. MW/PIEZOMETER CONDITIONS	
Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)	
Measured Well Total Depth (feet):	17.3
Initial Static Water Level (feet):	10.30
Initial Groundwater Elevation (ft-amsl):	692.31
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
9:31 AM	Purging start time.						
9:34 AM	15.3	1.7	2986.4	5.86	45.8	22.3	
9:37 AM	15.2	0.9	2727.6	5.83	30.5	21.6	
9:40 AM	15.4	0.6	2556.1	5.79	23.3	20.1	
9:43 AM	15.8	0.5	2479.4	5.80	21.7	22.9	
9:46 AM	15.7	0.4	2431.0	5.81	21.1	38.2	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	1.7
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	113.33

D. WELL MAINTENANCE		
Does the well require any future maintenance?	No	
If yes, explain:		

Additional Comments:	Color: Clear Odor: None

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill**		
Monitoring Well/Piezometer ID:	**MW-59**	Date:	**6/4/2024**
Gradient:	Down	Sampler:	Tyler Stirling

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	17.4
Initial Static Water Level (feet):	13.00
Initial Groundwater Elevation (ft-amsl):	686.36
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
11:49 AM	Purging start time.						
11:52 AM	15.1	1.2	2992.4	6.12	-55.7	31.4	
11:55 AM	15.2	0.5	3004.1	6.10	-59.6	31.6	
11:58 AM	15.4	0.3	3005.6	6.10	-64.7	31.1	
12:01 PM	15.3	0.2	3011.3	6.11	-69.6	29.2	
12:04 PM	15.4	0.2	3009.7	6.11	-73.4	27.3	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	1.8
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	120.00

D. WELL MAINTENANCE

Does the well require any future maintenance?	No
If yes, explain:	

Additional Comments:	Color: Cloudy with small black suspended solids Odor: Sulfur

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill**		
Monitoring Well/Piezometer ID:	**MW-61R**	Date:	**6/6/2024**
Gradient:	Down	Sampler:	Tyler Stirling

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	42.0
Initial Static Water Level (feet):	31.22
Initial Groundwater Elevation (ft-amsl):	678.83
Equipment Used:	Non-Dedicated Submersible

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
9:56 AM	Purging start time.						
9:59 AM	15.3	0.6	3139.5	5.95	23.5	301.1	
10:02 AM	16.2	0.5	3147.0	5.94	26.6	240.7	
10:05 AM	18.2	0.5	3141.0	5.94	29.0	204.0	
10:08 AM	15.6	0.4	3122.3	5.94	31.6	234.9	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	2.2
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	183.33

D. WELL MAINTENANCE

Does the well require any future maintenance?	No	
If yes, explain:		

Additional Comments:	Color: Light brown Odor: None

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill**		
Monitoring Well/Piezometer ID:	**MW-62**	Date:	**6/6/2024**
Gradient:	Down	Sampler:	Tyler Stirling

A. MW/PIEZOMETER CONDITIONS	
Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)	
Measured Well Total Depth (feet):	25.0
Initial Static Water Level (feet):	4.10
Initial Groundwater Elevation (ft-amsl):	743.19
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
12:01 PM	Purging start time.						
12:04 PM	15.6	0.8	1560.1	6.16	66.8	98.7	
12:07 PM	15.6	0.4	1554.5	6.11	69.9	64.2	
12:10 PM	15.1	0.3	1554.5	6.10	70.6	65.4	
12:13 PM	15.4	0.3	1548.0	6.09	70.8	64.1	
12:16 PM	15.4	0.2	1542.4	6.09	70.4	87.8	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	1.8
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	120.00

D. WELL MAINTENANCE		
Does the well require any future maintenance?	No	
If yes, explain:		

Additional Comments:	Color: Clear Odor: None

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill**		
Monitoring Well/Piezometer ID:	**MW-63R**	Date:	**6/4/2024**
Gradient:	Down	Sampler:	Tyler Stirling

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	27.7
Initial Static Water Level (feet):	12.95
Initial Groundwater Elevation (ft-amsl):	722.11
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
5:42 PM	Purging start time.						
5:45 PM	17.4	1.1	4045.8	6.37	112.6	35.0	
5:48 PM	17.6	1.0	4069.5	6.40	106.2	35.0	
5:51 PM	17.4	1.0	4077.0	6.41	102.3	36.2	
5:54 PM	17.6	1.0	4077.5	6.41	99.7	38.1	
5:57 PM	17.7	1.0	4076.1	6.42	97.6	56.9	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	2.0
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	133.33

D. WELL MAINTENANCE

Does the well require any future maintenance?	No	
If yes, explain:		

Additional Comments:	Color: Clear Odor: None

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill**		
Monitoring Well/Piezometer ID:	**MW-64**	Date:	**6/4/2024**
Gradient:	Down	Sampler:	Tyler Stirling

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	41.8
Initial Static Water Level (feet):	16.50
Initial Groundwater Elevation (ft-amsl):	681.26
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
2:56 PM	Purging start time.						
2:59 PM	16.4	0.8	2251.0	6.74	-33.4	33.8	
3:02 PM	16.8	0.5	2243.0	6.72	-47.8	41.9	
3:05 PM	16.9	0.4	2246.2	6.71	-54.8	27.5	
3:08 PM	17.0	0.3	2240.3	6.71	-59.2	25.6	
3:11 PM	17.3	0.3	2242.1	6.70	-62.1	22.5	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	1.9
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	126.67

D. WELL MAINTENANCE

Does the well require any future maintenance?	No
If yes, explain:	

Additional Comments:	Color: Clear Odor: None

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill**		
Monitoring Well/Piezometer ID:	**MW-65**	Date:	**6/4/2024**
Gradient:	Down	Sampler:	Tyler Stirling

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	20.8
Initial Static Water Level (feet):	9.16
Initial Groundwater Elevation (ft-amsl):	688.93
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
11:10 AM	Purging start time.						
11:13 AM	15.1	1.4	2485.0	6.26	-76.7	30.3	
11:16 AM	14.9	0.8	2486.6	6.28	-96.9	28.7	
11:19 AM	15.1	0.6	2475.8	6.28	-106.0	26.4	
11:22 AM	15.1	0.5	2480.7	6.27	-110.1	26.7	
11:25 AM	15.2	0.4	2471.7	6.27	-112.2	28.0	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	1.6
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	106.67

D. WELL MAINTENANCE

Does the well require any future maintenance?	No
If yes, explain:	

Additional Comments:	Color: Clear Odor: Hydrogen sulfide

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill**		
Monitoring Well/Piezometer ID:	**MW-66**	Date:	**6/4/2024**
Gradient:	Down	Sampler:	Tyler Stirling

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	17.7
Initial Static Water Level (feet):	10.60
Initial Groundwater Elevation (ft-amsl):	675.29
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
4:50 PM	Purging start time.						
4:53 PM	16.1	3.6	253.4	5.61	107.8	36.7	
4:56 PM	16.9	3.9	255.7	5.44	124.4	29.6	
4:59 PM	17.4	4.3	253.2	5.38	133.1	28.8	
5:02 PM	17.1	4.5	247.6	5.34	138.8	31.0	
5:05 PM	16.9	4.8	247.4	5.32	143.3	32.3	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	1.6
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	106.67

D. WELL MAINTENANCE

Does the well require any future maintenance?	No
If yes, explain:	

Additional Comments:	Color: Clear Odor: None

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill**		
Monitoring Well/Piezometer ID:	**MW-68**	Date:	**6/5/2024**
Gradient:	Down	Sampler:	Tyler Stirling

A. MW/PIEZOMETER CONDITIONS		
Well/Piezometer Capped?	Yes	
Litter/Standing Water?	No	

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)	
Measured Well Total Depth (feet):	58.1
Initial Static Water Level (feet):	47.75
Initial Groundwater Elevation (ft-amsl):	680.32
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
11:07 AM	Purging start time.						
11:10 AM	16.1	4.0	500.5	6.13	45.3	58.6	
11:13 AM	15.1	4.5	512.4	6.05	57.8	51.7	
11:16 AM	15.2	4.0	509.0	5.96	68.9	40.5	
11:19 AM	14.7	3.8	507.0	5.92	76.2	37.7	
11:22 AM	15.4	3.9	508.0	5.92	80.8	34.9	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	2.1
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	140.00

D. WELL MAINTENANCE		
Does the well require any future maintenance?	No	
If yes, explain:		

Additional Comments:	Color: Clear Odor: None

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill**		
Monitoring Well/Piezometer ID:	**MW-73**	Date:	**6/6/2024**
Gradient:	Down	Sampler:	Tyler Stirling

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	50.8
Initial Static Water Level (feet):	40.81
Initial Groundwater Elevation (ft-amsl):	688.76
Equipment Used:	Non-Dedicated Submersible

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
1:52 PM	Purging start time.						
1:55 PM	16.1	0.9	1169.4	5.82	46.4	1995.8	
1:58 PM	16.0	0.7	1168.3	5.80	38.0	1377.4	
2:01 PM	15.8	0.7	1171.9	5.80	32.9	717.3	
2:04 PM	15.6	0.7	1175.7	5.80	29.3	425.9	
2:07 PM	16.0	0.6	1171.2	5.80	26.4	251.6	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	2.0
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	133.33

D. WELL MAINTENANCE

Does the well require any future maintenance?	No	
If yes, explain:		

Additional Comments:	Color: Clear with very light brown tint Odor: None

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill**		
Monitoring Well/Piezometer ID:	**MW-75**	Date:	**6/6/2024**
Gradient:	Down	Sampler:	Tyler Stirling

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	NM
Initial Static Water Level (feet):	31.50
Initial Groundwater Elevation (ft-amsl):	678.09
Equipment Used:	Non-Dedicated Submersible

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
9:07 AM	Purging start time.						
9:10 AM	15.4	0.8	2515.4	5.74	-8.5	295.8	
9:13 AM	15.8	0.6	2488.9	5.68	-9.9	280.0	
9:16 AM	16.0	0.5	2471.0	5.65	-10.6	219.7	
9:19 AM	17.1	0.4	2442.0	5.63	-11.5	188.4	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	1.9
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	158.33

D. WELL MAINTENANCE

Does the well require any future maintenance?	No
If yes, explain:	

Additional Comments:	Color: Muddy brown Odor: None

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill**		
Monitoring Well/Piezometer ID:	**MW-78**	Date:	**6/5/2024**
Gradient:	Down	Sampler:	Tyler Stirling

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	62.7
Initial Static Water Level (feet):	50.29
Initial Groundwater Elevation (ft-amsl):	683.05
Equipment Used:	Dedicated Submersible

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
10:00 AM	Purging start time.						
10:03 AM	16.3	1.4	596.9	6.29	-16.0	268.5	
10:06 AM	15.8	0.6	568.7	6.17	2.6	384.5	
10:09 AM	16.4	0.4	571.9	6.12	16.6	295.8	
10:12 AM	16.9	0.4	571.5	6.11	25.0	163.5	
10:15 AM	17.0	0.3	572.2	6.11	31.0	152.3	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	1.5
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	100.00

D. WELL MAINTENANCE

Does the well require any future maintenance?	No	
If yes, explain:		

Additional Comments:	Color: Light cloudy brown Odor: None

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill**		
Monitoring Well/Piezometer ID:	**MW-79**	Date:	**6/5/2024**
Gradient:	Down	Sampler:	Tyler Stirling

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	52.4
Initial Static Water Level (feet):	36.30
Initial Groundwater Elevation (ft-amsl):	700.92
Equipment Used:	Non-Dedicated Submersible

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
11:57 AM	Purging start time.						
12:00 PM	15.8	1.0	1813.3	5.82	-27.5	33.9	
12:03 PM	17.2	0.6	1808.3	5.82	-21.5	27.2	
12:06 PM	16.7	0.5	1825.8	5.83	-17.7	30.5	
12:09 PM	16.7	0.5	1822.1	5.84	-11.1	35.4	
12:12 PM	16.8	0.5	1818.6	5.84	-6.4	49.0	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	1.6
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	106.67

D. WELL MAINTENANCE

Does the well require any future maintenance?	No	
If yes, explain:		

Additional Comments:	Color: Clear Odor: None

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill**		
Monitoring Well/Piezometer ID:	**MW-81**	Date:	**6/7/2024**
Gradient:	Down	Sampler:	Tyler Stirling

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	33.1
Initial Static Water Level (feet):	22.49
Initial Groundwater Elevation (ft-amsl):	677.11
Equipment Used:	Non-Dedicated Submersible

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
1:06 PM	Purging start time.						
1:09 PM	26.3	4.9	750.0	6.32	123.1	958.1	
1:12 PM	19.7	5.4	621.4	6.19	126.9	1280.3	
1:15 PM	18.8	3.5	636.5	6.10	130.1	1174.0	
1:18 PM	20.4	5.7	5.3	6.11	129.0	722.5	
1:21 PM	22.2	3.8	655.0	6.12	127.3	889.1	
1:24 PM	16.3	3.2	652.0	6.11	128.6	999.7	
1:27 PM	16.2	2.6	666.0	6.08	129.3	672.6	
1:30 PM	16.0	2.4	674.1	6.07	128.8	511.8	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	1.9
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	15:00
Average Purge Rate (mL/min):	126.67

D. WELL MAINTENANCE

Does the well require any future maintenance?	No	
If yes, explain:		

Additional Comments:	Color: Muddy brown Odor: None

FORM FOR SURFACE WATER SAMPLING

Site Name: Ottumwa-Wapello County Landfill
Permit No.: 90-SDP-01-75P
Surface Monitoring Point No.: GU-6
Date: 6/5/24

Name of Person Sampling: Tyler Stirling

A. TYPE OF MOINITORING POINT

Stream		Open Tile	
Road Ditch		Tile with Riser	
Drainage Ditch		Other	X
None			

B. PURPOSE OF MONITORING POINT

Upstream		Downstream	
Within Landfill	X	Other	

C. MONITORING POINT CONDITIONS/LOCATION

Groundwater underdrain outlet for Phases 1A and 1B of the 2008 North Lateral Expansion of the West MSWLF unit

Was monitoring point dry?	~~No~~		
Was water flowing?			
Standing Water?	Yes - mud		
Was water discolored?	orange		
Does water have odor?			
Was ground discolored?			
Litter present?			

D. FIELD MEASUREMENTS

Weather Conditions: 70° Sunny
Time: 1630
Field Measurements:

Temperature		Units	Celsius
Equipment Used			
pH		Units	Standard units
Equipment Used			
Spec.Conductance		Units	uS/cm
Equipment Used			

COMMENTS: GU-6 submerged in mud, unable to tell if flowing or collect sample representative of GU-6. I have a picture on my phone.

IDNR Form 542-1324

FORM FOR SURFACE WATER SAMPLING

Site Name: Ottumwa-Wapello County Landfill
Permit No.: 90-SDP-01-75P
Surface Monitoring Point No.: GU-7
Date: 6/5/24

Name of Person Sampling: Tyler Stirling

A. TYPE OF MOINITORING POINT

Stream		Open Tile	
Road Ditch		Tile with Riser	
Drainage Ditch		Other	X
None			

B. PURPOSE OF MONITORING POINT

Upstream		Downstream	
Within Landfill	X	Other	

C. MONITORING POINT CONDITIONS/LOCATION

Groundwater underdrain outlet for Phase 2 of the 2008 North Lateral Expansion of the West MSWLF unit.

Was monitoring point dry?	
Was water flowing?	Yes
Standing Water?	Yes
Was water discolored?	Orange in standing water
Does water have odor?	No
Was ground discolored?	Yes -
Litter present?	No

D. FIELD MEASUREMENTS

Weather Conditions: 70° Sunny
Time: 1605
Field Measurements:

Temperature	23.9	Units	Celsius
Equipment Used	YSI		
pH	6.48	Units	Standard units
Equipment Used			
Spec.Conductance	1835	Units	uS/cm
Equipment Used			

COMMENTS: Flowing ~ 500 ml/min.

IDNR Form 542-1324

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill, West MSWLF Unit**		
Monitoring Well/Piezometer ID:	**93-MW-31R**	Date:	**10/30/2024**
Gradient:	Down	Sampler:	Cole Tesar

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	57.2
Initial Static Water Level (feet):	48.52
Initial Groundwater Elevation (ft-amsl):	677.74
Equipment Used:	Non-Dedicated Submersible Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	**Temperature (°C) 10%**	Dissolved Oxygen (mg/L)	**Specific Conductivity (µS/cm) +/- 10%**	**pH (S.U.) +/- 0.1**	ORP (mV)	Turbidity (FNU)	
1:46 PM	Purging start time.						
1:49 PM							
1:52 PM	16.5	2.7	658.1	6.28	9.5	248.0	
1:55 PM	16.8	2.4	663.1	6.26	17.3	177.9	
1:58 PM	17.0	2.2	665.5	6.25	21.7	148.7	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	2.8
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	233.33

D. WELL MAINTENANCE

Does the well require any future maintenance?	No
If yes, explain:	

Additional Comments:	Color:Orange Odor:None Well was purged until water cleared.

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill, West MSWLF Unit**		
Monitoring Well/Piezometer ID:	**MW-39R**	Date:	**10/15/2024**
Gradient:	Down	Sampler:	Cole Tesar

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	22.3
Initial Static Water Level (feet):	19.41
Initial Groundwater Elevation (ft-amsl):	714.40
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	**Temperature (°C) 10%**	Dissolved Oxygen (mg/L)	**Specific Conductivity (µS/cm) +/- 10%**	**pH (S.U.) +/- 0.1**	ORP (mV)	Turbidity (FNU)	
12:13 PM	Purging start time.						
12:16 PM							
12:19 PM	14.5	0.5	4636.5	6.02	-50.2	3.0	
12:22 PM	14.6	0.4	4629.0	6.03	-54.3	3.0	
12:25 PM	14.6	0.3	4629.5	6.03	-57.2	2.9	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	1.7
Was well pumped/bailed dry?	Yes
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	141.67

D. WELL MAINTENANCE

Does the well require any future maintenance?	No
If yes, explain:	

Additional Comments:	Color:Clear Odor:None Duplicate MW-D1 partially collected. TSS bottle was not filled entirely due to well going dry.

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill, West MSWLF Unit**		
Monitoring Well/Piezometer ID:	**MW-40**	Date:	**10/15/2024**
Gradient:	Down	Sampler:	Cole Tesar

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	26.5
Initial Static Water Level (feet):	20.56
Initial Groundwater Elevation (ft-amsl):	708.20
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	**Temperature (°C) 10%**	Dissolved Oxygen (mg/L)	**Specific Conductivity (µS/cm) +/- 10%**	**pH (S.U.) +/- 0.1**	ORP (mV)	Turbidity (FNU)	
11:38 AM	Purging start time.						
11:41 AM							
11:44 AM	16.0	0.4	1556.4	5.26	82.7	71.7	
11:47 AM	16.0	0.3	1548.0	5.29	79.1	92.1	
11:50 AM	16.2	0.3	1543.7	5.27	79.7	57.0	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	1.7
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	141.67

D. WELL MAINTENANCE

Does the well require any future maintenance?	No	
If yes, explain:		

Additional Comments:	Color:Yellow tint Odor:None

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill, West MSWLF Unit**		
Monitoring Well/Piezometer ID:	**04-MW-56**	Date:	**10/14/2024**
Gradient:	Down	Sampler:	Cole Tesar

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	17.6
Initial Static Water Level (feet):	12.88
Initial Groundwater Elevation (ft-amsl):	678.12
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	**Temperature (°C) 10%**	Dissolved Oxygen (mg/L)	**Specific Conductivity (µS/cm) +/- 10%**	**pH (S.U.) +/- 0.1**	ORP (mV)	Turbidity (FNU)	
3:52 PM	Purging start time.						
3:55 PM							
3:58 PM	14.9	0.5	2007.9	6.12	-46.5	7.5	
4:01 PM	14.8	0.4	1999.9	6.12	-46.3	10.4	
4:04 PM	14.8	0.3	2000.0	6.13	-47.6	4.3	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	1.9
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	158.33

D. WELL MAINTENANCE

Does the well require any future maintenance?	No
If yes, explain:	
Additional Comments:	Color:Clear Odor:None

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill, West MSWLF Unit**		
Monitoring Well/Piezometer ID:	**MW-58**	Date:	**10/15/2024**
Gradient:	Down	Sampler:	Cole Tesar

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	17.6
Initial Static Water Level (feet):	12.21
Initial Groundwater Elevation (ft-amsl):	690.40
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	**Temperature (°C) 10%**	Dissolved Oxygen (mg/L)	**Specific Conductivity (µS/cm) +/- 10%**	**pH (S.U.) +/- 0.1**	ORP (mV)	Turbidity (FNU)	
11:06 AM	Purging start time.						
11:09 AM							
11:12 AM	15.0	0.5	3253.0	6.04	1.6	14.1	
11:15 AM	15.1	0.4	3257.4	6.04	1.6	16.3	
11:18 AM	15.2	0.4	3257.8	6.03	0.8	15.6	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	2.0
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	166.67

D. WELL MAINTENANCE

Does the well require any future maintenance?	No
If yes, explain:	
Additional Comments:	Color:Clear Odor:None

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill, West MSWLF Unit**		
Monitoring Well/Piezometer ID:	**MW-61R**	Date:	**10/30/2024**
Gradient:	Down	Sampler:	Cole Tesar

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	42.3
Initial Static Water Level (feet):	31.62
Initial Groundwater Elevation (ft-amsl):	678.43
Equipment Used:	Non-Dedicated Submersible Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	**Temperature (°C) 10%**	Dissolved Oxygen (mg/L)	**Specific Conductivity (µS/cm) +/- 10%**	**pH (S.U.) +/- 0.1**	ORP (mV)	Turbidity (FNU)	
12:44 PM	Purging start time.						
12:47 PM							
12:50 PM	16.9	0.7	2981.6	6.12	-27.1	248.3	
12:53 PM	16.7	0.6	2986.5	6.11	-25.8	276.2	
12:56 PM	17.8	0.5	2975.2	6.10	-25.2	322.2	
12:59 PM	17.2	0.5	2995.7	6.10	-27.7	369.2	
1:02 PM	16.8	0.4	2985.2	6.10	-32.0	376.3	
1:05 PM	17.6	0.4	2981.0	6.10	-33.9	350.6	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	3.5
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	21:00
Average Purge Rate (mL/min):	166.67

D. WELL MAINTENANCE

Does the well require any future maintenance?	No
If yes, explain:	

Additional Comments:	Color:Grayish/brown Odor:Sulfur Turbidity continuously increased; adjusted flow rate to lower turbidity.

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill, West MSWLF Unit**		
Monitoring Well/Piezometer ID:	**MW-63R**	Date:	**10/15/2024**
Gradient:	Down	Sampler:	Cole Tesar

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	27.8
Initial Static Water Level (feet):	13.72
Initial Groundwater Elevation (ft-amsl):	721.34
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	**Temperature (°C) 10%**	Dissolved Oxygen (mg/L)	**Specific Conductivity (µS/cm) +/- 10%**	**pH (S.U.) +/- 0.1**	ORP (mV)	Turbidity (FNU)	
1:17 PM	Purging start time.						
1:20 PM							
1:23 PM	16.3	0.6	3581.7	6.56	37.3	6.0	
1:26 PM	16.4	0.4	3585.9	6.57	45.8	5.3	
1:29 PM	16.5	0.4	3555.1	6.60	51.9	5.3	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	1.8
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	150.00

D. WELL MAINTENANCE

Does the well require any future maintenance?	No
If yes, explain:	

Additional Comments:	Color:Clear Odor:None Duplicate MW-D2 collected.

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill, West MSWLF Unit**		
Monitoring Well/Piezometer ID:	**MW-65**	Date:	**10/15/2024**
Gradient:	Down	Sampler:	Cole Tesar

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	21.0
Initial Static Water Level (feet):	11.64
Initial Groundwater Elevation (ft-amsl):	686.45
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	**Temperature (°C) 10%**	Dissolved Oxygen (mg/L)	**Specific Conductivity (µS/cm) +/- 10%**	**pH (S.U.) +/- 0.1**	ORP (mV)	Turbidity (FNU)	
10:29 AM	Purging start time.						
10:32 AM							
10:35 AM	14.2	0.6	2294.7	6.50	-125.1	36.1	
10:38 AM	14.3	0.4	2287.1	6.51	-125.2	28.3	
10:41 AM	14.3	0.4	2277.7	6.51	-125.4	30.8	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	1.8
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	150.00

D. WELL MAINTENANCE

Does the well require any future maintenance?	No
If yes, explain:	

Additional Comments:	Color:Cloudy Odor:Sulfur

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill, West MSWLF Unit**		
Monitoring Well/Piezometer ID:	**MW-67**	Date:	**10/30/2024**
Gradient:	Down	Sampler:	Cole Tesar

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	37.8
Initial Static Water Level (feet):	32.55
Initial Groundwater Elevation (ft-amsl):	676.02
Equipment Used:	Non-Dedicated Submersible Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	**Temperature (°C) 10%**	Dissolved Oxygen (mg/L)	**Specific Conductivity (µS/cm) +/- 10%**	**pH (S.U.) +/- 0.1**	ORP (mV)	Turbidity (FNU)	
11:37 AM	Purging start time.						
11:40 AM							
11:43 AM	15.6	5.3	472.0	6.34	-19.6	161.5	
11:46 AM	15.9	4.9	470.1	6.24	-4.8	116.0	
11:49 AM	16.2	4.7	473.8	6.19	5.8	82.6	
11:52 AM	15.8	4.4	472.7	6.17	14.3	41.6	
11:55 AM	15.5	4.2	473.3	6.17	20.4	19.9	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	4.0
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	18:00
Average Purge Rate (mL/min):	222.22

D. WELL MAINTENANCE

Does the well require any future maintenance?	No
If yes, explain:	
Additional Comments:	Color:Clear Odor:None

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill, West MSWLF Unit**		
Monitoring Well/Piezometer ID:	**MW-71**	Date:	**10/31/2024**
Gradient:	Down	Sampler:	Cole Tesar

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes	
Litter/Standing Water?	Yes	Well was submerged in standing water (flush mount)

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	54.1
Initial Static Water Level (feet):	49.53
Initial Groundwater Elevation (ft-amsl):	677.94
Equipment Used:	Non-Dedicated Submersible Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	**Temperature (°C) 10%**	Dissolved Oxygen (mg/L)	**Specific Conductivity (µS/cm) +/- 10%**	**pH (S.U.) +/- 0.1**	ORP (mV)	Turbidity (FNU)	
10:04 AM	Purging start time.						
10:07 AM							
10:10 AM	13.1	0.9	559.9	6.34	-34.9	1289.3	
10:13 AM	13.6	0.8	548.1	6.32	-26.2	1032.7	
10:16 AM	14.1	0.7	541.7	6.30	-20.0	780.4	
10:19 AM	14.2	0.6	532.3	6.30	-18.4	609.2	
10:22 AM	14.5	0.6	519.9	6.29	-19.5	412.5	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	3.8
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	18:00
Average Purge Rate (mL/min):	211.11

D. WELL MAINTENANCE

Does the well require any future maintenance?	No	
If yes, explain:		

Additional Comments:	Color:Gray/Cloudy Odor:Sulfur Purged longer to clear water up.

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill, West MSWLF Unit**		
Monitoring Well/Piezometer ID:	**MW-73**	Date:	**10/30/2024**
Gradient:	Down	Sampler:	Cole Tesar

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	50.8
Initial Static Water Level (feet):	40.41
Initial Groundwater Elevation (ft-amsl):	689.16
Equipment Used:	Non-Dedicated Submersible Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	**Temperature (°C) 10%**	Dissolved Oxygen (mg/L)	**Specific Conductivity (µS/cm) +/- 10%**	**pH (S.U.) +/- 0.1**	ORP (mV)	Turbidity (FNU)	
3:49 PM	Purging start time.						
3:52 PM							
3:55 PM	16.3	0.8	1066.2	5.99	-52.4	105.6	
3:58 PM	16.7	0.8	1059.5	5.99	-52.8	74.9	
4:01 PM	17.1	0.9	1069.5	5.98	-53.0	64.7	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	2.7
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	225.00

D. WELL MAINTENANCE

Does the well require any future maintenance?	No	
If yes, explain:		

Additional Comments:	Color:Clear Odor:None Purged until water was clear.

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill, West MSWLF Unit**		
Monitoring Well/Piezometer ID:	**MW-74**	Date:	**10/30/2024**
Gradient:	Down	Sampler:	Cole Tesar

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	43.4
Initial Static Water Level (feet):	39.35
Initial Groundwater Elevation (ft-amsl):	678.16
Equipment Used:	Non-Dedicated Submersible Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	**Temperature (°C) 10%**	Dissolved Oxygen (mg/L)	**Specific Conductivity (µS/cm) +/- 10%**	**pH (S.U.) +/- 0.1**	ORP (mV)	Turbidity (FNU)	
12:12 PM	Purging start time.						
12:15 PM							
12:18 PM	17.8	1.5	1552.0	6.24	-132.9	11.9	
12:21 PM	17.7	1.0	1573.4	6.17	-137.8	13.1	
12:24 PM	17.7	1.0	1598.2	6.17	-139.5	9.0	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	2.8
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	233.33

D. WELL MAINTENANCE

Does the well require any future maintenance?	No	
If yes, explain:		

Additional Comments:	Color:Cloudy Odor:Sulfur

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill, West MSWLF Unit**		
Monitoring Well/Piezometer ID:	**MW-78**	Date:	**10/30/2024**
Gradient:	Down	Sampler:	Cole Tesar

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	62.6
Initial Static Water Level (feet):	51.00
Initial Groundwater Elevation (ft-amsl):	682.34
Equipment Used:	Dedicated Submersible Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	**Temperature (°C) 10%**	Dissolved Oxygen (mg/L)	**Specific Conductivity (µS/cm) +/- 10%**	**pH (S.U.) +/- 0.1**	ORP (mV)	Turbidity (FNU)	
4:23 PM	Purging start time.						
4:26 PM							
4:29 PM	14.7	0.6	516.4	6.28	-31.6	208.4	
4:32 PM	14.9	0.5	516.8	6.23	-11.3	95.2	
4:35 PM	15.2	0.4	516.1	6.21	-0.7	48.4	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	2.5
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	208.33

D. WELL MAINTENANCE

Does the well require any future maintenance?	No	
If yes, explain:		

Additional Comments:	Color:Clear Odor:None

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill, West MSWLF Unit**		
Monitoring Well/Piezometer ID:	**MW-79**	Date:	**10/30/2024**
Gradient:	Down	Sampler:	Cole Tesar

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	52.9
Initial Static Water Level (feet):	36.86
Initial Groundwater Elevation (ft-amsl):	700.36
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	**Temperature (°C) 10%**	Dissolved Oxygen (mg/L)	**Specific Conductivity (µS/cm) +/- 10%**	**pH (S.U.) +/- 0.1**	ORP (mV)	Turbidity (FNU)	
10:56 AM	Purging start time.						
10:59 AM							
11:02 AM	15.7	0.7	1675.7	6.04	-67.2	223.9	
11:05 AM	15.9	0.6	1661.0	6.04	-90.5	186.1	
11:08 AM	16.7	0.5	1649.2	6.05	-113.7	172.6	
11:11 AM	17.1	0.5	1655.4	6.06	-124.4	141.8	
11:14 AM	17.3	0.6	1645.0	6.07	-127.5	141.7	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	2.7
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	18:00
Average Purge Rate (mL/min):	150.00

D. WELL MAINTENANCE

Does the well require any future maintenance?	No	
If yes, explain:		

Additional Comments:	Color:Cloudy/Light brown Odor:Sulfur

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill, West MSWLF Unit**		
Monitoring Well/Piezometer ID:	**MW-80**	Date:	**10/31/2024**
Gradient:	Down	Sampler:	Cole Tesar

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	40.8
Initial Static Water Level (feet):	35.15
Initial Groundwater Elevation (ft-amsl):	700.65
Equipment Used:	Non-Dedicated Submersible Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	**Temperature (°C) 10%**	Dissolved Oxygen (mg/L)	**Specific Conductivity (µS/cm) +/- 10%**	**pH (S.U.) +/- 0.1**	ORP (mV)	Turbidity (FNU)	
8:56 AM	Purging start time.						
8:59 AM							
9:02 AM	12.9	0.6	1648.1	5.91	-106.1	168.8	
9:05 AM	13.4	0.4	1652.5	5.90	-108.2	112.2	
9:08 AM	13.4	0.4	1656.6	5.91	-110.0	72.0	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	2.3
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	191.67

D. WELL MAINTENANCE

Does the well require any future maintenance?	No	
If yes, explain:		

Additional Comments:	Color:Cloudy Odor:Sulfur

FORM FOR GROUNDWATER SAMPLING

Project:	**Ottumwa-Wapello County Landfill, West MSWLF Unit**		
Monitoring Well/Piezometer ID:	**MW-81**	Date:	**10/14/2024**
Gradient:	Down	Sampler:	Cole Tesar

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	33.4
Initial Static Water Level (feet):	23.10
Initial Groundwater Elevation (ft-amsl):	676.50
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	**Temperature (°C) 10%**	Dissolved Oxygen (mg/L)	**Specific Conductivity (µS/cm) +/- 10%**	**pH (S.U.) +/- 0.1**	ORP (mV)	Turbidity (FNU)	
4:22 PM	Purging start time.						
4:25 PM							
4:28 PM	14.1	1.7	498.1	6.26	79.6	10.4	
4:31 PM	14.1	1.4	500.8	6.25	94.9	6.2	
4:34 PM	14.0	1.3	504.0	6.25	103.5	4.2	
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	1.7
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	141.67

D. WELL MAINTENANCE

Does the well require any future maintenance?	No
If yes, explain:	
Additional Comments:	Color:Clear Odor:None

FORM FOR SURFACE WATER SAMPLING

Site Name	Ottumwa-Wapello County Landfill	Permit No.	90-SDP-01-75P
Surface Monitoring Point No.	GU-6	Date	10/15/24
Name of Person Sampling	Cole Tesar		

A. TYPE OF MOINITORING POINT

Stream		Open Tile	
Road Ditch		Tile with Riser	
Drainage Ditch		Other	X
None			

B. PURPOSE OF MONITORING POINT

Upstream		Downstream	
Within Landfill	X	Other	

C. MONITORING POINT CONDITIONS/LOCATION

Groundwater underdrain outlet for Phases 1A and 1B of the 2008 North Lateral Expansion of the West MSWLF unit

Was monitoring point dry?	No
Was water flowing?	No
Standing Water?	Yes
Was water discolored?	Yes orange
Does water have odor?	Slight Swamp
Was ground discolored?	No
Litter present?	Yes

D. FIELD MEASUREMENTS

Weather Conditions: 56°F

Time: 14:16

Field Measurements:

Temperature		Units	Celsius
Equipment Used			
pH		Units	Standard units
Equipment Used			
Spec.Conductance		Units	uS/cm
Equipment Used			

COMMENTS No sample Collected.

FORM FOR SURFACE WATER SAMPLING

Site Name: Ottumwa-Wapello County Landfill
Permit No.: 90-SDP-01-75P
Surface Monitoring Point No.: GU-7
Date: 10/15/24

Name of Person Sampling: Gle Tesar

A. TYPE OF MOINITORING POINT

Stream		Open Tile	
Road Ditch		Tile with Riser	
Drainage Ditch		Other	X
None			

B. PURPOSE OF MONITORING POINT

Upstream		Downstream	
Within Landfill	X	Other	

C. MONITORING POINT CONDITIONS/LOCATION

Groundwater underdrain outlet for Phase 2 of the 2008 North Lateral Expansion of the West MSWLF unit.

Was monitoring point dry?	No
Was water flowing?	No
Standing Water?	Yes
Was water discolored?	Yes Orange
Does water have odor?	Slight Swamp
Was ground discolored?	No
Litter present?	Yes

D. FIELD MEASUREMENTS

Weather Conditions: 56° F

Time: 14:10

Field Measurements:

Temperature		Units	Celsius
Equipment Used			
pH		Units	Standard units
Equipment Used			
Spec.Conductance		Units	uS/cm
Equipment Used			

COMMENTS: No sample Collected

Appendix B-1

Laboratory Analytical Data Sheets

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Nathan Ohrt
SCS Engineers
1690 All State Court
Suite 100
West Des Moines, Iowa 50265

Generated 7/2/2024 4:25:34 PM

JOB DESCRIPTION

Ottumwa-Wapello County Landfill 1st 2024 Semi-Annu
1st 2024 Semi-Annual (1 of 3)

JOB NUMBER

310-283154-1

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls IA 50613

See page two for job notes and contact information.

myEOL

Job Notes

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

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
7/2/2024 4:25:34 PM

Authorized for release by
Mary Yang, Client Service Manager
Mary.Yang@ET.EurofinsUS.com
(319)595-2025

Table of Contents

Cover Page 1
Table of Contents 3
Case Narrative 4
Sample Summary 6
Detection Summary 7
Client Sample Results 14
Definitions 60
Surrogate Summary 62
QC Sample Results 65
QC Association 97
Chronicle 106
Certification Summary 116
Method Summary 118
Chain of Custody 119
Receipt Checklists 126

Job Narrative
310-283154-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

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

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

Receipt
The samples were received on 6/7/2024 4:50 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.1°C, 1.7°C and 2.8°C.

Receipt Exceptions
The following sample was received at the laboratory outside the required temperature criteria: MW-62 (310-283154-5). This does not meet regulatory requirements. The client was contacted regarding this issue, and the laboratory was instructed to proceed with analysis.

GC/MS VOA
Method 8260D: The method requirement for no headspace was not met. The following volatile sample was analyzed with headspace in the sample container: Trip Blank 1 (310-283154-25).

Method 8260D: The continuing calibration verification (CCV) associated with batch 310-424467 recovered above the upper control limit for 2-Hexanone (31.0%D) and 4-Methyl-2-pentanone (MIBK) (35.0%D). The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated sample is impacted: (CCV 310-424467/4).

Method 8260D: The method blank for analytical batch 310-424467 contained m,p-Xylene and Xylenes, Total above the method detection limit. This target analyte concentration was less than the reporting limit (RL) in the method blank; therefore, re-extraction and/or re-analysis of samples was not performed.

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

GC/MS Semi VOA
Method 8270E: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 310-424460. The laboratory control sample (LCS) was performed in duplicate (LCSD) to provide precision data for this batch.

Method 8270E: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 310-424460 and analytical batch 310-424715 recovered outside control limits for the following analytes: 2,4-Dinitrophenol

Method 8270E: The laboratory control sample duplicate (LCSD) for preparation batch 310-424460 and analytical batch 310-424715 recovered outside control limits for the following analytes: Famphur. These analytes were biased high in the LCSD and were not detected in the associated samples; therefore, the data have been reported.

Method 8270E: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 310-424460 and analytical batch 310-424715 recovered outside control limits for the following analytes: 2,4-Dinitrophenol, 3,3'-Dimethylbenzidine and Methapyrilene.

Method 8270E: The continuing calibration verification (CCV) associated with batch 310-424715 recovered above the upper control limit for 1,4-Naphthoquinone (22.7%D), Dinoseb (27.7%D), 3,3'-Dichlorobenzidine (20.5%D), Safrole (27.2%D), 1,3-Dinitrobenzene 23.5%D), o,o',o''-Triethylphosphorothioate (26.5%D), 2-Chloronaphthalene (27.1%D) and 2,4-Dichlorophenol (20.2%D). The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Job ID: 310-283154-1 (Continued) Eurofins Cedar Falls

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

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

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

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

Pesticides
Method 8081B: The continuing calibration verification (CCV) associated with batch 310-424293 recovered above the upper control limit for Methoxychlor. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

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

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

Metals
Method 6010D: The following sample(s) was diluted due to the presence of an interferent. MW-39R (310-283154-7). Elevated reporting limits (RLs) are provided.

Method 6020B: The initial calibration verification (ICV) result for batch 310-425398 was above the upper control limit. The affected analytes are: Selenium. Sample results were non-detects, and have been reported as qualified data. MW-63R (310-283154-14)

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

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

Sample Summary

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-283154-1	MW-53	Groundwater	06/04/24 13:22	06/07/24 16:50
310-283154-2	91-MW-14	Groundwater	06/04/24 14:31	06/07/24 16:50
310-283154-3	GU-7	Groundwater	06/05/24 16:05	06/07/24 16:50
310-283154-4	93-MW-32	Groundwater	06/04/24 16:18	06/07/24 16:50
310-283154-5	MW-62	Groundwater	06/06/24 12:17	06/07/24 16:50
310-283154-6	MW-81	Groundwater	06/06/24 13:30	06/07/24 16:50
310-283154-7	MW-39R	Groundwater	06/05/24 17:14	06/07/24 16:50
310-283154-8	MW-40	Groundwater	06/04/24 10:34	06/07/24 16:50
310-283154-9	04-MW-56	Groundwater	06/06/24 11:20	06/07/24 16:50
310-283154-10	MW-D1	Groundwater	06/04/24 16:18	06/07/24 16:50
310-283154-11	MW-D2	Groundwater	06/04/24 09:46	06/07/24 16:50
310-283154-12	MW-58	Groundwater	06/04/24 09:46	06/07/24 16:50
310-283154-13	MW-59	Groundwater	06/04/24 12:05	06/07/24 16:50
310-283154-14	MW-63R	Groundwater	06/04/24 17:58	06/07/24 16:50
310-283154-15	MW-64	Groundwater	06/04/24 15:12	06/07/24 16:50
310-283154-16	MW-65	Groundwater	06/04/24 11:25	06/07/24 16:50
310-283154-17	93-MW-31R	Groundwater	06/05/24 14:19	06/07/24 16:50
310-283154-18	MW-61R	Groundwater	06/06/24 10:09	06/07/24 16:50
310-283154-19	MW-73	Groundwater	06/06/24 14:07	06/07/24 16:50
310-283154-20	MW-79	Groundwater	06/05/24 12:13	06/07/24 16:50
310-283154-21	MW-66	Groundwater	06/04/24 17:05	06/07/24 16:50
310-283154-22	MW-68	Groundwater	06/05/24 11:23	06/07/24 16:50
310-283154-23	MW-75	Groundwater	06/06/24 09:23	06/07/24 16:50
310-283154-24	MW-78	Groundwater	06/05/24 10:16	06/07/24 16:50
310-283154-25	Trip Blank 1	Groundwater	06/04/24 00:00	06/07/24 16:50
310-283154-26	Trip Blank 2	Groundwater	06/04/24 00:00	06/07/24 16:50

Detection Summary

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-53 — Lab Sample ID: 310-283154-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.0220		0.00200	0.000660	mg/L	1		6020B	Total/NA
Total Suspended Solids	3.00		1.88	1.39	mg/L	1		I-3765-85	Total/NA

Client Sample ID: 91-MW-14 — Lab Sample ID: 310-283154-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.0141		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cobalt	0.000223	J	0.000500	0.000170	mg/L	1		6020B	Total/NA
Zinc	0.0136	J	0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	2.38		1.88	1.39	mg/L	1		I-3765-85	Total/NA

Client Sample ID: GU-7 — Lab Sample ID: 310-283154-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00385		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0184		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.000261		0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.0305		0.000500	0.000170	mg/L	1		6020B	Total/NA
Nickel	0.0761		0.00500	0.00210	mg/L	1		6020B	Total/NA
Zinc	0.0748		0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	29.5		3.75	2.78	mg/L	1		I-3765-85	Total/NA

Client Sample ID: 93-MW-32 — Lab Sample ID: 310-283154-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00377		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0605		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.00107		0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.00637		0.000500	0.000170	mg/L	1		6020B	Total/NA
Lead	0.000585		0.000500	0.000260	mg/L	1		6020B	Total/NA
Nickel	0.0779		0.00500	0.00210	mg/L	1		6020B	Total/NA
Zinc	0.0244		0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	60.0		3.75	2.78	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-62 — Lab Sample ID: 310-283154-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.0264		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cobalt	0.000399	J	0.000500	0.000170	mg/L	1		6020B	Total/NA
Lead	0.000452	J	0.000500	0.000260	mg/L	1		6020B	Total/NA
Nickel	0.00298	J	0.00500	0.00210	mg/L	1		6020B	Total/NA
Total Suspended Solids	3.38		1.88	1.39	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-81 — Lab Sample ID: 310-283154-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.238	J	1.00	0.220	ug/L	1		8260D	Total/NA
cis-1,2-Dichloroethene	2.44		1.00	0.210	ug/L	1		8260D	Total/NA
Tetrachloroethene	0.843	J	1.00	0.480	ug/L	1		8260D	Total/NA
Trichloroethene	0.887	J	1.00	0.430	ug/L	1		8260D	Total/NA
Arsenic	0.00158	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.234		0.00200	0.000660	mg/L	1		6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-81 (Continued)
Lab Sample ID: 310-283154-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Beryllium	0.000379	J	0.00100	0.000330	mg/L	1		6020B	Total/NA
Cadmium	0.00106		0.000200	0.000100	mg/L	1		6020B	Total/NA
Chromium	0.00166	J	0.00500	0.00120	mg/L	1		6020B	Total/NA
Cobalt	0.00324		0.000500	0.000170	mg/L	1		6020B	Total/NA
Copper	0.00405	J	0.00500	0.00180	mg/L	1		6020B	Total/NA
Lead	0.00166		0.000500	0.000260	mg/L	1		6020B	Total/NA
Nickel	0.0174		0.00500	0.00210	mg/L	1		6020B	Total/NA
Selenium	0.00307	J	0.00500	0.00140	mg/L	1		6020B	Total/NA
Vanadium	0.00519		0.00500	0.00110	mg/L	1		6020B	Total/NA
Zinc	0.0611		0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	561		15.0	11.1	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-39R
Lab Sample ID: 310-283154-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	2510		50.0	21.0	mg/L	50		9056A	Total/NA
Iron	253		1.00	0.158	mg/L	2		6010D	Total/NA
Manganese	32.9		0.0200	0.00640	mg/L	2		6010D	Total/NA
Arsenic	0.0259		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0119		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cobalt	0.0278		0.000500	0.000170	mg/L	1		6020B	Total/NA
Nickel	0.0110		0.00500	0.00210	mg/L	1		6020B	Total/NA
Total Suspended Solids	217		7.50	5.55	mg/L	1		I-3765-85	Total/NA
Total Alkalinity as CaCO3 to pH 4.5	529		5.00	2.50	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	529		5.00	2.50	mg/L	1		SM 2320B	Total/NA

Client Sample ID: MW-40
Lab Sample ID: 310-283154-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.513	J	1.00	0.220	ug/L	1		8260D	Total/NA
Acetone	24.4		10.0	3.10	ug/L	1		8260D	Total/NA
Benzene	0.845		0.500	0.220	ug/L	1		8260D	Total/NA
cis-1,2-Dichloroethene	5.84		1.00	0.210	ug/L	1		8260D	Total/NA
Vinyl chloride	0.737	J	1.00	0.180	ug/L	1		8260D	Total/NA
Sulfate	610		50.0	21.0	mg/L	50		9056A	Total/NA
Aluminum	0.0884	J	0.100	0.0250	mg/L	1		6010D	Total/NA
Iron	61.1		0.500	0.0790	mg/L	1		6010D	Total/NA
Manganese	38.7		0.0100	0.00320	mg/L	1		6010D	Total/NA
Arsenic	0.00702		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0140		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.000228		0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.135		0.000500	0.000170	mg/L	1		6020B	Total/NA
Copper	0.00457	J	0.00500	0.00180	mg/L	1		6020B	Total/NA
Nickel	0.0903		0.00500	0.00210	mg/L	1		6020B	Total/NA
Zinc	0.0687		0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	38.3		5.00	3.70	mg/L	1		I-3765-85	Total/NA
Total Alkalinity as CaCO3 to pH 4.5	212		5.00	2.50	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	212		5.00	2.50	mg/L	1		SM 2320B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: 04-MW-56 — Lab Sample ID: 310-283154-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	460		50.0	21.0	mg/L	50		9056A	Total/NA
Iron	20.0		0.500	0.0790	mg/L	1		6010D	Total/NA
Manganese	7.22		0.0100	0.00320	mg/L	1		6010D	Total/NA
Arsenic	0.00455		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0278		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.000210		0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.0214		0.000500	0.000170	mg/L	1		6020B	Total/NA
Copper	0.00270	J	0.00500	0.00180	mg/L	1		6020B	Total/NA
Nickel	0.0715		0.00500	0.00210	mg/L	1		6020B	Total/NA
Zinc	0.0660		0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	35.3		5.00	3.70	mg/L	1		I-3765-85	Total/NA
Total Alkalinity as CaCO3 to pH 4.5	524		5.00	2.50	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	524		5.00	2.50	mg/L	1		SM 2320B	Total/NA

Client Sample ID: MW-D1 — Lab Sample ID: 310-283154-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00393		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0649		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.00110		0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.00744		0.000500	0.000170	mg/L	1		6020B	Total/NA
Copper	0.00351	J	0.00500	0.00180	mg/L	1		6020B	Total/NA
Lead	0.000835		0.000500	0.000260	mg/L	1		6020B	Total/NA
Nickel	0.0824		0.00500	0.00210	mg/L	1		6020B	Total/NA
Zinc	0.0279		0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	89.3		3.75	2.78	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-D2 — Lab Sample ID: 310-283154-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	907		50.0	21.0	mg/L	50		9056A	Total/NA
Aluminum	0.0769	J	0.100	0.0250	mg/L	1		6010D	Total/NA
Iron	5.87		0.500	0.0790	mg/L	1		6010D	Total/NA
Manganese	4.25		0.0100	0.00320	mg/L	1		6010D	Total/NA
Barium	0.0235		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.00140		0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.0220		0.000500	0.000170	mg/L	1		6020B	Total/NA
Copper	0.00181	J	0.00500	0.00180	mg/L	1		6020B	Total/NA
Nickel	0.0520		0.00500	0.00210	mg/L	1		6020B	Total/NA
Zinc	0.0976		0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	15.8		3.75	2.78	mg/L	1		I-3765-85	Total/NA
Total Alkalinity as CaCO3 to pH 4.5	180		5.00	2.50	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	180		5.00	2.50	mg/L	1		SM 2320B	Total/NA

Client Sample ID: MW-58 — Lab Sample ID: 310-283154-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	911		50.0	21.0	mg/L	50		9056A	Total/NA
Aluminum	0.0570	J	0.100	0.0250	mg/L	1		6010D	Total/NA
Iron	5.39		0.500	0.0790	mg/L	1		6010D	Total/NA
Manganese	4.24		0.0100	0.00320	mg/L	1		6010D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-58 (Continued) — Lab Sample ID: 310-283154-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.0233		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.00136		0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.0215		0.000500	0.000170	mg/L	1		6020B	Total/NA
Copper	0.00238	J	0.00500	0.00180	mg/L	1		6020B	Total/NA
Nickel	0.0521		0.00500	0.00210	mg/L	1		6020B	Total/NA
Zinc	0.0882		0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	13.8		3.75	2.78	mg/L	1		I-3765-85	Total/NA
Total Alkalinity as CaCO3 to pH 4.5	175		5.00	2.50	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	175		5.00	2.50	mg/L	1		SM 2320B	Total/NA

Client Sample ID: MW-59 — Lab Sample ID: 310-283154-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	953		50.0	21.0	mg/L	50		9056A	Total/NA
Aluminum	0.0361	J	0.100	0.0250	mg/L	1		6010D	Total/NA
Iron	38.8		0.500	0.0790	mg/L	1		6010D	Total/NA
Manganese	12.4		0.0100	0.00320	mg/L	1		6010D	Total/NA
Arsenic	0.00585		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0317		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.000880		0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.00999		0.000500	0.000170	mg/L	1		6020B	Total/NA
Copper	0.00449	J	0.00500	0.00180	mg/L	1		6020B	Total/NA
Lead	0.000522		0.000500	0.000260	mg/L	1		6020B	Total/NA
Nickel	0.0230		0.00500	0.00210	mg/L	1		6020B	Total/NA
Zinc	0.0407		0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	81.0		5.00	3.70	mg/L	1		I-3765-85	Total/NA
Total Alkalinity as CaCO3 to pH 4.5	613		5.00	2.50	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	613		5.00	2.50	mg/L	1		SM 2320B	Total/NA

Client Sample ID: MW-63R — Lab Sample ID: 310-283154-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	2020		50.0	21.0	mg/L	50		9056A	Total/NA
Aluminum	0.645		0.100	0.0250	mg/L	1		6010D	Total/NA
Iron	0.113	J	0.500	0.0790	mg/L	1		6010D	Total/NA
Manganese	0.564		0.0100	0.00320	mg/L	1		6010D	Total/NA
Barium	0.0121		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.00403		0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.00276		0.000500	0.000170	mg/L	1		6020B	Total/NA
Copper	0.00331	J	0.00500	0.00180	mg/L	1		6020B	Total/NA
Nickel	0.0433		0.00500	0.00210	mg/L	1		6020B	Total/NA
Zinc	0.219		0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	5.75		1.88	1.39	mg/L	1		I-3765-85	Total/NA
Total Alkalinity as CaCO3 to pH 4.5	421		5.00	2.50	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	421		5.00	2.50	mg/L	1		SM 2320B	Total/NA

Client Sample ID: MW-64 — Lab Sample ID: 310-283154-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	68.7		50.0	21.0	mg/L	50		9056A	Total/NA
Iron	2.47		0.500	0.0790	mg/L	1		6010D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-64 (Continued) — Lab Sample ID: 310-283154-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	0.160		0.0100	0.00320	mg/L	1		6010D	Total/NA
Arsenic	0.00109	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.171		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cobalt	0.000308	J	0.000500	0.000170	mg/L	1		6020B	Total/NA
Nickel	0.0269		0.00500	0.00210	mg/L	1		6020B	Total/NA
Total Suspended Solids	6.25		1.88	1.39	mg/L	1		I-3765-85	Total/NA
Total Alkalinity as CaCO3 to pH 4.5	635		5.00	2.50	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	635		5.00	2.50	mg/L	1		SM 2320B	Total/NA

Client Sample ID: MW-65 — Lab Sample ID: 310-283154-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.649	J	1.00	0.220	ug/L	1		8260D	Total/NA
Benzene	1.55		0.500	0.220	ug/L	1		8260D	Total/NA
Chloroethane	3.28	J	4.00	0.790	ug/L	1		8260D	Total/NA
cis-1,2-Dichloroethene	0.878	J	1.00	0.210	ug/L	1		8260D	Total/NA
Sulfate	150		50.0	21.0	mg/L	50		9056A	Total/NA
Iron	58.2		0.500	0.0790	mg/L	1		6010D	Total/NA
Manganese	2.63		0.0100	0.00320	mg/L	1		6010D	Total/NA
Arsenic	0.0264		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.331		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cobalt	0.00169		0.000500	0.000170	mg/L	1		6020B	Total/NA
Total Suspended Solids	128		5.00	3.70	mg/L	1		I-3765-85	Total/NA
Total Alkalinity as CaCO3 to pH 4.5	873		5.00	2.50	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	873		5.00	2.50	mg/L	1		SM 2320B	Total/NA

Client Sample ID: 93-MW-31R — Lab Sample ID: 310-283154-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	150		100	42.0	mg/L	100		9056A	Total/NA
Iron	14.5		0.500	0.0790	mg/L	1		6010D	Total/NA
Manganese	0.397		0.0100	0.00320	mg/L	1		6010D	Total/NA
Arsenic	0.0131		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0577		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.000736		0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.00187		0.000500	0.000170	mg/L	1		6020B	Total/NA
Copper	0.00274	J	0.00500	0.00180	mg/L	1		6020B	Total/NA
Lead	0.000937		0.000500	0.000260	mg/L	1		6020B	Total/NA
Selenium	0.00401	J	0.00500	0.00140	mg/L	1		6020B	Total/NA
Vanadium	0.00366	J	0.00500	0.00110	mg/L	1		6020B	Total/NA
Zinc	0.0158	J	0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	85.0		15.0	11.1	mg/L	1		I-3765-85	Total/NA
Total Organic Carbon	1.29		1.00	0.500	mg/L	1		SM 5310C	Total/NA

Client Sample ID: MW-61R — Lab Sample ID: 310-283154-18

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.540	J	1.00	0.220	ug/L	1		8260D	Total/NA
cis-1,2-Dichloroethene	12.5		1.00	0.210	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	0.273	J	1.00	0.270	ug/L	1		8260D	Total/NA
Sulfate	1460		100	42.0	mg/L	100		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-61R (Continued) — Lab Sample ID: 310-283154-18

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	6.17		0.500	0.0790	mg/L	1		6010D	Total/NA
Manganese	6.41		0.0100	0.00320	mg/L	1		6010D	Total/NA
Arsenic	0.00754		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0147		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.000277		0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.0103		0.000500	0.000170	mg/L	1		6020B	Total/NA
Copper	0.00411	J	0.00500	0.00180	mg/L	1		6020B	Total/NA
Lead	0.00172		0.000500	0.000260	mg/L	1		6020B	Total/NA
Nickel	0.0335		0.00500	0.00210	mg/L	1		6020B	Total/NA
Vanadium	0.00192	J	0.00500	0.00110	mg/L	1		6020B	Total/NA
Zinc	0.0233		0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	139		15.0	11.1	mg/L	1		I-3765-85	Total/NA
Total Organic Carbon	3.35		1.00	0.500	mg/L	1		SM 5310C	Total/NA

Client Sample ID: MW-73 — Lab Sample ID: 310-283154-19

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	3.50		1.00	0.220	ug/L	1		8260D	Total/NA
1,2-Dichloropropane	0.918	J	1.00	0.270	ug/L	1		8260D	Total/NA
1,4-Dichlorobenzene	0.232	J	1.00	0.230	ug/L	1		8260D	Total/NA
Benzene	0.479	J	0.500	0.220	ug/L	1		8260D	Total/NA
cis-1,2-Dichloroethene	37.5		1.00	0.210	ug/L	1		8260D	Total/NA
Tetrachloroethene	2.36		1.00	0.480	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	0.702	J	1.00	0.270	ug/L	1		8260D	Total/NA
Trichloroethene	5.02		1.00	0.430	ug/L	1		8260D	Total/NA
Vinyl chloride	3.66		1.00	0.180	ug/L	1		8260D	Total/NA
Sulfate	63.3		50.0	21.0	mg/L	50		9056A	Total/NA
Iron	11.1		0.500	0.0790	mg/L	1		6010D	Total/NA
Manganese	5.54		0.0100	0.00320	mg/L	1		6010D	Total/NA
Arsenic	0.0116		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0995		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.107		0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.0639		0.000500	0.000170	mg/L	1		6020B	Total/NA
Copper	0.0165		0.00500	0.00180	mg/L	1		6020B	Total/NA
Lead	0.00283		0.000500	0.000260	mg/L	1		6020B	Total/NA
Nickel	0.0263		0.00500	0.00210	mg/L	1		6020B	Total/NA
Zinc	0.383		0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	239		15.0	11.1	mg/L	1		I-3765-85	Total/NA
Total Organic Carbon	1.09		1.00	0.500	mg/L	1		SM 5310C	Total/NA

Client Sample ID: MW-79 — Lab Sample ID: 310-283154-20

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	3.65		1.00	0.220	ug/L	1		8260D	Total/NA
1,2-Dichloropropane	0.404	J	1.00	0.270	ug/L	1		8260D	Total/NA
Benzene	0.301	J	0.500	0.220	ug/L	1		8260D	Total/NA
cis-1,2-Dichloroethene	38.2		1.00	0.210	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	0.766	J	1.00	0.270	ug/L	1		8260D	Total/NA
Vinyl chloride	5.19		1.00	0.180	ug/L	1		8260D	Total/NA
Sulfate	95.8		50.0	21.0	mg/L	50		9056A	Total/NA
Iron	0.264	J F1	0.500	0.0790	mg/L	1		6010D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-79 (Continued) — Lab Sample ID: 310-283154-20

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	16.3		0.0100	0.00320	mg/L	1		6010D	Total/NA
Barium	0.114		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.0235		0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.00324		0.000500	0.000170	mg/L	1		6020B	Total/NA
Copper	0.00257	J	0.00500	0.00180	mg/L	1		6020B	Total/NA
Lead	0.000839		0.000500	0.000260	mg/L	1		6020B	Total/NA
Nickel	0.0304		0.00500	0.00210	mg/L	1		6020B	Total/NA
Vanadium	0.00210	J	0.00500	0.00110	mg/L	1		6020B	Total/NA
Zinc	0.175		0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	21.3		3.75	2.78	mg/L	1		I-3765-85	Total/NA
Total Organic Carbon	1.03		1.00	0.500	mg/L	1		SM 5310C	Total/NA

Client Sample ID: MW-66 — Lab Sample ID: 310-283154-21

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	0.000281	J	0.000500	0.000170	mg/L	1		6020B	Total/NA
Total Suspended Solids	2.75		1.88	1.39	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-68 — Lab Sample ID: 310-283154-22

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	0.00298		0.000500	0.000170	mg/L	1		6020B	Total/NA
Total Suspended Solids	15.5		1.88	1.39	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-75 — Lab Sample ID: 310-283154-23

No Detections.

Client Sample ID: MW-78 — Lab Sample ID: 310-283154-24

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.34		1.00	0.210	ug/L	1		8260D	Total/NA
Tetrachloroethene	1.05		1.00	0.480	ug/L	1		8260D	Total/NA
Trichloroethene	0.556	J	1.00	0.430	ug/L	1		8260D	Total/NA
Cobalt	0.0171		0.000500	0.000170	mg/L	1		6020B	Total/NA
Total Suspended Solids	164		30.0	22.2	mg/L	1		I-3765-85	Total/NA

Client Sample ID: Trip Blank 1 — Lab Sample ID: 310-283154-25

No Detections.

Client Sample ID: Trip Blank 2 — Lab Sample ID: 310-283154-26

No Detections.

This Detection Summary does not include radiochemical test results.

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-53
Lab Sample ID: 310-283154-1
Date Collected: 06/04/24 13:22
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			06/12/24 02:29	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			06/12/24 02:29	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			06/12/24 02:29	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			06/12/24 02:29	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			06/12/24 02:29	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			06/12/24 02:29	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			06/12/24 02:29	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			06/12/24 02:29	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			06/12/24 02:29	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			06/12/24 02:29	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			06/12/24 02:29	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			06/12/24 02:29	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			06/12/24 02:29	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			06/12/24 02:29	1
2-Hexanone	<10.0		10.0	2.00	ug/L			06/12/24 02:29	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			06/12/24 02:29	1
Acetone	<10.0		10.0	3.10	ug/L			06/12/24 02:29	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			06/12/24 02:29	1
Benzene	<0.500		0.500	0.220	ug/L			06/12/24 02:29	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			06/12/24 02:29	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			06/12/24 02:29	1
Bromoform	<5.00		5.00	0.780	ug/L			06/12/24 02:29	1
Bromomethane	<4.00		4.00	1.10	ug/L			06/12/24 02:29	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			06/12/24 02:29	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			06/12/24 02:29	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			06/12/24 02:29	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			06/12/24 02:29	1
Chloroethane	<4.00		4.00	0.790	ug/L			06/12/24 02:29	1
Chloroform	<3.00		3.00	1.30	ug/L			06/12/24 02:29	1
Chloromethane	<3.00		3.00	0.610	ug/L			06/12/24 02:29	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			06/12/24 02:29	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			06/12/24 02:29	1
Dibromomethane	<1.00		1.00	0.330	ug/L			06/12/24 02:29	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			06/12/24 02:29	1
Iodomethane	<10.0		10.0	7.00	ug/L			06/12/24 02:29	1
Methylene chloride	<5.00		5.00	1.70	ug/L			06/12/24 02:29	1
Styrene	<1.00		1.00	0.370	ug/L			06/12/24 02:29	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			06/12/24 02:29	1
Toluene	<1.00		1.00	0.430	ug/L			06/12/24 02:29	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			06/12/24 02:29	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			06/12/24 02:29	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			06/12/24 02:29	1
Trichloroethene	<1.00		1.00	0.430	ug/L			06/12/24 02:29	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			06/12/24 02:29	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			06/12/24 02:29	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			06/12/24 02:29	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			06/12/24 02:29	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-53
Lab Sample ID: 310-283154-1
Date Collected: 06/04/24 13:22
Matrix: Groundwater
Date Received: 06/07/24 16:50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*101*		*73 - 130*		*06/12/24 02:29*	*1*
Toluene-d8 (Surr)	*94*		*80 - 120*		*06/12/24 02:29*	*1*
4-Bromofluorobenzene (Surr)	*103*		*80 - 120*		*06/12/24 02:29*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		06/12/24 09:00	07/01/24 23:22	1
Arsenic	<0.00200		0.00200	0.000530	mg/L		06/12/24 09:00	06/21/24 15:21	1
Barium	**0.0220**		0.00200	0.000660	mg/L		06/12/24 09:00	06/27/24 16:34	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		06/12/24 09:00	06/24/24 22:07	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		06/12/24 09:00	06/21/24 15:21	1
Chromium	<0.00500		0.00500	0.00120	mg/L		06/12/24 09:00	06/21/24 15:21	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		06/12/24 09:00	06/21/24 15:21	1
Copper	<0.00500		0.00500	0.00180	mg/L		06/12/24 09:00	06/24/24 22:07	1
Lead	<0.000500		0.000500	0.000260	mg/L		06/12/24 09:00	06/24/24 22:07	1
Nickel	<0.00500		0.00500	0.00210	mg/L		06/12/24 09:00	06/21/24 15:21	1
Selenium	<0.00500		0.00500	0.00140	mg/L		06/12/24 09:00	06/27/24 16:34	1
Silver	<0.00100		0.00100	0.000500	mg/L		06/12/24 09:00	06/21/24 15:21	1
Thallium	<0.00100		0.00100	0.000570	mg/L		06/12/24 09:00	06/24/24 22:07	1
Vanadium	<0.00500		0.00500	0.00110	mg/L		06/12/24 09:00	06/24/24 22:07	1
Zinc	<0.0200		0.0200	0.00970	mg/L		06/12/24 09:00	06/21/24 15:21	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**3.00**		1.88	1.39	mg/L			06/10/24 16:09	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: 91-MW-14
Lab Sample ID: 310-283154-2
Date Collected: 06/04/24 14:31
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200	0.000530	mg/L		06/12/24 09:00	06/21/24 15:34	1
Barium	**0.0141**		0.00200	0.000660	mg/L		06/12/24 09:00	06/27/24 16:44	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		06/12/24 09:00	06/21/24 15:34	1
Cobalt	**0.000223**	**J**	0.000500	0.000170	mg/L		06/12/24 09:00	06/21/24 15:34	1
Copper	<0.00500		0.00500	0.00180	mg/L		06/12/24 09:00	06/24/24 22:17	1
Lead	<0.000500		0.000500	0.000260	mg/L		06/12/24 09:00	06/24/24 22:17	1
Nickel	<0.00500		0.00500	0.00210	mg/L		06/12/24 09:00	06/21/24 15:34	1
Zinc	**0.0136**	**J**	0.0200	0.00970	mg/L		06/12/24 09:00	06/21/24 15:34	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**2.38**		1.88	1.39	mg/L			06/10/24 16:09	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: GU-7
Lab Sample ID: 310-283154-3
Date Collected: 06/05/24 16:05
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			06/12/24 02:51	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			06/12/24 02:51	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			06/12/24 02:51	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			06/12/24 02:51	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			06/12/24 02:51	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			06/12/24 02:51	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			06/12/24 02:51	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			06/12/24 02:51	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			06/12/24 02:51	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			06/12/24 02:51	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			06/12/24 02:51	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			06/12/24 02:51	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			06/12/24 02:51	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			06/12/24 02:51	1
2-Hexanone	<10.0		10.0	2.00	ug/L			06/12/24 02:51	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			06/12/24 02:51	1
Acetone	<10.0		10.0	3.10	ug/L			06/12/24 02:51	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			06/12/24 02:51	1
Benzene	<0.500		0.500	0.220	ug/L			06/12/24 02:51	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			06/12/24 02:51	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			06/12/24 02:51	1
Bromoform	<5.00		5.00	0.780	ug/L			06/12/24 02:51	1
Bromomethane	<4.00		4.00	1.10	ug/L			06/12/24 02:51	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			06/12/24 02:51	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			06/12/24 02:51	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			06/12/24 02:51	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			06/12/24 02:51	1
Chloroethane	<4.00		4.00	0.790	ug/L			06/12/24 02:51	1
Chloroform	<3.00		3.00	1.30	ug/L			06/12/24 02:51	1
Chloromethane	<3.00		3.00	0.610	ug/L			06/12/24 02:51	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			06/12/24 02:51	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			06/12/24 02:51	1
Dibromomethane	<1.00		1.00	0.330	ug/L			06/12/24 02:51	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			06/12/24 02:51	1
Iodomethane	<10.0		10.0	7.00	ug/L			06/12/24 02:51	1
Methylene chloride	<5.00		5.00	1.70	ug/L			06/12/24 02:51	1
Styrene	<1.00		1.00	0.370	ug/L			06/12/24 02:51	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			06/12/24 02:51	1
Toluene	<1.00		1.00	0.430	ug/L			06/12/24 02:51	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			06/12/24 02:51	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			06/12/24 02:51	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			06/12/24 02:51	1
Trichloroethene	<1.00		1.00	0.430	ug/L			06/12/24 02:51	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			06/12/24 02:51	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			06/12/24 02:51	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			06/12/24 02:51	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			06/12/24 02:51	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: GU-7
Lab Sample ID: 310-283154-3
Date Collected: 06/05/24 16:05
Matrix: Groundwater
Date Received: 06/07/24 16:50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*100*		*73 - 130*		*06/12/24 02:51*	*1*
Toluene-d8 (Surr)	*95*		*80 - 120*		*06/12/24 02:51*	*1*
4-Bromofluorobenzene (Surr)	*103*		*80 - 120*		*06/12/24 02:51*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		06/12/24 09:00	07/01/24 23:46	1
Arsenic	**0.00385**		0.00200	0.000530	mg/L		06/12/24 09:00	06/21/24 15:36	1
Barium	**0.0184**		0.00200	0.000660	mg/L		06/12/24 09:00	06/27/24 17:02	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		06/12/24 09:00	06/24/24 22:21	1
Cadmium	**0.000261**		0.000200	0.000100	mg/L		06/12/24 09:00	06/21/24 15:36	1
Chromium	<0.00500		0.00500	0.00120	mg/L		06/12/24 09:00	06/21/24 15:36	1
Cobalt	**0.0305**		0.000500	0.000170	mg/L		06/12/24 09:00	06/21/24 15:36	1
Copper	<0.00500		0.00500	0.00180	mg/L		06/12/24 09:00	06/24/24 22:21	1
Lead	<0.000500		0.000500	0.000260	mg/L		06/12/24 09:00	06/24/24 22:21	1
Nickel	**0.0761**		0.00500	0.00210	mg/L		06/12/24 09:00	06/21/24 15:36	1
Selenium	<0.00500		0.00500	0.00140	mg/L		06/12/24 09:00	06/27/24 17:02	1
Silver	<0.00100		0.00100	0.000500	mg/L		06/12/24 09:00	06/21/24 15:36	1
Thallium	<0.00100		0.00100	0.000570	mg/L		06/12/24 09:00	06/24/24 22:21	1
Vanadium	<0.00500		0.00500	0.00110	mg/L		06/12/24 09:00	06/24/24 22:21	1
Zinc	**0.0748**		0.0200	0.00970	mg/L		06/12/24 09:00	06/21/24 15:36	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**29.5**		3.75	2.78	mg/L			06/10/24 16:09	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: 93-MW-32
Lab Sample ID: 310-283154-4
Date Collected: 06/04/24 16:18
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00377		0.00200	0.000530	mg/L		06/12/24 09:00	06/21/24 15:38	1
Barium	0.0605		0.00200	0.000660	mg/L		06/12/24 09:00	06/27/24 17:05	1
Cadmium	0.00107		0.000200	0.000100	mg/L		06/12/24 09:00	06/21/24 15:38	1
Cobalt	0.00637		0.000500	0.000170	mg/L		06/12/24 09:00	06/21/24 15:38	1
Copper	<0.00500		0.00500	0.00180	mg/L		06/12/24 09:00	06/24/24 22:25	1
Lead	0.000585		0.000500	0.000260	mg/L		06/12/24 09:00	06/24/24 22:25	1
Nickel	0.0779		0.00500	0.00210	mg/L		06/12/24 09:00	06/21/24 15:38	1
Zinc	0.0244		0.0200	0.00970	mg/L		06/12/24 09:00	06/21/24 15:38	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	60.0		3.75	2.78	mg/L			06/10/24 16:09	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-62
Lab Sample ID: 310-283154-5
Date Collected: 06/06/24 12:17
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			06/12/24 03:14	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			06/12/24 03:14	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			06/12/24 03:14	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			06/12/24 03:14	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			06/12/24 03:14	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			06/12/24 03:14	1
1,1-Dichloropropene	<1.00		1.00	0.430	ug/L			06/12/24 03:14	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			06/12/24 03:14	1
1,2,4-Trichlorobenzene	<5.00		5.00	0.750	ug/L			06/12/24 03:14	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			06/12/24 03:14	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			06/12/24 03:14	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			06/12/24 03:14	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			06/12/24 03:14	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			06/12/24 03:14	1
1,3-Dichlorobenzene	<1.00		1.00	0.300	ug/L			06/12/24 03:14	1
1,3-Dichloropropane	<1.00		1.00	0.400	ug/L			06/12/24 03:14	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			06/12/24 03:14	1
2,2-Dichloropropane	<4.00		4.00	0.690	ug/L			06/12/24 03:14	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			06/12/24 03:14	1
2-Hexanone	<10.0		10.0	2.00	ug/L			06/12/24 03:14	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			06/12/24 03:14	1
Acetone	<10.0		10.0	3.10	ug/L			06/12/24 03:14	1
Acrolein	<10.0		10.0	3.60	ug/L			06/12/24 03:14	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			06/12/24 03:14	1
Allyl chloride	<2.00		2.00	0.700	ug/L			06/12/24 03:14	1
Benzene	<0.500		0.500	0.220	ug/L			06/12/24 03:14	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			06/12/24 03:14	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			06/12/24 03:14	1
Bromoform	<5.00		5.00	0.780	ug/L			06/12/24 03:14	1
Bromomethane	<4.00		4.00	1.10	ug/L			06/12/24 03:14	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			06/12/24 03:14	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			06/12/24 03:14	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			06/12/24 03:14	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			06/12/24 03:14	1
Chloroethane	<4.00		4.00	0.790	ug/L			06/12/24 03:14	1
Chloroform	<3.00		3.00	1.30	ug/L			06/12/24 03:14	1
Chloromethane	<3.00		3.00	0.610	ug/L			06/12/24 03:14	1
Chloroprene	<1.00		1.00	0.230	ug/L			06/12/24 03:14	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			06/12/24 03:14	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			06/12/24 03:14	1
Dibromomethane	<1.00		1.00	0.330	ug/L			06/12/24 03:14	1
Dichlorodifluoromethane	<3.00		3.00	0.250	ug/L			06/12/24 03:14	1
Ethyl methacrylate	<2.00		2.00	0.680	ug/L			06/12/24 03:14	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			06/12/24 03:14	1
Iodomethane	<10.0		10.0	7.00	ug/L			06/12/24 03:14	1
Methacrylonitrile	<10.0		10.0	3.30	ug/L			06/12/24 03:14	1
Methyl methacrylate	<2.00		2.00	0.760	ug/L			06/12/24 03:14	1
Methylene chloride	<5.00		5.00	1.70	ug/L			06/12/24 03:14	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-62
Lab Sample ID: 310-283154-5
Date Collected: 06/06/24 12:17
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<5.00		5.00	3.00	ug/L			06/12/24 03:14	1
Propionitrile	<10.0		10.0	3.40	ug/L			06/12/24 03:14	1
Styrene	<1.00		1.00	0.370	ug/L			06/12/24 03:14	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			06/12/24 03:14	1
Toluene	<1.00		1.00	0.430	ug/L			06/12/24 03:14	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			06/12/24 03:14	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			06/12/24 03:14	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			06/12/24 03:14	1
Trichloroethene	<1.00		1.00	0.430	ug/L			06/12/24 03:14	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			06/12/24 03:14	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			06/12/24 03:14	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			06/12/24 03:14	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			06/12/24 03:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*101*		*73 - 130*		*06/12/24 03:14*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*06/12/24 03:14*	*1*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*		*06/12/24 03:14*	*1*

Method: SW846 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<10.0		10.0	0.640	ug/L		06/13/24 10:50	06/17/24 16:27	1
Acenaphthylene	<10.0		10.0	0.720	ug/L		06/13/24 10:50	06/17/24 16:27	1
Acetophenone	<10.0		10.0	0.690	ug/L		06/13/24 10:50	06/17/24 16:27	1
2-Acetylaminofluorene	<10.0		10.0	2.70	ug/L		06/13/24 10:50	06/17/24 16:27	1
4-Aminobiphenyl	<10.0		10.0	2.20	ug/L		06/13/24 10:50	06/17/24 16:27	1
Anthracene	<10.0		10.0	0.870	ug/L		06/13/24 10:50	06/17/24 16:27	1
Benzo[a]anthracene	<10.0		10.0	0.850	ug/L		06/13/24 10:50	06/17/24 16:27	1
Benzo[a]pyrene	<10.0		10.0	8.10	ug/L		06/13/24 10:50	06/17/24 16:27	1
Benzo[b]fluoranthene	<10.0		10.0	4.90	ug/L		06/13/24 10:50	06/17/24 16:27	1
Benzo[g,h,i]perylene	<10.0		10.0	6.30	ug/L		06/13/24 10:50	06/17/24 16:27	1
Benzo[k]fluoranthene	<10.0		10.0	2.20	ug/L		06/13/24 10:50	06/17/24 16:27	1
Benzyl alcohol	<10.0		10.0	1.30	ug/L		06/13/24 10:50	06/17/24 16:27	1
Bis(2-chloroethoxy)methane	<10.0		10.0	0.760	ug/L		06/13/24 10:50	06/17/24 16:27	1
Bis(2-chloroethyl)ether	<10.0		10.0	0.820	ug/L		06/13/24 10:50	06/17/24 16:27	1
bis (2-chloroisopropyl) ether	<10.0		10.0	0.540	ug/L		06/13/24 10:50	06/17/24 16:27	1
Bis(2-ethylhexyl) phthalate	<10.0		10.0	5.50	ug/L		06/13/24 10:50	06/17/24 16:27	1
4-Bromophenyl phenyl ether	<10.0		10.0	0.700	ug/L		06/13/24 10:50	06/17/24 16:27	1
Butyl benzyl phthalate	<10.0		10.0	5.40	ug/L		06/13/24 10:50	06/17/24 16:27	1
4-Chloroaniline	<10.0		10.0	0.620	ug/L		06/13/24 10:50	06/17/24 16:27	1
Chlorobenzilate	<10.0		10.0	3.60	ug/L		06/13/24 10:50	06/17/24 16:27	1
4-Chloro-3-methylphenol	<10.0		10.0	0.840	ug/L		06/13/24 10:50	06/17/24 16:27	1
2-Chloronaphthalene	<10.0		10.0	0.640	ug/L		06/13/24 10:50	06/17/24 16:27	1
2-Chlorophenol	<10.0		10.0	0.540	ug/L		06/13/24 10:50	06/17/24 16:27	1
4-Chlorophenyl phenyl ether	<10.0		10.0	0.690	ug/L		06/13/24 10:50	06/17/24 16:27	1
Chrysene	<10.0		10.0	0.870	ug/L		06/13/24 10:50	06/17/24 16:27	1
Diallate	<10.0		10.0	4.00	ug/L		06/13/24 10:50	06/17/24 16:27	1
Dibenz(a,h)anthracene	<10.0		10.0	3.90	ug/L		06/13/24 10:50	06/17/24 16:27	1
Dibenzofuran	<10.0		10.0	0.740	ug/L		06/13/24 10:50	06/17/24 16:27	1

Client Sample ID: MW-62
Lab Sample ID: 310-283154-5
Date Collected: 06/06/24 12:17
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
3,3'-Dichlorobenzidine	<10.0		10.0	1.40	ug/L		06/13/24 10:50	06/17/24 16:27	1
2,4-Dichlorophenol	<10.0		10.0	0.850	ug/L		06/13/24 10:50	06/17/24 16:27	1
2,6-Dichlorophenol	<10.0		10.0	0.690	ug/L		06/13/24 10:50	06/17/24 16:27	1
Diethyl phthalate	<10.0		10.0	1.70	ug/L		06/13/24 10:50	06/17/24 16:27	1
Dimethoate	<10.0		10.0	3.60	ug/L		06/13/24 10:50	06/17/24 16:27	1
7,12-Dimethylbenz(a)anthracene	<10.0		10.0	1.90	ug/L		06/13/24 10:50	06/17/24 16:27	1
3,3'-Dimethylbenzidine	<10.0	*1	10.0	1.50	ug/L		06/13/24 10:50	06/17/24 16:27	1
2,4-Dimethylphenol	<10.0		10.0	0.580	ug/L		06/13/24 10:50	06/17/24 16:27	1
Dimethyl phthalate	<10.0		10.0	1.00	ug/L		06/13/24 10:50	06/17/24 16:27	1
Di-n-butyl phthalate	<10.0		10.0	5.60	ug/L		06/13/24 10:50	06/17/24 16:27	1
1,3-Dinitrobenzene	<10.0		10.0	3.20	ug/L		06/13/24 10:50	06/17/24 16:27	1
4,6-Dinitro-2-methylphenol	<10.0		10.0	6.90	ug/L		06/13/24 10:50	06/17/24 16:27	1
2,4-Dinitrophenol	<20.0	*1	20.0	13.0	ug/L		06/13/24 10:50	06/17/24 16:27	1
2,4-Dinitrotoluene	<10.0		10.0	6.40	ug/L		06/13/24 10:50	06/17/24 16:27	1
2,6-Dinitrotoluene	<10.0		10.0	0.520	ug/L		06/13/24 10:50	06/17/24 16:27	1
Di-n-octyl phthalate	<20.0		20.0	7.00	ug/L		06/13/24 10:50	06/17/24 16:27	1
Dinoseb	<10.0		10.0	2.40	ug/L		06/13/24 10:50	06/17/24 16:27	1
Diphenylamine	<10.0		10.0	6.00	ug/L		06/13/24 10:50	06/17/24 16:27	1
Disulfoton	<10.0		10.0	2.40	ug/L		06/13/24 10:50	06/17/24 16:27	1
Ethyl methanesulfonate	<10.0		10.0	3.60	ug/L		06/13/24 10:50	06/17/24 16:27	1
Ethyl parathion	<10.0		10.0	2.20	ug/L		06/13/24 10:50	06/17/24 16:27	1
Famphur	<10.0	*+	10.0	3.80	ug/L		06/13/24 10:50	06/17/24 16:27	1
Fluoranthene	<10.0		10.0	1.70	ug/L		06/13/24 10:50	06/17/24 16:27	1
Fluorene	<10.0		10.0	0.790	ug/L		06/13/24 10:50	06/17/24 16:27	1
Hexachlorobenzene	<10.0		10.0	0.700	ug/L		06/13/24 10:50	06/17/24 16:27	1
Hexachlorobutadiene	<10.0		10.0	0.860	ug/L		06/13/24 10:50	06/17/24 16:27	1
Hexachlorocyclopentadiene	<10.0		10.0	5.10	ug/L		06/13/24 10:50	06/17/24 16:27	1
Hexachloroethane	<10.0		10.0	0.970	ug/L		06/13/24 10:50	06/17/24 16:27	1
Hexachloropropene	<10.0		10.0	2.60	ug/L		06/13/24 10:50	06/17/24 16:27	1
Indeno(1,2,3-cd)pyrene	<10.0		10.0	4.20	ug/L		06/13/24 10:50	06/17/24 16:27	1
Isodrin	<10.0		10.0	4.70	ug/L		06/13/24 10:50	06/17/24 16:27	1
Isophorone	<10.0		10.0	0.930	ug/L		06/13/24 10:50	06/17/24 16:27	1
Isosafrole	<10.0		10.0	2.30	ug/L		06/13/24 10:50	06/17/24 16:27	1
Kepone	<10.0		10.0	1.00	ug/L		06/13/24 10:50	06/17/24 16:27	1
Methapyrilene	<10.0	*1	10.0	0.760	ug/L		06/13/24 10:50	06/17/24 16:27	1
3-Methylcholanthrene	<10.0		10.0	0.320	ug/L		06/13/24 10:50	06/17/24 16:27	1
Methyl methanesulfonate	<10.0		10.0	3.30	ug/L		06/13/24 10:50	06/17/24 16:27	1
2-Methylnaphthalene	<10.0		10.0	0.590	ug/L		06/13/24 10:50	06/17/24 16:27	1
Methyl parathion	<10.0		10.0	2.30	ug/L		06/13/24 10:50	06/17/24 16:27	1
2-Methylphenol	<10.0		10.0	0.650	ug/L		06/13/24 10:50	06/17/24 16:27	1
4-Methylphenol (and/or 3-Methylphenol)	<10.0		10.0	0.700	ug/L		06/13/24 10:50	06/17/24 16:27	1
1,4-Naphthoquinone	<10.0		10.0	3.60	ug/L		06/13/24 10:50	06/17/24 16:27	1
1-Naphthylamine	<10.0		10.0	2.50	ug/L		06/13/24 10:50	06/17/24 16:27	1
2-Naphthylamine	<10.0		10.0	2.10	ug/L		06/13/24 10:50	06/17/24 16:27	1
2-Nitroaniline	<10.0		10.0	5.90	ug/L		06/13/24 10:50	06/17/24 16:27	1
3-Nitroaniline	<10.0		10.0	2.70	ug/L		06/13/24 10:50	06/17/24 16:27	1
4-Nitroaniline	<10.0		10.0	1.30	ug/L		06/13/24 10:50	06/17/24 16:27	1
Nitrobenzene	<10.0		10.0	0.800	ug/L		06/13/24 10:50	06/17/24 16:27	1

Client Sample ID: MW-62
Lab Sample ID: 310-283154-5
Date Collected: 06/06/24 12:17
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
5-Nitro-o-toluidine	<10.0		10.0	2.80	ug/L		06/13/24 10:50	06/17/24 16:27	1
2-Nitrophenol	<10.0		10.0	6.80	ug/L		06/13/24 10:50	06/17/24 16:27	1
4-Nitrophenol	<10.0		10.0	7.60	ug/L		06/13/24 10:50	06/17/24 16:27	1
N-Nitrosodiethylamine	<10.0		10.0	3.40	ug/L		06/13/24 10:50	06/17/24 16:27	1
N-Nitrosodimethylamine	<10.0		10.0	0.720	ug/L		06/13/24 10:50	06/17/24 16:27	1
N-Nitrosodi-n-butylamine	<10.0		10.0	3.90	ug/L		06/13/24 10:50	06/17/24 16:27	1
N-Nitrosodi-n-propylamine	<10.0		10.0	0.920	ug/L		06/13/24 10:50	06/17/24 16:27	1
N-Nitrosodiphenylamine	<10.0		10.0	0.750	ug/L		06/13/24 10:50	06/17/24 16:27	1
N-Nitrosomethylethylamine	<10.0		10.0	4.90	ug/L		06/13/24 10:50	06/17/24 16:27	1
N-Nitrosopiperidine	<10.0		10.0	2.70	ug/L		06/13/24 10:50	06/17/24 16:27	1
N-Nitrosopyrrolidine	<10.0		10.0	3.60	ug/L		06/13/24 10:50	06/17/24 16:27	1
o,o',o''-Triethylphosphorothioate	<10.0		10.0	3.20	ug/L		06/13/24 10:50	06/17/24 16:27	1
o-Toluidine	<10.0		10.0	2.90	ug/L		06/13/24 10:50	06/17/24 16:27	1
p-Dimethylamino azobenzene	<10.0		10.0	2.20	ug/L		06/13/24 10:50	06/17/24 16:27	1
Pentachlorobenzene	<10.0		10.0	2.80	ug/L		06/13/24 10:50	06/17/24 16:27	1
Pentachloronitrobenzene	<10.0		10.0	5.80	ug/L		06/13/24 10:50	06/17/24 16:27	1
Pentachlorophenol	<10.0		10.0	9.60	ug/L		06/13/24 10:50	06/17/24 16:27	1
Phenacetin	<10.0		10.0	1.90	ug/L		06/13/24 10:50	06/17/24 16:27	1
Phenanthrene	<10.0		10.0	0.790	ug/L		06/13/24 10:50	06/17/24 16:27	1
Phenol	<10.0		10.0	1.10	ug/L		06/13/24 10:50	06/17/24 16:27	1
1,4-Phenylenediamine	<10.0	*-	10.0	1.90	ug/L		06/13/24 10:50	06/17/24 16:27	1
Phorate	<10.0		10.0	3.20	ug/L		06/13/24 10:50	06/17/24 16:27	1
Pronamide	<10.0		10.0	2.70	ug/L		06/13/24 10:50	06/17/24 16:27	1
Pyrene	<10.0		10.0	0.790	ug/L		06/13/24 10:50	06/17/24 16:27	1
Safrole	<10.0		10.0	2.80	ug/L		06/13/24 10:50	06/17/24 16:27	1
1,2,4,5-Tetrachlorobenzene	<10.0		10.0	0.540	ug/L		06/13/24 10:50	06/17/24 16:27	1
2,3,4,6-Tetrachlorophenol	<10.0		10.0	5.30	ug/L		06/13/24 10:50	06/17/24 16:27	1
Thionazin	<10.0		10.0	3.50	ug/L		06/13/24 10:50	06/17/24 16:27	1
2,4,5-Trichlorophenol	<10.0		10.0	5.30	ug/L		06/13/24 10:50	06/17/24 16:27	1
2,4,6-Trichlorophenol	<10.0		10.0	5.00	ug/L		06/13/24 10:50	06/17/24 16:27	1
1,3,5-Trinitrobenzene	<10.0		10.0	2.30	ug/L		06/13/24 10:50	06/17/24 16:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*64*		*39 - 118*	*06/13/24 10:50*	*06/17/24 16:27*	*1*
2-Fluorophenol (Surr)	*52*		*25 - 110*	*06/13/24 10:50*	*06/17/24 16:27*	*1*
Nitrobenzene-d5 (Surr)	*70*		*45 - 129*	*06/13/24 10:50*	*06/17/24 16:27*	*1*
Phenol-d5 (Surr)	*48*		*21 - 110*	*06/13/24 10:50*	*06/17/24 16:27*	*1*
Terphenyl-d14 (Surr)	*63*		*12 - 144*	*06/13/24 10:50*	*06/17/24 16:27*	*1*
2,4,6-Tribromophenol (Surr)	*61*		*27 - 136*	*06/13/24 10:50*	*06/17/24 16:27*	*1*

Method: SW846 8015C - Nonhalogenated Organic using GC/FID (Direct Aqueous Injection)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetonitrile	<10.0		10.0	2.60	mg/L			06/13/24 11:43	1
Isobutanol	<10.0		10.0	2.40	mg/L			06/13/24 11:43	1

Method: SW846 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	<0.0931		0.0931	0.0233	ug/L		06/12/24 14:18	06/12/24 21:30	1
4,4'-DDE	<0.0931		0.0931	0.0279	ug/L		06/12/24 14:18	06/12/24 21:30	1

Client Sample ID: MW-62
Lab Sample ID: 310-283154-5
Date Collected: 06/06/24 12:17
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 8081B - Organochlorine Pesticides (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDT	<0.0931		0.0931	0.0186	ug/L		06/12/24 14:18	06/12/24 21:30	1
Aldrin	<0.0931		0.0931	0.0205	ug/L		06/12/24 14:18	06/12/24 21:30	1
alpha-BHC	<0.0931		0.0931	0.00931	ug/L		06/12/24 14:18	06/12/24 21:30	1
beta-BHC	<0.0931		0.0931	0.0391	ug/L		06/12/24 14:18	06/12/24 21:30	1
Chlordane (technical)	<1.86		1.86	0.363	ug/L		06/12/24 14:18	06/12/24 21:30	1
delta-BHC	<0.0931		0.0931	0.0298	ug/L		06/12/24 14:18	06/12/24 21:30	1
Dieldrin	<0.0931		0.0931	0.0195	ug/L		06/12/24 14:18	06/12/24 21:30	1
Endosulfan I	<0.0931		0.0931	0.0261	ug/L		06/12/24 14:18	06/12/24 21:30	1
Endosulfan II	<0.0931		0.0931	0.0242	ug/L		06/12/24 14:18	06/12/24 21:30	1
Endosulfan sulfate	<0.0931		0.0931	0.0168	ug/L		06/12/24 14:18	06/12/24 21:30	1
Endrin	<0.0931		0.0931	0.0261	ug/L		06/12/24 14:18	06/12/24 21:30	1
Endrin aldehyde	<0.0931		0.0931	0.0251	ug/L		06/12/24 14:18	06/12/24 21:30	1
gamma-BHC (Lindane)	<0.0931		0.0931	0.00931	ug/L		06/12/24 14:18	06/12/24 21:30	1
Heptachlor	<0.0931		0.0931	0.0214	ug/L		06/12/24 14:18	06/12/24 21:30	1
Heptachlor epoxide	<0.0931		0.0931	0.0298	ug/L		06/12/24 14:18	06/12/24 21:30	1
Methoxychlor	<0.0931	*+	0.0931	0.0298	ug/L		06/12/24 14:18	06/12/24 21:30	1
Toxaphene	<1.86		1.86	0.931	ug/L		06/12/24 14:18	06/12/24 21:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*105*		*10 - 136*	*06/12/24 14:18*	*06/12/24 21:30*	*1*
Tetrachloro-m-xylene	*96*		*10 - 130*	*06/12/24 14:18*	*06/12/24 21:30*	*1*

Method: SW846 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	<1.86		1.86	0.763	ug/L		06/12/24 14:18	06/12/24 21:30	1
PCB-1221	<1.86		1.86	0.763	ug/L		06/12/24 14:18	06/12/24 21:30	1
PCB-1232	<1.86		1.86	0.763	ug/L		06/12/24 14:18	06/12/24 21:30	1
PCB-1242	<1.86		1.86	0.763	ug/L		06/12/24 14:18	06/12/24 21:30	1
PCB-1248	<1.86		1.86	0.642	ug/L		06/12/24 14:18	06/12/24 21:30	1
PCB-1254	<1.86		1.86	0.642	ug/L		06/12/24 14:18	06/12/24 21:30	1
PCB-1260	<1.86		1.86	0.642	ug/L		06/12/24 14:18	06/12/24 21:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*103*		*10 - 136*	*06/12/24 14:18*	*06/12/24 21:30*	*1*
Tetrachloro-m-xylene (Surr)	*100*		*10 - 130*	*06/12/24 14:18*	*06/12/24 21:30*	*1*

Method: SW846 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-D	<0.590		0.590	0.246	ug/L		06/13/24 07:10	06/15/24 03:31	1
Silvex (2,4,5-TP)	<0.0492		0.0492	0.0216	ug/L		06/13/24 07:10	06/15/24 03:31	1
2,4,5-T	<0.148		0.148	0.0639	ug/L		06/13/24 07:10	06/15/24 03:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*46*		*34 - 142*	*06/13/24 07:10*	*06/15/24 03:31*	*1*
DCAA	*51*		*34 - 142*	*06/13/24 07:10*	*06/15/24 03:31*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		06/12/24 09:00	07/01/24 23:50	1
Arsenic	<0.00200		0.00200	0.000530	mg/L		06/12/24 09:00	06/21/24 15:50	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-62
Lab Sample ID: 310-283154-5
Date Collected: 06/06/24 12:17
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 6020B - Metals (ICP/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.0264**		0.00200	0.000660	mg/L		06/12/24 09:00	06/27/24 17:09	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		06/12/24 09:00	06/24/24 22:28	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		06/12/24 09:00	06/21/24 15:50	1
Chromium	<0.00500		0.00500	0.00120	mg/L		06/12/24 09:00	06/21/24 15:50	1
Cobalt	**0.000399**	**J**	0.000500	0.000170	mg/L		06/12/24 09:00	06/21/24 15:50	1
Copper	<0.00500		0.00500	0.00180	mg/L		06/12/24 09:00	06/24/24 22:28	1
Lead	**0.000452**	**J**	0.000500	0.000260	mg/L		06/12/24 09:00	06/24/24 22:28	1
Nickel	**0.00298**	**J**	0.00500	0.00210	mg/L		06/12/24 09:00	06/21/24 15:50	1
Selenium	<0.00500		0.00500	0.00140	mg/L		06/12/24 09:00	06/27/24 17:09	1
Silver	<0.00100		0.00100	0.000500	mg/L		06/12/24 09:00	06/21/24 15:50	1
Thallium	<0.00100		0.00100	0.000570	mg/L		06/12/24 09:00	06/24/24 22:28	1
Vanadium	<0.00500		0.00500	0.00110	mg/L		06/12/24 09:00	06/24/24 22:28	1
Zinc	<0.0200		0.0200	0.00970	mg/L		06/12/24 09:00	06/21/24 15:50	1
Tin	<0.00500		0.00500	0.00230	mg/L		06/12/24 09:00	06/24/24 22:28	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200	0.000110	mg/L		06/11/24 16:44	06/14/24 13:34	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total (SW846 9012B)	<0.0100		0.0100	0.00350	mg/L		06/13/24 10:25	06/13/24 23:54	1
Sulfide (SW846 9034)	<1.00		1.00	0.231	mg/L		06/11/24 18:27	06/11/24 22:49	1
Total Suspended Solids (USGS I-3765-85)	**3.38**		1.88	1.39	mg/L			06/10/24 16:09	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-81
Lab Sample ID: 310-283154-6
Date Collected: 06/06/24 13:30
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			06/12/24 03:59	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			06/12/24 03:59	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			06/12/24 03:59	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			06/12/24 03:59	1
1,1-Dichloroethane	**0.238**	**J**	1.00	0.220	ug/L			06/12/24 03:59	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			06/12/24 03:59	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			06/12/24 03:59	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			06/12/24 03:59	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			06/12/24 03:59	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			06/12/24 03:59	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			06/12/24 03:59	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			06/12/24 03:59	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			06/12/24 03:59	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			06/12/24 03:59	1
2-Hexanone	<10.0		10.0	2.00	ug/L			06/12/24 03:59	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			06/12/24 03:59	1
Acetone	<10.0		10.0	3.10	ug/L			06/12/24 03:59	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			06/12/24 03:59	1
Benzene	<0.500		0.500	0.220	ug/L			06/12/24 03:59	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			06/12/24 03:59	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			06/12/24 03:59	1
Bromoform	<5.00		5.00	0.780	ug/L			06/12/24 03:59	1
Bromomethane	<4.00		4.00	1.10	ug/L			06/12/24 03:59	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			06/12/24 03:59	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			06/12/24 03:59	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			06/12/24 03:59	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			06/12/24 03:59	1
Chloroethane	<4.00		4.00	0.790	ug/L			06/12/24 03:59	1
Chloroform	<3.00		3.00	1.30	ug/L			06/12/24 03:59	1
Chloromethane	<3.00		3.00	0.610	ug/L			06/12/24 03:59	1
cis-1,2-Dichloroethene	**2.44**		1.00	0.210	ug/L			06/12/24 03:59	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			06/12/24 03:59	1
Dibromomethane	<1.00		1.00	0.330	ug/L			06/12/24 03:59	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			06/12/24 03:59	1
Iodomethane	<10.0		10.0	7.00	ug/L			06/12/24 03:59	1
Methylene chloride	<5.00		5.00	1.70	ug/L			06/12/24 03:59	1
Styrene	<1.00		1.00	0.370	ug/L			06/12/24 03:59	1
Tetrachloroethene	**0.843**	**J**	1.00	0.480	ug/L			06/12/24 03:59	1
Toluene	<1.00		1.00	0.430	ug/L			06/12/24 03:59	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			06/12/24 03:59	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			06/12/24 03:59	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			06/12/24 03:59	1
Trichloroethene	**0.887**	**J**	1.00	0.430	ug/L			06/12/24 03:59	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			06/12/24 03:59	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			06/12/24 03:59	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			06/12/24 03:59	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			06/12/24 03:59	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-81
Date Collected: 06/06/24 13:30
Date Received: 06/07/24 16:50

Lab Sample ID: 310-283154-6
Matrix: Groundwater

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*102*		*73 - 130*		*06/12/24 03:59*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*06/12/24 03:59*	*1*
4-Bromofluorobenzene (Surr)	*103*		*80 - 120*		*06/12/24 03:59*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		06/12/24 09:00	07/01/24 23:54	1
Arsenic	**0.00158**	**J**	0.00200	0.000530	mg/L		06/12/24 09:00	06/21/24 15:52	1
Barium	**0.234**		0.00200	0.000660	mg/L		06/12/24 09:00	06/27/24 17:12	1
Beryllium	**0.000379**	**J**	0.00100	0.000330	mg/L		06/12/24 09:00	06/24/24 22:46	1
Cadmium	**0.00106**		0.000200	0.000100	mg/L		06/12/24 09:00	06/21/24 15:52	1
Chromium	**0.00166**	**J**	0.00500	0.00120	mg/L		06/12/24 09:00	06/21/24 15:52	1
Cobalt	**0.00324**		0.000500	0.000170	mg/L		06/12/24 09:00	06/21/24 15:52	1
Copper	**0.00405**	**J**	0.00500	0.00180	mg/L		06/12/24 09:00	06/24/24 22:46	1
Lead	**0.00166**		0.000500	0.000260	mg/L		06/12/24 09:00	06/24/24 22:46	1
Nickel	**0.0174**		0.00500	0.00210	mg/L		06/12/24 09:00	06/21/24 15:52	1
Selenium	**0.00307**	**J**	0.00500	0.00140	mg/L		06/12/24 09:00	07/01/24 23:54	1
Silver	<0.00100		0.00100	0.000500	mg/L		06/12/24 09:00	06/21/24 15:52	1
Thallium	<0.00100		0.00100	0.000570	mg/L		06/12/24 09:00	06/27/24 17:12	1
Vanadium	**0.00519**		0.00500	0.00110	mg/L		06/12/24 09:00	06/24/24 22:46	1
Zinc	**0.0611**		0.0200	0.00970	mg/L		06/12/24 09:00	06/21/24 15:52	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**561**		15.0	11.1	mg/L			06/10/24 16:09	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-39R
Lab Sample ID: 310-283154-7
Date Collected: 06/05/24 17:14
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			06/12/24 03:37	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			06/12/24 03:37	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			06/12/24 03:37	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			06/12/24 03:37	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			06/12/24 03:37	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			06/12/24 03:37	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			06/12/24 03:37	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			06/12/24 03:37	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			06/12/24 03:37	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			06/12/24 03:37	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			06/12/24 03:37	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			06/12/24 03:37	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			06/12/24 03:37	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			06/12/24 03:37	1
2-Hexanone	<10.0		10.0	2.00	ug/L			06/12/24 03:37	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			06/12/24 03:37	1
Acetone	<10.0		10.0	3.10	ug/L			06/12/24 03:37	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			06/12/24 03:37	1
Benzene	<0.500		0.500	0.220	ug/L			06/12/24 03:37	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			06/12/24 03:37	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			06/12/24 03:37	1
Bromoform	<5.00		5.00	0.780	ug/L			06/12/24 03:37	1
Bromomethane	<4.00		4.00	1.10	ug/L			06/12/24 03:37	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			06/12/24 03:37	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			06/12/24 03:37	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			06/12/24 03:37	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			06/12/24 03:37	1
Chloroethane	<4.00		4.00	0.790	ug/L			06/12/24 03:37	1
Chloroform	<3.00		3.00	1.30	ug/L			06/12/24 03:37	1
Chloromethane	<3.00		3.00	0.610	ug/L			06/12/24 03:37	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			06/12/24 03:37	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			06/12/24 03:37	1
Dibromomethane	<1.00		1.00	0.330	ug/L			06/12/24 03:37	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			06/12/24 03:37	1
Iodomethane	<10.0		10.0	7.00	ug/L			06/12/24 03:37	1
Methylene chloride	<5.00		5.00	1.70	ug/L			06/12/24 03:37	1
Styrene	<1.00		1.00	0.370	ug/L			06/12/24 03:37	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			06/12/24 03:37	1
Toluene	<1.00		1.00	0.430	ug/L			06/12/24 03:37	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			06/12/24 03:37	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			06/12/24 03:37	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			06/12/24 03:37	1
Trichloroethene	<1.00		1.00	0.430	ug/L			06/12/24 03:37	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			06/12/24 03:37	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			06/12/24 03:37	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			06/12/24 03:37	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			06/12/24 03:37	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-39R
Date Collected: 06/05/24 17:14
Date Received: 06/07/24 16:50

Lab Sample ID: 310-283154-7
Matrix: Groundwater

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*102*		*73 - 130*		*06/12/24 03:37*	*1*
Toluene-d8 (Surr)	*94*		*80 - 120*		*06/12/24 03:37*	*1*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*		*06/12/24 03:37*	*1*

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**2510**		50.0	21.0	mg/L			06/13/24 18:16	50

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.200		0.200	0.0500	mg/L		06/12/24 09:00	06/17/24 13:52	2
Iron	**253**		1.00	0.158	mg/L		06/12/24 09:00	06/17/24 13:52	2
Manganese	**32.9**		0.0200	0.00640	mg/L		06/12/24 09:00	06/17/24 13:52	2

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		06/12/24 09:00	07/01/24 23:57	1
Arsenic	**0.0259**		0.00200	0.000530	mg/L		06/12/24 09:00	06/21/24 15:54	1
Barium	**0.0119**		0.00200	0.000660	mg/L		06/12/24 09:00	06/27/24 17:16	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		06/12/24 09:00	06/24/24 22:50	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		06/12/24 09:00	06/21/24 15:54	1
Chromium	<0.00500		0.00500	0.00120	mg/L		06/12/24 09:00	06/21/24 15:54	1
Cobalt	**0.0278**		0.000500	0.000170	mg/L		06/12/24 09:00	06/21/24 15:54	1
Copper	<0.00500		0.00500	0.00180	mg/L		06/12/24 09:00	06/24/24 22:50	1
Lead	<0.000500		0.000500	0.000260	mg/L		06/12/24 09:00	06/24/24 22:50	1
Nickel	**0.0110**		0.00500	0.00210	mg/L		06/12/24 09:00	06/21/24 15:54	1
Selenium	<0.00500		0.00500	0.00140	mg/L		06/12/24 09:00	06/27/24 17:16	1
Silver	<0.00100		0.00100	0.000500	mg/L		06/12/24 09:00	06/21/24 15:54	1
Thallium	<0.00100		0.00100	0.000570	mg/L		06/12/24 09:00	06/27/24 17:16	1
Vanadium	<0.00500		0.00500	0.00110	mg/L		06/12/24 09:00	06/24/24 22:50	1
Zinc	<0.0200		0.0200	0.00970	mg/L		06/12/24 09:00	06/21/24 15:54	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide (SW846 9034)	<1.00		1.00	0.231	mg/L		06/11/24 18:25	06/11/24 22:42	1
Total Suspended Solids (USGS I-3765-85)	**217**		7.50	5.55	mg/L			06/10/24 16:09	1
Total Alkalinity as CaCO3 to pH 4.5 (SM 2320B)	**529**		5.00	2.50	mg/L			06/12/24 17:38	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	**529**		5.00	2.50	mg/L			06/12/24 17:38	1
Carbonate Alkalinity as CaCO3 (SM 2320B)	<5.00		5.00	2.50	mg/L			06/12/24 17:38	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-40
Lab Sample ID: 310-283154-8
Date Collected: 06/04/24 10:34
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			06/12/24 06:38	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			06/12/24 06:38	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			06/12/24 06:38	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			06/12/24 06:38	1
1,1-Dichloroethane	**0.513**	**J**	1.00	0.220	ug/L			06/12/24 06:38	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			06/12/24 06:38	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			06/12/24 06:38	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			06/12/24 06:38	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			06/12/24 06:38	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			06/12/24 06:38	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			06/12/24 06:38	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			06/12/24 06:38	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			06/12/24 06:38	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			06/12/24 06:38	1
2-Hexanone	<10.0		10.0	2.00	ug/L			06/12/24 06:38	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			06/12/24 06:38	1
Acetone	**24.4**		10.0	3.10	ug/L			06/12/24 06:38	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			06/12/24 06:38	1
Benzene	**0.845**		0.500	0.220	ug/L			06/12/24 06:38	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			06/12/24 06:38	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			06/12/24 06:38	1
Bromoform	<5.00		5.00	0.780	ug/L			06/12/24 06:38	1
Bromomethane	<4.00		4.00	1.10	ug/L			06/12/24 06:38	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			06/12/24 06:38	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			06/12/24 06:38	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			06/12/24 06:38	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			06/12/24 06:38	1
Chloroethane	<4.00		4.00	0.790	ug/L			06/12/24 06:38	1
Chloroform	<3.00		3.00	1.30	ug/L			06/12/24 06:38	1
Chloromethane	<3.00		3.00	0.610	ug/L			06/12/24 06:38	1
cis-1,2-Dichloroethene	**5.84**		1.00	0.210	ug/L			06/12/24 06:38	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			06/12/24 06:38	1
Dibromomethane	<1.00		1.00	0.330	ug/L			06/12/24 06:38	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			06/12/24 06:38	1
Iodomethane	<10.0		10.0	7.00	ug/L			06/12/24 06:38	1
Methylene chloride	<5.00		5.00	1.70	ug/L			06/12/24 06:38	1
Styrene	<1.00		1.00	0.370	ug/L			06/12/24 06:38	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			06/12/24 06:38	1
Toluene	<1.00		1.00	0.430	ug/L			06/12/24 06:38	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			06/12/24 06:38	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			06/12/24 06:38	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			06/12/24 06:38	1
Trichloroethene	<1.00		1.00	0.430	ug/L			06/12/24 06:38	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			06/12/24 06:38	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			06/12/24 06:38	1
Vinyl chloride	**0.737**	**J**	1.00	0.180	ug/L			06/12/24 06:38	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			06/12/24 06:38	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-40
Date Collected: 06/04/24 10:34
Date Received: 06/07/24 16:50

Lab Sample ID: 310-283154-8
Matrix: Groundwater

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*104*		*73 - 130*		*06/12/24 06:38*	*1*
Toluene-d8 (Surr)	*93*		*80 - 120*		*06/12/24 06:38*	*1*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*		*06/12/24 06:38*	*1*

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**610**		50.0	21.0	mg/L			06/13/24 18:29	50

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**0.0884**	**J**	0.100	0.0250	mg/L		06/12/24 09:00	06/17/24 13:23	1
Iron	**61.1**		0.500	0.0790	mg/L		06/12/24 09:00	06/17/24 13:23	1
Manganese	**38.7**		0.0100	0.00320	mg/L		06/12/24 09:00	06/17/24 13:23	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		06/12/24 09:00	07/02/24 00:01	1
Arsenic	**0.00702**		0.00200	0.000530	mg/L		06/12/24 09:00	06/21/24 15:56	1
Barium	**0.0140**		0.00200	0.000660	mg/L		06/12/24 09:00	06/27/24 17:19	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		06/12/24 09:00	06/24/24 22:53	1
Cadmium	**0.000228**		0.000200	0.000100	mg/L		06/12/24 09:00	06/21/24 15:56	1
Chromium	<0.00500		0.00500	0.00120	mg/L		06/12/24 09:00	06/21/24 15:56	1
Cobalt	**0.135**		0.000500	0.000170	mg/L		06/12/24 09:00	06/21/24 15:56	1
Copper	**0.00457**	**J**	0.00500	0.00180	mg/L		06/12/24 09:00	06/24/24 22:53	1
Lead	<0.000500		0.000500	0.000260	mg/L		06/12/24 09:00	06/24/24 22:53	1
Nickel	**0.0903**		0.00500	0.00210	mg/L		06/12/24 09:00	06/21/24 15:56	1
Selenium	<0.00500		0.00500	0.00140	mg/L		06/12/24 09:00	06/27/24 17:19	1
Silver	<0.00100		0.00100	0.000500	mg/L		06/12/24 09:00	06/21/24 15:56	1
Thallium	<0.00100		0.00100	0.000570	mg/L		06/12/24 09:00	06/27/24 17:19	1
Vanadium	<0.00500		0.00500	0.00110	mg/L		06/12/24 09:00	06/24/24 22:53	1
Zinc	**0.0687**		0.0200	0.00970	mg/L		06/12/24 09:00	06/21/24 15:56	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**38.3**		5.00	3.70	mg/L			06/10/24 16:09	1
Total Alkalinity as CaCO3 to pH 4.5 (SM 2320B)	**212**		5.00	2.50	mg/L			06/12/24 17:48	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	**212**		5.00	2.50	mg/L			06/12/24 17:48	1
Carbonate Alkalinity as CaCO3 (SM 2320B)	<5.00		5.00	2.50	mg/L			06/12/24 17:48	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: 04-MW-56
Lab Sample ID: 310-283154-9

Date Collected: 06/06/24 11:20
Matrix: Groundwater

Date Received: 06/07/24 16:50

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	460		50.0	21.0	mg/L			06/13/24 18:42	50

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.100		0.100	0.0250	mg/L		06/12/24 09:00	06/17/24 13:25	1
Iron	20.0		0.500	0.0790	mg/L		06/12/24 09:00	06/17/24 13:25	1
Manganese	7.22		0.0100	0.00320	mg/L		06/12/24 09:00	06/17/24 13:25	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00455		0.00200	0.000530	mg/L		06/12/24 09:00	06/21/24 15:58	1
Barium	0.0278		0.00200	0.000660	mg/L		06/12/24 09:00	06/27/24 17:23	1
Cadmium	0.000210		0.000200	0.000100	mg/L		06/12/24 09:00	06/21/24 15:58	1
Cobalt	0.0214		0.000500	0.000170	mg/L		06/12/24 09:00	06/21/24 15:58	1
Copper	0.00270	J	0.00500	0.00180	mg/L		06/12/24 09:00	06/24/24 22:57	1
Lead	<0.000500		0.000500	0.000260	mg/L		06/12/24 09:00	06/24/24 22:57	1
Nickel	0.0715		0.00500	0.00210	mg/L		06/12/24 09:00	06/21/24 15:58	1
Zinc	0.0660		0.0200	0.00970	mg/L		06/12/24 09:00	06/21/24 15:58	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	35.3		5.00	3.70	mg/L			06/10/24 16:09	1
Total Alkalinity as CaCO3 to pH 4.5 (SM 2320B)	524		5.00	2.50	mg/L			06/12/24 18:05	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	524		5.00	2.50	mg/L			06/12/24 18:05	1
Carbonate Alkalinity as CaCO3 (SM 2320B)	<5.00		5.00	2.50	mg/L			06/12/24 18:05	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-D1
Lab Sample ID: 310-283154-10
Date Collected: 06/04/24 16:18
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00393		0.00200	0.000530	mg/L		06/12/24 09:00	06/21/24 16:01	1
Barium	0.0649		0.00200	0.000660	mg/L		06/12/24 09:00	06/27/24 17:26	1
Cadmium	0.00110		0.000200	0.000100	mg/L		06/12/24 09:00	06/21/24 16:01	1
Cobalt	0.00744		0.000500	0.000170	mg/L		06/12/24 09:00	06/21/24 16:01	1
Copper	0.00351	J	0.00500	0.00180	mg/L		06/12/24 09:00	06/24/24 23:01	1
Lead	0.000835		0.000500	0.000260	mg/L		06/12/24 09:00	06/24/24 23:01	1
Nickel	0.0824		0.00500	0.00210	mg/L		06/12/24 09:00	06/21/24 16:01	1
Zinc	0.0279		0.0200	0.00970	mg/L		06/12/24 09:00	06/21/24 16:01	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	89.3		3.75	2.78	mg/L			06/10/24 16:09	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-D2
Lab Sample ID: 310-283154-11
Date Collected: 06/04/24 09:46
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			06/12/24 06:15	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			06/12/24 06:15	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			06/12/24 06:15	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			06/12/24 06:15	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			06/12/24 06:15	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			06/12/24 06:15	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			06/12/24 06:15	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			06/12/24 06:15	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			06/12/24 06:15	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			06/12/24 06:15	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			06/12/24 06:15	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			06/12/24 06:15	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			06/12/24 06:15	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			06/12/24 06:15	1
2-Hexanone	<10.0		10.0	2.00	ug/L			06/12/24 06:15	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			06/12/24 06:15	1
Acetone	<10.0		10.0	3.10	ug/L			06/12/24 06:15	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			06/12/24 06:15	1
Benzene	<0.500		0.500	0.220	ug/L			06/12/24 06:15	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			06/12/24 06:15	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			06/12/24 06:15	1
Bromoform	<5.00		5.00	0.780	ug/L			06/12/24 06:15	1
Bromomethane	<4.00		4.00	1.10	ug/L			06/12/24 06:15	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			06/12/24 06:15	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			06/12/24 06:15	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			06/12/24 06:15	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			06/12/24 06:15	1
Chloroethane	<4.00		4.00	0.790	ug/L			06/12/24 06:15	1
Chloroform	<3.00		3.00	1.30	ug/L			06/12/24 06:15	1
Chloromethane	<3.00		3.00	0.610	ug/L			06/12/24 06:15	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			06/12/24 06:15	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			06/12/24 06:15	1
Dibromomethane	<1.00		1.00	0.330	ug/L			06/12/24 06:15	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			06/12/24 06:15	1
Iodomethane	<10.0		10.0	7.00	ug/L			06/12/24 06:15	1
Methylene chloride	<5.00		5.00	1.70	ug/L			06/12/24 06:15	1
Styrene	<1.00		1.00	0.370	ug/L			06/12/24 06:15	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			06/12/24 06:15	1
Toluene	<1.00		1.00	0.430	ug/L			06/12/24 06:15	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			06/12/24 06:15	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			06/12/24 06:15	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			06/12/24 06:15	1
Trichloroethene	<1.00		1.00	0.430	ug/L			06/12/24 06:15	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			06/12/24 06:15	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			06/12/24 06:15	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			06/12/24 06:15	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			06/12/24 06:15	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-D2
Date Collected: 06/04/24 09:46
Date Received: 06/07/24 16:50

Lab Sample ID: 310-283154-11
Matrix: Groundwater

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*102*		*73 - 130*		*06/12/24 06:15*	*1*
Toluene-d8 (Surr)	*95*		*80 - 120*		*06/12/24 06:15*	*1*
4-Bromofluorobenzene (Surr)	*106*		*80 - 120*		*06/12/24 06:15*	*1*

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**907**		50.0	21.0	mg/L			06/13/24 18:54	50

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**0.0769**	**J**	0.100	0.0250	mg/L		06/12/24 09:00	06/17/24 13:27	1
Iron	**5.87**		0.500	0.0790	mg/L		06/12/24 09:00	06/17/24 13:27	1
Manganese	**4.25**		0.0100	0.00320	mg/L		06/12/24 09:00	06/17/24 13:27	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		06/12/24 09:00	07/02/24 00:04	1
Arsenic	<0.00200		0.00200	0.000530	mg/L		06/12/24 09:00	06/21/24 16:03	1
Barium	**0.0235**		0.00200	0.000660	mg/L		06/12/24 09:00	06/27/24 17:30	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		06/12/24 09:00	06/24/24 23:04	1
Cadmium	**0.00140**		0.000200	0.000100	mg/L		06/12/24 09:00	06/21/24 16:03	1
Chromium	<0.00500		0.00500	0.00120	mg/L		06/12/24 09:00	06/21/24 16:03	1
Cobalt	**0.0220**		0.000500	0.000170	mg/L		06/12/24 09:00	06/21/24 16:03	1
Copper	**0.00181**	**J**	0.00500	0.00180	mg/L		06/12/24 09:00	06/24/24 23:04	1
Lead	<0.000500		0.000500	0.000260	mg/L		06/12/24 09:00	06/24/24 23:04	1
Nickel	**0.0520**		0.00500	0.00210	mg/L		06/12/24 09:00	06/21/24 16:03	1
Selenium	<0.00500		0.00500	0.00140	mg/L		06/12/24 09:00	06/27/24 17:30	1
Silver	<0.00100		0.00100	0.000500	mg/L		06/12/24 09:00	06/21/24 16:03	1
Thallium	<0.00100		0.00100	0.000570	mg/L		06/12/24 09:00	06/27/24 17:30	1
Vanadium	<0.00500		0.00500	0.00110	mg/L		06/12/24 09:00	06/24/24 23:04	1
Zinc	**0.0976**		0.0200	0.00970	mg/L		06/12/24 09:00	06/21/24 16:03	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**15.8**		3.75	2.78	mg/L			06/10/24 16:09	1
Total Alkalinity as CaCO3 to pH 4.5 (SM 2320B)	**180**		5.00	2.50	mg/L			06/12/24 18:15	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	**180**		5.00	2.50	mg/L			06/12/24 18:15	1
Carbonate Alkalinity as CaCO3 (SM 2320B)	<5.00		5.00	2.50	mg/L			06/12/24 18:15	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-58
Lab Sample ID: 310-283154-12
Date Collected: 06/04/24 09:46
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			06/12/24 04:22	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			06/12/24 04:22	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			06/12/24 04:22	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			06/12/24 04:22	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			06/12/24 04:22	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			06/12/24 04:22	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			06/12/24 04:22	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			06/12/24 04:22	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			06/12/24 04:22	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			06/12/24 04:22	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			06/12/24 04:22	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			06/12/24 04:22	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			06/12/24 04:22	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			06/12/24 04:22	1
2-Hexanone	<10.0		10.0	2.00	ug/L			06/12/24 04:22	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			06/12/24 04:22	1
Acetone	<10.0		10.0	3.10	ug/L			06/12/24 04:22	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			06/12/24 04:22	1
Benzene	<0.500		0.500	0.220	ug/L			06/12/24 04:22	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			06/12/24 04:22	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			06/12/24 04:22	1
Bromoform	<5.00		5.00	0.780	ug/L			06/12/24 04:22	1
Bromomethane	<4.00		4.00	1.10	ug/L			06/12/24 04:22	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			06/12/24 04:22	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			06/12/24 04:22	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			06/12/24 04:22	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			06/12/24 04:22	1
Chloroethane	<4.00		4.00	0.790	ug/L			06/12/24 04:22	1
Chloroform	<3.00		3.00	1.30	ug/L			06/12/24 04:22	1
Chloromethane	<3.00		3.00	0.610	ug/L			06/12/24 04:22	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			06/12/24 04:22	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			06/12/24 04:22	1
Dibromomethane	<1.00		1.00	0.330	ug/L			06/12/24 04:22	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			06/12/24 04:22	1
Iodomethane	<10.0		10.0	7.00	ug/L			06/12/24 04:22	1
Methylene chloride	<5.00		5.00	1.70	ug/L			06/12/24 04:22	1
Styrene	<1.00		1.00	0.370	ug/L			06/12/24 04:22	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			06/12/24 04:22	1
Toluene	<1.00		1.00	0.430	ug/L			06/12/24 04:22	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			06/12/24 04:22	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			06/12/24 04:22	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			06/12/24 04:22	1
Trichloroethene	<1.00		1.00	0.430	ug/L			06/12/24 04:22	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			06/12/24 04:22	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			06/12/24 04:22	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			06/12/24 04:22	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			06/12/24 04:22	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-58
Date Collected: 06/04/24 09:46
Date Received: 06/07/24 16:50

Lab Sample ID: 310-283154-12
Matrix: Groundwater

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*103*		*73 - 130*		*06/12/24 04:22*	*1*
Toluene-d8 (Surr)	*94*		*80 - 120*		*06/12/24 04:22*	*1*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*		*06/12/24 04:22*	*1*

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**911**		50.0	21.0	mg/L			06/13/24 19:07	50

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**0.0570**	**J**	0.100	0.0250	mg/L		06/12/24 09:00	06/17/24 13:31	1
Iron	**5.39**		0.500	0.0790	mg/L		06/12/24 09:00	06/17/24 13:31	1
Manganese	**4.24**		0.0100	0.00320	mg/L		06/12/24 09:00	06/17/24 13:31	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		06/12/24 09:00	07/02/24 00:12	1
Arsenic	<0.00200		0.00200	0.000530	mg/L		06/12/24 09:00	06/21/24 16:07	1
Barium	**0.0233**		0.00200	0.000660	mg/L		06/12/24 09:00	06/27/24 17:51	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		06/12/24 09:00	06/24/24 23:11	1
Cadmium	**0.00136**		0.000200	0.000100	mg/L		06/12/24 09:00	06/21/24 16:07	1
Chromium	<0.00500		0.00500	0.00120	mg/L		06/12/24 09:00	06/21/24 16:07	1
Cobalt	**0.0215**		0.000500	0.000170	mg/L		06/12/24 09:00	06/21/24 16:07	1
Copper	**0.00238**	**J**	0.00500	0.00180	mg/L		06/12/24 09:00	06/24/24 23:11	1
Lead	<0.000500		0.000500	0.000260	mg/L		06/12/24 09:00	06/24/24 23:11	1
Nickel	**0.0521**		0.00500	0.00210	mg/L		06/12/24 09:00	06/21/24 16:07	1
Selenium	<0.00500		0.00500	0.00140	mg/L		06/12/24 09:00	06/27/24 17:51	1
Silver	<0.00100		0.00100	0.000500	mg/L		06/12/24 09:00	06/21/24 16:07	1
Thallium	<0.00100		0.00100	0.000570	mg/L		06/12/24 09:00	06/27/24 17:51	1
Vanadium	<0.00500		0.00500	0.00110	mg/L		06/12/24 09:00	06/24/24 23:11	1
Zinc	**0.0882**		0.0200	0.00970	mg/L		06/12/24 09:00	06/21/24 16:07	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**13.8**		3.75	2.78	mg/L			06/10/24 16:09	1
Total Alkalinity as CaCO3 to pH 4.5 (SM 2320B)	**175**		5.00	2.50	mg/L			06/12/24 18:24	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	**175**		5.00	2.50	mg/L			06/12/24 18:24	1
Carbonate Alkalinity as CaCO3 (SM 2320B)	<5.00		5.00	2.50	mg/L			06/12/24 18:24	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-59
Date Collected: 06/04/24 12:05
Date Received: 06/07/24 16:50

Lab Sample ID: 310-283154-13
Matrix: Groundwater

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	953		50.0	21.0	mg/L			06/13/24 19:45	50

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	0.0361	J	0.100	0.0250	mg/L		06/12/24 09:00	06/17/24 13:33	1
Iron	38.8		0.500	0.0790	mg/L		06/12/24 09:00	06/17/24 13:33	1
Manganese	12.4		0.0100	0.00320	mg/L		06/12/24 09:00	06/17/24 13:33	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00585		0.00200	0.000530	mg/L		06/12/24 09:00	06/21/24 16:09	1
Barium	0.0317		0.00200	0.000660	mg/L		06/12/24 09:00	06/27/24 17:54	1
Cadmium	0.000880		0.000200	0.000100	mg/L		06/12/24 09:00	06/21/24 16:09	1
Cobalt	0.00999		0.000500	0.000170	mg/L		06/12/24 09:00	06/21/24 16:09	1
Copper	0.00449	J	0.00500	0.00180	mg/L		06/12/24 09:00	06/24/24 23:15	1
Lead	0.000522		0.000500	0.000260	mg/L		06/12/24 09:00	06/24/24 23:15	1
Nickel	0.0230		0.00500	0.00210	mg/L		06/12/24 09:00	06/21/24 16:09	1
Zinc	0.0407		0.0200	0.00970	mg/L		06/12/24 09:00	06/21/24 16:09	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide (SW846 9034)	<1.00		1.00	0.231	mg/L		06/11/24 18:18	06/11/24 22:19	1
Total Suspended Solids (USGS I-3765-85)	81.0		5.00	3.70	mg/L			06/10/24 16:09	1
Total Alkalinity as CaCO3 to pH 4.5 (SM 2320B)	613		5.00	2.50	mg/L			06/12/24 18:39	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	613		5.00	2.50	mg/L			06/12/24 18:39	1
Carbonate Alkalinity as CaCO3 (SM 2320B)	<5.00		5.00	2.50	mg/L			06/12/24 18:39	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-63R
Lab Sample ID: 310-283154-14
Date Collected: 06/04/24 17:58
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			06/12/24 04:45	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			06/12/24 04:45	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			06/12/24 04:45	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			06/12/24 04:45	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			06/12/24 04:45	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			06/12/24 04:45	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			06/12/24 04:45	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			06/12/24 04:45	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			06/12/24 04:45	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			06/12/24 04:45	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			06/12/24 04:45	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			06/12/24 04:45	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			06/12/24 04:45	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			06/12/24 04:45	1
2-Hexanone	<10.0		10.0	2.00	ug/L			06/12/24 04:45	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			06/12/24 04:45	1
Acetone	<10.0		10.0	3.10	ug/L			06/12/24 04:45	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			06/12/24 04:45	1
Benzene	<0.500		0.500	0.220	ug/L			06/12/24 04:45	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			06/12/24 04:45	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			06/12/24 04:45	1
Bromoform	<5.00		5.00	0.780	ug/L			06/12/24 04:45	1
Bromomethane	<4.00		4.00	1.10	ug/L			06/12/24 04:45	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			06/12/24 04:45	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			06/12/24 04:45	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			06/12/24 04:45	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			06/12/24 04:45	1
Chloroethane	<4.00		4.00	0.790	ug/L			06/12/24 04:45	1
Chloroform	<3.00		3.00	1.30	ug/L			06/12/24 04:45	1
Chloromethane	<3.00		3.00	0.610	ug/L			06/12/24 04:45	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			06/12/24 04:45	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			06/12/24 04:45	1
Dibromomethane	<1.00		1.00	0.330	ug/L			06/12/24 04:45	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			06/12/24 04:45	1
Iodomethane	<10.0		10.0	7.00	ug/L			06/12/24 04:45	1
Methylene chloride	<5.00		5.00	1.70	ug/L			06/12/24 04:45	1
Styrene	<1.00		1.00	0.370	ug/L			06/12/24 04:45	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			06/12/24 04:45	1
Toluene	<1.00		1.00	0.430	ug/L			06/12/24 04:45	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			06/12/24 04:45	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			06/12/24 04:45	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			06/12/24 04:45	1
Trichloroethene	<1.00		1.00	0.430	ug/L			06/12/24 04:45	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			06/12/24 04:45	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			06/12/24 04:45	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			06/12/24 04:45	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			06/12/24 04:45	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-63R
Date Collected: 06/04/24 17:58
Date Received: 06/07/24 16:50

Lab Sample ID: 310-283154-14
Matrix: Groundwater

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*103*		*73 - 130*		*06/12/24 04:45*	*1*
Toluene-d8 (Surr)	*93*		*80 - 120*		*06/12/24 04:45*	*1*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*06/12/24 04:45*	*1*

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**2020**		50.0	21.0	mg/L			06/13/24 19:57	50

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**0.645**		0.100	0.0250	mg/L		06/12/24 09:00	06/17/24 13:35	1
Iron	**0.113**	**J**	0.500	0.0790	mg/L		06/12/24 09:00	06/17/24 13:35	1
Manganese	**0.564**		0.0100	0.00320	mg/L		06/12/24 09:00	06/17/24 13:35	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		06/12/24 09:00	07/02/24 00:30	1
Arsenic	<0.00200		0.00200	0.000530	mg/L		06/12/24 09:00	06/21/24 16:20	1
Barium	**0.0121**		0.00200	0.000660	mg/L		06/12/24 09:00	06/27/24 17:58	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		06/12/24 09:00	06/24/24 23:18	1
Cadmium	**0.00403**		0.000200	0.000100	mg/L		06/12/24 09:00	06/21/24 16:20	1
Chromium	<0.00500		0.00500	0.00120	mg/L		06/12/24 09:00	06/21/24 16:20	1
Cobalt	**0.00276**		0.000500	0.000170	mg/L		06/12/24 09:00	06/21/24 16:20	1
Copper	**0.00331**	**J**	0.00500	0.00180	mg/L		06/12/24 09:00	06/24/24 23:18	1
Lead	<0.000500		0.000500	0.000260	mg/L		06/12/24 09:00	06/24/24 23:18	1
Nickel	**0.0433**		0.00500	0.00210	mg/L		06/12/24 09:00	06/21/24 16:20	1
Selenium	<0.00500	^1+	0.00500	0.00140	mg/L		06/12/24 09:00	06/21/24 16:20	1
Silver	<0.00100		0.00100	0.000500	mg/L		06/12/24 09:00	06/21/24 16:20	1
Thallium	<0.00100		0.00100	0.000570	mg/L		06/12/24 09:00	06/27/24 17:58	1
Vanadium	<0.00500		0.00500	0.00110	mg/L		06/12/24 09:00	06/24/24 23:18	1
Zinc	**0.219**		0.0200	0.00970	mg/L		06/12/24 09:00	06/24/24 23:18	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide (SW846 9034)	<1.00		1.00	0.231	mg/L		06/11/24 18:20	06/11/24 22:27	1
Total Suspended Solids (USGS I-3765-85)	**5.75**		1.88	1.39	mg/L			06/10/24 16:09	1
Total Alkalinity as CaCO3 to pH 4.5 (SM 2320B)	**421**		5.00	2.50	mg/L			06/12/24 18:50	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	**421**		5.00	2.50	mg/L			06/12/24 18:50	1
Carbonate Alkalinity as CaCO3 (SM 2320B)	<5.00		5.00	2.50	mg/L			06/12/24 18:50	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-64
Date Collected: 06/04/24 15:12
Date Received: 06/07/24 16:50

Lab Sample ID: 310-283154-15
Matrix: Groundwater

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**68.7**		50.0	21.0	mg/L			06/13/24 20:10	50

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.100		0.100	0.0250	mg/L		06/12/24 09:00	06/17/24 13:37	1
Iron	**2.47**		0.500	0.0790	mg/L		06/12/24 09:00	06/17/24 13:37	1
Manganese	**0.160**		0.0100	0.00320	mg/L		06/12/24 09:00	06/17/24 13:37	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.00109**	**J**	0.00200	0.000530	mg/L		06/12/24 09:00	06/21/24 16:23	1
Barium	**0.171**		0.00200	0.000660	mg/L		06/12/24 09:00	06/27/24 18:01	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		06/12/24 09:00	06/21/24 16:23	1
Cobalt	**0.000308**	**J**	0.000500	0.000170	mg/L		06/12/24 09:00	06/21/24 16:23	1
Copper	<0.00500		0.00500	0.00180	mg/L		06/12/24 09:00	06/24/24 23:37	1
Lead	<0.000500		0.000500	0.000260	mg/L		06/12/24 09:00	06/24/24 23:37	1
Nickel	**0.0269**		0.00500	0.00210	mg/L		06/12/24 09:00	06/21/24 16:23	1
Zinc	<0.0200		0.0200	0.00970	mg/L		06/12/24 09:00	06/24/24 23:37	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**6.25**		1.88	1.39	mg/L			06/10/24 16:09	1
Total Alkalinity as CaCO3 to pH 4.5 (SM 2320B)	**635**		5.00	2.50	mg/L			06/12/24 18:59	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	**635**		5.00	2.50	mg/L			06/12/24 18:59	1
Carbonate Alkalinity as CaCO3 (SM 2320B)	<5.00		5.00	2.50	mg/L			06/12/24 18:59	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-65
Lab Sample ID: 310-283154-16
Date Collected: 06/04/24 11:25
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			06/12/24 07:00	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			06/12/24 07:00	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			06/12/24 07:00	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			06/12/24 07:00	1
1,1-Dichloroethane	**0.649**	**J**	1.00	0.220	ug/L			06/12/24 07:00	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			06/12/24 07:00	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			06/12/24 07:00	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			06/12/24 07:00	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			06/12/24 07:00	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			06/12/24 07:00	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			06/12/24 07:00	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			06/12/24 07:00	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			06/12/24 07:00	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			06/12/24 07:00	1
2-Hexanone	<10.0		10.0	2.00	ug/L			06/12/24 07:00	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			06/12/24 07:00	1
Acetone	<10.0		10.0	3.10	ug/L			06/12/24 07:00	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			06/12/24 07:00	1
Benzene	**1.55**		0.500	0.220	ug/L			06/12/24 07:00	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			06/12/24 07:00	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			06/12/24 07:00	1
Bromoform	<5.00		5.00	0.780	ug/L			06/12/24 07:00	1
Bromomethane	<4.00		4.00	1.10	ug/L			06/12/24 07:00	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			06/12/24 07:00	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			06/12/24 07:00	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			06/12/24 07:00	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			06/12/24 07:00	1
Chloroethane	**3.28**	**J**	4.00	0.790	ug/L			06/12/24 07:00	1
Chloroform	<3.00		3.00	1.30	ug/L			06/12/24 07:00	1
Chloromethane	<3.00		3.00	0.610	ug/L			06/12/24 07:00	1
cis-1,2-Dichloroethene	**0.878**	**J**	1.00	0.210	ug/L			06/12/24 07:00	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			06/12/24 07:00	1
Dibromomethane	<1.00		1.00	0.330	ug/L			06/12/24 07:00	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			06/12/24 07:00	1
Iodomethane	<10.0		10.0	7.00	ug/L			06/12/24 07:00	1
Methylene chloride	<5.00		5.00	1.70	ug/L			06/12/24 07:00	1
Styrene	<1.00		1.00	0.370	ug/L			06/12/24 07:00	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			06/12/24 07:00	1
Toluene	<1.00		1.00	0.430	ug/L			06/12/24 07:00	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			06/12/24 07:00	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			06/12/24 07:00	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			06/12/24 07:00	1
Trichloroethene	<1.00		1.00	0.430	ug/L			06/12/24 07:00	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			06/12/24 07:00	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			06/12/24 07:00	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			06/12/24 07:00	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			06/12/24 07:00	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-65
Date Collected: 06/04/24 11:25
Date Received: 06/07/24 16:50

Lab Sample ID: 310-283154-16
Matrix: Groundwater

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*104*		*73 - 130*		*06/12/24 07:00*	*1*
Toluene-d8 (Surr)	*93*		*80 - 120*		*06/12/24 07:00*	*1*
4-Bromofluorobenzene (Surr)	*103*		*80 - 120*		*06/12/24 07:00*	*1*

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**150**		50.0	21.0	mg/L			06/13/24 20:22	50

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.100		0.100	0.0250	mg/L		06/12/24 09:00	06/17/24 13:40	1
Iron	**58.2**		0.500	0.0790	mg/L		06/12/24 09:00	06/17/24 13:40	1
Manganese	**2.63**		0.0100	0.00320	mg/L		06/12/24 09:00	06/17/24 13:40	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		06/12/24 09:00	07/02/24 00:34	1
Arsenic	**0.0264**		0.00200	0.000530	mg/L		06/12/24 09:00	06/21/24 16:25	1
Barium	**0.331**		0.00200	0.000660	mg/L		06/12/24 09:00	06/27/24 18:05	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		06/12/24 09:00	06/24/24 23:40	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		06/12/24 09:00	06/21/24 16:25	1
Chromium	<0.00500		0.00500	0.00120	mg/L		06/12/24 09:00	06/21/24 16:25	1
Cobalt	**0.00169**		0.000500	0.000170	mg/L		06/12/24 09:00	06/21/24 16:25	1
Copper	<0.00500		0.00500	0.00180	mg/L		06/12/24 09:00	06/24/24 23:40	1
Lead	<0.000500		0.000500	0.000260	mg/L		06/12/24 09:00	06/24/24 23:40	1
Nickel	<0.00500		0.00500	0.00210	mg/L		06/12/24 09:00	06/21/24 16:25	1
Selenium	<0.00500		0.00500	0.00140	mg/L		06/12/24 09:00	06/27/24 18:05	1
Silver	<0.00100		0.00100	0.000500	mg/L		06/12/24 09:00	06/21/24 16:25	1
Thallium	<0.00100		0.00100	0.000570	mg/L		06/12/24 09:00	06/27/24 18:05	1
Vanadium	<0.00500		0.00500	0.00110	mg/L		06/12/24 09:00	06/24/24 23:40	1
Zinc	<0.0200		0.0200	0.00970	mg/L		06/12/24 09:00	06/24/24 23:40	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide (SW846 9034)	<1.00		1.00	0.231	mg/L		06/11/24 18:23	06/11/24 22:34	1
Total Suspended Solids (USGS I-3765-85)	**128**		5.00	3.70	mg/L			06/10/24 16:09	1
Total Alkalinity as CaCO3 to pH 4.5 (SM 2320B)	**873**		5.00	2.50	mg/L			06/12/24 19:10	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	**873**		5.00	2.50	mg/L			06/12/24 19:10	1
Carbonate Alkalinity as CaCO3 (SM 2320B)	<5.00		5.00	2.50	mg/L			06/12/24 19:10	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: 93-MW-31R
Lab Sample ID: 310-283154-17
Date Collected: 06/05/24 14:19
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			06/12/24 05:07	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			06/12/24 05:07	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			06/12/24 05:07	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			06/12/24 05:07	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			06/12/24 05:07	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			06/12/24 05:07	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			06/12/24 05:07	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			06/12/24 05:07	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			06/12/24 05:07	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			06/12/24 05:07	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			06/12/24 05:07	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			06/12/24 05:07	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			06/12/24 05:07	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			06/12/24 05:07	1
2-Hexanone	<10.0		10.0	2.00	ug/L			06/12/24 05:07	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			06/12/24 05:07	1
Acetone	<10.0		10.0	3.10	ug/L			06/12/24 05:07	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			06/12/24 05:07	1
Benzene	<0.500		0.500	0.220	ug/L			06/12/24 05:07	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			06/12/24 05:07	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			06/12/24 05:07	1
Bromoform	<5.00		5.00	0.780	ug/L			06/12/24 05:07	1
Bromomethane	<4.00		4.00	1.10	ug/L			06/12/24 05:07	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			06/12/24 05:07	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			06/12/24 05:07	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			06/12/24 05:07	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			06/12/24 05:07	1
Chloroethane	<4.00		4.00	0.790	ug/L			06/12/24 05:07	1
Chloroform	<3.00		3.00	1.30	ug/L			06/12/24 05:07	1
Chloromethane	<3.00		3.00	0.610	ug/L			06/12/24 05:07	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			06/12/24 05:07	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			06/12/24 05:07	1
Dibromomethane	<1.00		1.00	0.330	ug/L			06/12/24 05:07	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			06/12/24 05:07	1
Iodomethane	<10.0		10.0	7.00	ug/L			06/12/24 05:07	1
Methylene chloride	<5.00		5.00	1.70	ug/L			06/12/24 05:07	1
Styrene	<1.00		1.00	0.370	ug/L			06/12/24 05:07	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			06/12/24 05:07	1
Toluene	<1.00		1.00	0.430	ug/L			06/12/24 05:07	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			06/12/24 05:07	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			06/12/24 05:07	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			06/12/24 05:07	1
Trichloroethene	<1.00		1.00	0.430	ug/L			06/12/24 05:07	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			06/12/24 05:07	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			06/12/24 05:07	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			06/12/24 05:07	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			06/12/24 05:07	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: 93-MW-31R
Lab Sample ID: 310-283154-17
Date Collected: 06/05/24 14:19
Matrix: Groundwater
Date Received: 06/07/24 16:50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*100*		*73 - 130*		*06/12/24 05:07*	*1*
Toluene-d8 (Surr)	*94*		*80 - 120*		*06/12/24 05:07*	*1*
4-Bromofluorobenzene (Surr)	*103*		*80 - 120*		*06/12/24 05:07*	*1*

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**150**		100	42.0	mg/L			06/11/24 14:35	100

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**14.5**		0.500	0.0790	mg/L		06/12/24 09:00	06/17/24 13:45	1
Manganese	**0.397**		0.0100	0.00320	mg/L		06/12/24 09:00	06/17/24 13:45	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		06/12/24 09:00	07/02/24 00:37	1
Arsenic	**0.0131**		0.00200	0.000530	mg/L		06/12/24 09:00	06/21/24 16:27	1
Barium	**0.0577**		0.00200	0.000660	mg/L		06/12/24 09:00	06/27/24 18:08	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		06/12/24 09:00	06/24/24 23:44	1
Cadmium	**0.000736**		0.000200	0.000100	mg/L		06/12/24 09:00	06/21/24 16:27	1
Chromium	<0.00500		0.00500	0.00120	mg/L		06/12/24 09:00	06/21/24 16:27	1
Cobalt	**0.00187**		0.000500	0.000170	mg/L		06/12/24 09:00	06/21/24 16:27	1
Copper	**0.00274**	**J**	0.00500	0.00180	mg/L		06/12/24 09:00	06/24/24 23:44	1
Lead	**0.000937**		0.000500	0.000260	mg/L		06/12/24 09:00	06/24/24 23:44	1
Nickel	<0.00500		0.00500	0.00210	mg/L		06/12/24 09:00	06/21/24 16:27	1
Selenium	**0.00401**	**J**	0.00500	0.00140	mg/L		06/12/24 09:00	06/27/24 18:08	1
Silver	<0.00100		0.00100	0.000500	mg/L		06/12/24 09:00	06/21/24 16:27	1
Thallium	<0.00100		0.00100	0.000570	mg/L		06/12/24 09:00	06/27/24 18:08	1
Vanadium	**0.00366**	**J**	0.00500	0.00110	mg/L		06/12/24 09:00	06/24/24 23:44	1
Zinc	**0.0158**	**J**	0.0200	0.00970	mg/L		06/12/24 09:00	06/24/24 23:44	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**85.0**		15.0	11.1	mg/L			06/11/24 10:22	1
Total Organic Carbon (SM 5310C)	**1.29**		1.00	0.500	mg/L			06/13/24 12:01	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-61R
Lab Sample ID: 310-283154-18
Date Collected: 06/06/24 10:09
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			06/12/24 05:30	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			06/12/24 05:30	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			06/12/24 05:30	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			06/12/24 05:30	1
1,1-Dichloroethane	**0.540**	**J**	1.00	0.220	ug/L			06/12/24 05:30	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			06/12/24 05:30	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			06/12/24 05:30	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			06/12/24 05:30	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			06/12/24 05:30	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			06/12/24 05:30	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			06/12/24 05:30	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			06/12/24 05:30	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			06/12/24 05:30	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			06/12/24 05:30	1
2-Hexanone	<10.0		10.0	2.00	ug/L			06/12/24 05:30	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			06/12/24 05:30	1
Acetone	<10.0		10.0	3.10	ug/L			06/12/24 05:30	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			06/12/24 05:30	1
Benzene	<0.500		0.500	0.220	ug/L			06/12/24 05:30	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			06/12/24 05:30	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			06/12/24 05:30	1
Bromoform	<5.00		5.00	0.780	ug/L			06/12/24 05:30	1
Bromomethane	<4.00		4.00	1.10	ug/L			06/12/24 05:30	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			06/12/24 05:30	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			06/12/24 05:30	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			06/12/24 05:30	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			06/12/24 05:30	1
Chloroethane	<4.00		4.00	0.790	ug/L			06/12/24 05:30	1
Chloroform	<3.00		3.00	1.30	ug/L			06/12/24 05:30	1
Chloromethane	<3.00		3.00	0.610	ug/L			06/12/24 05:30	1
cis-1,2-Dichloroethene	**12.5**		1.00	0.210	ug/L			06/12/24 05:30	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			06/12/24 05:30	1
Dibromomethane	<1.00		1.00	0.330	ug/L			06/12/24 05:30	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			06/12/24 05:30	1
Iodomethane	<10.0		10.0	7.00	ug/L			06/12/24 05:30	1
Methylene chloride	<5.00		5.00	1.70	ug/L			06/12/24 05:30	1
Styrene	<1.00		1.00	0.370	ug/L			06/12/24 05:30	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			06/12/24 05:30	1
Toluene	<1.00		1.00	0.430	ug/L			06/12/24 05:30	1
trans-1,2-Dichloroethene	**0.273**	**J**	1.00	0.270	ug/L			06/12/24 05:30	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			06/12/24 05:30	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			06/12/24 05:30	1
Trichloroethene	<1.00		1.00	0.430	ug/L			06/12/24 05:30	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			06/12/24 05:30	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			06/12/24 05:30	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			06/12/24 05:30	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			06/12/24 05:30	1

Client Sample ID: MW-61R
Date Collected: 06/06/24 10:09
Date Received: 06/07/24 16:50

Lab Sample ID: 310-283154-18
Matrix: Groundwater

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*103*		*73 - 130*		*06/12/24 05:30*	*1*
Toluene-d8 (Surr)	*92*		*80 - 120*		*06/12/24 05:30*	*1*
4-Bromofluorobenzene (Surr)	*103*		*80 - 120*		*06/12/24 05:30*	*1*

Method: SW846 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Endosulfan I	<0.0909		0.0909	0.0255	ug/L		06/12/24 14:18	06/12/24 21:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*103*		*10 - 136*	*06/12/24 14:18*	*06/12/24 21:50*	*1*
Tetrachloro-m-xylene (Surr)	*95*		*10 - 130*	*06/12/24 14:18*	*06/12/24 21:50*	*1*

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**1460**		100	42.0	mg/L			06/11/24 15:11	100

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**6.17**		0.500	0.0790	mg/L		06/12/24 09:00	06/17/24 13:47	1
Manganese	**6.41**		0.0100	0.00320	mg/L		06/12/24 09:00	06/17/24 13:47	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		06/12/24 09:00	07/02/24 00:41	1
Arsenic	**0.00754**		0.00200	0.000530	mg/L		06/12/24 09:00	06/21/24 16:29	1
Barium	**0.0147**		0.00200	0.000660	mg/L		06/12/24 09:00	06/27/24 18:12	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		06/12/24 09:00	06/24/24 23:47	1
Cadmium	**0.000277**		0.000200	0.000100	mg/L		06/12/24 09:00	06/21/24 16:29	1
Chromium	<0.00500		0.00500	0.00120	mg/L		06/12/24 09:00	06/21/24 16:29	1
Cobalt	**0.0103**		0.000500	0.000170	mg/L		06/12/24 09:00	06/21/24 16:29	1
Copper	**0.00411**	**J**	0.00500	0.00180	mg/L		06/12/24 09:00	06/24/24 23:47	1
Lead	**0.00172**		0.000500	0.000260	mg/L		06/12/24 09:00	06/24/24 23:47	1
Nickel	**0.0335**		0.00500	0.00210	mg/L		06/12/24 09:00	06/21/24 16:29	1
Selenium	<0.00500		0.00500	0.00140	mg/L		06/12/24 09:00	07/02/24 00:41	1
Silver	<0.00100		0.00100	0.000500	mg/L		06/12/24 09:00	06/21/24 16:29	1
Thallium	<0.00100		0.00100	0.000570	mg/L		06/12/24 09:00	06/27/24 18:12	1
Vanadium	**0.00192**	**J**	0.00500	0.00110	mg/L		06/12/24 09:00	06/24/24 23:47	1
Zinc	**0.0233**		0.0200	0.00970	mg/L		06/12/24 09:00	06/24/24 23:47	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**139**		15.0	11.1	mg/L			06/12/24 14:59	1
Total Organic Carbon (SM 5310C)	**3.35**		1.00	0.500	mg/L			06/13/24 14:26	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-73
Lab Sample ID: 310-283154-19
Date Collected: 06/06/24 14:07
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			06/12/24 05:52	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			06/12/24 05:52	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			06/12/24 05:52	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			06/12/24 05:52	1
1,1-Dichloroethane	**3.50**		1.00	0.220	ug/L			06/12/24 05:52	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			06/12/24 05:52	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			06/12/24 05:52	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			06/12/24 05:52	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			06/12/24 05:52	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			06/12/24 05:52	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			06/12/24 05:52	1
1,2-Dichloropropane	**0.918**	**J**	1.00	0.270	ug/L			06/12/24 05:52	1
1,4-Dichlorobenzene	**0.232**	**J**	1.00	0.230	ug/L			06/12/24 05:52	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			06/12/24 05:52	1
2-Hexanone	<10.0		10.0	2.00	ug/L			06/12/24 05:52	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			06/12/24 05:52	1
Acetone	<10.0		10.0	3.10	ug/L			06/12/24 05:52	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			06/12/24 05:52	1
Benzene	**0.479**	**J**	0.500	0.220	ug/L			06/12/24 05:52	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			06/12/24 05:52	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			06/12/24 05:52	1
Bromoform	<5.00		5.00	0.780	ug/L			06/12/24 05:52	1
Bromomethane	<4.00		4.00	1.10	ug/L			06/12/24 05:52	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			06/12/24 05:52	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			06/12/24 05:52	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			06/12/24 05:52	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			06/12/24 05:52	1
Chloroethane	<4.00		4.00	0.790	ug/L			06/12/24 05:52	1
Chloroform	<3.00		3.00	1.30	ug/L			06/12/24 05:52	1
Chloromethane	<3.00		3.00	0.610	ug/L			06/12/24 05:52	1
cis-1,2-Dichloroethene	**37.5**		1.00	0.210	ug/L			06/12/24 05:52	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			06/12/24 05:52	1
Dibromomethane	<1.00		1.00	0.330	ug/L			06/12/24 05:52	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			06/12/24 05:52	1
Iodomethane	<10.0		10.0	7.00	ug/L			06/12/24 05:52	1
Methylene chloride	<5.00		5.00	1.70	ug/L			06/12/24 05:52	1
Styrene	<1.00		1.00	0.370	ug/L			06/12/24 05:52	1
Tetrachloroethene	**2.36**		1.00	0.480	ug/L			06/12/24 05:52	1
Toluene	<1.00		1.00	0.430	ug/L			06/12/24 05:52	1
trans-1,2-Dichloroethene	**0.702**	**J**	1.00	0.270	ug/L			06/12/24 05:52	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			06/12/24 05:52	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			06/12/24 05:52	1
Trichloroethene	**5.02**		1.00	0.430	ug/L			06/12/24 05:52	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			06/12/24 05:52	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			06/12/24 05:52	1
Vinyl chloride	**3.66**		1.00	0.180	ug/L			06/12/24 05:52	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			06/12/24 05:52	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-73
Date Collected: 06/06/24 14:07
Date Received: 06/07/24 16:50

Lab Sample ID: 310-283154-19
Matrix: Groundwater

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*101*		*73 - 130*		*06/12/24 05:52*	*1*
Toluene-d8 (Surr)	*95*		*80 - 120*		*06/12/24 05:52*	*1*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*06/12/24 05:52*	*1*

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**63.3**		50.0	21.0	mg/L			06/11/24 15:23	50

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**11.1**		0.500	0.0790	mg/L		06/12/24 09:00	06/17/24 13:49	1
Manganese	**5.54**		0.0100	0.00320	mg/L		06/12/24 09:00	06/17/24 13:49	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		06/12/24 09:00	07/02/24 00:44	1
Arsenic	**0.0116**		0.00200	0.000530	mg/L		06/12/24 09:00	06/21/24 16:31	1
Barium	**0.0995**		0.00200	0.000660	mg/L		06/12/24 09:00	06/27/24 18:15	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		06/12/24 09:00	07/02/24 14:02	1
Cadmium	**0.107**		0.000200	0.000100	mg/L		06/12/24 09:00	06/21/24 16:31	1
Chromium	<0.00500		0.00500	0.00120	mg/L		06/12/24 09:00	06/21/24 16:31	1
Cobalt	**0.0639**		0.000500	0.000170	mg/L		06/12/24 09:00	06/21/24 16:31	1
Copper	**0.0165**		0.00500	0.00180	mg/L		06/12/24 09:00	06/24/24 23:51	1
Lead	**0.00283**		0.000500	0.000260	mg/L		06/12/24 09:00	06/24/24 23:51	1
Nickel	**0.0263**		0.00500	0.00210	mg/L		06/12/24 09:00	06/21/24 16:31	1
Selenium	<0.00500		0.00500	0.00140	mg/L		06/12/24 09:00	06/27/24 18:15	1
Silver	<0.00100		0.00100	0.000500	mg/L		06/12/24 09:00	06/21/24 16:31	1
Thallium	<0.00100		0.00100	0.000570	mg/L		06/12/24 09:00	06/27/24 18:15	1
Vanadium	<0.00500		0.00500	0.00110	mg/L		06/12/24 09:00	06/24/24 23:51	1
Zinc	**0.383**		0.0200	0.00970	mg/L		06/12/24 09:00	06/24/24 23:51	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**239**		15.0	11.1	mg/L			06/12/24 14:59	1
Total Organic Carbon (SM 5310C)	**1.09**		1.00	0.500	mg/L			06/13/24 15:02	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-79
Lab Sample ID: 310-283154-20
Date Collected: 06/05/24 12:13
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			06/13/24 18:41	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			06/13/24 18:41	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			06/13/24 18:41	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			06/13/24 18:41	1
1,1-Dichloroethane	**3.65**		1.00	0.220	ug/L			06/13/24 18:41	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			06/13/24 18:41	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			06/13/24 18:41	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			06/13/24 18:41	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			06/13/24 18:41	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			06/13/24 18:41	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			06/13/24 18:41	1
1,2-Dichloropropane	**0.404**	**J**	1.00	0.270	ug/L			06/13/24 18:41	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			06/13/24 18:41	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			06/13/24 18:41	1
2-Hexanone	<10.0		10.0	2.00	ug/L			06/13/24 18:41	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			06/13/24 18:41	1
Acetone	<10.0		10.0	3.10	ug/L			06/13/24 18:41	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			06/13/24 18:41	1
Benzene	**0.301**	**J**	0.500	0.220	ug/L			06/13/24 18:41	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			06/13/24 18:41	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			06/13/24 18:41	1
Bromoform	<5.00		5.00	0.780	ug/L			06/13/24 18:41	1
Bromomethane	<4.00		4.00	1.10	ug/L			06/13/24 18:41	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			06/13/24 18:41	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			06/13/24 18:41	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			06/13/24 18:41	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			06/13/24 18:41	1
Chloroethane	<4.00		4.00	0.790	ug/L			06/13/24 18:41	1
Chloroform	<3.00		3.00	1.30	ug/L			06/13/24 18:41	1
Chloromethane	<3.00		3.00	0.610	ug/L			06/13/24 18:41	1
cis-1,2-Dichloroethene	**38.2**		1.00	0.210	ug/L			06/13/24 18:41	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			06/13/24 18:41	1
Dibromomethane	<1.00		1.00	0.330	ug/L			06/13/24 18:41	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			06/13/24 18:41	1
Iodomethane	<10.0		10.0	7.00	ug/L			06/13/24 18:41	1
Methylene chloride	<5.00		5.00	1.70	ug/L			06/13/24 18:41	1
Styrene	<1.00		1.00	0.370	ug/L			06/13/24 18:41	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			06/13/24 18:41	1
Toluene	<1.00		1.00	0.430	ug/L			06/13/24 18:41	1
trans-1,2-Dichloroethene	**0.766**	**J**	1.00	0.270	ug/L			06/13/24 18:41	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			06/13/24 18:41	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			06/13/24 18:41	1
Trichloroethene	<1.00		1.00	0.430	ug/L			06/13/24 18:41	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			06/13/24 18:41	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			06/13/24 18:41	1
Vinyl chloride	**5.19**		1.00	0.180	ug/L			06/13/24 18:41	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			06/13/24 18:41	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-79
Date Collected: 06/05/24 12:13
Date Received: 06/07/24 16:50

Lab Sample ID: 310-283154-20
Matrix: Groundwater

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*104*		*73 - 130*		*06/13/24 18:41*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*06/13/24 18:41*	*1*
4-Bromofluorobenzene (Surr)	*92*		*80 - 120*		*06/13/24 18:41*	*1*

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**95.8**		50.0	21.0	mg/L			06/11/24 15:35	50

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**0.264**	**J F1**	0.500	0.0790	mg/L		06/12/24 09:00	06/17/24 13:59	1
Manganese	**16.3**		0.0100	0.00320	mg/L		06/12/24 09:00	06/17/24 13:59	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		06/12/24 09:00	06/17/24 16:40	1
Arsenic	<0.00200		0.00200	0.000530	mg/L		06/12/24 09:00	06/14/24 18:41	1
Barium	**0.114**		0.00200	0.000660	mg/L		06/12/24 09:00	06/14/24 18:41	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		06/12/24 09:00	06/17/24 16:40	1
Cadmium	**0.0235**		0.000200	0.000100	mg/L		06/12/24 09:00	06/14/24 18:41	1
Chromium	<0.00500		0.00500	0.00120	mg/L		06/12/24 09:00	06/17/24 16:40	1
Cobalt	**0.00324**		0.000500	0.000170	mg/L		06/12/24 09:00	06/17/24 16:40	1
Copper	**0.00257**	**J**	0.00500	0.00180	mg/L		06/12/24 09:00	06/17/24 16:40	1
Lead	**0.000839**		0.000500	0.000260	mg/L		06/12/24 09:00	06/14/24 18:41	1
Nickel	**0.0304**		0.00500	0.00210	mg/L		06/12/24 09:00	06/17/24 16:40	1
Selenium	<0.00500		0.00500	0.00140	mg/L		06/12/24 09:00	06/14/24 18:41	1
Silver	<0.00100		0.00100	0.000500	mg/L		06/12/24 09:00	06/14/24 18:41	1
Thallium	<0.00100		0.00100	0.000570	mg/L		06/12/24 09:00	06/17/24 16:40	1
Vanadium	**0.00210**	**J**	0.00500	0.00110	mg/L		06/12/24 09:00	06/17/24 16:40	1
Zinc	**0.175**		0.0200	0.00970	mg/L		06/12/24 09:00	06/17/24 16:40	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**21.3**		3.75	2.78	mg/L			06/11/24 10:22	1
Total Organic Carbon (SM 5310C)	**1.03**		1.00	0.500	mg/L			06/13/24 16:14	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-66
Lab Sample ID: 310-283154-21
Date Collected: 06/04/24 17:05
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200	0.000530	mg/L		06/12/24 09:00	06/14/24 18:52	1
Cobalt	**0.000281**	**J**	0.000500	0.000170	mg/L		06/12/24 09:00	06/17/24 16:49	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**2.75**		1.88	1.39	mg/L			06/10/24 16:09	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-68
Lab Sample ID: 310-283154-22
Date Collected: 06/05/24 11:23
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200	0.000530	mg/L		06/12/24 09:00	06/14/24 18:54	1
Cobalt	**0.00298**		0.000500	0.000170	mg/L		06/12/24 09:00	06/17/24 16:53	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**15.5**		1.88	1.39	mg/L			06/11/24 11:59	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-75
Lab Sample ID: 310-283154-23
Date Collected: 06/06/24 09:23
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.500		0.500	0.220	ug/L			06/13/24 19:03	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			06/13/24 19:03	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			06/13/24 19:03	1
Trichloroethene	<1.00		1.00	0.430	ug/L			06/13/24 19:03	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			06/13/24 19:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*104*		*73 - 130*		*06/13/24 19:03*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*06/13/24 19:03*	*1*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*		*06/13/24 19:03*	*1*

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-78
Lab Sample ID: 310-283154-24

Date Collected: 06/05/24 10:16
Matrix: Groundwater

Date Received: 06/07/24 16:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.34		1.00	0.210	ug/L			06/13/24 19:26	1
Tetrachloroethene	1.05		1.00	0.480	ug/L			06/13/24 19:26	1
Trichloroethene	0.556	J	1.00	0.430	ug/L			06/13/24 19:26	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			06/13/24 19:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*105*		*73 - 130*		*06/13/24 19:26*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*06/13/24 19:26*	*1*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*06/13/24 19:26*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.0171		0.000500	0.000170	mg/L		06/12/24 09:00	06/17/24 16:57	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	164		30.0	22.2	mg/L			06/11/24 11:59	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: Trip Blank 1
Lab Sample ID: 310-283154-25
Date Collected: 06/04/24 00:00
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			06/13/24 05:56	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			06/13/24 05:56	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			06/13/24 05:56	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			06/13/24 05:56	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			06/13/24 05:56	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			06/13/24 05:56	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			06/13/24 05:56	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			06/13/24 05:56	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			06/13/24 05:56	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			06/13/24 05:56	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			06/13/24 05:56	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			06/13/24 05:56	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			06/13/24 05:56	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			06/13/24 05:56	1
2-Hexanone	<10.0		10.0	2.00	ug/L			06/13/24 05:56	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			06/13/24 05:56	1
Acetone	<10.0		10.0	3.10	ug/L			06/13/24 05:56	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			06/13/24 05:56	1
Benzene	<0.500		0.500	0.220	ug/L			06/13/24 05:56	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			06/13/24 05:56	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			06/13/24 05:56	1
Bromoform	<5.00		5.00	0.780	ug/L			06/13/24 05:56	1
Bromomethane	<4.00		4.00	1.10	ug/L			06/13/24 05:56	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			06/13/24 05:56	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			06/13/24 05:56	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			06/13/24 05:56	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			06/13/24 05:56	1
Chloroethane	<4.00		4.00	0.790	ug/L			06/13/24 05:56	1
Chloroform	<3.00		3.00	1.30	ug/L			06/13/24 05:56	1
Chloromethane	<3.00		3.00	0.610	ug/L			06/13/24 05:56	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			06/13/24 05:56	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			06/13/24 05:56	1
Dibromomethane	<1.00		1.00	0.330	ug/L			06/13/24 05:56	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			06/13/24 05:56	1
Iodomethane	<10.0		10.0	7.00	ug/L			06/13/24 05:56	1
Methylene chloride	<5.00		5.00	1.70	ug/L			06/13/24 05:56	1
Styrene	<1.00		1.00	0.370	ug/L			06/13/24 05:56	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			06/13/24 05:56	1
Toluene	<1.00		1.00	0.430	ug/L			06/13/24 05:56	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			06/13/24 05:56	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			06/13/24 05:56	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			06/13/24 05:56	1
Trichloroethene	<1.00		1.00	0.430	ug/L			06/13/24 05:56	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			06/13/24 05:56	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			06/13/24 05:56	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			06/13/24 05:56	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			06/13/24 05:56	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: Trip Blank 1
Lab Sample ID: 310-283154-25
Date Collected: 06/04/24 00:00
Matrix: Groundwater
Date Received: 06/07/24 16:50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	100		73 - 130		06/13/24 05:56	1
Toluene-d8 (Surr)	96		80 - 120		06/13/24 05:56	1
4-Bromofluorobenzene (Surr)	103		80 - 120		06/13/24 05:56	1

Client Sample ID: Trip Blank 2
Lab Sample ID: 310-283154-26
Date Collected: 06/04/24 00:00
Matrix: Groundwater
Date Received: 06/07/24 16:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			06/13/24 06:18	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			06/13/24 06:18	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			06/13/24 06:18	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			06/13/24 06:18	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			06/13/24 06:18	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			06/13/24 06:18	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			06/13/24 06:18	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			06/13/24 06:18	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			06/13/24 06:18	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			06/13/24 06:18	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			06/13/24 06:18	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			06/13/24 06:18	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			06/13/24 06:18	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			06/13/24 06:18	1
2-Hexanone	<10.0		10.0	2.00	ug/L			06/13/24 06:18	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			06/13/24 06:18	1
Acetone	<10.0		10.0	3.10	ug/L			06/13/24 06:18	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			06/13/24 06:18	1
Benzene	<0.500		0.500	0.220	ug/L			06/13/24 06:18	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			06/13/24 06:18	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			06/13/24 06:18	1
Bromoform	<5.00		5.00	0.780	ug/L			06/13/24 06:18	1
Bromomethane	<4.00		4.00	1.10	ug/L			06/13/24 06:18	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			06/13/24 06:18	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			06/13/24 06:18	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			06/13/24 06:18	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			06/13/24 06:18	1
Chloroethane	<4.00		4.00	0.790	ug/L			06/13/24 06:18	1
Chloroform	<3.00		3.00	1.30	ug/L			06/13/24 06:18	1
Chloromethane	<3.00		3.00	0.610	ug/L			06/13/24 06:18	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			06/13/24 06:18	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			06/13/24 06:18	1
Dibromomethane	<1.00		1.00	0.330	ug/L			06/13/24 06:18	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			06/13/24 06:18	1
Iodomethane	<10.0		10.0	7.00	ug/L			06/13/24 06:18	1
Methylene chloride	<5.00		5.00	1.70	ug/L			06/13/24 06:18	1
Styrene	<1.00		1.00	0.370	ug/L			06/13/24 06:18	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			06/13/24 06:18	1
Toluene	<1.00		1.00	0.430	ug/L			06/13/24 06:18	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			06/13/24 06:18	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			06/13/24 06:18	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			06/13/24 06:18	1
Trichloroethene	<1.00		1.00	0.430	ug/L			06/13/24 06:18	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			06/13/24 06:18	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			06/13/24 06:18	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			06/13/24 06:18	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			06/13/24 06:18	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: Trip Blank 2
Lab Sample ID: 310-283154-26
Date Collected: 06/04/24 00:00
Matrix: Groundwater
Date Received: 06/07/24 16:50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	101		73 - 130		06/13/24 06:18	1
Toluene-d8 (Surr)	97		80 - 120		06/13/24 06:18	1
4-Bromofluorobenzene (Surr)	104		80 - 120		06/13/24 06:18	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC/MS Semi VOA

Qualifier	Qualifier Description
*-	LCS and/or LCSD is outside acceptance limits, low biased.
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*1	LCS/LCSD RPD exceeds control limits.
E	Result exceeded calibration range.

GC Semi VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.

Metals

Qualifier	Qualifier Description
^1+	Initial Calibration Verification (ICV) is outside acceptance limits, high biased.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
F1	MS and/or MSD recovery exceeds control limits.
F5	Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL, and the absolute difference between results is < the upper reporting limits for both.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Surrogate Summary

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Groundwater — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		DBFM	TOL	BFB
Lab Sample ID	Client Sample ID	(73-130)	(80-120)	(80-120)
310-283154-1	MW-53	101	94	103
310-283154-3	GU-7	100	95	103
310-283154-5	MW-62	101	96	101
310-283154-6	MW-81	102	96	103
310-283154-7	MW-39R	102	94	101
310-283154-8	MW-40	104	93	102
310-283154-11	MW-D2	102	95	106
310-283154-12	MW-58	103	94	102
310-283154-14	MW-63R	103	93	100
310-283154-16	MW-65	104	93	103
310-283154-17	93-MW-31R	100	94	103
310-283154-18	MW-61R	103	92	103
310-283154-19	MW-73	101	95	100
310-283154-20	MW-79	104	99	92
310-283154-23	MW-75	104	100	102
310-283154-24	MW-78	105	102	100
310-283154-25	Trip Blank 1	100	96	103
310-283154-26	Trip Blank 2	101	97	104

Surrogate Legend

DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		DBFM	TOL	BFB
Lab Sample ID	Client Sample ID	(73-130)	(80-120)	(80-120)
LCS 310-424145/6	Lab Control Sample	98	96	99
LCS 310-424145/7	Lab Control Sample	102	96	103
LCS 310-424285/6	Lab Control Sample	97	99	102
LCS 310-424285/7	Lab Control Sample	102	96	105
LCS 310-424467/8	Lab Control Sample	95	103	97
LCS 310-424467/9	Lab Control Sample	105	101	100
MB 310-424145/5	Method Blank	101	94	103
MB 310-424285/5	Method Blank	101	95	104
MB 310-424467/7	Method Blank	106	101	100

Surrogate Legend

DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)

Surrogate Summary

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Matrix: Groundwater — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)					
		FBP	2FP	NBZ	PHL	TPHL	TBP
Lab Sample ID	Client Sample ID	(39-118)	(25-110)	(45-129)	(21-110)	(12-144)	(27-136)
310-283154-5	MW-62	64	52	70	48	63	61

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)
2FP = 2-Fluorophenol (Surr)
NBZ = Nitrobenzene-d5 (Surr)
PHL = Phenol-d5 (Surr)
TPHL = Terphenyl-d14 (Surr)
TBP = 2,4,6-Tribromophenol (Surr)

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)					
		FBP	2FP	NBZ	PHL	TPHL	TBP
Lab Sample ID	Client Sample ID	(39-118)	(25-110)	(45-129)	(21-110)	(12-144)	(27-136)
LCS 310-424460/2-A	Lab Control Sample	77	63	83	58	84	84
LCSD 310-424460/3-A	Lab Control Sample Dup	74	64	82	61	81	82
MB 310-424460/1-A	Method Blank	90	70	100	65	97	91

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)
2FP = 2-Fluorophenol (Surr)
NBZ = Nitrobenzene-d5 (Surr)
PHL = Phenol-d5 (Surr)
TPHL = Terphenyl-d14 (Surr)
TBP = 2,4,6-Tribromophenol (Surr)

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Groundwater — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		DCB2	TCX2	TCX2
Lab Sample ID	Client Sample ID	(10-136)	(10-130)	(10-130)
310-283154-5	MW-62	105	96	96
310-283154-5 MS	MW-62	102	89	89
310-283154-5 MSD	MW-62	104	90	90
310-283154-18	MW-61R	103	95	95

Surrogate Legend

DCB = DCB Decachlorobiphenyl (Surr)
TCX = Tetrachloro-m-xylene (Surr)

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		DCB2	TCX2	TCX2
Lab Sample ID	Client Sample ID	(10-136)	(10-130)	(10-130)
LCS 310-424349/8-A	Lab Control Sample	102	85	85
MB 310-424349/1-A	Method Blank	92	85	85

Surrogate Summary

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Surrogate Legend

DCB = DCB Decachlorobiphenyl (Surr)
TCX = Tetrachloro-m-xylene (Surr)

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Groundwater — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)											
		DCB1	TCX1										
Lab Sample ID	Client Sample ID	(10-136)	(10-130)										
310-283154-5	MW-62	103	100										
310-283154-5 MS	MW-62	100	92										
310-283154-5 MSD	MW-62	101	92										

Surrogate Legend

DCB = DCB Decachlorobiphenyl (Surr)
TCX = Tetrachloro-m-xylene (Surr)

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)											
		DCB1	TCX1										
Lab Sample ID	Client Sample ID	(10-136)	(10-130)										
LCS 310-424349/9-A	Lab Control Sample	97	86										
MB 310-424349/1-A	Method Blank	91	88										

Surrogate Legend

DCB = DCB Decachlorobiphenyl (Surr)
TCX = Tetrachloro-m-xylene (Surr)

Method: 8151A - Herbicides (GC)

Matrix: Groundwater — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)											
		DCPAA1	DCPAA2										
Lab Sample ID	Client Sample ID	(34-142)	(34-142)										
310-283154-5	MW-62	46	51										

Surrogate Legend

DCPAA = DCAA

Method: 8151A - Herbicides (GC)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)											
		DCPAA1	DCPAA2										
Lab Sample ID	Client Sample ID	(34-142)	(34-142)										
LCS 410-516868/2-A	Lab Control Sample	73	79										
LCSD 410-516868/3-A	Lab Control Sample Dup	55	56										
MB 410-516868/1-A	Method Blank	69	74										

Surrogate Legend

DCPAA = DCAA

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 310-424145/5
Matrix: Water
Analysis Batch: 424145

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			06/11/24 22:42	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			06/11/24 22:42	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			06/11/24 22:42	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			06/11/24 22:42	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			06/11/24 22:42	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			06/11/24 22:42	1
1,1-Dichloropropene	<1.00		1.00	0.430	ug/L			06/11/24 22:42	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			06/11/24 22:42	1
1,2,4-Trichlorobenzene	<5.00		5.00	0.750	ug/L			06/11/24 22:42	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			06/11/24 22:42	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			06/11/24 22:42	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			06/11/24 22:42	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			06/11/24 22:42	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			06/11/24 22:42	1
1,3-Dichlorobenzene	<1.00		1.00	0.300	ug/L			06/11/24 22:42	1
1,3-Dichloropropane	<1.00		1.00	0.400	ug/L			06/11/24 22:42	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			06/11/24 22:42	1
2,2-Dichloropropane	<4.00		4.00	0.690	ug/L			06/11/24 22:42	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			06/11/24 22:42	1
2-Hexanone	<10.0		10.0	2.00	ug/L			06/11/24 22:42	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			06/11/24 22:42	1
Acetone	<10.0		10.0	3.10	ug/L			06/11/24 22:42	1
Acrolein	<10.0		10.0	3.60	ug/L			06/11/24 22:42	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			06/11/24 22:42	1
Allyl chloride	<2.00		2.00	0.700	ug/L			06/11/24 22:42	1
Benzene	<0.500		0.500	0.220	ug/L			06/11/24 22:42	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			06/11/24 22:42	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			06/11/24 22:42	1
Bromoform	<5.00		5.00	0.780	ug/L			06/11/24 22:42	1
Bromomethane	<4.00		4.00	1.10	ug/L			06/11/24 22:42	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			06/11/24 22:42	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			06/11/24 22:42	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			06/11/24 22:42	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			06/11/24 22:42	1
Chloroethane	<4.00		4.00	0.790	ug/L			06/11/24 22:42	1
Chloroform	<3.00		3.00	1.30	ug/L			06/11/24 22:42	1
Chloromethane	<3.00		3.00	0.610	ug/L			06/11/24 22:42	1
Chloroprene	<1.00		1.00	0.230	ug/L			06/11/24 22:42	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			06/11/24 22:42	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			06/11/24 22:42	1
Dibromomethane	<1.00		1.00	0.330	ug/L			06/11/24 22:42	1
Dichlorodifluoromethane	<3.00		3.00	0.250	ug/L			06/11/24 22:42	1
Ethyl methacrylate	<2.00		2.00	0.680	ug/L			06/11/24 22:42	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			06/11/24 22:42	1
Iodomethane	<10.0		10.0	7.00	ug/L			06/11/24 22:42	1
Methacrylonitrile	<10.0		10.0	3.30	ug/L			06/11/24 22:42	1
Methyl methacrylate	<2.00		2.00	0.760	ug/L			06/11/24 22:42	1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 310-424145/5
Matrix: Water
Analysis Batch: 424145

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene chloride	<5.00		5.00	1.70	ug/L			06/11/24 22:42	1
Naphthalene	<5.00		5.00	3.00	ug/L			06/11/24 22:42	1
Propionitrile	<10.0		10.0	3.40	ug/L			06/11/24 22:42	1
Styrene	<1.00		1.00	0.370	ug/L			06/11/24 22:42	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			06/11/24 22:42	1
Toluene	<1.00		1.00	0.430	ug/L			06/11/24 22:42	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			06/11/24 22:42	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			06/11/24 22:42	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			06/11/24 22:42	1
Trichloroethene	<1.00		1.00	0.430	ug/L			06/11/24 22:42	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			06/11/24 22:42	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			06/11/24 22:42	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			06/11/24 22:42	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			06/11/24 22:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*101*		*73 - 130*		*06/11/24 22:42*	*1*
Toluene-d8 (Surr)	*94*		*80 - 120*		*06/11/24 22:42*	*1*
4-Bromofluorobenzene (Surr)	*103*		*80 - 120*		*06/11/24 22:42*	*1*

Lab Sample ID: LCS 310-424145/6
Matrix: Water
Analysis Batch: 424145

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1,2-Tetrachloroethane	20.0	18.39		ug/L		92	71 - 120
1,1,1-Trichloroethane	20.0	18.76		ug/L		94	73 - 129
1,1,2,2-Tetrachloroethane	20.0	19.24		ug/L		96	68 - 124
1,1,2-Trichloroethane	20.0	19.05		ug/L		95	73 - 123
1,1-Dichloroethane	20.0	18.22		ug/L		91	70 - 127
1,1-Dichloroethene	20.0	19.82		ug/L		99	63 - 132
1,1-Dichloropropene	20.0	18.11		ug/L		91	69 - 132
1,2,3-Trichloropropane	20.0	19.53		ug/L		98	65 - 127
1,2,4-Trichlorobenzene	20.0	17.23		ug/L		86	68 - 124
1,2-Dibromo-3-chloropropane	20.0	18.87		ug/L		94	50 - 150
1,2-Dibromoethane (EDB)	20.0	19.60		ug/L		98	75 - 125
1,2-Dichlorobenzene	20.0	19.80		ug/L		99	74 - 120
1,2-Dichloroethane	20.0	17.55		ug/L		88	71 - 125
1,2-Dichloropropane	20.0	19.11		ug/L		96	73 - 124
1,3-Dichlorobenzene	20.0	20.44		ug/L		102	72 - 120
1,3-Dichloropropane	20.0	19.01		ug/L		95	72 - 125
1,4-Dichlorobenzene	20.0	17.67		ug/L		88	72 - 120
2,2-Dichloropropane	20.0	17.09		ug/L		85	50 - 150
2-Butanone (MEK)	40.0	37.11		ug/L		93	50 - 150
2-Hexanone	40.0	43.08		ug/L		108	60 - 140
4-Methyl-2-pentanone (MIBK)	40.0	40.39		ug/L		101	60 - 139
Acetone	40.0	36.72		ug/L		92	50 - 150

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-424145/6
Matrix: Water
Analysis Batch: 424145

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acrolein	94.8	78.15		ug/L		82	49 - 150
Acrylonitrile	200	183.5		ug/L		92	50 - 150
Allyl chloride	20.0	17.44		ug/L		87	49 - 150
Benzene	20.0	18.28		ug/L		91	72 - 124
Bromochloromethane	20.0	18.66		ug/L		93	73 - 130
Bromodichloromethane	20.0	18.44		ug/L		92	74 - 122
Bromoform	20.0	18.79		ug/L		94	61 - 122
Carbon disulfide	20.0	19.13		ug/L		96	59 - 135
Carbon tetrachloride	20.0	18.69		ug/L		93	67 - 132
Chlorobenzene	20.0	19.23		ug/L		96	76 - 120
Chlorodibromomethane	20.0	18.76		ug/L		94	71 - 121
Chloroform	20.0	17.90		ug/L		90	72 - 125
Chloroprene	20.0	17.61		ug/L		88	69 - 133
cis-1,2-Dichloroethene	20.0	18.09		ug/L		90	74 - 123
cis-1,3-Dichloropropene	20.0	18.19		ug/L		91	71 - 125
Dibromomethane	20.0	19.13		ug/L		96	74 - 125
Ethyl methacrylate	20.0	21.02		ug/L		105	70 - 129
Ethylbenzene	20.0	18.27		ug/L		91	74 - 122
Iodomethane	20.0	14.09		ug/L		70	10 - 150
Methacrylonitrile	200	188.3		ug/L		94	69 - 129
Methyl methacrylate	40.0	40.24		ug/L		101	68 - 131
Methylene chloride	20.0	19.47		ug/L		97	50 - 150
Naphthalene	20.0	18.08		ug/L		90	50 - 150
Propionitrile	200	195.3		ug/L		98	63 - 135
Styrene	20.0	18.93		ug/L		95	74 - 121
Tetrachloroethene	20.0	19.19		ug/L		96	71 - 130
Toluene	20.0	19.78		ug/L		99	74 - 123
trans-1,2-Dichloroethene	20.0	17.74		ug/L		89	70 - 126
trans-1,3-Dichloropropene	20.0	17.27		ug/L		86	69 - 123
trans-1,4-Dichloro-2-butene	20.0	15.47		ug/L		77	50 - 150
Trichloroethene	20.0	19.53		ug/L		98	72 - 126
Vinyl acetate	40.0	38.56		ug/L		96	50 - 150
Xylenes, Total	40.0	37.53		ug/L		94	73 - 123

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*98*		*73 - 130*
Toluene-d8 (Surr)	*96*		*80 - 120*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*

Lab Sample ID: LCS 310-424145/7
Matrix: Water
Analysis Batch: 424145

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromomethane	20.0	15.64		ug/L		78	23 - 150
Chloroethane	20.0	22.22		ug/L		111	54 - 136
Chloromethane	20.0	23.49		ug/L		117	38 - 150

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-424145/7
Matrix: Water
Analysis Batch: 424145

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Dichlorodifluoromethane	20.0	28.32		ug/L		142	39 - 150
Trichlorofluoromethane	20.0	23.46		ug/L		117	54 - 149
Vinyl chloride	20.0	20.27		ug/L		101	56 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*102*		*73 - 130*
Toluene-d8 (Surr)	*96*		*80 - 120*
4-Bromofluorobenzene (Surr)	*103*		*80 - 120*

Lab Sample ID: MB 310-424285/5
Matrix: Water
Analysis Batch: 424285

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			06/13/24 04:25	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			06/13/24 04:25	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			06/13/24 04:25	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			06/13/24 04:25	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			06/13/24 04:25	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			06/13/24 04:25	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			06/13/24 04:25	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			06/13/24 04:25	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			06/13/24 04:25	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			06/13/24 04:25	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			06/13/24 04:25	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			06/13/24 04:25	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			06/13/24 04:25	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			06/13/24 04:25	1
2-Hexanone	<10.0		10.0	2.00	ug/L			06/13/24 04:25	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			06/13/24 04:25	1
Acetone	<10.0		10.0	3.10	ug/L			06/13/24 04:25	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			06/13/24 04:25	1
Benzene	<0.500		0.500	0.220	ug/L			06/13/24 04:25	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			06/13/24 04:25	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			06/13/24 04:25	1
Bromoform	<5.00		5.00	0.780	ug/L			06/13/24 04:25	1
Bromomethane	<4.00		4.00	1.10	ug/L			06/13/24 04:25	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			06/13/24 04:25	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			06/13/24 04:25	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			06/13/24 04:25	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			06/13/24 04:25	1
Chloroethane	<4.00		4.00	0.790	ug/L			06/13/24 04:25	1
Chloroform	<3.00		3.00	1.30	ug/L			06/13/24 04:25	1
Chloromethane	<3.00		3.00	0.610	ug/L			06/13/24 04:25	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			06/13/24 04:25	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			06/13/24 04:25	1
Dibromomethane	<1.00		1.00	0.330	ug/L			06/13/24 04:25	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 310-424285/5
Matrix: Water
Analysis Batch: 424285

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	<1.00		1.00	0.310	ug/L			06/13/24 04:25	1
Iodomethane	<10.0		10.0	7.00	ug/L			06/13/24 04:25	1
Methylene chloride	<5.00		5.00	1.70	ug/L			06/13/24 04:25	1
Styrene	<1.00		1.00	0.370	ug/L			06/13/24 04:25	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			06/13/24 04:25	1
Toluene	<1.00		1.00	0.430	ug/L			06/13/24 04:25	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			06/13/24 04:25	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			06/13/24 04:25	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			06/13/24 04:25	1
Trichloroethene	<1.00		1.00	0.430	ug/L			06/13/24 04:25	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			06/13/24 04:25	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			06/13/24 04:25	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			06/13/24 04:25	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			06/13/24 04:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*101*		*73 - 130*		*06/13/24 04:25*	*1*
Toluene-d8 (Surr)	*95*		*80 - 120*		*06/13/24 04:25*	*1*
4-Bromofluorobenzene (Surr)	*104*		*80 - 120*		*06/13/24 04:25*	*1*

Lab Sample ID: LCS 310-424285/6
Matrix: Water
Analysis Batch: 424285

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1,2-Tetrachloroethane	20.0	18.86		ug/L		94	71 - 120
1,1,1-Trichloroethane	20.0	19.01		ug/L		95	73 - 129
1,1,2,2-Tetrachloroethane	20.0	19.27		ug/L		96	68 - 124
1,1,2-Trichloroethane	20.0	19.21		ug/L		96	73 - 123
1,1-Dichloroethane	20.0	17.89		ug/L		89	70 - 127
1,1-Dichloroethene	20.0	19.19		ug/L		96	63 - 132
1,2,3-Trichloropropane	20.0	19.36		ug/L		97	65 - 127
1,2-Dibromo-3-chloropropane	20.0	17.65		ug/L		88	50 - 150
1,2-Dibromoethane (EDB)	20.0	19.26		ug/L		96	75 - 125
1,2-Dichlorobenzene	20.0	20.06		ug/L		100	74 - 120
1,2-Dichloroethane	20.0	17.57		ug/L		88	71 - 125
1,2-Dichloropropane	20.0	19.90		ug/L		100	73 - 124
1,4-Dichlorobenzene	20.0	18.14		ug/L		91	72 - 120
2-Butanone (MEK)	40.0	34.18		ug/L		85	50 - 150
2-Hexanone	40.0	42.82		ug/L		107	60 - 140
4-Methyl-2-pentanone (MIBK)	40.0	40.75		ug/L		102	60 - 139
Acetone	40.0	32.44		ug/L		81	50 - 150
Acrylonitrile	200	177.7		ug/L		89	50 - 150
Benzene	20.0	18.54		ug/L		93	72 - 124
Bromochloromethane	20.0	18.02		ug/L		90	73 - 130
Bromodichloromethane	20.0	17.74		ug/L		89	74 - 122
Bromoform	20.0	18.71		ug/L		94	61 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-424285/6
Matrix: Water
Analysis Batch: 424285

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Carbon disulfide	20.0	17.71		ug/L		89	59 - 135
Carbon tetrachloride	20.0	18.21		ug/L		91	67 - 132
Chlorobenzene	20.0	19.85		ug/L		99	76 - 120
Chlorodibromomethane	20.0	18.89		ug/L		94	71 - 121
Chloroform	20.0	17.86		ug/L		89	72 - 125
cis-1,2-Dichloroethene	20.0	18.10		ug/L		91	74 - 123
cis-1,3-Dichloropropene	20.0	18.34		ug/L		92	71 - 125
Dibromomethane	20.0	19.14		ug/L		96	74 - 125
Ethylbenzene	20.0	18.70		ug/L		94	74 - 122
Iodomethane	20.0	13.67		ug/L		68	10 - 150
Methylene chloride	20.0	19.75		ug/L		99	50 - 150
Styrene	20.0	19.43		ug/L		97	74 - 121
Tetrachloroethene	20.0	19.09		ug/L		95	71 - 130
Toluene	20.0	20.17		ug/L		101	74 - 123
trans-1,2-Dichloroethene	20.0	16.75		ug/L		84	70 - 126
trans-1,3-Dichloropropene	20.0	17.70		ug/L		88	69 - 123
trans-1,4-Dichloro-2-butene	20.0	15.48		ug/L		77	50 - 150
Trichloroethene	20.0	20.12		ug/L		101	72 - 126
Vinyl acetate	40.0	37.38		ug/L		93	50 - 150
Xylenes, Total	40.0	39.04		ug/L		98	73 - 123

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*97*		*73 - 130*
Toluene-d8 (Surr)	*99*		*80 - 120*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*

Lab Sample ID: LCS 310-424285/7
Matrix: Water
Analysis Batch: 424285

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromomethane	20.0	15.81		ug/L		79	23 - 150
Chloroethane	20.0	21.09		ug/L		105	54 - 136
Chloromethane	20.0	20.96		ug/L		105	38 - 150
Trichlorofluoromethane	20.0	22.91		ug/L		115	54 - 149
Vinyl chloride	20.0	19.73		ug/L		99	56 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*102*		*73 - 130*
Toluene-d8 (Surr)	*96*		*80 - 120*
4-Bromofluorobenzene (Surr)	*105*		*80 - 120*

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 310-424467/7
Matrix: Water
Analysis Batch: 424467

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			06/13/24 12:36	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			06/13/24 12:36	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			06/13/24 12:36	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			06/13/24 12:36	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			06/13/24 12:36	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			06/13/24 12:36	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			06/13/24 12:36	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			06/13/24 12:36	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			06/13/24 12:36	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			06/13/24 12:36	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			06/13/24 12:36	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			06/13/24 12:36	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			06/13/24 12:36	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			06/13/24 12:36	1
2-Hexanone	<10.0		10.0	2.00	ug/L			06/13/24 12:36	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			06/13/24 12:36	1
Acetone	<10.0		10.0	3.10	ug/L			06/13/24 12:36	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			06/13/24 12:36	1
Benzene	<0.500		0.500	0.220	ug/L			06/13/24 12:36	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			06/13/24 12:36	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			06/13/24 12:36	1
Bromoform	<5.00		5.00	0.780	ug/L			06/13/24 12:36	1
Bromomethane	<4.00		4.00	1.10	ug/L			06/13/24 12:36	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			06/13/24 12:36	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			06/13/24 12:36	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			06/13/24 12:36	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			06/13/24 12:36	1
Chloroethane	<4.00		4.00	0.790	ug/L			06/13/24 12:36	1
Chloroform	<3.00		3.00	1.30	ug/L			06/13/24 12:36	1
Chloromethane	<3.00		3.00	0.610	ug/L			06/13/24 12:36	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			06/13/24 12:36	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			06/13/24 12:36	1
Dibromomethane	<1.00		1.00	0.330	ug/L			06/13/24 12:36	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			06/13/24 12:36	1
Iodomethane	<10.0		10.0	7.00	ug/L			06/13/24 12:36	1
Methylene chloride	<5.00		5.00	1.70	ug/L			06/13/24 12:36	1
Styrene	<1.00		1.00	0.370	ug/L			06/13/24 12:36	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			06/13/24 12:36	1
Toluene	<1.00		1.00	0.430	ug/L			06/13/24 12:36	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			06/13/24 12:36	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			06/13/24 12:36	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			06/13/24 12:36	1
Trichloroethene	<1.00		1.00	0.430	ug/L			06/13/24 12:36	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			06/13/24 12:36	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			06/13/24 12:36	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			06/13/24 12:36	1
Xylenes, Total	0.5594	J	3.00	0.400	ug/L			06/13/24 12:36	1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 310-424467/7
Matrix: Water
Analysis Batch: 424467

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*106*		*73 - 130*		*06/13/24 12:36*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*06/13/24 12:36*	*1*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*06/13/24 12:36*	*1*

Lab Sample ID: LCS 310-424467/8
Matrix: Water
Analysis Batch: 424467

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1,2-Tetrachloroethane	20.0	20.24		ug/L		101	71 - 120
1,1,1-Trichloroethane	20.0	19.26		ug/L		96	73 - 129
1,1,2,2-Tetrachloroethane	20.0	20.70		ug/L		104	68 - 124
1,1,2-Trichloroethane	20.0	20.24		ug/L		101	73 - 123
1,1-Dichloroethane	20.0	20.80		ug/L		104	70 - 127
1,1-Dichloroethene	20.0	19.87		ug/L		99	63 - 132
1,2,3-Trichloropropane	20.0	19.46		ug/L		97	65 - 127
1,2-Dibromo-3-chloropropane	20.0	18.59		ug/L		93	50 - 150
1,2-Dibromoethane (EDB)	20.0	20.07		ug/L		100	75 - 125
1,2-Dichlorobenzene	20.0	19.84		ug/L		99	74 - 120
1,2-Dichloroethane	20.0	19.69		ug/L		98	71 - 125
1,2-Dichloropropane	20.0	21.39		ug/L		107	73 - 124
1,4-Dichlorobenzene	20.0	19.84		ug/L		99	72 - 120
2-Butanone (MEK)	40.0	49.42		ug/L		124	50 - 150
2-Hexanone	40.0	50.78		ug/L		127	60 - 140
4-Methyl-2-pentanone (MIBK)	40.0	50.98		ug/L		127	60 - 139
Acetone	40.0	40.11		ug/L		100	50 - 150
Acrylonitrile	200	234.4		ug/L		117	50 - 150
Benzene	20.0	20.20		ug/L		101	72 - 124
Bromochloromethane	20.0	18.61		ug/L		93	73 - 130
Bromodichloromethane	20.0	17.90		ug/L		90	74 - 122
Bromoform	20.0	18.52		ug/L		93	61 - 122
Carbon disulfide	20.0	19.58		ug/L		98	59 - 135
Carbon tetrachloride	20.0	19.63		ug/L		98	67 - 132
Chlorobenzene	20.0	20.07		ug/L		100	76 - 120
Chlorodibromomethane	20.0	19.01		ug/L		95	71 - 121
Chloroform	20.0	18.19		ug/L		91	72 - 125
cis-1,2-Dichloroethene	20.0	19.47		ug/L		97	74 - 123
cis-1,3-Dichloropropene	20.0	21.24		ug/L		106	71 - 125
Dibromomethane	20.0	19.11		ug/L		96	74 - 125
Ethylbenzene	20.0	20.95		ug/L		105	74 - 122
Iodomethane	20.0	12.21		ug/L		61	10 - 150
Methylene chloride	20.0	19.36		ug/L		97	50 - 150
Styrene	20.0	20.76		ug/L		104	74 - 121
Tetrachloroethene	20.0	20.67		ug/L		103	71 - 130
Toluene	20.0	20.46		ug/L		102	74 - 123
trans-1,2-Dichloroethene	20.0	19.76		ug/L		99	70 - 126
trans-1,3-Dichloropropene	20.0	19.62		ug/L		98	69 - 123

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-424467/8
Matrix: Water
Analysis Batch: 424467

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
trans-1,4-Dichloro-2-butene	20.0	22.20		ug/L		111	50 - 150
Trichloroethene	20.0	19.68		ug/L		98	72 - 126
Vinyl acetate	40.0	43.75		ug/L		109	50 - 150
Xylenes, Total	40.0	41.67		ug/L		104	73 - 123

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*95*		*73 - 130*
Toluene-d8 (Surr)	*103*		*80 - 120*
4-Bromofluorobenzene (Surr)	*97*		*80 - 120*

Lab Sample ID: LCS 310-424467/9
Matrix: Water
Analysis Batch: 424467

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromomethane	20.0	15.88		ug/L		79	23 - 150
Chloroethane	20.0	21.78		ug/L		109	54 - 136
Chloromethane	20.0	20.55		ug/L		103	38 - 150
Trichlorofluoromethane	20.0	23.22		ug/L		116	54 - 149
Vinyl chloride	20.0	21.85		ug/L		109	56 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*105*		*73 - 130*
Toluene-d8 (Surr)	*101*		*80 - 120*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 310-424460/1-A
Matrix: Water
Analysis Batch: 424715

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 424460

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<10.0		10.0	0.640	ug/L		06/13/24 10:50	06/17/24 14:20	1
Acenaphthylene	<10.0		10.0	0.720	ug/L		06/13/24 10:50	06/17/24 14:20	1
Acetophenone	<10.0		10.0	0.690	ug/L		06/13/24 10:50	06/17/24 14:20	1
2-Acetylaminofluorene	<10.0		10.0	2.70	ug/L		06/13/24 10:50	06/17/24 14:20	1
4-Aminobiphenyl	<10.0		10.0	2.20	ug/L		06/13/24 10:50	06/17/24 14:20	1
Anthracene	<10.0		10.0	0.870	ug/L		06/13/24 10:50	06/17/24 14:20	1
Benzo[a]anthracene	<10.0		10.0	0.850	ug/L		06/13/24 10:50	06/17/24 14:20	1
Benzo[a]pyrene	<10.0		10.0	8.10	ug/L		06/13/24 10:50	06/17/24 14:20	1
Benzo[b]fluoranthene	<10.0		10.0	4.90	ug/L		06/13/24 10:50	06/17/24 14:20	1
Benzo[g,h,i]perylene	<10.0		10.0	6.30	ug/L		06/13/24 10:50	06/17/24 14:20	1
Benzo[k]fluoranthene	<10.0		10.0	2.20	ug/L		06/13/24 10:50	06/17/24 14:20	1
Benzyl alcohol	<10.0		10.0	1.30	ug/L		06/13/24 10:50	06/17/24 14:20	1
Bis(2-chloroethoxy)methane	<10.0		10.0	0.760	ug/L		06/13/24 10:50	06/17/24 14:20	1
Bis(2-chloroethyl)ether	<10.0		10.0	0.820	ug/L		06/13/24 10:50	06/17/24 14:20	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 310-424460/1-A
Matrix: Water
Analysis Batch: 424715

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 424460

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
bis (2-chloroisopropyl) ether	<10.0		10.0	0.540	ug/L		06/13/24 10:50	06/17/24 14:20	1
Bis(2-ethylhexyl) phthalate	<10.0		10.0	5.50	ug/L		06/13/24 10:50	06/17/24 14:20	1
4-Bromophenyl phenyl ether	<10.0		10.0	0.700	ug/L		06/13/24 10:50	06/17/24 14:20	1
Butyl benzyl phthalate	<10.0		10.0	5.40	ug/L		06/13/24 10:50	06/17/24 14:20	1
4-Chloroaniline	<10.0		10.0	0.620	ug/L		06/13/24 10:50	06/17/24 14:20	1
Chlorobenzilate	<10.0		10.0	3.60	ug/L		06/13/24 10:50	06/17/24 14:20	1
4-Chloro-3-methylphenol	<10.0		10.0	0.840	ug/L		06/13/24 10:50	06/17/24 14:20	1
2-Chloronaphthalene	<10.0		10.0	0.640	ug/L		06/13/24 10:50	06/17/24 14:20	1
2-Chlorophenol	<10.0		10.0	0.540	ug/L		06/13/24 10:50	06/17/24 14:20	1
4-Chlorophenyl phenyl ether	<10.0		10.0	0.690	ug/L		06/13/24 10:50	06/17/24 14:20	1
Chrysene	<10.0		10.0	0.870	ug/L		06/13/24 10:50	06/17/24 14:20	1
Diallate	<10.0		10.0	4.00	ug/L		06/13/24 10:50	06/17/24 14:20	1
Dibenz(a,h)anthracene	<10.0		10.0	3.90	ug/L		06/13/24 10:50	06/17/24 14:20	1
Dibenzofuran	<10.0		10.0	0.740	ug/L		06/13/24 10:50	06/17/24 14:20	1
3,3'-Dichlorobenzidine	<10.0		10.0	1.40	ug/L		06/13/24 10:50	06/17/24 14:20	1
2,4-Dichlorophenol	<10.0		10.0	0.850	ug/L		06/13/24 10:50	06/17/24 14:20	1
2,6-Dichlorophenol	<10.0		10.0	0.690	ug/L		06/13/24 10:50	06/17/24 14:20	1
Diethyl phthalate	<10.0		10.0	1.70	ug/L		06/13/24 10:50	06/17/24 14:20	1
Dimethoate	<10.0		10.0	3.60	ug/L		06/13/24 10:50	06/17/24 14:20	1
7,12-Dimethylbenz(a)anthracene	<10.0		10.0	1.90	ug/L		06/13/24 10:50	06/17/24 14:20	1
3,3'-Dimethylbenzidine	<10.0		10.0	1.50	ug/L		06/13/24 10:50	06/17/24 14:20	1
2,4-Dimethylphenol	<10.0		10.0	0.580	ug/L		06/13/24 10:50	06/17/24 14:20	1
Dimethyl phthalate	<10.0		10.0	1.00	ug/L		06/13/24 10:50	06/17/24 14:20	1
Di-n-butyl phthalate	<10.0		10.0	5.60	ug/L		06/13/24 10:50	06/17/24 14:20	1
1,3-Dinitrobenzene	<10.0		10.0	3.20	ug/L		06/13/24 10:50	06/17/24 14:20	1
4,6-Dinitro-2-methylphenol	<10.0		10.0	6.90	ug/L		06/13/24 10:50	06/17/24 14:20	1
2,4-Dinitrophenol	<20.0		20.0	13.0	ug/L		06/13/24 10:50	06/17/24 14:20	1
2,4-Dinitrotoluene	<10.0		10.0	6.40	ug/L		06/13/24 10:50	06/17/24 14:20	1
2,6-Dinitrotoluene	<10.0		10.0	0.520	ug/L		06/13/24 10:50	06/17/24 14:20	1
Di-n-octyl phthalate	<20.0		20.0	7.00	ug/L		06/13/24 10:50	06/17/24 14:20	1
Dinoseb	<10.0		10.0	2.40	ug/L		06/13/24 10:50	06/17/24 14:20	1
Diphenylamine	<10.0		10.0	6.00	ug/L		06/13/24 10:50	06/17/24 14:20	1
Disulfoton	<10.0		10.0	2.40	ug/L		06/13/24 10:50	06/17/24 14:20	1
Ethyl methanesulfonate	<10.0		10.0	3.60	ug/L		06/13/24 10:50	06/17/24 14:20	1
Ethyl parathion	<10.0		10.0	2.20	ug/L		06/13/24 10:50	06/17/24 14:20	1
Famphur	<10.0		10.0	3.80	ug/L		06/13/24 10:50	06/17/24 14:20	1
Fluoranthene	<10.0		10.0	1.70	ug/L		06/13/24 10:50	06/17/24 14:20	1
Fluorene	<10.0		10.0	0.790	ug/L		06/13/24 10:50	06/17/24 14:20	1
Hexachlorobenzene	<10.0		10.0	0.700	ug/L		06/13/24 10:50	06/17/24 14:20	1
Hexachlorobutadiene	<10.0		10.0	0.860	ug/L		06/13/24 10:50	06/17/24 14:20	1
Hexachlorocyclopentadiene	<10.0		10.0	5.10	ug/L		06/13/24 10:50	06/17/24 14:20	1
Hexachloroethane	<10.0		10.0	0.970	ug/L		06/13/24 10:50	06/17/24 14:20	1
Hexachloropropene	<10.0		10.0	2.60	ug/L		06/13/24 10:50	06/17/24 14:20	1
Indeno(1,2,3-cd)pyrene	<10.0		10.0	4.20	ug/L		06/13/24 10:50	06/17/24 14:20	1
Isodrin	<10.0		10.0	4.70	ug/L		06/13/24 10:50	06/17/24 14:20	1
Isophorone	<10.0		10.0	0.930	ug/L		06/13/24 10:50	06/17/24 14:20	1
Isosafrole	<10.0		10.0	2.30	ug/L		06/13/24 10:50	06/17/24 14:20	1
Kepone	<10.0		10.0	1.00	ug/L		06/13/24 10:50	06/17/24 14:20	1

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 310-424460/1-A
Matrix: Water
Analysis Batch: 424715

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 424460

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methapyrilene	<10.0		10.0	0.760	ug/L		06/13/24 10:50	06/17/24 14:20	1
3-Methylcholanthrene	<10.0		10.0	0.320	ug/L		06/13/24 10:50	06/17/24 14:20	1
Methyl methanesulfonate	<10.0		10.0	3.30	ug/L		06/13/24 10:50	06/17/24 14:20	1
2-Methylnaphthalene	<10.0		10.0	0.590	ug/L		06/13/24 10:50	06/17/24 14:20	1
Methyl parathion	<10.0		10.0	2.30	ug/L		06/13/24 10:50	06/17/24 14:20	1
2-Methylphenol	<10.0		10.0	0.650	ug/L		06/13/24 10:50	06/17/24 14:20	1
4-Methylphenol (and/or 3-Methylphenol)	<10.0		10.0	0.700	ug/L		06/13/24 10:50	06/17/24 14:20	1
1,4-Naphthoquinone	<10.0		10.0	3.60	ug/L		06/13/24 10:50	06/17/24 14:20	1
1-Naphthylamine	<10.0		10.0	2.50	ug/L		06/13/24 10:50	06/17/24 14:20	1
2-Naphthylamine	<10.0		10.0	2.10	ug/L		06/13/24 10:50	06/17/24 14:20	1
2-Nitroaniline	<10.0		10.0	5.90	ug/L		06/13/24 10:50	06/17/24 14:20	1
3-Nitroaniline	<10.0		10.0	2.70	ug/L		06/13/24 10:50	06/17/24 14:20	1
4-Nitroaniline	<10.0		10.0	1.30	ug/L		06/13/24 10:50	06/17/24 14:20	1
Nitrobenzene	<10.0		10.0	0.800	ug/L		06/13/24 10:50	06/17/24 14:20	1
5-Nitro-o-toluidine	<10.0		10.0	2.80	ug/L		06/13/24 10:50	06/17/24 14:20	1
2-Nitrophenol	<10.0		10.0	6.80	ug/L		06/13/24 10:50	06/17/24 14:20	1
4-Nitrophenol	<10.0		10.0	7.60	ug/L		06/13/24 10:50	06/17/24 14:20	1
N-Nitrosodiethylamine	<10.0		10.0	3.40	ug/L		06/13/24 10:50	06/17/24 14:20	1
N-Nitrosodimethylamine	<10.0		10.0	0.720	ug/L		06/13/24 10:50	06/17/24 14:20	1
N-Nitrosodi-n-butylamine	<10.0		10.0	3.90	ug/L		06/13/24 10:50	06/17/24 14:20	1
N-Nitrosodi-n-propylamine	<10.0		10.0	0.920	ug/L		06/13/24 10:50	06/17/24 14:20	1
N-Nitrosodiphenylamine	<10.0		10.0	0.750	ug/L		06/13/24 10:50	06/17/24 14:20	1
N-Nitrosomethylethylamine	<10.0		10.0	4.90	ug/L		06/13/24 10:50	06/17/24 14:20	1
N-Nitrosopiperidine	<10.0		10.0	2.70	ug/L		06/13/24 10:50	06/17/24 14:20	1
N-Nitrosopyrrolidine	<10.0		10.0	3.60	ug/L		06/13/24 10:50	06/17/24 14:20	1
o,o',o''-Triethylphosphorothioate	<10.0		10.0	3.20	ug/L		06/13/24 10:50	06/17/24 14:20	1
o-Toluidine	<10.0		10.0	2.90	ug/L		06/13/24 10:50	06/17/24 14:20	1
p-Dimethylamino azobenzene	<10.0		10.0	2.20	ug/L		06/13/24 10:50	06/17/24 14:20	1
Pentachlorobenzene	<10.0		10.0	2.80	ug/L		06/13/24 10:50	06/17/24 14:20	1
Pentachloronitrobenzene	<10.0		10.0	5.80	ug/L		06/13/24 10:50	06/17/24 14:20	1
Pentachlorophenol	<10.0		10.0	9.60	ug/L		06/13/24 10:50	06/17/24 14:20	1
Phenacetin	<10.0		10.0	1.90	ug/L		06/13/24 10:50	06/17/24 14:20	1
Phenanthrene	<10.0		10.0	0.790	ug/L		06/13/24 10:50	06/17/24 14:20	1
Phenol	<10.0		10.0	1.10	ug/L		06/13/24 10:50	06/17/24 14:20	1
1,4-Phenylenediamine	<10.0		10.0	1.90	ug/L		06/13/24 10:50	06/17/24 14:20	1
Phorate	<10.0		10.0	3.20	ug/L		06/13/24 10:50	06/17/24 14:20	1
Pronamide	<10.0		10.0	2.70	ug/L		06/13/24 10:50	06/17/24 14:20	1
Pyrene	<10.0		10.0	0.790	ug/L		06/13/24 10:50	06/17/24 14:20	1
Safrole	<10.0		10.0	2.80	ug/L		06/13/24 10:50	06/17/24 14:20	1
1,2,4,5-Tetrachlorobenzene	<10.0		10.0	0.540	ug/L		06/13/24 10:50	06/17/24 14:20	1
2,3,4,6-Tetrachlorophenol	<10.0		10.0	5.30	ug/L		06/13/24 10:50	06/17/24 14:20	1
Thionazin	<10.0		10.0	3.50	ug/L		06/13/24 10:50	06/17/24 14:20	1
2,4,5-Trichlorophenol	<10.0		10.0	5.30	ug/L		06/13/24 10:50	06/17/24 14:20	1
2,4,6-Trichlorophenol	<10.0		10.0	5.00	ug/L		06/13/24 10:50	06/17/24 14:20	1
1,3,5-Trinitrobenzene	<10.0		10.0	2.30	ug/L		06/13/24 10:50	06/17/24 14:20	1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 310-424460/1-A
Matrix: Water
Analysis Batch: 424715

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 424460

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	90		39 - 118	06/13/24 10:50	06/17/24 14:20	1
2-Fluorophenol (Surr)	70		25 - 110	06/13/24 10:50	06/17/24 14:20	1
Nitrobenzene-d5 (Surr)	100		45 - 129	06/13/24 10:50	06/17/24 14:20	1
Phenol-d5 (Surr)	65		21 - 110	06/13/24 10:50	06/17/24 14:20	1
Terphenyl-d14 (Surr)	97		12 - 144	06/13/24 10:50	06/17/24 14:20	1
2,4,6-Tribromophenol (Surr)	91		27 - 136	06/13/24 10:50	06/17/24 14:20	1

Lab Sample ID: LCS 310-424460/2-A
Matrix: Water
Analysis Batch: 424715

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 424460

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acenaphthene	100	83.23		ug/L		83	43 - 110
Acenaphthylene	100	77.78		ug/L		78	40 - 110
Acetophenone	100	81.33		ug/L		81	48 - 119
2-Acetylaminofluorene	64.0	59.99		ug/L		94	35 - 150
4-Aminobiphenyl	64.0	47.57		ug/L		74	24 - 138
Anthracene	100	82.20		ug/L		82	51 - 120
Benzo[a]anthracene	100	76.42		ug/L		76	51 - 123
Benzo[a]pyrene	100	82.09		ug/L		82	48 - 125
Benzo[b]fluoranthene	100	74.17		ug/L		74	49 - 129
Benzo[g,h,i]perylene	100	86.34		ug/L		86	43 - 139
Benzo[k]fluoranthene	100	79.29		ug/L		79	47 - 130
Benzyl alcohol	100	81.66		ug/L		82	39 - 128
Bis(2-chloroethoxy)methane	100	75.90		ug/L		76	48 - 121
Bis(2-chloroethyl)ether	100	79.28		ug/L		79	43 - 123
bis (2-chloroisopropyl) ether	100	72.34		ug/L		72	34 - 123
Bis(2-ethylhexyl) phthalate	100	85.04		ug/L		85	43 - 143
4-Bromophenyl phenyl ether	100	78.99		ug/L		79	45 - 119
Butyl benzyl phthalate	100	78.10		ug/L		78	46 - 135
4-Chloroaniline	100	93.40		ug/L		93	21 - 139
Chlorobenzilate	64.0	46.48		ug/L		73	52 - 138
4-Chloro-3-methylphenol	100	75.72		ug/L		76	49 - 130
2-Chloronaphthalene	100	71.33		ug/L		71	37 - 110
2-Chlorophenol	100	83.21		ug/L		83	44 - 117
4-Chlorophenyl phenyl ether	100	74.67		ug/L		75	44 - 116
Chrysene	100	79.88		ug/L		80	51 - 125
Diallate	64.0	48.05		ug/L		75	42 - 141
Dibenz(a,h)anthracene	100	87.02		ug/L		87	38 - 149
Dibenzofuran	100	80.10		ug/L		80	45 - 112
2,4-Dichlorophenol	100	86.45		ug/L		86	41 - 124
2,6-Dichlorophenol	100	85.91		ug/L		86	30 - 130
Diethyl phthalate	100	82.98		ug/L		83	43 - 135
Dimethoate	64.0	66.79		ug/L		104	51 - 150
7,12-Dimethylbenz(a)anthracene	64.0	50.30		ug/L		79	51 - 129
3,3'-Dimethylbenzidine	64.0	31.30		ug/L		49	10 - 150
2,4-Dimethylphenol	100	75.14		ug/L		75	31 - 142

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 310-424460/2-A
Matrix: Water
Analysis Batch: 424715

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 424460

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Dimethyl phthalate	100	93.24		ug/L		93	43 - 129
Di-n-butyl phthalate	100	89.54		ug/L		90	50 - 133
1,3-Dinitrobenzene	100	100.7		ug/L		101	45 - 138
4,6-Dinitro-2-methylphenol	200	183.9		ug/L		92	22 - 143
2,4-Dinitrophenol	200	141.7		ug/L		71	10 - 138
2,4-Dinitrotoluene	100	87.36		ug/L		87	47 - 137
2,6-Dinitrotoluene	100	86.29		ug/L		86	51 - 130
Di-n-octyl phthalate	100	88.27		ug/L		88	34 - 150
Dinoseb	64.0	68.37		ug/L		107	25 - 146
Diphenylamine	85.0	71.14		ug/L		84	48 - 122
Disulfoton	64.0	43.30		ug/L		68	54 - 131
Ethyl methanesulfonate	64.0	47.84		ug/L		75	48 - 120
Ethyl parathion	64.0	54.04		ug/L		84	52 - 149
Famphur	64.0	113.8	E *+	ug/L		178	44 - 150
Fluoranthene	100	83.32		ug/L		83	47 - 128
Fluorene	100	81.10		ug/L		81	45 - 119
Hexachlorobenzene	100	75.71		ug/L		76	48 - 119
Hexachlorobutadiene	100	70.41		ug/L		70	32 - 110
Hexachlorocyclopentadiene	100	33.40		ug/L		33	10 - 110
Hexachloroethane	100	54.18		ug/L		54	31 - 110
Hexachloropropene	64.0	21.93		ug/L		34	10 - 110
Indeno(1,2,3-cd)pyrene	100	95.14		ug/L		95	37 - 150
Isodrin	64.0	53.21		ug/L		83	52 - 125
Isophorone	100	74.82		ug/L		75	50 - 125
Isosafrole	64.0	50.90		ug/L		80	31 - 123
Kepone	64.0	81.22		ug/L		127	10 - 150
Methapyrilene	64.0	15.11		ug/L		24	10 - 110
3-Methylcholanthrene	64.0	56.31		ug/L		88	43 - 150
Methyl methanesulfonate	64.0	29.49		ug/L		46	36 - 110
2-Methylnaphthalene	100	76.19		ug/L		76	33 - 110
Methyl parathion	64.0	64.48		ug/L		101	50 - 150
2-Methylphenol	100	81.07		ug/L		81	47 - 118
4-Methylphenol (and/or 3-Methylphenol)	100	69.72		ug/L		70	46 - 117
1,4-Naphthoquinone	64.0	56.58		ug/L		88	37 - 149
1-Naphthylamine	64.0	29.95		ug/L		47	19 - 110
2-Naphthylamine	64.0	41.96		ug/L		66	18 - 127
2-Nitroaniline	100	81.37		ug/L		81	50 - 135
3-Nitroaniline	100	95.52		ug/L		96	42 - 139
4-Nitroaniline	100	70.67		ug/L		71	31 - 145
Nitrobenzene	100	73.32		ug/L		73	47 - 116
5-Nitro-o-toluidine	64.0	57.49		ug/L		90	47 - 145
2-Nitrophenol	100	81.29		ug/L		81	41 - 129
4-Nitrophenol	200	74.36		ug/L		37	18 - 110
N-Nitrosodiethylamine	64.0	56.19		ug/L		88	47 - 138
N-Nitrosodimethylamine	100	55.45		ug/L		55	37 - 110
N-Nitrosodi-n-butylamine	64.0	55.95		ug/L		87	52 - 142
N-Nitrosodi-n-propylamine	100	74.02		ug/L		74	45 - 130

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 310-424460/2-A
Matrix: Water
Analysis Batch: 424715

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 424460

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
N-Nitrosodiphenylamine	100	85.27		ug/L		85	49 - 121
N-Nitrosomethylethylamine	64.0	49.02		ug/L		77	54 - 123
N-Nitrosopiperidine	64.0	49.82		ug/L		78	60 - 127
N-Nitrosopyrrolidine	64.0	58.28		ug/L		91	56 - 143
o,o',o''-Triethylphosphorothioate	64.0	58.46		ug/L		91	45 - 113
o-Toluidine	64.0	53.31		ug/L		83	24 - 142
p-Dimethylamino azobenzene	64.0	52.88		ug/L		83	42 - 138
Pentachlorobenzene	64.0	42.55		ug/L		66	33 - 110
Pentachloronitrobenzene	64.0	55.22		ug/L		86	65 - 127
Pentachlorophenol	200	124.1		ug/L		62	26 - 133
Phenacetin	64.0	54.74		ug/L		86	56 - 146
Phenanthrene	100	79.61		ug/L		80	51 - 117
Phenol	100	51.09		ug/L		51	29 - 110
1,4-Phenylenediamine	64.0	<10.0	*-	ug/L		-1	20 - 120
Phorate	64.0	42.52		ug/L		66	57 - 135
Pronamide	64.0	53.24		ug/L		83	61 - 144
Pyrene	100	76.32		ug/L		76	48 - 127
Safrole	64.0	53.59		ug/L		84	34 - 110
1,2,4,5-Tetrachlorobenzene	100	70.66		ug/L		71	36 - 110
2,3,4,6-Tetrachlorophenol	100	88.25		ug/L		88	33 - 134
Thionazin	64.0	54.20		ug/L		85	52 - 147
2,4,5-Trichlorophenol	100	78.52		ug/L		79	35 - 133
2,4,6-Trichlorophenol	100	90.91		ug/L		91	28 - 139
1,3,5-Trinitrobenzene	64.0	45.83		ug/L		72	39 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*77*		*39 - 118*
2-Fluorophenol (Surr)	*63*		*25 - 110*
Nitrobenzene-d5 (Surr)	*83*		*45 - 129*
Phenol-d5 (Surr)	*58*		*21 - 110*
Terphenyl-d14 (Surr)	*84*		*12 - 144*
2,4,6-Tribromophenol (Surr)	*84*		*27 - 136*

Lab Sample ID: LCSD 310-424460/3-A
Matrix: Water
Analysis Batch: 424715

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 424460

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Acenaphthene	100	82.29		ug/L		82	43 - 110	1	35
Acenaphthylene	100	76.21		ug/L		76	40 - 110	2	35
Acetophenone	100	79.60		ug/L		80	48 - 119	2	35
2-Acetylaminofluorene	64.0	56.95		ug/L		89	35 - 150	5	28
4-Aminobiphenyl	64.0	47.46		ug/L		74	24 - 138	0	35
Anthracene	100	81.04		ug/L		81	51 - 120	1	35
Benzo[a]anthracene	100	75.66		ug/L		76	51 - 123	1	35
Benzo[a]pyrene	100	80.55		ug/L		81	48 - 125	2	35
Benzo[b]fluoranthene	100	75.29		ug/L		75	49 - 129	2	35

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 310-424460/3-A
Matrix: Water
Analysis Batch: 424715

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 424460

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzo[g,h,i]perylene	100	85.26		ug/L		85	43 - 139	1	35
Benzo[k]fluoranthene	100	74.85		ug/L		75	47 - 130	6	35
Benzyl alcohol	100	85.09		ug/L		85	39 - 128	4	35
Bis(2-chloroethoxy)methane	100	76.12		ug/L		76	48 - 121	0	35
Bis(2-chloroethyl)ether	100	79.81		ug/L		80	43 - 123	1	35
bis (2-chloroisopropyl) ether	100	71.87		ug/L		72	34 - 123	1	35
Bis(2-ethylhexyl) phthalate	100	84.83		ug/L		85	43 - 143	0	35
4-Bromophenyl phenyl ether	100	77.53		ug/L		78	45 - 119	2	35
Butyl benzyl phthalate	100	76.64		ug/L		77	46 - 135	2	35
4-Chloroaniline	100	83.15		ug/L		83	21 - 139	12	35
Chlorobenzilate	64.0	45.96		ug/L		72	52 - 138	1	28
4-Chloro-3-methylphenol	100	78.09		ug/L		78	49 - 130	3	35
2-Chloronaphthalene	100	82.90		ug/L		83	37 - 110	15	35
2-Chlorophenol	100	82.49		ug/L		82	44 - 117	1	35
4-Chlorophenyl phenyl ether	100	74.09		ug/L		74	44 - 116	1	35
Chrysene	100	78.44		ug/L		78	51 - 125	2	35
Diallate	64.0	47.93		ug/L		75	42 - 141	0	35
Dibenz(a,h)anthracene	100	86.33		ug/L		86	38 - 149	1	35
Dibenzofuran	100	77.25		ug/L		77	45 - 112	4	35
2,4-Dichlorophenol	100	86.98		ug/L		87	41 - 124	1	35
2,6-Dichlorophenol	100	86.37		ug/L		86	30 - 130	1	35
Diethyl phthalate	100	78.20		ug/L		78	43 - 135	6	35
Dimethoate	64.0	63.80		ug/L		100	51 - 150	5	26
7,12-Dimethylbenz(a)anthracene	64.0	48.24		ug/L		75	51 - 129	4	28
3,3'-Dimethylbenzidine	64.0	46.52	*1	ug/L		73	10 - 150	39	35
2,4-Dimethylphenol	100	74.11		ug/L		74	31 - 142	1	35
Dimethyl phthalate	100	91.34		ug/L		91	43 - 129	2	35
Di-n-butyl phthalate	100	89.06		ug/L		89	50 - 133	1	35
1,3-Dinitrobenzene	100	100.8		ug/L		101	45 - 138	0	35
4,6-Dinitro-2-methylphenol	200	169.9		ug/L		85	22 - 143	8	35
2,4-Dinitrophenol	200	86.44	*1	ug/L		43	10 - 138	48	35
2,4-Dinitrotoluene	100	84.52		ug/L		85	47 - 137	3	35
2,6-Dinitrotoluene	100	85.53		ug/L		86	51 - 130	1	35
Di-n-octyl phthalate	100	88.88		ug/L		89	34 - 150	1	35
Dinoseb	64.0	65.31		ug/L		102	25 - 146	5	35
Diphenylamine	85.0	68.60		ug/L		81	48 - 122	4	35
Disulfoton	64.0	43.92		ug/L		69	54 - 131	1	24
Ethyl methanesulfonate	64.0	49.71		ug/L		78	48 - 120	4	27
Ethyl parathion	64.0	53.55		ug/L		84	52 - 149	1	26
Famphur	64.0	101.0	E *+	ug/L		158	44 - 150	12	35
Fluoranthene	100	81.19		ug/L		81	47 - 128	3	35
Fluorene	100	77.23		ug/L		77	45 - 119	5	35
Hexachlorobenzene	100	77.80		ug/L		78	48 - 119	3	35
Hexachlorobutadiene	100	70.85		ug/L		71	32 - 110	1	35
Hexachlorocyclopentadiene	100	29.28		ug/L		29	10 - 110	13	35
Hexachloroethane	100	53.25		ug/L		53	31 - 110	2	35
Hexachloropropene	64.0	23.16		ug/L		36	10 - 110	5	35
Indeno(1,2,3-cd)pyrene	100	90.72		ug/L		91	37 - 150	5	35

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 310-424460/3-A
Matrix: Water
Analysis Batch: 424715

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 424460

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Isodrin	64.0	54.88		ug/L		86	52 - 125	3	26
Isophorone	100	75.59		ug/L		76	50 - 125	1	35
Isosafrole	64.0	48.39		ug/L		76	31 - 123	5	35
Kepone	64.0	76.69		ug/L		120	10 - 150	6	35
Methapyrilene	64.0	31.23	*1	ug/L		49	10 - 110	70	35
3-Methylcholanthrene	64.0	54.50		ug/L		85	43 - 150	3	32
Methyl methanesulfonate	64.0	30.23		ug/L		47	36 - 110	2	26
2-Methylnaphthalene	100	75.87		ug/L		76	33 - 110	0	35
Methyl parathion	64.0	61.42		ug/L		96	50 - 150	5	25
2-Methylphenol	100	82.49		ug/L		82	47 - 118	2	35
4-Methylphenol (and/or 3-Methylphenol)	100	70.39		ug/L		70	46 - 117	1	35
1,4-Naphthoquinone	64.0	53.59		ug/L		84	37 - 149	5	29
1-Naphthylamine	64.0	34.61		ug/L		54	19 - 110	14	35
2-Naphthylamine	64.0	40.92		ug/L		64	18 - 127	3	35
2-Nitroaniline	100	79.22		ug/L		79	50 - 135	3	35
3-Nitroaniline	100	93.00		ug/L		93	42 - 139	3	35
4-Nitroaniline	100	67.40		ug/L		67	31 - 145	5	35
Nitrobenzene	100	71.92		ug/L		72	47 - 116	2	35
5-Nitro-o-toluidine	64.0	52.05		ug/L		81	47 - 145	10	31
2-Nitrophenol	100	82.75		ug/L		83	41 - 129	2	35
4-Nitrophenol	200	78.45		ug/L		39	18 - 110	5	35
N-Nitrosodiethylamine	64.0	57.28		ug/L		90	47 - 138	2	26
N-Nitrosodimethylamine	100	56.76		ug/L		57	37 - 110	2	35
N-Nitrosodi-n-butylamine	64.0	54.13		ug/L		85	52 - 142	3	27
N-Nitrosodi-n-propylamine	100	72.48		ug/L		72	45 - 130	2	35
N-Nitrosodiphenylamine	100	82.19		ug/L		82	49 - 121	4	35
N-Nitrosomethylethylamine	64.0	48.53		ug/L		76	54 - 123	1	26
N-Nitrosopiperidine	64.0	49.87		ug/L		78	60 - 127	0	26
N-Nitrosopyrrolidine	64.0	55.00		ug/L		86	56 - 143	6	25
o,o',o''-Triethylphosphorothioate	64.0	54.25		ug/L		85	45 - 113	7	33
o-Toluidine	64.0	53.97		ug/L		84	24 - 142	1	35
p-Dimethylamino azobenzene	64.0	52.91		ug/L		83	42 - 138	0	29
Pentachlorobenzene	64.0	44.35		ug/L		69	33 - 110	4	35
Pentachloronitrobenzene	64.0	53.47		ug/L		84	65 - 127	3	29
Pentachlorophenol	200	116.6		ug/L		58	26 - 133	6	35
Phenacetin	64.0	51.36		ug/L		80	56 - 146	6	25
Phenanthrene	100	78.71		ug/L		79	51 - 117	1	35
Phenol	100	52.36		ug/L		52	29 - 110	2	35
1,4-Phenylenediamine	64.0	<10.0	*-	ug/L		-0.9	20 - 120	17	35
Phorate	64.0	43.40		ug/L		68	57 - 135	2	26
Pronamide	64.0	51.22		ug/L		80	61 - 144	4	27
Pyrene	100	74.92		ug/L		75	48 - 127	2	35
Safrole	64.0	47.32		ug/L		74	34 - 110	12	35
1,2,4,5-Tetrachlorobenzene	100	71.48		ug/L		71	36 - 110	1	35
2,3,4,6-Tetrachlorophenol	100	85.34		ug/L		85	33 - 134	3	35
Thionazin	64.0	51.24		ug/L		80	52 - 147	6	28
2,4,5-Trichlorophenol	100	78.84		ug/L		79	35 - 133	0	35

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 310-424460/3-A
Matrix: Water
Analysis Batch: 424715

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 424460

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2,4,6-Trichlorophenol			100	91.11		ug/L		91	28 - 139	0	35
1,3,5-Trinitrobenzene			64.0	44.78		ug/L		70	39 - 144	2	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*74*		*39 - 118*
2-Fluorophenol (Surr)	*64*		*25 - 110*
Nitrobenzene-d5 (Surr)	*82*		*45 - 129*
Phenol-d5 (Surr)	*61*		*21 - 110*
Terphenyl-d14 (Surr)	*81*		*12 - 144*
2,4,6-Tribromophenol (Surr)	*82*		*27 - 136*

Method: 8015C - Nonhalogenated Organic using GC/FID (Direct Aqueous Injection)

Lab Sample ID: MB 310-424385/4
Matrix: Water
Analysis Batch: 424385

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetonitrile	<10.0		10.0	2.60	mg/L			06/13/24 07:48	1
Isobutanol	<10.0		10.0	2.40	mg/L			06/13/24 07:48	1

Lab Sample ID: LCS 310-424385/5
Matrix: Water
Analysis Batch: 424385

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Acetonitrile			113	123.1		mg/L		109	67 - 132		
Isobutanol			104	107.8		mg/L		103	80 - 121		

Method: 8081B - Organochlorine Pesticides (GC)

Lab Sample ID: MB 310-424349/1-A
Matrix: Water
Analysis Batch: 424293

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 424349

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	<0.0916		0.0916	0.0229	ug/L		06/12/24 14:18	06/12/24 21:10	1
4,4'-DDE	<0.0916		0.0916	0.0275	ug/L		06/12/24 14:18	06/12/24 21:10	1
4,4'-DDT	<0.0916		0.0916	0.0183	ug/L		06/12/24 14:18	06/12/24 21:10	1
Aldrin	<0.0916		0.0916	0.0202	ug/L		06/12/24 14:18	06/12/24 21:10	1
alpha-BHC	<0.0916		0.0916	0.00916	ug/L		06/12/24 14:18	06/12/24 21:10	1
beta-BHC	<0.0916		0.0916	0.0385	ug/L		06/12/24 14:18	06/12/24 21:10	1
Chlordane (technical)	<1.83		1.83	0.357	ug/L		06/12/24 14:18	06/12/24 21:10	1
delta-BHC	<0.0916		0.0916	0.0293	ug/L		06/12/24 14:18	06/12/24 21:10	1
Dieldrin	<0.0916		0.0916	0.0192	ug/L		06/12/24 14:18	06/12/24 21:10	1
Endosulfan I	<0.0916		0.0916	0.0257	ug/L		06/12/24 14:18	06/12/24 21:10	1
Endosulfan II	<0.0916		0.0916	0.0238	ug/L		06/12/24 14:18	06/12/24 21:10	1
Endosulfan sulfate	<0.0916		0.0916	0.0165	ug/L		06/12/24 14:18	06/12/24 21:10	1

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: MB 310-424349/1-A
Matrix: Water
Analysis Batch: 424293

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 424349

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Endrin	<0.0916		0.0916	0.0257	ug/L		06/12/24 14:18	06/12/24 21:10	1
Endrin aldehyde	<0.0916		0.0916	0.0247	ug/L		06/12/24 14:18	06/12/24 21:10	1
gamma-BHC (Lindane)	<0.0916		0.0916	0.00916	ug/L		06/12/24 14:18	06/12/24 21:10	1
Heptachlor	<0.0916		0.0916	0.0211	ug/L		06/12/24 14:18	06/12/24 21:10	1
Heptachlor epoxide	<0.0916		0.0916	0.0293	ug/L		06/12/24 14:18	06/12/24 21:10	1
Methoxychlor	<0.0916		0.0916	0.0293	ug/L		06/12/24 14:18	06/12/24 21:10	1
Toxaphene	<1.83		1.83	0.916	ug/L		06/12/24 14:18	06/12/24 21:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*92*		*10 - 136*	*06/12/24 14:18*	*06/12/24 21:10*	*1*
Tetrachloro-m-xylene	*85*		*10 - 130*	*06/12/24 14:18*	*06/12/24 21:10*	*1*
Tetrachloro-m-xylene (Surr)	*85*		*10 - 130*	*06/12/24 14:18*	*06/12/24 21:10*	*1*

Lab Sample ID: LCS 310-424349/8-A
Matrix: Water
Analysis Batch: 424293

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 424349

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
4,4'-DDD	2.72	2.680		ug/L		99	36 - 149
4,4'-DDE	2.72	2.506		ug/L		92	34 - 130
4,4'-DDT	2.72	3.770		ug/L		139	23 - 150
Aldrin	2.72	2.394		ug/L		88	13 - 120
alpha-BHC	2.72	2.681		ug/L		99	36 - 127
beta-BHC	2.72	2.406		ug/L		89	37 - 136
delta-BHC	2.72	2.623		ug/L		97	33 - 134
Dieldrin	2.72	2.587		ug/L		95	39 - 130
Endosulfan I	2.72	2.236		ug/L		82	10 - 120
Endosulfan II	2.72	2.421		ug/L		89	14 - 120
Endosulfan sulfate	2.72	2.775		ug/L		102	36 - 147
Endrin	2.72	2.609		ug/L		96	39 - 140
Endrin aldehyde	2.72	2.599		ug/L		96	32 - 137
gamma-BHC (Lindane)	2.72	2.727		ug/L		100	36 - 132
Heptachlor	2.72	2.615		ug/L		96	27 - 120
Heptachlor epoxide	2.72	2.621		ug/L		96	38 - 133
Methoxychlor	2.72	5.738	*+	ug/L		211	10 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*102*		*10 - 136*
Tetrachloro-m-xylene	*85*		*10 - 130*
Tetrachloro-m-xylene (Surr)	*85*		*10 - 130*

Lab Sample ID: 310-283154-5 MS
Matrix: Groundwater
Analysis Batch: 424293

Client Sample ID: MW-62
Prep Type: Total/NA
Prep Batch: 424349

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*102*		*10 - 136*

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 310-283154-5 MS
Matrix: Groundwater
Analysis Batch: 424293

Client Sample ID: MW-62
Prep Type: Total/NA
Prep Batch: 424349

Surrogate	MS %Recovery	MS Qualifier	Limits
Tetrachloro-m-xylene	89		10 - 130
Tetrachloro-m-xylene (Surr)	89		10 - 130

Lab Sample ID: 310-283154-5 MSD
Matrix: Groundwater
Analysis Batch: 424293

Client Sample ID: MW-62
Prep Type: Total/NA
Prep Batch: 424349

Surrogate	MSD %Recovery	MSD Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	104		10 - 136
Tetrachloro-m-xylene	90		10 - 130
Tetrachloro-m-xylene (Surr)	90		10 - 130

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 310-424349/1-A
Matrix: Water
Analysis Batch: 424294

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 424349

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	<1.83		1.83	0.751	ug/L		06/12/24 14:18	06/12/24 21:10	1
PCB-1221	<1.83		1.83	0.751	ug/L		06/12/24 14:18	06/12/24 21:10	1
PCB-1232	<1.83		1.83	0.751	ug/L		06/12/24 14:18	06/12/24 21:10	1
PCB-1242	<1.83		1.83	0.751	ug/L		06/12/24 14:18	06/12/24 21:10	1
PCB-1248	<1.83		1.83	0.632	ug/L		06/12/24 14:18	06/12/24 21:10	1
PCB-1254	<1.83		1.83	0.632	ug/L		06/12/24 14:18	06/12/24 21:10	1
PCB-1260	<1.83		1.83	0.632	ug/L		06/12/24 14:18	06/12/24 21:10	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	91		10 - 136	06/12/24 14:18	06/12/24 21:10	1
Tetrachloro-m-xylene (Surr)	88		10 - 130	06/12/24 14:18	06/12/24 21:10	1

Lab Sample ID: LCS 310-424349/9-A
Matrix: Water
Analysis Batch: 424294

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 424349

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
PCB-1016	26.2	23.79		ug/L		91	30 - 133
PCB-1260	26.2	17.97		ug/L		69	31 - 133

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	97		10 - 136
Tetrachloro-m-xylene (Surr)	86		10 - 130

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Lab Sample ID: 310-283154-5 MS
Matrix: Groundwater
Analysis Batch: 424294

Client Sample ID: MW-62
Prep Type: Total/NA
Prep Batch: 424349

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
PCB-1016	<1.86		26.1	30.82		ug/L		118	30 - 133
PCB-1260	<1.86		26.1	29.55		ug/L		113	31 - 133

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*100*		*10 - 136*
Tetrachloro-m-xylene (Surr)	*92*		*10 - 130*

Lab Sample ID: 310-283154-5 MSD
Matrix: Groundwater
Analysis Batch: 424294

Client Sample ID: MW-62
Prep Type: Total/NA
Prep Batch: 424349

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
PCB-1016	<1.86		27.0	24.93		ug/L		92	30 - 133	21	35
PCB-1260	<1.86		27.0	25.81		ug/L		95	31 - 133	14	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*101*		*10 - 136*
Tetrachloro-m-xylene (Surr)	*92*		*10 - 130*

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 410-516868/1-A
Matrix: Water
Analysis Batch: 517292

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 516868

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-D	<0.600		0.600	0.250	ug/L		06/13/24 07:10	06/14/24 06:44	1
Silvex (2,4,5-TP)	<0.0500		0.0500	0.0220	ug/L		06/13/24 07:10	06/14/24 06:44	1
2,4,5-T	<0.150		0.150	0.0650	ug/L		06/13/24 07:10	06/14/24 06:44	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*69*		*34 - 142*	*06/13/24 07:10*	*06/14/24 06:44*	*1*
DCAA	*74*		*34 - 142*	*06/13/24 07:10*	*06/14/24 06:44*	*1*

Lab Sample ID: LCS 410-516868/2-A
Matrix: Water
Analysis Batch: 517292

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 516868

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2,4-D	2.51	2.253		ug/L		90	53 - 159
Silvex (2,4,5-TP)	0.250	0.2199		ug/L		88	62 - 170
2,4,5-T	0.250	0.2106		ug/L		84	57 - 171

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCAA	*73*		*34 - 142*
DCAA	*79*		*34 - 142*

Method: 8151A - Herbicides (GC) (Continued)

Lab Sample ID: LCSD 410-516868/3-A
Matrix: Water
Analysis Batch: 517292

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 516868

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2,4-D			2.51	2.037		ug/L		81	53 - 159	10	30
Silvex (2,4,5-TP)			0.250	0.1993		ug/L		80	62 - 170	10	30
2,4,5-T			0.250	0.1896		ug/L		76	57 - 171	10	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCAA	*55*		*34 - 142*
DCAA	*56*		*34 - 142*

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-424275/3
Matrix: Water
Analysis Batch: 424275

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	<1.00		1.00	0.420	mg/L			06/11/24 09:36	1

Lab Sample ID: LCS 310-424275/4
Matrix: Water
Analysis Batch: 424275

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Sulfate			10.0	9.906		mg/L		99	90 - 110		

Lab Sample ID: 310-283154-17 MS
Matrix: Groundwater
Analysis Batch: 424275

Client Sample ID: 93-MW-31R
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Sulfate	150		500	619.8		mg/L		94	80 - 120		

Lab Sample ID: 310-283154-17 MSD
Matrix: Groundwater
Analysis Batch: 424275

Client Sample ID: 93-MW-31R
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Sulfate	150		500	612.1		mg/L		92	80 - 120	1	15

Lab Sample ID: MB 310-424636/3
Matrix: Water
Analysis Batch: 424636

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	<1.00		1.00	0.420	mg/L			06/13/24 15:58	1

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 310-424636/4
Matrix: Water
Analysis Batch: 424636

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfate	10.0	10.11		mg/L		101	90 - 110

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 310-424217/1-A
Matrix: Water
Analysis Batch: 424909

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 424217

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.100		0.100	0.0250	mg/L		06/12/24 09:00	06/17/24 13:11	1
Iron	<0.500		0.500	0.0790	mg/L		06/12/24 09:00	06/17/24 13:11	1
Manganese	<0.0100		0.0100	0.00320	mg/L		06/12/24 09:00	06/17/24 13:11	1

Lab Sample ID: LCS 310-424217/2-A
Matrix: Water
Analysis Batch: 424909

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 424217

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	0.200	0.2156		mg/L		108	80 - 120
Iron	0.200	0.2021	J	mg/L		101	80 - 120
Manganese	0.100	0.1026		mg/L		103	80 - 120

Lab Sample ID: 310-283154-11 DU
Matrix: Groundwater
Analysis Batch: 424909

Client Sample ID: MW-D2
Prep Type: Total/NA
Prep Batch: 424217

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	0.0769	J	0.1238	F5	mg/L		47	20
Iron	5.87		5.465		mg/L		7	20
Manganese	4.25		3.777		mg/L		12	20

Lab Sample ID: MB 310-424219/1-A
Matrix: Water
Analysis Batch: 424909

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 424219

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.500		0.500	0.0790	mg/L		06/12/24 09:00	06/17/24 13:55	1
Manganese	<0.0100		0.0100	0.00320	mg/L		06/12/24 09:00	06/17/24 13:55	1

Lab Sample ID: LCS 310-424219/2-A
Matrix: Water
Analysis Batch: 424909

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 424219

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	0.200	0.2033	J	mg/L		102	80 - 120
Manganese	0.100	0.1039		mg/L		104	80 - 120

Method: 6010D - Metals (ICP) (Continued)

Lab Sample ID: 310-283154-20 MS
Matrix: Groundwater
Analysis Batch: 424909

Client Sample ID: MW-79
Prep Type: Total/NA
Prep Batch: 424219

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	0.264	J F1	0.200	0.4922	J	mg/L		114	75 - 125
Manganese	16.3		0.100	16.44	4	mg/L		112	75 - 125

Lab Sample ID: 310-283154-20 MSD
Matrix: Groundwater
Analysis Batch: 424909

Client Sample ID: MW-79
Prep Type: Total/NA
Prep Batch: 424219

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Iron	0.264	J F1	0.200	0.5302	F1	mg/L		133	75 - 125	7	20
Manganese	16.3		0.100	16.37	4	mg/L		39	75 - 125	0	20

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-424217/1-A
Matrix: Water
Analysis Batch: 425398

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 424217

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200	0.000530	mg/L		06/12/24 09:00	06/21/24 15:16	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		06/12/24 09:00	06/21/24 15:16	1
Chromium	<0.00500		0.00500	0.00120	mg/L		06/12/24 09:00	06/21/24 15:16	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		06/12/24 09:00	06/21/24 15:16	1
Nickel	<0.00500		0.00500	0.00210	mg/L		06/12/24 09:00	06/21/24 15:16	1
Silver	<0.00100		0.00100	0.000500	mg/L		06/12/24 09:00	06/21/24 15:16	1
Zinc	<0.0200		0.0200	0.00970	mg/L		06/12/24 09:00	06/21/24 15:16	1

Lab Sample ID: MB 310-424217/1-A
Matrix: Water
Analysis Batch: 425519

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 424217

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	<0.00100		0.00100	0.000330	mg/L		06/12/24 09:00	06/24/24 22:00	1
Copper	<0.00500		0.00500	0.00180	mg/L		06/12/24 09:00	06/24/24 22:00	1
Lead	<0.000500		0.000500	0.000260	mg/L		06/12/24 09:00	06/24/24 22:00	1
Thallium	<0.00100		0.00100	0.000570	mg/L		06/12/24 09:00	06/24/24 22:00	1
Vanadium	<0.00500		0.00500	0.00110	mg/L		06/12/24 09:00	06/24/24 22:00	1
Tin	<0.00500		0.00500	0.00230	mg/L		06/12/24 09:00	06/24/24 22:00	1

Lab Sample ID: MB 310-424217/1-A
Matrix: Water
Analysis Batch: 425927

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 424217

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	<0.00200		0.00200	0.000660	mg/L		06/12/24 09:00	06/27/24 16:27	1
Selenium	<0.00500		0.00500	0.00140	mg/L		06/12/24 09:00	06/27/24 16:27	1

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 310-424217/1-A
Matrix: Water
Analysis Batch: 426190

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 424217

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		06/12/24 09:00	07/01/24 23:15	1

Lab Sample ID: LCS 310-424217/2-A
Matrix: Water
Analysis Batch: 425398

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 424217

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	0.200	0.2128		mg/L		106	80 - 120
Cadmium	0.100	0.09736		mg/L		97	80 - 120
Chromium	0.100	0.1065		mg/L		107	80 - 120
Cobalt	0.100	0.1049		mg/L		105	80 - 120
Nickel	0.200	0.2086		mg/L		104	80 - 120
Silver	0.100	0.09924		mg/L		99	80 - 120
Zinc	0.200	0.1910		mg/L		96	80 - 120

Lab Sample ID: LCS 310-424217/2-A
Matrix: Water
Analysis Batch: 425519

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 424217

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Beryllium	0.100	0.09590		mg/L		96	80 - 120
Copper	0.200	0.2023		mg/L		101	80 - 120
Lead	0.200	0.1885		mg/L		94	80 - 120
Thallium	0.100	0.08807		mg/L		88	80 - 120
Vanadium	0.100	0.09686		mg/L		97	80 - 120
Tin	0.200	0.1971		mg/L		99	80 - 120

Lab Sample ID: LCS 310-424217/2-A
Matrix: Water
Analysis Batch: 425927

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 424217

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Barium	0.100	0.1017		mg/L		102	80 - 120
Selenium	0.400	0.3468		mg/L		87	80 - 120

Lab Sample ID: LCS 310-424217/2-A
Matrix: Water
Analysis Batch: 426190

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 424217

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.200	0.2036		mg/L		102	80 - 120

Lab Sample ID: 310-283154-1 MS
Matrix: Groundwater
Analysis Batch: 425398

Client Sample ID: MW-53
Prep Type: Total/NA
Prep Batch: 424217

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	<0.00200		0.200	0.2191		mg/L		110	75 - 125
Cadmium	<0.000200		0.100	0.09134		mg/L		91	75 - 125

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: 310-283154-1 MS — **Client Sample ID: MW-53**
Matrix: Groundwater — **Prep Type: Total/NA**
Analysis Batch: 425398 — **Prep Batch: 424217**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chromium	<0.00500		0.100	0.1053		mg/L		105	75 - 125
Cobalt	<0.000500		0.100	0.1014		mg/L		101	75 - 125
Nickel	<0.00500		0.200	0.2012		mg/L		101	75 - 125
Silver	<0.00100		0.100	0.09593		mg/L		96	75 - 125
Zinc	<0.0200		0.200	0.2031		mg/L		102	75 - 125

Lab Sample ID: 310-283154-1 MS — **Client Sample ID: MW-53**
Matrix: Groundwater — **Prep Type: Total/NA**
Analysis Batch: 425519 — **Prep Batch: 424217**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Beryllium	<0.00100		0.100	0.1003		mg/L		100	75 - 125
Copper	<0.00500		0.200	0.1850		mg/L		92	75 - 125
Lead	<0.000500		0.200	0.1823		mg/L		91	75 - 125
Thallium	<0.00100		0.100	0.07538		mg/L		75	75 - 125
Vanadium	<0.00500		0.100	0.1000		mg/L		100	75 - 125
Tin	<0.00500		0.200	0.1981		mg/L		99	75 - 125

Lab Sample ID: 310-283154-1 MS — **Client Sample ID: MW-53**
Matrix: Groundwater — **Prep Type: Total/NA**
Analysis Batch: 425927 — **Prep Batch: 424217**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Barium	0.0220		0.100	0.1219		mg/L		100	75 - 125
Selenium	<0.00500		0.400	0.3639		mg/L		91	75 - 125

Lab Sample ID: 310-283154-1 MS — **Client Sample ID: MW-53**
Matrix: Groundwater — **Prep Type: Total/NA**
Analysis Batch: 426190 — **Prep Batch: 424217**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	<0.00200		0.200	0.2038		mg/L		102	75 - 125

Lab Sample ID: 310-283154-1 MSD — **Client Sample ID: MW-53**
Matrix: Groundwater — **Prep Type: Total/NA**
Analysis Batch: 425398 — **Prep Batch: 424217**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	<0.00200		0.200	0.2250		mg/L		113	75 - 125	3	20
Cadmium	<0.000200		0.100	0.09433		mg/L		94	75 - 125	3	20
Chromium	<0.00500		0.100	0.1084		mg/L		108	75 - 125	3	20
Cobalt	<0.000500		0.100	0.1073		mg/L		107	75 - 125	6	20
Nickel	<0.00500		0.200	0.2066		mg/L		103	75 - 125	3	20
Silver	<0.00100		0.100	0.09870		mg/L		99	75 - 125	3	20
Zinc	<0.0200		0.200	0.2077		mg/L		104	75 - 125	2	20

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: 310-283154-1 MSD — **Client Sample ID: MW-53**
Matrix: Groundwater — **Prep Type: Total/NA**
Analysis Batch: 425519 — **Prep Batch: 424217**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Beryllium	<0.00100		0.100	0.09432		mg/L		94	75 - 125	6	20
Copper	<0.00500		0.200	0.1846		mg/L		92	75 - 125	0	20
Lead	<0.000500		0.200	0.1844		mg/L		92	75 - 125	1	20
Thallium	<0.00100		0.100	0.07583		mg/L		76	75 - 125	1	20
Vanadium	<0.00500		0.100	0.09949		mg/L		99	75 - 125	1	20
Tin	<0.00500		0.200	0.1931		mg/L		97	75 - 125	3	20

Lab Sample ID: 310-283154-1 MSD — **Client Sample ID: MW-53**
Matrix: Groundwater — **Prep Type: Total/NA**
Analysis Batch: 425927 — **Prep Batch: 424217**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Barium	0.0220		0.100	0.1246		mg/L		103	75 - 125	2	20
Selenium	<0.00500		0.400	0.3711		mg/L		93	75 - 125	2	20

Lab Sample ID: 310-283154-1 MSD — **Client Sample ID: MW-53**
Matrix: Groundwater — **Prep Type: Total/NA**
Analysis Batch: 426190 — **Prep Batch: 424217**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	<0.00200		0.200	0.2144		mg/L		107	75 - 125	5	20

Lab Sample ID: 310-283154-11 DU — **Client Sample ID: MW-D2**
Matrix: Groundwater — **Prep Type: Total/NA**
Analysis Batch: 425398 — **Prep Batch: 424217**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	<0.00200		<0.00200		mg/L		NC	20
Cadmium	0.00140		0.001317		mg/L		6	20
Chromium	<0.00500		<0.00500		mg/L		NC	20
Cobalt	0.0220		0.02230		mg/L		1	20
Nickel	0.0520		0.05106		mg/L		2	20
Silver	<0.00100		<0.00100		mg/L		NC	20
Zinc	0.0976		0.09058		mg/L		7	20

Lab Sample ID: 310-283154-11 DU — **Client Sample ID: MW-D2**
Matrix: Groundwater — **Prep Type: Total/NA**
Analysis Batch: 425519 — **Prep Batch: 424217**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Beryllium	<0.00100		<0.00100		mg/L		NC	20
Chromium	<0.00500		<0.00500		mg/L		NC	20
Cobalt	0.0195		0.02006		mg/L		3	20
Copper	0.00181	J	0.002069	J	mg/L		14	20
Lead	<0.000500		<0.000500		mg/L		NC	20
Nickel	0.0478		0.05021		mg/L		5	20
Vanadium	<0.00500		<0.00500		mg/L		NC	20
Zinc	0.0869		0.08613		mg/L		0.9	20

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: 310-283154-11 DU
Matrix: Groundwater
Analysis Batch: 425927

Client Sample ID: MW-D2
Prep Type: Total/NA
Prep Batch: 424217

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Barium	0.0235		0.02288		mg/L		3	20
Selenium	<0.00500		<0.00500		mg/L		NC	20
Thallium	<0.00100		<0.00100		mg/L		NC	20
Tin	<0.00500		<0.00500		mg/L		NC	20

Lab Sample ID: 310-283154-11 DU
Matrix: Groundwater
Analysis Batch: 426190

Client Sample ID: MW-D2
Prep Type: Total/NA
Prep Batch: 424217

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Antimony	<0.00200		<0.00200		mg/L		NC	20

Lab Sample ID: MB 310-424219/1-A
Matrix: Water
Analysis Batch: 424713

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 424219

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200	0.000530	mg/L		06/12/24 09:00	06/14/24 18:28	1
Barium	<0.00200		0.00200	0.000660	mg/L		06/12/24 09:00	06/14/24 18:28	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		06/12/24 09:00	06/14/24 18:28	1
Lead	<0.000500		0.000500	0.000260	mg/L		06/12/24 09:00	06/14/24 18:28	1
Selenium	<0.00500		0.00500	0.00140	mg/L		06/12/24 09:00	06/14/24 18:28	1
Silver	<0.00100		0.00100	0.000500	mg/L		06/12/24 09:00	06/14/24 18:28	1

Lab Sample ID: MB 310-424219/1-A
Matrix: Water
Analysis Batch: 424838

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 424219

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		06/12/24 09:00	06/17/24 16:33	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		06/12/24 09:00	06/17/24 16:33	1
Chromium	<0.00500		0.00500	0.00120	mg/L		06/12/24 09:00	06/17/24 16:33	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		06/12/24 09:00	06/17/24 16:33	1
Copper	<0.00500		0.00500	0.00180	mg/L		06/12/24 09:00	06/17/24 16:33	1
Nickel	<0.00500		0.00500	0.00210	mg/L		06/12/24 09:00	06/17/24 16:33	1
Thallium	<0.00100		0.00100	0.000570	mg/L		06/12/24 09:00	06/17/24 16:33	1
Vanadium	<0.00500		0.00500	0.00110	mg/L		06/12/24 09:00	06/17/24 16:33	1
Zinc	<0.0200		0.0200	0.00970	mg/L		06/12/24 09:00	06/17/24 16:33	1

Lab Sample ID: LCS 310-424219/2-A
Matrix: Water
Analysis Batch: 424713

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 424219

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	0.200	0.2063		mg/L		103	80 - 120
Barium	0.100	0.1102		mg/L		110	80 - 120
Cadmium	0.100	0.1002		mg/L		100	80 - 120
Lead	0.200	0.2206		mg/L		110	80 - 120

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 310-424219/2-A
Matrix: Water
Analysis Batch: 424713

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 424219

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Selenium	0.400	0.4179		mg/L		104	80 - 120
Silver	0.100	0.1072		mg/L		107	80 - 120

Lab Sample ID: LCS 310-424219/2-A
Matrix: Water
Analysis Batch: 424838

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 424219

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.200	0.1976		mg/L		99	80 - 120
Beryllium	0.100	0.1009		mg/L		101	80 - 120
Chromium	0.100	0.09907		mg/L		99	80 - 120
Cobalt	0.100	0.1059		mg/L		106	80 - 120
Copper	0.200	0.2119		mg/L		106	80 - 120
Nickel	0.200	0.2065		mg/L		103	80 - 120
Thallium	0.100	0.09491		mg/L		95	80 - 120
Vanadium	0.100	0.09705		mg/L		97	80 - 120
Zinc	0.200	0.1906		mg/L		95	80 - 120

Lab Sample ID: 310-283154-20 MS
Matrix: Groundwater
Analysis Batch: 424713

Client Sample ID: MW-79
Prep Type: Total/NA
Prep Batch: 424219

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	<0.00200		0.200	0.2198		mg/L		110	75 - 125
Barium	0.114		0.100	0.2206		mg/L		106	75 - 125
Cadmium	0.0235		0.100	0.1206		mg/L		97	75 - 125
Lead	0.000839		0.200	0.2271		mg/L		113	75 - 125
Selenium	<0.00500		0.400	0.4128		mg/L		103	75 - 125
Silver	<0.00100		0.100	0.1065		mg/L		106	75 - 125

Lab Sample ID: 310-283154-20 MS
Matrix: Groundwater
Analysis Batch: 424838

Client Sample ID: MW-79
Prep Type: Total/NA
Prep Batch: 424219

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	<0.00200		0.200	0.2088		mg/L		104	75 - 125
Beryllium	<0.00100		0.100	0.1059		mg/L		106	75 - 125
Chromium	<0.00500		0.100	0.1021		mg/L		102	75 - 125
Cobalt	0.00324		0.100	0.1088		mg/L		106	75 - 125
Copper	0.00257	J	0.200	0.2108		mg/L		104	75 - 125
Nickel	0.0304		0.200	0.2297		mg/L		100	75 - 125
Thallium	<0.00100		0.100	0.08413		mg/L		84	75 - 125
Vanadium	0.00210	J	0.100	0.1047		mg/L		103	75 - 125
Zinc	0.175		0.200	0.3662		mg/L		96	75 - 125

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: 310-283154-20 MSD — **Client Sample ID: MW-79**
Matrix: Groundwater — **Prep Type: Total/NA**
Analysis Batch: 424713 — **Prep Batch: 424219**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	<0.00200		0.200	0.2261		mg/L		113	75 - 125	3	20
Barium	0.114		0.100	0.2247		mg/L		110	75 - 125	2	20
Cadmium	0.0235		0.100	0.1230		mg/L		99	75 - 125	2	20
Lead	0.000839		0.200	0.2266		mg/L		113	75 - 125	0	20
Selenium	<0.00500		0.400	0.4155		mg/L		104	75 - 125	1	20
Silver	<0.00100		0.100	0.1068		mg/L		107	75 - 125	0	20

Lab Sample ID: 310-283154-20 MSD — **Client Sample ID: MW-79**
Matrix: Groundwater — **Prep Type: Total/NA**
Analysis Batch: 424838 — **Prep Batch: 424219**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	<0.00200		0.200	0.2063		mg/L		103	75 - 125	1	20
Beryllium	<0.00100		0.100	0.1050		mg/L		105	75 - 125	1	20
Chromium	<0.00500		0.100	0.09905		mg/L		99	75 - 125	3	20
Cobalt	0.00324		0.100	0.1057		mg/L		102	75 - 125	3	20
Copper	0.00257	J	0.200	0.2017		mg/L		100	75 - 125	4	20
Nickel	0.0304		0.200	0.2249		mg/L		97	75 - 125	2	20
Thallium	<0.00100		0.100	0.08164		mg/L		82	75 - 125	3	20
Vanadium	0.00210	J	0.100	0.1016		mg/L		99	75 - 125	3	20
Zinc	0.175		0.200	0.3605		mg/L		93	75 - 125	2	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-424222/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 424664 — **Prep Batch: 424222**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200	0.000110	mg/L		06/11/24 16:44	06/14/24 12:54	1

Lab Sample ID: LCS 310-424222/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 424664 — **Prep Batch: 424222**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Mercury			0.00167	0.001610		mg/L		97	80 - 120		

Method: 9012B - Cyanide, Total andor Amenable

Lab Sample ID: MB 310-424450/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 424545 — **Prep Batch: 424450**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	<0.0100		0.0100	0.00350	mg/L		06/13/24 10:25	06/13/24 23:50	1

Method: 9012B - Cyanide, Total andor Amenable (Continued)

Lab Sample ID: LCS 310-424450/2-A
Matrix: Water
Analysis Batch: 424545

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 424450

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	0.200	0.1974		mg/L		99	90 - 110

Method: 9034 - Sulfide, Acid soluble and Insoluble (Titrimetric)

Lab Sample ID: MB 500-772110/1-A
Matrix: Water
Analysis Batch: 772120

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 772110

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	<1.00		1.00	0.231	mg/L		06/11/24 18:00	06/11/24 21:20	1

Lab Sample ID: LCS 500-772110/2-A
Matrix: Water
Analysis Batch: 772120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 772110

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfide	3.64	3.698		mg/L		102	80 - 120

Method: I-3765-85 - Residue, Non-filterable (TSS)

Lab Sample ID: MB 310-424090/1
Matrix: Water
Analysis Batch: 424090

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.00		5.00	3.70	mg/L			06/10/24 16:09	1

Lab Sample ID: LCS 310-424090/2
Matrix: Water
Analysis Batch: 424090

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	100.0		mg/L		100	81 - 116

Lab Sample ID: MB 310-424147/1
Matrix: Water
Analysis Batch: 424147

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.00		5.00	3.70	mg/L			06/11/24 10:22	1

Lab Sample ID: MB 310-424175/1
Matrix: Water
Analysis Batch: 424175

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.00		5.00	3.70	mg/L			06/11/24 11:59	1

Method: I-3765-85 - Residue, Non-filterable (TSS) (Continued)

Lab Sample ID: LCS 310-424175/2
Matrix: Water
Analysis Batch: 424175

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	103.0		mg/L		103	81 - 116

Lab Sample ID: MB 310-424355/1
Matrix: Water
Analysis Batch: 424355

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.00		5.00	3.70	mg/L			06/12/24 14:59	1

Lab Sample ID: LCS 310-424355/2
Matrix: Water
Analysis Batch: 424355

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	104.0		mg/L		104	81 - 116

Lab Sample ID: 310-283154-18 DU
Matrix: Groundwater
Analysis Batch: 424355

Client Sample ID: MW-61R
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	139		136.0		mg/L		2	35

Method: SM 2320B - Alkalinity

Lab Sample ID: LCS 310-424393/25
Matrix: Water
Analysis Batch: 424393

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Alkalinity as CaCO3 to pH 4.5	1000	958.4		mg/L		96	86 - 111

Lab Sample ID: 310-283154-8 DU
Matrix: Groundwater
Analysis Batch: 424393

Client Sample ID: MW-40
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Alkalinity as CaCO3 to pH 4.5	212		210.2		mg/L		0.8	16
Bicarbonate Alkalinity as CaCO3	212		210.2		mg/L		0.8	
Carbonate Alkalinity as CaCO3	<5.00		<5.00		mg/L		NC	

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Method: SM 5310C - TOC

Lab Sample ID: MB 310-424547/11
Matrix: Water
Analysis Batch: 424547

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	<1.00		1.00	0.500	mg/L			06/12/24 12:42	1

Lab Sample ID: LCS 310-424547/12
Matrix: Water
Analysis Batch: 424547

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Organic Carbon			9.99	10.82		mg/L		108	85 - 115		

Lab Sample ID: 310-283154-20 MS
Matrix: Groundwater
Analysis Batch: 424547

Client Sample ID: MW-79
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Organic Carbon	1.03		4.99	6.178		mg/L		103	85 - 115		

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

GC/MS VOA

Analysis Batch: 424145

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-1	MW-53	Total/NA	Groundwater	8260D	
310-283154-3	GU-7	Total/NA	Groundwater	8260D	
310-283154-5	MW-62	Total/NA	Groundwater	8260D	
310-283154-6	MW-81	Total/NA	Groundwater	8260D	
310-283154-7	MW-39R	Total/NA	Groundwater	8260D	
310-283154-8	MW-40	Total/NA	Groundwater	8260D	
310-283154-11	MW-D2	Total/NA	Groundwater	8260D	
310-283154-12	MW-58	Total/NA	Groundwater	8260D	
310-283154-14	MW-63R	Total/NA	Groundwater	8260D	
310-283154-16	MW-65	Total/NA	Groundwater	8260D	
310-283154-17	93-MW-31R	Total/NA	Groundwater	8260D	
310-283154-18	MW-61R	Total/NA	Groundwater	8260D	
310-283154-19	MW-73	Total/NA	Groundwater	8260D	
MB 310-424145/5	Method Blank	Total/NA	Water	8260D	
LCS 310-424145/6	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-424145/7	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 424285

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-25	Trip Blank 1	Total/NA	Groundwater	8260D	
310-283154-26	Trip Blank 2	Total/NA	Groundwater	8260D	
MB 310-424285/5	Method Blank	Total/NA	Water	8260D	
LCS 310-424285/6	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-424285/7	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 424467

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-20	MW-79	Total/NA	Groundwater	8260D	
310-283154-23	MW-75	Total/NA	Groundwater	8260D	
310-283154-24	MW-78	Total/NA	Groundwater	8260D	
MB 310-424467/7	Method Blank	Total/NA	Water	8260D	
LCS 310-424467/8	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-424467/9	Lab Control Sample	Total/NA	Water	8260D	

GC/MS Semi VOA

Prep Batch: 424460

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-5	MW-62	Total/NA	Groundwater	3510C	
MB 310-424460/1-A	Method Blank	Total/NA	Water	3510C	
LCS 310-424460/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 310-424460/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Analysis Batch: 424715

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-5	MW-62	Total/NA	Groundwater	8270E	424460
MB 310-424460/1-A	Method Blank	Total/NA	Water	8270E	424460
LCS 310-424460/2-A	Lab Control Sample	Total/NA	Water	8270E	424460
LCSD 310-424460/3-A	Lab Control Sample Dup	Total/NA	Water	8270E	424460

GC Semi VOA

Analysis Batch: 424293

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-5	MW-62	Total/NA	Groundwater	8081B	424349
310-283154-18	MW-61R	Total/NA	Groundwater	8081B	424349
MB 310-424349/1-A	Method Blank	Total/NA	Water	8081B	424349
LCS 310-424349/8-A	Lab Control Sample	Total/NA	Water	8081B	424349
310-283154-5 MS	MW-62	Total/NA	Groundwater	8081B	424349
310-283154-5 MSD	MW-62	Total/NA	Groundwater	8081B	424349

Analysis Batch: 424294

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-5	MW-62	Total/NA	Groundwater	8082A	424349
MB 310-424349/1-A	Method Blank	Total/NA	Water	8082A	424349
LCS 310-424349/9-A	Lab Control Sample	Total/NA	Water	8082A	424349
310-283154-5 MS	MW-62	Total/NA	Groundwater	8082A	424349
310-283154-5 MSD	MW-62	Total/NA	Groundwater	8082A	424349

Prep Batch: 424349

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-5	MW-62	Total/NA	Groundwater	3511	
310-283154-18	MW-61R	Total/NA	Groundwater	3511	
MB 310-424349/1-A	Method Blank	Total/NA	Water	3511	
LCS 310-424349/8-A	Lab Control Sample	Total/NA	Water	3511	
LCS 310-424349/9-A	Lab Control Sample	Total/NA	Water	3511	
310-283154-5 MS	MW-62	Total/NA	Groundwater	3511	
310-283154-5 MSD	MW-62	Total/NA	Groundwater	3511	

Analysis Batch: 424385

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-5	MW-62	Total/NA	Groundwater	8015C	
MB 310-424385/4	Method Blank	Total/NA	Water	8015C	
LCS 310-424385/5	Lab Control Sample	Total/NA	Water	8015C	

Prep Batch: 516868

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-5	MW-62	Total/NA	Groundwater	8151A	
MB 410-516868/1-A	Method Blank	Total/NA	Water	8151A	
LCS 410-516868/2-A	Lab Control Sample	Total/NA	Water	8151A	
LCSD 410-516868/3-A	Lab Control Sample Dup	Total/NA	Water	8151A	

Analysis Batch: 517292

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-5	MW-62	Total/NA	Groundwater	8151A	516868
MB 410-516868/1-A	Method Blank	Total/NA	Water	8151A	516868
LCS 410-516868/2-A	Lab Control Sample	Total/NA	Water	8151A	516868
LCSD 410-516868/3-A	Lab Control Sample Dup	Total/NA	Water	8151A	516868

HPLC/IC

Analysis Batch: 424275

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-17	93-MW-31R	Total/NA	Groundwater	9056A	

HPLC/IC (Continued)

Analysis Batch: 424275 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-18	MW-61R	Total/NA	Groundwater	9056A	
310-283154-19	MW-73	Total/NA	Groundwater	9056A	
310-283154-20	MW-79	Total/NA	Groundwater	9056A	
MB 310-424275/3	Method Blank	Total/NA	Water	9056A	
LCS 310-424275/4	Lab Control Sample	Total/NA	Water	9056A	
310-283154-17 MS	93-MW-31R	Total/NA	Groundwater	9056A	
310-283154-17 MSD	93-MW-31R	Total/NA	Groundwater	9056A	

Analysis Batch: 424636

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-7	MW-39R	Total/NA	Groundwater	9056A	
310-283154-8	MW-40	Total/NA	Groundwater	9056A	
310-283154-9	04-MW-56	Total/NA	Groundwater	9056A	
310-283154-11	MW-D2	Total/NA	Groundwater	9056A	
310-283154-12	MW-58	Total/NA	Groundwater	9056A	
310-283154-13	MW-59	Total/NA	Groundwater	9056A	
310-283154-14	MW-63R	Total/NA	Groundwater	9056A	
310-283154-15	MW-64	Total/NA	Groundwater	9056A	
310-283154-16	MW-65	Total/NA	Groundwater	9056A	
MB 310-424636/3	Method Blank	Total/NA	Water	9056A	
LCS 310-424636/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 424217

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-1	MW-53	Total/NA	Groundwater	3005A	
310-283154-2	91-MW-14	Total/NA	Groundwater	3005A	
310-283154-3	GU-7	Total/NA	Groundwater	3005A	
310-283154-4	93-MW-32	Total/NA	Groundwater	3005A	
310-283154-5	MW-62	Total/NA	Groundwater	3005A	
310-283154-6	MW-81	Total/NA	Groundwater	3005A	
310-283154-7	MW-39R	Total/NA	Groundwater	3005A	
310-283154-8	MW-40	Total/NA	Groundwater	3005A	
310-283154-9	04-MW-56	Total/NA	Groundwater	3005A	
310-283154-10	MW-D1	Total/NA	Groundwater	3005A	
310-283154-11	MW-D2	Total/NA	Groundwater	3005A	
310-283154-12	MW-58	Total/NA	Groundwater	3005A	
310-283154-13	MW-59	Total/NA	Groundwater	3005A	
310-283154-14	MW-63R	Total/NA	Groundwater	3005A	
310-283154-15	MW-64	Total/NA	Groundwater	3005A	
310-283154-16	MW-65	Total/NA	Groundwater	3005A	
310-283154-17	93-MW-31R	Total/NA	Groundwater	3005A	
310-283154-18	MW-61R	Total/NA	Groundwater	3005A	
310-283154-19	MW-73	Total/NA	Groundwater	3005A	
MB 310-424217/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-424217/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-283154-1 MS	MW-53	Total/NA	Groundwater	3005A	
310-283154-1 MSD	MW-53	Total/NA	Groundwater	3005A	
310-283154-11 DU	MW-D2	Total/NA	Groundwater	3005A	

Metals

Prep Batch: 424219

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-20	MW-79	Total/NA	Groundwater	3005A	
310-283154-21	MW-66	Total/NA	Groundwater	3005A	
310-283154-22	MW-68	Total/NA	Groundwater	3005A	
310-283154-24	MW-78	Total/NA	Groundwater	3005A	
MB 310-424219/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-424219/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-283154-20 MS	MW-79	Total/NA	Groundwater	3005A	
310-283154-20 MSD	MW-79	Total/NA	Groundwater	3005A	

Prep Batch: 424222

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-5	MW-62	Total/NA	Groundwater	7470A	
MB 310-424222/1-A	Method Blank	Total/NA	Water	7470A	
LCS 310-424222/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 424664

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-5	MW-62	Total/NA	Groundwater	7470A	424222
MB 310-424222/1-A	Method Blank	Total/NA	Water	7470A	424222
LCS 310-424222/2-A	Lab Control Sample	Total/NA	Water	7470A	424222

Analysis Batch: 424713

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-20	MW-79	Total/NA	Groundwater	6020B	424219
310-283154-21	MW-66	Total/NA	Groundwater	6020B	424219
310-283154-22	MW-68	Total/NA	Groundwater	6020B	424219
MB 310-424219/1-A	Method Blank	Total/NA	Water	6020B	424219
LCS 310-424219/2-A	Lab Control Sample	Total/NA	Water	6020B	424219
310-283154-20 MS	MW-79	Total/NA	Groundwater	6020B	424219
310-283154-20 MSD	MW-79	Total/NA	Groundwater	6020B	424219

Analysis Batch: 424838

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-20	MW-79	Total/NA	Groundwater	6020B	424219
310-283154-21	MW-66	Total/NA	Groundwater	6020B	424219
310-283154-22	MW-68	Total/NA	Groundwater	6020B	424219
310-283154-24	MW-78	Total/NA	Groundwater	6020B	424219
MB 310-424219/1-A	Method Blank	Total/NA	Water	6020B	424219
LCS 310-424219/2-A	Lab Control Sample	Total/NA	Water	6020B	424219
310-283154-20 MS	MW-79	Total/NA	Groundwater	6020B	424219
310-283154-20 MSD	MW-79	Total/NA	Groundwater	6020B	424219

Analysis Batch: 424909

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-7	MW-39R	Total/NA	Groundwater	6010D	424217
310-283154-8	MW-40	Total/NA	Groundwater	6010D	424217
310-283154-9	04-MW-56	Total/NA	Groundwater	6010D	424217
310-283154-11	MW-D2	Total/NA	Groundwater	6010D	424217
310-283154-12	MW-58	Total/NA	Groundwater	6010D	424217
310-283154-13	MW-59	Total/NA	Groundwater	6010D	424217

Metals (Continued)

Analysis Batch: 424909 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-14	MW-63R	Total/NA	Groundwater	6010D	424217
310-283154-15	MW-64	Total/NA	Groundwater	6010D	424217
310-283154-16	MW-65	Total/NA	Groundwater	6010D	424217
310-283154-17	93-MW-31R	Total/NA	Groundwater	6010D	424217
310-283154-18	MW-61R	Total/NA	Groundwater	6010D	424217
310-283154-19	MW-73	Total/NA	Groundwater	6010D	424217
310-283154-20	MW-79	Total/NA	Groundwater	6010D	424219
MB 310-424217/1-A	Method Blank	Total/NA	Water	6010D	424217
MB 310-424219/1-A	Method Blank	Total/NA	Water	6010D	424219
LCS 310-424217/2-A	Lab Control Sample	Total/NA	Water	6010D	424217
LCS 310-424219/2-A	Lab Control Sample	Total/NA	Water	6010D	424219
310-283154-20 MS	MW-79	Total/NA	Groundwater	6010D	424219
310-283154-20 MSD	MW-79	Total/NA	Groundwater	6010D	424219
310-283154-11 DU	MW-D2	Total/NA	Groundwater	6010D	424217

Analysis Batch: 425398

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-1	MW-53	Total/NA	Groundwater	6020B	424217
310-283154-2	91-MW-14	Total/NA	Groundwater	6020B	424217
310-283154-3	GU-7	Total/NA	Groundwater	6020B	424217
310-283154-4	93-MW-32	Total/NA	Groundwater	6020B	424217
310-283154-5	MW-62	Total/NA	Groundwater	6020B	424217
310-283154-6	MW-81	Total/NA	Groundwater	6020B	424217
310-283154-7	MW-39R	Total/NA	Groundwater	6020B	424217
310-283154-8	MW-40	Total/NA	Groundwater	6020B	424217
310-283154-9	04-MW-56	Total/NA	Groundwater	6020B	424217
310-283154-10	MW-D1	Total/NA	Groundwater	6020B	424217
310-283154-11	MW-D2	Total/NA	Groundwater	6020B	424217
310-283154-12	MW-58	Total/NA	Groundwater	6020B	424217
310-283154-13	MW-59	Total/NA	Groundwater	6020B	424217
310-283154-14	MW-63R	Total/NA	Groundwater	6020B	424217
310-283154-15	MW-64	Total/NA	Groundwater	6020B	424217
310-283154-16	MW-65	Total/NA	Groundwater	6020B	424217
310-283154-17	93-MW-31R	Total/NA	Groundwater	6020B	424217
310-283154-18	MW-61R	Total/NA	Groundwater	6020B	424217
310-283154-19	MW-73	Total/NA	Groundwater	6020B	424217
MB 310-424217/1-A	Method Blank	Total/NA	Water	6020B	424217
LCS 310-424217/2-A	Lab Control Sample	Total/NA	Water	6020B	424217
310-283154-1 MS	MW-53	Total/NA	Groundwater	6020B	424217
310-283154-1 MSD	MW-53	Total/NA	Groundwater	6020B	424217
310-283154-11 DU	MW-D2	Total/NA	Groundwater	6020B	424217

Analysis Batch: 425519

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-1	MW-53	Total/NA	Groundwater	6020B	424217
310-283154-2	91-MW-14	Total/NA	Groundwater	6020B	424217
310-283154-3	GU-7	Total/NA	Groundwater	6020B	424217
310-283154-4	93-MW-32	Total/NA	Groundwater	6020B	424217
310-283154-5	MW-62	Total/NA	Groundwater	6020B	424217
310-283154-6	MW-81	Total/NA	Groundwater	6020B	424217

Metals (Continued)

Analysis Batch: 425519 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-7	MW-39R	Total/NA	Groundwater	6020B	424217
310-283154-8	MW-40	Total/NA	Groundwater	6020B	424217
310-283154-9	04-MW-56	Total/NA	Groundwater	6020B	424217
310-283154-10	MW-D1	Total/NA	Groundwater	6020B	424217
310-283154-11	MW-D2	Total/NA	Groundwater	6020B	424217
310-283154-12	MW-58	Total/NA	Groundwater	6020B	424217
310-283154-13	MW-59	Total/NA	Groundwater	6020B	424217
310-283154-14	MW-63R	Total/NA	Groundwater	6020B	424217
310-283154-15	MW-64	Total/NA	Groundwater	6020B	424217
310-283154-16	MW-65	Total/NA	Groundwater	6020B	424217
310-283154-17	93-MW-31R	Total/NA	Groundwater	6020B	424217
310-283154-18	MW-61R	Total/NA	Groundwater	6020B	424217
310-283154-19	MW-73	Total/NA	Groundwater	6020B	424217
MB 310-424217/1-A	Method Blank	Total/NA	Water	6020B	424217
LCS 310-424217/2-A	Lab Control Sample	Total/NA	Water	6020B	424217
310-283154-1 MS	MW-53	Total/NA	Groundwater	6020B	424217
310-283154-1 MSD	MW-53	Total/NA	Groundwater	6020B	424217
310-283154-11 DU	MW-D2	Total/NA	Groundwater	6020B	424217

Analysis Batch: 425927

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-1	MW-53	Total/NA	Groundwater	6020B	424217
310-283154-2	91-MW-14	Total/NA	Groundwater	6020B	424217
310-283154-3	GU-7	Total/NA	Groundwater	6020B	424217
310-283154-4	93-MW-32	Total/NA	Groundwater	6020B	424217
310-283154-5	MW-62	Total/NA	Groundwater	6020B	424217
310-283154-6	MW-81	Total/NA	Groundwater	6020B	424217
310-283154-7	MW-39R	Total/NA	Groundwater	6020B	424217
310-283154-8	MW-40	Total/NA	Groundwater	6020B	424217
310-283154-9	04-MW-56	Total/NA	Groundwater	6020B	424217
310-283154-10	MW-D1	Total/NA	Groundwater	6020B	424217
310-283154-11	MW-D2	Total/NA	Groundwater	6020B	424217
310-283154-12	MW-58	Total/NA	Groundwater	6020B	424217
310-283154-13	MW-59	Total/NA	Groundwater	6020B	424217
310-283154-14	MW-63R	Total/NA	Groundwater	6020B	424217
310-283154-15	MW-64	Total/NA	Groundwater	6020B	424217
310-283154-16	MW-65	Total/NA	Groundwater	6020B	424217
310-283154-17	93-MW-31R	Total/NA	Groundwater	6020B	424217
310-283154-18	MW-61R	Total/NA	Groundwater	6020B	424217
310-283154-19	MW-73	Total/NA	Groundwater	6020B	424217
MB 310-424217/1-A	Method Blank	Total/NA	Water	6020B	424217
LCS 310-424217/2-A	Lab Control Sample	Total/NA	Water	6020B	424217
310-283154-1 MS	MW-53	Total/NA	Groundwater	6020B	424217
310-283154-1 MSD	MW-53	Total/NA	Groundwater	6020B	424217
310-283154-11 DU	MW-D2	Total/NA	Groundwater	6020B	424217

Analysis Batch: 426190

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-1	MW-53	Total/NA	Groundwater	6020B	424217
310-283154-3	GU-7	Total/NA	Groundwater	6020B	424217

Metals (Continued)

Analysis Batch: 426190 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-5	MW-62	Total/NA	Groundwater	6020B	424217
310-283154-6	MW-81	Total/NA	Groundwater	6020B	424217
310-283154-7	MW-39R	Total/NA	Groundwater	6020B	424217
310-283154-8	MW-40	Total/NA	Groundwater	6020B	424217
310-283154-11	MW-D2	Total/NA	Groundwater	6020B	424217
310-283154-12	MW-58	Total/NA	Groundwater	6020B	424217
310-283154-14	MW-63R	Total/NA	Groundwater	6020B	424217
310-283154-16	MW-65	Total/NA	Groundwater	6020B	424217
310-283154-17	93-MW-31R	Total/NA	Groundwater	6020B	424217
310-283154-18	MW-61R	Total/NA	Groundwater	6020B	424217
310-283154-19	MW-73	Total/NA	Groundwater	6020B	424217
MB 310-424217/1-A	Method Blank	Total/NA	Water	6020B	424217
LCS 310-424217/2-A	Lab Control Sample	Total/NA	Water	6020B	424217
310-283154-1 MS	MW-53	Total/NA	Groundwater	6020B	424217
310-283154-1 MSD	MW-53	Total/NA	Groundwater	6020B	424217
310-283154-11 DU	MW-D2	Total/NA	Groundwater	6020B	424217

Analysis Batch: 426288

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-19	MW-73	Total/NA	Groundwater	6020B	424217

General Chemistry

Analysis Batch: 424090

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-1	MW-53	Total/NA	Groundwater	I-3765-85	
310-283154-2	91-MW-14	Total/NA	Groundwater	I-3765-85	
310-283154-3	GU-7	Total/NA	Groundwater	I-3765-85	
310-283154-4	93-MW-32	Total/NA	Groundwater	I-3765-85	
310-283154-5	MW-62	Total/NA	Groundwater	I-3765-85	
310-283154-6	MW-81	Total/NA	Groundwater	I-3765-85	
310-283154-7	MW-39R	Total/NA	Groundwater	I-3765-85	
310-283154-8	MW-40	Total/NA	Groundwater	I-3765-85	
310-283154-9	04-MW-56	Total/NA	Groundwater	I-3765-85	
310-283154-10	MW-D1	Total/NA	Groundwater	I-3765-85	
310-283154-11	MW-D2	Total/NA	Groundwater	I-3765-85	
310-283154-12	MW-58	Total/NA	Groundwater	I-3765-85	
310-283154-13	MW-59	Total/NA	Groundwater	I-3765-85	
310-283154-14	MW-63R	Total/NA	Groundwater	I-3765-85	
310-283154-15	MW-64	Total/NA	Groundwater	I-3765-85	
310-283154-16	MW-65	Total/NA	Groundwater	I-3765-85	
310-283154-21	MW-66	Total/NA	Groundwater	I-3765-85	
MB 310-424090/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-424090/2	Lab Control Sample	Total/NA	Water	I-3765-85	

Analysis Batch: 424147

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-17	93-MW-31R	Total/NA	Groundwater	I-3765-85	
310-283154-20	MW-79	Total/NA	Groundwater	I-3765-85	
MB 310-424147/1	Method Blank	Total/NA	Water	I-3765-85	

General Chemistry (Continued)

Analysis Batch: 424147 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 310-424147/2	Lab Control Sample	Total/NA	Water	I-3765-85	

Analysis Batch: 424175

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-22	MW-68	Total/NA	Groundwater	I-3765-85	
310-283154-24	MW-78	Total/NA	Groundwater	I-3765-85	
MB 310-424175/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-424175/2	Lab Control Sample	Total/NA	Water	I-3765-85	

Analysis Batch: 424355

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-18	MW-61R	Total/NA	Groundwater	I-3765-85	
310-283154-19	MW-73	Total/NA	Groundwater	I-3765-85	
MB 310-424355/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-424355/2	Lab Control Sample	Total/NA	Water	I-3765-85	
310-283154-18 DU	MW-61R	Total/NA	Groundwater	I-3765-85	

Analysis Batch: 424393

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-7	MW-39R	Total/NA	Groundwater	SM 2320B	
310-283154-8	MW-40	Total/NA	Groundwater	SM 2320B	
310-283154-9	04-MW-56	Total/NA	Groundwater	SM 2320B	
310-283154-11	MW-D2	Total/NA	Groundwater	SM 2320B	
310-283154-12	MW-58	Total/NA	Groundwater	SM 2320B	
310-283154-13	MW-59	Total/NA	Groundwater	SM 2320B	
310-283154-14	MW-63R	Total/NA	Groundwater	SM 2320B	
310-283154-15	MW-64	Total/NA	Groundwater	SM 2320B	
310-283154-16	MW-65	Total/NA	Groundwater	SM 2320B	
LCS 310-424393/25	Lab Control Sample	Total/NA	Water	SM 2320B	
310-283154-8 DU	MW-40	Total/NA	Groundwater	SM 2320B	

Prep Batch: 424450

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-5	MW-62	Total/NA	Groundwater	9012B	
MB 310-424450/1-A	Method Blank	Total/NA	Water	9012B	
LCS 310-424450/2-A	Lab Control Sample	Total/NA	Water	9012B	

Analysis Batch: 424545

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-5	MW-62	Total/NA	Groundwater	9012B	424450
MB 310-424450/1-A	Method Blank	Total/NA	Water	9012B	424450
LCS 310-424450/2-A	Lab Control Sample	Total/NA	Water	9012B	424450

Analysis Batch: 424547

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-17	93-MW-31R	Total/NA	Groundwater	SM 5310C	
310-283154-18	MW-61R	Total/NA	Groundwater	SM 5310C	
310-283154-19	MW-73	Total/NA	Groundwater	SM 5310C	
310-283154-20	MW-79	Total/NA	Groundwater	SM 5310C	
MB 310-424547/11	Method Blank	Total/NA	Water	SM 5310C	

General Chemistry (Continued)

Analysis Batch: 424547 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 310-424547/12	Lab Control Sample	Total/NA	Water	SM 5310C	
310-283154-20 MS	MW-79	Total/NA	Groundwater	SM 5310C	

Prep Batch: 772110

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-5	MW-62	Total/NA	Groundwater	9030B	
310-283154-7	MW-39R	Total/NA	Groundwater	9030B	
310-283154-13	MW-59	Total/NA	Groundwater	9030B	
310-283154-14	MW-63R	Total/NA	Groundwater	9030B	
310-283154-16	MW-65	Total/NA	Groundwater	9030B	
MB 500-772110/1-A	Method Blank	Total/NA	Water	9030B	
LCS 500-772110/2-A	Lab Control Sample	Total/NA	Water	9030B	

Analysis Batch: 772120

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283154-5	MW-62	Total/NA	Groundwater	9034	772110
310-283154-7	MW-39R	Total/NA	Groundwater	9034	772110
310-283154-13	MW-59	Total/NA	Groundwater	9034	772110
310-283154-14	MW-63R	Total/NA	Groundwater	9034	772110
310-283154-16	MW-65	Total/NA	Groundwater	9034	772110
MB 500-772110/1-A	Method Blank	Total/NA	Water	9034	772110
LCS 500-772110/2-A	Lab Control Sample	Total/NA	Water	9034	772110

Lab Chronicle

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-53
Lab Sample ID: 310-283154-1
Date Collected: 06/04/24 13:22
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	424145	WSE8	EET CF	06/12/24 02:29
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425519	NFT2	EET CF	06/24/24 22:07
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425927	DHM5	EET CF	06/27/24 16:34
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	426190	NFT2	EET CF	07/01/24 23:22
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425398	NFT2	EET CF	06/21/24 15:21
Total/NA	Analysis	I-3765-85		1	424090	ENB7	EET CF	06/10/24 16:09

Client Sample ID: 91-MW-14
Lab Sample ID: 310-283154-2
Date Collected: 06/04/24 14:31
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425519	NFT2	EET CF	06/24/24 22:17
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425927	DHM5	EET CF	06/27/24 16:44
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425398	NFT2	EET CF	06/21/24 15:34
Total/NA	Analysis	I-3765-85		1	424090	ENB7	EET CF	06/10/24 16:09

Client Sample ID: GU-7
Lab Sample ID: 310-283154-3
Date Collected: 06/05/24 16:05
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	424145	WSE8	EET CF	06/12/24 02:51
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425519	NFT2	EET CF	06/24/24 22:21
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425927	DHM5	EET CF	06/27/24 17:02
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	426190	NFT2	EET CF	07/01/24 23:46
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425398	NFT2	EET CF	06/21/24 15:36
Total/NA	Analysis	I-3765-85		1	424090	ENB7	EET CF	06/10/24 16:09

Lab Chronicle

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: 93-MW-32
Lab Sample ID: 310-283154-4
Date Collected: 06/04/24 16:18
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425519	NFT2	EET CF	06/24/24 22:25
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425927	DHM5	EET CF	06/27/24 17:05
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425398	NFT2	EET CF	06/21/24 15:38
Total/NA	Analysis	I-3765-85		1	424090	ENB7	EET CF	06/10/24 16:09

Client Sample ID: MW-62
Lab Sample ID: 310-283154-5
Date Collected: 06/06/24 12:17
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	424145	WSE8	EET CF	06/12/24 03:14
Total/NA	Prep	3510C			424460	JT8P	EET CF	06/13/24 10:50
Total/NA	Analysis	8270E		1	424715	L0FS	EET CF	06/17/24 16:27
Total/NA	Analysis	8015C		1	424385	V7YZ	EET CF	06/13/24 11:43
Total/NA	Prep	3511			424349	D2YP	EET CF	06/12/24 14:18
Total/NA	Analysis	8081B		1	424293	BW2O	EET CF	06/12/24 21:30
Total/NA	Prep	3511			424349	D2YP	EET CF	06/12/24 14:18
Total/NA	Analysis	8082A		1	424294	BW2O	EET CF	06/12/24 21:30
Total/NA	Prep	8151A			516868	QKX3	ELLE	06/13/24 07:10
Total/NA	Analysis	8151A		1	517292	UAMZ	ELLE	06/15/24 03:31
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425519	NFT2	EET CF	06/24/24 22:28
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425927	DHM5	EET CF	06/27/24 17:09
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	426190	NFT2	EET CF	07/01/24 23:50
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425398	NFT2	EET CF	06/21/24 15:50
Total/NA	Prep	7470A			424222	A6US	EET CF	06/11/24 16:44
Total/NA	Analysis	7470A		1	424664	A6US	EET CF	06/14/24 13:34
Total/NA	Prep	9012B			424450	WZC8	EET CF	06/13/24 10:25
Total/NA	Analysis	9012B		1	424545	ZJX4	EET CF	06/13/24 23:54
Total/NA	Prep	9030B			772110	CLB	EET CHI	06/11/24 18:27 - 06/11/24 18:30 [1]
Total/NA	Analysis	9034		1	772120	CLB	EET CHI	06/11/24 22:49 - 06/11/24 22:57 [1]
Total/NA	Analysis	I-3765-85		1	424090	ENB7	EET CF	06/10/24 16:09

Lab Chronicle

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-81
Lab Sample ID: 310-283154-6
Date Collected: 06/06/24 13:30
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	424145	WSE8	EET CF	06/12/24 03:59
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425519	NFT2	EET CF	06/24/24 22:46
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425927	DHM5	EET CF	06/27/24 17:12
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	426190	NFT2	EET CF	07/01/24 23:54
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425398	NFT2	EET CF	06/21/24 15:52
Total/NA	Analysis	I-3765-85		1	424090	ENB7	EET CF	06/10/24 16:09

Client Sample ID: MW-39R
Lab Sample ID: 310-283154-7
Date Collected: 06/05/24 17:14
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	424145	WSE8	EET CF	06/12/24 03:37
Total/NA	Analysis	9056A		50	424636	QTZ5	EET CF	06/13/24 18:16
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6010D		2	424909	ZRI4	EET CF	06/17/24 13:52
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425519	NFT2	EET CF	06/24/24 22:50
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425927	DHM5	EET CF	06/27/24 17:16
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	426190	NFT2	EET CF	07/01/24 23:57
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425398	NFT2	EET CF	06/21/24 15:54
Total/NA	Prep	9030B			772110	CLB	EET CHI	06/11/24 18:25 - 06/11/24 18:27 [1]
Total/NA	Analysis	9034		1	772120	CLB	EET CHI	06/11/24 22:42 - 06/11/24 22:49 [1]
Total/NA	Analysis	I-3765-85		1	424090	ENB7	EET CF	06/10/24 16:09
Total/NA	Analysis	SM 2320B		1	424393	WZC8	EET CF	06/12/24 17:38

Client Sample ID: MW-40
Lab Sample ID: 310-283154-8
Date Collected: 06/04/24 10:34
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	424145	WSE8	EET CF	06/12/24 06:38
Total/NA	Analysis	9056A		50	424636	QTZ5	EET CF	06/13/24 18:29
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6010D		1	424909	ZRI4	EET CF	06/17/24 13:23

Lab Chronicle

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-40
Lab Sample ID: 310-283154-8
Date Collected: 06/04/24 10:34
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425519	NFT2	EET CF	06/24/24 22:53
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425927	DHM5	EET CF	06/27/24 17:19
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	426190	NFT2	EET CF	07/02/24 00:01
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425398	NFT2	EET CF	06/21/24 15:56
Total/NA	Analysis	I-3765-85		1	424090	ENB7	EET CF	06/10/24 16:09
Total/NA	Analysis	SM 2320B		1	424393	WZC8	EET CF	06/12/24 17:48

Client Sample ID: 04-MW-56
Lab Sample ID: 310-283154-9
Date Collected: 06/06/24 11:20
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		50	424636	QTZ5	EET CF	06/13/24 18:42
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6010D		1	424909	ZRI4	EET CF	06/17/24 13:25
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425519	NFT2	EET CF	06/24/24 22:57
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425927	DHM5	EET CF	06/27/24 17:23
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425398	NFT2	EET CF	06/21/24 15:58
Total/NA	Analysis	I-3765-85		1	424090	ENB7	EET CF	06/10/24 16:09
Total/NA	Analysis	SM 2320B		1	424393	WZC8	EET CF	06/12/24 18:05

Client Sample ID: MW-D1
Lab Sample ID: 310-283154-10
Date Collected: 06/04/24 16:18
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425519	NFT2	EET CF	06/24/24 23:01
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425927	DHM5	EET CF	06/27/24 17:26
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425398	NFT2	EET CF	06/21/24 16:01
Total/NA	Analysis	I-3765-85		1	424090	ENB7	EET CF	06/10/24 16:09

Lab Chronicle

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-D2
Lab Sample ID: 310-283154-11
Date Collected: 06/04/24 09:46
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	424145	WSE8	EET CF	06/12/24 06:15
Total/NA	Analysis	9056A		50	424636	QTZ5	EET CF	06/13/24 18:54
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6010D		1	424909	ZRI4	EET CF	06/17/24 13:27
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425519	NFT2	EET CF	06/24/24 23:04
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425927	DHM5	EET CF	06/27/24 17:30
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	426190	NFT2	EET CF	07/02/24 00:04
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425398	NFT2	EET CF	06/21/24 16:03
Total/NA	Analysis	I-3765-85		1	424090	ENB7	EET CF	06/10/24 16:09
Total/NA	Analysis	SM 2320B		1	424393	WZC8	EET CF	06/12/24 18:15

Client Sample ID: MW-58
Lab Sample ID: 310-283154-12
Date Collected: 06/04/24 09:46
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	424145	WSE8	EET CF	06/12/24 04:22
Total/NA	Analysis	9056A		50	424636	QTZ5	EET CF	06/13/24 19:07
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6010D		1	424909	ZRI4	EET CF	06/17/24 13:31
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425519	NFT2	EET CF	06/24/24 23:11
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425927	DHM5	EET CF	06/27/24 17:51
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	426190	NFT2	EET CF	07/02/24 00:12
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425398	NFT2	EET CF	06/21/24 16:07
Total/NA	Analysis	I-3765-85		1	424090	ENB7	EET CF	06/10/24 16:09
Total/NA	Analysis	SM 2320B		1	424393	WZC8	EET CF	06/12/24 18:24

Client Sample ID: MW-59
Lab Sample ID: 310-283154-13
Date Collected: 06/04/24 12:05
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		50	424636	QTZ5	EET CF	06/13/24 19:45
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6010D		1	424909	ZRI4	EET CF	06/17/24 13:33

Lab Chronicle

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-59
Lab Sample ID: 310-283154-13
Date Collected: 06/04/24 12:05
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425519	NFT2	EET CF	06/24/24 23:15
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425927	DHM5	EET CF	06/27/24 17:54
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425398	NFT2	EET CF	06/21/24 16:09
Total/NA	Prep	9030B			772110	CLB	EET CHI	06/11/24 18:18 - 06/11/24 18:20 [1]
Total/NA	Analysis	9034		1	772120	CLB	EET CHI	06/11/24 22:19 - 06/11/24 22:27 [1]
Total/NA	Analysis	I-3765-85		1	424090	ENB7	EET CF	06/10/24 16:09
Total/NA	Analysis	SM 2320B		1	424393	WZC8	EET CF	06/12/24 18:39

Client Sample ID: MW-63R
Lab Sample ID: 310-283154-14
Date Collected: 06/04/24 17:58
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	424145	WSE8	EET CF	06/12/24 04:45
Total/NA	Analysis	9056A		50	424636	QTZ5	EET CF	06/13/24 19:57
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6010D		1	424909	ZRI4	EET CF	06/17/24 13:35
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425519	NFT2	EET CF	06/24/24 23:18
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425927	DHM5	EET CF	06/27/24 17:58
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	426190	NFT2	EET CF	07/02/24 00:30
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425398	NFT2	EET CF	06/21/24 16:20
Total/NA	Prep	9030B			772110	CLB	EET CHI	06/11/24 18:20 - 06/11/24 18:23 [1]
Total/NA	Analysis	9034		1	772120	CLB	EET CHI	06/11/24 22:27 - 06/11/24 22:34 [1]
Total/NA	Analysis	I-3765-85		1	424090	ENB7	EET CF	06/10/24 16:09
Total/NA	Analysis	SM 2320B		1	424393	WZC8	EET CF	06/12/24 18:50

Client Sample ID: MW-64
Lab Sample ID: 310-283154-15
Date Collected: 06/04/24 15:12
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		50	424636	QTZ5	EET CF	06/13/24 20:10
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6010D		1	424909	ZRI4	EET CF	06/17/24 13:37
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425519	NFT2	EET CF	06/24/24 23:37

Lab Chronicle

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-64
Lab Sample ID: 310-283154-15
Date Collected: 06/04/24 15:12
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425927	DHM5	EET CF	06/27/24 18:01
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425398	NFT2	EET CF	06/21/24 16:23
Total/NA	Analysis	I-3765-85		1	424090	ENB7	EET CF	06/10/24 16:09
Total/NA	Analysis	SM 2320B		1	424393	WZC8	EET CF	06/12/24 18:59

Client Sample ID: MW-65
Lab Sample ID: 310-283154-16
Date Collected: 06/04/24 11:25
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	424145	WSE8	EET CF	06/12/24 07:00
Total/NA	Analysis	9056A		50	424636	QTZ5	EET CF	06/13/24 20:22
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6010D		1	424909	ZRI4	EET CF	06/17/24 13:40
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425519	NFT2	EET CF	06/24/24 23:40
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425927	DHM5	EET CF	06/27/24 18:05
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	426190	NFT2	EET CF	07/02/24 00:34
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425398	NFT2	EET CF	06/21/24 16:25
Total/NA	Prep	9030B			772110	CLB	EET CHI	06/11/24 18:23 - 06/11/24 18:25 [1]
Total/NA	Analysis	9034		1	772120	CLB	EET CHI	06/11/24 22:34 - 06/11/24 22:42 [1]
Total/NA	Analysis	I-3765-85		1	424090	ENB7	EET CF	06/10/24 16:09
Total/NA	Analysis	SM 2320B		1	424393	WZC8	EET CF	06/12/24 19:10

Client Sample ID: 93-MW-31R
Lab Sample ID: 310-283154-17
Date Collected: 06/05/24 14:19
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	424145	WSE8	EET CF	06/12/24 05:07
Total/NA	Analysis	9056A		100	424275	QTZ5	EET CF	06/11/24 14:35
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6010D		1	424909	ZRI4	EET CF	06/17/24 13:45
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425519	NFT2	EET CF	06/24/24 23:44
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425927	DHM5	EET CF	06/27/24 18:08

Lab Chronicle

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: 93-MW-31R
Lab Sample ID: 310-283154-17
Date Collected: 06/05/24 14:19
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	426190	NFT2	EET CF	07/02/24 00:37
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425398	NFT2	EET CF	06/21/24 16:27
Total/NA	Analysis	I-3765-85		1	424147	DGU1	EET CF	06/11/24 10:22
Total/NA	Analysis	SM 5310C		1	424547	DGU1	EET CF	06/13/24 12:01

Client Sample ID: MW-61R
Lab Sample ID: 310-283154-18
Date Collected: 06/06/24 10:09
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	424145	WSE8	EET CF	06/12/24 05:30
Total/NA	Prep	3511			424349	D2YP	EET CF	06/12/24 14:18
Total/NA	Analysis	8081B		1	424293	BW2O	EET CF	06/12/24 21:50
Total/NA	Analysis	9056A		100	424275	QTZ5	EET CF	06/11/24 15:11
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6010D		1	424909	ZRI4	EET CF	06/17/24 13:47
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425519	NFT2	EET CF	06/24/24 23:47
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425927	DHM5	EET CF	06/27/24 18:12
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	426190	NFT2	EET CF	07/02/24 00:41
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425398	NFT2	EET CF	06/21/24 16:29
Total/NA	Analysis	I-3765-85		1	424355	DGU1	EET CF	06/12/24 14:59
Total/NA	Analysis	SM 5310C		1	424547	DGU1	EET CF	06/13/24 14:26

Client Sample ID: MW-73
Lab Sample ID: 310-283154-19
Date Collected: 06/06/24 14:07
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	424145	WSE8	EET CF	06/12/24 05:52
Total/NA	Analysis	9056A		50	424275	QTZ5	EET CF	06/11/24 15:23
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6010D		1	424909	ZRI4	EET CF	06/17/24 13:49
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425519	NFT2	EET CF	06/24/24 23:51
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425927	DHM5	EET CF	06/27/24 18:15

Lab Chronicle

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-73
Lab Sample ID: 310-283154-19
Date Collected: 06/06/24 14:07
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	426190	NFT2	EET CF	07/02/24 00:44
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	426288	NFT2	EET CF	07/02/24 14:02
Total/NA	Prep	3005A			424217	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	425398	NFT2	EET CF	06/21/24 16:31
Total/NA	Analysis	I-3765-85		1	424355	DGU1	EET CF	06/12/24 14:59
Total/NA	Analysis	SM 5310C		1	424547	DGU1	EET CF	06/13/24 15:02

Client Sample ID: MW-79
Lab Sample ID: 310-283154-20
Date Collected: 06/05/24 12:13
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	424467	FE5V	EET CF	06/13/24 18:41
Total/NA	Analysis	9056A		50	424275	QTZ5	EET CF	06/11/24 15:35
Total/NA	Prep	3005A			424219	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6010D		1	424909	ZRI4	EET CF	06/17/24 13:59
Total/NA	Prep	3005A			424219	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	424838	NFT2	EET CF	06/17/24 16:40
Total/NA	Prep	3005A			424219	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	424713	NFT2	EET CF	06/14/24 18:41
Total/NA	Analysis	I-3765-85		1	424147	DGU1	EET CF	06/11/24 10:22
Total/NA	Analysis	SM 5310C		1	424547	DGU1	EET CF	06/13/24 16:14

Client Sample ID: MW-66
Lab Sample ID: 310-283154-21
Date Collected: 06/04/24 17:05
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			424219	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	424838	NFT2	EET CF	06/17/24 16:49
Total/NA	Prep	3005A			424219	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	424713	NFT2	EET CF	06/14/24 18:52
Total/NA	Analysis	I-3765-85		1	424090	ENB7	EET CF	06/10/24 16:09

Client Sample ID: MW-68
Lab Sample ID: 310-283154-22
Date Collected: 06/05/24 11:23
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			424219	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	424838	NFT2	EET CF	06/17/24 16:53

Lab Chronicle

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Client Sample ID: MW-68
Lab Sample ID: 310-283154-22
Date Collected: 06/05/24 11:23
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			424219	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	424713	NFT2	EET CF	06/14/24 18:54
Total/NA	Analysis	I-3765-85		1	424175	DGU1	EET CF	06/11/24 11:59

Client Sample ID: MW-75
Lab Sample ID: 310-283154-23
Date Collected: 06/06/24 09:23
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	424467	FE5V	EET CF	06/13/24 19:03

Client Sample ID: MW-78
Lab Sample ID: 310-283154-24
Date Collected: 06/05/24 10:16
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	424467	FE5V	EET CF	06/13/24 19:26
Total/NA	Prep	3005A			424219	QTZ5	EET CF	06/12/24 09:00
Total/NA	Analysis	6020B		1	424838	NFT2	EET CF	06/17/24 16:57
Total/NA	Analysis	I-3765-85		1	424175	DGU1	EET CF	06/11/24 11:59

Client Sample ID: Trip Blank 1
Lab Sample ID: 310-283154-25
Date Collected: 06/04/24 00:00
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	424285	WSE8	EET CF	06/13/24 05:56

Client Sample ID: Trip Blank 2
Lab Sample ID: 310-283154-26
Date Collected: 06/04/24 00:00
Matrix: Groundwater
Date Received: 06/07/24 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	424285	WSE8	EET CF	06/13/24 06:18

[1] This procedure uses a method stipulated length of time for the process. Both start and end times are displayed.

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

EET CHI = Eurofins Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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

Accreditation/Certification Summary

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Laboratory: Eurofins Cedar Falls

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8260D		Groundwater	1,2,4-Trichlorobenzene
8260D		Groundwater	Allyl chloride
8260D		Groundwater	Ethyl methacrylate

Laboratory: Eurofins Chicago

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

Authority	Program	Identification Number	Expiration Date
Iowa	State	082	05-01-26

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	0001.01	11-30-24
A2LA	ISO/IEC 17025	0001.01	11-30-24
Alabama	State	43200	01-31-25
Alaska	State	PA00009	06-30-24
Alaska (UST)	State	17-027	02-28-25
Arizona	State	AZ0780	03-12-25
Arkansas DEQ	State	88-00660	08-09-24
California	State	2792	11-30-24
Colorado	State	PA00009	06-16-24
Connecticut	State	PH-0746	06-30-25
DE Haz. Subst. Cleanup Act (HSCA)	State	019-006 (PA cert)	01-31-25
Delaware (DW)	State	N/A	01-31-25
Florida	NELAP	E87997	06-30-24
Georgia (DW)	State	C048	01-31-25
Hawaii	State	N/A	01-31-25
Illinois	NELAP	200027	01-31-25
Iowa	State	361	03-01-24 *
Kansas	NELAP	E-10151	10-31-24
Kentucky (DW)	State	KY90088	12-31-24
Kentucky (UST)	State	0001.01	11-30-24
Kentucky (WW)	State	KY90088	12-31-24
Louisiana (All)	NELAP	02055	06-30-24
Maine	State	2019012	03-12-25
Maryland	State	100	06-30-25
Massachusetts	State	M-PA009	06-30-25
Michigan	State	9930	01-31-25
Minnesota	NELAP	042-999-487	12-31-24
Mississippi	State	023	01-31-25
Missouri	State	450	01-31-25
Montana (DW)	State	0098	01-01-25
Nebraska	State	NE-OS-32-17	01-31-25

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
New Hampshire	NELAP	2730	01-10-25
New Jersey	NELAP	PA011	06-30-24
New York	NELAP	10670	04-01-25
North Carolina (DW)	State	42705	07-31-24
North Carolina (WW/SW)	State	521	12-31-24
North Dakota	State	R-205	01-31-24 *
Oklahoma	NELAP	9804	08-31-24
Oregon	NELAP	PA200001	09-11-24
Pennsylvania	NELAP	36-00037	01-31-25
Quebec Ministry of Environment and Fight against Climate Change	PALA	507	09-16-24
Rhode Island	State	LAO00338	12-30-24
South Carolina	State	89002	01-31-25
Tennessee	State	02838	01-31-25
Texas	NELAP	T104704194-23-46	08-31-24
USDA	US Federal Programs	525-22-298-19481	10-25-25
Vermont	State	VT - 36037	10-28-24
Virginia	NELAP	460182	06-14-25
Washington	State	C457	04-11-24 *
West Virginia (DW)	State	9906 C	01-31-25
West Virginia DEP	State	055	06-20-24
Wyoming	State	8TMS-L	01-31-25
Wyoming (UST)	A2LA	0001.01	11-30-24

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: SCS Engineers
Job ID: 310-283154-1
Project/Site: Ottumwa-Wapello County Landfill 1st 2024
Semi-Annu

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CF
8270E	Semivolatile Organic Compounds (GC/MS)	SW846	EET CF
8015C	Nonhalogenated Organic using GC/FID (Direct Aqueous Injection)	SW846	EET CF
8081B	Organochlorine Pesticides (GC)	SW846	EET CF
8082A	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	SW846	EET CF
8151A	Herbicides (GC)	SW846	ELLE
9056A	Anions, Ion Chromatography	SW846	EET CF
6010D	Metals (ICP)	SW846	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
7470A	Mercury (CVAA)	SW846	EET CF
9012B	Cyanide, Total andor Amenable	SW846	EET CF
9034	Sulfide, Acid soluble and Insoluble (Titrimetric)	SW846	EET CHI
I-3765-85	Residue, Non-filterable (TSS)	USGS	EET CF
SM 2320B	Alkalinity	SM	EET CF
SM 5310C	TOC	SM	EET CF
3005A	Preparation, Total Metals	SW846	EET CF
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	EET CF
3511	Microextraction of Organic Compounds	SW846	EET CF
5030B	Purge and Trap	SW846	EET CF
7470A	Preparation, Mercury	SW846	EET CF
8151A	Extraction (Herbicides)	SW846	ELLE
9012B	Cyanide, Total and/or Amenable, Distillation	SW846	EET CF
9030B	Sulfide, Distillation (Acid Soluble and Insoluble)	SW846	EET CHI

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

USGS = "Methods For Analysis Of Water And Fluvial Sediments", USGS, 1989

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

EET CHI = Eurofins Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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

eurofins | Environment Testing America

310-283154 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS

City/State. | CITY | STATE | Project:

Receipt Information

Date/Time Received: | DATE: 6-7-24 | TIME: 1650 | Received By: CC

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☒ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☒ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? ☒ Yes ☐ No *If yes:* Cooler # 1 of 3

Cooler Custody Seals Present? ☐ Yes ☒ No *If yes:* Cooler custody seals intact? ☐ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☒ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☒ Yes ☐ No *If yes:* Which VOA samples are in cooler? ↓

GW-7, 63R, 79, 73, 166, 81, 68, 78, 39R

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: X | Correction Factor (°C): 0.0

Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 1.1 | Corrected Temp (°C): 1.1

Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g , bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

Receive MW 73/81. 1L vials labeled 73, 250 Nitric labeled 81. Bagged with all 73 and same time

eurofins | Environment Testing America

Place COC scanning label here

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS

City/State: CITY | STATE | Project:

Receipt Information

Date/Time Received: DATE 6-7-24 | TIME 1650 | Received By: CC

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☒ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☒ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? ☒ Yes ☐ No *If yes:* Cooler # 2 of 3

Cooler Custody Seals Present? ☐ Yes ☒ No *If yes:* Cooler custody seals intact? ☐ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☒ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☐ Yes ☒ No *If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: X | Correction Factor (°C): 0.0

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 1.7 | Corrected Temp (°C): 1.7

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE. If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

eurofins | Environment Testing America

Place COC scanning label here

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS

City/State: CITY | STATE | Project:

Receipt Information

Date/Time Received: DATE 6-7-24 | TIME 1650 | Received By: CC

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☒ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☒ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? ☒ Yes ☐ No *If yes:* Cooler # 3 of 3

Cooler Custody Seals Present? ☐ Yes ☒ No *If yes:* Cooler custody seals intact? ☐ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☒ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☒ Yes ☐ No *If yes:* Which VOA samples are in cooler? ↓

MW75, 93-MW-31R, MW-73, MW-61R, 62

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: X | Correction Factor (°C): 0.0

Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 2.8 | Corrected Temp (°C): 2.8

Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

Eurofins TestAmerica, Cedar Falls
3019 Venture Way

Cedar Falls IA 50613-6907
phone 319.277.2401 fax 319 277 2425

Chain of Custody Record

eurofins

Regulatory Program ☐ DW ☐ NPDES ☑ RCRA ☐ Other

TestAmerica Laboratories Inc. d/b/a Eurofins TestAmerica

Client Contact	**Project Manager Nathan Ohrt**		
Nathan Ohrt	Email nohrt@scsengineers.com	**Site Contact: Lori Creech**	**Date**
SCS Engineers	Cell 319-331-9613	**Lab Contact:**	**Carrier**
	Analysis Turnaround Time		
	☐ CALENDAR DAYS ☐ WORKING DAYS		
	Other:_____		
	☐ 2 weeks		
Project Name 1st 2024 Semi-Annual Sampling	☐ 1 week		
Site Ottumwa-Wapello County Landfill	☐ 2 days		
P O #	☐ 1 day		

COC No 1
__1__ of __3__ COCs
Sampler:
For Lab Use Only
Walk-in Client:
Lab Sampling
Job / SDG No

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Appendix I	Appendix II	Appendix I metals list	Total Suspended Solids	AMD	Sulfide	Sample Specific Notes
MW-53	6/4/24	1322	G	GW		N		X			X			
91-MW-14	6/4/24	1431	G	GW		N				X	X			
~~GU-6~~			G	GW		N		X			X			
GU-7	6/5/24	1605	G	GW		N		X			X			
93-MW-32	6/4/24	1618	G	GW		N				X	X			
MW-62	6/6/24	1217	G	GW		N			X		X			
MW-81	6/6/24	1330	G	GW		N		X			X			
MW-39R	6/5/24	1714	G	GW		N		X			X	X	X	
MW-40	6/4/24	1034	G	GW		N		X			X	X		
04-MW-56	6/6/24	1120	G	GW		N				X	X	X		
MW-D1	6/4/24	1618	G	GW		N				X	X			
MW-D2	6/4/24	0946	G	GW				X			X	X		
MW-58	6/4/24	0946	G	GW		N		X			X	X		
MW-59	6/4/24	1205	G	GW		N				X	X	X	X	

Preservation Used 1= Ice 2= HCl, 3= H_2SO_4, 4=HNO_3 5=NaOH, 6= Other _____

Possible Hazard Identification
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☑ Disposal by Lab ☐ Archive for_____ Months

Special Instructions/QC Requirements & Comments
"Appendix I metals list" includes arsenic, barium, cadmium, copper, cobalt, lead, nickel, and zinc.
"AMD" includes total alkalinity, total iron, total manganese, total aluminum, and sulfate.
"Natural Attenuation" includes total organic carbon, nitrate, total iron, total manganese, and sulfate.

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No		Cooler Temp (°C) Obs'd _____ Corr'd _____		Therm ID No. _____	
Relinquished by: Tyler Starling Tyler S	Company: SCS	Date/Time: 6/7/24 1400	Received by:	Company:	Date/Time:	
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:	
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: CE	Company: 6-7-24 1650	Date/Time:	

Form No. CA-C-WI-002, Rev 4.23, dated 4/16/2019

7/2/2024

Eurofins TestAmerica, Cedar Falls
3019 Venture Way

Cedar Falls IA 50613-6907
phone 319 277 2401 fax 319 277 2425

Chain of Custody Record

eurofins

Regulatory Program ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact	Project Manager: Nathan Ohrt	Site Contact: Lori Creech	Date	COC No 2
Nathan Ohrt	Email nohrt@scsengineers.com	Lab Contact:	Carrier:	2 of 3 COCs
SCS Engineers	Cell 319-331-9613			Sampler:
	Analysis Turnaround Time			For Lab Use Only
	☐ CALENDAR DAYS ☐ WORKING DAYS			Walk-in Client:
	Other:			Lab Sampling:
Project Name 1st 2024 Semi-Annual Sampling	☐ 2 weeks			
Site Ottumwa-Wapello County Landfill	☐ 1 week			Job / SDG No
P O #	☐ 2 days			
	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Appendix I		Appendix I metals list	Total Suspended Solids	AMD	Sulfide	Natural Attenuation	Endosulfan I	Sample Specific Notes
MW-63R	6/4/24	1758	G	GW		N		X			X	X	X			
MW-64	6/4/24	1512	G	GW		N				X	X	X				
MW-65	6/4/24	1125	G	GW		N		X			X	X	X			
93-MW-31R	6/5/24	1419	G	GW		N		X			X			X		
MW-61R	6/6/24	1009	G	GW		N		X			X			X	X	
MW-73	6/6/24	1407	G	GW		N		X			X			X		
MW-79	6/5/24	1213	G	GW		N		X			X			X		

Preservation Used 1= Ice, 2= HCl; 3= H2SO4, 4=HNO3, 5=NaOH, 6= Other

Possible Hazard Identification
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for Months

Special Instructions/QC Requirements & Comments

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No	Cooler Temp (°C) Obs'd	Corr'd	Therm ID No

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Tyler Stirling Tyler S	SCS	6/7/24 1400			
Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Relinquished by	Company	Date/Time	Received in Laboratory by: CC	Company:	Date/Time: 6-7-24 1650

Form No CA-C-WI-002, Rev. 4.23, dated 4/16/2019

7/2/2024

Eurofins TestAmerica, Cedar Falls
3019 Venture Way

Cedar Falls IA 50613-6907
phone 319 277 2401 fax 319 277 2425

Chain of Custody Record

eurofins

Regulatory Program ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact	Project Manager: Nathan Ohrt	Site Contact: Lori Creech	Date	COC No 3
Nathan Ohrt	Email nohrt@scsengineers.com	Lab Contact:	Carrier:	3 of 3 COCs
SCS Engineers	Cell 319-331-9613			Sampler:
	Analysis Turnaround Time			For Lab Use Only
	☐ CALENDAR DAYS ☐ WORKING DAYS			Walk-in Client:
	Other:			Lab Sampling:
Project Name 1st 2024 Semi-Annual Sampling	☐ 2 weeks			
Site Ottumwa-Wapello County Landfill	☐ 1 week			Job / SDG No
P O #	☐ 2 days ☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Aresenic	Cobalt	Total Suspended Solids	Trichloroethene	Tetrachloroethene	cis-1,2-Dichloroethene	Vinyl Chloride	Benzene	Trip Blank	Sample Specific Notes
MW-66	6/4/24	1705	G	GW		N		X	X	X							
~~MW-67~~			G	GW		N		X	X	X		X					
MW-68	6/5/24	1123	G	GW		N		X	X	X							
~~MW-71~~			G	GW		N		X	X	X	X		X				
~~MW-74~~			G	GW		N		X	X	X	X	X	X	X	X		
MW-75	6/6/24	0923	G	GW		N					X	X	X	X	X		
MW-78	6/5/24	1016	G	GW		N			X	X	X	X	X	X			
~~MW-80~~			G	GW		N							X	X			
Trip Blank																X	Please include trip blanks in all coolers containing VOC sample

Preservation Used 1= Ice, 2= HCl, 3= H_2SO_4, 4=HNO_3, 5=NaOH, 6= Other _____

Possible Hazard Identification
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments

Custody Seals Intact ☐ Yes ☐ No	Custody Seal No	Cooler Temp (°C) Obs'd _____ Corr'd _____ Therm ID No _____			
Relinquished by: Tyler Stirling Tyler S	Company: SCS	Date/Time: 6/7/24 1400	Received by:	Company	Date/Time
Relinquished by	Company	Date/Time	Received by:	Company	Date/Time
Relinquished by:	Company	Date/Time	Received in Laboratory by: CC 6-7-24	Company	Date/Time 1620

Form No. CA-C-WI-002, Rev 4.23, dated 4/16/2019

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone: 319-277-2401 Fax: 319-277-2425

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Yang, Mary E	Carrier Tracking No(s):	COC No: 310-73308.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Mary.Yang@ET.EurofinsUS.com	State of Origin: Iowa	Page: Page 1 of 1
Company: Eurofins Lancaster Laboratories Environm		Accreditations Required (See note): State Program - Iowa		Job #: 310-283154-1
Address: 2425 New Holland Pike, ,	Due Date Requested: 6/20/2024			
City: Lancaster	TAT Requested (days):			
State, Zip: PA, 17601				
Phone: 717-656-2300(Tel)	PO #:			
Email:	WO #:			
Project Name: Ottumwa-Wapello County Landfill 1st 2024 Semi-Annu	Project #: 31002405			
Site: 310-SCS Ottumwa-Wapello Co Landfill	SSOW#:			

Analysis Requested

Preservation Codes: -

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Wewater, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8151A/8151A_AP Appendix II Herbicides	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-62 (310-283154-5)	6/6/24	12:17 Central		Water			X	2	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing North Central, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing North Central, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing North Central, LLC.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	6/6/24 1620				
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 6/11/24 9:40	Company ECLGT

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:	IR: 7.9	C: 7.9

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-283154-1

Login Number: 283154

List Source: Eurofins Cedar Falls

List Number: 1

Creator: Mathews, Emily A

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-283154-1

Login Number: 283154
List Number: 3
Creator: Schmidt, Kara

List Source: Eurofins Chicago
List Creation: 06/11/24 12:45 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-283154-1

Login Number: 283154
List Number: 2
Creator: Santiago, Nathaniel

List Source: Eurofins Lancaster Laboratories Environment Testing, LLC
List Creation: 06/11/24 12:21 PM

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

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Nathan Ohrt
SCS Engineers
1690 All State Court
Suite 100
West Des Moines, Iowa 50265

Generated 10/31/2024 4:45:07 PM

JOB DESCRIPTION

2nd 2024 Semi-Annual Sampling
Ottumwa-Wapello County Landfill

JOB NUMBER

310-293043-1

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls IA 50613

See page two for job notes and contact information.

myEOL

Job Notes

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

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
10/31/2024 4:45:07 PM

Authorized for release by
Samuel Miller, Project Management Assistant I
Samuel.Miller@et.eurofinsus.com
(319)277-2401

Table of Contents

Cover Page 1
Table of Contents 3
Case Narrative 4
Sample Summary 5
Detection Summary 6
Client Sample Results 8
Definitions 27
Surrogate Summary 28
QC Sample Results 29
QC Association 39
Chronicle 42
Certification Summary 45
Method Summary 46
Chain of Custody 47
Receipt Checklists 51

Job ID: 310-293043-1 — Eurofins Cedar Falls

Job Narrative
310-293043-1

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

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

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

Receipt
The samples were received on 10/16/2024 4:40 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.8°C.

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

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

General Chemistry
Method 9034_Calc: Maximum amount of titrate given with no color change.

MW-39R (310-293043-2) and MW-65 (310-293043-8)

Method 9034_Calc: The method blank for preparation batch 500-791690 and analytical batch 500-791692 contained Sulfide above the method detection limit. This target analyte concentration was less than the reporting limit (RL) in the method blank; therefore, re-extraction and/or re-analysis of samples was not performed.

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

Sample Summary

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-293043-1
SDG: Ottumwa-Wapello County Landfill

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-293043-1	MW-81	Water	10/14/24 16:22	10/16/24 16:40
310-293043-2	MW-39R	Water	10/15/24 12:13	10/16/24 16:40
310-293043-3	MW-40	Water	10/15/24 11:38	10/16/24 16:40
310-293043-4	04-MW-56	Water	10/14/24 15:52	10/16/24 16:40
310-293043-5	MW-58	Water	10/15/24 11:06	10/16/24 16:40
310-293043-6	MW-D1	Water	10/15/24 12:13	10/16/24 16:40
310-293043-7	MW-63R	Water	10/15/24 13:17	10/16/24 16:40
310-293043-8	MW-65	Water	10/15/24 10:29	10/16/24 16:40
310-293043-9	MW-D2	Water	10/15/24 13:17	10/16/24 16:40
310-293043-10	Trip Blank	Water	10/15/24 00:00	10/16/24 16:40

Detection Summary

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-293043-1
SDG: Ottumwa-Wapello County Landfill

Client Sample ID: MW-81 — Lab Sample ID: 310-293043-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.72		1.00	0.210	ug/L	1		8260D	Total/NA
Tetrachloroethene	0.483	J	1.00	0.480	ug/L	1		8260D	Total/NA
Trichloroethene	0.617	J	1.00	0.430	ug/L	1		8260D	Total/NA
Barium	0.0735		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.000218		0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.000740		0.000500	0.000170	mg/L	1		6020B	Total/NA
Nickel	0.00562		0.00500	0.00210	mg/L	1		6020B	Total/NA
Total Suspended Solids	5.63		1.88	1.39	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-39R — Lab Sample ID: 310-293043-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00422		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0111		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cobalt	0.0252		0.000500	0.000170	mg/L	1		6020B	Total/NA
Nickel	0.00952		0.00500	0.00210	mg/L	1		6020B	Total/NA
Total Suspended Solids	44.0		15.0	11.1	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-40 — Lab Sample ID: 310-293043-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.644	J	1.00	0.220	ug/L	1		8260D	Total/NA
Benzene	0.882		0.500	0.220	ug/L	1		8260D	Total/NA
cis-1,2-Dichloroethene	4.17		1.00	0.210	ug/L	1		8260D	Total/NA
Vinyl chloride	0.638	J	1.00	0.180	ug/L	1		8260D	Total/NA
Arsenic	0.00637		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0151		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.000180	J	0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.120		0.000500	0.000170	mg/L	1		6020B	Total/NA
Lead	0.000275	J	0.000500	0.000260	mg/L	1		6020B	Total/NA
Nickel	0.130		0.00500	0.00210	mg/L	1		6020B	Total/NA
Zinc	0.133		0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	19.0		3.75	2.78	mg/L	1		I-3765-85	Total/NA

Client Sample ID: 04-MW-56 — Lab Sample ID: 310-293043-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00451		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0309		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cobalt	0.0158		0.000500	0.000170	mg/L	1		6020B	Total/NA
Nickel	0.0478		0.00500	0.00210	mg/L	1		6020B	Total/NA
Zinc	0.0238		0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	7.62		1.88	1.39	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-58 — Lab Sample ID: 310-293043-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.000908	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0150		0.00800	0.00264	mg/L	4		6020B	Total/NA
Cadmium	0.000241		0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.0355		0.000500	0.000170	mg/L	1		6020B	Total/NA
Nickel	0.0400		0.00500	0.00210	mg/L	1		6020B	Total/NA
Zinc	0.0369		0.0200	0.00970	mg/L	1		6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-293043-1
SDG: Ottumwa-Wapello County Landfill

Client Sample ID: MW-58 (Continued) — Lab Sample ID: 310-293043-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Suspended Solids	13.5		3.75	2.78	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-D1 — Lab Sample ID: 310-293043-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00313		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0101		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cobalt	0.0211		0.000500	0.000170	mg/L	1		6020B	Total/NA
Nickel	0.00724		0.00500	0.00210	mg/L	1		6020B	Total/NA
Total Suspended Solids	177		15.0	11.1	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-63R — Lab Sample ID: 310-293043-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.0121		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.00331		0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.000350	J	0.000500	0.000170	mg/L	1		6020B	Total/NA
Nickel	0.0300		0.00500	0.00210	mg/L	1		6020B	Total/NA
Zinc	0.175		0.0200	0.00970	mg/L	1		6020B	Total/NA
Sulfide	0.320	J B	1.00	0.231	mg/L	1		9034	Total/NA
Total Suspended Solids	2.75		1.88	1.39	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-65 — Lab Sample ID: 310-293043-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.745	J	1.00	0.220	ug/L	1		8260D	Total/NA
Benzene	2.06		0.500	0.220	ug/L	1		8260D	Total/NA
Chloroethane	3.59	J	4.00	0.790	ug/L	1		8260D	Total/NA
cis-1,2-Dichloroethene	0.894	J	1.00	0.210	ug/L	1		8260D	Total/NA
Arsenic	0.0260		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.399		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.000197	J	0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.00224		0.000500	0.000170	mg/L	1		6020B	Total/NA
Nickel	0.00361	J	0.00500	0.00210	mg/L	1		6020B	Total/NA
Total Suspended Solids	54.0		15.0	11.1	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-D2 — Lab Sample ID: 310-293043-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.0127		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.00182		0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.00127		0.000500	0.000170	mg/L	1		6020B	Total/NA
Nickel	0.0330		0.00500	0.00210	mg/L	1		6020B	Total/NA
Zinc	0.0931		0.0200	0.00970	mg/L	1		6020B	Total/NA

Client Sample ID: Trip Blank — Lab Sample ID: 310-293043-10

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-81
Date Collected: 10/14/24 16:22
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			10/22/24 17:52	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			10/22/24 17:52	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			10/22/24 17:52	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			10/22/24 17:52	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			10/22/24 17:52	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			10/22/24 17:52	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			10/22/24 17:52	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			10/22/24 17:52	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			10/22/24 17:52	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			10/22/24 17:52	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			10/22/24 17:52	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			10/22/24 17:52	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			10/22/24 17:52	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			10/22/24 17:52	1
2-Hexanone	<10.0		10.0	2.00	ug/L			10/22/24 17:52	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			10/22/24 17:52	1
Acetone	<10.0		10.0	3.10	ug/L			10/22/24 17:52	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			10/22/24 17:52	1
Benzene	<0.500		0.500	0.220	ug/L			10/22/24 17:52	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			10/22/24 17:52	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			10/22/24 17:52	1
Bromoform	<5.00		5.00	0.780	ug/L			10/22/24 17:52	1
Bromomethane	<4.00		4.00	1.10	ug/L			10/22/24 17:52	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			10/22/24 17:52	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			10/22/24 17:52	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			10/22/24 17:52	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			10/22/24 17:52	1
Chloroethane	<4.00		4.00	0.790	ug/L			10/22/24 17:52	1
Chloroform	<3.00		3.00	1.30	ug/L			10/22/24 17:52	1
Chloromethane	<3.00		3.00	0.610	ug/L			10/22/24 17:52	1
cis-1,2-Dichloroethene	**1.72**		1.00	0.210	ug/L			10/22/24 17:52	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			10/22/24 17:52	1
Dibromomethane	<1.00		1.00	0.330	ug/L			10/22/24 17:52	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			10/22/24 17:52	1
Iodomethane	<10.0		10.0	7.00	ug/L			10/22/24 17:52	1
Methylene chloride	<5.00		5.00	1.70	ug/L			10/22/24 17:52	1
Styrene	<1.00		1.00	0.370	ug/L			10/22/24 17:52	1
Tetrachloroethene	**0.483**	**J**	1.00	0.480	ug/L			10/22/24 17:52	1
Toluene	<1.00		1.00	0.430	ug/L			10/22/24 17:52	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			10/22/24 17:52	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			10/22/24 17:52	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			10/22/24 17:52	1
Trichloroethene	**0.617**	**J**	1.00	0.430	ug/L			10/22/24 17:52	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			10/22/24 17:52	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			10/22/24 17:52	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			10/22/24 17:52	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			10/22/24 17:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*101*		*73 - 130*		*10/22/24 17:52*	*1*

Client Sample ID: MW-81
Date Collected: 10/14/24 16:22
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*80 - 120*		*10/22/24 17:52*	*1*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*		*10/22/24 17:52*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200	0.000530	mg/L		10/18/24 09:30	10/30/24 20:15	1
Barium	**0.0735**		0.00200	0.000660	mg/L		10/18/24 09:30	10/30/24 20:15	1
Cadmium	**0.000218**		0.000200	0.000100	mg/L		10/18/24 09:30	10/30/24 20:15	1
Cobalt	**0.000740**		0.000500	0.000170	mg/L		10/18/24 09:30	10/30/24 20:15	1
Copper	<0.00500		0.00500	0.00180	mg/L		10/18/24 09:30	10/31/24 13:09	1
Lead	<0.000500		0.000500	0.000260	mg/L		10/18/24 09:30	10/30/24 20:15	1
Nickel	**0.00562**		0.00500	0.00210	mg/L		10/18/24 09:30	10/30/24 20:15	1
Zinc	<0.0200		0.0200	0.00970	mg/L		10/18/24 09:30	10/30/24 20:15	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**5.63**		1.88	1.39	mg/L			10/17/24 12:51	1

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-293043-1
SDG: Ottumwa-Wapello County Landfill

Client Sample ID: MW-39R
Date Collected: 10/15/24 12:13
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-2
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			10/22/24 18:14	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			10/22/24 18:14	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			10/22/24 18:14	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			10/22/24 18:14	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			10/22/24 18:14	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			10/22/24 18:14	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			10/22/24 18:14	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			10/22/24 18:14	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			10/22/24 18:14	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			10/22/24 18:14	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			10/22/24 18:14	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			10/22/24 18:14	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			10/22/24 18:14	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			10/22/24 18:14	1
2-Hexanone	<10.0		10.0	2.00	ug/L			10/22/24 18:14	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			10/22/24 18:14	1
Acetone	<10.0		10.0	3.10	ug/L			10/22/24 18:14	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			10/22/24 18:14	1
Benzene	<0.500		0.500	0.220	ug/L			10/22/24 18:14	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			10/22/24 18:14	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			10/22/24 18:14	1
Bromoform	<5.00		5.00	0.780	ug/L			10/22/24 18:14	1
Bromomethane	<4.00		4.00	1.10	ug/L			10/22/24 18:14	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			10/22/24 18:14	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			10/22/24 18:14	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			10/22/24 18:14	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			10/22/24 18:14	1
Chloroethane	<4.00		4.00	0.790	ug/L			10/22/24 18:14	1
Chloroform	<3.00		3.00	1.30	ug/L			10/22/24 18:14	1
Chloromethane	<3.00		3.00	0.610	ug/L			10/22/24 18:14	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			10/22/24 18:14	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			10/22/24 18:14	1
Dibromomethane	<1.00		1.00	0.330	ug/L			10/22/24 18:14	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			10/22/24 18:14	1
Iodomethane	<10.0		10.0	7.00	ug/L			10/22/24 18:14	1
Methylene chloride	<5.00		5.00	1.70	ug/L			10/22/24 18:14	1
Styrene	<1.00		1.00	0.370	ug/L			10/22/24 18:14	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			10/22/24 18:14	1
Toluene	<1.00		1.00	0.430	ug/L			10/22/24 18:14	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			10/22/24 18:14	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			10/22/24 18:14	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			10/22/24 18:14	1
Trichloroethene	<1.00		1.00	0.430	ug/L			10/22/24 18:14	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			10/22/24 18:14	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			10/22/24 18:14	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			10/22/24 18:14	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			10/22/24 18:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*102*		*73 - 130*		*10/22/24 18:14*	*1*

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-293043-1
SDG: Ottumwa-Wapello County Landfill

Client Sample ID: MW-39R
Date Collected: 10/15/24 12:13
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-2
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*80 - 120*		*10/22/24 18:14*	*1*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*10/22/24 18:14*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.00422**		0.00200	0.000530	mg/L		10/18/24 09:30	10/30/24 20:18	1
Barium	**0.0111**		0.00200	0.000660	mg/L		10/18/24 09:30	10/30/24 20:18	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		10/18/24 09:30	10/30/24 20:18	1
Cobalt	**0.0252**		0.000500	0.000170	mg/L		10/18/24 09:30	10/30/24 20:18	1
Copper	<0.00500		0.00500	0.00180	mg/L		10/18/24 09:30	10/31/24 13:12	1
Lead	<0.000500		0.000500	0.000260	mg/L		10/18/24 09:30	10/30/24 20:18	1
Nickel	**0.00952**		0.00500	0.00210	mg/L		10/18/24 09:30	10/30/24 20:18	1
Zinc	<0.0200		0.0200	0.00970	mg/L		10/18/24 09:30	10/30/24 20:18	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide (SW846 9034)	<1.00		1.00	0.231	mg/L		10/21/24 13:06	10/21/24 14:05	1
Total Suspended Solids (USGS I-3765-85)	**44.0**		15.0	11.1	mg/L			10/18/24 07:11	1

Client Sample ID: MW-40
Date Collected: 10/15/24 11:38
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-3
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			10/22/24 18:37	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			10/22/24 18:37	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			10/22/24 18:37	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			10/22/24 18:37	1
1,1-Dichloroethane	**0.644**	**J**	1.00	0.220	ug/L			10/22/24 18:37	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			10/22/24 18:37	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			10/22/24 18:37	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			10/22/24 18:37	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			10/22/24 18:37	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			10/22/24 18:37	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			10/22/24 18:37	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			10/22/24 18:37	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			10/22/24 18:37	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			10/22/24 18:37	1
2-Hexanone	<10.0		10.0	2.00	ug/L			10/22/24 18:37	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			10/22/24 18:37	1
Acetone	<10.0		10.0	3.10	ug/L			10/22/24 18:37	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			10/22/24 18:37	1
Benzene	**0.882**		0.500	0.220	ug/L			10/22/24 18:37	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			10/22/24 18:37	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			10/22/24 18:37	1
Bromoform	<5.00		5.00	0.780	ug/L			10/22/24 18:37	1
Bromomethane	<4.00		4.00	1.10	ug/L			10/22/24 18:37	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			10/22/24 18:37	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			10/22/24 18:37	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			10/22/24 18:37	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			10/22/24 18:37	1
Chloroethane	<4.00		4.00	0.790	ug/L			10/22/24 18:37	1
Chloroform	<3.00		3.00	1.30	ug/L			10/22/24 18:37	1
Chloromethane	<3.00		3.00	0.610	ug/L			10/22/24 18:37	1
cis-1,2-Dichloroethene	**4.17**		1.00	0.210	ug/L			10/22/24 18:37	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			10/22/24 18:37	1
Dibromomethane	<1.00		1.00	0.330	ug/L			10/22/24 18:37	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			10/22/24 18:37	1
Iodomethane	<10.0		10.0	7.00	ug/L			10/22/24 18:37	1
Methylene chloride	<5.00		5.00	1.70	ug/L			10/22/24 18:37	1
Styrene	<1.00		1.00	0.370	ug/L			10/22/24 18:37	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			10/22/24 18:37	1
Toluene	<1.00		1.00	0.430	ug/L			10/22/24 18:37	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			10/22/24 18:37	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			10/22/24 18:37	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			10/22/24 18:37	1
Trichloroethene	<1.00		1.00	0.430	ug/L			10/22/24 18:37	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			10/22/24 18:37	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			10/22/24 18:37	1
Vinyl chloride	**0.638**	**J**	1.00	0.180	ug/L			10/22/24 18:37	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			10/22/24 18:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*102*		*73 - 130*		*10/22/24 18:37*	*1*

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-293043-1
SDG: Ottumwa-Wapello County Landfill

Client Sample ID: MW-40
Date Collected: 10/15/24 11:38
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-3
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*80 - 120*		*10/22/24 18:37*	*1*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*10/22/24 18:37*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.00637**		0.00200	0.000530	mg/L		10/18/24 09:30	10/30/24 20:21	1
Barium	**0.0151**		0.00200	0.000660	mg/L		10/18/24 09:30	10/30/24 20:21	1
Cadmium	**0.000180**	**J**	0.000200	0.000100	mg/L		10/18/24 09:30	10/30/24 20:21	1
Cobalt	**0.120**		0.000500	0.000170	mg/L		10/18/24 09:30	10/30/24 20:21	1
Copper	<0.00500		0.00500	0.00180	mg/L		10/18/24 09:30	10/31/24 13:15	1
Lead	**0.000275**	**J**	0.000500	0.000260	mg/L		10/18/24 09:30	10/30/24 20:21	1
Nickel	**0.130**		0.00500	0.00210	mg/L		10/18/24 09:30	10/30/24 20:21	1
Zinc	**0.133**		0.0200	0.00970	mg/L		10/18/24 09:30	10/30/24 20:21	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**19.0**		3.75	2.78	mg/L			10/18/24 07:11	1

Client Sample Results

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-293043-1
SDG: Ottumwa-Wapello County Landfill

Client Sample ID: 04-MW-56
Date Collected: 10/14/24 15:52
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-4
Matrix: Water

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.00451**		0.00200	0.000530	mg/L		10/18/24 09:30	10/30/24 20:35	1
Barium	**0.0309**		0.00200	0.000660	mg/L		10/18/24 09:30	10/31/24 13:18	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		10/18/24 09:30	10/30/24 20:35	1
Cobalt	**0.0158**		0.000500	0.000170	mg/L		10/18/24 09:30	10/30/24 20:35	1
Copper	<0.00500		0.00500	0.00180	mg/L		10/18/24 09:30	10/31/24 13:18	1
Lead	<0.000500		0.000500	0.000260	mg/L		10/18/24 09:30	10/30/24 20:35	1
Nickel	**0.0478**		0.00500	0.00210	mg/L		10/18/24 09:30	10/30/24 20:35	1
Zinc	**0.0238**		0.0200	0.00970	mg/L		10/18/24 09:30	10/30/24 20:35	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**7.62**		1.88	1.39	mg/L			10/17/24 12:51	1

Client Sample ID: MW-58
Date Collected: 10/15/24 11:06
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-5
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			10/22/24 23:32	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			10/22/24 23:32	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			10/22/24 23:32	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			10/22/24 23:32	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			10/22/24 23:32	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			10/22/24 23:32	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			10/22/24 23:32	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			10/22/24 23:32	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			10/22/24 23:32	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			10/22/24 23:32	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			10/22/24 23:32	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			10/22/24 23:32	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			10/22/24 23:32	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			10/22/24 23:32	1
2-Hexanone	<10.0		10.0	2.00	ug/L			10/22/24 23:32	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			10/22/24 23:32	1
Acetone	<10.0		10.0	3.10	ug/L			10/22/24 23:32	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			10/22/24 23:32	1
Benzene	<0.500		0.500	0.220	ug/L			10/22/24 23:32	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			10/22/24 23:32	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			10/22/24 23:32	1
Bromoform	<5.00		5.00	0.780	ug/L			10/22/24 23:32	1
Bromomethane	<4.00		4.00	1.10	ug/L			10/22/24 23:32	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			10/22/24 23:32	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			10/22/24 23:32	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			10/22/24 23:32	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			10/22/24 23:32	1
Chloroethane	<4.00		4.00	0.790	ug/L			10/22/24 23:32	1
Chloroform	<3.00		3.00	1.30	ug/L			10/22/24 23:32	1
Chloromethane	<3.00		3.00	0.610	ug/L			10/22/24 23:32	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			10/22/24 23:32	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			10/22/24 23:32	1
Dibromomethane	<1.00		1.00	0.330	ug/L			10/22/24 23:32	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			10/22/24 23:32	1
Iodomethane	<10.0		10.0	7.00	ug/L			10/22/24 23:32	1
Methylene chloride	<5.00		5.00	1.70	ug/L			10/22/24 23:32	1
Styrene	<1.00		1.00	0.370	ug/L			10/22/24 23:32	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			10/22/24 23:32	1
Toluene	<1.00		1.00	0.430	ug/L			10/22/24 23:32	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			10/22/24 23:32	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			10/22/24 23:32	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			10/22/24 23:32	1
Trichloroethene	<1.00		1.00	0.430	ug/L			10/22/24 23:32	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			10/22/24 23:32	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			10/22/24 23:32	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			10/22/24 23:32	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			10/22/24 23:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*100*		*73 - 130*		*10/22/24 23:32*	*1*

Client Sample ID: MW-58
Date Collected: 10/15/24 11:06
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-5
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*80 - 120*		*10/22/24 23:32*	*1*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*10/22/24 23:32*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.000908**	**J**	0.00200	0.000530	mg/L		10/18/24 09:30	10/30/24 20:38	1
Barium	**0.0150**		0.00800	0.00264	mg/L		10/18/24 09:30	10/31/24 13:21	4
Cadmium	**0.000241**		0.000200	0.000100	mg/L		10/18/24 09:30	10/30/24 20:38	1
Cobalt	**0.0355**		0.000500	0.000170	mg/L		10/18/24 09:30	10/30/24 20:38	1
Copper	<0.0200		0.0200	0.00720	mg/L		10/18/24 09:30	10/31/24 13:21	4
Lead	<0.000500		0.000500	0.000260	mg/L		10/18/24 09:30	10/30/24 20:38	1
Nickel	**0.0400**		0.00500	0.00210	mg/L		10/18/24 09:30	10/30/24 20:38	1
Zinc	**0.0369**		0.0200	0.00970	mg/L		10/18/24 09:30	10/30/24 20:38	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**13.5**		3.75	2.78	mg/L			10/18/24 08:53	1

Client Sample ID: MW-D1
Date Collected: 10/15/24 12:13
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-6
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			10/22/24 23:55	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			10/22/24 23:55	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			10/22/24 23:55	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			10/22/24 23:55	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			10/22/24 23:55	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			10/22/24 23:55	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			10/22/24 23:55	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			10/22/24 23:55	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			10/22/24 23:55	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			10/22/24 23:55	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			10/22/24 23:55	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			10/22/24 23:55	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			10/22/24 23:55	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			10/22/24 23:55	1
2-Hexanone	<10.0		10.0	2.00	ug/L			10/22/24 23:55	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			10/22/24 23:55	1
Acetone	<10.0		10.0	3.10	ug/L			10/22/24 23:55	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			10/22/24 23:55	1
Benzene	<0.500		0.500	0.220	ug/L			10/22/24 23:55	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			10/22/24 23:55	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			10/22/24 23:55	1
Bromoform	<5.00		5.00	0.780	ug/L			10/22/24 23:55	1
Bromomethane	<4.00		4.00	1.10	ug/L			10/22/24 23:55	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			10/22/24 23:55	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			10/22/24 23:55	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			10/22/24 23:55	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			10/22/24 23:55	1
Chloroethane	<4.00		4.00	0.790	ug/L			10/22/24 23:55	1
Chloroform	<3.00		3.00	1.30	ug/L			10/22/24 23:55	1
Chloromethane	<3.00		3.00	0.610	ug/L			10/22/24 23:55	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			10/22/24 23:55	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			10/22/24 23:55	1
Dibromomethane	<1.00		1.00	0.330	ug/L			10/22/24 23:55	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			10/22/24 23:55	1
Iodomethane	<10.0		10.0	7.00	ug/L			10/22/24 23:55	1
Methylene chloride	<5.00		5.00	1.70	ug/L			10/22/24 23:55	1
Styrene	<1.00		1.00	0.370	ug/L			10/22/24 23:55	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			10/22/24 23:55	1
Toluene	<1.00		1.00	0.430	ug/L			10/22/24 23:55	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			10/22/24 23:55	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			10/22/24 23:55	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			10/22/24 23:55	1
Trichloroethene	<1.00		1.00	0.430	ug/L			10/22/24 23:55	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			10/22/24 23:55	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			10/22/24 23:55	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			10/22/24 23:55	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			10/22/24 23:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*101*		*73 - 130*		*10/22/24 23:55*	*1*

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-293043-1
SDG: Ottumwa-Wapello County Landfill

Client Sample ID: MW-D1

Date Collected: 10/15/24 12:13
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-6

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*80 - 120*		*10/22/24 23:55*	*1*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*10/22/24 23:55*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.00313**		0.00200	0.000530	mg/L		10/18/24 09:30	10/30/24 20:44	1
Barium	**0.0101**		0.00200	0.000660	mg/L		10/18/24 09:30	10/31/24 13:26	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		10/18/24 09:30	10/30/24 20:44	1
Cobalt	**0.0211**		0.000500	0.000170	mg/L		10/18/24 09:30	10/30/24 20:44	1
Copper	<0.00500		0.00500	0.00180	mg/L		10/18/24 09:30	10/31/24 13:26	1
Lead	<0.000500		0.000500	0.000260	mg/L		10/18/24 09:30	10/30/24 20:44	1
Nickel	**0.00724**		0.00500	0.00210	mg/L		10/18/24 09:30	10/30/24 20:44	1
Zinc	<0.0200		0.0200	0.00970	mg/L		10/18/24 09:30	10/30/24 20:44	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**177**		15.0	11.1	mg/L			10/18/24 08:53	1

Client Sample ID: MW-63R
Date Collected: 10/15/24 13:17
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-7
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			10/23/24 00:17	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			10/23/24 00:17	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			10/23/24 00:17	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			10/23/24 00:17	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			10/23/24 00:17	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			10/23/24 00:17	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			10/23/24 00:17	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			10/23/24 00:17	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			10/23/24 00:17	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			10/23/24 00:17	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			10/23/24 00:17	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			10/23/24 00:17	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			10/23/24 00:17	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			10/23/24 00:17	1
2-Hexanone	<10.0		10.0	2.00	ug/L			10/23/24 00:17	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			10/23/24 00:17	1
Acetone	<10.0		10.0	3.10	ug/L			10/23/24 00:17	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			10/23/24 00:17	1
Benzene	<0.500		0.500	0.220	ug/L			10/23/24 00:17	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			10/23/24 00:17	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			10/23/24 00:17	1
Bromoform	<5.00		5.00	0.780	ug/L			10/23/24 00:17	1
Bromomethane	<4.00		4.00	1.10	ug/L			10/23/24 00:17	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			10/23/24 00:17	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			10/23/24 00:17	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			10/23/24 00:17	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			10/23/24 00:17	1
Chloroethane	<4.00		4.00	0.790	ug/L			10/23/24 00:17	1
Chloroform	<3.00		3.00	1.30	ug/L			10/23/24 00:17	1
Chloromethane	<3.00		3.00	0.610	ug/L			10/23/24 00:17	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			10/23/24 00:17	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			10/23/24 00:17	1
Dibromomethane	<1.00		1.00	0.330	ug/L			10/23/24 00:17	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			10/23/24 00:17	1
Iodomethane	<10.0		10.0	7.00	ug/L			10/23/24 00:17	1
Methylene chloride	<5.00		5.00	1.70	ug/L			10/23/24 00:17	1
Styrene	<1.00		1.00	0.370	ug/L			10/23/24 00:17	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			10/23/24 00:17	1
Toluene	<1.00		1.00	0.430	ug/L			10/23/24 00:17	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			10/23/24 00:17	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			10/23/24 00:17	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			10/23/24 00:17	1
Trichloroethene	<1.00		1.00	0.430	ug/L			10/23/24 00:17	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			10/23/24 00:17	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			10/23/24 00:17	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			10/23/24 00:17	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			10/23/24 00:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*102*		*73 - 130*		*10/23/24 00:17*	*1*

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-293043-1
SDG: Ottumwa-Wapello County Landfill

Client Sample ID: MW-63R
Date Collected: 10/15/24 13:17
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-7
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*80 - 120*		*10/23/24 00:17*	*1*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*10/23/24 00:17*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200	0.000530	mg/L		10/18/24 09:30	10/30/24 20:47	1
Barium	**0.0121**		0.00200	0.000660	mg/L		10/18/24 09:30	10/31/24 13:29	1
Cadmium	**0.00331**		0.000200	0.000100	mg/L		10/18/24 09:30	10/30/24 20:47	1
Cobalt	**0.000350**	**J**	0.000500	0.000170	mg/L		10/18/24 09:30	10/30/24 20:47	1
Copper	<0.00500		0.00500	0.00180	mg/L		10/18/24 09:30	10/31/24 13:29	1
Lead	<0.000500		0.000500	0.000260	mg/L		10/18/24 09:30	10/30/24 20:47	1
Nickel	**0.0300**		0.00500	0.00210	mg/L		10/18/24 09:30	10/30/24 20:47	1
Zinc	**0.175**		0.0200	0.00970	mg/L		10/18/24 09:30	10/30/24 20:47	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide (SW846 9034)	**0.320**	**J B**	1.00	0.231	mg/L		10/21/24 13:08	10/21/24 14:08	1
Total Suspended Solids (USGS I-3765-85)	**2.75**		1.88	1.39	mg/L			10/18/24 08:53	1

Client Sample ID: MW-65
Date Collected: 10/15/24 10:29
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-8
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			10/23/24 00:40	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			10/23/24 00:40	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			10/23/24 00:40	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			10/23/24 00:40	1
1,1-Dichloroethane	**0.745**	**J**	1.00	0.220	ug/L			10/23/24 00:40	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			10/23/24 00:40	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			10/23/24 00:40	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			10/23/24 00:40	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			10/23/24 00:40	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			10/23/24 00:40	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			10/23/24 00:40	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			10/23/24 00:40	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			10/23/24 00:40	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			10/23/24 00:40	1
2-Hexanone	<10.0		10.0	2.00	ug/L			10/23/24 00:40	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			10/23/24 00:40	1
Acetone	<10.0		10.0	3.10	ug/L			10/23/24 00:40	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			10/23/24 00:40	1
Benzene	**2.06**		0.500	0.220	ug/L			10/23/24 00:40	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			10/23/24 00:40	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			10/23/24 00:40	1
Bromoform	<5.00		5.00	0.780	ug/L			10/23/24 00:40	1
Bromomethane	<4.00		4.00	1.10	ug/L			10/23/24 00:40	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			10/23/24 00:40	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			10/23/24 00:40	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			10/23/24 00:40	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			10/23/24 00:40	1
Chloroethane	**3.59**	**J**	4.00	0.790	ug/L			10/23/24 00:40	1
Chloroform	<3.00		3.00	1.30	ug/L			10/23/24 00:40	1
Chloromethane	<3.00		3.00	0.610	ug/L			10/23/24 00:40	1
cis-1,2-Dichloroethene	**0.894**	**J**	1.00	0.210	ug/L			10/23/24 00:40	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			10/23/24 00:40	1
Dibromomethane	<1.00		1.00	0.330	ug/L			10/23/24 00:40	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			10/23/24 00:40	1
Iodomethane	<10.0		10.0	7.00	ug/L			10/23/24 00:40	1
Methylene chloride	<5.00		5.00	1.70	ug/L			10/23/24 00:40	1
Styrene	<1.00		1.00	0.370	ug/L			10/23/24 00:40	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			10/23/24 00:40	1
Toluene	<1.00		1.00	0.430	ug/L			10/23/24 00:40	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			10/23/24 00:40	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			10/23/24 00:40	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			10/23/24 00:40	1
Trichloroethene	<1.00		1.00	0.430	ug/L			10/23/24 00:40	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			10/23/24 00:40	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			10/23/24 00:40	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			10/23/24 00:40	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			10/23/24 00:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*100*		*73 - 130*		*10/23/24 00:40*	*1*

Client Sample ID: MW-65
Date Collected: 10/15/24 10:29
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-8
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*80 - 120*		*10/23/24 00:40*	*1*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*10/23/24 00:40*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0260**		0.00200	0.000530	mg/L		10/18/24 09:30	10/30/24 20:50	1
Barium	**0.399**		0.00200	0.000660	mg/L		10/18/24 09:30	10/31/24 13:32	1
Cadmium	**0.000197**	**J**	0.000200	0.000100	mg/L		10/18/24 09:30	10/30/24 20:50	1
Cobalt	**0.00224**		0.000500	0.000170	mg/L		10/18/24 09:30	10/30/24 20:50	1
Copper	<0.00500		0.00500	0.00180	mg/L		10/18/24 09:30	10/31/24 13:32	1
Lead	<0.000500		0.000500	0.000260	mg/L		10/18/24 09:30	10/30/24 20:50	1
Nickel	**0.00361**	**J**	0.00500	0.00210	mg/L		10/18/24 09:30	10/30/24 20:50	1
Zinc	<0.0200		0.0200	0.00970	mg/L		10/18/24 09:30	10/30/24 20:50	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide (SW846 9034)	<1.00		1.00	0.231	mg/L		10/21/24 13:16	10/21/24 14:17	1
Total Suspended Solids (USGS I-3765-85)	**54.0**		15.0	11.1	mg/L			10/18/24 08:53	1

Client Sample ID: MW-D2
Date Collected: 10/15/24 13:17
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-9
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			10/23/24 01:03	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			10/23/24 01:03	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			10/23/24 01:03	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			10/23/24 01:03	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			10/23/24 01:03	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			10/23/24 01:03	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			10/23/24 01:03	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			10/23/24 01:03	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			10/23/24 01:03	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			10/23/24 01:03	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			10/23/24 01:03	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			10/23/24 01:03	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			10/23/24 01:03	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			10/23/24 01:03	1
2-Hexanone	<10.0		10.0	2.00	ug/L			10/23/24 01:03	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			10/23/24 01:03	1
Acetone	<10.0		10.0	3.10	ug/L			10/23/24 01:03	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			10/23/24 01:03	1
Benzene	<0.500		0.500	0.220	ug/L			10/23/24 01:03	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			10/23/24 01:03	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			10/23/24 01:03	1
Bromoform	<5.00		5.00	0.780	ug/L			10/23/24 01:03	1
Bromomethane	<4.00		4.00	1.10	ug/L			10/23/24 01:03	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			10/23/24 01:03	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			10/23/24 01:03	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			10/23/24 01:03	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			10/23/24 01:03	1
Chloroethane	<4.00		4.00	0.790	ug/L			10/23/24 01:03	1
Chloroform	<3.00		3.00	1.30	ug/L			10/23/24 01:03	1
Chloromethane	<3.00		3.00	0.610	ug/L			10/23/24 01:03	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			10/23/24 01:03	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			10/23/24 01:03	1
Dibromomethane	<1.00		1.00	0.330	ug/L			10/23/24 01:03	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			10/23/24 01:03	1
Iodomethane	<10.0		10.0	7.00	ug/L			10/23/24 01:03	1
Methylene chloride	<5.00		5.00	1.70	ug/L			10/23/24 01:03	1
Styrene	<1.00		1.00	0.370	ug/L			10/23/24 01:03	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			10/23/24 01:03	1
Toluene	<1.00		1.00	0.430	ug/L			10/23/24 01:03	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			10/23/24 01:03	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			10/23/24 01:03	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			10/23/24 01:03	1
Trichloroethene	<1.00		1.00	0.430	ug/L			10/23/24 01:03	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			10/23/24 01:03	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			10/23/24 01:03	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			10/23/24 01:03	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			10/23/24 01:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*99*		*73 - 130*		*10/23/24 01:03*	*1*

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-293043-1
SDG: Ottumwa-Wapello County Landfill

Client Sample ID: MW-D2
Date Collected: 10/15/24 13:17
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-9
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*80 - 120*		*10/23/24 01:03*	*1*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*10/23/24 01:03*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200	0.000530	mg/L		10/18/24 09:30	10/30/24 20:53	1
Barium	**0.0127**		0.00200	0.000660	mg/L		10/18/24 09:30	10/31/24 13:35	1
Cadmium	**0.00182**		0.000200	0.000100	mg/L		10/18/24 09:30	10/30/24 20:53	1
Cobalt	**0.00127**		0.000500	0.000170	mg/L		10/18/24 09:30	10/30/24 20:53	1
Copper	<0.00500		0.00500	0.00180	mg/L		10/18/24 09:30	10/31/24 13:35	1
Lead	<0.000500		0.000500	0.000260	mg/L		10/18/24 09:30	10/30/24 20:53	1
Nickel	**0.0330**		0.00500	0.00210	mg/L		10/18/24 09:30	10/30/24 20:53	1
Zinc	**0.0931**		0.0200	0.00970	mg/L		10/18/24 09:30	10/30/24 20:53	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<1.88		1.88	1.39	mg/L			10/18/24 08:53	1

Client Sample ID: Trip Blank
Date Collected: 10/15/24 00:00
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-10
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			10/22/24 22:24	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			10/22/24 22:24	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			10/22/24 22:24	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			10/22/24 22:24	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			10/22/24 22:24	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			10/22/24 22:24	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			10/22/24 22:24	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			10/22/24 22:24	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			10/22/24 22:24	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			10/22/24 22:24	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			10/22/24 22:24	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			10/22/24 22:24	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			10/22/24 22:24	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			10/22/24 22:24	1
2-Hexanone	<10.0		10.0	2.00	ug/L			10/22/24 22:24	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			10/22/24 22:24	1
Acetone	<10.0		10.0	3.10	ug/L			10/22/24 22:24	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			10/22/24 22:24	1
Benzene	<0.500		0.500	0.220	ug/L			10/22/24 22:24	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			10/22/24 22:24	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			10/22/24 22:24	1
Bromoform	<5.00		5.00	0.780	ug/L			10/22/24 22:24	1
Bromomethane	<4.00		4.00	1.10	ug/L			10/22/24 22:24	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			10/22/24 22:24	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			10/22/24 22:24	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			10/22/24 22:24	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			10/22/24 22:24	1
Chloroethane	<4.00		4.00	0.790	ug/L			10/22/24 22:24	1
Chloroform	<3.00		3.00	1.30	ug/L			10/22/24 22:24	1
Chloromethane	<3.00		3.00	0.610	ug/L			10/22/24 22:24	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			10/22/24 22:24	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			10/22/24 22:24	1
Dibromomethane	<1.00		1.00	0.330	ug/L			10/22/24 22:24	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			10/22/24 22:24	1
Iodomethane	<10.0		10.0	7.00	ug/L			10/22/24 22:24	1
Methylene chloride	<5.00		5.00	1.70	ug/L			10/22/24 22:24	1
Styrene	<1.00		1.00	0.370	ug/L			10/22/24 22:24	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			10/22/24 22:24	1
Toluene	<1.00		1.00	0.430	ug/L			10/22/24 22:24	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			10/22/24 22:24	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			10/22/24 22:24	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			10/22/24 22:24	1
Trichloroethene	<1.00		1.00	0.430	ug/L			10/22/24 22:24	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			10/22/24 22:24	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			10/22/24 22:24	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			10/22/24 22:24	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			10/22/24 22:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*101*		*73 - 130*		*10/22/24 22:24*	*1*

Client Sample ID: Trip Blank
Date Collected: 10/15/24 00:00
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-10
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	*97*		*80 - 120*		*10/22/24 22:24*	*1*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*10/22/24 22:24*	*1*

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Surrogate Summary

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-293043-1
SDG: Ottumwa-Wapello County Landfill

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)								
		DBFM	TOL	BFB						
Lab Sample ID	Client Sample ID	(73-130)	(80-120)	(80-120)						
310-293043-1	MW-81	101	98	101						
310-293043-2	MW-39R	102	98	99						
310-293043-3	MW-40	102	98	100						
310-293043-5	MW-58	100	98	99						
310-293043-5 MS	MW-58	100	101	99						
310-293043-5 MSD	MW-58	100	100	98						
310-293043-6	MW-D1	101	98	100						
310-293043-7	MW-63R	102	98	100						
310-293043-8	MW-65	100	98	99						
310-293043-9	MW-D2	99	98	100						
310-293043-10	Trip Blank	101	97	99						
LCS 310-436944/6	Lab Control Sample	100	100	98						
LCS 310-436944/7	Lab Control Sample	102	98	99						
LCS 310-437070/6	Lab Control Sample	100	100	99						
LCS 310-437070/7	Lab Control Sample	102	98	100						
MB 310-436944/5	Method Blank	101	98	100						
MB 310-437070/5	Method Blank	99	100	98						

Surrogate Legend

DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 310-436944/5
Matrix: Water
Analysis Batch: 436944

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			10/22/24 10:16	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			10/22/24 10:16	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			10/22/24 10:16	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			10/22/24 10:16	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			10/22/24 10:16	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			10/22/24 10:16	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			10/22/24 10:16	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			10/22/24 10:16	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			10/22/24 10:16	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			10/22/24 10:16	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			10/22/24 10:16	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			10/22/24 10:16	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			10/22/24 10:16	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			10/22/24 10:16	1
2-Hexanone	<10.0		10.0	2.00	ug/L			10/22/24 10:16	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			10/22/24 10:16	1
Acetone	<10.0		10.0	3.10	ug/L			10/22/24 10:16	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			10/22/24 10:16	1
Benzene	<0.500		0.500	0.220	ug/L			10/22/24 10:16	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			10/22/24 10:16	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			10/22/24 10:16	1
Bromoform	<5.00		5.00	0.780	ug/L			10/22/24 10:16	1
Bromomethane	<4.00		4.00	1.10	ug/L			10/22/24 10:16	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			10/22/24 10:16	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			10/22/24 10:16	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			10/22/24 10:16	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			10/22/24 10:16	1
Chloroethane	<4.00		4.00	0.790	ug/L			10/22/24 10:16	1
Chloroform	<3.00		3.00	1.30	ug/L			10/22/24 10:16	1
Chloromethane	<3.00		3.00	0.610	ug/L			10/22/24 10:16	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			10/22/24 10:16	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			10/22/24 10:16	1
Dibromomethane	<1.00		1.00	0.330	ug/L			10/22/24 10:16	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			10/22/24 10:16	1
Iodomethane	<10.0		10.0	7.00	ug/L			10/22/24 10:16	1
Methylene chloride	<5.00		5.00	1.70	ug/L			10/22/24 10:16	1
Styrene	<1.00		1.00	0.370	ug/L			10/22/24 10:16	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			10/22/24 10:16	1
Toluene	<1.00		1.00	0.430	ug/L			10/22/24 10:16	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			10/22/24 10:16	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			10/22/24 10:16	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			10/22/24 10:16	1
Trichloroethene	<1.00		1.00	0.430	ug/L			10/22/24 10:16	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			10/22/24 10:16	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			10/22/24 10:16	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			10/22/24 10:16	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			10/22/24 10:16	1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 310-436944/5
Matrix: Water
Analysis Batch: 436944

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*101*		*73 - 130*		*10/22/24 10:16*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*10/22/24 10:16*	*1*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*10/22/24 10:16*	*1*

Lab Sample ID: LCS 310-436944/6
Matrix: Water
Analysis Batch: 436944

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1,2-Tetrachloroethane	20.0	19.49		ug/L		97	71 - 120
1,1,1-Trichloroethane	20.0	19.33		ug/L		97	73 - 129
1,1,2,2-Tetrachloroethane	20.0	20.30		ug/L		101	68 - 124
1,1,2-Trichloroethane	20.0	20.19		ug/L		101	73 - 123
1,1-Dichloroethane	20.0	19.12		ug/L		96	70 - 127
1,1-Dichloroethene	20.0	19.11		ug/L		96	63 - 132
1,2,3-Trichloropropane	20.0	19.90		ug/L		100	65 - 127
1,2-Dibromo-3-chloropropane	20.0	19.74		ug/L		99	50 - 150
1,2-Dibromoethane (EDB)	20.0	20.82		ug/L		104	75 - 125
1,2-Dichlorobenzene	20.0	19.85		ug/L		99	74 - 120
1,2-Dichloroethane	20.0	19.59		ug/L		98	71 - 125
1,2-Dichloropropane	20.0	19.25		ug/L		96	73 - 124
1,4-Dichlorobenzene	20.0	19.65		ug/L		98	72 - 120
2-Butanone (MEK)	40.0	37.86		ug/L		95	50 - 150
2-Hexanone	40.0	39.21		ug/L		98	60 - 140
4-Methyl-2-pentanone (MIBK)	40.0	39.78		ug/L		99	60 - 139
Acetone	40.0	38.00		ug/L		95	50 - 150
Acrylonitrile	200	202.3		ug/L		101	50 - 150
Benzene	20.0	19.34		ug/L		97	72 - 124
Bromochloromethane	20.0	20.53		ug/L		103	73 - 130
Bromodichloromethane	20.0	19.46		ug/L		97	74 - 122
Bromoform	20.0	19.23		ug/L		96	61 - 122
Carbon disulfide	20.0	19.01		ug/L		95	59 - 135
Carbon tetrachloride	20.0	19.19		ug/L		96	67 - 132
Chlorobenzene	20.0	19.53		ug/L		98	76 - 120
Chlorodibromomethane	20.0	19.61		ug/L		98	71 - 121
Chloroform	20.0	18.59		ug/L		93	72 - 125
cis-1,2-Dichloroethene	20.0	19.44		ug/L		97	74 - 123
cis-1,3-Dichloropropene	20.0	19.00		ug/L		95	71 - 125
Dibromomethane	20.0	19.97		ug/L		100	74 - 125
Ethylbenzene	20.0	19.83		ug/L		99	74 - 122
Iodomethane	20.0	11.36		ug/L		57	10 - 150
Methylene chloride	20.0	19.87		ug/L		99	50 - 150
Styrene	20.0	20.40		ug/L		102	74 - 121
Tetrachloroethene	20.0	19.84		ug/L		99	71 - 130
Toluene	20.0	19.35		ug/L		97	74 - 123
trans-1,2-Dichloroethene	20.0	19.36		ug/L		97	70 - 126
trans-1,3-Dichloropropene	20.0	18.92		ug/L		95	69 - 123
trans-1,4-Dichloro-2-butene	20.0	16.54		ug/L		83	50 - 150

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-436944/6
Matrix: Water
Analysis Batch: 436944

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Trichloroethene	20.0	19.65		ug/L		98	72 - 126
Vinyl acetate	40.0	37.42		ug/L		94	50 - 150
Xylenes, Total	40.0	39.56		ug/L		99	73 - 123

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*100*		*73 - 130*
Toluene-d8 (Surr)	*100*		*80 - 120*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*

Lab Sample ID: LCS 310-436944/7
Matrix: Water
Analysis Batch: 436944

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromomethane	20.0	14.77		ug/L		74	23 - 150
Chloroethane	20.0	17.58		ug/L		88	54 - 136
Chloromethane	20.0	17.72		ug/L		89	38 - 150
Trichlorofluoromethane	20.0	19.98		ug/L		100	54 - 149
Vinyl chloride	20.0	18.26		ug/L		91	56 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*102*		*73 - 130*
Toluene-d8 (Surr)	*98*		*80 - 120*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*

Lab Sample ID: MB 310-437070/5
Matrix: Water
Analysis Batch: 437070

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			10/22/24 21:15	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			10/22/24 21:15	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			10/22/24 21:15	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			10/22/24 21:15	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			10/22/24 21:15	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			10/22/24 21:15	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			10/22/24 21:15	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			10/22/24 21:15	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			10/22/24 21:15	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			10/22/24 21:15	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			10/22/24 21:15	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			10/22/24 21:15	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			10/22/24 21:15	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			10/22/24 21:15	1
2-Hexanone	<10.0		10.0	2.00	ug/L			10/22/24 21:15	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			10/22/24 21:15	1
Acetone	<10.0		10.0	3.10	ug/L			10/22/24 21:15	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			10/22/24 21:15	1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 310-437070/5
Matrix: Water
Analysis Batch: 437070

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.500		0.500	0.220	ug/L			10/22/24 21:15	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			10/22/24 21:15	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			10/22/24 21:15	1
Bromoform	<5.00		5.00	0.780	ug/L			10/22/24 21:15	1
Bromomethane	<4.00		4.00	1.10	ug/L			10/22/24 21:15	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			10/22/24 21:15	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			10/22/24 21:15	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			10/22/24 21:15	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			10/22/24 21:15	1
Chloroethane	<4.00		4.00	0.790	ug/L			10/22/24 21:15	1
Chloroform	<3.00		3.00	1.30	ug/L			10/22/24 21:15	1
Chloromethane	<3.00		3.00	0.610	ug/L			10/22/24 21:15	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			10/22/24 21:15	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			10/22/24 21:15	1
Dibromomethane	<1.00		1.00	0.330	ug/L			10/22/24 21:15	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			10/22/24 21:15	1
Iodomethane	<10.0		10.0	7.00	ug/L			10/22/24 21:15	1
Methylene chloride	<5.00		5.00	1.70	ug/L			10/22/24 21:15	1
Styrene	<1.00		1.00	0.370	ug/L			10/22/24 21:15	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			10/22/24 21:15	1
Toluene	<1.00		1.00	0.430	ug/L			10/22/24 21:15	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			10/22/24 21:15	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			10/22/24 21:15	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			10/22/24 21:15	1
Trichloroethene	<1.00		1.00	0.430	ug/L			10/22/24 21:15	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			10/22/24 21:15	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			10/22/24 21:15	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			10/22/24 21:15	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			10/22/24 21:15	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*99*		*73 - 130*		*10/22/24 21:15*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*10/22/24 21:15*	*1*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*		*10/22/24 21:15*	*1*

Lab Sample ID: LCS 310-437070/6
Matrix: Water
Analysis Batch: 437070

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1,2-Tetrachloroethane	20.0	20.81		ug/L		104	71 - 120
1,1,1-Trichloroethane	20.0	21.64		ug/L		108	73 - 129
1,1,2,2-Tetrachloroethane	20.0	20.54		ug/L		103	68 - 124
1,1,2-Trichloroethane	20.0	20.76		ug/L		104	73 - 123
1,1-Dichloroethane	20.0	21.11		ug/L		106	70 - 127
1,1-Dichloroethene	20.0	21.91		ug/L		110	63 - 132
1,2,3-Trichloropropane	20.0	20.12		ug/L		101	65 - 127
1,2-Dibromo-3-chloropropane	20.0	18.51		ug/L		93	50 - 150

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-437070/6
Matrix: Water
Analysis Batch: 437070

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,2-Dibromoethane (EDB)	20.0	21.10		ug/L		105	75 - 125
1,2-Dichlorobenzene	20.0	21.00		ug/L		105	74 - 120
1,2-Dichloroethane	20.0	20.31		ug/L		102	71 - 125
1,2-Dichloropropane	20.0	20.71		ug/L		104	73 - 124
1,4-Dichlorobenzene	20.0	20.87		ug/L		104	72 - 120
2-Butanone (MEK)	40.0	37.88		ug/L		95	50 - 150
2-Hexanone	40.0	38.25		ug/L		96	60 - 140
4-Methyl-2-pentanone (MIBK)	40.0	38.95		ug/L		97	60 - 139
Acetone	40.0	37.67		ug/L		94	50 - 150
Acrylonitrile	200	201.2		ug/L		101	50 - 150
Benzene	20.0	21.45		ug/L		107	72 - 124
Bromochloromethane	20.0	21.68		ug/L		108	73 - 130
Bromodichloromethane	20.0	20.82		ug/L		104	74 - 122
Bromoform	20.0	19.63		ug/L		98	61 - 122
Carbon disulfide	20.0	21.55		ug/L		108	59 - 135
Carbon tetrachloride	20.0	21.92		ug/L		110	67 - 132
Chlorobenzene	20.0	21.20		ug/L		106	76 - 120
Chlorodibromomethane	20.0	20.47		ug/L		102	71 - 121
Chloroform	20.0	20.23		ug/L		101	72 - 125
cis-1,2-Dichloroethene	20.0	21.49		ug/L		107	74 - 123
cis-1,3-Dichloropropene	20.0	20.42		ug/L		102	71 - 125
Dibromomethane	20.0	20.79		ug/L		104	74 - 125
Ethylbenzene	20.0	21.93		ug/L		110	74 - 122
Iodomethane	20.0	11.98		ug/L		60	10 - 150
Methylene chloride	20.0	20.94		ug/L		105	50 - 150
Styrene	20.0	22.02		ug/L		110	74 - 121
Tetrachloroethene	20.0	22.34		ug/L		112	71 - 130
Toluene	20.0	21.32		ug/L		107	74 - 123
trans-1,2-Dichloroethene	20.0	21.92		ug/L		110	70 - 126
trans-1,3-Dichloropropene	20.0	20.03		ug/L		100	69 - 123
trans-1,4-Dichloro-2-butene	20.0	17.53		ug/L		88	50 - 150
Trichloroethene	20.0	21.90		ug/L		109	72 - 126
Vinyl acetate	40.0	40.04		ug/L		100	50 - 150
Xylenes, Total	40.0	43.50		ug/L		109	73 - 123

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*100*		*73 - 130*
Toluene-d8 (Surr)	*100*		*80 - 120*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*

Lab Sample ID: LCS 310-437070/7
Matrix: Water
Analysis Batch: 437070

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromomethane	20.0	17.09		ug/L		85	23 - 150
Chloroethane	20.0	20.44		ug/L		102	54 - 136
Chloromethane	20.0	20.28		ug/L		101	38 - 150

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-437070/7
Matrix: Water
Analysis Batch: 437070

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Trichlorofluoromethane			20.0	23.10		ug/L		116	54 - 149		
Vinyl chloride			20.0	21.43		ug/L		107	56 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*102*		*73 - 130*
Toluene-d8 (Surr)	*98*		*80 - 120*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*

Lab Sample ID: 310-293043-5 MS
Matrix: Water
Analysis Batch: 437070

Client Sample ID: MW-58
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1,1,2-Tetrachloroethane	<1.00		20.0	16.89		ug/L		84	55 - 130		
1,1,1-Trichloroethane	<1.00		20.0	15.54		ug/L		78	52 - 130		
1,1,2,2-Tetrachloroethane	<1.00		20.0	18.40		ug/L		92	54 - 130		
1,1,2-Trichloroethane	<1.00		20.0	17.53		ug/L		88	58 - 130		
1,1-Dichloroethane	<1.00		20.0	16.42		ug/L		82	49 - 130		
1,1-Dichloroethene	<2.00		20.0	15.89		ug/L		79	37 - 132		
1,2,3-Trichloropropane	<1.00		20.0	17.67		ug/L		88	49 - 130		
1,2-Dibromo-3-chloropropane	<5.00		20.0	16.64		ug/L		83	38 - 150		
1,2-Dibromoethane (EDB)	<1.00		20.0	17.15		ug/L		86	60 - 130		
1,2-Dichlorobenzene	<1.00		20.0	17.51		ug/L		88	59 - 130		
1,2-Dichloroethane	<1.00		20.0	16.22		ug/L		81	51 - 130		
1,2-Dichloropropane	<1.00		20.0	16.36		ug/L		82	57 - 130		
1,4-Dichlorobenzene	<1.00		20.0	17.12		ug/L		86	57 - 130		
2-Butanone (MEK)	<10.0		40.0	31.44		ug/L		79	38 - 150		
2-Hexanone	<10.0		40.0	33.60		ug/L		84	46 - 140		
4-Methyl-2-pentanone (MIBK)	<10.0		40.0	33.97		ug/L		85	47 - 139		
Acetone	<10.0		40.0	31.33		ug/L		78	31 - 150		
Acrylonitrile	<5.00		200	169.7		ug/L		85	40 - 150		
Benzene	<0.500		20.0	16.62		ug/L		83	46 - 130		
Bromochloromethane	<5.00		20.0	17.32		ug/L		87	57 - 130		
Bromodichloromethane	<1.00		20.0	16.23		ug/L		81	57 - 130		
Bromoform	<5.00		20.0	16.42		ug/L		82	44 - 130		
Carbon disulfide	<1.00		20.0	16.84		ug/L		84	38 - 135		
Carbon tetrachloride	<2.00		20.0	15.29		ug/L		76	45 - 132		
Chlorobenzene	<1.00		20.0	16.88		ug/L		84	59 - 130		
Chlorodibromomethane	<5.00		20.0	16.54		ug/L		83	54 - 130		
Chloroform	<3.00		20.0	15.75		ug/L		79	51 - 130		
cis-1,2-Dichloroethene	<1.00		20.0	16.75		ug/L		84	45 - 130		
cis-1,3-Dichloropropene	<5.00		20.0	15.92		ug/L		80	53 - 130		
Dibromomethane	<1.00		20.0	16.69		ug/L		83	59 - 130		
Ethylbenzene	<1.00		20.0	17.01		ug/L		85	45 - 130		
Iodomethane	<10.0		20.0	10.76		ug/L		54	10 - 150		
Methylene chloride	<5.00		20.0	16.80		ug/L		84	37 - 150		
Styrene	<1.00		20.0	17.78		ug/L		89	47 - 130		
Tetrachloroethene	<1.00		20.0	15.87		ug/L		79	47 - 130		

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 310-293043-5 MS
Matrix: Water
Analysis Batch: 437070

Client Sample ID: MW-58
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Toluene	<1.00		20.0	16.47		ug/L		82	51 - 130
trans-1,2-Dichloroethene	<1.00		20.0	16.43		ug/L		82	48 - 130
trans-1,3-Dichloropropene	<5.00		20.0	15.68		ug/L		78	50 - 130
trans-1,4-Dichloro-2-butene	<10.0		20.0	14.88		ug/L		74	26 - 150
Trichloroethene	<1.00		20.0	16.05		ug/L		80	51 - 130
Vinyl acetate	<10.0		40.0	29.85		ug/L		75	29 - 150
Xylenes, Total	<3.00		40.0	34.39		ug/L		86	43 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*100*		*73 - 130*
Toluene-d8 (Surr)	*101*		*80 - 120*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*

Lab Sample ID: 310-293043-5 MSD
Matrix: Water
Analysis Batch: 437070

Client Sample ID: MW-58
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane	<1.00		20.0	16.84		ug/L		84	55 - 130	0	20
1,1,1-Trichloroethane	<1.00		20.0	15.59		ug/L		78	52 - 130	0	20
1,1,2,2-Tetrachloroethane	<1.00		20.0	18.54		ug/L		93	54 - 130	1	20
1,1,2-Trichloroethane	<1.00		20.0	17.54		ug/L		88	58 - 130	0	20
1,1-Dichloroethane	<1.00		20.0	16.53		ug/L		83	49 - 130	1	20
1,1-Dichloroethene	<2.00		20.0	15.64		ug/L		78	37 - 132	2	26
1,2,3-Trichloropropane	<1.00		20.0	17.57		ug/L		88	49 - 130	1	26
1,2-Dibromo-3-chloropropane	<5.00		20.0	17.21		ug/L		86	38 - 150	3	20
1,2-Dibromoethane (EDB)	<1.00		20.0	17.30		ug/L		86	60 - 130	1	20
1,2-Dichlorobenzene	<1.00		20.0	17.99		ug/L		90	59 - 130	3	20
1,2-Dichloroethane	<1.00		20.0	16.22		ug/L		81	51 - 130	0	20
1,2-Dichloropropane	<1.00		20.0	16.61		ug/L		83	57 - 130	2	20
1,4-Dichlorobenzene	<1.00		20.0	17.45		ug/L		87	57 - 130	2	20
2-Butanone (MEK)	<10.0		40.0	31.82		ug/L		80	38 - 150	1	20
2-Hexanone	<10.0		40.0	33.99		ug/L		85	46 - 140	1	20
4-Methyl-2-pentanone (MIBK)	<10.0		40.0	34.42		ug/L		86	47 - 139	1	20
Acetone	<10.0		40.0	31.69		ug/L		79	31 - 150	1	29
Acrylonitrile	<5.00		200	172.1		ug/L		86	40 - 150	1	20
Benzene	<0.500		20.0	16.50		ug/L		83	46 - 130	1	20
Bromochloromethane	<5.00		20.0	17.24		ug/L		86	57 - 130	0	20
Bromodichloromethane	<1.00		20.0	16.29		ug/L		81	57 - 130	0	20
Bromoform	<5.00		20.0	16.72		ug/L		84	44 - 130	2	20
Carbon disulfide	<1.00		20.0	15.76		ug/L		79	38 - 135	7	30
Carbon tetrachloride	<2.00		20.0	15.23		ug/L		76	45 - 132	0	20
Chlorobenzene	<1.00		20.0	16.80		ug/L		84	59 - 130	0	20
Chlorodibromomethane	<5.00		20.0	16.61		ug/L		83	54 - 130	0	20
Chloroform	<3.00		20.0	15.66		ug/L		78	51 - 130	1	20
cis-1,2-Dichloroethene	<1.00		20.0	16.47		ug/L		82	45 - 130	2	20
cis-1,3-Dichloropropene	<5.00		20.0	16.03		ug/L		80	53 - 130	1	20
Dibromomethane	<1.00		20.0	16.77		ug/L		84	59 - 130	0	20

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 310-293043-5 MSD
Matrix: Water
Analysis Batch: 437070

Client Sample ID: MW-58
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Ethylbenzene	<1.00		20.0	16.92		ug/L		85	45 - 130	1	20
Iodomethane	<10.0		20.0	11.64		ug/L		58	10 - 150	8	35
Methylene chloride	<5.00		20.0	16.66		ug/L		83	37 - 150	1	24
Styrene	<1.00		20.0	17.88		ug/L		89	47 - 130	1	20
Tetrachloroethene	<1.00		20.0	16.04		ug/L		80	47 - 130	1	20
Toluene	<1.00		20.0	16.23		ug/L		81	51 - 130	1	20
trans-1,2-Dichloroethene	<1.00		20.0	16.14		ug/L		81	48 - 130	2	22
trans-1,3-Dichloropropene	<5.00		20.0	15.67		ug/L		78	50 - 130	0	20
trans-1,4-Dichloro-2-butene	<10.0		20.0	16.41		ug/L		82	26 - 150	10	23
Trichloroethene	<1.00		20.0	15.94		ug/L		80	51 - 130	1	20
Vinyl acetate	<10.0		40.0	29.71		ug/L		74	29 - 150	0	23
Xylenes, Total	<3.00		40.0	33.98		ug/L		85	43 - 130	1	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*100*		*73 - 130*
Toluene-d8 (Surr)	*100*		*80 - 120*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-436653/1-A
Matrix: Water
Analysis Batch: 438161

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 436653

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200	0.000530	mg/L		10/18/24 09:30	10/30/24 19:30	1
Barium	<0.00200		0.00200	0.000660	mg/L		10/18/24 09:30	10/30/24 19:30	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		10/18/24 09:30	10/30/24 19:30	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		10/18/24 09:30	10/30/24 19:30	1
Copper	<0.00500		0.00500	0.00180	mg/L		10/18/24 09:30	10/30/24 19:30	1
Lead	<0.000500		0.000500	0.000260	mg/L		10/18/24 09:30	10/30/24 19:30	1
Nickel	<0.00500		0.00500	0.00210	mg/L		10/18/24 09:30	10/30/24 19:30	1
Zinc	<0.0200		0.0200	0.00970	mg/L		10/18/24 09:30	10/30/24 19:30	1

Lab Sample ID: LCS 310-436653/2-A
Matrix: Water
Analysis Batch: 438161

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 436653

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	0.200	0.1880		mg/L		94	80 - 120
Barium	0.100	0.1060		mg/L		106	80 - 120
Cadmium	0.100	0.09844		mg/L		98	80 - 120
Cobalt	0.100	0.1130		mg/L		113	80 - 120
Copper	0.200	0.2028		mg/L		101	80 - 120
Lead	0.200	0.1987		mg/L		99	80 - 120
Nickel	0.200	0.2105		mg/L		105	80 - 120
Zinc	0.200	0.1806		mg/L		90	80 - 120

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: 310-293043-5 DU
Matrix: Water
Analysis Batch: 438161

Client Sample ID: MW-58
Prep Type: Total/NA
Prep Batch: 436653

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Arsenic	0.000908	J		0.0009230	J	mg/L				2	20
Cadmium	0.000241			0.0002340		mg/L				3	20
Cobalt	0.0355			0.03614		mg/L				2	20
Lead	<0.000500			<0.000500		mg/L				NC	20
Nickel	0.0400			0.04135		mg/L				3	20
Zinc	0.0369			0.03708		mg/L				0.5	20

Lab Sample ID: 310-293043-5 DU
Matrix: Water
Analysis Batch: 438282

Client Sample ID: MW-58
Prep Type: Total/NA
Prep Batch: 436653

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Barium	0.0150			0.01566		mg/L				4	20
Copper	<0.0200			<0.0200		mg/L				NC	20

Method: 9034 - Sulfide, Acid soluble and Insoluble (Titrimetric)

Lab Sample ID: MB 500-791690/1-A
Matrix: Water
Analysis Batch: 791692

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 791690

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	0.3999	J	1.00	0.231	mg/L		10/21/24 13:01	10/21/24 13:59	1

Lab Sample ID: LCS 500-791690/2-A
Matrix: Water
Analysis Batch: 791692

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 791690

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Sulfide			3.76	4.017		mg/L		107	80 - 120		

Lab Sample ID: 310-293043-7 MS
Matrix: Water
Analysis Batch: 791692

Client Sample ID: MW-63R
Prep Type: Total/NA
Prep Batch: 791690

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Sulfide	0.320	J B	3.76	3.778		mg/L		92	75 - 125		

Lab Sample ID: 310-293043-7 MSD
Matrix: Water
Analysis Batch: 791692

Client Sample ID: MW-63R
Prep Type: Total/NA
Prep Batch: 791690

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Sulfide	0.320	J B	3.76	3.954		mg/L		97	75 - 125	5	20

Method: I-3765-85 - Residue, Non-filterable (TSS)

Lab Sample ID: MB 310-436615/1
Matrix: Water
Analysis Batch: 436615

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.00		5.00	3.70	mg/L			10/17/24 12:51	1

Lab Sample ID: LCS 310-436615/2
Matrix: Water
Analysis Batch: 436615

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	101.0		mg/L		101	81 - 116

Lab Sample ID: MB 310-436687/1
Matrix: Water
Analysis Batch: 436687

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.00		5.00	3.70	mg/L			10/18/24 07:11	1

Lab Sample ID: LCS 310-436687/2
Matrix: Water
Analysis Batch: 436687

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	101.0		mg/L		101	81 - 116

Lab Sample ID: MB 310-436717/1
Matrix: Water
Analysis Batch: 436717

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.00		5.00	3.70	mg/L			10/18/24 08:53	1

Lab Sample ID: LCS 310-436717/2
Matrix: Water
Analysis Batch: 436717

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	100.0		mg/L		100	81 - 116

Lab Sample ID: 310-293043-5 DU
Matrix: Water
Analysis Batch: 436717

Client Sample ID: MW-58
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	13.5		13.00		mg/L		4	35

GC/MS VOA

Analysis Batch: 436944

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-293043-1	MW-81	Total/NA	Water	8260D	
310-293043-2	MW-39R	Total/NA	Water	8260D	
310-293043-3	MW-40	Total/NA	Water	8260D	
MB 310-436944/5	Method Blank	Total/NA	Water	8260D	
LCS 310-436944/6	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-436944/7	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 437070

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-293043-5	MW-58	Total/NA	Water	8260D	
310-293043-6	MW-D1	Total/NA	Water	8260D	
310-293043-7	MW-63R	Total/NA	Water	8260D	
310-293043-8	MW-65	Total/NA	Water	8260D	
310-293043-9	MW-D2	Total/NA	Water	8260D	
310-293043-10	Trip Blank	Total/NA	Water	8260D	
MB 310-437070/5	Method Blank	Total/NA	Water	8260D	
LCS 310-437070/6	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-437070/7	Lab Control Sample	Total/NA	Water	8260D	
310-293043-5 MS	MW-58	Total/NA	Water	8260D	
310-293043-5 MSD	MW-58	Total/NA	Water	8260D	

Metals

Prep Batch: 436653

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-293043-1	MW-81	Total/NA	Water	3005A	
310-293043-2	MW-39R	Total/NA	Water	3005A	
310-293043-3	MW-40	Total/NA	Water	3005A	
310-293043-4	04-MW-56	Total/NA	Water	3005A	
310-293043-5	MW-58	Total/NA	Water	3005A	
310-293043-6	MW-D1	Total/NA	Water	3005A	
310-293043-7	MW-63R	Total/NA	Water	3005A	
310-293043-8	MW-65	Total/NA	Water	3005A	
310-293043-9	MW-D2	Total/NA	Water	3005A	
MB 310-436653/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-436653/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-293043-5 DU	MW-58	Total/NA	Water	3005A	

Analysis Batch: 438161

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-293043-1	MW-81	Total/NA	Water	6020B	436653
310-293043-2	MW-39R	Total/NA	Water	6020B	436653
310-293043-3	MW-40	Total/NA	Water	6020B	436653
310-293043-4	04-MW-56	Total/NA	Water	6020B	436653
310-293043-5	MW-58	Total/NA	Water	6020B	436653
310-293043-6	MW-D1	Total/NA	Water	6020B	436653
310-293043-7	MW-63R	Total/NA	Water	6020B	436653
310-293043-8	MW-65	Total/NA	Water	6020B	436653
310-293043-9	MW-D2	Total/NA	Water	6020B	436653
MB 310-436653/1-A	Method Blank	Total/NA	Water	6020B	436653
LCS 310-436653/2-A	Lab Control Sample	Total/NA	Water	6020B	436653

Metals (Continued)

Analysis Batch: 438161 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-293043-5 DU	MW-58	Total/NA	Water	6020B	436653

Analysis Batch: 438282

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-293043-1	MW-81	Total/NA	Water	6020B	436653
310-293043-2	MW-39R	Total/NA	Water	6020B	436653
310-293043-3	MW-40	Total/NA	Water	6020B	436653
310-293043-4	04-MW-56	Total/NA	Water	6020B	436653
310-293043-5	MW-58	Total/NA	Water	6020B	436653
310-293043-6	MW-D1	Total/NA	Water	6020B	436653
310-293043-7	MW-63R	Total/NA	Water	6020B	436653
310-293043-8	MW-65	Total/NA	Water	6020B	436653
310-293043-9	MW-D2	Total/NA	Water	6020B	436653
310-293043-5 DU	MW-58	Total/NA	Water	6020B	436653

General Chemistry

Analysis Batch: 436615

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-293043-1	MW-81	Total/NA	Water	I-3765-85	
310-293043-4	04-MW-56	Total/NA	Water	I-3765-85	
MB 310-436615/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-436615/2	Lab Control Sample	Total/NA	Water	I-3765-85	

Analysis Batch: 436687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-293043-2	MW-39R	Total/NA	Water	I-3765-85	
310-293043-3	MW-40	Total/NA	Water	I-3765-85	
MB 310-436687/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-436687/2	Lab Control Sample	Total/NA	Water	I-3765-85	

Analysis Batch: 436717

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-293043-5	MW-58	Total/NA	Water	I-3765-85	
310-293043-6	MW-D1	Total/NA	Water	I-3765-85	
310-293043-7	MW-63R	Total/NA	Water	I-3765-85	
310-293043-8	MW-65	Total/NA	Water	I-3765-85	
310-293043-9	MW-D2	Total/NA	Water	I-3765-85	
MB 310-436717/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-436717/2	Lab Control Sample	Total/NA	Water	I-3765-85	
310-293043-5 DU	MW-58	Total/NA	Water	I-3765-85	

Prep Batch: 791690

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-293043-2	MW-39R	Total/NA	Water	9030B	
310-293043-7	MW-63R	Total/NA	Water	9030B	
310-293043-8	MW-65	Total/NA	Water	9030B	
MB 500-791690/1-A	Method Blank	Total/NA	Water	9030B	
LCS 500-791690/2-A	Lab Control Sample	Total/NA	Water	9030B	
310-293043-7 MS	MW-63R	Total/NA	Water	9030B	
310-293043-7 MSD	MW-63R	Total/NA	Water	9030B	

QC Association Summary

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-293043-1
SDG: Ottumwa-Wapello County Landfill

General Chemistry

Analysis Batch: 791692

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-293043-2	MW-39R	Total/NA	Water	9034	791690
310-293043-7	MW-63R	Total/NA	Water	9034	791690
310-293043-8	MW-65	Total/NA	Water	9034	791690
MB 500-791690/1-A	Method Blank	Total/NA	Water	9034	791690
LCS 500-791690/2-A	Lab Control Sample	Total/NA	Water	9034	791690
310-293043-7 MS	MW-63R	Total/NA	Water	9034	791690
310-293043-7 MSD	MW-63R	Total/NA	Water	9034	791690

Lab Chronicle

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-293043-1
SDG: Ottumwa-Wapello County Landfill

Client Sample ID: MW-81

Date Collected: 10/14/24 16:22
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	436944	FE5V	EET CF	10/22/24 17:52
Total/NA	Prep	3005A			436653	F5MW	EET CF	10/18/24 09:30
Total/NA	Analysis	6020B		1	438161	A6US	EET CF	10/30/24 20:15
Total/NA	Prep	3005A			436653	F5MW	EET CF	10/18/24 09:30
Total/NA	Analysis	6020B		1	438282	ZRI4	EET CF	10/31/24 13:09
Total/NA	Analysis	I-3765-85		1	436615	DGU1	EET CF	10/17/24 12:51

Client Sample ID: MW-39R

Date Collected: 10/15/24 12:13
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	436944	FE5V	EET CF	10/22/24 18:14
Total/NA	Prep	3005A			436653	F5MW	EET CF	10/18/24 09:30
Total/NA	Analysis	6020B		1	438161	A6US	EET CF	10/30/24 20:18
Total/NA	Prep	3005A			436653	F5MW	EET CF	10/18/24 09:30
Total/NA	Analysis	6020B		1	438282	ZRI4	EET CF	10/31/24 13:12
Total/NA	Prep	9030B			791690	TR	EET CHI	10/21/24 13:06 - 10/21/24 13:08 [1]
Total/NA	Analysis	9034		1	791692	TR	EET CHI	10/21/24 14:05 - 10/21/24 14:08 [1]
Total/NA	Analysis	I-3765-85		1	436687	DGU1	EET CF	10/18/24 07:11

Client Sample ID: MW-40

Date Collected: 10/15/24 11:38
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	436944	FE5V	EET CF	10/22/24 18:37
Total/NA	Prep	3005A			436653	F5MW	EET CF	10/18/24 09:30
Total/NA	Analysis	6020B		1	438161	A6US	EET CF	10/30/24 20:21
Total/NA	Prep	3005A			436653	F5MW	EET CF	10/18/24 09:30
Total/NA	Analysis	6020B		1	438282	ZRI4	EET CF	10/31/24 13:15
Total/NA	Analysis	I-3765-85		1	436687	DGU1	EET CF	10/18/24 07:11

Client Sample ID: 04-MW-56

Date Collected: 10/14/24 15:52
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			436653	F5MW	EET CF	10/18/24 09:30
Total/NA	Analysis	6020B		1	438161	A6US	EET CF	10/30/24 20:35
Total/NA	Prep	3005A			436653	F5MW	EET CF	10/18/24 09:30
Total/NA	Analysis	6020B		1	438282	ZRI4	EET CF	10/31/24 13:18
Total/NA	Analysis	I-3765-85		1	436615	DGU1	EET CF	10/17/24 12:51

Client Sample ID: MW-58

Lab Sample ID: 310-293043-5

Date Collected: 10/15/24 11:06

Matrix: Water

Date Received: 10/16/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	437070	FE5V	EET CF	10/22/24 23:32
Total/NA	Prep	3005A			436653	F5MW	EET CF	10/18/24 09:30
Total/NA	Analysis	6020B		1	438161	A6US	EET CF	10/30/24 20:38
Total/NA	Prep	3005A			436653	F5MW	EET CF	10/18/24 09:30
Total/NA	Analysis	6020B		4	438282	ZRI4	EET CF	10/31/24 13:21
Total/NA	Analysis	I-3765-85		1	436717	DGU1	EET CF	10/18/24 08:53

Client Sample ID: MW-D1

Lab Sample ID: 310-293043-6

Date Collected: 10/15/24 12:13

Matrix: Water

Date Received: 10/16/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	437070	FE5V	EET CF	10/22/24 23:55
Total/NA	Prep	3005A			436653	F5MW	EET CF	10/18/24 09:30
Total/NA	Analysis	6020B		1	438161	A6US	EET CF	10/30/24 20:44
Total/NA	Prep	3005A			436653	F5MW	EET CF	10/18/24 09:30
Total/NA	Analysis	6020B		1	438282	ZRI4	EET CF	10/31/24 13:26
Total/NA	Analysis	I-3765-85		1	436717	DGU1	EET CF	10/18/24 08:53

Client Sample ID: MW-63R

Lab Sample ID: 310-293043-7

Date Collected: 10/15/24 13:17

Matrix: Water

Date Received: 10/16/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	437070	FE5V	EET CF	10/23/24 00:17
Total/NA	Prep	3005A			436653	F5MW	EET CF	10/18/24 09:30
Total/NA	Analysis	6020B		1	438161	A6US	EET CF	10/30/24 20:47
Total/NA	Prep	3005A			436653	F5MW	EET CF	10/18/24 09:30
Total/NA	Analysis	6020B		1	438282	ZRI4	EET CF	10/31/24 13:29
Total/NA	Prep	9030B			791690	TR	EET CHI	10/21/24 13:08 - 10/21/24 13:11 [1]
Total/NA	Analysis	9034		1	791692	TR	EET CHI	10/21/24 14:08 - 10/21/24 14:11 [1]
Total/NA	Analysis	I-3765-85		1	436717	DGU1	EET CF	10/18/24 08:53

Client Sample ID: MW-65

Lab Sample ID: 310-293043-8

Date Collected: 10/15/24 10:29

Matrix: Water

Date Received: 10/16/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	437070	FE5V	EET CF	10/23/24 00:40
Total/NA	Prep	3005A			436653	F5MW	EET CF	10/18/24 09:30
Total/NA	Analysis	6020B		1	438161	A6US	EET CF	10/30/24 20:50
Total/NA	Prep	3005A			436653	F5MW	EET CF	10/18/24 09:30
Total/NA	Analysis	6020B		1	438282	ZRI4	EET CF	10/31/24 13:32
Total/NA	Prep	9030B			791690	TR	EET CHI	10/21/24 13:16 - 10/21/24 13:19 [1]
Total/NA	Analysis	9034		1	791692	TR	EET CHI	10/21/24 14:17 - 10/21/24 14:20 [1]

Lab Chronicle

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-293043-1
SDG: Ottumwa-Wapello County Landfill

Client Sample ID: MW-65

Date Collected: 10/15/24 10:29
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	I-3765-85		1	436717	DGU1	EET CF	10/18/24 08:53

Client Sample ID: MW-D2

Date Collected: 10/15/24 13:17
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	437070	FE5V	EET CF	10/23/24 01:03
Total/NA	Prep	3005A			436653	F5MW	EET CF	10/18/24 09:30
Total/NA	Analysis	6020B		1	438161	A6US	EET CF	10/30/24 20:53
Total/NA	Prep	3005A			436653	F5MW	EET CF	10/18/24 09:30
Total/NA	Analysis	6020B		1	438282	ZRI4	EET CF	10/31/24 13:35
Total/NA	Analysis	I-3765-85		1	436717	DGU1	EET CF	10/18/24 08:53

Client Sample ID: Trip Blank

Date Collected: 10/15/24 00:00
Date Received: 10/16/24 16:40

Lab Sample ID: 310-293043-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	437070	FE5V	EET CF	10/22/24 22:24

[1] This procedure uses a method stipulated length of time for the process. Both start and end times are displayed.

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

EET CHI = Eurofins Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Accreditation/Certification Summary

Client: SCS Engineers
Job ID: 310-293043-1
Project/Site: 2nd 2024 Semi-Annual Sampling
SDG: Ottumwa-Wapello County Landfill

Laboratory: Eurofins Cedar Falls

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

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-25

Laboratory: Eurofins Chicago

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

Authority	Program	Identification Number	Expiration Date
Iowa	State	082	05-01-26

Method Summary

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-293043-1
SDG: Ottumwa-Wapello County Landfill

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
9034	Sulfide, Acid soluble and Insoluble (Titrimetric)	SW846	EET CHI
I-3765-85	Residue, Non-filterable (TSS)	USGS	EET CF
3005A	Preparation, Total Metals	SW846	EET CF
5030B	Purge and Trap	SW846	EET CF
9030B	Sulfide, Distillation (Acid Soluble and Insoluble)	SW846	EET CHI

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

USGS = "Methods For Analysis Of Water And Fluvial Sediments", USGS, 1989

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

EET CHI = Eurofins Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

eurofins | Environment Testing America

310-293043 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: GCS

City/State: CITY | STATE | Project:

Receipt Information

Date/Time Received: DATE 10/16/24 | TIME 1640 | Received By: [illegible]

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☒ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☒ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? ☐ Yes ☒ No *If yes:* Cooler # _____ of _____

Cooler Custody Seals Present? ☐ Yes ☒ No *If yes:* Cooler custody seals intact? ☐ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☒ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☒ Yes ☒ No *If yes.* Which VOA samples are in cooler? ↓

all

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: 2 | Correction Factor (°C): 0

• **Temp Blank Temperature** – *If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature*

Uncorrected Temp (°C): 0.8 | Corrected Temp (°C): 0.8

• **Sample Container Temperature**

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE If yes, contact PM before proceeding If no, proceed with login

Additional Comments

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone (319) 277-2401 Phone (319) 277-2425

Testing ca Des Moines SC

eurofins

Chain of Custody Record

Client Information	Sampler: Cole Tesar	Lab PM: Miller, Samuel	Carrier Tracking No(s):	COC No: 310-98368-26773 1
Client Contact: Nathan Ohrt	Phone: 641-841-4459	E-Mail: Samuel.Miller@et.eurofinsus.com	State of Origin:	Page: Page 1 of 2
Company: SCS Engineers	PWSID:			Job #:
Address: 1690 All State Court Suite 100	Due Date Requested:			
City: West Des Moines	TAT Requested (days):			
State, Zip: IA, 50265	Compliance Project: Δ Yes Δ No			
Phone: 319-331-9613(Tel)	PO #: 27223157 25			
Email: nohrt@scsengineers.com	WO #:			
Project Name: 2nd 2024 Semi-Annual Sampling	Project #: 31002405			
Site: Ottumwa-Wapello County Landfill	SSOW#:			

Analysis Requested

Preservation Codes.
N - None
A - HCL
D - HNO3
CB - ZnAcetate/NaOH
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	I_3765_85 - TSS	8260D - Volatile Appendix I Sublist	6020B - Appendix I Metals	9034_Calc - Sulfide	6020B - Arsenic	6020B - Cobalt	8260D - Trichloroethene	8260D - Tetrachloroethene	8260D - cis-1,2-Dichloroethene	8260D - Vinyl Chloride	8260D - Benzene	NITRATE	Total Number of containers	Special Instructions/Note:
			Preservation Code:																	
GU-6	—	—	G	Water			X	X	X											NC Sample Collected
GU-7	—	—	G	Water			X	X	X											↓
MW-81	10 7 24	16.22	G	Water			X	X	X											
MW-39R	10/15 24	12:13	G	Water			X	X	X	X										
MW-40	10 15 24	11 38	G	Water			X	X	X											
04-MW-56	10 9 24	15 52	G	Water			X		X											
MW-58	10/15/24	11:06	G	Water			X	X	X											
MW-D1	10/15/24	12 13	G	Water			X	X	X											
MW-63R	10/15/24	13 17	G	Water			X	X	X	X										
MW-65	10/15/24	10 20	G	Water			X	X	X	X										
93-MW-31R	—	—	G	Water			X	X	X											NO SAMPLE

Page 48 of 52

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
	Cole Tesar	10/16/24 1400	SCS			
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 10/16/24 1640	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No:

Cooler Temperature(s) °C and Other Remarks:

10/31/2024

Ver: 05/06/2024

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone (319) 277-2401 Phone (319) 277-2425

Chain of Custody Record

TestAmerica Des Moines SC
214

eurofins

Client Information	Sampler: Cole Tesar	Lab PM: Miller, Samuel	Carrier Tracking No(s):	COC No: 310-98368-26773 2
Client Contact: Nathan Ohrt	Phone: 64-847-4457	E-Mail: Samuel Miller@et.eurofinsus.com	State of Origin:	Page: Page 2 of 2
Company: SCS Engineers	PWSID:			Job #:
Address: 1690 All State Court Suite 100	Due Date Requested:			
City: West Des Moines	TAT Requested (days):			
State, Zip: IA, 50265	Compliance Project: Δ Yes Δ No			
Phone: 319-331-9613(Tel)	PO #: 27223157 25			
Email: nohrt@scsengineers.com	WO #:			
Project Name: 2nd 2024 Semi-Annual Sampling	Project #: 31002405			
Site: Ottumwa-Wapello County Landfill	SSOW#:			

Analysis Requested

Preservation Codes:
N - None
A - HCL
D - HNO3
CB - ZnAcetate/NaOH

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	I_3765_86 - TSS	8260D - Volatile Appendix I Sublist	6020B - Appendix I Metals	9034_Calc - Sulfide	6020B - Arsenic	6020B - Cobalt	8260D - Trichloroethene	8260D - Tetrachloroethene	8260D - cis-1,2-Dichloroethene	8260D - Vinyl Chloride	8260D - Benzene			Total Number of containers	Special Instructions/Note:
			Preservation Code:																		
MW-61R			G	Water			X	X	X												NO SAMPLE
MW-73			G	Water			X	X	X												NO SAMPLE
MW-79			G	Water			X	X	X												NO SAMPLE
MW-D2	10/15/24	13:17	G	Water			X	X	X												
MW-67			G	Water			X				X	X		X							NO SAMPLE
MW-71			G	Water			X				X	X	X		X						
MW-74			G	Water			X				X	X	X	X	X	X	X				
MW-78			G	Water			X					X	X	X	X	X					
MW-80			G	Water											X	X					
~~MW-59~~																					

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested I, II, III, IV, Other (specify)

Special Instructions/QC Requirements.

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
	Cole Tesar	10/16/24 1700	SCS			
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Relinquished by:	Date/Time:	Company	Received by: XTO	Date/Time: 10/16/24 1640	Company: ET

Custody Seals Intact: Δ Yes Δ No | Custody Seal No

Cooler Temperature(s) °C and Other Remarks:

Ver: 05/06/2024

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone 319-277-2401 Fax 319-277-2425

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler	Lab PM. Miller, Samuel	Carrier Tracking No(s)	COC No: 310-77471 1
Client Contact. Shipping/Receiving	Phone	E-Mail Samuel Miller@et eurofinsus com	State of Origin: Iowa	Page Page 1 of 1
Company Eurofins Environment Testing North Centr		Accreditations Required (See note). State Program - Iowa		Job #: 310-293043-1
Address. 2417 Bond Street, ,	Due Date Requested 10/29/2024			
City University Park	TAT Requested (days)			
State Zip: IL, 60484				
Phone 708-534-5200(Tel) 708-534-5211(Fax)	PO #:			
Email:	WO #:			
Project Name: 2nd 2024 Semi-Annual Sampling	Project #: 31002405			
Site. 310-SCS Ottumwa-Wapello Co Landfill	SSOW#:			

310-293043 COC

Analysis Requested

Preservation Codes

Other

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9034_Calc/9030B	Total Number of containers	Special Instructions/Note:
			Preservation Code						
MW-39R (310-293043-2)	10/15/24	12 13 Central	G	Water			X	1	
MW-63R (310-293043-7)	10/15/24	13.17 Central	G	Water			X	1	
MW-65 (310-293043-8)	10/15/24	10 29 Central	G	Water			X	1	

Note: Since laboratory accreditations are subject to change Eurofins Environment Testing North Central LLC places the ownership of method analyte & accreditation compliance upon our subcontract laboratories This sample shipment is forwarded under chain-of-custody If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed the samples must be shipped back to the Eurofins Environment Testing North Central LLC laboratory or other instructions will be provided Any changes to accreditation status should be brought to Eurofins Environment Testing North Central LLC attention immediately If all requested accreditations are current to date return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing North Central, LLC.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested I, II, III, IV, Other (specify) Primary Deliverable Rank 2	Special Instructions/QC Requirements

Empty Kit Relinquished by	Date	Time	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1		10/17/24 1540			10/18/24 0930	
2	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
3	Relinquished by	Date/Time	Company	Received by	Date/Time	Company

Custody Seals Intact Δ Yes Δ No	Custody Seal No	Cooler Temperature(s) °C and Other Remarks
		1.5-1.5

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-293043-1
SDG Number: Ottumwa-Wapello County Landfill

Login Number: 293043
List Number: 1
Creator: Homolar, Dana J

List Source: Eurofins Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-293043-1
SDG Number: Ottumwa-Wapello County Landfill

Login Number: 293043
List Number: 2
Creator: Scott, Sherri L

List Source: Eurofins Chicago
List Creation: 10/18/24 03:09 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.5
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	True	

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Nathan Ohrt
SCS Engineers
1690 All State Court
Suite 100
West Des Moines, Iowa 50265

Generated 11/12/2024 8:59:05 AM

JOB DESCRIPTION

2nd 2024 Semi-Annual Sampling
Ottumwa-Wapello County Landfill

JOB NUMBER

310-294184-1

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls IA 50613

See page two for job notes and contact information.

Job Notes

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

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/12/2024 8:59:05 AM

Authorized for release by
Samuel Miller, Project Management Assistant I
Samuel.Miller@et.eurofinsus.com
(319)277-2401

Table of Contents

Cover Page 1
Table of Contents 3
Case Narrative 4
Sample Summary 5
Detection Summary 6
Client Sample Results 9
Definitions 24
Surrogate Summary 25
QC Sample Results 26
QC Association 32
Chronicle 34
Certification Summary 37
Method Summary 38
Chain of Custody 39
Receipt Checklists 42

Job Narrative
310-294184-1

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

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

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

Receipt
The samples were received on 10/31/2024 5:40 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.3°C.

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) associated with batch 310-438398 recovered outside control limits for Iodomethane (-55.8%D). The LCS associated with this CCV passes CCV criteria for the affected analytes; therefore, the data have been reported. The associated sample is impacted: (CCV 310-438398/3).

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

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

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

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

Sample Summary

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-294184-1
SDG: Ottumwa-Wapello County Landfill

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-294184-1	MW-67	Ground Water	10/30/24 11:37	10/31/24 17:40
310-294184-2	MW-71	Ground Water	10/31/24 10:04	10/31/24 17:40
310-294184-3	MW-74	Ground Water	10/30/24 12:12	10/31/24 17:40
310-294184-4	MW-78	Ground Water	10/30/24 16:23	10/31/24 17:40
310-294184-5	MW-80	Ground Water	10/31/24 08:56	10/31/24 17:40
310-294184-6	93-MW-31R	Ground Water	10/30/24 13:46	10/31/24 17:40
310-294184-7	MW-61R	Ground Water	10/30/24 12:44	10/31/24 17:40
310-294184-8	MW-73	Ground Water	10/30/24 15:49	10/31/24 17:40
310-294184-9	MW-79	Ground Water	10/30/24 10:56	10/31/24 17:40
310-294184-10	Trip Blank	Water	10/31/24 00:00	10/31/24 17:40

Detection Summary

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-294184-1
SDG: Ottumwa-Wapello County Landfill

Client Sample ID: MW-67 — Lab Sample ID: 310-294184-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.000772	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Cobalt	0.00131		0.000500	0.000170	mg/L	1		6020B	Total/NA
Total Suspended Solids	3.63		1.88	1.39	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-71 — Lab Sample ID: 310-294184-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00406		0.00200	0.000530	mg/L	1		6020B	Total/NA
Cobalt	0.00305		0.000500	0.000170	mg/L	1		6020B	Total/NA
Total Suspended Solids	153		15.0	11.1	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-74 — Lab Sample ID: 310-294184-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.778		0.500	0.220	ug/L	1		8260D	Total/NA
cis-1,2-Dichloroethene	52.9		1.00	0.210	ug/L	1		8260D	Total/NA
Trichloroethene	2.97		1.00	0.430	ug/L	1		8260D	Total/NA
Vinyl chloride	1.51		1.00	0.180	ug/L	1		8260D	Total/NA
Arsenic	0.0299		0.00200	0.000530	mg/L	1		6020B	Total/NA
Cobalt	0.0108		0.000500	0.000170	mg/L	1		6020B	Total/NA
Total Suspended Solids	42.0		15.0	11.1	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-78 — Lab Sample ID: 310-294184-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.34		1.00	0.210	ug/L	1		8260D	Total/NA
Tetrachloroethene	1.01		1.00	0.480	ug/L	1		8260D	Total/NA
Trichloroethene	0.661	J	1.00	0.430	ug/L	1		8260D	Total/NA
Cobalt	0.0122		0.000500	0.000170	mg/L	1		6020B	Total/NA
Total Suspended Solids	13.3		1.88	1.39	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-80 — Lab Sample ID: 310-294184-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	12.5		1.00	0.210	ug/L	1		8260D	Total/NA
Vinyl chloride	7.56		1.00	0.180	ug/L	1		8260D	Total/NA

Client Sample ID: 93-MW-31R — Lab Sample ID: 310-294184-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.50		1.00	0.210	ug/L	1		8260D	Total/NA
Nitrate as N	2.21		0.200	0.0780	mg/L	1		9056A	Total/NA
Arsenic	0.00166	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0598		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.000515		0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.00309		0.000500	0.000170	mg/L	1		6020B	Total/NA
Lead	0.00151		0.000500	0.000260	mg/L	1		6020B	Total/NA
Nickel	0.0109		0.00500	0.00210	mg/L	1		6020B	Total/NA
Selenium	0.00315	J	0.00500	0.00140	mg/L	1		6020B	Total/NA
Vanadium	0.00230	J	0.00500	0.00110	mg/L	1		6020B	Total/NA
Total Suspended Solids	65.7		5.00	3.70	mg/L	1		I-3765-85	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-294184-1
SDG: Ottumwa-Wapello County Landfill

Client Sample ID: MW-61R — Lab Sample ID: 310-294184-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.618	J	1.00	0.220	ug/L	1		8260D	Total/NA
cis-1,2-Dichloroethene	16.0		1.00	0.210	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	0.443	J	1.00	0.270	ug/L	1		8260D	Total/NA
Arsenic	0.00700		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0171		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.000484		0.000200	0.000100	mg/L	1		6020B	Total/NA
Chromium	0.00188	J	0.00500	0.00120	mg/L	1		6020B	Total/NA
Cobalt	0.0135		0.000500	0.000170	mg/L	1		6020B	Total/NA
Copper	0.00711		0.00500	0.00180	mg/L	1		6020B	Total/NA
Lead	0.00314		0.000500	0.000260	mg/L	1		6020B	Total/NA
Nickel	0.0434		0.00500	0.00210	mg/L	1		6020B	Total/NA
Selenium	0.00154	J	0.00500	0.00140	mg/L	1		6020B	Total/NA
Vanadium	0.00373	J	0.00500	0.00110	mg/L	1		6020B	Total/NA
Zinc	0.0332		0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	292		30.0	22.2	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-73 — Lab Sample ID: 310-294184-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	3.32		1.00	0.220	ug/L	1		8260D	Total/NA
1,2-Dichloropropane	0.821	J	1.00	0.270	ug/L	1		8260D	Total/NA
Benzene	0.514		0.500	0.220	ug/L	1		8260D	Total/NA
cis-1,2-Dichloroethene	38.7		1.00	0.210	ug/L	1		8260D	Total/NA
Tetrachloroethene	1.77		1.00	0.480	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	0.776	J	1.00	0.270	ug/L	1		8260D	Total/NA
Trichloroethene	4.20		1.00	0.430	ug/L	1		8260D	Total/NA
Vinyl chloride	3.18		1.00	0.180	ug/L	1		8260D	Total/NA
Arsenic	0.00519		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0812		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.0240		0.000200	0.000100	mg/L	1		6020B	Total/NA
Chromium	0.00191	J	0.00500	0.00120	mg/L	1		6020B	Total/NA
Cobalt	0.0546		0.000500	0.000170	mg/L	1		6020B	Total/NA
Copper	0.00518		0.00500	0.00180	mg/L	1		6020B	Total/NA
Lead	0.00111		0.000500	0.000260	mg/L	1		6020B	Total/NA
Nickel	0.0275		0.00500	0.00210	mg/L	1		6020B	Total/NA
Zinc	0.0824		0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	81.0		5.00	3.70	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-79 — Lab Sample ID: 310-294184-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	2.89		1.00	0.220	ug/L	1		8260D	Total/NA
1,2-Dichloropropane	0.344	J	1.00	0.270	ug/L	1		8260D	Total/NA
1,4-Dichlorobenzene	0.960	J	1.00	0.230	ug/L	1		8260D	Total/NA
Benzene	0.349	J	0.500	0.220	ug/L	1		8260D	Total/NA
cis-1,2-Dichloroethene	35.7		1.00	0.210	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	0.632	J	1.00	0.270	ug/L	1		8260D	Total/NA
Vinyl chloride	6.36		1.00	0.180	ug/L	1		8260D	Total/NA
Barium	0.113		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.0108		0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.00371		0.000500	0.000170	mg/L	1		6020B	Total/NA
Lead	0.00127		0.000500	0.000260	mg/L	1		6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-294184-1
SDG: Ottumwa-Wapello County Landfill

Client Sample ID: MW-79 (Continued)

Lab Sample ID: 310-294184-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nickel	0.0309		0.00500	0.00210	mg/L	1		6020B	Total/NA
Vanadium	0.00414	J	0.00500	0.00110	mg/L	1		6020B	Total/NA
Zinc	0.0606		0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	60.0		15.0	11.1	mg/L	1		I-3765-85	Total/NA

Client Sample ID: Trip Blank

Lab Sample ID: 310-294184-10

No Detections.

This Detection Summary does not include radiochemical test results.

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-294184-1
SDG: Ottumwa-Wapello County Landfill

Client Sample ID: MW-67
Date Collected: 10/30/24 11:37
Date Received: 10/31/24 17:40

Lab Sample ID: 310-294184-1
Matrix: Ground Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	<1.00		1.00	0.480	ug/L			11/02/24 14:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*99*		*73 - 130*		*11/02/24 14:20*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*11/02/24 14:20*	*1*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*11/02/24 14:20*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.000772**	**J**	0.00200	0.000530	mg/L		11/11/24 09:30	11/11/24 20:16	1
Cobalt	**0.00131**		0.000500	0.000170	mg/L		11/11/24 09:30	11/11/24 20:16	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**3.63**		1.88	1.39	mg/L			11/04/24 13:01	1

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-294184-1
SDG: Ottumwa-Wapello County Landfill

Client Sample ID: MW-71

Date Collected: 10/31/24 10:04
Date Received: 10/31/24 17:40

Lab Sample ID: 310-294184-2

Matrix: Ground Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			11/02/24 14:43	1
Trichloroethene	<1.00		1.00	0.430	ug/L			11/02/24 14:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*100*		*73 - 130*		*11/02/24 14:43*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*11/02/24 14:43*	*1*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*11/02/24 14:43*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.00406**		0.00200	0.000530	mg/L		11/11/24 09:30	11/11/24 20:19	1
Cobalt	**0.00305**		0.000500	0.000170	mg/L		11/11/24 09:30	11/11/24 20:19	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**153**		15.0	11.1	mg/L			11/06/24 07:35	1

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-294184-1
SDG: Ottumwa-Wapello County Landfill

Client Sample ID: MW-74

Date Collected: 10/30/24 12:12
Date Received: 10/31/24 17:40

Lab Sample ID: 310-294184-3

Matrix: Ground Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**0.778**		0.500	0.220	ug/L			11/02/24 15:06	1
cis-1,2-Dichloroethene	**52.9**		1.00	0.210	ug/L			11/02/24 15:06	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			11/02/24 15:06	1
Trichloroethene	**2.97**		1.00	0.430	ug/L			11/02/24 15:06	1
Vinyl chloride	**1.51**		1.00	0.180	ug/L			11/02/24 15:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*101*		*73 - 130*		*11/02/24 15:06*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*11/02/24 15:06*	*1*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*		*11/02/24 15:06*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0299**		0.00200	0.000530	mg/L		11/11/24 09:30	11/11/24 20:25	1
Cobalt	**0.0108**		0.000500	0.000170	mg/L		11/11/24 09:30	11/11/24 20:25	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**42.0**		15.0	11.1	mg/L			11/04/24 13:41	1

Client Sample ID: MW-78

Date Collected: 10/30/24 16:23
Date Received: 10/31/24 17:40

Lab Sample ID: 310-294184-4

Matrix: Ground Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	2.34		1.00	0.210	ug/L			11/02/24 15:28	1
Tetrachloroethene	1.01		1.00	0.480	ug/L			11/02/24 15:28	1
Trichloroethene	0.661	J	1.00	0.430	ug/L			11/02/24 15:28	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			11/02/24 15:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*106*		*73 - 130*		*11/02/24 15:28*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*11/02/24 15:28*	*1*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*11/02/24 15:28*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.0122		0.000500	0.000170	mg/L		11/11/24 09:30	11/11/24 20:39	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	13.3		1.88	1.39	mg/L			11/04/24 13:01	1

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-294184-1
SDG: Ottumwa-Wapello County Landfill

Client Sample ID: MW-80
Date Collected: 10/31/24 08:56
Date Received: 10/31/24 17:40

Lab Sample ID: 310-294184-5
Matrix: Ground Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	12.5		1.00	0.210	ug/L			11/02/24 15:51	1
Vinyl chloride	7.56		1.00	0.180	ug/L			11/02/24 15:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*102*		*73 - 130*		*11/02/24 15:51*	*1*
Toluene-d8 (Surr)	*95*		*80 - 120*		*11/02/24 15:51*	*1*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*		*11/02/24 15:51*	*1*

Client Sample ID: 93-MW-31R
Date Collected: 10/30/24 13:46
Date Received: 10/31/24 17:40

Lab Sample ID: 310-294184-6
Matrix: Ground Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			11/02/24 16:14	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			11/02/24 16:14	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			11/02/24 16:14	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			11/02/24 16:14	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			11/02/24 16:14	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			11/02/24 16:14	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			11/02/24 16:14	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			11/02/24 16:14	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			11/02/24 16:14	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			11/02/24 16:14	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			11/02/24 16:14	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			11/02/24 16:14	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			11/02/24 16:14	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			11/02/24 16:14	1
2-Hexanone	<10.0		10.0	2.00	ug/L			11/02/24 16:14	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			11/02/24 16:14	1
Acetone	<10.0		10.0	3.10	ug/L			11/02/24 16:14	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			11/02/24 16:14	1
Benzene	<0.500		0.500	0.220	ug/L			11/02/24 16:14	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			11/02/24 16:14	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			11/02/24 16:14	1
Bromoform	<5.00		5.00	0.780	ug/L			11/02/24 16:14	1
Bromomethane	<4.00		4.00	1.10	ug/L			11/02/24 16:14	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			11/02/24 16:14	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			11/02/24 16:14	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			11/02/24 16:14	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			11/02/24 16:14	1
Chloroethane	<4.00		4.00	0.790	ug/L			11/02/24 16:14	1
Chloroform	<3.00		3.00	1.30	ug/L			11/02/24 16:14	1
Chloromethane	<3.00		3.00	0.610	ug/L			11/02/24 16:14	1
cis-1,2-Dichloroethene	**1.50**		1.00	0.210	ug/L			11/02/24 16:14	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			11/02/24 16:14	1
Dibromomethane	<1.00		1.00	0.330	ug/L			11/02/24 16:14	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			11/02/24 16:14	1
Iodomethane	<10.0		10.0	7.00	ug/L			11/02/24 16:14	1
Methylene chloride	<5.00		5.00	1.70	ug/L			11/02/24 16:14	1
Styrene	<1.00		1.00	0.370	ug/L			11/02/24 16:14	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			11/02/24 16:14	1
Toluene	<1.00		1.00	0.430	ug/L			11/02/24 16:14	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			11/02/24 16:14	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			11/02/24 16:14	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			11/02/24 16:14	1
Trichloroethene	<1.00		1.00	0.430	ug/L			11/02/24 16:14	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			11/02/24 16:14	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			11/02/24 16:14	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			11/02/24 16:14	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			11/02/24 16:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*99*		*73 - 130*		*11/02/24 16:14*	*1*

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-294184-1
SDG: Ottumwa-Wapello County Landfill

Client Sample ID: 93-MW-31R
Date Collected: 10/30/24 13:46
Date Received: 10/31/24 17:40

Lab Sample ID: 310-294184-6
Matrix: Ground Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*96*		*80 - 120*		*11/02/24 16:14*	*1*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*		*11/02/24 16:14*	*1*

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	**2.21**		0.200	0.0780	mg/L			11/01/24 10:13	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		11/11/24 09:30	11/11/24 20:42	1
Arsenic	**0.00166**	**J**	0.00200	0.000530	mg/L		11/11/24 09:30	11/11/24 20:42	1
Barium	**0.0598**		0.00200	0.000660	mg/L		11/11/24 09:30	11/11/24 20:42	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		11/11/24 09:30	11/11/24 20:42	1
Cadmium	**0.000515**		0.000200	0.000100	mg/L		11/11/24 09:30	11/11/24 20:42	1
Chromium	<0.00500		0.00500	0.00120	mg/L		11/11/24 09:30	11/11/24 20:42	1
Cobalt	**0.00309**		0.000500	0.000170	mg/L		11/11/24 09:30	11/11/24 20:42	1
Copper	<0.00500		0.00500	0.00180	mg/L		11/11/24 09:30	11/11/24 20:42	1
Lead	**0.00151**		0.000500	0.000260	mg/L		11/11/24 09:30	11/11/24 20:42	1
Nickel	**0.0109**		0.00500	0.00210	mg/L		11/11/24 09:30	11/11/24 20:42	1
Selenium	**0.00315**	**J**	0.00500	0.00140	mg/L		11/11/24 09:30	11/11/24 20:42	1
Silver	<0.00100		0.00100	0.000500	mg/L		11/11/24 09:30	11/11/24 20:42	1
Thallium	<0.00100		0.00100	0.000570	mg/L		11/11/24 09:30	11/11/24 20:42	1
Vanadium	**0.00230**	**J**	0.00500	0.00110	mg/L		11/11/24 09:30	11/11/24 20:42	1
Zinc	<0.0200		0.0200	0.00970	mg/L		11/11/24 09:30	11/11/24 20:42	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**65.7**		5.00	3.70	mg/L			11/04/24 13:41	1

Client Sample ID: MW-61R
Date Collected: 10/30/24 12:44
Date Received: 10/31/24 17:40

Lab Sample ID: 310-294184-7
Matrix: Ground Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			11/02/24 16:37	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			11/02/24 16:37	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			11/02/24 16:37	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			11/02/24 16:37	1
1,1-Dichloroethane	**0.618**	**J**	1.00	0.220	ug/L			11/02/24 16:37	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			11/02/24 16:37	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			11/02/24 16:37	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			11/02/24 16:37	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			11/02/24 16:37	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			11/02/24 16:37	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			11/02/24 16:37	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			11/02/24 16:37	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			11/02/24 16:37	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			11/02/24 16:37	1
2-Hexanone	<10.0		10.0	2.00	ug/L			11/02/24 16:37	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			11/02/24 16:37	1
Acetone	<10.0		10.0	3.10	ug/L			11/02/24 16:37	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			11/02/24 16:37	1
Benzene	<0.500		0.500	0.220	ug/L			11/02/24 16:37	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			11/02/24 16:37	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			11/02/24 16:37	1
Bromoform	<5.00		5.00	0.780	ug/L			11/02/24 16:37	1
Bromomethane	<4.00		4.00	1.10	ug/L			11/02/24 16:37	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			11/02/24 16:37	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			11/02/24 16:37	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			11/02/24 16:37	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			11/02/24 16:37	1
Chloroethane	<4.00		4.00	0.790	ug/L			11/02/24 16:37	1
Chloroform	<3.00		3.00	1.30	ug/L			11/02/24 16:37	1
Chloromethane	<3.00		3.00	0.610	ug/L			11/02/24 16:37	1
cis-1,2-Dichloroethene	**16.0**		1.00	0.210	ug/L			11/02/24 16:37	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			11/02/24 16:37	1
Dibromomethane	<1.00		1.00	0.330	ug/L			11/02/24 16:37	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			11/02/24 16:37	1
Iodomethane	<10.0		10.0	7.00	ug/L			11/02/24 16:37	1
Methylene chloride	<5.00		5.00	1.70	ug/L			11/02/24 16:37	1
Styrene	<1.00		1.00	0.370	ug/L			11/02/24 16:37	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			11/02/24 16:37	1
Toluene	<1.00		1.00	0.430	ug/L			11/02/24 16:37	1
trans-1,2-Dichloroethene	**0.443**	**J**	1.00	0.270	ug/L			11/02/24 16:37	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			11/02/24 16:37	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			11/02/24 16:37	1
Trichloroethene	<1.00		1.00	0.430	ug/L			11/02/24 16:37	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			11/02/24 16:37	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			11/02/24 16:37	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			11/02/24 16:37	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			11/02/24 16:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*102*		*73 - 130*		*11/02/24 16:37*	*1*

Client Sample ID: MW-61R
Date Collected: 10/30/24 12:44
Date Received: 10/31/24 17:40

Lab Sample ID: 310-294184-7
Matrix: Ground Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*96*		*80 - 120*		*11/02/24 16:37*	*1*
4-Bromofluorobenzene (Surr)	*107*		*80 - 120*		*11/02/24 16:37*	*1*

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	<0.200		0.200	0.0780	mg/L			11/01/24 09:58	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		11/11/24 09:30	11/11/24 20:44	1
Arsenic	**0.00700**		0.00200	0.000530	mg/L		11/11/24 09:30	11/11/24 20:44	1
Barium	**0.0171**		0.00200	0.000660	mg/L		11/11/24 09:30	11/11/24 20:44	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		11/11/24 09:30	11/11/24 20:44	1
Cadmium	**0.000484**		0.000200	0.000100	mg/L		11/11/24 09:30	11/11/24 20:44	1
Chromium	**0.00188**	**J**	0.00500	0.00120	mg/L		11/11/24 09:30	11/11/24 20:44	1
Cobalt	**0.0135**		0.000500	0.000170	mg/L		11/11/24 09:30	11/11/24 20:44	1
Copper	**0.00711**		0.00500	0.00180	mg/L		11/11/24 09:30	11/11/24 20:44	1
Lead	**0.00314**		0.000500	0.000260	mg/L		11/11/24 09:30	11/11/24 20:44	1
Nickel	**0.0434**		0.00500	0.00210	mg/L		11/11/24 09:30	11/11/24 20:44	1
Selenium	**0.00154**	**J**	0.00500	0.00140	mg/L		11/11/24 09:30	11/11/24 20:44	1
Silver	<0.00100		0.00100	0.000500	mg/L		11/11/24 09:30	11/11/24 20:44	1
Thallium	<0.00100		0.00100	0.000570	mg/L		11/11/24 09:30	11/11/24 20:44	1
Vanadium	**0.00373**	**J**	0.00500	0.00110	mg/L		11/11/24 09:30	11/11/24 20:44	1
Zinc	**0.0332**		0.0200	0.00970	mg/L		11/11/24 09:30	11/11/24 20:44	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**292**		30.0	22.2	mg/L			11/04/24 13:41	1

Client Sample ID: MW-73

Date Collected: 10/30/24 15:49
Date Received: 10/31/24 17:40

Lab Sample ID: 310-294184-8

Matrix: Ground Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			11/02/24 17:00	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			11/02/24 17:00	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			11/02/24 17:00	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			11/02/24 17:00	1
1,1-Dichloroethane	**3.32**		1.00	0.220	ug/L			11/02/24 17:00	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			11/02/24 17:00	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			11/02/24 17:00	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			11/02/24 17:00	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			11/02/24 17:00	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			11/02/24 17:00	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			11/02/24 17:00	1
1,2-Dichloropropane	**0.821**	**J**	1.00	0.270	ug/L			11/02/24 17:00	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			11/02/24 17:00	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			11/02/24 17:00	1
2-Hexanone	<10.0		10.0	2.00	ug/L			11/02/24 17:00	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			11/02/24 17:00	1
Acetone	<10.0		10.0	3.10	ug/L			11/02/24 17:00	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			11/02/24 17:00	1
Benzene	**0.514**		0.500	0.220	ug/L			11/02/24 17:00	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			11/02/24 17:00	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			11/02/24 17:00	1
Bromoform	<5.00		5.00	0.780	ug/L			11/02/24 17:00	1
Bromomethane	<4.00		4.00	1.10	ug/L			11/02/24 17:00	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			11/02/24 17:00	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			11/02/24 17:00	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			11/02/24 17:00	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			11/02/24 17:00	1
Chloroethane	<4.00		4.00	0.790	ug/L			11/02/24 17:00	1
Chloroform	<3.00		3.00	1.30	ug/L			11/02/24 17:00	1
Chloromethane	<3.00		3.00	0.610	ug/L			11/02/24 17:00	1
cis-1,2-Dichloroethene	**38.7**		1.00	0.210	ug/L			11/02/24 17:00	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			11/02/24 17:00	1
Dibromomethane	<1.00		1.00	0.330	ug/L			11/02/24 17:00	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			11/02/24 17:00	1
Iodomethane	<10.0		10.0	7.00	ug/L			11/02/24 17:00	1
Methylene chloride	<5.00		5.00	1.70	ug/L			11/02/24 17:00	1
Styrene	<1.00		1.00	0.370	ug/L			11/02/24 17:00	1
Tetrachloroethene	**1.77**		1.00	0.480	ug/L			11/02/24 17:00	1
Toluene	<1.00		1.00	0.430	ug/L			11/02/24 17:00	1
trans-1,2-Dichloroethene	**0.776**	**J**	1.00	0.270	ug/L			11/02/24 17:00	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			11/02/24 17:00	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			11/02/24 17:00	1
Trichloroethene	**4.20**		1.00	0.430	ug/L			11/02/24 17:00	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			11/02/24 17:00	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			11/02/24 17:00	1
Vinyl chloride	**3.18**		1.00	0.180	ug/L			11/02/24 17:00	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			11/02/24 17:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*102*		*73 - 130*		*11/02/24 17:00*	*1*

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-294184-1
SDG: Ottumwa-Wapello County Landfill

Client Sample ID: MW-73
Date Collected: 10/30/24 15:49
Date Received: 10/31/24 17:40

Lab Sample ID: 310-294184-8
Matrix: Ground Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*80 - 120*		*11/02/24 17:00*	*1*
4-Bromofluorobenzene (Surr)	*97*		*80 - 120*		*11/02/24 17:00*	*1*

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	<0.200		0.200	0.0780	mg/L			11/01/24 10:29	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		11/11/24 09:30	11/11/24 20:47	1
Arsenic	**0.00519**		0.00200	0.000530	mg/L		11/11/24 09:30	11/11/24 20:47	1
Barium	**0.0812**		0.00200	0.000660	mg/L		11/11/24 09:30	11/11/24 20:47	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		11/11/24 09:30	11/11/24 20:47	1
Cadmium	**0.0240**		0.000200	0.000100	mg/L		11/11/24 09:30	11/11/24 20:47	1
Chromium	**0.00191**	**J**	0.00500	0.00120	mg/L		11/11/24 09:30	11/11/24 20:47	1
Cobalt	**0.0546**		0.000500	0.000170	mg/L		11/11/24 09:30	11/11/24 20:47	1
Copper	**0.00518**		0.00500	0.00180	mg/L		11/11/24 09:30	11/11/24 20:47	1
Lead	**0.00111**		0.000500	0.000260	mg/L		11/11/24 09:30	11/11/24 20:47	1
Nickel	**0.0275**		0.00500	0.00210	mg/L		11/11/24 09:30	11/11/24 20:47	1
Selenium	<0.00500		0.00500	0.00140	mg/L		11/11/24 09:30	11/11/24 20:47	1
Silver	<0.00100		0.00100	0.000500	mg/L		11/11/24 09:30	11/11/24 20:47	1
Thallium	<0.00100		0.00100	0.000570	mg/L		11/11/24 09:30	11/11/24 20:47	1
Vanadium	<0.00500		0.00500	0.00110	mg/L		11/11/24 09:30	11/11/24 20:47	1
Zinc	**0.0824**		0.0200	0.00970	mg/L		11/11/24 09:30	11/11/24 20:47	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**81.0**		5.00	3.70	mg/L			11/04/24 13:41	1

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-294184-1
SDG: Ottumwa-Wapello County Landfill

Client Sample ID: MW-79
Date Collected: 10/30/24 10:56
Date Received: 10/31/24 17:40

Lab Sample ID: 310-294184-9
Matrix: Ground Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			11/02/24 17:23	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			11/02/24 17:23	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			11/02/24 17:23	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			11/02/24 17:23	1
1,1-Dichloroethane	**2.89**		1.00	0.220	ug/L			11/02/24 17:23	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			11/02/24 17:23	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			11/02/24 17:23	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			11/02/24 17:23	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			11/02/24 17:23	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			11/02/24 17:23	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			11/02/24 17:23	1
1,2-Dichloropropane	**0.344**	**J**	1.00	0.270	ug/L			11/02/24 17:23	1
1,4-Dichlorobenzene	**0.960**	**J**	1.00	0.230	ug/L			11/02/24 17:23	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			11/02/24 17:23	1
2-Hexanone	<10.0		10.0	2.00	ug/L			11/02/24 17:23	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			11/02/24 17:23	1
Acetone	<10.0		10.0	3.10	ug/L			11/02/24 17:23	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			11/02/24 17:23	1
Benzene	**0.349**	**J**	0.500	0.220	ug/L			11/02/24 17:23	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			11/02/24 17:23	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			11/02/24 17:23	1
Bromoform	<5.00		5.00	0.780	ug/L			11/02/24 17:23	1
Bromomethane	<4.00		4.00	1.10	ug/L			11/02/24 17:23	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			11/02/24 17:23	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			11/02/24 17:23	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			11/02/24 17:23	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			11/02/24 17:23	1
Chloroethane	<4.00		4.00	0.790	ug/L			11/02/24 17:23	1
Chloroform	<3.00		3.00	1.30	ug/L			11/02/24 17:23	1
Chloromethane	<3.00		3.00	0.610	ug/L			11/02/24 17:23	1
cis-1,2-Dichloroethene	**35.7**		1.00	0.210	ug/L			11/02/24 17:23	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			11/02/24 17:23	1
Dibromomethane	<1.00		1.00	0.330	ug/L			11/02/24 17:23	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			11/02/24 17:23	1
Iodomethane	<10.0		10.0	7.00	ug/L			11/02/24 17:23	1
Methylene chloride	<5.00		5.00	1.70	ug/L			11/02/24 17:23	1
Styrene	<1.00		1.00	0.370	ug/L			11/02/24 17:23	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			11/02/24 17:23	1
Toluene	<1.00		1.00	0.430	ug/L			11/02/24 17:23	1
trans-1,2-Dichloroethene	**0.632**	**J**	1.00	0.270	ug/L			11/02/24 17:23	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			11/02/24 17:23	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			11/02/24 17:23	1
Trichloroethene	<1.00		1.00	0.430	ug/L			11/02/24 17:23	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			11/02/24 17:23	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			11/02/24 17:23	1
Vinyl chloride	**6.36**		1.00	0.180	ug/L			11/02/24 17:23	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			11/02/24 17:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*102*		*73 - 130*		*11/02/24 17:23*	*1*

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-294184-1
SDG: Ottumwa-Wapello County Landfill

Client Sample ID: MW-79
Date Collected: 10/30/24 10:56
Date Received: 10/31/24 17:40

Lab Sample ID: 310-294184-9
Matrix: Ground Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*80 - 120*		*11/02/24 17:23*	*1*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*		*11/02/24 17:23*	*1*

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	<0.200		0.200	0.0780	mg/L			11/01/24 09:42	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		11/11/24 09:30	11/11/24 20:50	1
Arsenic	<0.00200		0.00200	0.000530	mg/L		11/11/24 09:30	11/11/24 20:50	1
Barium	**0.113**		0.00200	0.000660	mg/L		11/11/24 09:30	11/11/24 20:50	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		11/11/24 09:30	11/11/24 20:50	1
Cadmium	**0.0108**		0.000200	0.000100	mg/L		11/11/24 09:30	11/11/24 20:50	1
Chromium	<0.00500		0.00500	0.00120	mg/L		11/11/24 09:30	11/11/24 20:50	1
Cobalt	**0.00371**		0.000500	0.000170	mg/L		11/11/24 09:30	11/11/24 20:50	1
Copper	<0.00500		0.00500	0.00180	mg/L		11/11/24 09:30	11/11/24 20:50	1
Lead	**0.00127**		0.000500	0.000260	mg/L		11/11/24 09:30	11/11/24 20:50	1
Nickel	**0.0309**		0.00500	0.00210	mg/L		11/11/24 09:30	11/11/24 20:50	1
Selenium	<0.00500		0.00500	0.00140	mg/L		11/11/24 09:30	11/11/24 20:50	1
Silver	<0.00100		0.00100	0.000500	mg/L		11/11/24 09:30	11/11/24 20:50	1
Thallium	<0.00100		0.00100	0.000570	mg/L		11/11/24 09:30	11/11/24 20:50	1
Vanadium	**0.00414**	**J**	0.00500	0.00110	mg/L		11/11/24 09:30	11/11/24 20:50	1
Zinc	**0.0606**		0.0200	0.00970	mg/L		11/11/24 09:30	11/11/24 20:50	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**60.0**		15.0	11.1	mg/L			11/04/24 13:41	1

Client Sample ID: Trip Blank
Date Collected: 10/31/24 00:00
Date Received: 10/31/24 17:40

Lab Sample ID: 310-294184-10
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			11/02/24 12:25	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			11/02/24 12:25	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			11/02/24 12:25	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			11/02/24 12:25	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			11/02/24 12:25	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			11/02/24 12:25	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			11/02/24 12:25	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			11/02/24 12:25	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			11/02/24 12:25	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			11/02/24 12:25	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			11/02/24 12:25	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			11/02/24 12:25	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			11/02/24 12:25	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			11/02/24 12:25	1
2-Hexanone	<10.0		10.0	2.00	ug/L			11/02/24 12:25	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			11/02/24 12:25	1
Acetone	<10.0		10.0	3.10	ug/L			11/02/24 12:25	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			11/02/24 12:25	1
Benzene	<0.500		0.500	0.220	ug/L			11/02/24 12:25	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			11/02/24 12:25	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			11/02/24 12:25	1
Bromoform	<5.00		5.00	0.780	ug/L			11/02/24 12:25	1
Bromomethane	<4.00		4.00	1.10	ug/L			11/02/24 12:25	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			11/02/24 12:25	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			11/02/24 12:25	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			11/02/24 12:25	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			11/02/24 12:25	1
Chloroethane	<4.00		4.00	0.790	ug/L			11/02/24 12:25	1
Chloroform	<3.00		3.00	1.30	ug/L			11/02/24 12:25	1
Chloromethane	<3.00		3.00	0.610	ug/L			11/02/24 12:25	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			11/02/24 12:25	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			11/02/24 12:25	1
Dibromomethane	<1.00		1.00	0.330	ug/L			11/02/24 12:25	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			11/02/24 12:25	1
Iodomethane	<10.0		10.0	7.00	ug/L			11/02/24 12:25	1
Methylene chloride	<5.00		5.00	1.70	ug/L			11/02/24 12:25	1
Styrene	<1.00		1.00	0.370	ug/L			11/02/24 12:25	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			11/02/24 12:25	1
Toluene	<1.00		1.00	0.430	ug/L			11/02/24 12:25	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			11/02/24 12:25	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			11/02/24 12:25	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			11/02/24 12:25	1
Trichloroethene	<1.00		1.00	0.430	ug/L			11/02/24 12:25	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			11/02/24 12:25	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			11/02/24 12:25	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			11/02/24 12:25	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			11/02/24 12:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*101*		*73 - 130*		*11/02/24 12:25*	*1*

Client Sample ID: Trip Blank
Date Collected: 10/31/24 00:00
Date Received: 10/31/24 17:40

Lab Sample ID: 310-294184-10
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	95		80 - 120		11/02/24 12:25	1
4-Bromofluorobenzene (Surr)	100		80 - 120		11/02/24 12:25	1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Surrogate Summary

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-294184-1
SDG: Ottumwa-Wapello County Landfill

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Ground Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		DBFM	TOL	BFB
Lab Sample ID	Client Sample ID	(73-130)	(80-120)	(80-120)
310-294184-1	MW-67	99	99	100
310-294184-2	MW-71	100	96	99
310-294184-3	MW-74	101	97	102
310-294184-4	MW-78	106	96	100
310-294184-5	MW-80	102	95	102
310-294184-6	93-MW-31R	99	96	101
310-294184-7	MW-61R	102	96	107
310-294184-8	MW-73	102	97	97
310-294184-9	MW-79	102	97	101

Surrogate Legend

DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		DBFM	TOL	BFB
Lab Sample ID	Client Sample ID	(73-130)	(80-120)	(80-120)
310-294184-10	Trip Blank	101	95	100
LCS 310-438398/6	Lab Control Sample	101	97	100
LCS 310-438398/7	Lab Control Sample	101	96	100
MB 310-438398/5	Method Blank	102	96	101

Surrogate Legend

DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 310-438398/5
Matrix: Water
Analysis Batch: 438398

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			11/02/24 10:09	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			11/02/24 10:09	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			11/02/24 10:09	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			11/02/24 10:09	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			11/02/24 10:09	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			11/02/24 10:09	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			11/02/24 10:09	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			11/02/24 10:09	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			11/02/24 10:09	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			11/02/24 10:09	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			11/02/24 10:09	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			11/02/24 10:09	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			11/02/24 10:09	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			11/02/24 10:09	1
2-Hexanone	<10.0		10.0	2.00	ug/L			11/02/24 10:09	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			11/02/24 10:09	1
Acetone	<10.0		10.0	3.10	ug/L			11/02/24 10:09	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			11/02/24 10:09	1
Benzene	<0.500		0.500	0.220	ug/L			11/02/24 10:09	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			11/02/24 10:09	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			11/02/24 10:09	1
Bromoform	<5.00		5.00	0.780	ug/L			11/02/24 10:09	1
Bromomethane	<4.00		4.00	1.10	ug/L			11/02/24 10:09	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			11/02/24 10:09	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			11/02/24 10:09	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			11/02/24 10:09	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			11/02/24 10:09	1
Chloroethane	<4.00		4.00	0.790	ug/L			11/02/24 10:09	1
Chloroform	<3.00		3.00	1.30	ug/L			11/02/24 10:09	1
Chloromethane	<3.00		3.00	0.610	ug/L			11/02/24 10:09	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			11/02/24 10:09	1
Dibromomethane	<1.00		1.00	0.330	ug/L			11/02/24 10:09	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			11/02/24 10:09	1
Iodomethane	<10.0		10.0	7.00	ug/L			11/02/24 10:09	1
Methylene chloride	<5.00		5.00	1.70	ug/L			11/02/24 10:09	1
Styrene	<1.00		1.00	0.370	ug/L			11/02/24 10:09	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			11/02/24 10:09	1
Toluene	<1.00		1.00	0.430	ug/L			11/02/24 10:09	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			11/02/24 10:09	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			11/02/24 10:09	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			11/02/24 10:09	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			11/02/24 10:09	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			11/02/24 10:09	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			11/02/24 10:09	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			11/02/24 10:09	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			11/02/24 10:09	1
Trichloroethene	<1.00		1.00	0.430	ug/L			11/02/24 10:09	1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 310-438398/5
Matrix: Water
Analysis Batch: 438398

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*102*		*73 - 130*		*11/02/24 10:09*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*11/02/24 10:09*	*1*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*		*11/02/24 10:09*	*1*

Lab Sample ID: LCS 310-438398/6
Matrix: Water
Analysis Batch: 438398

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1,2-Tetrachloroethane	20.0	20.79		ug/L		104	71 - 120
1,1,1-Trichloroethane	20.0	21.94		ug/L		110	73 - 129
1,1,2,2-Tetrachloroethane	20.0	20.41		ug/L		102	68 - 124
1,1,2-Trichloroethane	20.0	19.42		ug/L		97	73 - 123
1,1-Dichloroethane	20.0	21.17		ug/L		106	70 - 127
1,1-Dichloroethene	20.0	21.99		ug/L		110	63 - 132
1,2,3-Trichloropropane	20.0	19.80		ug/L		99	65 - 127
1,2-Dibromo-3-chloropropane	20.0	17.56		ug/L		88	50 - 150
1,2-Dibromoethane (EDB)	20.0	19.93		ug/L		100	75 - 125
1,2-Dichlorobenzene	20.0	19.51		ug/L		98	74 - 120
1,2-Dichloroethane	20.0	20.33		ug/L		102	71 - 125
1,2-Dichloropropane	20.0	20.64		ug/L		103	73 - 124
1,4-Dichlorobenzene	20.0	20.62		ug/L		103	72 - 120
2-Butanone (MEK)	40.0	37.23		ug/L		93	50 - 150
2-Hexanone	40.0	33.38		ug/L		83	60 - 140
4-Methyl-2-pentanone (MIBK)	40.0	37.29		ug/L		93	60 - 139
Acetone	40.0	38.46		ug/L		96	50 - 150
Acrylonitrile	200	204.3		ug/L		102	50 - 150
Benzene	20.0	21.57		ug/L		108	72 - 124
Bromochloromethane	20.0	22.09		ug/L		110	73 - 130
Bromodichloromethane	20.0	20.98		ug/L		105	74 - 122
Bromoform	20.0	20.03		ug/L		100	61 - 122
Carbon disulfide	20.0	21.31		ug/L		107	59 - 135
Carbon tetrachloride	20.0	22.64		ug/L		113	67 - 132
Chlorobenzene	20.0	20.87		ug/L		104	76 - 120
Chlorodibromomethane	20.0	19.09		ug/L		95	71 - 121
Chloroform	20.0	20.51		ug/L		103	72 - 125
cis-1,3-Dichloropropene	20.0	19.63		ug/L		98	71 - 125
Dibromomethane	20.0	20.95		ug/L		105	74 - 125
Ethylbenzene	20.0	21.38		ug/L		107	74 - 122
Iodomethane	20.0	10.36		ug/L		52	10 - 150
Methylene chloride	20.0	20.45		ug/L		102	50 - 150
Styrene	20.0	21.62		ug/L		108	74 - 121
Tetrachloroethene	20.0	20.33		ug/L		102	71 - 130
Toluene	20.0	20.72		ug/L		104	74 - 123
trans-1,2-Dichloroethene	20.0	21.68		ug/L		108	70 - 126
trans-1,3-Dichloropropene	20.0	19.14		ug/L		96	69 - 123
trans-1,4-Dichloro-2-butene	20.0	18.56		ug/L		93	50 - 150
Vinyl acetate	40.0	39.66		ug/L		99	50 - 150

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-438398/6
Matrix: Water
Analysis Batch: 438398

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Xylenes, Total	40.0	42.33		ug/L		106	73 - 123
cis-1,2-Dichloroethene	20.0	21.55		ug/L		108	74 - 123
Trichloroethene	20.0	22.21		ug/L		111	72 - 126

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*101*		*73 - 130*
Toluene-d8 (Surr)	*97*		*80 - 120*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*

Lab Sample ID: LCS 310-438398/7
Matrix: Water
Analysis Batch: 438398

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromomethane	20.0	16.32		ug/L		82	23 - 150
Chloroethane	20.0	18.08		ug/L		90	54 - 136
Chloromethane	20.0	19.95		ug/L		100	38 - 150
Trichlorofluoromethane	20.0	22.14		ug/L		111	54 - 149
Vinyl chloride	20.0	20.23		ug/L		101	56 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*101*		*73 - 130*
Toluene-d8 (Surr)	*96*		*80 - 120*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-438500/3
Matrix: Water
Analysis Batch: 438500

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	<0.200		0.200	0.0780	mg/L			11/01/24 09:11	1

Lab Sample ID: LCS 310-438500/4
Matrix: Water
Analysis Batch: 438500

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrate as N	2.00	1.977		mg/L		99	90 - 110

Lab Sample ID: 310-294184-8 MS
Matrix: Ground Water
Analysis Batch: 438500

Client Sample ID: MW-73
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrate as N	<0.200		1.00	0.9382		mg/L		94	80 - 120

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: 310-294184-8 MSD
Matrix: Ground Water
Analysis Batch: 438500

Client Sample ID: MW-73
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Nitrate as N	<0.200		1.00	0.9418		mg/L		94	80 - 120	0	15

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-439163/1-A
Matrix: Water
Analysis Batch: 439376

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 439163

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		11/11/24 09:30	11/11/24 19:22	1
Arsenic	<0.00200		0.00200	0.000530	mg/L		11/11/24 09:30	11/11/24 19:22	1
Barium	<0.00200		0.00200	0.000660	mg/L		11/11/24 09:30	11/11/24 19:22	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		11/11/24 09:30	11/11/24 19:22	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		11/11/24 09:30	11/11/24 19:22	1
Chromium	<0.00500		0.00500	0.00120	mg/L		11/11/24 09:30	11/11/24 19:22	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		11/11/24 09:30	11/11/24 19:22	1
Copper	<0.00500		0.00500	0.00180	mg/L		11/11/24 09:30	11/11/24 19:22	1
Lead	<0.000500		0.000500	0.000260	mg/L		11/11/24 09:30	11/11/24 19:22	1
Nickel	<0.00500		0.00500	0.00210	mg/L		11/11/24 09:30	11/11/24 19:22	1
Selenium	<0.00500		0.00500	0.00140	mg/L		11/11/24 09:30	11/11/24 19:22	1
Silver	<0.00100		0.00100	0.000500	mg/L		11/11/24 09:30	11/11/24 19:22	1
Thallium	<0.00100		0.00100	0.000570	mg/L		11/11/24 09:30	11/11/24 19:22	1
Vanadium	<0.00500		0.00500	0.00110	mg/L		11/11/24 09:30	11/11/24 19:22	1
Zinc	<0.0200		0.0200	0.00970	mg/L		11/11/24 09:30	11/11/24 19:22	1

Lab Sample ID: LCS 310-439163/2-A
Matrix: Water
Analysis Batch: 439376

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 439163

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.200	0.2070		mg/L		103	80 - 120
Arsenic	0.200	0.2062		mg/L		103	80 - 120
Barium	0.100	0.1062		mg/L		106	80 - 120
Beryllium	0.100	0.1015		mg/L		102	80 - 120
Cadmium	0.100	0.1022		mg/L		102	80 - 120
Chromium	0.100	0.1043		mg/L		104	80 - 120
Cobalt	0.100	0.1033		mg/L		103	80 - 120
Copper	0.200	0.2070		mg/L		103	80 - 120
Lead	0.200	0.2240		mg/L		112	80 - 120
Nickel	0.200	0.2103		mg/L		105	80 - 120
Selenium	0.400	0.4039		mg/L		101	80 - 120
Silver	0.100	0.1168		mg/L		117	80 - 120
Thallium	0.100	0.1173		mg/L		117	80 - 120
Vanadium	0.100	0.1063		mg/L		106	80 - 120
Zinc	0.200	0.1898		mg/L		95	80 - 120

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: 310-294184-2 DU
Matrix: Ground Water
Analysis Batch: 439376

Client Sample ID: MW-71
Prep Type: Total/NA
Prep Batch: 439163

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Antimony	<0.00200		<0.00200		mg/L		NC	20
Arsenic	0.00406		0.004032		mg/L		0.8	20
Barium	0.100		0.1002		mg/L		0	20
Beryllium	<0.00100		<0.00100		mg/L		NC	20
Cadmium	0.00125		0.001264		mg/L		1	20
Chromium	0.00286	J	0.002913	J	mg/L		2	20
Cobalt	0.00305		0.002996		mg/L		2	20
Copper	0.00387	J	0.004126	J	mg/L		6	20
Lead	0.00430		0.004300		mg/L		0	20
Nickel	0.00794		0.007831		mg/L		1	20
Selenium	0.00357	J	0.003716	J	mg/L		4	20
Silver	<0.00100		<0.00100		mg/L		NC	20
Thallium	<0.00100		<0.00100		mg/L		NC	20
Vanadium	0.00332	J	0.003396	J	mg/L		2	20
Zinc	0.0680		0.06712		mg/L		1	20

Method: I-3765-85 - Residue, Non-filterable (TSS)

Lab Sample ID: MB 310-438588/1
Matrix: Water
Analysis Batch: 438588

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.00		5.00	3.70	mg/L			11/04/24 13:01	1

Lab Sample ID: LCS 310-438588/2
Matrix: Water
Analysis Batch: 438588

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	96.00		mg/L		96	81 - 116

Lab Sample ID: MB 310-438595/1
Matrix: Water
Analysis Batch: 438595

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.00		5.00	3.70	mg/L			11/04/24 13:41	1

Lab Sample ID: LCS 310-438595/2
Matrix: Water
Analysis Batch: 438595

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	89.00		mg/L		89	81 - 116

Method: I-3765-85 - Residue, Non-filterable (TSS) (Continued)

Lab Sample ID: 310-294184-3 DU
Matrix: Ground Water
Analysis Batch: 438595

Client Sample ID: MW-74
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Suspended Solids	42.0			41.00		mg/L				2	35

Lab Sample ID: MB 310-438804/1
Matrix: Water
Analysis Batch: 438804

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.00		5.00	3.70	mg/L			11/06/24 07:35	1

Lab Sample ID: LCS 310-438804/2
Matrix: Water
Analysis Batch: 438804

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Suspended Solids			100	106.0		mg/L		106	81 - 116		

GC/MS VOA

Analysis Batch: 438398

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-294184-1	MW-67	Total/NA	Ground Water	8260D	
310-294184-2	MW-71	Total/NA	Ground Water	8260D	
310-294184-3	MW-74	Total/NA	Ground Water	8260D	
310-294184-4	MW-78	Total/NA	Ground Water	8260D	
310-294184-5	MW-80	Total/NA	Ground Water	8260D	
310-294184-6	93-MW-31R	Total/NA	Ground Water	8260D	
310-294184-7	MW-61R	Total/NA	Ground Water	8260D	
310-294184-8	MW-73	Total/NA	Ground Water	8260D	
310-294184-9	MW-79	Total/NA	Ground Water	8260D	
310-294184-10	Trip Blank	Total/NA	Water	8260D	
MB 310-438398/5	Method Blank	Total/NA	Water	8260D	
LCS 310-438398/6	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-438398/7	Lab Control Sample	Total/NA	Water	8260D	

HPLC/IC

Analysis Batch: 438500

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-294184-6	93-MW-31R	Total/NA	Ground Water	9056A	
310-294184-7	MW-61R	Total/NA	Ground Water	9056A	
310-294184-8	MW-73	Total/NA	Ground Water	9056A	
310-294184-9	MW-79	Total/NA	Ground Water	9056A	
MB 310-438500/3	Method Blank	Total/NA	Water	9056A	
LCS 310-438500/4	Lab Control Sample	Total/NA	Water	9056A	
310-294184-8 MS	MW-73	Total/NA	Ground Water	9056A	
310-294184-8 MSD	MW-73	Total/NA	Ground Water	9056A	

Metals

Prep Batch: 439163

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-294184-1	MW-67	Total/NA	Ground Water	3005A	
310-294184-2	MW-71	Total/NA	Ground Water	3005A	
310-294184-3	MW-74	Total/NA	Ground Water	3005A	
310-294184-4	MW-78	Total/NA	Ground Water	3005A	
310-294184-6	93-MW-31R	Total/NA	Ground Water	3005A	
310-294184-7	MW-61R	Total/NA	Ground Water	3005A	
310-294184-8	MW-73	Total/NA	Ground Water	3005A	
310-294184-9	MW-79	Total/NA	Ground Water	3005A	
MB 310-439163/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-439163/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-294184-2 DU	MW-71	Total/NA	Ground Water	3005A	

Analysis Batch: 439376

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-294184-1	MW-67	Total/NA	Ground Water	6020B	439163
310-294184-2	MW-71	Total/NA	Ground Water	6020B	439163
310-294184-3	MW-74	Total/NA	Ground Water	6020B	439163
310-294184-4	MW-78	Total/NA	Ground Water	6020B	439163
310-294184-6	93-MW-31R	Total/NA	Ground Water	6020B	439163
310-294184-7	MW-61R	Total/NA	Ground Water	6020B	439163
310-294184-8	MW-73	Total/NA	Ground Water	6020B	439163

Metals (Continued)

Analysis Batch: 439376 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-294184-9	MW-79	Total/NA	Ground Water	6020B	439163
MB 310-439163/1-A	Method Blank	Total/NA	Water	6020B	439163
LCS 310-439163/2-A	Lab Control Sample	Total/NA	Water	6020B	439163
310-294184-2 DU	MW-71	Total/NA	Ground Water	6020B	439163

General Chemistry

Analysis Batch: 438588

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-294184-1	MW-67	Total/NA	Ground Water	I-3765-85	
310-294184-4	MW-78	Total/NA	Ground Water	I-3765-85	
MB 310-438588/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-438588/2	Lab Control Sample	Total/NA	Water	I-3765-85	

Analysis Batch: 438595

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-294184-3	MW-74	Total/NA	Ground Water	I-3765-85	
310-294184-6	93-MW-31R	Total/NA	Ground Water	I-3765-85	
310-294184-7	MW-61R	Total/NA	Ground Water	I-3765-85	
310-294184-8	MW-73	Total/NA	Ground Water	I-3765-85	
310-294184-9	MW-79	Total/NA	Ground Water	I-3765-85	
MB 310-438595/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-438595/2	Lab Control Sample	Total/NA	Water	I-3765-85	
310-294184-3 DU	MW-74	Total/NA	Ground Water	I-3765-85	

Analysis Batch: 438804

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-294184-2	MW-71	Total/NA	Ground Water	I-3765-85	
MB 310-438804/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-438804/2	Lab Control Sample	Total/NA	Water	I-3765-85	

Lab Chronicle

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-294184-1
SDG: Ottumwa-Wapello County Landfill

Client Sample ID: MW-67
Date Collected: 10/30/24 11:37
Date Received: 10/31/24 17:40

Lab Sample ID: 310-294184-1
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	438398	FE5V	EET CF	11/02/24 14:20
Total/NA	Prep	3005A			439163	F5MW	EET CF	11/11/24 09:30
Total/NA	Analysis	6020B		1	439376	A6US	EET CF	11/11/24 20:16
Total/NA	Analysis	I-3765-85		1	438588	DGU1	EET CF	11/04/24 13:01

Client Sample ID: MW-71
Date Collected: 10/31/24 10:04
Date Received: 10/31/24 17:40

Lab Sample ID: 310-294184-2
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	438398	FE5V	EET CF	11/02/24 14:43
Total/NA	Prep	3005A			439163	F5MW	EET CF	11/11/24 09:30
Total/NA	Analysis	6020B		1	439376	A6US	EET CF	11/11/24 20:19
Total/NA	Analysis	I-3765-85		1	438804	DGU1	EET CF	11/06/24 07:35

Client Sample ID: MW-74
Date Collected: 10/30/24 12:12
Date Received: 10/31/24 17:40

Lab Sample ID: 310-294184-3
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	438398	FE5V	EET CF	11/02/24 15:06
Total/NA	Prep	3005A			439163	F5MW	EET CF	11/11/24 09:30
Total/NA	Analysis	6020B		1	439376	A6US	EET CF	11/11/24 20:25
Total/NA	Analysis	I-3765-85		1	438595	DGU1	EET CF	11/04/24 13:41

Client Sample ID: MW-78
Date Collected: 10/30/24 16:23
Date Received: 10/31/24 17:40

Lab Sample ID: 310-294184-4
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	438398	FE5V	EET CF	11/02/24 15:28
Total/NA	Prep	3005A			439163	F5MW	EET CF	11/11/24 09:30
Total/NA	Analysis	6020B		1	439376	A6US	EET CF	11/11/24 20:39
Total/NA	Analysis	I-3765-85		1	438588	DGU1	EET CF	11/04/24 13:01

Client Sample ID: MW-80
Date Collected: 10/31/24 08:56
Date Received: 10/31/24 17:40

Lab Sample ID: 310-294184-5
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	438398	FE5V	EET CF	11/02/24 15:51

Lab Chronicle

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-294184-1
SDG: Ottumwa-Wapello County Landfill

Client Sample ID: 93-MW-31R

Date Collected: 10/30/24 13:46
Date Received: 10/31/24 17:40

Lab Sample ID: 310-294184-6

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	438398	FE5V	EET CF	11/02/24 16:14
Total/NA	Analysis	9056A		1	438500	WZC8	EET CF	11/01/24 10:13
Total/NA	Prep	3005A			439163	F5MW	EET CF	11/11/24 09:30
Total/NA	Analysis	6020B		1	439376	A6US	EET CF	11/11/24 20:42
Total/NA	Analysis	I-3765-85		1	438595	DGU1	EET CF	11/04/24 13:41

Client Sample ID: MW-61R

Date Collected: 10/30/24 12:44
Date Received: 10/31/24 17:40

Lab Sample ID: 310-294184-7

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	438398	FE5V	EET CF	11/02/24 16:37
Total/NA	Analysis	9056A		1	438500	WZC8	EET CF	11/01/24 09:58
Total/NA	Prep	3005A			439163	F5MW	EET CF	11/11/24 09:30
Total/NA	Analysis	6020B		1	439376	A6US	EET CF	11/11/24 20:44
Total/NA	Analysis	I-3765-85		1	438595	DGU1	EET CF	11/04/24 13:41

Client Sample ID: MW-73

Date Collected: 10/30/24 15:49
Date Received: 10/31/24 17:40

Lab Sample ID: 310-294184-8

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	438398	FE5V	EET CF	11/02/24 17:00
Total/NA	Analysis	9056A		1	438500	WZC8	EET CF	11/01/24 10:29
Total/NA	Prep	3005A			439163	F5MW	EET CF	11/11/24 09:30
Total/NA	Analysis	6020B		1	439376	A6US	EET CF	11/11/24 20:47
Total/NA	Analysis	I-3765-85		1	438595	DGU1	EET CF	11/04/24 13:41

Client Sample ID: MW-79

Date Collected: 10/30/24 10:56
Date Received: 10/31/24 17:40

Lab Sample ID: 310-294184-9

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	438398	FE5V	EET CF	11/02/24 17:23
Total/NA	Analysis	9056A		1	438500	WZC8	EET CF	11/01/24 09:42
Total/NA	Prep	3005A			439163	F5MW	EET CF	11/11/24 09:30
Total/NA	Analysis	6020B		1	439376	A6US	EET CF	11/11/24 20:50
Total/NA	Analysis	I-3765-85		1	438595	DGU1	EET CF	11/04/24 13:41

Lab Chronicle

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-294184-1
SDG: Ottumwa-Wapello County Landfill

Client Sample ID: Trip Blank
Date Collected: 10/31/24 00:00
Date Received: 10/31/24 17:40

Lab Sample ID: 310-294184-10
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	438398	FE5V	EET CF	11/02/24 12:25

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: SCS Engineers
Job ID: 310-294184-1
Project/Site: 2nd 2024 Semi-Annual Sampling
SDG: Ottumwa-Wapello County Landfill

Laboratory: Eurofins Cedar Falls

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

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-25

Method Summary

Client: SCS Engineers
Project/Site: 2nd 2024 Semi-Annual Sampling

Job ID: 310-294184-1
SDG: Ottumwa-Wapello County Landfill

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CF
9056A	Anions, Ion Chromatography	SW846	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
I-3765-85	Residue, Non-filterable (TSS)	USGS	EET CF
3005A	Preparation, Total Metals	SW846	EET CF
5030B	Purge and Trap	SW846	EET CF

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

USGS = "Methods For Analysis Of Water And Fluvial Sediments", USGS, 1989

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

eurofins | Environment Testing America

310-294184 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS

City/State: CITY | STATE | Project:

Receipt Information

Date/Time Received: DATE 10/31/24 | TIME 1740 | Received By: KB

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☒ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☒ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? ☐ Yes ☒ No *If yes:* Cooler # _____ of _____

Cooler Custody Seals Present? ☐ Yes ☒ No *If yes:* Cooler custody seals intact? ☐ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☒ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☒ Yes ☒ No *If yes:* Which VOA samples are in cooler? ↓

qu

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: 2 | Correction Factor (°C): 0

• **Temp Blank Temperature** – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 1.3 | Corrected Temp (°C): 1.3

• **Sample Container Temperature**

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

Eurofins TestAmerica, Cedar Falls
3019 Venture Way

Cedar Falls IA 50613-6907
phone 319 277 2401 *fax* 319 277 2425

Chain of Custody Record

eurofins

Regulatory Program: ☐ DW ☐ NPDES ☑ RCRA ☐ Other

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact	Project Manager: Nathan Ohrt	Site Contact: Lori Creech	Date:	COC No
SCS Engineers	Email nohrt@scsengineers com	Lab Contact: Sam Miller	Carrier:	3 of 3 COCs
1690 All State Court, Suite 100	Cell 319-331-9613			Sampler
West Des Moines Iowa 50265	Analysis Turnaround Time			For Lab Use Only:
	☐ CALENDAR DAYS ☐ WORKING DAYS			Walk-in Client:
	Other:			Lab Sampling
Project Name 2nd 2024 Semi-Annual Sampling	☐ 2 weeks			
Site Ottumwa-Wapello County Landfill	☐ 1 week			Job / SDG No
P O # 27223157 25	☐ 2 days			
	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Aresenic	Cobalt	Total Suspended Solids	Trichloroethene	Tetrachloroethene	cis-1,2-Dichloroethene	Vinyl Chloride	Benzene	Sample Specific Notes
MW-67	10/30/24	11:37	G	GW		N		X	X	X		X				
MW-71	10/31/24	08:04	G	GW		N		X	X	X	X		X			
MW-74	10/31/24	12:12	G	GW		N		X	X	X	X	X	X	X	X	
MW-78	10/30/24	16:43	G	GW		N			X	X	X	X	X	X		
MW-80	10/31/24	8:56	G	GW		N							X	X		

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No	Cooler Temp (°C) Obs'd: _____ Corr'd. _____ Therm ID No. _____			
Relinquished by: Lee Tesar	Company: SCS	Date/Time: 10/31/24 17:00	Received by:	Company:	Date/Time
Relinquished by:	Company:	Date/Time	Received by:	Company:	Date/Time
Relinquished by:	Company	Date/Time	Received in Laboratory by:	Company:	Date/Time: 10/31/24 1740

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

Eurofins TestAmerica, Cedar Falls
3019 Venture Way

Cedar Falls IA 50613-6907
phone 319 277 2401 fax 319 277 2425

Chain of Custody Record

eurofins

Regulatory Program: ☐ DW ☐ NPDES ☑ RCRA ☐ Other

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact	Project Manager: Nathan Ohrt	Site Contact: Lori Creech	Date:	COC No
SCS Engineers	Email nohrt@scsengineers.com	Lab Contact: Sam Miller	Carrier:	2 of 3 COCs
1690 All State Court, Suite 100	Cell 319-331-9613			Sampler:
West Des Moines, Iowa 50265	**Analysis Turnaround Time**			**For Lab Use Only:**
	☐ CALENDAR DAYS ☐ WORKING DAYS			Walk-in Client:
	Other:			Lab Sampling
Project Name 2nd 2024 Semi-Annual Sampling	☐ 2 weeks			
Site Ottumwa-Wapello County Landfill	☐ 1 week			Job / SDG No
P O # 27223157 25	☐ 2 days			
	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Appendix I	Appendix I VOCs	Appendix I metals list	Total Suspended Solids	Sulfide	Nitrate	Sample Specific Notes
MW-63R			G	GW		N		X			X	X		
MW-65			G	GW		N			X	X	X	X		
93-MW-31R	10 30 24	1376	G	GW		N		X			X		X	
MW-61R	10 30 24	1211	G	GW		N		X			X		X	
MW-73	10 30 24	1541	G	GW		N		X			X		X	
MW-79	10 30 24	1026	G	GW		N		X			X		X	
MW-D2			G	GW		N		X			X			

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:
"Appendix I metals list" includes arsenic, barium, cadmium, copper, cobalt, lead, nickel, and zinc.

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No | Cooler Temp (°C) Obs'd._____ Corr'd._____ Therm ID No ._____

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Courier	SCS	10 31 24 1700			
Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Relinquished by	Company	Date/Time	Received in Laboratory by	Company	Date/Time
					10/31/24 1740

Page 11 of 12

11/12/2024

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-294184-1
SDG Number: Ottumwa-Wapello County Landfill

Login Number: 294184
List Number: 1
Creator: Homolar, Dana J

List Source: Eurofins Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Appendix B-2

Data Validation Documentation

Completed by: Michael Morgan
Date of Sampling: 6/3-6/2024
Lab Report Date: 7/2/2024
Site Name: Ottumwa-Wapello County Landfill - West MSWLF unit
Project Type: 1st 2024 HMSP
Lab Report Number: 310-283154-1

	OK	NO	N/A	NOTES
Sample Collection and Sample Handling				
Chain of Custody	X			
Temperature		X		Sample MW-62 was received at the laboratory outside the required temperature criteria. The client was contacted regarding this issue, and the laboratory was instructed to proceed with analysis.
Preservation	X			
Condition	X			Sample MW-39R was diluted due to the presence of an interferent; elevated reporting limits are provided.
Case Narrative		X		The method requirement for no headspace was not met.; the volatile sample Trip Blank 1 was analyzed with headspace in the sample container.
Holding Times	X			
Analytical Sensitivity and Blanks				
Method Blank Detections		X		The method blank for analytical batch 310-424467 contained m,p-Xylene and Xylenes, Total above the method detection limit. This target analyte concentration was less than the reporting limit in the method blank so re-extraction and/or re-analysis of samples was not performed.
Trip Blank Detections	X			No detections.
Accuracy				
ICV/CCV		X		The CCV associated with batch 310-424467 recovered above the upper control limit for multiple analytes; the samples associated with this CCV were non-detects for the affected analytes so the data have been reported. Method 8081B: The continuing calibration verification (ICV) associated with batch 310-424293 recovered above the upper control limit for Methoxychlor. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The ICV result for batch 310-425398 was above the upper control limit for Selenium.; sample results were non-detects, and have been reported as qualified data.
LCS/LCSD		X		The RPD of the LCS and LCSD for preparation batch 310-424460 and analytical batch 310-424715 recovered outside control limits for 2,4-Dinitrophenol. The LCSD for preparation batch 310-424460 and analytical batch 310-424715 recovered outside control limits for Famphur; these analytes were biased high in the LCSD and were not detected in the associated samples so the data have been reported. The RPD of the LCS and LCSD for preparation batch 310-424460 and analytical batch 310-424715 recovered outside control limits for 2,4-Dinitrophenol, 3,3' Dimethylbenzidine, and Methapyrilene.
MS/MSD		X		Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 310-424460; the LCS was performed in duplicate to provide precision data for this batch.
Surrogates (organics only)	X			
Precision				
QA/QC Sample RPDs	X			
Field Duplicates	X			Sample 93-MW-32 and duplicate sample MW-D1 had >50% RPD for analyzed parameters. Sample MW-58 and duplicate sample MW-D2 had <50% RPD for the analyzed parameters.

Completed by: Nathan Ohrt
Date of Sampling: 10/14-15/2024
Lab Report Date: 10/31/2024
Site Name: Ottumwa-Wapello County Landfill - West MSWLF unit
Project Type: 2nd 2024 HMSP
Lab Report Number: 310-293043

	OK	NO	N/A	NOTES
Sample Collection and Sample Handling				
Chain of Custody	X			
Temperature	X			
Preservation	X			
Condition	X			
Case Narrative	X			
Holding Times	X			
Analytical Sensitivity and Blanks				
Method Blank Detections		X		The method blank for preparation batch 500-791690 and analytical batch 500-791692 contained Sulfide above the method detection limit; this target analyte concentration was less than the reporting limit in the method blank so re-extraction and/or re-analysis of samples was not performed.
Trip Blank Detections	X			No detections.
Accuracy				
ICV/CCV	X			
LCS/LCSD	X			
MS/MSD	x			
Surrogates (organics only)	x			
Precision				
QA/QC Sample RPDs	X			
Field Duplicates	X			Sample MW-39 and duplicate sample MW-D1 had <50% RPD for the analyzed parameters. Sample MW-63R and duplicate sample MW-D2 had <50% RPD for the analyzed parameters except for cadmium (58%), cobalt (113%), and zinc (-61%).

Completed by: Nathan Ohrt
Date of Sampling: 10/30-31/2024
Lab Report Date: 11/12/2024
Site Name: Ottumwa-Wapello County Landfill - West MSWLF unit
Project Type: 2nd 2024 HMSP
Lab Report Number: 310-294184

	OK	NO	N/A	NOTES
Sample Collection and Sample Handling				
Chain of Custody	X			
Temperature	X			
Preservation	X			
Condition	X			
Case Narrative	X			
Holding Times	X			
Analytical Sensitivity and Blanks				
Method Blank Detections	X			No detections.
Trip Blank Detections	X			No detections.
Accuracy				
ICV/CCV		X		The CCV associated with batch 310-438398 recovered outside control limits for Iodomethane (-55.8%D), the LCS associated with this CCV passes CCV criteria for the affected analytes so the data was reported.
LCS/LCSD	X			
MS/MSD	x			
Surrogates (organics only)	x			
Precision				
QA/QC Sample RPDs	X			
Field Duplicates			X	

Appendix C-1

Summary of Groundwater Chemistry – HMSP

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Total Metals Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Antimony, mg/L (CAS NO - 7440-36-0)	4/14/2008	N/A	N/A	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	N/A	N/A	N/A	N/A	N/A	< 0.006	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.006	< 0.012	< 0.006	< 0.012	< 0.006	N/A	N/A	N/A	N/A	N/A	< 0.012	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.006	< 0.012	< 0.03	< 0.048	< 0.006	N/A	N/A	N/A	N/A	N/A	< 0.012	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 0.018	< 0.018	< 0.006	< 0.024	< 0.006	N/A	N/A	N/A	< 0.024	N/A	< 0.006	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 0.018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	N/A	N/A	N/A	< 0.006	N/A	< 0.006	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 0.006	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.006	< 0.006	< 0.006	0.00604	< 0.006	< 0.006	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	N/A	< 0.006	< 0.006	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.006	< 0.006	< 0.006	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.006	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.012	< 0.012	< 0.006	N/A	< 0.012	< 0.006	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 0.006	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 0.006	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.006	< 0.006	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 0.006	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.012	< 0.006	N/A	< 0.012	N/A	N/A	N/A	N/A	< 0.012	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.024	< 0.006	< 0.006	< 0.006	< 0.006	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.006	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	0.00679	0.0207	0.00787	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.006	N/A	N/A	N/A	N/A	N/A
	6/24/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.006	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	0.000778*	0.00226*	0.00135*	< 0.006	0.00225*	< 0.006	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 0.006	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	0.00435*	< 0.006	< 0.006	< 0.006	< 0.006	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 0.006	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 0.006	N/A	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	N/A	< 0.006	< 0.006	N/A	N/A	N/A
	5/18/2015	0.000267*	0.000259*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.000192*	< 0.001	0.000172*	0.000262*	0.000223*	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	0.000184*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A
	4/4/2016	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.00027*	< 0.001	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.000233*	< 0.001	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	0.000788*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	0.000285*	< 0.001	< 0.001	< 0.001	< 0.001	0.000476*	0.000232*	0.000328*	0.00042*	0.00033*	< 0.001	0.00038*	< 0.001	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000546*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 0.003	< 0.003	< 0.003	< 0.003	N/A	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.003	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	< 0.002
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	< 0.001
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.01	N/A	N/A	N/A	< 0.001	N/A
	6/16/2020	N/A	N/A	< 0.001	< 0.001	**0.0011**	< 0.001	< 0.001	< 0.004	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.00245**	**0.00211**
	11/3/2020	< 0.001	N/A	N/A	N/A	N/A	< 0.001	< 0.001	< 0.001	N/A	N/A	< 0.002	N/A	N/A	N/A	**0.00148**	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002	N/A
	4/5/2021	< 0.002	N/A	N/A	N/A	N/A	< 0.002	< 0.002	< 0.002	< 0.002	N/A	< 0.002	< 0.002	N/A	< 0.002	< 0.002	< 0.002
	8/25/2021	N/A	N/A	N/A	N/A	N/A	< 0.002	< 0.002	< 0.002	N/A	N/A	< 0.002	N/A	N/A	< 0.002	< 0.002	< 0.002
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Total Metals Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Antimony, mg/L (CAS NO - 7440-36-0)	3/8/2022	0.00256	N/A	N/A	N/A	N/A	< 0.002	< 0.002	< 0.002	N/A	N/A	< 0.002	N/A	N/A	< 0.002	< 0.002	< 0.008
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	< 0.002	< 0.002	< 0.002	N/A	N/A	< 0.002	N/A	N/A	< 0.002	< 0.002	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A
	2/21/2023	N/A	N/A	< 0.002	N/A	< 0.002	< 0.002	< 0.002	< 0.002	N/A	N/A	< 0.002	N/A	< 0.002	< 0.002	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 0.002	N/A	< 0.002	N/A	N/A	< 0.002	< 0.002	< 0.002	N/A	N/A	< 0.002	N/A	N/A	< 0.002	N/A	N/A
	7/25/2023	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 0.002	N/A	N/A	N/A	N/A	< 0.002	< 0.002	< 0.002	N/A	< 0.002	< 0.002	N/A	< 0.002	< 0.002	N/A	< 0.002
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 0.002	< 0.002	< 0.002	N/A	N/A	< 0.002	N/A	N/A	< 0.002	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A
Arsenic, mg/L (CAS NO - 7440-38-2)	4/14/2008	N/A	N/A	0.00705	0.00198	0.00473	0.045	0.00633	N/A	N/A	N/A	N/A	N/A	0.00158	N/A	N/A	N/A
	6/13/2008	N/A	N/A	0.014	0.0034	0.00281	0.0148	0.00243	N/A	N/A	N/A	N/A	N/A	0.00438	N/A	N/A	N/A
	8/20/2008	N/A	N/A	0.011	0.00155	0.00233	0.0324	0.00255	N/A	N/A	N/A	N/A	N/A	0.00104	N/A	N/A	N/A
	9/30/2008	N/A	N/A	0.00723	< 0.003	0.003	0.0143	0.00199	N/A	N/A	N/A	0.00527	N/A	0.00113	N/A	N/A	N/A
	9/30/2008	N/A	N/A	0.0105	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	0.00884	0.00151	0.00652	0.0358	0.00109	N/A	N/A	N/A	< 0.001	N/A	0.00252	N/A	N/A	N/A
	12/16/2008	N/A	N/A	0.00771	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	0.0126	0.00152	0.00258	0.046	0.00185	0.00326	0.00846	< 0.001	0.00121	0.0466	0.00252	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00313	0.00162	0.0098	< 0.001	0.041	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	0.00554	0.00571	0.0115	0.0134	0.00306	0.0493	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	0.0077	0.00202	0.0038	0.0578	0.00127	0.00378	0.0141	0.00188	N/A	0.0642	0.00474	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	0.00312	0.00293	0.0131	0.00344	N/A	0.0418	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00966	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	0.00289	< 0.001	0.00519	0.0103	0.00266	< 0.003	0.0109	< 0.003	N/A	0.0669	< 0.01	N/A	N/A	N/A
	10/14/2010	N/A	N/A	0.0104	0.0018	0.00238	0.0152	0.00289	< 0.002	0.018	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	0.00123	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	0.011	0.00391	0.00561	0.0223	0.00474	< 0.008	0.0764	< 0.002	< 0.008	N/A	N/A	N/A	N/A	N/A
	3/4/2011	< 0.015	< 0.03	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2011	< 0.006	< 0.003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/14/2011	< 0.001	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/19/2011	< 0.006	< 0.008	N/A	< 0.002	< 0.001	0.0357	0.00277	< 0.004	0.0202	< 0.004	< 0.002	N/A	N/A	N/A	N/A	N/A
	10/13/2011	< 0.003	< 0.003	0.0197	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	0.0102	N/A	N/A	N/A
	2/20/2012	N/A	N/A	0.0094	0.0122	0.0874	0.0245	0.0076	< 0.004	0.0973	< 0.004	< 0.004	0.01	0.087	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	0.0083	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	0.0131	0.00369	N/A	< 0.001	N/A	N/A	N/A	N/A	0.02	N/A	N/A	N/A
	8/8/2012	N/A	N/A	0.0177	0.00158	0.03	0.0153	0.00502	< 0.004	0.0835	0.00305	0.00618	0.0122	0.019	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00259	N/A	N/A	N/A	N/A	N/A	N/A
	10/24/2012	N/A	N/A	0.0122	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	0.0123	0.0107	0.00156	0.0965	0.00576	0.00487	0.0213	0.0052	0.00526	0.00843	0.0229	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00799	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	0.00875	0.0043	0.0024	0.0134	0.00598	0.00612	0.00826	0.00115	0.00236	0.0106	0.0529	N/A	N/A	N/A
	8/19/2013	N/A	N/A	0.00954	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	0.00227	< 0.001	0.00167	0.0302	0.00395	< 0.001	< 0.002	0.0009*	< 0.001	0.00525	0.0245	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	0.00217	N/A	0.00596	0.00221	0.000689*	0.0238	0.0011	< 0.002	0.0152	< 0.001	N/A	0.00316	0.0208	N/A	N/A	N/A
	5/18/2015	0.00358	0.00158*	0.00233	< 0.002	0.00119*	0.0102	0.00147*	< 0.002	0.0191	0.00121*	< 0.002	0.00222	0.00525	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	0.00137*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 0.002	< 0.002	0.0019*	< 0.002	< 0.002	**0.00529**	0.00126*	< 0.002	**0.0103**	< 0.002	0.00119*	0.00162*	**0.00997**	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.00241**	N/A	N/A	N/A	N/A
	4/4/2016	< 0.002	< 0.002	0.00174*	< 0.002	< 0.002	**0.00521**	**0.00215**	< 0.002	**0.00568**	< 0.002	< 0.002	**0.00651**	**0.0128**	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	0.000843*	< 0.002	**0.00424**	< 0.002	< 0.002	**0.00759**	**0.00252**	< 0.002	**0.00646**	< 0.002	< 0.002	**0.00849**	**0.0254**	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 0.002	< 0.002	**0.00291**	< 0.002	< 0.002	**0.0949**	**0.0044**	< 0.002	**0.00583**	< 0.002	< 0.002	**0.00636**	**0.0159**	N/A	N/A	N/A
	1/9/2017	N/A	N/A	**0.00288**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 0.002	< 0.002	0.00165*	< 0.002	< 0.002	**0.00521**	**0.00458**	< 0.002	**0.0129**	< 0.002	< 0.002	**0.0075**	**0.0086**	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	**0.00353**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 0.002	< 0.002	0.00177*	< 0.002	< 0.002	**0.0599**	**0.00482**	0.000566*	**0.00277**	0.000531*	< 0.002	**0.0159**	**0.0292**	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.00271**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	0.000455*	0.000592*	**0.00418**	0.000497*	N/A	**0.0222**	**0.00158**	**0.00157**	**0.00886**	0.000586*	0.000923*	**0.0108**	**0.0139**	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000668*	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Total Metals Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Arsenic, mg/L (CAS NO - 7440-38-2)	10/22/2018	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 0.002	< 0.002	**0.00512**	< 0.002	< 0.002	**0.00348**	**0.00239**	< 0.002	**0.00538**	< 0.002	< 0.002	**0.00425**	**0.0167**	N/A	N/A	**0.00324**
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 0.002	< 0.002	**0.00353**	< 0.002	< 0.002	**0.00523**	**0.00479**	< 0.002	**0.00719**	< 0.002	< 0.002	**0.0107**	**0.0239**	N/A	N/A	0.000854*
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0123**	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	**0.00311**	N/A
	6/16/2020	N/A	N/A	**0.00619**	< 0.002	**0.00863**	**0.00282**	**0.00448**	< 0.008	**0.00718**	< 0.002	< 0.002	**0.00349**	**0.0169**	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0193**	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0067**	**0.00424**
	11/3/2020	< 0.002	N/A	**0.00393**	N/A	N/A	**0.0384**	**0.00751**	< 0.002	N/A	N/A	0.00141*	N/A	**0.0259**	N/A	0.00147*	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	**0.0395**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.00211**
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.00233**	N/A
	4/5/2021	< 0.002	N/A	**0.00579**	< 0.002	**0.00824**	**0.00247**	**0.00273**	< 0.002	**0.00446**	< 0.002	< 0.002	0.00117*	**0.0198**	< 0.002	< 0.002	0.000942*
	4/5/2021	N/A	N/A	0.00576*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	**0.00466**	N/A	N/A	**0.0042**	**0.00346**	< 0.002	N/A	N/A	< 0.002	N/A	**0.0228**	< 0.002	< 0.002	0.0011*
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	**0.00208**	N/A	**0.0037**	0.00193*	N/A	**0.0419**	**0.00428**	< 0.002	**0.00565**	< 0.002	< 0.002	0.0012*	0.0406	< 0.002	< 0.002	< 0.008
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	**0.0045**	N/A	N/A	**0.00566**	**0.00407**	< 0.002	N/A	N/A	< 0.002	N/A	**0.0235**	< 0.002	< 0.002	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A
	8/1/2022	N/A	N/A	N/A	N/A	**0.00582**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A
	2/21/2023	N/A	N/A	**0.00591**	< 0.002	**0.00886**	**0.00563**	**0.00222**	< 0.002	**0.00509**	< 0.002	< 0.002	0.000904*	**0.0247**	< 0.002	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	0.00164*	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 0.002	N/A	**0.00475**	N/A	N/A	**0.0223**	**0.00466**	< 0.002	N/A	N/A	< 0.002	N/A	**0.0187**	< 0.002	N/A	N/A
	7/25/2023	N/A	N/A	**0.00466**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 0.002	N/A	**0.00455**	< 0.002	**0.00393**	**0.0259**	**0.00702**	< 0.002	**0.00585**	< 0.002	< 0.002	0.00109*	**0.0264**	0.00158*	N/A	**0.00385**
	6/4/2024	N/A	N/A	N/A	N/A	**0.00377**	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	**0.00451**	N/A	N/A	**0.00422**	**0.00637**	0.000908*	N/A	N/A	< 0.002	N/A	**0.026**	< 0.002	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	**0.00313**	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A
Barium, mg/L (CAS NO - 7440-39-3)	4/14/2008	N/A	N/A	0.0284	0.0401	0.642	0.0246	0.0118	N/A	N/A	N/A	N/A	N/A	0.0355	N/A	N/A	N/A
	6/13/2008	N/A	N/A	0.0327	0.078	0.262	0.0215	0.0174	N/A	N/A	N/A	N/A	N/A	0.0555	N/A	N/A	N/A
	8/20/2008	N/A	N/A	0.154	0.182	2.64	0.411	0.0288	N/A	N/A	N/A	N/A	N/A	0.152	N/A	N/A	N/A
	9/30/2008	N/A	N/A	0.0459	0.0257	0.278	0.0182	0.0127	N/A	N/A	N/A	0.069	N/A	0.0362	N/A	N/A	N/A
	9/30/2008	N/A	N/A	0.0307	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	0.0487	0.0401	0.734	0.0178	0.0147	N/A	N/A	N/A	0.0216	N/A	0.0575	N/A	N/A	N/A
	12/16/2008	N/A	N/A	0.0792	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	0.0311	0.0298	0.464	< 0.01	0.0126	0.018	0.0347	0.057	0.0171	0.508	0.0447	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0247	0.0277	0.458	0.0203	0.499	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	0.0117	0.0253	0.0559	0.417	0.0275	0.547	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	0.0313	0.0256	1.39	0.0102	0.015	0.0185	0.0951	0.0735	N/A	0.547	0.0693	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	0.0304	0.0213	0.135	0.0918	N/A	0.584	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.15	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	0.0221	0.0389	0.865	< 0.01	0.0151	0.0187	0.148	0.0547	N/A	0.396	0.0444	N/A	N/A	N/A
	10/14/2010	N/A	N/A	0.0598	0.137	0.337	0.0134	0.0201	0.0171	0.148	0.0562	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	0.124	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	0.0289	0.0773	0.585	< 0.01	0.0156	0.0189	0.108	0.0896	0.0176	N/A	N/A	N/A	N/A	N/A
	3/4/2011	0.0342	0.0207	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2011	0.0161	0.0319	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/14/2011	0.0312	0.015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/19/2011	0.0245	< 0.01	N/A	0.0145	0.0803	< 0.01	< 0.01	0.0153	0.098	0.0509	0.0146	N/A	N/A	N/A	N/A	N/A
	10/13/2011	0.0301	0.013	0.0565	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.145	0.12	N/A	N/A	N/A
	2/20/2012	N/A	N/A	0.0464	0.127	1.53	0.0928	0.125	0.0675	1.23	0.0571	0.0253	0.215	0.629	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	0.108	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	0.0117	0.409	N/A	0.0169	N/A	N/A	N/A	N/A	0.123	N/A	N/A	N/A
	8/8/2012	N/A	N/A	0.043	0.0568	1.69	0.0147	0.0208	0.0263	0.272	0.116	0.0431	0.187	0.122	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.105	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	0.0248	0.0574	0.175	0.0229	0.0218	0.0146	0.0484	0.0782	0.041	0.208	0.13	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0375	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	0.0192	0.0657	0.19	0.00645*	0.0418	0.0133	0.0463	0.0684	0.0382	0.148	0.127	N/A	N/A	N/A
	8/19/2013	N/A	N/A	0.0168	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	0.0177	0.043	0.401	0.0217	0.0386	0.00567*	0.075	0.0882	0.0225	0.145	0.145	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	0.0349	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	0.048	N/A	0.0187	0.0516	0.187	0.0032*	0.0291	0.0102	0.0545	0.076	N/A	0.234	0.129	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Total Metals Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Barium, mg/L (CAS NO - 7440-39-3)	5/18/2015	0.0369	0.0185	0.0198	0.0323	0.0904	0.0084	0.0102	0.0125	0.0452	0.0581	0.0187	0.131	0.138	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	0.0102	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	0.0288	0.0149	0.0224	0.0296	0.0666	0.00934	0.0108	0.017	0.0479	0.0387	0.0221	0.0675	0.137	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0645	N/A	N/A	N/A	N/A
	4/4/2016	0.0224	0.0113	0.0166	0.0173	0.0787	0.00613	0.00929	0.00847	0.025	0.0333	0.0161	0.178	0.153	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	0.0207	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	0.0292	0.0142	0.027	0.0208	0.0695	0.00853	0.0122	0.0117	0.0525	0.0367	0.0184	0.196	0.277	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	0.0206	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	0.0261	0.0129	0.0243	0.0266	0.0612	0.00785	0.0104	0.00962	0.128	0.0334	0.0162	0.171	0.239	N/A	N/A	N/A
	1/9/2017	N/A	N/A	0.0248	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	0.026	0.0114	0.0196	0.0215	0.0679	0.00817	0.0102	0.0101	0.0619	0.0334	0.0166	0.232	0.209	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0101	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	0.0229	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	0.0284	0.0112	0.0233	0.0202	0.0649	0.00793	0.0103	0.0112	0.0281	0.045	0.018	0.316	0.271	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0287	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	0.0233	0.0113	0.0199	0.0179	N/A	0.00914	0.015	0.0251	0.0695	0.0343	0.0154	0.355	0.133	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0339	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	0.0693	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	0.0242	0.0116	0.02	0.019	0.0476	0.00866	0.0158	0.0119	0.0348	0.0288	0.0144	0.315	0.201	N/A	N/A	0.0138
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0151	N/A	N/A	N/A	N/A	N/A
	8/26/2019	0.0245	0.012	0.0211	0.0194	0.0699	0.00906	0.017	0.0129	0.0458	0.0355	0.0156	0.423	0.197	N/A	N/A	0.0135
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.439	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0159	N/A	N/A	N/A	0.116	N/A
	6/16/2020	N/A	N/A	0.0212	0.0611	0.167	0.00729	0.0155	0.00376	0.0402	0.0384	0.0134	0.321	0.148	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.194	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.148	0.026
	9/22/2020	N/A	N/A	N/A	0.0165	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/3/2020	0.023	N/A	0.0226	N/A	N/A	0.00836	0.0145	0.0111	N/A	N/A	0.0144	N/A	0.266	N/A	0.0361	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	0.00845	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0334
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.051	N/A
	4/5/2021	0.0268	N/A	0.0191	0.0225	0.182	0.0084	0.0176	0.0137	0.0429	0.0429	0.0157	0.281	0.216	0.0769	0.0349	0.0233
	4/5/2021	N/A	N/A	0.0195	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	0.0198	N/A	N/A	0.00868	0.0174	0.0115	N/A	N/A	0.0137	N/A	0.243	0.0579	0.0378	0.0205
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0117	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	0.0249	N/A	0.0283	0.0219	N/A	0.0109	0.0157	0.00997	0.051	0.0323	0.0149	0.228	0.361	0.0626	0.0381	0.0169
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0106	N/A	0.0323	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	0.0234	N/A	N/A	0.00836	0.0163	0.0116	N/A	N/A	0.013	N/A	0.195	0.0579	0.0362	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0133	N/A	N/A	N/A	N/A	N/A
	8/1/2022	N/A	N/A	N/A	N/A	0.158	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0695	N/A	N/A
	2/21/2023	N/A	N/A	0.0239	0.0188	0.136	0.00835	0.0133	0.0154	0.0291	0.0305	0.0142	0.203	0.289	0.0671	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	0.0136	N/A	N/A	N/A	0.0164	N/A	N/A	N/A	N/A	N/A
	7/25/2023	0.024	N/A	0.0279	N/A	N/A	0.00939	0.0148	0.0107	N/A	N/A	0.0141	N/A	0.217	0.0668	N/A	N/A
	7/25/2023	N/A	N/A	0.028	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	0.022	N/A	0.0278	0.0141	0.0649	0.0119	0.014	0.0233	0.0317	0.0264	0.0121	0.171	0.331	0.234	N/A	0.0184
	6/4/2024	N/A	N/A	N/A	N/A	0.0605	N/A	N/A	0.0235	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	0.0309	N/A	N/A	0.0111	0.0151	0.015	N/A	N/A	0.0127	N/A	0.399	0.0735	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	0.0101	N/A	N/A	N/A	N/A	0.0121	N/A	N/A	N/A	N/A	N/A
Beryllium, mg/L (CAS NO - 7440-41-7)	4/14/2008	N/A	N/A	0.00107	< 0.001	0.00953	0.00886	< 0.001	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.001	< 0.001	0.00212	0.00266	< 0.001	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A
	8/20/2008	N/A	N/A	0.00124	< 0.001	0.00656	0.00978	< 0.001	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A
	9/30/2008	N/A	N/A	0.00147	< 0.001	0.00306	0.00338	< 0.001	N/A	N/A	N/A	0.00528	N/A	< 0.001	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	0.00394	< 0.001	0.0104	0.00154	0.00114	N/A	N/A	N/A	< 0.001	N/A	< 0.001	N/A	N/A	N/A
	12/16/2008	N/A	N/A	0.00254	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	0.00156	< 0.001	0.00752	0.00138	0.00105	0.00112	0.00254	0.00274	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	< 0.001	0.035	0.00116	< 0.001	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	0.0027	0.00142	< 0.1	0.00119	< 0.001	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	0.00117	< 0.001	0.021	< 0.001	0.00112	0.00318	< 0.001	0.0022	N/A	0.0017	< 0.004	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00278	0.00107	0.00368	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 0.001	< 0.001	0.00588	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	< 0.001	< 0.001	N/A	N/A	N/A
	10/14/2010	N/A	N/A	0.00204	< 0.001	0.00218	< 0.001	0.0014	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Total Metals Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Beryllium, mg/L (CAS NO - 7440-41-7)	2/24/2011	N/A	N/A	< 0.001	< 0.001	0.0128	< 0.001	0.00167	< 0.001	< 0.001	0.00377	< 0.001	N/A	N/A	N/A	N/A	N/A
	3/4/2011	0.00126	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2011	< 0.001	0.00107	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/14/2011	0.00133	0.00118	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/19/2011	< 0.001	< 0.001	N/A	0.00435	< 0.001	< 0.001	< 0.001	0.00177	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A	N/A	N/A
	10/13/2011	< 0.001	< 0.001	0.00184	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	0.00623	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 0.004	< 0.004	0.0063	< 0.004	< 0.004	< 0.004	0.0041	< 0.004	< 0.004	< 0.004	0.0078	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 0.004	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.001	0.0056	N/A	< 0.001	N/A	N/A	N/A	N/A	0.00524	N/A	N/A	N/A
	8/8/2012	N/A	N/A	0.00101	< 0.001	0.0325	0.00142	< 0.001	0.00992	0.0138	0.00299	0.00189	0.00164	0.00332	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00397	N/A	N/A	N/A	N/A	N/A	N/A
	10/24/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 0.001	< 0.001	0.00251	0.00709	0.00156	0.00162	< 0.001	0.00315	0.0012	0.00134	0.00321	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00183	N/A	N/A	N/A	N/A	N/A
	6/24/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00269	N/A	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	0.000429*	0.000582*	0.00192	0.000783*	0.00285	0.00218	0.000592*	0.00113	0.000559*	0.00151	0.00588	N/A	N/A	N/A
	8/19/2013	N/A	N/A	0.000661*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 0.001	< 0.001	0.00443	0.00892	0.00182	0.000804*	0.00233	0.00553	0.000534*	0.00196	0.00266	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	0.00933	N/A	0.000385*	0.000711*	0.00114	0.000386*	0.00188	0.000402*	0.000295*	0.00247	N/A	0.00449	0.00125	N/A	N/A	N/A
	5/18/2015	0.00195*	0.00155*	0.000042*	< 0.001	0.000353*	0.000086*	0.000097*	0.000332*	0.000206*	0.000491*	< 0.001	< 0.001	0.000143*	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	0.000057*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	0.000167*	< 0.001	0.000411*	0.000113*	0.000116*	< 0.001	0.000144*	0.000298*	< 0.001	0.000069*	0.000128*	0.000169*	0.000465*	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000068*	N/A	N/A	N/A	N/A
	4/4/2016	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.000272*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.000427*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.000295*	0.000403*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.000475*	< 0.001	< 0.001	< 0.001	< 0.001	0.000249*	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000413*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	0.00021*	< 0.001	< 0.001	< 0.001	< 0.001	0.000336*	0.000216*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 0.001	< 0.001	< 0.001	< 0.001	N/A	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	< 0.001
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	< 0.001
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0014**	N/A	N/A	N/A	0.000362*	N/A
	6/16/2020	N/A	N/A	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.0054**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.00156**	**0.00108**
	11/3/2020	< 0.001	N/A	N/A	N/A	N/A	< 0.001	< 0.001	0.000322*	N/A	N/A	**0.00188**	N/A	N/A	N/A	< 0.001	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A
	4/5/2021	< 0.001	N/A	N/A	N/A	N/A	< 0.001	< 0.001	< 0.001	< 0.001	N/A	0.000308*	< 0.001	N/A	< 0.001	< 0.001	< 0.001
	8/25/2021	N/A	N/A	N/A	N/A	N/A	< 0.001	< 0.001	0.000878*	N/A	N/A	< 0.001	N/A	N/A	< 0.001	< 0.001	< 0.001
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	0.000864*	N/A	N/A	N/A	N/A	< 0.001	< 0.001	< 0.004	N/A	N/A	< 0.004	N/A	N/A	< 0.001	< 0.001	< 0.004
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	< 0.001	< 0.001	< 0.001	N/A	N/A	< 0.001	N/A	N/A	< 0.001	< 0.001	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A
	2/21/2023	N/A	N/A	< 0.001	N/A	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	< 0.001	N/A	< 0.001	< 0.001	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	0.000317*	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 0.001	N/A	< 0.001	N/A	N/A	< 0.001	< 0.001	< 0.001	N/A	N/A	< 0.001	N/A	N/A	< 0.001	N/A	N/A
	7/25/2023	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 0.001	N/A	N/A	N/A	N/A	< 0.001	< 0.001	< 0.001	N/A	< 0.001	< 0.001	N/A	< 0.001	0.000379*	N/A	< 0.001
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 0.001	0.000371*	< 0.004	N/A	N/A	< 0.001	N/A	N/A	< 0.001	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Total Metals Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Cadmium, mg/L (CAS NO - 7440-43-9)	4/14/2008	N/A	N/A	< 0.0005	< 0.0005	0.00496	0.000533	0.00136	N/A	N/A	N/A	N/A	N/A	0.00391	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.0005	< 0.0005	0.00152	0.000557	0.00326	N/A	N/A	N/A	N/A	N/A	0.00304	N/A	N/A	N/A
	8/20/2008	N/A	N/A	0.000952	< 0.0005	0.00428	0.000689	0.00171	N/A	N/A	N/A	N/A	N/A	0.00266	N/A	N/A	N/A
	9/30/2008	N/A	N/A	0.000873	< 0.0005	0.00184	0.000542	0.00186	N/A	N/A	N/A	0.000557	N/A	0.00228	N/A	N/A	N/A
	9/30/2008	N/A	N/A	0.000853	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 0.0005	0.000581	0.00752	0.000602	0.002	N/A	N/A	N/A	< 0.0005	N/A	0.00125	N/A	N/A	N/A
	12/16/2008	N/A	N/A	0.00168	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	0.00504	0.0012	0.00648	0.00104	0.00532	0.00452	0.0064	0.00294	0.000699	0.00122	0.00308	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00548	0.00155	0.0182	0.000659	0.00122	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	0.00165	0.0124	0.000786	0.000694	< 0.0005	0.00122	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	0.00548	0.000649	0.00588	0.00214	0.00408	0.00938	0.00095	0.00149	N/A	0.00544	0.00988	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	0.0252	0.00492	0.00073	0.00192	N/A	0.0066	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00159	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	0.00179	0.00248	0.00388	0.000981	0.0029	0.00619	< 0.0005	0.000803	N/A	0.00392	0.0019	N/A	N/A	N/A
	10/14/2010	N/A	N/A	0.00437	0.00176	0.00191	< 0.0005	0.00381	0.00316	0.000881	0.00382	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	0.00204	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	0.00131	0.00112	0.00713	0.00128	0.00348	0.00275	0.0007	0.00114	0.00752	N/A	N/A	N/A	N/A	N/A
	3/4/2011	0.00616	0.00254	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2011	0.00187	0.00422	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/14/2011	0.00264	0.00224	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/19/2011	0.000934	0.00272	N/A	0.0074	0.00165	< 0.0005	0.00279	0.00495	0.00404	0.00106	0.00906	N/A	N/A	N/A	N/A	N/A
	10/13/2011	0.00883	0.002	0.00524	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00127	0.00212	N/A	N/A	N/A
	2/20/2012	N/A	N/A	0.0022	0.0014	0.0108	0.0036	0.0083	0.0049	0.02	0.0009	0.0022	< 0.0008	0.0133	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	0.0022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	0.000809	0.00351	N/A	0.00343	N/A	N/A	N/A	N/A	0.0011	N/A	N/A	N/A
	8/8/2012	N/A	N/A	0.0116	0.00183	0.031	0.00416	0.00704	0.00565	0.0388	0.00129	0.000656	0.000962	0.00124	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00156	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	0.00253	0.00272	0.0107	0.00234	0.00262	0.00399	0.0108	0.00228	0.00263	0.00104	< 0.0005	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000889	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	0.00163	0.0133	0.00173	0.00109	0.0144	0.00164	0.00392	0.00089	0.00028*	0.00108	0.00157	N/A	N/A	N/A
	8/19/2013	N/A	N/A	0.00261	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/21/2013	N/A	N/A	N/A	0.00343	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	0.00758	0.00253	0.00347	0.000147*	0.0157	0.00128	0.000897	0.00148	0.00187	0.00491	0.00684	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	0.00182	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	0.00133	N/A	0.000675	0.000796	0.00113	0.000232*	0.0127	0.00189	0.00128	0.00119	N/A	0.000879	0.000662	N/A	N/A	N/A
	5/18/2015	0.000612	0.00132	0.000994	0.000868	0.000395*	0.000142*	0.00292	0.00212	0.0022	0.000639	0.000407*	0.00062	0.0009	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	0.00303	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	0.000157*	0.000484*	0.000495*	0.000258*	**0.000504**	< 0.0005	**0.00214**	**0.0017**	< 0.0005	0.000169*	0.000156*	< 0.0005	< 0.0005	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0005	N/A	N/A	N/A	N/A
	4/4/2016	0.000069*	< 0.0005	0.000092*	0.000078*	0.000487*	< 0.0005	0.000496*	**0.000699**	0.000295*	0.00012*	0.000089*	< 0.0005	< 0.0005	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	0.000065*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	0.000052*	< 0.0005	0.000172*	0.000089*	0.000483*	0.000055*	**0.00221**	0.000095*	< 0.0005	0.000133*	0.000149*	< 0.0005	0.000062*	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	0.000102*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	0.000042*	0.000071*	0.000066*	0.000199*	0.00049*	0.00009*	**0.00097**	0.00009*	0.000079*	0.000198*	0.000058*	< 0.0005	0.000061*	N/A	N/A	N/A
	1/9/2017	N/A	N/A	0.000089*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	0.000113*	< 0.0005	< 0.0005	0.000176*	0.00038*	0.000089*	0.000221*	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	0.000077*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	**0.00054**	< 0.0005	0.000217*	0.000139*	**0.00063**	0.000319*	**0.000761**	**0.0025**	0.000098*	0.000439*	0.000184*	0.000086*	**0.000735**	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000076*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	0.000217*	< 0.0005	< 0.0005	**0.000777**	N/A	0.000221*	**0.000921**	**0.000704**	< 0.0005	0.000266*	**0.000711**	< 0.0005	< 0.0005	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0005	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	0.000327*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/14/2019	N/A	N/A	N/A	< 0.0005	N/A	N/A	N/A	N/A	N/A	N/A	**0.000806**	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.000189*	< 0.0005	0.000235*	0.000451*	< 0.0005	< 0.0005	0.000223*	< 0.0005	< 0.0005	N/A	N/A	< 0.001
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00023*	N/A	N/A	N/A	N/A	N/A
	8/26/2019	**0.000622**	**0.00013**	0.000047*	**0.000102**	**0.000488**	< 0.0001	**0.000488**	**0.000141**	< 0.0001	0.00005*	**0.00105**	< 0.0001	< 0.0001	N/A	N/A	< 0.0001
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0001	N/A	N/A	N/A	N/A
	11/19/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.00776**	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.00554**	N/A	N/A	N/A	**0.000147**	N/A
	6/16/2020	N/A	N/A	< 0.0001	0.000094*	**0.00149**	< 0.0001	0.000081*	**0.00919**	< 0.0001	< 0.0001	**0.00152**	< 0.0001	0.000077*	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00007*	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.000805**	< 0.0001
	11/3/2020	0.000066*	N/A	**0.000131**	N/A	N/A	< 0.0001	**0.00148**	**0.000109**	N/A	N/A	**0.0033**	N/A	< 0.0001	N/A	**0.000443**	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 0.0001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Total Metals Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Cadmium, mg/L (CAS NO - 7440-43-9)	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000066
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000511	N/A
	4/5/2021	< 0.0001	N/A	< 0.0001	0.000091*	0.000263	< 0.0001	0.000332	0.000791	< 0.0001	0.000056*	0.00168	< 0.0001	< 0.0001	0.000264	0.000182	0.000746
	4/5/2021	N/A	N/A	< 0.0004	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 0.0001	N/A	N/A	0.000092*	0.000595	0.000092*	N/A	N/A	0.00211	N/A	< 0.0001	0.000121	0.000198	< 0.0001
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000082*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	0.001	N/A	< 0.0001	0.000873	N/A	< 0.0001	0.000164	< 0.0004	< 0.0001	< 0.0001	0.0007	< 0.0001	< 0.0001	0.000066*	0.000206	< 0.0004
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0001	N/A	< 0.0001	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	0.000376	N/A	N/A	< 0.0001	0.00027	0.00018	N/A	N/A	0.000527	N/A	< 0.0001	0.000126	0.000133	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000614	N/A	N/A	N/A	N/A	N/A
	8/1/2022	N/A	N/A	N/A	N/A	0.00101	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000076*	N/A	N/A
	2/21/2023	N/A	N/A	< 0.0001	0.000216	0.000463	< 0.0001	0.000617	0.000216	0.000151	< 0.0001	0.000771	< 0.0001	< 0.0001	0.000062*	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	0.000629	N/A	N/A	N/A	0.00267	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 0.0002	N/A	< 0.0002	N/A	N/A	< 0.0002	0.000616	< 0.0002	N/A	N/A	0.000637	N/A	< 0.0002	< 0.0002	N/A	N/A
	7/25/2023	N/A	N/A	< 0.0002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 0.0002	N/A	0.00021	< 0.0002	0.0011	< 0.0002	0.000228	0.00136	0.00088	< 0.0002	0.00403	< 0.0002	< 0.0002	0.00106	N/A	0.000261
	6/4/2024	N/A	N/A	N/A	N/A	0.00107	N/A	N/A	0.0014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	< 0.0002	N/A	N/A	< 0.0002	0.00018*	0.000241	N/A	N/A	0.00182	N/A	0.000197*	0.000218	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 0.0002	N/A	N/A	N/A	N/A	0.00331	N/A	N/A	N/A	N/A	N/A
Chromium, mg/L (CAS NO - 7440-47-3)	4/14/2008	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A
	8/20/2008	N/A	N/A	0.039	0.0361	0.431	0.447	< 0.02	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A	0.0214	N/A	< 0.02	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A	< 0.02	N/A	< 0.02	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	< 0.02	< 0.02	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	< 0.02	< 0.02	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A	N/A	N/A
	3/4/2011	< 0.02	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2011	< 0.02	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/14/2011	< 0.02	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/19/2011	< 0.02	< 0.02	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A	N/A	N/A
	10/13/2011	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	0.0206	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 0.02	< 0.02	0.174	0.0364	0.0311	< 0.02	0.0987	< 0.02	< 0.02	< 0.02	0.197	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.02	< 0.02	N/A	< 0.02	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 0.02	< 0.02	< 0.02	0.00237*	0.00335*	< 0.02	0.00206*	< 0.02	< 0.02	0.00914*	0.0128*	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 0.02	< 0.02	0.00267*	0.0137*	0.00173*	< 0.02	< 0.02	< 0.02	< 0.02	0.00435*	< 0.02	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	0.00462*	N/A	< 0.02	0.00521*	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	0.0172*	< 0.02	N/A	N/A	N/A
	5/18/2015	< 0.025	< 0.025	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00193*	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A
	4/4/2016	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.000771*	< 0.005	< 0.005	0.0007*	< 0.005	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.000619*	< 0.005	< 0.005	0.000536*	0.000541*	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.000431*	0.000418*	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Total Metals Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Chromium, mg/L (CAS NO - 7440-47-3)	6/26/2017	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.000826*	< 0.005	< 0.005	0.000925*	< 0.005	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.000869*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00126*	0.000911*	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 0.005	< 0.005	0.00134*	< 0.005	N/A	< 0.005	< 0.005	0.00132*	0.00147*	< 0.005	0.00133*	0.00209*	0.00138*	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00116*	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00116*	< 0.005	N/A	N/A	< 0.005
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 0.005	0.00339*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	**0.0283**	< 0.005	N/A	N/A	< 0.005
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0014*	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.05	N/A	N/A	N/A	**0.00887**	N/A
	6/16/2020	N/A	N/A	< 0.005	< 0.005	0.00143*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.014**	0.00135*
	11/3/2020	< 0.005	N/A	N/A	N/A	N/A	< 0.005	< 0.005	< 0.005	N/A	N/A	< 0.005	N/A	N/A	N/A	< 0.005	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A
	4/5/2021	< 0.005	N/A	N/A	N/A	N/A	< 0.005	< 0.005	< 0.005	< 0.005	N/A	< 0.005	< 0.005	N/A	< 0.005	< 0.005	< 0.005
	8/25/2021	N/A	N/A	N/A	N/A	N/A	< 0.005	< 0.005	< 0.005	N/A	N/A	< 0.005	N/A	N/A	< 0.005	< 0.005	< 0.005
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 0.005	N/A	N/A	N/A	N/A	< 0.005	< 0.005	< 0.005	N/A	N/A	< 0.005	N/A	N/A	< 0.005	< 0.005	< 0.02
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	< 0.005	< 0.005	< 0.005	N/A	N/A	< 0.005	N/A	N/A	< 0.005	< 0.005	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A
	2/21/2023	N/A	N/A	< 0.005	N/A	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	< 0.005	N/A	< 0.005	< 0.005	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 0.005	N/A	< 0.005	N/A	N/A	< 0.005	< 0.005	< 0.005	N/A	N/A	< 0.005	N/A	N/A	< 0.005	N/A	N/A
	7/25/2023	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 0.005	N/A	N/A	N/A	N/A	< 0.005	< 0.005	< 0.005	N/A	< 0.005	< 0.005	N/A	< 0.005	0.00166*	N/A	< 0.005
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 0.005	< 0.005	< 0.005	N/A	N/A	< 0.005	N/A	N/A	< 0.005	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A
Cobalt, mg/L (CAS NO - 7440-48-4)	4/14/2008	N/A	N/A	0.0367	< 0.02	0.0826	0.0552	0.0365	N/A	N/A	N/A	N/A	N/A	0.0387	N/A	N/A	N/A
	6/13/2008	N/A	N/A	0.0574	< 0.02	0.0328	0.0387	0.0419	N/A	N/A	N/A	N/A	N/A	0.0483	N/A	N/A	N/A
	8/20/2008	N/A	N/A	0.0738	0.0201	0.218	0.299	0.0443	N/A	N/A	N/A	N/A	N/A	0.0531	N/A	N/A	N/A
	9/30/2008	N/A	N/A	0.0335	< 0.02	0.0455	0.0636	0.0406	N/A	N/A	N/A	0.0567	N/A	< 0.02	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	0.052	< 0.02	0.131	0.0681	0.0423	N/A	N/A	N/A	< 0.02	N/A	0.0332	N/A	N/A	N/A
	12/16/2008	N/A	N/A	0.034	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	0.0366	< 0.02	0.0695	0.049	0.0422	0.105	0.0317	< 0.02	< 0.02	0.055	0.0664	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0747	< 0.02	0.0403	< 0.02	0.0538	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	0.0489	0.101	< 0.02	0.0721	< 0.02	0.0633	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 0.02	< 0.02	0.0767	0.0456	0.049	0.0793	< 0.02	< 0.02	N/A	0.0704	0.0448	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	0.061	0.111	0.0381	< 0.02	N/A	0.0832	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.029	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	0.0137	0.0169	0.0644	0.0387	0.059	0.0942	0.0216	0.00208	N/A	0.0931	0.013	N/A	N/A	N/A
	10/14/2010	N/A	N/A	0.0391	0.0131	0.0076	0.0345	0.0596	0.0723	0.0396	< 0.00155	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	0.0161	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	0.0252	0.0292	0.095	0.048	0.0471	0.093	0.0562	0.00351	0.00483	N/A	N/A	N/A	N/A	N/A
	3/4/2011	0.0465	0.00669	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2011	0.0042	0.0178	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/14/2011	0.0143	0.0101	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/19/2011	0.0112	0.00194	N/A	0.0704	0.00761	0.0381	0.0472	0.0662	0.0206	< 0.00155	0.0119	N/A	N/A	N/A	N/A	N/A
	10/13/2011	0.014	0.00337	0.0547	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00818	0.0454	N/A	N/A	N/A
	2/20/2012	N/A	N/A	0.0222	0.0185	0.0827	0.0624	0.0768	0.0841	0.114	0.0015	0.0058	0.0049	0.128	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	0.0195	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	0.0512	0.0577	N/A	0.0622	N/A	N/A	N/A	N/A	0.00815	N/A	N/A	N/A
	8/8/2012	N/A	N/A	0.029	0.00783	0.34	0.0644	0.0994	0.0445	0.188	0.00639	0.0311	0.0121	0.00636	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00748	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	0.0217	0.0381	0.0312	0.122	0.131	0.109	0.0317	0.00801	0.0309	0.00482	0.00757	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0239	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Total Metals Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Cobalt, mg/L (CAS NO - 7440-48-4)	8/19/2013	N/A	N/A	0.0247	0.0112	0.015	0.0716	0.155	0.0308	0.0225	< 0.00132	0.00952	0.0124	0.0166	N/A	N/A	N/A
	8/19/2013	N/A	N/A	0.024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	0.0136	0.0343	0.0753	0.0835	0.102	0.0669	0.0399	0.00355*	0.00505*	0.00596*	0.0331	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	0.035	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	0.0283	N/A	0.0266	0.0314	0.014	0.0838	0.133	0.0668	0.0201	0.00827	N/A	0.0221	0.00504	N/A	N/A	N/A
	5/18/2015	0.0198	0.0159	0.0256	0.0102	0.0017	0.0877	0.137	0.0401	0.0478	0.00153	0.00356	0.00227	0.0346	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	0.136	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	**0.00323**	**0.00108**	**0.0121**	**0.0124**	**0.00138**	**0.102**	**0.0979**	**0.0447**	**0.0267**	**0.000558**	**0.00473**	0.000261*	**0.0143**	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000419*	N/A	N/A	N/A	N/A
	4/4/2016	0.000046*	0.00011*	**0.0147**	0.000122*	**0.000995**	**0.0898**	**0.128**	**0.0238**	**0.0274**	0.00023*	**0.000811**	**0.000898**	**0.0173**	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	0.000186*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	**0.00935**	**0.012**	**0.0193**	**0.00278**	**0.00231**	**0.0722**	**0.0998**	**0.0271**	**0.0103**	0.000264*	**0.00291**	0.000441*	**0.0163**	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	**0.00285**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	**0.00833**	**0.00558**	**0.0196**	**0.00478**	**0.00391**	**0.0848**	**0.119**	**0.0249**	**0.00399**	0.000172*	**0.00108**	0.000242*	**0.00282**	N/A	N/A	N/A
	1/9/2017	N/A	N/A	**0.0202**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	**0.00104**	**0.000722**	**0.0203**	**0.00269**	**0.00173**	**0.0833**	**0.116**	**0.0267**	**0.00911**	0.000337*	**0.00256**	**0.00102**	**0.00818**	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0265**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/19/2017	N/A	N/A	**0.0263**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	**0.0194**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	**0.00279**	0.000121*	**0.0175**	0.000177*	**0.00517**	**0.0662**	**0.118**	**0.016**	**0.0168**	0.000129*	0.000213*	**0.00196**	**0.00761**	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0161**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	0.0009*	0.000695*	**0.0211**	0.000922*	N/A	**0.0281**	**0.0567**	**0.0213**	**0.00554**	< 0.001	**0.00249**	**0.00119**	**0.0149**	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000431*	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	0.000446*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 0.0005	0.000119*	**0.0284**	0.000126*	0.000231*	**0.108**	**0.107**	**0.00314**	**0.0146**	0.000293*	0.000195*	**0.00155**	**0.00865**	N/A	N/A	**0.247**
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00023*	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 0.0005	**0.0038**	**0.0384**	**0.00388**	**0.000951**	**0.103**	**0.115**	**0.033**	**0.00678**	0.000474*	**0.0195**	**0.00209**	**0.00804**	N/A	N/A	**0.0596**
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.00228**	N/A	N/A	N/A	N/A
	11/19/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.118**	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0038**	N/A	N/A	N/A	**0.002**	N/A
	6/16/2020	N/A	N/A	**0.0309**	< 0.0005	**0.124**	**0.0905**	**0.103**	**0.129**	**0.00962**	**0.00081**	**0.00131**	**0.000884**	**0.0055**	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.00424**	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0105**	**0.0441**
	11/3/2020	**0.000567**	N/A	**0.0243**	N/A	N/A	**0.0363**	**0.105**	**0.0337**	N/A	N/A	**0.05**	N/A	**0.00378**	N/A	**0.00331**	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	**0.04**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0536**
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0127**	N/A
	4/5/2021	0.000094*	N/A	**0.0232**	0.00017*	**0.0682**	**0.0795**	**0.122**	**0.0381**	**0.0106**	**0.000582**	0.000349*	**0.000611**	**0.00758**	0.000439*	**0.0113**	**0.0234**
	4/5/2021	N/A	N/A	**0.0248**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	**0.0201**	N/A	N/A	**0.0407**	**0.119**	**0.0344**	N/A	N/A	**0.00219**	N/A	**0.00321**	0.000224*	**0.0132**	**0.0272**
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0349**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	**0.00099**	N/A	**0.0174**	**0.00118**	N/A	**0.0448**	**0.119**	**0.0191**	**0.017**	0.000462*	0.0013*	0.000452*	0.00496	< 0.0005	**0.0132**	**0.00846**
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0185**	N/A	0.000474*	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	**0.0191**	N/A	N/A	**0.0871**	**0.132**	**0.0306**	N/A	N/A	**0.000534**	N/A	**0.0044**	< 0.0005	**0.00999**	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.000606**	N/A	N/A	N/A	N/A	N/A
	8/1/2022	N/A	N/A	N/A	N/A	**0.0186**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/6/2022	N/A	N/A	N/A	N/A	N/A	N/A	**0.128**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000312*	N/A	N/A
	2/21/2023	N/A	N/A	**0.0153**	0.000404*	**0.0402**	**0.0417**	**0.0714**	**0.00192**	**0.0186**	**0.000604**	**0.00129**	0.000464*	**0.00407**	0.000193*	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	**0.0731**	N/A	N/A	N/A	**0.00716**	N/A	N/A	N/A	N/A	N/A
	7/25/2023	0.000262*	N/A	**0.015**	N/A	N/A	**0.0219**	**0.106**	**0.0315**	N/A	N/A	**0.000686**	N/A	**0.00327**	0.00022*	N/A	N/A
	7/25/2023	N/A	N/A	**0.0149**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 0.0005	N/A	**0.0214**	0.000223*	**0.00744**	**0.0278**	**0.135**	**0.0215**	**0.00999**	0.000399*	**0.00276**	0.000308*	**0.00169**	**0.00324**	N/A	**0.0305**
	6/4/2024	N/A	N/A	N/A	N/A	**0.00637**	N/A	N/A	**0.022**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	**0.0158**	N/A	N/A	**0.0252**	**0.12**	**0.0355**	N/A	N/A	**0.00127**	N/A	**0.00224**	**0.00074**	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	**0.0211**	N/A	N/A	N/A	N/A	0.00035*	N/A	N/A	N/A	N/A	N/A
Copper, mg/L (CAS NO - 7440-50-8)	4/14/2008	N/A	N/A	< 0.02	0.0209	0.127	0.0427	< 0.02	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.02	< 0.02	0.0505	0.0254	0.0228	N/A	N/A	N/A	N/A	N/A	0.0202	N/A	N/A	N/A
	8/20/2008	N/A	N/A	0.0497	< 0.02	0.388	0.291	0.0267	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 0.02	< 0.02	0.0532	0.0243	< 0.02	N/A	N/A	N/A	0.0353	N/A	< 0.02	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 0.02	< 0.02	0.15	< 0.02	< 0.02	N/A	N/A	N/A	< 0.02	N/A	0.0205	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 0.02	< 0.02	0.104	< 0.02	0.0258	< 0.02	0.0666	0.0236	< 0.02	< 0.02	0.03	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	0.0279	0.0974	< 0.02	< 0.02	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Total Metals Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Copper, mg/L (CAS NO - 7440-50-8)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	< 0.02	< 0.02	0.04	< 0.02	< 0.02	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 0.02	< 0.02	0.0763	< 0.02	0.0215	< 0.02	< 0.02	< 0.02	N/A	< 0.02	0.0433	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	< 0.02	0.035	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 0.02	< 0.02	0.0788	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	0.0322	< 0.02	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 0.02	< 0.02	0.0329	0.0219	0.0368	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 0.02	< 0.02	0.199	< 0.02	< 0.02	< 0.02	0.0235	0.0292	< 0.02	N/A	N/A	N/A	N/A	N/A
	3/4/2011	0.0309	0.0865	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2011	< 0.02	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/14/2011	0.0571	0.0569	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/19/2011	0.0267	0.0314	N/A	0.0249	< 0.02	0.0432	< 0.02	0.0261	0.0225	0.0289	0.0458	N/A	N/A	N/A	N/A	N/A
	10/13/2011	0.0311	0.0206	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	0.0345	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 0.02	< 0.02	0.253	0.0394	0.0736	< 0.02	0.276	< 0.02	< 0.02	< 0.02	0.25	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.02	0.0703	N/A	< 0.02	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 0.02	< 0.02	0.21	0.0341	0.0234	0.0246	0.254	0.0342	< 0.02	0.0294	< 0.02	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0343	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 0.02	< 0.02	0.0355	0.037	0.0269	< 0.02	0.0733	0.0223	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	0.00492*	< 0.02	0.0393	0.0134*	0.0721	0.00806*	0.0137*	0.0119*	< 0.02	0.0197*	0.00418*	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 0.02	0.00627*	0.0841	< 0.02	0.101	< 0.02	0.00999*	0.0377	0.00409*	0.0178*	0.0264	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	0.00853*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	0.0258	N/A	0.00852*	0.00707*	0.0261	0.00502*	0.0668	< 0.02	< 0.02	0.0225	N/A	0.0222	0.00555*	N/A	N/A	N/A
	5/18/2015	0.0274	0.0783	0.00322	0.00324	0.0119	0.00552	0.00442	0.00132*	0.00451	0.0102	0.00372	0.00443	0.0126	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	0.00442	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	0.00191*	**0.00837**	0.00174*	0.000958*	**0.00263**	< 0.002	**0.00219**	0.000968*	< 0.002	0.000537*	**0.00275**	< 0.002	0.000901*	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000835*	N/A	N/A	N/A	N/A
	4/4/2016	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00179*	< 0.005	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 0.005	0.00239*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00173*	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 0.005	0.00226*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	**0.0136**	< 0.005	0.00356*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	0.000562*	0.00163*	0.000536*	**0.00313**	N/A	0.000601*	**0.00326**	0.00165*	0.00123*	**0.00266**	0.00095*	0.00083*	0.000663*	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00173*	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00265*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	< 0.005
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	< 0.005
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.05	N/A	N/A	N/A	**0.00561**	N/A
	6/16/2020	N/A	N/A	< 0.005	0.0024*	**0.00847**	< 0.005	< 0.005	< 0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0114**	0.00219*
	11/3/2020	< 0.005	N/A	< 0.005	N/A	N/A	0.00152*	< 0.005	< 0.005	N/A	N/A	**0.00601**	N/A	< 0.005	N/A	< 0.005	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.00428**	N/A
	4/5/2021	< 0.005	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
	4/5/2021	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 0.005	N/A	N/A	< 0.005	< 0.005	< 0.005	N/A	N/A	< 0.005	N/A	< 0.005	< 0.005	< 0.005	< 0.005
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	0.002*	N/A	< 0.005	0.00194*	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.02
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 0.005	N/A	N/A	< 0.005	< 0.005	< 0.005	N/A	N/A	< 0.005	N/A	< 0.005	< 0.005	< 0.005	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A
	8/1/2022	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Total Metals Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Copper, mg/L (CAS NO - 7440-50-8)	2/21/2023	N/A	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00203*	0.00224*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	0.00206*	N/A	N/A	N/A	0.00217*	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 0.005	N/A	< 0.005	N/A	N/A	< 0.005	< 0.005	< 0.005	N/A	N/A	< 0.005	N/A	< 0.005	0.0042*	N/A	N/A
	7/25/2023	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 0.005	N/A	0.0027*	< 0.005	0.00351*	< 0.005	0.00457*	0.00238*	0.00449*	< 0.005	0.00331*	< 0.005	< 0.005	0.00405*	N/A	< 0.005
	6/4/2024	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	0.00181*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	< 0.005	N/A	N/A	< 0.005	< 0.005	< 0.02	N/A	N/A	< 0.005	N/A	< 0.005	< 0.005	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A
Lead, mg/L (CAS NO - 7439-92-1)	4/14/2008	N/A	N/A	< 0.004	< 0.004	0.0149	0.00406	< 0.004	N/A	N/A	N/A	N/A	N/A	< 0.004	N/A	N/A	N/A
	6/13/2008	N/A	N/A	0.00481	< 0.004	0.00877	< 0.004	< 0.004	N/A	N/A	N/A	N/A	N/A	< 0.004	N/A	N/A	N/A
	8/20/2008	N/A	N/A	0.00496	< 0.004	0.0119	0.00425	< 0.004	N/A	N/A	N/A	N/A	N/A	< 0.004	N/A	N/A	N/A
	9/30/2008	N/A	N/A	0.00544	< 0.004	0.0119	< 0.004	< 0.004	N/A	N/A	N/A	< 0.004	N/A	< 0.004	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 0.004	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 0.004	< 0.004	0.017	< 0.004	< 0.004	N/A	N/A	N/A	< 0.004	N/A	0.00715	N/A	N/A	N/A
	12/16/2008	N/A	N/A	0.00537	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	0.0064	0.00515	0.0156	< 0.004	< 0.004	< 0.004	0.0121	0.0142	< 0.004	< 0.004	< 0.004	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00706	0.00561	0.0923	< 0.004	0.00513	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.004	0.00717	0.0114	0.0367	< 0.004	0.00495	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	0.00716	< 0.004	0.013	< 0.004	0.00554	0.00769	0.0059	0.0114	N/A	0.00455	0.00936	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00663	0.00489	0.02	N/A	0.0132	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.004	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 0.004	< 0.004	0.0124	< 0.004	< 0.004	< 0.004	< 0.004	0.00708	N/A	0.0145	< 0.004	N/A	N/A	N/A
	10/14/2010	N/A	N/A	0.0161	0.00473	< 0.004	< 0.004	0.00791	< 0.004	0.00554	0.00432	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	0.00901	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	0.00963	0.00765	0.0204	< 0.004	0.00998	< 0.004	< 0.004	0.0185	< 0.004	N/A	N/A	N/A	N/A	N/A
	3/4/2011	0.00711	0.00444	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2011	< 0.004	0.00815	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/14/2011	0.00643	0.00463	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/19/2011	< 0.004	< 0.004	N/A	0.0042	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	0.00518	< 0.004	N/A	N/A	N/A	N/A	N/A
	10/13/2011	< 0.004	< 0.004	0.0119	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.004	0.0167	N/A	N/A	N/A
	2/20/2012	N/A	N/A	0.0093	0.0218	0.121	0.0475	0.0384	0.0132	0.128	0.0106	0.0048	0.0069	0.203	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	0.0136	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	0.00652	< 0.004	0.0123	N/A	< 0.004	N/A	N/A	N/A	N/A	0.00966	N/A	N/A	N/A
	8/8/2012	N/A	N/A	0.0141	< 0.004	0.0204	0.022	0.00815	0.0159	0.0241	0.0154	0.011	0.0183	0.0106	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0159	N/A	N/A	N/A	N/A	N/A	N/A
	10/24/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00526	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 0.004	0.00963	0.00799	0.0165	0.00758	0.00429	0.0132	0.0152	0.00675	0.00685	< 0.004	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00918	N/A	N/A	N/A	N/A	N/A
	6/24/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00865	N/A	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	0.00783	0.0099	0.0113	0.0151	0.0199	0.0107	0.00792	0.0102	0.00536	0.011	0.0118	N/A	N/A	N/A
	8/19/2013	N/A	N/A	0.00475	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 0.004	< 0.004	0.00897	< 0.008	0.00722	< 0.004	< 0.004	0.0124	< 0.004	0.0108	0.00588	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 0.004	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	0.0307	N/A	0.00309*	0.00968	0.0069	0.00242*	0.0104	< 0.004	0.00115*	0.0125	N/A	0.0269	0.00127*	N/A	N/A	N/A
	5/18/2015	0.0208	0.0104	0.000967	0.000427*	0.00327	0.00255	0.000383*	0.000324*	0.00688	0.00539	0.000468*	0.000459*	0.00204	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	0.000426*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	**0.00232**	0.000218*	**0.0007**	**0.00097**	**0.00126**	0.000112*	0.00021*	0.000263*	0.000161*	**0.000552**	**0.000585**	0.000422*	0.000293*	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.00112**	N/A	N/A	N/A	N/A
	4/4/2016	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.00047*	< 0.0005	< 0.0005	< 0.0005	< 0.0005	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 0.0005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 0.0005	< 0.0005	0.000313*	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.000282*	< 0.0005	< 0.0005	< 0.0005	< 0.0005	**0.000694**	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 0.0005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 0.0005	0.000287*	< 0.0005	0.000348*	< 0.0005	< 0.0005	< 0.0005	0.000211*	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	N/A	N/A	N/A
	1/9/2017	N/A	N/A	0.000218*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	**0.000553**	< 0.0005	< 0.0005	< 0.0005	0.000459*	0.000431*	< 0.0005	< 0.0005	0.000491*	< 0.0005	< 0.0005	< 0.0005	< 0.0005	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.0005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	**0.00179**	< 0.0005	0.000434*	< 0.0005	0.000483*	**0.00362**	**0.0021**	**0.00335**	< 0.0005	**0.000505**	**0.00528**	**0.000589**	**0.00211**	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0005	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/22/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.000879**	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 0.0005	< 0.0005	0.000243*	0.000341*	N/A	< 0.0005	0.000353*	**0.000559**	0.000401*	0.000332*	**0.00052**	< 0.0005	**0.000574**	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0005	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 0.0005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	N/A	N/A	< 0.0005
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0005	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Total Metals Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Lead, mg/L (CAS NO - 7439-92-1)	8/26/2019	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	N/A	N/A	< 0.0005
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0005	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000399*	N/A	N/A	N/A	**0.00347**	N/A
	6/16/2020	N/A	N/A	< 0.0005	< 0.0005	**0.00381**	< 0.0005	< 0.0005	0.000222*	0.000112*	< 0.0005	< 0.0005	< 0.0005	0.000291*	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000154*	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.00498**	< 0.0005
	11/3/2020	< 0.0005	N/A	0.000331*	N/A	N/A	0.000159*	**0.000503**	0.000136*	N/A	N/A	**0.00278**	N/A	< 0.0005	N/A	0.000152*	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 0.0005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.000177**
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.00164**	N/A
	4/5/2021	< 0.0005	N/A	< 0.0005	< 0.0005	0.000382*	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.000397*	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
	4/5/2021	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 0.0005	N/A	N/A	< 0.0005	< 0.0005	< 0.0005	N/A	N/A	< 0.0005	N/A	< 0.0005	< 0.0005	< 0.0005	< 0.0005
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	**0.00191**	N/A	< 0.0005	**0.00163**	N/A	< 0.0005	0.000279*	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.000251*	< 0.0005	< 0.0005	< 0.0005
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0005	N/A	< 0.0005	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	**0.00078**	N/A	N/A	< 0.0005	< 0.0005	< 0.0005	N/A	N/A	< 0.0005	N/A	0.000387*	< 0.0005	< 0.0005	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0005	N/A	N/A	N/A	N/A	N/A
	8/1/2022	N/A	N/A	N/A	N/A	**0.000848**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0005	N/A	N/A
	2/21/2023	N/A	N/A	< 0.0005	0.000377*	**0.000979**	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.000411*	< 0.0005	< 0.0005	< 0.0005	< 0.0005	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0005	N/A	N/A	N/A	0.000296*	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 0.0005	N/A	< 0.0005	N/A	N/A	< 0.0005	< 0.0005	< 0.0005	N/A	N/A	< 0.0005	N/A	< 0.0005	< 0.0005	N/A	N/A
	7/25/2023	N/A	N/A	< 0.0005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 0.0005	N/A	< 0.0005	< 0.0005	**0.000835**	< 0.0005	< 0.0005	< 0.0005	**0.000522**	0.000452*	< 0.0005	< 0.0005	< 0.0005	**0.00166**	N/A	< 0.0005
	6/4/2024	N/A	N/A	N/A	N/A	**0.000585**	N/A	N/A	< 0.0005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	< 0.0005	N/A	N/A	< 0.0005	0.000275*	< 0.0005	N/A	N/A	< 0.0005	N/A	< 0.0005	< 0.0005	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 0.0005	N/A	N/A	N/A	N/A	< 0.0005	N/A	N/A	N/A	N/A	N/A
Mercury, mg/L (CAS NO - 7439-97-6)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0002	N/A	N/A	N/A	N/A	< 0.0002	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0002	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0002	N/A	< 0.0002	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0002	N/A	< 0.0002	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0002	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.0002	< 0.0002	N/A	< 0.0002	N/A	N/A	N/A	N/A	< 0.0002	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	0.000256	0.0000319*	N/A	0.0000566*	N/A	0.0000682*	N/A	N/A	0.0000686*	N/A	N/A	N/A
	10/21/2013	N/A	N/A	N/A	N/A	< 0.0002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	N/A	< 0.0002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	< 0.0002	N/A	N/A	N/A	N/A	< 0.0002	N/A	N/A	N/A	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	< 0.0002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	< 0.0002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	N/A	< 0.0002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	N/A	< 0.0002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	< 0.0002	N/A	< 0.0002	N/A	< 0.0002	N/A	N/A	< 0.0002	N/A	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	< 0.0002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.0002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 0.0002	< 0.0002	N/A	0.000127*	N/A	N/A	N/A	N/A	< 0.0002	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 0.0002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0002	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0002	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0002	N/A	< 0.0002	N/A	< 0.0002	< 0.0002	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0002	N/A	N/A
	2/21/2023	N/A	N/A	< 0.0002	N/A	< 0.0002	< 0.0002	N/A	< 0.0002	N/A	N/A	N/A	N/A	< 0.0002	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0002	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0002	N/A	N/A	N/A	N/A	N/A	N/A
Nickel, mg/L (CAS NO - 7440-02-0)	4/14/2008	N/A	N/A	0.053	< 0.05	0.185	0.0668	0.0778	N/A	N/A	N/A	N/A	N/A	0.0809	N/A	N/A	N/A
	6/13/2008	N/A	N/A	0.108	< 0.05	0.0678	0.0715	0.0765	N/A	N/A	N/A	N/A	N/A	0.101	N/A	N/A	N/A
	8/20/2008	N/A	N/A	0.154	0.0586	0.676	0.73	0.0812	N/A	N/A	N/A	N/A	N/A	0.103	N/A	N/A	N/A
	9/30/2008	N/A	N/A	0.0663	< 0.05	0.0768	0.0611	0.0711	N/A	N/A	N/A	N/A	N/A	0.0702	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 0.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	0.0804	< 0.05	0.275	0.0599	0.0773	N/A	N/A	N/A	< 0.05	N/A	0.0771	N/A	N/A	N/A
	12/16/2008	N/A	N/A	0.113	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	0.0652	< 0.05	0.159	< 0.05	0.0776	0.139	0.0542	< 0.05	< 0.05	0.0882	0.0917	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.117	< 0.05	0.39	< 0.05	0.0917	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	0.084	0.134	< 0.05	0.799	< 0.05	0.114	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 0.05	< 0.05	0.217	< 0.05	0.0757	0.12	< 0.05	< 0.05	N/A	0.106	0.0786	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Total Metals Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Nickel, mg/L (CAS NO - 7440-02-0)	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	0.0873	0.15	< 0.05	0.0518	N/A	0.112	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	0.0582	0.079	0.186	< 0.05	0.0965	0.134	< 0.05	< 0.05	N/A	0.117	< 0.05	N/A	N/A	N/A
	10/14/2010	N/A	N/A	0.11	0.0728	< 0.05	< 0.05	0.102	0.16	0.114	< 0.05	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	0.0716	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	0.0938	0.0668	0.329	< 0.05	0.0793	0.117	0.108	< 0.05	< 0.05	N/A	N/A	N/A	N/A	N/A
	3/4/2011	< 0.05	< 0.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2011	< 0.05	< 0.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/14/2011	< 0.05	< 0.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/19/2011	< 0.05	< 0.05	N/A	0.171	< 0.05	< 0.05	0.136	0.143	< 0.05	< 0.05	< 0.05	N/A	N/A	N/A	N/A	N/A
	10/13/2011	< 0.05	< 0.05	0.185	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.05	0.0809	N/A	N/A	N/A
	2/20/2012	N/A	N/A	0.0607	0.055	0.256	0.0888	0.113	0.168	0.236	< 0.05	< 0.05	< 0.05	0.268	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	0.053	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.05	0.146	N/A	0.136	N/A	N/A	N/A	N/A	< 0.05	N/A	N/A	N/A
	8/8/2012	N/A	N/A	0.0553	< 0.05	0.921	< 0.05	0.118	0.0572	0.495	< 0.05	0.203	< 0.05	< 0.05	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.05	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 0.05	< 0.05	0.0656	0.0859	0.128	0.161	0.0698	< 0.05	< 0.05	< 0.05	< 0.05	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.05	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	0.0678	0.0375*	0.0561	0.0423*	0.141	0.0463*	0.0614	0.0178*	0.0229*	0.0385*	0.0263*	N/A	N/A	N/A
	8/19/2013	N/A	N/A	0.0591	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	0.0344*	0.109	0.145	0.065	0.116	0.117	0.158	0.0482*	0.0159*	0.0466*	0.0636	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	0.0912	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	0.0691	N/A	0.0687	0.0919	0.0671	0.0502	0.139	0.119	0.0429*	0.0493*	N/A	0.111	0.023*	N/A	N/A	N/A
	5/18/2015	0.0279	0.0301	0.0633	0.0607	0.0218	0.038	0.0977	0.0985	0.0713	0.02	0.0184	0.0462	0.0379	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	0.101	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	**0.0117**	**0.0251**	**0.0452**	**0.0214**	**0.0273**	**0.0588**	**0.132**	**0.108**	**0.0278**	**0.0132**	**0.0196**	0.00348*	**0.0144**	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00302*	N/A	N/A	N/A	N/A
	4/4/2016	**0.00622**	0.00357*	**0.0333**	0.00482*	**0.034**	**0.0454**	**0.0848**	**0.0605**	**0.0377**	**0.0102**	**0.0089**	**0.0461**	**0.0159**	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	0.00345*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	**0.00742**	**0.00727**	**0.0632**	**0.0142**	**0.0332**	**0.0303**	**0.107**	**0.0299**	**0.0162**	**0.0104**	**0.0169**	**0.0402**	**0.0184**	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	**0.0139**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	**0.011**	**0.00647**	**0.0435**	**0.00788**	**0.0323**	**0.0468**	**0.0933**	**0.0267**	**0.00716**	**0.00994**	**0.00592**	**0.031**	**0.00607**	N/A	N/A	N/A
	1/9/2017	N/A	N/A	**0.0467**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	**0.0122**	0.0042*	**0.0498**	**0.0181**	**0.0281**	**0.0327**	**0.0872**	**0.0283**	**0.0158**	**0.0106**	**0.00893**	**0.0647**	**0.01**	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0281**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/19/2017	N/A	N/A	**0.0631**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	**0.0625**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	**0.032**	0.00247*	**0.0651**	0.00164*	**0.0337**	**0.0477**	**0.0744**	**0.0453**	**0.0272**	**0.00552**	0.00376*	**0.0906**	**0.00599**	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0269**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	**0.0106**	**0.00428**	**0.051**	**0.0163**	N/A	**0.0112**	**0.0701**	**0.0447**	**0.0103**	**0.00998**	**0.0165**	**0.0735**	**0.0122**	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.00945**	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	**0.025**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	0.00211*	0.00175*	**0.0521**	< 0.005	**0.0163**	**0.0441**	**0.0712**	**0.0312**	**0.021**	**0.00906**	**0.00771**	**0.0768**	**0.0116**	N/A	N/A	**0.483**
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.00759**	N/A	N/A	N/A	N/A	N/A
	8/26/2019	0.00336*	**0.00611**	**0.0646**	**0.0191**	**0.0344**	**0.0426**	**0.0955**	**0.0344**	**0.0112**	**0.0106**	**0.106**	**0.0938**	**0.0111**	N/A	N/A	**0.131**
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0967**	N/A	N/A	N/A	N/A
	11/19/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.231**	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.112**	N/A	N/A	N/A	**0.0296**	N/A
	6/16/2020	N/A	N/A	**0.0837**	**0.00647**	**0.177**	**0.0384**	**0.0758**	**0.271**	**0.0157**	**0.0116**	**0.0308**	**0.0616**	**0.0108**	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.00777**	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0809**	**0.0877**
	11/3/2020	0.0038*	N/A	**0.0925**	N/A	N/A	**0.0211**	**0.0773**	**0.0381**	N/A	N/A	**0.234**	N/A	**0.00808**	N/A	**0.0355**	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	**0.0218**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0924**
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0679**	N/A
	4/5/2021	< 0.005	N/A	**0.0748**	< 0.005	**0.0547**	**0.0318**	**0.076**	**0.0679**	**0.0129**	**0.0111**	**0.0431**	**0.0494**	**0.0145**	0.00452*	**0.0509**	**0.0672**
	4/5/2021	N/A	N/A	**0.0782**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	**0.0677**	N/A	N/A	**0.0178**	**0.0888**	**0.0372**	N/A	N/A	**0.0486**	N/A	**0.00968**	< 0.005	**0.0246**	**0.0521**
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0375**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	0.00277*	N/A	**0.0734**	0.00487*	N/A	**0.0225**	**0.0985**	**0.0227**	**0.0191**	**0.00936**	0.0198*	**0.0353**	0.00965	< 0.005	**0.0287**	**0.0335**
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0178**	N/A	**0.00951**	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	**0.0654**	N/A	N/A	**0.0423**	**0.0802**	**0.0272**	N/A	N/A	**0.0137**	N/A	**0.0164**	< 0.005	**0.0259**	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0157**	N/A	N/A	N/A	N/A	N/A
	8/1/2022	N/A	N/A	N/A	N/A	**0.0391**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Total Metals Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Nickel, mg/L (CAS NO - 7440-02-0)	2/21/2023	N/A	N/A	**0.0652**	< 0.005	**0.0451**	**0.026**	**0.0596**	**0.0108**	**0.0291**	**0.00861**	**0.0199**	**0.0312**	**0.00528**	< 0.005	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	**0.06**	N/A	N/A	N/A	**0.048**	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 0.005	N/A	**0.0651**	N/A	N/A	**0.0142**	**0.0656**	**0.0305**	N/A	N/A	**0.0135**	N/A	**0.0068**	< 0.005	N/A	N/A
	7/25/2023	N/A	N/A	**0.0634**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 0.005	N/A	**0.0715**	< 0.005	**0.0824**	**0.011**	**0.0903**	**0.0521**	**0.023**	0.00298*	**0.0433**	**0.0269**	< 0.005	**0.0174**	N/A	**0.0761**
	6/4/2024	N/A	N/A	N/A	N/A	**0.0779**	N/A	N/A	**0.052**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	**0.0478**	N/A	N/A	**0.00952**	**0.13**	**0.04**	N/A	N/A	**0.033**	N/A	0.00361*	**0.00562**	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	**0.00724**	N/A	N/A	N/A	N/A	**0.03**	N/A	N/A	N/A	N/A	N/A
Selenium, mg/L (CAS NO - 7782-49-2)	4/14/2008	N/A	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A	< 0.005	N/A	< 0.005	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A	< 0.005	N/A	< 0.005	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	< 0.005	< 0.005	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.015	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	< 0.005	< 0.005	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	< 0.005	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 0.005	< 0.005	0.0197	< 0.005	< 0.005	< 0.005	0.0278	< 0.005	< 0.005	0.0109	0.0111	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.005	< 0.005	N/A	< 0.005	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 0.005	< 0.005	0.00562	0.00704	< 0.005	0.0123	0.05	< 0.005	0.00919	< 0.005	0.0114	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A
	10/24/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	0.00289*	0.003*	0.00302*	0.00241*	0.00265*	0.003*	0.00361*	0.00325*	0.0031*	0.00333*	0.00312*	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	0.00323*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 0.005	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	< 0.005	< 0.005	N/A	N/A	N/A
	5/18/2015	< 0.025	< 0.025	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A
	4/4/2016	< 0.005	< 0.005	< 0.005	< 0.005	0.000913*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.000847*	0.00127*	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.000796*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00156*	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.000753*	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00108*	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	0.000985*	< 0.005	< 0.005	< 0.005	< 0.005	0.00102*	< 0.005	0.00155*	< 0.005	**0.0131**	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00106*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 0.0025	< 0.0025	< 0.0025	< 0.0025	N/A	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0025	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	0.004*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 0.005	< 0.005	< 0.005	< 0.005	0.00291*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	< 0.01
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00124*	N/A	N/A	< 0.005
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.05	N/A	N/A	N/A	0.00312*	N/A
	6/16/2020	N/A	N/A	< 0.005	0.00277*	0.00143*	< 0.005	< 0.005	< 0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Total Metals Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Selenium, mg/L (CAS NO - 7782-49-2)	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.00754**	**0.00671**
	11/3/2020	< 0.005	N/A	N/A	N/A	N/A	< 0.005	< 0.005	< 0.005	N/A	N/A	0.00493*	N/A	N/A	N/A	0.00462*	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.00308**	N/A
	4/5/2021	< 0.005	N/A	N/A	N/A	N/A	< 0.005	< 0.005	< 0.005	< 0.005	N/A	0.00137*	< 0.005	N/A	< 0.005	0.00386*	< 0.005
	8/25/2021	N/A	N/A	N/A	N/A	N/A	0.00121*	< 0.005	< 0.005	N/A	N/A	< 0.005	N/A	N/A	< 0.005	0.00399*	< 0.005
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	0.0044*	N/A	N/A	N/A	N/A	< 0.005	< 0.005	< 0.005	N/A	N/A	< 0.005	N/A	N/A	< 0.005	0.00115*	< 0.02
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	0.00121*	< 0.005	< 0.005	N/A	N/A	< 0.005	N/A	N/A	< 0.005	0.00316*	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A
	2/21/2023	N/A	N/A	0.0012*	N/A	< 0.005	< 0.005	< 0.005	0.00104*	N/A	N/A	< 0.005	N/A	0.000983*	< 0.005	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	0.00172*	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 0.005	N/A	< 0.005	N/A	N/A	< 0.005	< 0.005	< 0.005	N/A	N/A	< 0.005	N/A	N/A	< 0.005	N/A	N/A
	7/25/2023	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 0.005	N/A	N/A	N/A	N/A	< 0.005	< 0.005	< 0.005	N/A	< 0.005	< 0.005	N/A	< 0.005	0.00307*	N/A	< 0.005
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 0.005	< 0.005	< 0.02	N/A	N/A	< 0.005	N/A	N/A	< 0.005	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A
Silver, mg/L (CAS NO - 7440-22-4)	4/14/2008	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.06	< 0.02	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A	< 0.02	N/A	< 0.02	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A	< 0.02	N/A	< 0.02	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	< 0.02	< 0.02	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	< 0.02	< 0.02	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	< 0.02	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.02	< 0.02	N/A	< 0.02	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.0856	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 0.02	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	< 0.02	< 0.02	N/A	N/A	N/A
	5/18/2015	0.000066*	0.000061*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.000081*	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 0.001	< 0.001	< 0.001	0.000105*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.000108*	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000124*	N/A	N/A	N/A	N/A
	4/4/2016	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.000185*	< 0.001	0.000158*	0.000175*	0.000198*	< 0.001	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	0.000176*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Total Metals Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Silver, mg/L (CAS NO - 7440-22-4)	3/5/2018	0.00025*	0.000207*	< 0.001	< 0.001	< 0.001	0.000289*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000304*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 0.0005	< 0.0005	< 0.0005	< 0.0005	N/A	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0005	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	< 0.002
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	< 0.001
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.01	N/A	N/A	N/A	< 0.001	N/A
	6/16/2020	N/A	N/A	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00101	0.00111
	11/3/2020	< 0.001	N/A	N/A	N/A	N/A	< 0.001	< 0.001	< 0.001	N/A	N/A	< 0.001	N/A	N/A	N/A	< 0.001	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A
	4/5/2021	< 0.001	N/A	N/A	N/A	N/A	< 0.001	< 0.001	< 0.001	< 0.001	N/A	< 0.001	< 0.001	N/A	< 0.001	< 0.001	< 0.001
	8/25/2021	N/A	N/A	N/A	N/A	N/A	< 0.001	< 0.001	< 0.001	N/A	N/A	< 0.001	N/A	N/A	< 0.001	< 0.001	< 0.001
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	0.000958*	N/A	N/A	N/A	N/A	< 0.001	< 0.001	< 0.004	N/A	N/A	< 0.004	N/A	N/A	< 0.001	< 0.001	< 0.004
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	< 0.001	< 0.001	< 0.001	N/A	N/A	< 0.001	N/A	N/A	< 0.001	< 0.001	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A
	2/21/2023	N/A	N/A	< 0.001	N/A	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	< 0.001	N/A	< 0.001	< 0.001	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 0.001	N/A	< 0.001	N/A	N/A	< 0.001	< 0.001	< 0.001	N/A	N/A	< 0.001	N/A	N/A	< 0.001	N/A	N/A
	7/25/2023	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 0.001	N/A	N/A	N/A	N/A	< 0.001	< 0.001	< 0.001	N/A	< 0.001	< 0.001	N/A	< 0.001	< 0.001	N/A	< 0.001
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 0.001	< 0.001	< 0.001	N/A	N/A	< 0.001	N/A	N/A	< 0.001	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A
Thallium, mg/L (CAS NO - 7440-28-0)	4/14/2008	N/A	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	N/A	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	N/A	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	N/A	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	N/A	N/A	N/A	< 0.002	N/A	< 0.002	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	N/A	N/A	N/A	< 0.002	N/A	< 0.002	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.004	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	N/A	< 0.002	< 0.002	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002	< 0.002	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	N/A	< 0.002	< 0.002	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002	< 0.002	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.002	< 0.002	N/A	< 0.002	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.004	< 0.002	< 0.004	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 0.002	N/A	< 0.002	< 0.002	< 0.002	< 0.002	0.000604*	< 0.002	< 0.002	< 0.002	N/A	< 0.002	< 0.002	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Total Metals Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Thallium, mg/L (CAS NO - 7440-28-0)	5/18/2015	0.000037*	0.000065*	0.000083*	< 0.001	< 0.001	0.000148*	0.000345*	0.000064*	0.000077*	< 0.001	< 0.001	0.000046*	0.000075*	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	0.00033*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 0.001	< 0.001	0.000064*	0.000061*	< 0.001	0.000054*	0.000183*	0.000099*	< 0.001	0.00004*	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A
	4/4/2016	< 0.001	< 0.001	0.000027*	< 0.001	< 0.001	< 0.001	0.000243*	0.000047*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 0.001	< 0.001	0.000046*	< 0.001	< 0.001	0.000034*	0.000194*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 0.001	< 0.001	0.000037*	< 0.001	< 0.001	0.000171*	0.000448*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	1/9/2017	N/A	N/A	0.000032*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.000188*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	0.000067*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.00009*	0.000344*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 0.002	< 0.002	< 0.002	< 0.002	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	< 0.001
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	< 0.001
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	< 0.001	N/A
	6/16/2020	N/A	N/A	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.000846*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.00306**	**0.00302**
	11/3/2020	< 0.001	N/A	N/A	N/A	N/A	< 0.001	0.000425*	< 0.001	N/A	N/A	< 0.001	N/A	N/A	N/A	< 0.001	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A
	4/5/2021	< 0.001	N/A	N/A	N/A	N/A	< 0.001	< 0.001	< 0.001	< 0.001	N/A	< 0.001	< 0.001	N/A	< 0.001	< 0.001	< 0.001
	8/25/2021	N/A	N/A	N/A	N/A	N/A	**0.00103**	0.00033*	< 0.001	N/A	N/A	< 0.001	N/A	N/A	< 0.001	< 0.001	< 0.001
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	**0.00278**	N/A	N/A	N/A	N/A	< 0.001	0.000453*	< 0.001	N/A	N/A	< 0.001	N/A	N/A	< 0.001	< 0.001	< 0.001
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	< 0.001	< 0.001	< 0.001	N/A	N/A	< 0.001	N/A	N/A	< 0.001	< 0.001	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A
	2/21/2023	N/A	N/A	< 0.001	N/A	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	< 0.001	N/A	< 0.001	< 0.001	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 0.001	N/A	< 0.001	N/A	N/A	< 0.001	< 0.001	< 0.001	N/A	N/A	< 0.001	N/A	N/A	< 0.001	N/A	N/A
	7/25/2023	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 0.001	N/A	N/A	N/A	N/A	< 0.001	< 0.001	< 0.001	N/A	< 0.001	< 0.001	N/A	< 0.001	< 0.001	N/A	< 0.001
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 0.001	< 0.001	< 0.001	N/A	N/A	< 0.001	N/A	N/A	< 0.001	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	N/A	N/A
Tin, mg/L (CAS NO - 7440-31-5)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.1	N/A	N/A	N/A	N/A	< 0.1	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.1	N/A	< 0.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.1	N/A	< 0.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.1	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.1	< 0.1	N/A	< 0.1	N/A	N/A	N/A	N/A	< 0.1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 0.1	< 0.1	N/A	< 0.1	N/A	< 0.1	N/A	N/A	< 0.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0761*	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 0.1	N/A	< 0.1	N/A	N/A	< 0.1	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 0.005	0.002*	N/A	< 0.005	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.05	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	< 0.005	N/A	< 0.005	< 0.005	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A
	2/21/2023	N/A	N/A	< 0.005	N/A	< 0.005	< 0.005	N/A	< 0.005	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Total Metals Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Vanadium, mg/L (CAS NO - 7440-62-2)	4/14/2008	N/A	N/A	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	N/A	N/A	N/A	N/A	N/A	< 0.05	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	N/A	N/A	N/A	N/A	N/A	< 0.05	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.05	< 0.05	0.558	0.393	< 0.05	N/A	N/A	N/A	N/A	N/A	< 0.05	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	N/A	N/A	N/A	< 0.05	N/A	< 0.05	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 0.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 0.05	< 0.05	0.0614	< 0.05	< 0.05	N/A	N/A	N/A	< 0.05	N/A	< 0.05	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 0.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	N/A	< 0.05	< 0.05	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.05	< 0.05	< 0.05	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 0.05	< 0.05	0.0551	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	N/A	< 0.05	< 0.05	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 0.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 0.05	< 0.05	0.113	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 0.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.05	0.0509	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 0.05	< 0.05	0.262	< 0.05	< 0.05	< 0.05	0.212	< 0.05	< 0.05	< 0.05	0.167	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 0.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.05	< 0.05	N/A	< 0.05	N/A	N/A	N/A	N/A	< 0.05	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 0.05	< 0.05	0.36	< 0.05	< 0.05	< 0.05	0.222	< 0.05	< 0.05	< 0.05	< 0.05	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.05	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 0.05	< 0.05	< 0.05	0.0552	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.05	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 0.05	0.00768*	0.0165*	< 0.05	0.0141*	< 0.05	0.0211*	< 0.05	< 0.05	0.00699*	0.0315*	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 0.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 0.05	0.00317*	0.0256*	0.0382*	0.0228*	< 0.05	0.0398*	0.0142*	< 0.05	0.0105*	0.0124*	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 0.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	0.0169*	N/A	0.00397*	0.0129*	0.0119*	0.00404*	0.00842*	< 0.05	0.00777*	0.0128*	N/A	0.0292*	0.007*	N/A	N/A	N/A
	5/18/2015	0.00657	0.00476*	< 0.005	0.000605*	0.0036*	0.00113*	< 0.005	< 0.005	0.0109	0.00221*	< 0.005	0.00081*	0.00145*	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	0.000637*	< 0.005	< 0.005	0.000586*	0.00141*	< 0.005	< 0.005	< 0.005	0.00197*	< 0.005	0.000924*	< 0.005	0.000475*	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A
	4/4/2016	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.000691*	< 0.005	< 0.005	< 0.005	0.000446*	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 0.005	< 0.005	0.000381*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00131*	< 0.005	< 0.005	< 0.005	0.000684*	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 0.005	< 0.005	0.000311*	0.000545*	< 0.005	< 0.005	0.000469*	< 0.005	0.00137*	< 0.005	< 0.005	< 0.005	0.000483*	N/A	N/A	N/A
	1/9/2017	N/A	N/A	0.000284*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00304*	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.000941*	0.00143*	< 0.005	< 0.005	0.000903*	< 0.005	< 0.005	0.00103*	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 0.005	< 0.005	< 0.005	< 0.005	N/A	< 0.005	< 0.005	< 0.005	0.00397*	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00112*	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	< 0.01
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00154*	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	< 0.005
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.05	N/A	N/A	N/A	**0.0132**	N/A
	6/16/2020	N/A	N/A	< 0.005	< 0.005	0.000964*	< 0.005	< 0.005	< 0.005	0.00193*	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0223**	0.0015*
	11/3/2020	< 0.005	N/A	N/A	N/A	N/A	< 0.005	< 0.005	< 0.005	N/A	N/A	< 0.005	N/A	N/A	N/A	< 0.005	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.00327**	N/A
	4/5/2021	< 0.005	N/A	N/A	N/A	N/A	< 0.005	< 0.005	< 0.005	< 0.005	N/A	< 0.005	< 0.005	N/A	< 0.005	< 0.005	< 0.005
	8/25/2021	N/A	N/A	N/A	N/A	N/A	< 0.005	< 0.005	< 0.005	N/A	N/A	< 0.005	N/A	N/A	< 0.005	< 0.005	< 0.005
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Total Metals Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Vanadium, mg/L (CAS NO - 7440-62-2)	3/8/2022	< 0.005	N/A	N/A	N/A	N/A	< 0.005	< 0.005	< 0.005	N/A	N/A	< 0.005	N/A	N/A	< 0.005	< 0.005	< 0.02
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	< 0.005	< 0.005	< 0.005	N/A	N/A	< 0.005	N/A	N/A	< 0.005	< 0.005	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A
	2/21/2023	N/A	N/A	< 0.005	N/A	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	< 0.005	N/A	< 0.005	< 0.005	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 0.005	N/A	< 0.005	N/A	N/A	< 0.005	< 0.005	< 0.005	N/A	N/A	< 0.005	N/A	N/A	< 0.005	N/A	N/A
	7/25/2023	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 0.005	N/A	N/A	N/A	N/A	< 0.005	< 0.005	< 0.005	N/A	< 0.005	< 0.005	N/A	< 0.005	**0.00519**	N/A	< 0.005
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 0.005	< 0.005	< 0.005	N/A	N/A	< 0.005	N/A	N/A	< 0.005	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A
Zinc, mg/L (CAS NO - 7440-66-6)	4/14/2008	N/A	N/A	0.0459	0.0513	0.344	0.28	0.114	N/A	N/A	N/A	N/A	N/A	0.0957	N/A	N/A	N/A
	6/13/2008	N/A	N/A	0.164	0.167	0.128	0.332	0.146	N/A	N/A	N/A	N/A	N/A	0.243	N/A	N/A	N/A
	8/20/2008	N/A	N/A	0.229	0.218	1.41	0.814	0.165	N/A	N/A	N/A	N/A	N/A	0.259	N/A	N/A	N/A
	9/30/2008	N/A	N/A	0.0672	0.0446	0.113	0.228	0.12	N/A	N/A	N/A	0.0366	N/A	0.0768	N/A	N/A	N/A
	9/30/2008	N/A	N/A	0.0663	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	0.0597	0.0532	0.335	0.285	0.131	N/A	N/A	N/A	0.0508	N/A	0.0632	N/A	N/A	N/A
	12/16/2008	N/A	N/A	0.0854	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	0.147	0.0726	0.222	0.342	0.139	0.203	0.229	0.0699	0.0743	< 0.06	0.188	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.315	0.164	0.261	0.0982	< 0.06	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	0.125	0.414	0.0984	0.447	0.116	0.0664	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	0.102	0.09	0.339	0.334	0.123	0.302	0.0818	0.0558	N/A	0.0667	0.187	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	0.19	0.348	0.192	0.0678	N/A	0.0745	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	0.0409	0.0353	0.263	< 0.02	0.101	0.109	< 0.02	< 0.02	N/A	< 0.1	< 0.02	N/A	N/A	N/A
	10/14/2010	N/A	N/A	0.171	0.0512	0.0229	0.215	0.186	0.239	0.0809	0.0781	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	0.127	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	0.193	0.0475	0.53	0.294	0.145	0.14	0.0326	0.0908	0.801	N/A	N/A	N/A	N/A	N/A
	3/4/2011	< 0.06	0.0803	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2011	0.0695	< 0.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/14/2011	< 0.06	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/19/2011	< 0.06	< 0.06	N/A	0.404	0.0268	0.066	0.143	0.111	< 0.02	< 0.02	0.039	N/A	N/A	N/A	N/A	N/A
	10/13/2011	< 0.06	< 0.02	0.429	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	0.156	N/A	N/A	N/A
	2/20/2012	N/A	N/A	0.131	0.0293	0.908	0.148	0.227	0.224	0.881	< 0.02	0.033	< 0.02	1.39	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	0.0423	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	0.0415	0.23	N/A	0.0879	N/A	N/A	N/A	N/A	0.0652	N/A	N/A	N/A
	8/8/2012	N/A	N/A	0.155	< 0.02	1.43	0.108	0.154	0.107	1.74	0.0279	< 0.02	0.0471	0.0343	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0279	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	0.201	0.0846	0.121	0.617	0.188	0.308	0.267	0.0591	0.0826	0.0495	0.0778	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0826	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	0.171	0.123	0.104	0.321	0.389	0.186	0.213	0.0775	0.108	0.0941	0.193	N/A	N/A	N/A
	8/19/2013	N/A	N/A	0.202	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	0.0687	< 0.02	0.178	0.579	0.293	0.0664	0.533	< 0.02	< 0.02	0.00703*	0.039	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	0.0396	N/A	0.0704	< 0.02	0.0594	0.087	0.19	0.0446	< 0.02	0.0727	N/A	0.0492	< 0.02	N/A	N/A	N/A
	5/18/2015	0.0298	0.0309	0.0521	0.0199	0.0387	0.0509	0.111	0.0655	0.0844	< 0.01	0.013	< 0.01	0.0148	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	0.113	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 0.01	< 0.01	**0.0501**	< 0.01	**0.0255**	**0.0128**	**0.101**	**0.0795**	< 0.01	< 0.01	0.00737*	< 0.01	< 0.01	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.01	N/A	N/A	N/A	N/A
	4/4/2016	< 0.01	< 0.01	**0.0259**	< 0.01	**0.0266**	< 0.01	**0.0763**	**0.0835**	0.0063*	< 0.01	< 0.01	< 0.01	< 0.01	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 0.01	< 0.01	**0.0233**	< 0.01	**0.0267**	< 0.01	**0.0884**	**0.0208**	< 0.01	< 0.01	**0.021**	< 0.01	**0.0327**	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	0.00687*	< 0.01	**0.0187**	0.00584*	**0.0232**	**0.0397**	**0.122**	**0.0139**	0.00591*	< 0.01	0.00641*	< 0.01	**0.0121**	N/A	N/A	N/A
	1/9/2017	N/A	N/A	**0.0232**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 0.02	< 0.02	**0.0232**	< 0.02	**0.0244**	< 0.02	**0.0526**	0.0131*	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/19/2017	N/A	N/A	0.0123*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	0.015*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	**0.0377**	< 0.02	< 0.02	< 0.02	**0.0238**	**0.0644**	**0.0706**	**0.0884**	**0.14**	< 0.02	< 0.02	< 0.02	< 0.02	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0254**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	0.014*	< 0.02	**0.0251**	0.0158*	N/A	< 0.02	**0.0396**	**0.0805**	< 0.02	0.0111*	**0.034**	< 0.02	< 0.02	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Total Metals Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Zinc, mg/L (CAS NO - 7440-66-6)	10/22/2018	N/A	N/A	N/A	N/A	**0.0221**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 0.02	< 0.02	**0.0217**	< 0.02	0.0164*	< 0.02	**0.0457**	**0.0482**	**0.02**	< 0.02	0.0178*	< 0.02	< 0.02	N/A	N/A	**0.257**
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0167*	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 0.02	< 0.02	**0.0322**	< 0.02	**0.0284**	< 0.02	**0.0709**	**0.0222**	< 0.02	< 0.02	**0.193**	< 0.02	< 0.02	N/A	N/A	< 0.02
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A
	11/19/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.539**	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.48**	N/A	N/A	N/A	**0.0368**	N/A
	6/16/2020	N/A	N/A	**0.0284**	< 0.02	0.0117*	< 0.02	**0.0328**	**0.678**	< 0.02	< 0.02	**0.0773**	< 0.02	< 0.02	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0698**	< 0.02
	11/3/2020	< 0.02	N/A	0.0147*	N/A	N/A	< 0.02	**0.0746**	0.0172*	N/A	N/A	**0.447**	N/A	< 0.02	N/A	**0.022**	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0121**
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0628**	N/A
	4/5/2021	< 0.02	N/A	< 0.02	< 0.02	0.015*	< 0.02	**0.0616**	**0.105**	< 0.02	< 0.02	**0.19**	< 0.02	< 0.02	< 0.02	**0.0478**	0.0194*
	4/5/2021	N/A	N/A	< 0.08	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 0.02	N/A	N/A	< 0.02	**0.0697**	0.0155*	N/A	N/A	**0.121**	N/A	< 0.02	< 0.02	0.0179*	< 0.02
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0158*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 0.02	N/A	< 0.02	< 0.02	N/A	0.0113*	**0.129**	0.0119*	< 0.02	< 0.02	**0.068**	< 0.02	< 0.02	< 0.02	0.0195*	< 0.08
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 0.02	N/A	N/A	0.0131*	**0.0599**	**0.0237**	N/A	N/A	**0.0733**	N/A	**0.0248**	< 0.02	0.0157*	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.0839**	N/A	N/A	N/A	N/A	N/A
	8/1/2022	N/A	N/A	N/A	N/A	**0.0562**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A
	2/21/2023	N/A	N/A	< 0.02	< 0.02	**0.0301**	< 0.02	**0.0309**	0.0168*	< 0.02	< 0.02	**0.0551**	< 0.02	< 0.02	< 0.02	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	**0.032**	N/A	N/A	N/A	**0.157**	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 0.02	N/A	0.0163*	N/A	N/A	< 0.02	**0.0443**	0.0183*	N/A	N/A	**0.0618**	N/A	< 0.02	< 0.02	N/A	N/A
	7/25/2023	N/A	N/A	0.0156*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 0.02	N/A	**0.066**	0.0136*	**0.0279**	< 0.02	**0.0687**	**0.0976**	**0.0407**	< 0.02	**0.219**	< 0.02	< 0.02	**0.0611**	N/A	**0.0748**
	6/4/2024	N/A	N/A	N/A	N/A	**0.0244**	N/A	N/A	**0.0882**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	**0.0238**	N/A	N/A	< 0.02	**0.133**	**0.0369**	N/A	N/A	**0.0931**	N/A	< 0.02	< 0.02	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	**0.175**	N/A	N/A	N/A	N/A	N/A
Total Suspended Solids, mg/L (CAS NO - TSS)	2/13/2014	N/A	N/A	188	3340	8130	8300	6600	556	1410	5340	281	1550	2680	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	117	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	10200	N/A	570	1380	2490	290	805	67	325	1900	N/A	12700	4720	N/A	N/A	N/A
	5/18/2015	2960	1910	12	4.25	3.63	5.75	254	88.6	60.2	20.3	< 1.88	36.8	416	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	234	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	**147**	**18.9**	**28.5**	**24.2**	**248**	**17.1**	**24.1**	**87.5**	**47.4**	**15.9**	**88.4**	**60.6**	**119**	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**36.5**	N/A	N/A	N/A	N/A
	4/4/2016	1*	< 1.88	**6.62**	**2.13**	**3.75**	**28.3**	**16.5**	**7.25**	**43.2**	< 1.88	**2**	**47.5**	**80**	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	**2**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	**29**	**5.8**	**35.4**	**2.25**	**6.87**	**16.1**	**10**	**56**	**39**	1.38*	**2.63**	**34.5**	**151**	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	**2.25**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	**6**	**2.38**	**23.9**	**36.8**	**4.62**	**7.13**	**6.38**	**18.1**	**102**	< 1.88	**6.5**	**22**	**93.6**	N/A	N/A	N/A
	1/9/2017	N/A	N/A	**19.5**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	**2.75**	**5.13**	**6.5**	**15.3**	**42**	**6.13**	**8.63**	**9.13**	**122**	1.13*	**5.63**	**49.8**	**77**	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**15.9**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/19/2017	N/A	N/A	**5.33**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	**4**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	**31.6**	**3.38**	**5.37**	**3.38**	**53.6**	**57.1**	**23.4**	**14.7**	**16.7**	**3.6**	**4.62**	**97.4**	**77**	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**18**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/22/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**19.6**	N/A	N/A	N/A	N/A	N/A
	10/2/2018	**2.5**	1.5*	**10.8**	1.38*	N/A	**37.3**	**9.17**	**14.2**	**80.3**	< 1.88	**3.5**	**65**	**51.7**	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**2.88**	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	**7.13**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/14/2019	N/A	N/A	N/A	1.25*	N/A	N/A	N/A	N/A	N/A	N/A	**2.5**	N/A	N/A	N/A	N/A	N/A
	4/1/2019	1.38*	0.875*	**9.63**	1.38*	**26.8**	**7.62**	**12.8**	**5.5**	**68.8**	< 1.88	**4.13**	**34.3**	**60.3**	N/A	N/A	**91.9**
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**3.38**	N/A	N/A	N/A	N/A	N/A
	8/26/2019	1.5*	**2.63**	**5.88**	**4**	**27.4**	**13.5**	**8.88**	**8.75**	**4350**	0.75*	**2.75**	**77.3**	**80.6**	N/A	N/A	**13.6**
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**100**	N/A	N/A	N/A	N/A
	11/19/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**8.75**	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**38.6**	N/A	N/A	N/A	**186**	N/A
	6/16/2020	N/A	N/A	**19**	**3**	**62**	13*	2.25*	< 1.88	**60**	< 1.88	**2.25**	**39**	**52**	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**176**	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**453**	**64.5**

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Total Metals Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Total Suspended Solids, mg/L (CAS NO - TSS)	9/22/2020	N/A	N/A	N/A	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/3/2020	3.6	N/A	32	N/A	N/A	25.5	10	17.5	N/A	N/A	16.3	N/A	124	N/A	35	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	32	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	23
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	44.6	N/A
	4/5/2021	1.13*	N/A	43.8	5.25	42.8	27	11	4.88	56.3	4.25	4.75	7.67	92	32	1.63*	28.3
	4/5/2021	N/A	N/A	30	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	20	N/A	N/A	19.5	7.75	5.5	N/A	N/A	2.5	20.5	96	< 1.88	2.38	34
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 5	N/A	48.5	18	N/A	29.7	24	5	47	2*	5.33	7	147	< 5	3.33*	4.67*
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.67	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	65	N/A	N/A	27.5	24	7.25	N/A	N/A	1.88	N/A	66	0.75*	437	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.5	N/A	N/A	N/A	N/A	N/A
	8/1/2022	N/A	N/A	N/A	N/A	86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/6/2022	N/A	N/A	N/A	N/A	N/A	N/A	8.37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3	N/A	N/A
	2/21/2023	N/A	N/A	19.7	2.13	82	64.5	8.75	4.6	29	4.25	11.3	5.4	133	< 1.88	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	8.2	N/A	N/A	N/A	4.25	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 5	N/A	46.7	N/A	N/A	70	31	29	N/A	N/A	1*	N/A	120	< 1.88	N/A	N/A
	7/25/2023	N/A	N/A	116	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	3	N/A	35.3	2.38	89.3	217	38.3	15.8	81	3.38	5.75	6.25	128	561	N/A	29.5
	6/4/2024	N/A	N/A	N/A	N/A	60	N/A	N/A	13.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	7.62	N/A	N/A	44	19	13.5	N/A	N/A	2.75	N/A	54	5.63	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	177	N/A	N/A	N/A	N/A	< 1.88	N/A	N/A	N/A	N/A	N/A

Note: * indicates 'J flag'. Detection is below the reporting limit, but greater than the MDL (Method Detection Limit). The concentration is estimated.

Denotes Detection.
Denotes Confirmed Outlier. Statistically Excluded.

Sampling performed over multiple dates is recorded on the first date sampled. Refer to field forms for exact sample date.

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
1,1,1,2-Tetrachloroethane, ug/L (CAS NO - 630-20-6)	4/14/2008	N/A	N/A	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	N/A	N/A	N/A	N/A	N/A	< 0.33	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	N/A	N/A	N/A	N/A	N/A	< 0.33	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	N/A	N/A	N/A	N/A	N/A	< 0.33	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 5	< 1	< 1	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	< 4	< 4	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 5	< 1	< 5	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	N/A	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	5/18/2015	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	4/4/2016	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 1	N/A	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A
	6/16/2020	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1
	11/3/2020	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	N/A	< 1	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
	4/5/2021	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	4/5/2021	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
1,1,1,2-Tetrachloroethane, ug/L (CAS NO - 630-20-6)	3/8/2022	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	7/25/2023	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 1	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	< 1	< 1	N/A	< 1	< 1	N/A	< 1
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
1,1,1-Trichloroethane, ug/L (CAS NO - 71-55-6)	4/14/2008	N/A	N/A	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	N/A	N/A	N/A	N/A	N/A	< 0.19	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	N/A	N/A	N/A	N/A	N/A	< 0.19	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	N/A	N/A	N/A	N/A	N/A	< 0.19	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 5	< 1	< 1	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	< 5	< 5	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 2	< 1	< 2	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	N/A	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	5/18/2015	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	4/4/2016	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 1	N/A	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
1,1,1-Trichloroethane, ug/L (CAS NO - 71-55-6)	8/26/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A
	6/16/2020	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1
	11/3/2020	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	N/A	< 1	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
	4/5/2021	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	4/5/2021	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	7/25/2023	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 1	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	< 1	< 1	N/A	< 1	< 1	N/A	< 1
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
1,1,2,2-Tetrachloroethane, ug/L (CAS NO - 79-34-5)	4/14/2008	N/A	N/A	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	N/A	N/A	N/A	N/A	N/A	< 0.23	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	N/A	N/A	N/A	N/A	N/A	< 0.23	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	N/A	N/A	N/A	N/A	N/A	< 0.23	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 5	< 1	< 1	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	< 10	< 10	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	N/A	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	5/18/2015	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	4/4/2016	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
1,1,2,2-Tetrachloroethane, ug/L (CAS NO - 79-34-5)	9/13/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 1	N/A	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A
	6/16/2020	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1
	11/3/2020	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	N/A	< 1	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
	4/5/2021	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	4/5/2021	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	7/25/2023	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 1	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	< 1	< 1	N/A	< 1	< 1	N/A	< 1
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
1,1,2-Trichloroethane, ug/L (CAS NO - 79-00-5)	4/14/2008	N/A	N/A	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	N/A	N/A	N/A	N/A	N/A	< 0.37	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	N/A	N/A	N/A	N/A	N/A	< 0.37	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	N/A	N/A	N/A	N/A	N/A	< 0.37	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 5	< 1	< 1	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
1,1,2-Trichloroethane, ug/L (CAS NO - 79-00-5)	2/25/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	N/A	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	5/18/2015	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	4/4/2016	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 1	N/A	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A
	6/16/2020	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1
	11/3/2020	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	N/A	< 1	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
	4/5/2021	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	4/5/2021	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	7/25/2023	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 1	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	< 1	< 1	N/A	< 1	< 1	N/A	< 1
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
1,1-Dichloroethane, ug/L (CAS NO - 75-34-3)	4/14/2008	N/A	N/A	< 0.19	< 0.19	< 0.19	< 0.19	**5.52**	N/A	N/A	N/A	N/A	N/A	< 0.427	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.19	< 0.19	< 0.19	< 0.19	**4.37**	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.19	< 0.19	< 0.19	< 0.19	**3.59**	N/A	N/A	N/A	N/A	N/A	< 0.42	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	< 1	< 1	< 1	**3.49**	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	< 1	< 1	< 1	**4.64**	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 1	< 1	< 1	< 1	**5.61**	< 1	< 1	< 1	< 1	**2.31**	< 1	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 5	< 1	**4.19**	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	**8.71**	< 1	< 1	< 1	< 1	**5.11**	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 1	< 1	< 1	< 1	**6.88**	< 1	**1.05**	< 1	N/A	**2.75**	< 1	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
1,1-Dichloroethane, ug/L (CAS NO - 75-34-3)	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	**6.83**	< 1	**4.82**	< 1	N/A	**2.7**	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**8.14**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 1	< 1	< 1	< 1	**6.83**	< 1	**6.71**	< 1	N/A	**1.63**	< 1	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 1	< 1	< 1	< 1	**4.8**	< 1	**6.95**	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 5	< 1	< 1	< 1	**2.11**	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 1	N/A	< 1	**3.84**	< 1	**5.98**	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 1	< 1	< 1	< 1	**3.3**	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	**3.5**	< 1	**1.87**	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 1	< 1	< 1	< 1	**2.72**	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	< 1	< 1	< 1	**2.46**	< 1	**2.31**	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 1	< 1	< 1	< 1	**2.82**	< 1	**3.03**	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	N/A	< 1	< 1	< 1	N/A	**2.44**	< 1	**3.43**	< 1	N/A	< 1	0.517*	N/A	N/A	N/A
	5/18/2015	< 1	< 1	< 1	< 1	< 1	< 1	**2.12**	< 1	**1.37**	< 1	< 1	< 1	0.969*	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	**2.14**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 1	N/A	< 1	< 1	< 1	< 1	**1.75**	< 1	< 1	< 1	< 1	< 1	0.277*	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	4/4/2016	< 1	N/A	0.232*	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	0.782*	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 1	N/A	< 1	< 1	< 1	< 1	**1.63**	< 1	**1.69**	< 1	< 1	< 1	**1.15**	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 1	N/A	< 1	< 1	< 1	< 1	**1.71**	< 1	**1.58**	< 1	< 1	< 1	0.609*	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 1	N/A	0.253*	< 1	< 1	< 1	**1.5**	< 1	**1.75**	< 1	< 1	0.414*	0.82*	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	0.674*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 1	N/A	< 1	< 1	< 1	< 1	**2**	< 1	< 1	< 1	< 1	**2.07**	**1.5**	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 1	N/A	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	**1.05**	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 1	N/A	< 1	< 1	< 1	< 1	**1.05**	< 1	< 1	< 1	< 1	0.454*	**1.09**	N/A	N/A	< 1
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 1	N/A	0.291*	< 1	< 1	< 1	**1.11**	< 1	**1.29**	< 1	< 1	0.89*	**1.52**	N/A	N/A	< 1
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.957*	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A
	6/16/2020	N/A	N/A	< 1	< 1	< 1	< 1	0.727*	< 1	< 1	< 1	< 1	0.344*	0.593*	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.807*	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1
	11/3/2020	< 1	N/A	< 1	N/A	N/A	< 1	0.755*	< 1	N/A	N/A	< 1	N/A	**1.49**	N/A	< 1	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
	4/5/2021	< 1	N/A	< 1	N/A	N/A	< 1	0.695*	< 1	< 1	N/A	< 1	< 1	0.602*	0.389*	< 1	< 1
	4/5/2021	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 1	N/A	N/A	< 1	0.764*	< 1	N/A	N/A	< 1	N/A	**1.07**	< 1	< 1	< 1
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 1	N/A	< 1	N/A	N/A	< 1	0.919*	< 1	< 1	N/A	< 1	< 1	0.987*	< 1	< 1	< 1
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 1	N/A	N/A	< 1	0.603*	< 1	N/A	N/A	< 1	N/A	0.573*	0.252*	< 1	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	0.694*	< 1	N/A	N/A	< 1	N/A	0.977*	0.359*	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	0.556*	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
1,1-Dichloroethane, ug/L (CAS NO - 75-34-3)	7/25/2023	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	7/25/2023	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 1	N/A	N/A	N/A	N/A	< 1	0.513*	< 1	N/A	< 1	< 1	N/A	0.649*	0.238*	N/A	< 1
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	0.644*	< 1	N/A	N/A	< 1	N/A	0.745*	< 1	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
1,1-Dichloroethene, ug/L (CAS NO - 75-35-4)	4/14/2008	N/A	N/A	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	N/A	N/A	N/A	N/A	N/A	< 0.37	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	N/A	N/A	N/A	N/A	N/A	< 0.37	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	N/A	N/A	N/A	N/A	N/A	< 0.37	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A	< 2	N/A	< 2	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A	< 2	N/A	< 2	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	< 2	< 10	< 2	< 2	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	< 2	< 2	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	< 2	< 2	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	< 2	< 2	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 10	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	< 2	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 2	< 2	N/A	< 2	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 2	N/A	< 2	< 2	< 2	N/A	< 2	< 2	< 2	< 2	N/A	< 2	< 2	N/A	N/A	N/A
	5/18/2015	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A
	4/4/2016	< 2	N/A	< 2	< 2	< 2	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 2	N/A	< 2	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	< 2
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	< 2
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	< 2	N/A
	6/16/2020	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	< 2
	11/3/2020	< 2	N/A	< 2	N/A	N/A	< 2	< 2	< 2	N/A	N/A	< 2	N/A	< 2	N/A	< 2	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
1,1-Dichloroethene, ug/L (CAS NO - 75-35-4)	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A
	4/5/2021	< 2	N/A	< 2	N/A	N/A	< 2	< 2	< 2	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2
	4/5/2021	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 2	N/A	N/A	< 2	< 2	< 2	N/A	N/A	< 2	N/A	< 2	< 2	< 2	< 2
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 2	N/A	< 2	N/A	N/A	< 2	< 2	< 2	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 2	N/A	N/A	< 2	< 2	< 2	N/A	N/A	< 2	N/A	< 2	< 2	< 2	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A
	2/21/2023	N/A	N/A	< 2	N/A	< 2	< 2	< 2	< 2	N/A	N/A	< 2	N/A	< 2	< 2	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 2	N/A	< 2	N/A	N/A	< 2	< 2	< 2	N/A	N/A	< 2	N/A	< 2	< 2	N/A	N/A
	7/25/2023	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 2	N/A	N/A	N/A	N/A	< 2	< 2	< 2	N/A	< 2	< 2	N/A	< 2	< 2	N/A	< 2
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 2	< 2	< 2	N/A	N/A	< 2	N/A	< 2	< 2	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A
1,2,3-Trichloropropane, ug/L (CAS NO - 96-18-4)	4/14/2008	N/A	N/A	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	N/A	N/A	N/A	N/A	N/A	< 0.7	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	N/A	N/A	N/A	N/A	N/A	< 0.7	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	N/A	N/A	N/A	N/A	N/A	< 0.7	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 5	< 1	< 1	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	< 10	< 10	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	N/A	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	5/18/2015	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	4/4/2016	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
1,2,3-Trichloropropane, ug/L (CAS NO - 96-18-4)	10/2/2018	< 1	N/A	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A
	6/16/2020	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1
	11/3/2020	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	N/A	< 1	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
	4/5/2021	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	4/5/2021	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	7/25/2023	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 1	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	< 1	< 1	N/A	< 1	< 1	N/A	< 1
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
1,2-Dibromo-3-Chloropropane, ug/L (CAS NO - 96-12-8)	4/14/2008	N/A	N/A	< 0.86	< 0.86	< 0.86	< 0.86	< 0.86	N/A	N/A	N/A	N/A	N/A	< 0.86	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.86	< 0.86	< 0.86	< 0.86	< 0.86	N/A	N/A	N/A	N/A	N/A	< 0.86	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.86	< 0.86	< 0.86	< 0.86	< 0.86	N/A	N/A	N/A	N/A	N/A	< 0.86	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 0.86	< 0.86	< 0.86	< 0.86	< 0.86	N/A	N/A	N/A	< 0.86	N/A	< 0.86	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 0.86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 0.86	< 0.86	< 0.86	< 0.86	< 0.86	N/A	N/A	N/A	< 0.86	N/A	< 0.86	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 0.86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 0.86	< 0.86	< 0.86	< 0.86	< 0.86	< 0.86	< 0.86	< 0.86	< 0.86	< 0.86	< 0.86	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.86	< 0.86	< 4.3	< 0.86	< 0.86	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 0.498	< 0.498	< 0.498	< 0.498	< 10	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 0.498	< 0.498	< 0.498	< 0.498	< 0.498	< 0.498	< 0.498	< 0.498	N/A	< 0.498	< 0.498	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.55	< 0.498	< 0.498	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.498	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 0.498	< 0.498	< 0.498	< 0.498	< 0.498	< 0.498	< 0.498	< 0.498	N/A	< 0.498	< 0.498	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 0.12	< 0.12	< 0.12	0.12	< 10	< 0.12	< 10	< 0.12	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 0.12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 0.6	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 0.12	N/A	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 0.12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.12	< 0.12	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 0.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.12	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.12	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 0.12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 0.12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 0.12	N/A	< 0.12	< 0.12	< 0.12	N/A	< 0.12	< 0.12	< 0.12	< 0.12	N/A	< 0.12	< 0.12	N/A	N/A	N/A
	5/18/2015	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
1,2-Dibromo-3-Chloropropane, ug/L (CAS NO - 96-12-8)	8/12/2015	< 0.5	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A
	4/4/2016	< 0.5	N/A	< 0.5	< 0.5	< 0.5	< 0.5	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 0.5	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 0.5	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 0.5	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 0.5	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 0.5	N/A	< 0.5	< 0.5	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 1.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 1.2	N/A	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	N/A	N/A	< 1.2
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.2	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 1.2	N/A	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	N/A	N/A	< 1.2
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.2	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	< 5	N/A
	6/16/2020	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5
	11/3/2020	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	N/A	< 5	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A
	4/5/2021	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5
	4/5/2021	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	< 5	< 5
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	< 5	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A
	2/21/2023	N/A	N/A	< 5	N/A	< 5	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	N/A	N/A
	7/25/2023	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 5	N/A	N/A	N/A	N/A	< 5	< 5	< 5	N/A	< 5	< 5	N/A	< 5	< 5	N/A	< 5
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
1,2-Dibromoethane [EDB], ug/L (CAS NO - 106-93-4)	4/14/2008	N/A	N/A	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	N/A	N/A	N/A	N/A	N/A	< 0.25	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	N/A	N/A	N/A	N/A	N/A	< 0.25	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	N/A	N/A	N/A	< 0.25	N/A	< 0.25	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 0.25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	N/A	N/A	N/A	< 0.25	N/A	< 0.25	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 0.25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.25	< 0.25	< 1.25	< 0.25	< 0.25	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 0.255	< 0.255	< 0.255	< 0.255	< 10	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 0.255	< 0.255	< 0.255	< 0.255	< 0.255	< 0.255	< 0.255	< 0.255	N/A	< 0.255	< 0.255	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.255	< 0.255	< 0.255	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.255	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 0.255	< 0.255	< 0.255	< 0.255	< 0.255	< 0.255	< 0.255	< 0.255	N/A	< 0.255	< 0.255	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 0.13	< 0.13	< 0.13	< 0.13	< 10	< 0.13	< 10	< 0.13	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 0.13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 0.65	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 0.13	N/A	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 0.13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.13	< 0.13	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 0.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
1,2-Dibromoethane [EDB], ug/L (CAS NO - 106-93-4)	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.13	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.13	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 0.13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 0.13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 0.13	N/A	< 0.13	< 0.13	< 0.13	N/A	< 0.13	< 0.13	< 0.13	< 0.13	N/A	< 0.13	< 0.13	N/A	N/A	N/A
	5/18/2015	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 0.13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 0.13	N/A	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.13	N/A	N/A	N/A	N/A
	4/4/2016	< 0.13	N/A	< 0.13	< 0.13	< 0.13	< 0.13	N/A	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 0.13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 0.13	N/A	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 0.13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 0.13	N/A	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 0.13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 0.13	N/A	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 0.13	N/A	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.13	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 0.13	N/A	< 0.13	< 0.13	N/A	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.13	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 0.34	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 0.34	N/A	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	N/A	N/A	< 0.34
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.34	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 0.34	N/A	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	N/A	N/A	< 0.34
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.34	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A
	6/16/2020	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1
	11/3/2020	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	N/A	< 1	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
	4/5/2021	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	4/5/2021	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	7/25/2023	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 1	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	< 1	< 1	N/A	< 1	< 1	N/A	< 1
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
1,2-Dichlorobenzene, ug/L (CAS NO - 95-50-1)	4/14/2008	N/A	N/A	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	N/A	N/A	N/A	N/A	N/A	< 0.21	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	N/A	N/A	N/A	N/A	N/A	< 0.21	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	N/A	N/A	N/A	N/A	N/A	< 0.21	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 5	< 1	< 1	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
1,2-Dichlorobenzene, ug/L (CAS NO - 95-50-1)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 2	< 2	< 2	< 2	< 1	< 2	< 1	< 2	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	N/A	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	5/18/2015	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	4/4/2016	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 1	N/A	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A
	6/16/2020	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1
	11/3/2020	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	N/A	< 1	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
	4/5/2021	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	4/5/2021	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
1,2-Dichlorobenzene, ug/L (CAS NO - 95-50-1)	7/25/2023	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	7/25/2023	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 1	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	< 1	< 1	N/A	< 1	< 1	N/A	< 1
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
1,2-Dichloroethane, ug/L (CAS NO - 107-06-2)	4/14/2008	N/A	N/A	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	N/A	N/A	N/A	N/A	N/A	< 0.2	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	N/A	N/A	N/A	N/A	N/A	< 0.2	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	N/A	N/A	N/A	N/A	N/A	< 0.2	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 5	< 1	< 1	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	N/A	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	5/18/2015	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	4/4/2016	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 1	N/A	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	**1.19**
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	0.594*
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A
	6/16/2020	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1
	11/3/2020	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	N/A	< 1	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
1,2-Dichloroethane, ug/L (CAS NO - 107-06-2)	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
	4/5/2021	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	4/5/2021	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	7/25/2023	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 1	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	< 1	< 1	N/A	< 1	< 1	N/A	< 1
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
1,2-Dichloropropane, ug/L (CAS NO - 78-87-5)	4/14/2008	N/A	N/A	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	N/A	N/A	N/A	N/A	N/A	< 0.4	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	N/A	N/A	N/A	N/A	N/A	< 0.4	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	N/A	N/A	N/A	N/A	N/A	< 0.4	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 5	< 1	< 1	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	N/A	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	5/18/2015	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	4/4/2016	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
1,2-Dichloropropane, ug/L (CAS NO - 78-87-5)	10/2/2018	< 1	N/A	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A
	6/16/2020	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1
	11/3/2020	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	N/A	< 1	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
	4/5/2021	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	4/5/2021	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	7/25/2023	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 1	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	< 1	< 1	N/A	< 1	< 1	N/A	< 1
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
1,4-Dichlorobenzene, ug/L (CAS NO - 106-46-7)	4/14/2008	N/A	N/A	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	N/A	N/A	N/A	N/A	N/A	< 0.16	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	N/A	N/A	N/A	N/A	N/A	< 0.16	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	N/A	N/A	N/A	N/A	N/A	< 0.16	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	**1.73**	< 1	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 5	< 1	< 1	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	< 1	< 1	**1.57**	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	**1.98**	< 1	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	**1.92**	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	**2.38**	< 1	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	N/A	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	5/18/2015	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
1,4-Dichlorobenzene, ug/L (CAS NO - 106-46-7)	8/12/2015	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	4/4/2016	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 1	N/A	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A
	6/16/2020	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1
	11/3/2020	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	N/A	< 1	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
	4/5/2021	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	4/5/2021	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	7/25/2023	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 1	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	< 1	< 1	N/A	< 1	< 1	N/A	< 1
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
2-Butanone, ug/L (CAS NO - 78-93-3)	4/14/2008	N/A	N/A	< 0.91	< 0.91	< 0.91	< 0.91	< 0.91	N/A	N/A	N/A	N/A	N/A	< 0.91	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.91	< 0.91	< 0.91	< 0.91	< 0.91	N/A	N/A	N/A	N/A	N/A	< 0.91	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.91	< 0.91	< 0.91	< 0.91	< 0.91	N/A	N/A	N/A	N/A	N/A	< 0.91	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 10	< 10	< 10	< 10	< 10	**22.2**	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10	< 50	< 10	< 10	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10	**22.3**	< 10	< 10	< 10	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	< 10	< 10	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	< 10	< 10	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 50	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
2-Butanone, ug/L (CAS NO - 78-93-3)	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	0.596*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 10	N/A	< 10	< 10	< 10	N/A	< 10	< 10	1.54*	< 10	N/A	< 10	< 10	N/A	N/A	N/A
	5/18/2015	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	4/4/2016	< 10	N/A	1.48*	< 10	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 10	N/A	1.39*	< 10	< 10	< 10	< 10	1.66*	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	2.53*	< 10	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 10	N/A	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	< 10
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	< 10
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	< 10	N/A
	6/16/2020	N/A	N/A	< 10	< 10	294	2.23*	< 10	< 10	9.33*	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10
	11/3/2020	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	N/A	< 10	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A
	4/5/2021	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10
	4/5/2021	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	< 10	< 10
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	< 10	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 10	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	N/A	N/A
	7/25/2023	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 10	N/A	N/A	N/A	N/A	< 10	< 10	< 10	N/A	< 10	< 10	N/A	< 10	< 10	N/A	< 10
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
2-Hexanone, ug/L (CAS NO - 591-78-6)	4/14/2008	N/A	N/A	< 1.76	< 1.76	< 1.76	< 1.76	< 1.76	N/A	N/A	N/A	N/A	N/A	< 1.76	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 1.76	< 1.76	< 1.76	< 1.76	< 1.76	N/A	N/A	N/A	N/A	N/A	< 1.76	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 1.76	< 1.76	< 1.76	< 1.76	< 1.76	N/A	N/A	N/A	N/A	N/A	< 1.76	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10	< 50	< 10	< 10	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
2-Hexanone, ug/L (CAS NO - 591-78-6)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	< 10	< 10	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	< 10	< 10	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 50	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 10	N/A	< 10	< 10	< 10	N/A	< 10	< 10	< 10	< 10	N/A	< 10	< 10	N/A	N/A	N/A
	5/18/2015	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	4/4/2016	< 10	N/A	0.258*	< 10	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 10	N/A	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	< 10
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	< 10
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	< 10	N/A
	6/16/2020	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10
	11/3/2020	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	N/A	< 10	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A
	4/5/2021	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10
	4/5/2021	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	< 10	< 10
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	< 10	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 10	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
2-Hexanone, ug/L (CAS NO - 591-78-6)	7/25/2023	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	N/A	N/A
	7/25/2023	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 10	N/A	N/A	N/A	N/A	< 10	< 10	< 10	N/A	< 10	< 10	N/A	< 10	< 10	N/A	< 10
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
4-Methyl-2-Pentanone, ug/L (CAS NO - 108-10-1)	4/14/2008	N/A	N/A	< 0.31	< 0.31	< 0.31	< 0.31	< 0.31	N/A	N/A	N/A	N/A	N/A	< 0.31	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.31	< 0.31	< 0.31	< 0.31	< 0.31	N/A	N/A	N/A	N/A	N/A	< 0.31	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.31	< 0.72	< 0.57	< 0.31	< 0.31	N/A	N/A	N/A	N/A	N/A	< 0.31	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10	< 50	< 10	< 10	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	< 10	< 10	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	< 10	< 10	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 50	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	< 10	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 10	N/A	< 10	< 10	< 10	N/A	< 10	< 10	< 10	< 10	N/A	< 10	< 10	N/A	N/A	N/A
	5/18/2015	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	4/4/2016	< 10	N/A	< 10	< 10	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 10	N/A	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	< 10
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	< 10
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	< 10	N/A
	6/16/2020	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10
	11/3/2020	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	N/A	< 10	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
4-Methyl-2-Pentanone, ug/L (CAS NO - 108-10-1)	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A
	4/5/2021	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10
	4/5/2021	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	< 10	< 10
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	< 10	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 10	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	N/A	N/A
	7/25/2023	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 10	N/A	N/A	N/A	N/A	< 10	< 10	< 10	N/A	< 10	< 10	N/A	< 10	< 10	N/A	< 10
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
Acetone, ug/L (CAS NO - 67-64-1)	4/14/2008	N/A	N/A	< 4.62	< 4.62	< 4.62	< 4.62	< 4.62	N/A	N/A	N/A	N/A	N/A	< 4.62	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 4.62	< 4.62	< 4.62	< 4.62	< 4.62	N/A	N/A	N/A	N/A	N/A	< 4.62	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 4.62	< 4.62	< 4.62	< 4.62	< 4.62	N/A	N/A	N/A	N/A	N/A	< 4.62	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10	< 50	< 10	< 10	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10	**31.4**	< 10	< 10	< 10	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	**14.1**	< 10	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	< 10	< 10	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 10	**12.8**	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 50	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	**39.3**	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	**12.3**	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 10	< 10	2.52*	< 10	< 10	< 10	1.87*	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	**27.9**	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 10	N/A	< 10	2.6*	< 10	N/A	4.61*	< 10	2.83*	< 10	N/A	6.33*	4.07*	N/A	N/A	N/A
	5/18/2015	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	4/4/2016	< 10	N/A	2.42*	< 10	< 10	2.34*	N/A	< 10	< 10	2.49*	< 10	2.83*	2.78*	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	1.94*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	6.08*	< 10	< 10	< 10	3.34*	N/A	N/A	N/A
	1/9/2017	N/A	N/A	1.81*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	3.2*	N/A	2.4*	2.47*	1.91*	3.59*	4.67*	2.67*	5.6*	3.17*	3.26*	4.16*	3.44*	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.22*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 10	N/A	2.87*	1.8*	< 10	< 10	2.86*	< 10	3.08*	4.47*	< 10	< 10	2.05*	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.71*	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Acetone, ug/L (CAS NO - 67-64-1)	10/2/2018	< 10	N/A	< 10	< 10	N/A	< 10	3.75*	3.28*	< 10	< 10	< 10	5.31*	4.9*	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	3.72*	< 10	< 10	< 10	< 10	N/A	N/A	< 10
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	13.1	< 10	< 10	5.79*	< 10	N/A	N/A	< 10
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.97*	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	< 10	N/A
	6/16/2020	N/A	N/A	< 10	< 10	261	< 10	< 10	< 10	14.8	< 10	< 10	< 10	3.21*	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10
	11/3/2020	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	3.59*	N/A	< 10	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A
	4/5/2021	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10
	4/5/2021	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	< 10	< 10
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	8.04*	N/A	< 10	< 10	< 10	< 10	< 10	< 10
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	< 10	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 10	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	3.41*	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	4.12*	N/A	N/A	N/A	3.14*	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	N/A	N/A
	7/25/2023	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 10	N/A	N/A	N/A	N/A	< 10	24.4	< 10	N/A	< 10	< 10	N/A	< 10	< 10	N/A	< 10
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
Acrylonitrile, ug/L (CAS NO - 107-13-1)	4/14/2008	N/A	N/A	< 1.28	< 1.28	< 1.28	< 1.28	< 1.28	N/A	N/A	N/A	N/A	N/A	< 1.28	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 1.28	< 1.28	< 1.28	< 1.28	< 1.28	N/A	N/A	N/A	N/A	N/A	< 1.28	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 1.28	< 1.28	< 1.28	< 1.28	< 1.28	N/A	N/A	N/A	N/A	N/A	< 1.28	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10	< 50	< 10	< 10	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	< 10	< 10	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 50	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 10	N/A	< 10	< 10	< 10	N/A	< 10	< 10	< 10	< 10	N/A	< 10	< 10	N/A	N/A	N/A
	5/18/2015	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Acrylonitrile, ug/L (CAS NO - 107-13-1)	8/12/2015	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	4/4/2016	< 10	N/A	< 10	< 10	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 10	N/A	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	< 10
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	< 10
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	< 5	N/A
	6/16/2020	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5
	11/3/2020	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	N/A	< 5	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A
	4/5/2021	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5
	4/5/2021	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	< 5	< 5
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	< 5	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A
	2/21/2023	N/A	N/A	< 5	N/A	< 5	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	N/A	N/A
	7/25/2023	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 5	N/A	N/A	N/A	N/A	< 5	< 5	< 5	N/A	< 5	< 5	N/A	< 5	< 5	N/A	< 5
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
Benzene, ug/L (CAS NO - 71-43-2)	4/14/2008	N/A	N/A	< 0.16	< 0.16	< 0.16	< 0.16	< 0.393	N/A	N/A	N/A	N/A	N/A	< 0.16	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.16	< 0.16	< 0.16	< 0.16	< 0.36	N/A	N/A	N/A	N/A	N/A	< 0.16	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.16	< 0.16	< 0.16	< 0.16	< 0.34	N/A	N/A	N/A	N/A	N/A	< 0.16	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	N/A	N/A	N/A	< 0.5	N/A	< 0.5	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	N/A	N/A	N/A	< 0.5	N/A	< 0.5	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**4.96**	< 0.5	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	< 0.5	< 2.5	< 0.5	**4.82**	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	**0.58**	< 0.5	**1.7**	< 0.5	< 0.5	**5.95**	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 0.5	< 0.5	< 0.5	< 0.5	**0.63**	< 0.5	**2.24**	< 0.5	N/A	**5.6**	< 0.5	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	**0.71**	< 0.5	**1.87**	< 0.5	N/A	**4.98**	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**2.78**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 0.5	< 0.5	< 0.5	< 0.5	**0.97**	< 0.5	**2.19**	< 0.5	N/A	**7.44**	< 0.5	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 0.5	< 0.5	< 0.5	< 0.5	**0.99**	< 0.5	**2.39**	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 2.5	< 0.5	< 0.5	< 0.5	**0.7**	< 0.5	**0.59**	< 0.5	< 0.5	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 0.5	N/A	< 0.5	**1.15**	< 0.5	**2.07**	< 0.5	< 0.5	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	< 0.5	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 0.5	< 0.5	< 0.5	< 0.5	**1.2**	< 0.5	**1.5**	< 0.5	< 0.5	< 0.5	< 0.5	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Benzene, ug/L (CAS NO - 71-43-2)	5/29/2012	N/A	N/A	N/A	N/A	< 0.5	< 0.5	N/A	< 0.5	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 0.5	< 0.5	< 0.5	< 0.5	**1.8**	< 0.5	**1.44**	< 0.5	< 0.5	< 0.5	**0.99**	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 0.5	< 0.5	< 0.5	< 0.5	**1.94**	< 0.5	**0.888**	< 0.5	< 0.5	< 0.5	< 0.5	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 0.5	< 0.5	< 0.5	< 0.5	**2.22**	< 0.5	**1.33**	< 0.5	< 0.5	< 0.5	0.427*	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 0.5	< 0.5	< 0.5	< 0.5	**1.39**	< 0.5	**1.22**	< 0.5	< 0.5	< 0.5	**0.886**	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 0.5	N/A	< 0.5	< 0.5	< 0.5	N/A	**2.01**	< 0.5	**2.55**	< 0.5	N/A	0.131*	**1.28**	N/A	N/A	N/A
	5/18/2015	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**2.03**	< 0.5	**2.25**	< 0.5	< 0.5	< 0.5	0.256*	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	**2.08**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 0.5	N/A	< 0.5	< 0.5	< 0.5	< 0.5	**0.556**	< 0.5	**2.17**	< 0.5	< 0.5	< 0.5	**0.566**	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A
	4/4/2016	< 0.5	N/A	< 0.5	< 0.5	< 0.5	< 0.5	N/A	< 0.5	**0.887**	< 0.5	< 0.5	< 0.5	0.461*	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 0.5	N/A	< 0.5	< 0.5	< 0.5	< 0.5	**2.29**	< 0.5	**1.68**	< 0.5	< 0.5	< 0.5	**1.37**	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 0.5	N/A	< 0.5	< 0.5	< 0.5	< 0.5	**1.03**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**1.89**	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 0.5	N/A	< 0.5	< 0.5	< 0.5	< 0.5	**1.93**	< 0.5	**2.15**	< 0.5	< 0.5	< 0.5	**0.612**	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 0.5	N/A	< 0.5	< 0.5	< 0.5	< 0.5	**2.07**	< 0.5	0.256*	< 0.5	< 0.5	0.229*	**2.14**	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.249*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 0.5	N/A	< 0.5	< 0.5	N/A	< 0.5	0.448*	< 0.5	**1.79**	< 0.5	< 0.5	< 0.5	**0.912**	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 0.5	N/A	< 0.5	< 0.5	< 0.5	< 0.5	**1.82**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.857**	N/A	N/A	**1.5**
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 0.5	N/A	< 0.5	< 0.5	< 0.5	< 0.5	**1.49**	< 0.5	**1.31**	< 0.5	< 0.5	< 0.5	**1.02**	N/A	N/A	< 0.5
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	< 0.5	N/A
	6/16/2020	N/A	N/A	< 0.5	< 0.5	< 0.5	< 0.5	**1.23**	< 0.5	**1.13**	< 0.5	< 0.5	< 0.5	**0.906**	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.703**	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	< 0.5
	11/3/2020	< 0.5	N/A	< 0.5	N/A	N/A	< 0.5	**1.14**	< 0.5	N/A	N/A	< 0.5	N/A	**1.56**	N/A	< 0.5	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A
	4/5/2021	< 0.5	N/A	< 0.5	N/A	N/A	< 0.5	**0.748**	< 0.5	**1.43**	N/A	< 0.5	< 0.5	**0.826**	< 0.5	< 0.5	< 0.5
	4/5/2021	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	0.247*	N/A	N/A	0.367*	**0.977**	< 0.5	N/A	N/A	< 0.5	N/A	**1.25**	< 0.5	< 0.5	< 0.5
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 0.5	N/A	< 0.5	N/A	N/A	< 0.5	**1.04**	< 0.5	0.404*	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 0.5	N/A	N/A	< 0.5	**1.21**	< 0.5	N/A	N/A	< 0.5	N/A	**1.01**	< 0.5	< 0.5	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A
	2/21/2023	N/A	N/A	< 0.5	N/A	< 0.5	< 0.5	**0.708**	< 0.5	N/A	N/A	< 0.5	N/A	**1.51**	< 0.5	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	**0.505**	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 0.5	N/A	< 0.5	N/A	N/A	< 0.5	**1.09**	< 0.5	N/A	N/A	< 0.5	N/A	**1.06**	< 0.5	N/A	N/A
	7/25/2023	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 0.5	N/A	N/A	N/A	N/A	< 0.5	**0.845**	< 0.5	N/A	< 0.5	< 0.5	N/A	**1.55**	< 0.5	N/A	< 0.5
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 0.5	**0.882**	< 0.5	N/A	N/A	< 0.5	N/A	**2.06**	< 0.5	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A	N/A
Bromochloromethane, ug/L (CAS NO - 74-97-5)	4/14/2008	N/A	N/A	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	N/A	N/A	N/A	N/A	N/A	< 0.76	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	N/A	N/A	N/A	N/A	N/A	< 0.76	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	N/A	N/A	N/A	N/A	N/A	< 0.76	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	< 5	N/A	< 5	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	< 5	N/A	< 5	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Bromochloromethane, ug/L (CAS NO - 74-97-5)	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 25	< 5	< 5	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	< 5	< 5	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	< 5	< 5	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 25	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 5	< 5	N/A	< 5	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 5	N/A	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	N/A	N/A	N/A
	5/18/2015	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A
	4/4/2016	< 5	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 5	N/A	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	< 5
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	< 5
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	< 5	N/A
	6/16/2020	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5
	11/3/2020	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	N/A	< 5	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A
	4/5/2021	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5
	4/5/2021	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	< 5	< 5
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	< 5	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A
	2/21/2023	N/A	N/A	< 5	N/A	< 5	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Bromochloromethane, ug/L (CAS NO - 74-97-5)	7/25/2023	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	N/A	N/A
	7/25/2023	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 5	N/A	N/A	N/A	N/A	< 5	< 5	< 5	N/A	< 5	< 5	N/A	< 5	< 5	N/A	< 5
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
Bromodichloromethane, ug/L (CAS NO - 75-27-4)	4/14/2008	N/A	N/A	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	N/A	N/A	N/A	N/A	N/A	< 0.2	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	N/A	N/A	N/A	N/A	N/A	< 0.2	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	N/A	N/A	N/A	N/A	N/A	< 0.2	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 5	< 1	< 1	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	< 4	< 4	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	N/A	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	5/18/2015	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	4/4/2016	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 1	N/A	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A
	6/16/2020	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1
	11/3/2020	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	N/A	< 1	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Bromodichloromethane, ug/L (CAS NO - 75-27-4)	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
	4/5/2021	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	4/5/2021	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	7/25/2023	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 1	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	< 1	< 1	N/A	< 1	< 1	N/A	< 1
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
Bromoform, ug/L (CAS NO - 75-25-2)	4/14/2008	N/A	N/A	< 0.43	< 0.43	< 0.43	< 0.43	< 0.43	N/A	N/A	N/A	N/A	N/A	< 0.43	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.43	< 0.43	< 0.43	< 0.43	< 0.43	N/A	N/A	N/A	N/A	N/A	< 0.43	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.43	< 0.43	< 0.43	< 0.43	< 0.43	N/A	N/A	N/A	N/A	N/A	< 0.43	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	< 5	N/A	< 5	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	< 5	N/A	< 5	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 25	< 5	< 5	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	< 5	< 5	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	< 5	< 5	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 25	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 5	< 5	N/A	< 5	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 5	N/A	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	N/A	N/A	N/A
	5/18/2015	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A
	4/4/2016	< 5	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Bromoform, ug/L (CAS NO - 75-25-2)	10/2/2018	< 5	N/A	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	< 5
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	< 5
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	< 5	N/A
	6/16/2020	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5
	11/3/2020	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	N/A	< 5	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A
	4/5/2021	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5
	4/5/2021	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	< 5	< 5
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	< 5	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A
	2/21/2023	N/A	N/A	< 5	N/A	< 5	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	N/A	N/A
	7/25/2023	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 5	N/A	N/A	N/A	N/A	< 5	< 5	< 5	N/A	< 5	< 5	N/A	< 5	< 5	N/A	< 5
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
Bromomethane, ug/L (CAS NO - 74-83-9)	4/14/2008	N/A	N/A	< 0.48	< 0.48	< 0.48	< 0.48	< 0.48	N/A	N/A	N/A	N/A	N/A	< 0.48	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.48	< 0.48	< 0.48	< 0.48	< 0.48	N/A	N/A	N/A	N/A	N/A	< 0.48	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.48	< 0.48	< 0.48	< 0.48	< 0.48	N/A	N/A	N/A	N/A	N/A	< 0.48	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A	< 4	N/A	< 4	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A	< 4	N/A	< 4	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	< 4	< 20	< 4	< 4	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	< 4	< 4	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	< 4	< 4	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	< 4	< 4	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 20	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 4	N/A	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 50	< 50	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 4	< 4	N/A	< 4	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 4	N/A	< 4	< 4	< 4	N/A	< 4	< 4	< 4	< 4	N/A	< 4	< 4	N/A	N/A	N/A
	5/18/2015	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Bromomethane, ug/L (CAS NO - 74-83-9)	8/12/2015	< 4	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A
	4/4/2016	0.485*	N/A	< 4	< 4	< 4	0.253*	N/A	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	0.221*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 4	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 4	N/A	< 4	0.252*	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	0.317*	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	0.51*	N/A	0.464*	0.499*	0.42*	0.371*	0.305*	0.472*	< 4	0.449*	0.423*	0.451*	0.502*	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.506*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	0.47*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 4	N/A	< 4	< 4	< 4	< 4	0.23*	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 4	N/A	< 4	< 4	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 4	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	< 4
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 4	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	< 4
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	< 4	N/A
	6/16/2020	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	< 4
	11/3/2020	< 4	N/A	< 4	N/A	N/A	< 4	< 4	< 4	N/A	N/A	< 4	N/A	< 4	N/A	< 4	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A
	4/5/2021	< 4	N/A	< 4	N/A	N/A	< 4	< 4	< 4	< 4	N/A	< 4	< 4	< 4	< 4	< 4	< 4
	4/5/2021	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 4	N/A	N/A	< 4	< 4	< 4	N/A	N/A	< 4	N/A	< 4	< 4	< 4	< 4
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 4	N/A	< 4	N/A	N/A	< 4	< 4	< 4	< 4	N/A	< 4	< 4	< 4	< 4	< 4	< 4
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 4	N/A	N/A	< 4	< 4	< 4	N/A	N/A	< 4	N/A	< 4	< 4	< 4	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A
	2/21/2023	N/A	N/A	< 4	N/A	< 4	< 4	< 4	< 4	N/A	N/A	< 4	N/A	< 4	< 4	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 4	N/A	< 4	N/A	N/A	< 4	< 4	< 4	N/A	N/A	< 4	N/A	< 4	< 4	N/A	N/A
	7/25/2023	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 4	N/A	N/A	N/A	N/A	< 4	< 4	< 4	N/A	< 4	< 4	N/A	< 4	< 4	N/A	< 4
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 4	< 4	< 4	N/A	N/A	< 4	N/A	< 4	< 4	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A
Carbon Disulfide, ug/L (CAS NO - 75-15-0)	4/14/2008	N/A	N/A	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	N/A	N/A	N/A	N/A	N/A	< 0.18	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.18	< 0.18	< 0.51	< 0.18	< 0.18	N/A	N/A	N/A	N/A	N/A	< 0.18	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	N/A	N/A	N/A	N/A	N/A	< 0.18	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 5	< 1	< 1	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	< 5	< 5	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 10	< 1	< 10	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Carbon Disulfide, ug/L (CAS NO - 75-15-0)	2/20/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	1.98	< 1	< 1	< 1	< 1	1.05	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	0.233*	< 1	< 1	< 1	< 1	0.235*	< 1	< 1	0.29*	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	N/A	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	5/18/2015	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	4/4/2016	< 1	N/A	< 1	< 1	0.192*	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 1	N/A	0.376*	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 1	N/A	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A
	6/16/2020	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1
	11/3/2020	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	N/A	< 1	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
	4/5/2021	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	4/5/2021	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	7/25/2023	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 1	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	< 1	< 1	N/A	< 1	< 1	N/A	< 1
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride, ug/L (CAS NO - 56-23-5)	4/14/2008	N/A	N/A	< 0.31	< 0.31	< 0.31	< 0.31	< 0.31	N/A	N/A	N/A	N/A	N/A	< 0.31	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.31	< 0.31	< 0.31	< 0.31	< 0.31	N/A	N/A	N/A	N/A	N/A	< 0.31	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.31	< 0.31	< 0.31	< 0.31	< 0.31	N/A	N/A	N/A	N/A	N/A	< 0.31	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A	< 2	N/A	< 2	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A	< 2	N/A	< 2	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Carbon Tetrachloride, ug/L (CAS NO - 56-23-5)	4/14/2009	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	< 2	< 10	< 2	< 2	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	< 2	< 2	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	< 2	< 2	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	< 5	< 5	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 2	< 2	< 2	< 2	< 5	< 2	< 5	< 2	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 10	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	< 2	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 2	< 2	N/A	< 2	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 2	N/A	< 2	< 2	< 2	N/A	< 2	< 2	< 2	< 2	N/A	< 2	< 2	N/A	N/A	N/A
	5/18/2015	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A
	4/4/2016	< 2	N/A	< 2	< 2	< 2	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 2	N/A	< 2	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	< 2
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	< 2
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	< 2	N/A
	6/16/2020	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	< 2
	11/3/2020	< 2	N/A	< 2	N/A	N/A	< 2	< 2	< 2	N/A	N/A	< 2	N/A	< 2	N/A	< 2	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A
	4/5/2021	< 2	N/A	< 2	N/A	N/A	< 2	< 2	< 2	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2
	4/5/2021	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 2	N/A	N/A	< 2	< 2	< 2	N/A	N/A	< 2	N/A	< 2	< 2	< 2	< 2
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 2	N/A	< 2	N/A	N/A	< 2	< 2	< 2	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 2	N/A	N/A	< 2	< 2	< 2	N/A	N/A	< 2	N/A	< 2	< 2	< 2	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A
	2/21/2023	N/A	N/A	< 2	N/A	< 2	< 2	< 2	< 2	N/A	N/A	< 2	N/A	< 2	< 2	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Carbon Tetrachloride, ug/L (CAS NO - 56-23-5)	7/25/2023	< 2	N/A	< 2	N/A	N/A	< 2	< 2	< 2	N/A	N/A	< 2	N/A	< 2	< 2	N/A	N/A
	7/25/2023	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 2	N/A	N/A	N/A	N/A	< 2	< 2	< 2	N/A	< 2	< 2	N/A	< 2	< 2	N/A	< 2
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 2	< 2	< 2	N/A	N/A	< 2	N/A	< 2	< 2	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A
Chlorobenzene, ug/L (CAS NO - 108-90-7)	4/14/2008	N/A	N/A	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	N/A	N/A	N/A	N/A	N/A	< 0.17	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	N/A	N/A	N/A	N/A	N/A	< 0.17	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	N/A	N/A	N/A	N/A	N/A	< 0.17	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 5	< 1	< 1	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	1.08	< 1	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	N/A	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	5/18/2015	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	0.195*	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	4/4/2016	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 1	N/A	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A
	6/16/2020	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1
	11/3/2020	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	N/A	< 1	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Chlorobenzene, ug/L (CAS NO - 108-90-7)	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
	4/5/2021	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	4/5/2021	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	7/25/2023	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 1	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	< 1	< 1	N/A	< 1	< 1	N/A	< 1
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
Chlorodibromomethane, ug/L (CAS NO - 124-48-1)	4/14/2008	N/A	N/A	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	N/A	N/A	N/A	N/A	N/A	< 0.26	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	N/A	N/A	N/A	N/A	N/A	< 0.26	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	N/A	N/A	N/A	N/A	N/A	< 0.26	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	< 5	N/A	< 5	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	< 5	N/A	< 5	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 25	< 5	< 5	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	< 5	< 5	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	< 5	< 5	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 25	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 5	< 5	N/A	< 5	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 5	N/A	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	N/A	N/A	N/A
	5/18/2015	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A
	4/4/2016	< 5	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Chlorodibromomethane, ug/L (CAS NO - 124-48-1)	10/2/2018	< 5	N/A	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	< 5
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	< 5
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	< 5	N/A
	6/16/2020	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5
	11/3/2020	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	N/A	< 5	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A
	4/5/2021	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5
	4/5/2021	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	< 5	< 5
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	< 5	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A
	2/21/2023	N/A	N/A	< 5	N/A	< 5	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	N/A	N/A
	7/25/2023	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 5	N/A	N/A	N/A	N/A	< 5	< 5	< 5	N/A	< 5	< 5	N/A	< 5	< 5	N/A	< 5
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
Chloroethane, ug/L (CAS NO - 75-00-3)	4/14/2008	N/A	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 2.62	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 2.76	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 2.13	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A	< 4	N/A	< 4	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A	< 4	N/A	< 4	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	< 4	< 20	< 4	< 4	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	< 4	< 4	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	< 4	< 4	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 4	< 4	< 4	< 4	**4.5**	< 4	< 4	< 4	N/A	< 4	< 4	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 20	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 4	N/A	< 4	< 4	< 4	**35.7**	< 4	< 4	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	< 4	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 4	< 4	N/A	< 4	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 4	< 4	< 4	< 4	2.44*	< 4	0.648*	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	8/19/2013	N/A	N/A	1.55*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 4	< 4	< 4	< 4	2.11*	< 4	1.29*	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 4	N/A	1.09*	< 4	< 4	N/A	2.45*	< 4	1.45*	< 4	N/A	< 4	< 4	N/A	N/A	N/A
	5/18/2015	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Chloroethane, ug/L (CAS NO - 75-00-3)	8/12/2015	< 4	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A
	4/4/2016	< 4	N/A	2.49*	< 4	< 4	< 4	N/A	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 4	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 4	N/A	2.39*	< 4	< 4	< 4	1.99*	< 4	1.49*	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	1/9/2017	N/A	N/A	2.33*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 4	N/A	3.14*	< 4	< 4	< 4	1.98*	< 4	1.24*	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	1.29*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 4	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	2.31*	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 4	N/A	1.6*	< 4	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	1.87*	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 4	N/A	1.39*	< 4	< 4	< 4	1.64*	< 4	< 4	< 4	< 4	< 4	1.5*	N/A	N/A	1.39*
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 4	N/A	1.95*	< 4	< 4	< 4	1.63*	< 4	0.845*	< 4	< 4	< 4	2.17*	N/A	N/A	< 4
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	< 4	N/A
	6/16/2020	N/A	N/A	1.24*	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	1.63*	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.33*	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	< 4
	11/3/2020	< 4	N/A	1.25*	N/A	N/A	< 4	0.814*	< 4	N/A	N/A	< 4	N/A	5.9	N/A	< 4	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A
	4/5/2021	< 4	N/A	1.11*	N/A	N/A	< 4	< 4	< 4	< 4	N/A	< 4	< 4	2.49*	< 4	< 4	< 4
	4/5/2021	N/A	N/A	0.977*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	0.895*	N/A	N/A	< 4	1.01*	< 4	N/A	N/A	< 4	N/A	3.56*	< 4	< 4	< 4
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 4	N/A	0.952*	N/A	N/A	< 4	0.909*	< 4	< 4	N/A	< 4	< 4	4.99	< 4	< 4	< 4
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	0.943*	N/A	N/A	< 4	0.884*	< 4	N/A	N/A	< 4	N/A	2.92*	< 4	< 4	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A
	2/21/2023	N/A	N/A	1.11*	N/A	< 4	< 4	< 4	< 4	N/A	N/A	< 4	N/A	5.07	< 4	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 4	N/A	< 4	N/A	N/A	< 4	< 4	< 4	N/A	N/A	< 4	N/A	2.92*	< 4	N/A	N/A
	7/25/2023	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 4	N/A	N/A	N/A	N/A	< 4	< 4	< 4	N/A	< 4	< 4	N/A	3.28*	< 4	N/A	< 4
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 4	< 4	< 4	N/A	N/A	< 4	N/A	3.59*	< 4	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A
Chloroform, ug/L (CAS NO - 67-66-3)	4/14/2008	N/A	N/A	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	N/A	N/A	N/A	N/A	N/A	< 0.17	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	N/A	N/A	N/A	N/A	N/A	< 0.17	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	N/A	N/A	N/A	N/A	N/A	< 0.17	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 5	< 1	< 1	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Chloroform, ug/L (CAS NO - 67-66-3)	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	N/A	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	5/18/2015	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	4/4/2016	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 3	N/A	< 3	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	< 3
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	< 3
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	< 3	N/A
	6/16/2020	N/A	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	< 3
	11/3/2020	< 3	N/A	< 3	N/A	N/A	< 3	< 3	< 3	N/A	N/A	< 3	N/A	< 3	N/A	< 3	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A
	4/5/2021	< 3	N/A	< 3	N/A	N/A	< 3	< 3	< 3	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3
	4/5/2021	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 3	N/A	N/A	< 3	< 3	< 3	N/A	N/A	< 3	N/A	< 3	< 3	< 3	< 3
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 3	N/A	< 3	N/A	N/A	< 3	< 3	< 3	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 3	N/A	N/A	< 3	< 3	< 3	N/A	N/A	< 3	N/A	< 3	< 3	< 3	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A
	2/21/2023	N/A	N/A	< 3	N/A	< 3	< 3	< 3	< 3	N/A	N/A	< 3	N/A	< 3	< 3	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 3	N/A	< 3	N/A	N/A	< 3	< 3	< 3	N/A	N/A	< 3	N/A	< 3	< 3	N/A	N/A
	7/25/2023	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 3	N/A	N/A	N/A	N/A	< 3	< 3	< 3	N/A	< 3	< 3	N/A	< 3	< 3	N/A	< 3
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 3	< 3	< 3	N/A	N/A	< 3	N/A	< 3	< 3	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A
Chloromethane, ug/L (CAS NO - 74-87-3)	4/14/2008	N/A	N/A	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	N/A	N/A	N/A	N/A	N/A	< 0.2	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.54	< 0.2	< 0.2	< 0.2	< 0.2	N/A	N/A	N/A	N/A	N/A	< 0.2	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	N/A	N/A	N/A	N/A	N/A	< 0.2	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A	< 3	N/A	< 3	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A	< 3	N/A	< 3	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Chloromethane, ug/L (CAS NO - 74-87-3)	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	< 3	< 15	< 3	< 3	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	< 3	< 3	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	< 3	< 3	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	< 3	< 3	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 15	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	< 3	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 3	< 3	N/A	< 3	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 3	N/A	< 3	< 3	< 3	N/A	< 3	< 3	< 3	< 3	N/A	< 3	< 3	N/A	N/A	N/A
	5/18/2015	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 3	N/A	< 3	< 3	1.15*	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A
	4/4/2016	< 3	N/A	< 3	< 3	< 3	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	0.467*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	0.747*	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 3	N/A	< 3	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	< 3
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	< 3
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	< 3	N/A
	6/16/2020	N/A	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	< 3
	11/3/2020	< 3	N/A	< 3	N/A	N/A	< 3	< 3	< 3	N/A	N/A	< 3	N/A	< 3	N/A	< 3	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A
	4/5/2021	< 3	N/A	< 3	N/A	N/A	< 3	< 3	< 3	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3
	4/5/2021	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 3	N/A	N/A	< 3	< 3	< 3	N/A	N/A	< 3	N/A	< 3	< 3	< 3	< 3
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 3	N/A	< 3	N/A	N/A	< 3	< 3	< 3	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 3	N/A	N/A	< 3	< 3	< 3	N/A	N/A	< 3	N/A	< 3	< 3	< 3	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A
	2/21/2023	N/A	N/A	< 3	N/A	< 3	< 3	< 3	< 3	N/A	N/A	< 3	N/A	< 3	< 3	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Chloromethane, ug/L (CAS NO - 74-87-3)	7/25/2023	< 3	N/A	< 3	N/A	N/A	< 3	< 3	< 3	N/A	N/A	< 3	N/A	< 3	< 3	N/A	N/A
	7/25/2023	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 3	N/A	N/A	N/A	N/A	< 3	< 3	< 3	N/A	< 3	< 3	N/A	< 3	< 3	N/A	< 3
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 3	< 3	< 3	N/A	N/A	< 3	N/A	< 3	< 3	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A
cis-1,2-Dichloroethene, ug/L (CAS NO - 156-59-2)	4/14/2008	N/A	N/A	< 0.37	< 0.37	< 0.37	< 0.37	< 0.863	N/A	N/A	N/A	N/A	N/A	< 0.37	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.37	< 0.37	< 0.37	< 0.37	< 0.82	N/A	N/A	N/A	N/A	N/A	< 0.37	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.37	< 0.37	< 0.37	< 0.37	< 0.52	N/A	N/A	N/A	N/A	N/A	< 0.37	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	< 1	< 1	1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1.18	< 1	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 5	< 1	2.14	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	2.97	< 1	< 1	< 1	< 1	2.37	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 1	< 1	< 1	< 1	2.43	< 1	< 1	< 1	N/A	1.81	< 1	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	2.66	< 1	3.09	< 1	N/A	2.32	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.03	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 1	< 1	< 1	< 1	3.45	< 1	5.27	< 1	N/A	1.27	< 1	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 1	< 1	< 1	< 1	3.64	< 1	6.01	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 5	< 1	< 1	< 1	2.19	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 1	N/A	< 1	5.97	< 1	3.67	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 1	< 1	< 1	< 1	3.5	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	5.81	< 1	1.39	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 1	< 1	< 1	< 1	5.31	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	< 1	< 1	< 1	5.73	< 1	1.52	< 1	< 1	< 1	0.321*	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 1	< 1	< 1	< 1	3.94	< 1	3.29	< 1	< 1	< 1	0.8*	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	N/A	< 1	< 1	< 1	N/A	6.3	< 1	3.78	< 1	N/A	< 1	1.14	N/A	N/A	N/A
	5/18/2015	< 1	< 1	< 1	< 1	< 1	< 1	5.03	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	5.71	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 1	N/A	< 1	< 1	< 1	< 1	4.19	< 1	< 1	< 1	< 1	< 1	0.351*	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	4/4/2016	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	0.395*	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 1	N/A	< 1	< 1	< 1	< 1	6.82	< 1	< 1	< 1	< 1	< 1	0.743*	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 1	N/A	< 1	< 1	< 1	< 1	5.66	< 1	0.522*	< 1	< 1	< 1	1.3	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 1	N/A	< 1	< 1	< 1	< 1	6.81	< 1	0.248*	< 1	< 1	< 1	0.529*	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 1	N/A	< 1	< 1	< 1	< 1	7.98	< 1	< 1	< 1	< 1	0.269*	1.41	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 1	N/A	< 1	< 1	N/A	< 1	3.32	< 1	< 1	< 1	< 1	< 1	0.405*	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 1	N/A	< 1	< 1	< 1	< 1	7.35	< 1	< 1	< 1	< 1	< 1	0.681*	N/A	N/A	1.42
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 1	N/A	< 1	< 1	< 1	< 1	7.05	< 1	< 1	< 1	< 1	< 1	0.791*	N/A	N/A	0.439*
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A
	6/16/2020	N/A	N/A	< 1	< 1	< 1	< 1	3.91	< 1	< 1	< 1	< 1	< 1	0.777*	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.503*	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1
	11/3/2020	< 1	N/A	< 1	N/A	N/A	< 1	4.06	< 1	N/A	N/A	< 1	N/A	0.906*	N/A	< 1	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
cis-1,2-Dichloroethene, ug/L (CAS NO - 156-59-2)	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
	4/5/2021	< 1	N/A	< 1	N/A	N/A	< 1	3.21	< 1	< 1	N/A	< 1	< 1	0.558*	1.25	< 1	< 1
	4/5/2021	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 1	N/A	N/A	< 1	4.11	< 1	N/A	N/A	< 1	N/A	0.776*	0.327*	< 1	< 1
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 1	N/A	< 1	N/A	N/A	< 1	4.38	< 1	< 1	N/A	< 1	< 1	0.602*	0.511*	< 1	< 1
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 1	N/A	N/A	< 1	6.08	< 1	N/A	N/A	< 1	N/A	0.47*	0.535*	< 1	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.671*	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	4.77	< 1	N/A	N/A	< 1	N/A	0.766*	1.03	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	3.32	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 1	N/A	< 1	N/A	N/A	< 1	7.99	< 1	N/A	N/A	< 1	N/A	< 1	0.675*	N/A	N/A
	7/25/2023	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 1	N/A	N/A	N/A	N/A	< 1	5.84	< 1	N/A	< 1	< 1	N/A	0.878*	2.44	N/A	< 1
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	4.17	< 1	N/A	N/A	< 1	N/A	0.894*	1.72	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
cis-1,3-Dichloropropene, ug/L (CAS NO - 10061-01-5)	4/14/2008	N/A	N/A	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	N/A	N/A	N/A	N/A	N/A	< 0.23	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	N/A	N/A	N/A	N/A	N/A	< 0.23	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	N/A	N/A	N/A	N/A	N/A	< 0.23	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	< 5	N/A	< 5	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	< 5	N/A	< 5	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 25	< 5	< 5	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	< 5	< 5	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	< 5	< 5	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 25	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 5	< 5	N/A	< 5	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 5	N/A	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	N/A	N/A	N/A
	5/18/2015	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A
	4/4/2016	< 5	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
cis-1,3-Dichloropropene, ug/L (CAS NO - 10061-01-5)	10/2/2018	< 5	N/A	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	< 5
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	< 5
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	< 5	N/A
	6/16/2020	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5
	11/3/2020	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	N/A	< 5	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A
	4/5/2021	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5
	4/5/2021	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	< 5	< 5
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	< 5	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A
	2/21/2023	N/A	N/A	< 5	N/A	< 5	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	N/A	N/A
	7/25/2023	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 5	N/A	N/A	N/A	N/A	< 5	< 5	< 5	N/A	< 5	< 5	N/A	< 5	< 5	N/A	< 5
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
Ethylbenzene, ug/L (CAS NO - 100-41-4)	4/14/2008	N/A	N/A	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	N/A	N/A	N/A	N/A	N/A	< 0.25	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	N/A	N/A	N/A	N/A	N/A	< 0.25	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	N/A	N/A	N/A	N/A	N/A	< 0.25	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 5	< 1	< 1	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	**2.88**	< 1	< 1	< 1	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	**6.69**	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	**8.41**	< 1	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	**1.8**	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	N/A	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	5/18/2015	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Ethylbenzene, ug/L (CAS NO - 100-41-4)	8/12/2015	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	4/4/2016	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 1	N/A	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	0.547*
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A
	6/16/2020	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1
	11/3/2020	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	N/A	< 1	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
	4/5/2021	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	4/5/2021	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	7/25/2023	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 1	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	< 1	< 1	N/A	< 1	< 1	N/A	< 1
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
Iodomethane, ug/L (CAS NO - 74-88-4)	4/14/2008	N/A	N/A	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	N/A	N/A	N/A	N/A	N/A	< 0.4	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	N/A	N/A	N/A	N/A	N/A	< 0.4	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	N/A	N/A	N/A	N/A	N/A	< 0.4	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 20	< 20	< 100	< 20	< 20	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 20	< 20	< 20	N/A	< 20	< 10	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 20	< 20	< 20	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	< 10	< 10	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 10	< 10	< 10	< 10	< 20	< 10	< 20	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 50	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 20	N/A	< 20	< 20	< 20	< 10	< 20	< 20	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Iodomethane, ug/L (CAS NO - 74-88-4)	2/20/2012	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 10	N/A	< 10	< 10	< 10	N/A	< 10	< 10	< 10	< 10	N/A	< 10	< 10	N/A	N/A	N/A
	5/18/2015	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	4/4/2016	< 10	N/A	< 10	< 10	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 10	N/A	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	< 10
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	< 10
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	< 10	N/A
	6/16/2020	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10
	11/3/2020	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	N/A	< 10	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A
	4/5/2021	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10
	4/5/2021	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	< 10	< 10
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	< 10	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 10	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	N/A	N/A
	7/25/2023	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 10	N/A	N/A	N/A	N/A	< 10	< 10	< 10	N/A	< 10	< 10	N/A	< 10	< 10	N/A	< 10
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
Methylene Bromide, ug/L (CAS NO - 74-95-3)	4/14/2008	N/A	N/A	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	N/A	N/A	N/A	N/A	N/A	< 0.3	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	N/A	N/A	N/A	N/A	N/A	< 0.3	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	N/A	N/A	N/A	N/A	N/A	< 0.3	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Methylene Bromide, ug/L (CAS NO - 74-95-3)	4/14/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 5	< 1	< 1	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	N/A	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	5/18/2015	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	4/4/2016	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 1	N/A	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A
	6/16/2020	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1
	11/3/2020	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	N/A	< 1	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
	4/5/2021	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	4/5/2021	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Methylene Bromide, ug/L (CAS NO - 74-95-3)	7/25/2023	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	7/25/2023	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 1	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	< 1	< 1	N/A	< 1	< 1	N/A	< 1
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
Methylene Chloride, ug/L (CAS NO - 75-09-2)	4/14/2008	N/A	N/A	< 0.45	< 0.45	< 0.45	< 0.45	< 0.45	N/A	N/A	N/A	N/A	N/A	< 0.45	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.45	< 0.45	< 0.45	< 0.45	< 0.45	N/A	N/A	N/A	N/A	N/A	< 0.45	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.65	< 0.78	< 0.74	< 0.62	< 0.75	N/A	N/A	N/A	N/A	N/A	< 0.87	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	< 5	N/A	< 5	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	< 5	N/A	< 5	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 25	< 5	< 5	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	< 5	< 5	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	< 5	< 5	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 25	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 5	< 5	N/A	< 5	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	0.523*	< 5	< 5	0.4*	0.593*	0.296*	0.589*	< 5	< 5	0.652*	0.24*	N/A	N/A	N/A
	8/19/2013	N/A	N/A	0.401*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 5	0.542*	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 5	N/A	0.437*	0.444*	0.437*	N/A	0.306*	0.492*	1.06*	< 5	N/A	< 5	0.604*	N/A	N/A	N/A
	5/18/2015	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	0.327*	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A
	4/4/2016	< 5	N/A	0.437*	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 5	N/A	0.368*	0.177*	< 5	< 5	< 5	< 5	0.265*	< 5	< 5	< 5	0.178*	N/A	N/A	N/A
	1/9/2017	N/A	N/A	0.299*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	0.428*	N/A	0.535*	0.435*	0.352*	0.444*	0.431*	0.345*	0.416*	0.338*	0.354*	0.373*	0.517*	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.341*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	0.312*	N/A	< 5	< 5	0.616*	0.318*	< 5	0.267*	< 5	< 5	0.325*	< 5	0.451*	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 5	N/A	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	< 5
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	< 5
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	< 5	N/A
	6/16/2020	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5
	11/3/2020	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	N/A	< 5	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Methylene Chloride, ug/L (CAS NO - 75-09-2)	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A
	4/5/2021	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5
	4/5/2021	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	< 5	< 5
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	< 5	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A
	2/21/2023	N/A	N/A	< 5	N/A	< 5	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	N/A	N/A
	7/25/2023	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 5	N/A	N/A	N/A	N/A	< 5	< 5	< 5	N/A	< 5	< 5	N/A	< 5	< 5	N/A	< 5
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
Styrene, ug/L (CAS NO - 100-42-5)	4/14/2008	N/A	N/A	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	N/A	N/A	N/A	N/A	N/A	< 0.19	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	N/A	N/A	N/A	N/A	N/A	< 0.19	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	N/A	N/A	N/A	N/A	N/A	< 0.19	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 5	< 1	< 1	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	< 2	< 2	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	< 4	< 4	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 2	< 1	< 2	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	N/A	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	5/18/2015	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	4/4/2016	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Styrene, ug/L (CAS NO - 100-42-5)	10/2/2018	< 1	N/A	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A
	6/16/2020	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1
	11/3/2020	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	N/A	< 1	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
	4/5/2021	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	4/5/2021	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	7/25/2023	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 1	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	< 1	< 1	N/A	< 1	< 1	N/A	< 1
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
Tetrachloroethene, ug/L (CAS NO - 127-18-4)	4/14/2008	N/A	N/A	< 0.38	< 0.763	< 0.38	< 0.38	< 0.38	N/A	N/A	N/A	N/A	N/A	< 0.788	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	N/A	N/A	N/A	N/A	N/A	< 0.38	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	N/A	N/A	N/A	N/A	N/A	< 0.38	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 5	< 1	< 1	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	N/A	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	5/18/2015	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Tetrachloroethene, ug/L (CAS NO - 127-18-4)	8/12/2015	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	4/4/2016	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 1	N/A	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A
	6/16/2020	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1
	11/3/2020	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	N/A	< 1	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
	4/5/2021	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	**1.26**	< 1	< 1
	4/5/2021	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	0.951*	< 1	< 1
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	**1.08**	< 1	< 1
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	**1.16**	< 1	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**1.04**	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	0.797*	N/A	N/A
	7/25/2023	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 1	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	< 1	< 1	N/A	< 1	0.843*	N/A	< 1
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	0.483*	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
Toluene, ug/L (CAS NO - 108-88-3)	4/14/2008	N/A	N/A	< 0.14	< 0.176	< 0.14	< 0.14	< 0.14	N/A	N/A	N/A	N/A	N/A	< 0.382	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	N/A	N/A	N/A	N/A	N/A	< 0.14	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	N/A	N/A	N/A	N/A	N/A	< 0.14	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 5	< 1	< 1	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	< 1	< 1	**1.41**	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 5	**3.37**	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Toluene, ug/L (CAS NO - 108-88-3)	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	0.229*	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	N/A	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	5/18/2015	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	4/4/2016	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	0.154*	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	0.15*	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	0.199*	N/A	0.214*	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 1	N/A	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	0.568*
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 1	N/A	< 1	< 1	**6.22**	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A
	6/16/2020	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1
	11/3/2020	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	N/A	< 1	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
	4/5/2021	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	4/5/2021	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	0.44*	N/A	N/A	0.782*	0.531*	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.431*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	7/25/2023	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 1	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	< 1	< 1	N/A	< 1	< 1	N/A	< 1
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
trans-1,2-Dichloroethene, ug/L (CAS NO - 156-60-5)	4/14/2008	N/A	N/A	< 0.31	< 0.31	< 0.31	< 0.31	< 0.31	N/A	N/A	N/A	N/A	N/A	< 0.31	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.31	< 0.31	< 0.31	< 0.31	< 0.31	N/A	N/A	N/A	N/A	N/A	< 0.31	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.31	< 0.31	< 0.31	< 0.31	< 0.31	N/A	N/A	N/A	N/A	N/A	< 0.31	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 5	< 1	< 1	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
trans-1,2-Dichloroethene, ug/L (CAS NO - 156-60-5)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	< 1	< 1	< 1	0.427*	< 1	0.402*	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	N/A	< 1	< 1	< 1	N/A	0.368*	< 1	0.31*	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	5/18/2015	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	4/4/2016	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	0.217*	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 1	N/A	< 1	< 1	< 1	< 1	0.279*	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 1	N/A	< 1	< 1	< 1	< 1	0.518*	< 1	0.581*	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 1	N/A	< 1	< 1	< 1	< 1	0.551*	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 1	N/A	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 1	N/A	< 1	< 1	< 1	< 1	0.485*	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 1	N/A	< 1	< 1	< 1	< 1	0.421*	< 1	0.412*	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A
	6/16/2020	N/A	N/A	< 1	< 1	< 1	< 1	0.362*	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1
	11/3/2020	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	N/A	< 1	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
	4/5/2021	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	4/5/2021	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 1	N/A	N/A	< 1	0.275*	< 1	N/A	N/A	< 1	N/A	0.315*	< 1	< 1	< 1
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 1	N/A	< 1	N/A	N/A	< 1	0.347*	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 1	N/A	N/A	< 1	0.328*	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
trans-1,2-Dichloroethene, ug/L (CAS NO - 156-60-5)	7/25/2023	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	7/25/2023	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 1	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	< 1	< 1	N/A	< 1	< 1	N/A	< 1
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
trans-1,3-Dichloropropene, ug/L (CAS NO - 10061-02-6)	4/14/2008	N/A	N/A	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	N/A	N/A	N/A	N/A	N/A	< 0.17	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	N/A	N/A	N/A	N/A	N/A	< 0.17	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	N/A	N/A	N/A	N/A	N/A	< 0.17	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	< 5	N/A	< 5	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	< 5	N/A	< 5	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 25	< 5	< 5	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	< 5	< 5	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	< 5	< 5	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 25	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 5	< 5	N/A	< 5	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 5	N/A	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	N/A	N/A	N/A
	5/18/2015	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A
	4/4/2016	< 5	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 5	N/A	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	< 5
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	< 5
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	< 5	N/A
	6/16/2020	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5
	11/3/2020	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	N/A	< 5	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
trans-1,3-Dichloropropene, ug/L (CAS NO - 10061-02-6)	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A
	4/5/2021	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5
	4/5/2021	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	< 5	< 5
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	< 5	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A
	2/21/2023	N/A	N/A	< 5	N/A	< 5	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 5	N/A	< 5	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	N/A	N/A
	7/25/2023	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 5	N/A	N/A	N/A	N/A	< 5	< 5	< 5	N/A	< 5	< 5	N/A	< 5	< 5	N/A	< 5
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 5	N/A	N/A	< 5	N/A	< 5	< 5	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
trans-1,4-Dichloro-2-Butene, ug/L (CAS NO - 110-57-6)	4/14/2008	N/A	N/A	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	N/A	N/A	N/A	N/A	N/A	< 1.8	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	N/A	N/A	N/A	N/A	N/A	< 3.6	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	N/A	N/A	N/A	N/A	N/A	< 1.8	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10	< 50	< 10	< 10	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	< 10	< 10	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 50	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	< 10	< 10	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 50	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 10	N/A	< 10	< 10	< 10	N/A	< 10	< 10	< 10	< 10	N/A	< 10	< 10	N/A	N/A	N/A
	5/18/2015	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	4/4/2016	< 10	N/A	< 10	< 10	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
trans-1,4-Dichloro-2-Butene, ug/L (CAS NO - 110-57-6)	10/2/2018	< 10	N/A	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	< 10
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	< 10
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	< 10	N/A
	6/16/2020	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10
	11/3/2020	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	N/A	< 10	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A
	4/5/2021	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10
	4/5/2021	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	< 10	< 10
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	< 10	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 10	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	N/A	N/A
	7/25/2023	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 10	N/A	N/A	N/A	N/A	< 10	< 10	< 10	N/A	< 10	< 10	N/A	< 10	< 10	N/A	< 10
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
Trichloroethene, ug/L (CAS NO - 79-01-6)	4/14/2008	N/A	N/A	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	N/A	N/A	N/A	N/A	N/A	< 0.24	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	N/A	N/A	N/A	N/A	N/A	< 0.24	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	N/A	N/A	N/A	N/A	N/A	< 0.24	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 5	< 1	**1.28**	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	< 1	< 1	**1.2**	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	**1.06**	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	N/A	< 1	< 1	< 1	N/A	< 1	< 1	0.463*	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	5/18/2015	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Trichloroethene, ug/L (CAS NO - 79-01-6)	8/12/2015	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	4/4/2016	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 1	N/A	< 1	< 1	< 1	< 1	0.253*	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 1	N/A	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A
	6/16/2020	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1
	11/3/2020	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	N/A	< 1	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
	4/5/2021	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	0.712*	< 1	< 1
	4/5/2021	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	0.442*	< 1	< 1
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	0.634*	< 1	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.612*	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	0.73*	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	0.658*	N/A	N/A
	7/25/2023	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 1	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	< 1	< 1	N/A	< 1	0.887*	N/A	< 1
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	0.617*	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
Trichlorofluoromethane, ug/L (CAS NO - 75-69-4)	4/14/2008	N/A	N/A	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	N/A	N/A	N/A	N/A	N/A	< 0.26	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	N/A	N/A	N/A	N/A	N/A	< 0.26	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	N/A	N/A	N/A	N/A	N/A	< 0.26	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A	< 4	N/A	< 4	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A	< 4	N/A	< 4	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	< 4	< 20	< 4	< 4	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	< 4	< 4	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	< 4	< 4	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	< 4	< 4	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 20	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 4	N/A	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	< 4	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Trichlorofluoromethane, ug/L (CAS NO - 75-69-4)	5/29/2012	N/A	N/A	N/A	N/A	< 4	< 4	N/A	< 4	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 4	N/A	< 4	< 4	< 4	N/A	< 4	< 4	< 4	< 4	N/A	< 4	< 4	N/A	N/A	N/A
	5/18/2015	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 4	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A
	4/4/2016	< 4	N/A	< 4	< 4	< 4	< 4	N/A	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 4	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 4	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 4	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 4	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 4	N/A	< 4	< 4	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 4	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	< 4
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 4	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	< 4
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	< 4	N/A
	6/16/2020	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	< 4
	11/3/2020	< 4	N/A	< 4	N/A	N/A	< 4	< 4	< 4	N/A	N/A	< 4	N/A	< 4	N/A	< 4	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A
	4/5/2021	< 4	N/A	< 4	N/A	N/A	< 4	< 4	< 4	< 4	N/A	< 4	< 4	< 4	< 4	< 4	< 4
	4/5/2021	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 4	N/A	N/A	< 4	< 4	< 4	N/A	N/A	< 4	N/A	< 4	< 4	< 4	< 4
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 4	N/A	< 4	N/A	N/A	< 4	< 4	< 4	< 4	N/A	< 4	< 4	< 4	< 4	< 4	< 4
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 4	N/A	N/A	< 4	< 4	< 4	N/A	N/A	< 4	N/A	< 4	< 4	< 4	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A
	2/21/2023	N/A	N/A	< 4	N/A	< 4	< 4	< 4	< 4	N/A	N/A	< 4	N/A	< 4	< 4	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 4	N/A	< 4	N/A	N/A	< 4	< 4	< 4	N/A	N/A	< 4	N/A	< 4	< 4	N/A	N/A
	7/25/2023	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 4	N/A	N/A	N/A	N/A	< 4	< 4	< 4	N/A	< 4	< 4	N/A	< 4	< 4	N/A	< 4
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 4	< 4	< 4	N/A	N/A	< 4	N/A	< 4	< 4	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A
Vinyl Acetate, ug/L (CAS NO - 108-05-4)	4/14/2008	N/A	N/A	< 1.36	< 1.36	< 1.36	< 1.36	< 1.36	N/A	N/A	N/A	N/A	N/A	< 1.36	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 1.36	< 1.36	< 1.36	< 1.36	< 1.36	N/A	N/A	N/A	N/A	N/A	< 1.36	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 1.36	< 1.36	< 1.36	< 1.36	< 1.36	N/A	N/A	N/A	N/A	N/A	< 1.36	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A	< 2	N/A	< 2	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A	< 2	N/A	< 2	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Vinyl Acetate, ug/L (CAS NO - 108-05-4)	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	< 2	< 10	< 2	< 2	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	< 2	< 2	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	< 2	< 2	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	< 2	< 2	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 5	< 5	< 5	< 5	< 2	< 5	< 2	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 10	< 2	< 2	< 2	< 4	< 2	< 4	< 2	< 2	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	< 2	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 2	< 2	N/A	< 2	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 2	N/A	< 2	< 2	< 2	N/A	< 2	< 2	< 2	< 2	N/A	< 2	< 2	N/A	N/A	N/A
	5/18/2015	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	4/4/2016	< 10	N/A	< 10	< 10	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 10	N/A	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	< 10
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	< 10
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	< 10	N/A
	6/16/2020	N/A	N/A	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 10
	11/3/2020	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	N/A	< 10	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A
	4/5/2021	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10
	4/5/2021	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	< 10	< 10
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	< 10	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 10	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Vinyl Acetate, ug/L (CAS NO - 108-05-4)	7/25/2023	< 10	N/A	< 10	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	N/A	N/A
	7/25/2023	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 10	N/A	N/A	N/A	N/A	< 10	< 10	< 10	N/A	< 10	< 10	N/A	< 10	< 10	N/A	< 10
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 10	< 10	< 10	N/A	N/A	< 10	N/A	< 10	< 10	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride, ug/L (CAS NO - 75-01-4)	4/14/2008	N/A	N/A	< 0.26	< 0.26	< 0.26	< 0.26	**2.94**	N/A	N/A	N/A	N/A	N/A	< 0.26	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.26	< 0.26	< 0.26	< 0.26	**3.26**	N/A	N/A	N/A	N/A	N/A	< 0.26	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.26	< 0.26	< 0.26	< 0.26	**2.78**	N/A	N/A	N/A	N/A	N/A	< 0.26	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	< 1	< 1	< 1	**3.26**	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	< 1	< 1	< 1	**2.89**	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 1	< 1	< 1	< 1	**2.53**	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 5	< 1	< 1	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	**3.07**	< 1	< 1	< 1	< 1	**1.05**	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 1	< 1	< 1	< 1	**2.85**	< 1	< 1	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	**2.73**	< 1	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 1	< 1	< 1	< 1	**3.66**	< 1	**1.08**	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 1	< 1	< 1	< 1	**1.72**	< 1	**1.33**	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 5	< 1	< 1	< 1	**1.73**	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 1	N/A	< 1	**2.22**	< 1	**1.41**	< 1	< 1	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 1	< 1	< 1	< 1	**2**	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	**1.61**	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 1	< 1	< 1	< 1	**1.75**	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	< 1	< 1	< 1	**2.53**	< 1	0.955*	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 1	< 1	< 1	< 1	**2.15**	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	N/A	< 1	< 1	< 1	N/A	**1.82**	< 1	0.911*	< 1	N/A	< 1	< 1	N/A	N/A	N/A
	5/18/2015	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	0.936*	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	4/4/2016	< 1	N/A	< 1	< 1	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 1	N/A	< 1	< 1	< 1	< 1	0.668*	< 1	0.6*	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 1	N/A	< 1	< 1	< 1	< 1	**1.09**	< 1	0.333*	< 1	< 1	< 1	0.33*	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	< 1	N/A	< 1	< 1	< 1	< 1	**1.47**	< 1	0.869*	< 1	< 1	< 1	0.107*	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 1	N/A	< 1	< 1	< 1	< 1	**1.26**	< 1	< 1	< 1	< 1	0.276*	0.274*	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	< 1	N/A	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 1	N/A	< 1	< 1	< 1	< 1	**1.22**	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	0.71*
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 1	N/A	< 1	< 1	< 1	< 1	0.871*	< 1	0.813*	< 1	< 1	< 1	< 1	N/A	N/A	< 1
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A
	6/16/2020	N/A	N/A	< 1	< 1	< 1	< 1	**1.12**	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1
	11/3/2020	< 1	N/A	< 1	N/A	N/A	< 1	0.586*	< 1	N/A	N/A	< 1	N/A	< 1	N/A	< 1	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Vinyl Chloride, ug/L (CAS NO - 75-01-4)	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
	4/5/2021	< 1	N/A	< 1	N/A	N/A	< 1	0.331*	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	4/5/2021	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 1	N/A	N/A	< 1	0.306*	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 1	N/A	< 1	N/A	N/A	< 1	0.382*	< 1	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 1	N/A	N/A	< 1	1.09	< 1	N/A	N/A	< 1	N/A	< 1	< 1	< 1	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	0.287*	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 1	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	7/25/2023	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 1	N/A	N/A	N/A	N/A	< 1	0.737*	< 1	N/A	< 1	< 1	N/A	< 1	< 1	N/A	< 1
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	0.638*	< 1	N/A	N/A	< 1	N/A	< 1	< 1	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
Xylenes, total, ug/L (CAS NO - 1330-20-7)	4/14/2008	N/A	N/A	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	N/A	N/A	N/A	N/A	N/A	< 0.3	N/A	N/A	N/A
	6/13/2008	N/A	N/A	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	N/A	N/A	N/A	N/A	N/A	< 0.3	N/A	N/A	N/A
	8/20/2008	N/A	N/A	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	N/A	N/A	N/A	N/A	N/A	< 0.3	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A	< 3	N/A	< 3	N/A	N/A	N/A
	9/30/2008	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A	< 3	N/A	< 3	N/A	N/A	N/A
	12/16/2008	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/14/2009	N/A	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	7/14/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	< 3	< 15	< 3	< 3	N/A	N/A	N/A	N/A
	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	< 3	< 3	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 6	< 6	< 6	N/A	N/A	N/A	N/A	N/A	N/A
	2/23/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 7.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	< 3	< 3	N/A	N/A	N/A
	10/14/2010	N/A	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	< 15	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	< 3	N/A	N/A	N/A
	2/20/2012	N/A	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 3	< 3	N/A	< 3	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A
	8/8/2012	N/A	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	8/19/2013	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	N/A	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 3	N/A	< 3	< 3	< 3	N/A	< 3	< 3	< 3	< 3	N/A	< 3	< 3	N/A	N/A	N/A
	5/18/2015	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A
	4/4/2016	< 3	N/A	< 3	< 3	< 3	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	9/13/2016	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	< 3	N/A	< 3	0.184*	< 3	< 3	< 3	< 3	0.995*	< 3	< 3	< 3	0.146*	N/A	N/A	N/A
	1/9/2017	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/26/2017	0.16*	N/A	0.156*	< 3	< 3	0.14*	< 3	< 3	0.131*	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Appendix I VOC Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Xylenes, total, ug/L (CAS NO - 1330-20-7)	10/2/2018	< 3	N/A	< 3	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	10/2/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	0.593*
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A
	8/26/2019	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	< 3
	8/26/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	< 3	N/A
	6/16/2020	N/A	N/A	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A
	8/20/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	< 3
	11/3/2020	< 3	N/A	< 3	N/A	N/A	< 3	< 3	< 3	N/A	N/A	< 3	N/A	< 3	N/A	< 3	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3
	2/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A
	4/5/2021	< 3	N/A	< 3	N/A	N/A	< 3	< 3	< 3	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3
	4/5/2021	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/25/2021	N/A	N/A	< 3	N/A	N/A	0.643*	0.405*	< 3	N/A	N/A	< 3	N/A	< 3	< 3	< 3	< 3
	8/25/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/8/2022	< 3	N/A	< 3	N/A	N/A	< 3	< 3	< 3	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3
	3/8/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/22/2022	N/A	N/A	< 3	N/A	N/A	< 3	< 3	< 3	N/A	N/A	< 3	N/A	< 3	< 3	< 3	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A
	2/21/2023	N/A	N/A	< 3	N/A	< 3	< 3	< 3	< 3	N/A	N/A	< 3	N/A	< 3	< 3	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A
	7/25/2023	< 3	N/A	< 3	N/A	N/A	< 3	< 3	< 3	N/A	N/A	< 3	N/A	< 3	< 3	N/A	N/A
	7/25/2023	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6/4/2024	< 3	N/A	N/A	N/A	N/A	< 3	< 3	< 3	N/A	< 3	< 3	N/A	< 3	< 3	N/A	< 3
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 3	< 3	< 3	N/A	N/A	< 3	N/A	< 3	< 3	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A
M&P-Xylene, ug/L (CAS NO - 179601-23-1)	8/8/2012	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A
O-Xylene, ug/L (CAS NO - 95-47-6)	8/8/2012	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A

Note: * indicates 'J flag'. Detection is below the reporting limit, but greater than the MDL (Method Detection Limit). The concentration is estimated.

Denotes Detection.
Denotes Confirmed Outlier. Statistically Excluded.

Sampling performed over multiple dates is recorded on the first date sampled. Refer to field forms for exact sample date.

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
1,1-Dichloropropene, ug/L (CAS NO - 563-58-6)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	< 1	N/A	N/A	< 1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	< 1	N/A	< 1	< 1	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
1,2,4,5-Tetrachlorobenzene, ug/L (CAS NO - 95-94-3)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
1,2,4-Trichlorobenzene, ug/L (CAS NO - 120-82-1)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 5	< 5	N/A	< 5	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 5	< 5	N/A	< 5	N/A	< 5	N/A	N/A	< 5	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	< 5	N/A	N/A	< 5	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 5	< 5	N/A	< 5	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	< 5	N/A	< 5	< 5	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A
	2/21/2023	N/A	N/A	< 5	N/A	< 5	< 5	N/A	< 5	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A
1,3,5-Trinitrobenzene, ug/L (CAS NO - 99-35-4)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
1,3,5-Trinitrobenzene, ug/L (CAS NO - 99-35-4)	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
1,3-Dichlorobenzene, ug/L (CAS NO - 541-73-1)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	< 1	N/A	N/A	< 1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	< 1	N/A	< 1	< 1	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
1,3-Dichloropropane, ug/L (CAS NO - 142-28-9)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	< 1	N/A	N/A	< 1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	< 1	N/A	< 1	< 1	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
1,3-Dinitrobenzene, ug/L (CAS NO - 99-65-0)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
1,3-Dinitrobenzene, ug/L (CAS NO - 99-65-0)	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
1,4-Naphthoquinone, ug/L (CAS NO - 130-15-4)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
1-Naphthylamine, ug/L (CAS NO - 134-32-7)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
2,2-Dichloropropane, ug/L (CAS NO - 594-20-7)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 4	< 4	< 4	< 4	< 4	< 4	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 4	< 4	N/A	< 4	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 4	< 4	N/A	< 4	N/A	< 4	N/A	N/A	< 4	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	< 4	N/A	N/A	< 4	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 4	< 4	N/A	< 4	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	< 4	N/A	< 4	< 4	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A
	2/21/2023	N/A	N/A	< 4	N/A	< 4	< 4	N/A	< 4	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4	N/A	N/A	N/A	N/A	N/A	N/A
2,3,4,6-Tetrachlorophenol, ug/L (CAS NO - 58-90-2)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
2,4,5-T [2C], ug/L (CAS NO - 93-76-5)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.21	N/A	N/A	N/A	N/A	< 0.25	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.29	N/A	< 0.27	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.54	N/A	< 0.54	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.43	< 0.43	N/A	< 0.43	N/A	N/A	N/A	N/A	< 0.4	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 1.06	< 1.06	N/A	< 1.04	N/A	< 1.04	N/A	N/A	< 1.11	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.03	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 1.09	N/A	< 1.01	N/A	N/A	< 1.08	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1.03	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 1.15	< 1.11	N/A	< 1.07	N/A	N/A	N/A	N/A	< 1.06	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 1.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.05	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.15	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 1.09	N/A	< 1.06	N/A	< 1.08	< 1.09	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A
	2/21/2023	N/A	N/A	< 0.5	N/A	< 0.5	< 0.5	N/A	< 0.5	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.91	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.148	N/A	N/A	N/A	N/A	N/A	N/A
2,4,5-TP [Silvex] [2C], ug/L (CAS NO - 93-72-1)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.21	N/A	N/A	N/A	N/A	**0.69**	N/A	N/A	N/A	N/A
	10/2/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**1.1**	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.2	N/A	N/A	**0.69**	N/A	N/A	N/A	N/A
	4/22/2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.57**	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.29	N/A	< 0.27	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.54	N/A	< 0.54	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.29	< 0.29	N/A	< 0.29	N/A	N/A	N/A	N/A	< 0.27	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
2,4,5-TP [Silvex] [2C], ug/L (CAS NO - 93-72-1)	8/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.29	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 1.06	< 1.06	N/A	< 1.04	N/A	< 1.04	N/A	< 1.03	< 1.11	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.08	N/A	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.03	N/A	< 1.07	N/A	N/A	N/A	N/A
	5/18/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.12	N/A	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.07	N/A	N/A	N/A	N/A
	8/12/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.08	N/A	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.07	N/A	N/A	N/A	N/A
	9/13/2016	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.04	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 1.09	N/A	< 1.01	N/A	N/A	< 1.08	N/A	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1.03	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 1.15	< 1.11	N/A	< 1.07	N/A	N/A	N/A	< 1.03	< 1.06	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 1.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.09	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.05	N/A	< 1.09	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.15	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 1.09	N/A	< 1.06	N/A	< 1.08	< 1.09	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A
	2/21/2023	N/A	N/A	< 0.5	N/A	< 0.5	< 0.5	N/A	< 0.5	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.91	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0492	N/A	N/A	N/A	N/A	N/A	N/A
2,4,5-Trichlorophenol, ug/L (CAS NO - 95-95-4)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
2,4,6-Trichlorophenol, ug/L (CAS NO - 88-06-2)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
2,4-D [2C], ug/L (CAS NO - 94-75-7)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1.1	N/A	N/A	N/A	N/A	< 1.2	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.54	N/A	< 0.51	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 1.1	N/A	< 1.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.47	< 0.47	N/A	< 0.47	N/A	N/A	N/A	N/A	< 0.43	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
2,4-D [2C], ug/L (CAS NO - 94-75-7)	8/19/2013	N/A	N/A	N/A	N/A	< 1.06	< 1.06	N/A	< 1.04	N/A	< 1.04	N/A	N/A	< 1.11	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.03	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 1.09	N/A	< 1.01	N/A	N/A	< 1.08	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1.03	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 1.15	< 1.11	N/A	< 1.07	N/A	N/A	N/A	N/A	< 1.06	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 1.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.05	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.15	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 1.09	N/A	< 1.06	N/A	< 1.08	< 1.09	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A
	2/21/2023	N/A	N/A	< 2	N/A	< 2	< 2	N/A	< 2	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.91	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.59	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dichlorophenol, ug/L (CAS NO - 120-83-2)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dimethylphenol, ug/L (CAS NO - 105-67-9)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dinitrophenol, ug/L (CAS NO - 51-28-5)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 20	N/A	N/A	N/A	N/A	< 23.3	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 20	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 20	N/A	< 20	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 20	N/A	< 20	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 20	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 20	< 20	N/A	< 20	N/A	N/A	N/A	N/A	< 20	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 40.8	< 21.3	N/A	< 24.1	N/A	< 20.4	N/A	N/A	< 20.2	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 20.6	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 20	N/A	< 20.8	N/A	N/A	< 21.5	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 20.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 21.3	< 20.4	N/A	< 21.3	N/A	N/A	N/A	N/A	< 21.3	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 21.1	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 20.8	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
2,4-Dinitrophenol, ug/L (CAS NO - 51-28-5)	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 21.3	N/A	< 21.5	N/A	< 21.7	< 21.7	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 20	N/A	N/A
	2/21/2023	N/A	N/A	< 20	N/A	< 18.5	< 18.9	N/A	< 20	N/A	N/A	N/A	N/A	< 18.9	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 19.2	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 20	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dinitrotoluene, ug/L (CAS NO - 121-14-2)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
2,6-Dichlorophenol, ug/L (CAS NO - 87-65-0)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
2,6-Dinitrotoluene, ug/L (CAS NO - 606-20-2)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
2-Acetylaminofluorene, ug/L (CAS NO - 53-96-3)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
2-Chloronaphthalene, ug/L (CAS NO - 91-58-7)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
2-Chlorophenol, ug/L (CAS NO - 95-57-8)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
2-Methylnaphthalene, ug/L (CAS NO - 91-57-6)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
2-Methylnaphthalene, ug/L (CAS NO - 91-57-6)	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	36	N/A	8.47*	11.2	N/A	21.3	N/A	N/A	N/A	N/A	492	N/A	N/A	N/A
	7/25/2023	N/A	N/A	< 10	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
2-Methylphenol, ug/L (CAS NO - 95-48-7)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	< 10.1	N/A	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
2-Naphthylamine, ug/L (CAS NO - 91-59-8)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
2-Nitroaniline, ug/L (CAS NO - 88-74-4)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
2-Nitroaniline, ug/L (CAS NO - 88-74-4)	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
2-Nitrophenol, ug/L (CAS NO - 88-75-5)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
3,3-Dichlorobenzidine, ug/L (CAS NO - 91-94-1)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 102	< 53.2	N/A	< 60.2	N/A	< 51	N/A	N/A	< 50.5	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 51.5	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 50	N/A	< 52.1	N/A	N/A	< 53.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 50.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 53.2	< 51	N/A	< 53.2	N/A	N/A	N/A	N/A	< 53.2	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
3,3-Dimethylbenzidine, ug/L (CAS NO - 119-93-7)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
3/4-Methylphenol, ug/L (CAS NO - T-34MP)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
3/4-Methylphenol, ug/L (CAS NO - T-34MP)	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
3-Chloropropene, ug/L (CAS NO - 107-05-1)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 2	< 2	N/A	< 2	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 2	< 2	N/A	< 2	N/A	< 2	N/A	N/A	< 2	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	< 2	N/A	N/A	< 2	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 2	< 2	N/A	< 2	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	< 2	N/A	< 2	< 2	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A
	2/21/2023	N/A	N/A	< 2	N/A	< 2	< 2	N/A	< 2	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A
3-Methylcholanthrene, ug/L (CAS NO - 56-49-5)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
3-Nitroaniline, ug/L (CAS NO - 99-09-2)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
3-Nitroaniline, ug/L (CAS NO - 99-09-2)	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
4,4`-DDD, ug/L (CAS NO - 72-54-8)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.032	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 0.0344	< 0.033	N/A	< 0.033	N/A	< 0.0327	N/A	N/A	< 0.0333	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0323	N/A	< 0.0344	N/A	N/A	< 0.0344	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	0.0024*	< 0.0337	N/A	0.00371*	N/A	N/A	N/A	N/A	0.0129*	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.337	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	0.00284*	N/A	< 0.034	N/A	< 0.0337	< 0.034	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.064	N/A	N/A
	2/21/2023	N/A	N/A	< 0.064	N/A	< 0.0615	< 0.0593	N/A	< 0.0604	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0931	N/A	N/A	N/A	N/A	N/A	N/A
4,4`-DDE, ug/L (CAS NO - 72-55-9)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.032	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 0.0344	< 0.033	N/A	< 0.033	N/A	< 0.0327	N/A	N/A	< 0.0333	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0323	N/A	< 0.0344	N/A	N/A	< 0.0344	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 0.034	< 0.0337	N/A	< 0.0344	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.337	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0356	N/A	0.0029*	N/A	< 0.0337	< 0.034	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.064	N/A	N/A
	2/21/2023	N/A	N/A	< 0.064	N/A	< 0.0615	< 0.0593	N/A	< 0.0604	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0931	N/A	N/A	N/A	N/A	N/A	N/A
4,4`-DDT, ug/L (CAS NO - 50-29-3)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.032	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 0.0344	< 0.033	N/A	< 0.033	N/A	< 0.0327	N/A	N/A	< 0.0333	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0323	N/A	< 0.0344	N/A	N/A	< 0.0344	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	0.00475*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 0.034	< 0.0337	N/A	0.00463*	N/A	N/A	N/A	N/A	0.00715*	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.337	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0356	N/A	< 0.034	N/A	< 0.0337	< 0.034	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.064	N/A	N/A
	2/21/2023	N/A	N/A	< 0.064	N/A	< 0.0615	< 0.0593	N/A	< 0.0604	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0931	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
4,6-Dinitro-2-methylphenol, ug/L (CAS NO - 534-52-1)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
4-Aminobiphenyl, ug/L (CAS NO - 92-67-1)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
4-Bromophenyl phenyl ether, ug/L (CAS NO - 101-55-3)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
4-Chloro-3-methylphenol, ug/L (CAS NO - 59-50-7)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
4-Chloro-3-methylphenol, ug/L (CAS NO - 59-50-7)	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
4-Chloroaniline, ug/L (CAS NO - 106-47-8)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
4-Chlorophenyl phenyl ether, ug/L (CAS NO - 7005-72-3)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
4-Nitroaniline, ug/L (CAS NO - 100-01-6)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
4-Nitroaniline, ug/L (CAS NO - 100-01-6)	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
4-Nitrophenol, ug/L (CAS NO - 100-02-7)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
5-Nitro-o-toluidine, ug/L (CAS NO - 99-55-8)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
7,12-Dimethylbenz [a] anthracene, ug/L (CAS NO - 57-97-6)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Acenaphthene, ug/L (CAS NO - 83-32-9)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Acenaphthylene, ug/L (CAS NO - 208-96-8)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Acetonitrile, ug/L (CAS NO - 75-05-8)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10000	N/A	N/A	N/A	N/A	< 10000	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10000	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10000	N/A	< 10000	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10000	N/A	< 10000	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10000	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10000	< 10000	N/A	< 10000	N/A	N/A	N/A	N/A	< 10000	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 10000	< 10000	N/A	< 10000	N/A	< 10000	N/A	N/A	< 10000	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10000	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10000	N/A	< 10000	N/A	N/A	< 10000	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10000	< 10000	N/A	< 10000	N/A	N/A	N/A	N/A	< 10000	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10000	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10000	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10000	N/A	< 10000	N/A	< 10000	< 10000	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10000	N/A	N/A
	2/21/2023	N/A	N/A	< 10000	N/A	< 10000	603*	N/A	N/A	N/A	N/A	N/A	N/A	< 10000	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10000	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10000	N/A	N/A	N/A	N/A	N/A	N/A
Acetophenone, ug/L (CAS NO - 98-86-2)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Acetophenone, ug/L (CAS NO - 98-86-2)	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Acrolein, ug/L (CAS NO - 107-02-8)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	< 10	N/A	N/A	< 10	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	< 10	< 10	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Aldrin, ug/L (CAS NO - 309-00-2)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.032	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 0.0344	< 0.033	N/A	< 0.033	N/A	< 0.0327	N/A	N/A	< 0.0333	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0323	N/A	< 0.0344	N/A	N/A	< 0.0344	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 0.034	< 0.0337	N/A	< 0.0344	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.337	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0356	N/A	< 0.034	N/A	< 0.0337	< 0.034	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.064	N/A	N/A
	2/21/2023	N/A	N/A	< 0.064	N/A	< 0.0615	< 0.0593	N/A	< 0.0604	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0931	N/A	N/A	N/A	N/A	N/A	N/A
Anthracene, ug/L (CAS NO - 120-12-7)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Anthracene, ug/L (CAS NO - 120-12-7)	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Benzo [a] anthracene, ug/L (CAS NO - 56-55-3)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Benzo [b] fluoranthene, ug/L (CAS NO - 205-99-2)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	0.652*	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Benzo [g,h,i] perylene, ug/L (CAS NO - 191-24-2)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	0.966*	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Benzo [k] fluoranthene, ug/L (CAS NO - 207-08-9)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	0.722*	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Benzyl alcohol, ug/L (CAS NO - 100-51-6)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Alpha-BHC, ug/L (CAS NO - 319-84-6)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.64	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.032	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 0.0344	< 0.033	N/A	0.00226*	N/A	< 0.0327	N/A	N/A	0.00374*	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Alpha-BHC, ug/L (CAS NO - 319-84-6)	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0323	N/A	< 0.0344	N/A	N/A	< 0.0344	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	0.00176*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 0.034	0.00398*	N/A	< 0.0344	N/A	N/A	N/A	N/A	0.00739*	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.337	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0356	N/A	0.00572*	N/A	< 0.0337	< 0.034	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.064	N/A	N/A
	2/21/2023	N/A	N/A	< 0.064	N/A	< 0.0615	< 0.0593	N/A	< 0.0604	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0931	N/A	N/A	N/A	N/A	N/A	N/A
Beta-BHC, ug/L (CAS NO - 319-85-7)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.64	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.032	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	0.00347*	< 0.033	N/A	< 0.033	N/A	< 0.0327	N/A	N/A	< 0.0333	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00388*	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0323	N/A	< 0.0344	N/A	N/A	< 0.0344	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 0.034	< 0.0337	N/A	< 0.0344	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.337	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0356	N/A	< 0.034	N/A	< 0.0337	< 0.034	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.064	N/A	N/A
	2/21/2023	N/A	N/A	< 0.064	N/A	< 0.0615	< 0.0593	N/A	< 0.0604	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0931	N/A	N/A	N/A	N/A	N/A	N/A
Delta-BHC, ug/L (CAS NO - 319-86-8)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.64	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.032	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	0.00347*	< 0.033	N/A	< 0.033	N/A	< 0.0327	N/A	N/A	< 0.0333	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00388*	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0323	N/A	< 0.0344	N/A	N/A	< 0.0344	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 0.034	< 0.0337	N/A	< 0.0344	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.337	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0356	N/A	< 0.034	N/A	< 0.0337	< 0.034	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.064	N/A	N/A
	2/21/2023	N/A	N/A	< 0.064	N/A	< 0.0615	< 0.0593	N/A	< 0.0604	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0931	N/A	N/A	N/A	N/A	N/A	N/A
Gamma-BHC [Lindane], ug/L (CAS NO - 58-89-9)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.64	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.032	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 0.0344	< 0.033	N/A	< 0.033	N/A	< 0.0327	N/A	N/A	< 0.0333	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	0.00296*	N/A	< 0.0344	N/A	N/A	< 0.0344	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	0.00505*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 0.034	0.00572*	N/A	0.00264*	N/A	N/A	N/A	N/A	0.00709*	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Gamma-BHC [Lindane], ug/L (CAS NO - 58-89-9)	10/2/2018	N/A	N/A	0.00257*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.337	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0356	N/A	< 0.034	N/A	< 0.0337	< 0.034	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.064	N/A	N/A
	2/21/2023	N/A	N/A	< 0.064	N/A	< 0.0615	< 0.0593	N/A	< 0.0604	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0931	N/A	N/A	N/A	N/A	N/A	N/A
Bis[2-chloroethoxy]methane, ug/L (CAS NO - 111-91-1)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Bis[2-chloroethyl]ether, ug/L (CAS NO - 111-44-4)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Bis[2-chloroisopropyl]ether, ug/L (CAS NO - 108-60-1)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Bis[2-ethylhexyl]phthalate, ug/L (CAS NO - 117-81-7)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	2.73*	N/A	2.62*	N/A	N/A	2.78*	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	2.26*	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	8.42*	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Butyl benzyl phthalate, ug/L (CAS NO - 85-68-7)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	0.602*	N/A	0.599*	N/A	N/A	0.62*	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Chlordane, ug/L (CAS NO - 57-74-9)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 2	< 2	N/A	< 2	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 2.15	< 2.06	N/A	< 2.06	N/A	< 2.04	N/A	N/A	< 2.08	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 2.02	N/A	< 2.15	N/A	N/A	< 2.15	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 2.13	< 2.11	N/A	< 2.15	N/A	N/A	N/A	N/A	< 2.13	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 2.13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2.13	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 21.1	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 2.22	N/A	< 2.13	N/A	< 2.11	< 2.13	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A
	2/21/2023	N/A	N/A	< 2	N/A	< 1.92	< 1.85	N/A	< 1.89	N/A	N/A	N/A	N/A	< 1.89	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.89	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.86	N/A	N/A	N/A	N/A	N/A	N/A
Chlorobenzilate, ug/L (CAS NO - 510-15-6)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Chlorobenzilate, ug/L (CAS NO - 510-15-6)	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Chloroprene, ug/L (CAS NO - 126-99-8)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	< 1	N/A	N/A	< 1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	< 1	N/A	< 1	< 1	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A
Chrysene, ug/L (CAS NO - 218-01-9)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide, mg/L (CAS NO - 57-12-5)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.01	N/A	N/A	N/A	N/A	< 0.01	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.01	N/A	< 0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.01	N/A	< 0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.01	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	**0.0481**	**0.0543**	N/A	**0.0194**	N/A	N/A	N/A	N/A	< 0.01	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	< 0.01	< 0.01	N/A	< 0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/27/2012	N/A	N/A	N/A	N/A	< 0.01	< 0.01	N/A	< 0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	< 0.01	< 0.01	N/A	< 0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 0.01	< 0.01	N/A	< 0.01	N/A	< 0.01	N/A	N/A	< 0.01	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	N/A	< 0.01	< 0.01	N/A	< 0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	< 0.01	< 0.01	N/A	< 0.01	N/A	< 0.01	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 0.01	N/A	< 0.01	N/A	N/A	< 0.01	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 0.01	< 0.01	N/A	< 0.01	N/A	N/A	N/A	N/A	< 0.01	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Cyanide, mg/L (CAS NO - 57-12-5)	10/2/2018	N/A	N/A	< 0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.01	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.01	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 0.01	N/A	< 0.01	N/A	< 0.01	< 0.01	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.01	N/A	N/A
	2/21/2023	N/A	N/A	< 0.01	N/A	< 0.01	< 0.01	N/A	< 0.01	N/A	N/A	N/A	N/A	< 0.01	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.01	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.01	N/A	N/A	N/A	N/A	N/A	N/A
Diallate [cis or trans], ug/L (CAS NO - 2303-16-4)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Dibenz [a,h] anthracene, ug/L (CAS NO - 53-70-3)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	1.15*	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Dibenzofuran, ug/L (CAS NO - 132-64-9)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Dichlorodifluoromethane, ug/L (CAS NO - 75-71-8)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 3	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 3	< 3	N/A	< 3	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 3	< 3	N/A	< 3	N/A	< 3	N/A	N/A	< 3	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	< 3	N/A	N/A	< 3	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 3	< 3	N/A	< 3	N/A	N/A	N/A	N/A	0.787*	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	< 3	N/A	< 3	< 3	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A
	2/21/2023	N/A	N/A	< 3	N/A	< 3	< 3	N/A	< 3	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3	N/A	N/A	N/A	N/A	N/A	N/A
Dieldrin, ug/L (CAS NO - 60-57-1)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.032	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 0.0344	< 0.033	N/A	< 0.033	N/A	< 0.0327	N/A	N/A	< 0.0333	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0323	N/A	< 0.0344	N/A	N/A	< 0.0344	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	0.00452*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 0.034	< 0.0337	N/A	< 0.0344	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0229*	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	0.00399*	N/A	< 0.034	N/A	< 0.0337	0.00316*	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.064	N/A	N/A
	2/21/2023	N/A	N/A	< 0.064	N/A	< 0.0615	< 0.0593	N/A	< 0.0604	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0931	N/A	N/A	N/A	N/A	N/A	N/A
Diethyl phthalate, ug/L (CAS NO - 84-66-2)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Dimethoate, ug/L (CAS NO - 60-51-5)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Dimethoate, ug/L (CAS NO - 60-51-5)	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Dimethyl phthalate, ug/L (CAS NO - 131-11-3)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Dimethylaminoazobenzene, ug/L (CAS NO - 60-11-7)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Di-n-butyl phthalate, ug/L (CAS NO - 84-74-2)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	0.582*	N/A	0.6*	N/A	N/A	0.628*	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	0.884*	0.84*	N/A	< 10.6	N/A	N/A	N/A	N/A	0.911*	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Di-n-butyl phthalate, ug/L (CAS NO - 84-74-2)	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Di-n-octyl phthalate, ug/L (CAS NO - 117-84-0)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	0.534*	0.277*	N/A	< 24.1	N/A	< 20.4	N/A	N/A	0.308*	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 20.6	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	1.55*	N/A	1.62*	N/A	N/A	1.65*	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 20.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 21.3	< 20.4	N/A	< 21.3	N/A	N/A	N/A	N/A	< 21.3	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 21.1	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 20.8	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 21.3	N/A	< 21.5	N/A	< 21.7	< 21.7	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 20	N/A	N/A
	2/21/2023	N/A	N/A	< 20	N/A	< 18.5	< 18.9	N/A	< 20	N/A	N/A	N/A	N/A	< 18.9	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 19.2	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 20	N/A	N/A	N/A	N/A	N/A	N/A
Dinoseb, ug/L (CAS NO - 88-85-7)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Diphenylamine, ug/L (CAS NO - 122-39-4)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Disulfoton, ug/L (CAS NO - 298-04-4)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Endosulfan I, ug/L (CAS NO - 959-98-8)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.032	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 0.0344	< 0.033	N/A	< 0.033	N/A	< 0.0327	N/A	N/A	< 0.0333	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00536*	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0323	N/A	< 0.0344	N/A	N/A	< 0.0344	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 0.034	< 0.0337	N/A	< 0.0344	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.337	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0356	N/A	0.00261*	N/A	< 0.0337	0.0166*	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.064	N/A	N/A
	2/21/2023	N/A	N/A	< 0.064	N/A	< 0.0615	< 0.0593	N/A	< 0.0604	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0931	N/A	N/A	N/A	N/A	N/A	N/A
Endosulfan II, ug/L (CAS NO - 33213-65-9)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.032	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 0.0344	< 0.033	N/A	< 0.033	N/A	< 0.0327	N/A	N/A	< 0.0333	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0323	N/A	< 0.0344	N/A	N/A	< 0.0344	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 0.034	< 0.0337	N/A	< 0.0344	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.337	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0356	N/A	< 0.034	N/A	< 0.0337	< 0.034	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.064	N/A	N/A
	2/21/2023	N/A	N/A	< 0.064	N/A	< 0.0615	< 0.0593	N/A	< 0.0604	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0931	N/A	N/A	N/A	N/A	N/A	N/A
Endosulfan sulfate, ug/L (CAS NO - 1031-07-8)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.032	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 0.0344	< 0.033	N/A	< 0.033	N/A	< 0.0327	N/A	N/A	< 0.0333	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Endosulfan sulfate, ug/L (CAS NO - 1031-07-8)	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0323	N/A	< 0.0344	N/A	N/A	< 0.0344	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	0.0116*	< 0.0337	N/A	< 0.0344	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.337	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0356	N/A	< 0.034	N/A	< 0.0337	0.00666*	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.064	N/A	N/A
	2/21/2023	N/A	N/A	< 0.064	N/A	< 0.0615	< 0.0593	N/A	< 0.0604	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0931	N/A	N/A	N/A	N/A	N/A	N/A
Endrin, ug/L (CAS NO - 72-20-8)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.032	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 0.0344	< 0.033	N/A	< 0.033	N/A	< 0.0327	N/A	N/A	< 0.0333	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0323	N/A	< 0.0344	N/A	N/A	< 0.0344	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 0.034	< 0.0337	N/A	< 0.0344	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.337	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0356	N/A	0.00504*	N/A	< 0.0337	< 0.034	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.064	N/A	N/A
	2/21/2023	N/A	N/A	< 0.064	N/A	< 0.0615	< 0.0593	N/A	< 0.0604	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0931	N/A	N/A	N/A	N/A	N/A	N/A
Endrin aldehyde, ug/L (CAS NO - 7421-93-4)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.032	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 0.0344	< 0.033	N/A	< 0.033	N/A	< 0.0327	N/A	N/A	< 0.0333	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0323	N/A	< 0.0344	N/A	N/A	< 0.0344	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	0.0152*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 0.034	0.0157*	N/A	0.011*	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.337	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0356	N/A	< 0.034	N/A	< 0.0337	< 0.034	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.064	N/A	N/A
	2/21/2023	N/A	N/A	< 0.064	N/A	< 0.0615	< 0.0593	N/A	< 0.0604	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0931	N/A	N/A	N/A	N/A	N/A	N/A
Ethyl Methacrylate, ug/L (CAS NO - 97-63-2)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 2	< 2	N/A	< 2	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 2	< 2	N/A	< 2	N/A	< 2	N/A	N/A	< 2	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	< 2	N/A	N/A	< 2	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 2	< 2	N/A	< 2	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Ethyl Methacrylate, ug/L (CAS NO - 97-63-2)	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	< 2	N/A	< 2	< 2	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A
	2/21/2023	N/A	N/A	< 2	N/A	< 2	< 2	N/A	< 2	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A
Ethyl Methanesulfonate, ug/L (CAS NO - 62-50-0)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Famphur, ug/L (CAS NO - 52-85-7)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 20	N/A	N/A	N/A	N/A	< 23.3	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 20	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 20	N/A	< 20	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 20	N/A	< 20	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 20	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 20	< 20	N/A	< 20	N/A	N/A	N/A	N/A	< 20	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 40.8	< 21.3	N/A	< 24.1	N/A	< 20.4	N/A	N/A	< 20.2	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 20.6	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 20	N/A	< 20.8	N/A	N/A	< 21.5	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 20.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 21.3	< 20.4	N/A	< 21.3	N/A	N/A	N/A	N/A	< 21.3	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Fluoranthene, ug/L (CAS NO - 206-44-0)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.712*	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Fluorene, ug/L (CAS NO - 86-73-7)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Heptachlor, ug/L (CAS NO - 76-44-8)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.64	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.032	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 0.0344	< 0.033	N/A	< 0.033	N/A	< 0.0327	N/A	N/A	< 0.0333	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0323	N/A	N/A	< 0.0344	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0323	N/A	< 0.0344	N/A	N/A	< 0.0344	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 0.034	0.0241*	N/A	< 0.0344	N/A	N/A	N/A	N/A	0.0116*	N/A	N/A	N/A
	10/2/2018	N/A	N/A	0.00309*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.337	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	0.00478*	N/A	< 0.034	N/A	< 0.0337	< 0.034	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.064	N/A	N/A
	2/21/2023	N/A	N/A	< 0.064	N/A	< 0.0615	< 0.0593	N/A	< 0.0604	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0931	N/A	N/A	N/A	N/A	N/A	N/A
Heptachlor Epoxide, ug/L (CAS NO - 1024-57-3)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.032	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 0.0344	< 0.033	N/A	< 0.033	N/A	< 0.0327	N/A	N/A	< 0.0333	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0323	N/A	< 0.0344	N/A	N/A	< 0.0344	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 0.034	< 0.0337	N/A	< 0.0344	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.337	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0356	N/A	< 0.034	N/A	< 0.0337	< 0.034	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.064	N/A	N/A
	2/21/2023	N/A	N/A	< 0.064	N/A	< 0.0615	< 0.0593	N/A	< 0.0604	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0931	N/A	N/A	N/A	N/A	N/A	N/A
Hexachlorobenzene, ug/L (CAS NO - 118-74-1)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Hexachlorobenzene, ug/L (CAS NO - 118-74-1)	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Hexachlorobutadiene, ug/L (CAS NO - 87-68-3)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	< 5	< 5	< 5	< 5	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Hexachlorocyclopentadiene, ug/L (CAS NO - 77-47-4)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 40.8	< 21.3	N/A	< 24.1	N/A	< 20.4	N/A	N/A	< 20.2	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 20.6	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 20	N/A	< 20.8	N/A	N/A	< 21.5	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 20.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 21.3	< 20.4	N/A	< 21.3	N/A	N/A	N/A	N/A	< 21.3	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Hexachloroethane, ug/L (CAS NO - 67-72-1)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Hexachloroethane, ug/L (CAS NO - 67-72-1)	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Hexachloropropene, ug/L (CAS NO - 1888-71-7)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Indeno [1,2,3-cd] pyrene, ug/L (CAS NO - 193-39-5)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	0.809*	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	1.32*	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Isobutanol, mg/L (CAS NO - 78-83-1)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	< 10	N/A	N/A	< 10	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	< 10	< 10	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 10	< 10	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Isodrin, ug/L (CAS NO - 465-73-6)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Isophorone, ug/L (CAS NO - 78-59-1)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Isosafrole, ug/L (CAS NO - 120-58-1)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Kepone, ug/L (CAS NO - 143-50-0)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Kepone, ug/L (CAS NO - 143-50-0)	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Methacrylonitrile, ug/L (CAS NO - 126-98-7)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	< 1	N/A	N/A	< 1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	< 10	< 10	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Methapyrilene, ug/L (CAS NO - 91-80-5)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Methoxychlor, ug/L (CAS NO - 72-43-5)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.032	< 0.032	N/A	< 0.032	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 0.0344	< 0.033	N/A	< 0.033	N/A	< 0.0327	N/A	N/A	< 0.0333	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.032	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0323	N/A	< 0.0344	N/A	N/A	< 0.0344	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	0.00362*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	0.0168*	< 0.0337	N/A	< 0.0344	N/A	N/A	N/A	N/A	0.00265*	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Methoxychlor, ug/L (CAS NO - 72-43-5)	10/2/2018	N/A	N/A	0.00266*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.034	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.337	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0356	N/A	< 0.034	N/A	< 0.0337	< 0.034	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.064	N/A	N/A
	2/21/2023	N/A	N/A	< 0.064	N/A	< 0.0615	< 0.0593	N/A	< 0.0604	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0604	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0931	N/A	N/A	N/A	N/A	N/A	N/A
Methyl Methacrylate, ug/L (CAS NO - 80-62-6)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 2	< 2	N/A	< 2	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 2	< 2	N/A	< 2	N/A	< 2	N/A	N/A	< 2	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	< 2	N/A	N/A	< 2	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 2	< 2	N/A	< 2	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	< 2	N/A	< 2	< 2	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A
	2/21/2023	N/A	N/A	< 2	N/A	< 2	< 2	N/A	< 2	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A
Methyl Methanesulfonate, ug/L (CAS NO - 66-27-3)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Naphthalene, ug/L (CAS NO - 91-20-3)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 5	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 5	< 5	N/A	< 5	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 5	< 5	N/A	< 5	N/A	< 5	N/A	N/A	< 5	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	< 5	N/A	N/A	< 5	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 5	< 5	N/A	< 5	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	**7.18**	N/A	3.14*	N/A	< 5	< 5	N/A	N/A	N/A	N/A
	6/15/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A
	2/21/2023	N/A	N/A	< 5	N/A	< 5	< 5	N/A	< 5	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Nitrobenzene, ug/L (CAS NO - 98-95-3)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
N-Nitrosodiethylamine, ug/L (CAS NO - 55-18-5)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
N-Nitrosodimethylamine, ug/L (CAS NO - 62-75-9)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
N-Nitrosodi-n-butylamine, ug/L (CAS NO - 924-16-3)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
N-Nitrosodi-n-butylamine, ug/L (CAS NO - 924-16-3)	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
N-Nitrosodi-n-propylamine, ug/L (CAS NO - 621-64-7)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
N-Nitrosodiphenylamine, ug/L (CAS NO - 86-30-6)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	3.34*	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
N-Nitrosomethylethylamine, ug/L (CAS NO - 10595-95-6)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
N-Nitrosomethylethylamine, ug/L (CAS NO - 10595-95-6)	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
N-Nitrosopiperidine, ug/L (CAS NO - 100-75-4)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
N-Nitrosopyrrolidine, ug/L (CAS NO - 930-55-2)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
O,O,O-Triethyl Phosphorothioate, ug/L (CAS NO - 126-68-1)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
O-Toluidine, ug/L (CAS NO - 95-53-4)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Parathion-Ethyl, ug/L (CAS NO - 56-38-2)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Parathion-Methyl, ug/L (CAS NO - 298-00-0)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	1.72*	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
PCB-1016, ug/L (CAS NO - 12674-11-2)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A	N/A	< 0.909	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	< 0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	< 0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.8	< 0.8	N/A	< 0.8	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 0.899	< 0.808	N/A	< 0.808	N/A	< 0.8	N/A	N/A	< 0.816	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.842	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
PCB-1016, ug/L (CAS NO - 12674-11-2)	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 1.57	N/A	< 0.8	N/A	N/A	< 0.86	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.851	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 0.833	< 0.842	N/A	< 0.851	N/A	N/A	N/A	N/A	< 0.833	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 0.808	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.833	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 8.42	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 0.889	N/A	< 0.851	N/A	< 0.842	< 0.851	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A
	2/21/2023	N/A	N/A	< 0.8	N/A	< 0.769	< 0.741	N/A	< 0.755	N/A	N/A	N/A	N/A	< 0.755	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.755	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.86	N/A	N/A	N/A	N/A	N/A	N/A
PCB-1221, ug/L (CAS NO - 11104-28-2)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A	N/A	< 0.909	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	< 0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	< 0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.8	< 0.8	N/A	< 0.8	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 0.899	< 0.808	N/A	< 0.808	N/A	< 0.8	N/A	N/A	< 0.816	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.842	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 1.57	N/A	< 0.8	N/A	N/A	< 0.86	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.851	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 0.833	< 0.842	N/A	< 0.851	N/A	N/A	N/A	N/A	< 0.833	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 0.808	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.833	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 8.42	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 0.889	N/A	< 0.851	N/A	< 0.842	< 0.851	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A
	2/21/2023	N/A	N/A	< 0.8	N/A	< 0.769	< 0.741	N/A	< 0.755	N/A	N/A	N/A	N/A	< 0.755	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.755	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.86	N/A	N/A	N/A	N/A	N/A	N/A
PCB-1232, ug/L (CAS NO - 11141-16-5)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A	N/A	< 0.909	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	< 0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	< 0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.8	< 0.8	N/A	< 0.8	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 0.899	< 0.808	N/A	< 0.808	N/A	< 0.8	N/A	N/A	< 0.816	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.842	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 1.57	N/A	< 0.8	N/A	N/A	< 0.86	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.851	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 0.833	< 0.842	N/A	< 0.851	N/A	N/A	N/A	N/A	< 0.833	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 0.808	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.833	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 8.42	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 0.889	N/A	< 0.851	N/A	< 0.842	< 0.851	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A
	2/21/2023	N/A	N/A	< 0.8	N/A	< 0.769	< 0.741	N/A	< 0.755	N/A	N/A	N/A	N/A	< 0.755	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.755	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.86	N/A	N/A	N/A	N/A	N/A	N/A
PCB-1242, ug/L (CAS NO - 53469-21-9)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A	N/A	< 0.909	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	< 0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	< 0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.8	< 0.8	N/A	< 0.8	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 0.899	< 0.808	N/A	< 0.808	N/A	< 0.8	N/A	N/A	< 0.816	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.842	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 1.57	N/A	< 0.8	N/A	N/A	< 0.86	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.851	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 0.833	< 0.842	N/A	< 0.851	N/A	N/A	N/A	N/A	< 0.833	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 0.808	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.833	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 8.42	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
PCB-1242, ug/L (CAS NO - 53469-21-9)	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 0.889	N/A	< 0.851	N/A	< 0.842	< 0.851	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A
	2/21/2023	N/A	N/A	< 0.8	N/A	< 0.769	< 0.741	N/A	< 0.755	N/A	N/A	N/A	N/A	< 0.755	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.755	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.86	N/A	N/A	N/A	N/A	N/A	N/A
PCB-1248, ug/L (CAS NO - 12672-29-6)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A	N/A	< 0.909	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	< 0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	< 0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.8	< 0.8	N/A	< 0.8	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 0.899	< 0.808	N/A	< 0.808	N/A	< 0.8	N/A	N/A	< 0.816	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.842	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 1.57	N/A	< 0.8	N/A	N/A	< 0.86	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.851	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 0.833	< 0.842	N/A	< 0.851	N/A	N/A	N/A	N/A	< 0.833	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 0.808	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.833	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 8.42	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 0.889	N/A	< 0.851	N/A	< 0.842	< 0.851	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A
	2/21/2023	N/A	N/A	< 0.8	N/A	< 0.769	< 0.741	N/A	< 0.755	N/A	N/A	N/A	N/A	< 0.755	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.755	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.86	N/A	N/A	N/A	N/A	N/A	N/A
PCB-1254, ug/L (CAS NO - 11097-69-1)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A	N/A	< 0.909	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	< 0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	< 0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.8	< 0.8	N/A	< 0.8	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 0.899	< 0.808	N/A	< 0.808	N/A	< 0.8	N/A	N/A	< 0.816	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.842	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 1.57	N/A	< 0.8	N/A	N/A	< 0.86	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.851	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 0.833	< 0.842	N/A	< 0.851	N/A	N/A	N/A	N/A	< 0.833	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 0.808	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.833	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 8.42	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 0.889	N/A	< 0.851	N/A	< 0.842	< 0.851	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A
	2/21/2023	N/A	N/A	< 0.8	N/A	< 0.769	< 0.741	N/A	< 0.755	N/A	N/A	N/A	N/A	< 0.755	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.755	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.86	N/A	N/A	N/A	N/A	N/A	N/A
PCB-1260, ug/L (CAS NO - 11096-82-5)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A	N/A	< 0.909	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	< 0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	< 0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.8	< 0.8	N/A	< 0.8	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 0.899	< 0.808	N/A	< 0.808	N/A	< 0.8	N/A	N/A	< 0.816	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.842	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 1.57	N/A	< 0.8	N/A	N/A	< 0.86	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 0.851	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 0.833	< 0.842	N/A	< 0.851	N/A	N/A	N/A	N/A	< 0.833	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 0.808	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.833	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 8.42	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 0.889	N/A	< 0.851	N/A	< 0.842	< 0.851	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.8	N/A	N/A
	2/21/2023	N/A	N/A	< 0.8	N/A	< 0.769	< 0.741	N/A	< 0.755	N/A	N/A	N/A	N/A	< 0.755	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.755	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.86	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Pentachlorobenzene, ug/L (CAS NO - 608-93-5)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Pentachloronitrobenzene, ug/L (CAS NO - 82-68-8)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Pentachlorophenol [2C], ug/L (CAS NO - 87-86-5)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Phenacetin, ug/L (CAS NO - 62-44-2)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Phenacetin, ug/L (CAS NO - 62-44-2)	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Phenanthrene, ug/L (CAS NO - 85-01-8)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Phenol, ug/L (CAS NO - 108-95-2)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Phorate, ug/L (CAS NO - 298-02-2)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry
Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Phorate, ug/L (CAS NO - 298-02-2)	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Pronamide, ug/L (CAS NO - 23950-58-5)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Propionitrile, ug/L (CAS NO - 107-12-0)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	< 10	N/A	N/A	< 10	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	< 10	< 10	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Pyrene, ug/L (CAS NO - 129-00-0)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.291*	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Safrole, ug/L (CAS NO - 94-59-7)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Sulfide, mg/L (CAS NO - 18496-25-8)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**3.8**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 0.19	N/A	**2.3**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/19/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**1.5**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	2/20/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 0.23	**4.4**	N/A	< 0.23	N/A	N/A	N/A	N/A	**1.5**	N/A	N/A	N/A
	8/8/2012	N/A	N/A	N/A	N/A	N/A	< 0.23	N/A	N/A	**2.5**	N/A	N/A	N/A	< 0.23	N/A	N/A	N/A
	12/27/2012	N/A	N/A	N/A	N/A	N/A	**3.8**	N/A	N/A	N/A	N/A	N/A	N/A	**8.4**	N/A	N/A	N/A
	2/25/2013	N/A	N/A	N/A	N/A	N/A	**3.01**	N/A	N/A	**8.75**	N/A	N/A	N/A	**2.39**	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	0.208*	< 1	N/A	< 1	**4.16**	< 1	N/A	N/A	< 1	N/A	N/A	N/A
	2/13/2014	N/A	N/A	N/A	N/A	N/A	0.212*	N/A	N/A	**9.33**	N/A	N/A	N/A	**4.8**	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	0.784*	< 1	N/A	N/A	< 1	N/A	N/A	N/A
	5/18/2015	< 1	< 1	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	8/12/2015	< 1	< 1	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	4/4/2016	< 1	< 1	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	9/13/2016	< 1	< 1	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	< 1	< 1	N/A	< 1	N/A	N/A	< 1	< 1	N/A	N/A	N/A
	6/26/2017	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 1	**6.53**	N/A	< 1	< 1	N/A	N/A	N/A	**3.18**	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 1	N/A	N/A	0.496*	N/A	N/A	**1.14**	N/A	N/A	N/A	0.88*	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	< 1	N/A	N/A	**7.98**	N/A	N/A	N/A
	8/26/2019	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**4.92**	N/A	N/A	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A	< 10	N/A	< 10	N/A	N/A	N/A
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	11.1	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A
	11/3/2020	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	< 10	< 10	< 10	N/A	N/A	N/A
	8/25/2021	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	3/8/2022	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A
	6/22/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.237*	N/A	N/A
	2/21/2023	N/A	N/A	< 1	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	< 1	< 1	N/A	< 1	N/A	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A	0.32*	N/A	< 1	N/A	N/A	N/A
Thionazin, ug/L (CAS NO - 297-97-2)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	< 11.6	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 10	< 10	N/A	< 10	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P

Other Constituents	Sample Date	MW-53 UPG	MW-54 UPG	04-MW-56 DNG	91-MW-14 DNG	93-MW-32 DNG	MW-39R DNG	MW-40 DNG	MW-58 DNG	MW-59 DNG	MW-62 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG	MW-81 DNG	GU-6 DNG	GU-7 DNG
Thionazin, ug/L (CAS NO - 297-97-2)	8/19/2013	N/A	N/A	N/A	N/A	< 20.4	< 10.6	N/A	< 12	N/A	< 10.2	N/A	N/A	< 10.1	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.3	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	< 10.4	N/A	N/A	< 10.8	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 10.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 10.6	< 10.2	N/A	< 10.6	N/A	N/A	N/A	N/A	< 10.6	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.5	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10.4	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 10.6	N/A	< 10.8	N/A	< 10.9	< 10.9	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
	2/21/2023	N/A	N/A	< 10	N/A	< 9.26	< 9.43	N/A	< 10	N/A	N/A	N/A	N/A	< 9.43	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 9.62	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A	N/A
Toxaphene, ug/L (CAS NO - 8001-35-2)	8/27/2009	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A
	12/21/2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/14/2010	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2/24/2011	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/13/2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A
	5/29/2012	N/A	N/A	N/A	N/A	< 2	< 2	N/A	< 2	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A
	8/19/2013	N/A	N/A	N/A	N/A	< 2.15	< 2.06	N/A	< 2.06	N/A	< 2.04	N/A	N/A	< 2.08	N/A	N/A	N/A
	8/21/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A
	1/9/2017	N/A	N/A	N/A	N/A	N/A	N/A	< 2.02	N/A	< 2.15	N/A	N/A	< 2.15	N/A	N/A	N/A	N/A
	11/28/2017	N/A	N/A	< 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	N/A	< 2.13	< 2.11	N/A	< 2.15	N/A	N/A	N/A	N/A	< 2.13	N/A	N/A	N/A
	10/2/2018	N/A	N/A	< 2.13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2.13	N/A	N/A	N/A	N/A	N/A	N/A
	2/6/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 21.1	N/A	N/A	N/A	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	N/A	N/A	< 2.22	N/A	< 2.13	N/A	< 2.11	< 2.13	N/A	N/A	N/A	N/A
	10/31/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 2	N/A	N/A
	2/21/2023	N/A	N/A	< 2	N/A	< 1.92	< 1.85	N/A	< 1.89	N/A	N/A	N/A	N/A	< 1.89	N/A	N/A	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.89	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.86	N/A	N/A	N/A	N/A	N/A	N/A

Note: * indicates 'J flag'. Detection is below the reporting limit, but greater than the MDL (Method Detection Limit). The concentration is estimated.

Denotes Detection.
Denotes Confirmed Outlier. Statistically Excluded.

Sampling performed over multiple dates is recorded on the first date sampled. Refer to field forms for exact sample date.

Appendix C-2

Summary of Groundwater Chemistry – Source

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - Source

Total Metals Constituents	Sample Date	93-MW-31R DNG	MW-61R DNG	MW-73 DNG	MW-79 DNG
Antimony, mg/L (CAS NO - 7440-36-0)	10/22/2018	< 0.001	0.000714*	N/A	N/A
	4/1/2019	< 0.001	< 0.001	N/A	N/A
	8/26/2019	< 0.001	< 0.001	< 0.001	< 0.001
	6/16/2020	< 0.001	0.000576*	< 0.001	< 0.001
	11/3/2020	< 0.001	< 0.001	< 0.001	< 0.001
	4/5/2021	< 0.002	< 0.004	< 0.008	< 0.014
	8/25/2021	< 0.002	< 0.002	< 0.002	< 0.002
	3/8/2022	< 0.002	< 0.002	< 0.002	< 0.002
	6/22/2022	< 0.002	< 0.002	< 0.002	< 0.002
	2/21/2023	< 0.002	< 0.002	N/A	< 0.002
	7/25/2023	< 0.002	< 0.002	N/A	< 0.002
	7/25/2023	< 0.002	N/A	N/A	N/A
	6/4/2024	< 0.002	< 0.002	< 0.002	< 0.002
	10/14/2024	< 0.002	< 0.002	< 0.002	< 0.002
Arsenic, mg/L (CAS NO - 7440-38-2)	10/3/2018	N/A	N/A	**0.00868**	N/A
	10/22/2018	0.0016*	**0.0168**	N/A	N/A
	4/1/2019	< 0.002	**0.0221**	**0.00602**	N/A
	8/26/2019	< 0.002	**0.0182**	**0.0128**	< 0.002
	6/16/2020	< 0.002	**0.00298**	**0.00864**	< 0.002
	11/3/2020	**0.00296**	**0.00538**	**0.0113**	**0.000976**
	4/5/2021	0.00158*	**0.00436**	**0.00884**	< 0.014
	8/25/2021	0.00174*	**0.00699**	**0.0152**	0.000837*
	3/8/2022	**0.00577**	**0.00628**	**0.00653**	< 0.002
	6/22/2022	**0.00397**	**0.00544**	**0.0115**	< 0.002
	2/21/2023	**0.00498**	**0.00649**	N/A	< 0.002
	7/25/2023	0.00122*	**0.00456**	N/A	< 0.002
	7/25/2023	0.00123*	N/A	N/A	N/A
	6/4/2024	**0.0131**	**0.00754**	**0.0116**	< 0.002
	10/14/2024	0.00166*	**0.007**	**0.00519**	< 0.002
Barium, mg/L (CAS NO - 7440-39-3)	10/22/2018	**0.0615**	**0.0228**	N/A	N/A
	4/1/2019	**0.0365**	**0.0191**	N/A	N/A
	8/26/2019	**0.0355**	**0.0201**	**0.0616**	**0.0953**
	6/16/2020	**0.0248**	**0.0165**	**0.0565**	**0.0887**
	11/3/2020	**0.0599**	**0.0147**	**0.0592**	**0.0685**
	4/5/2021	**0.036**	**0.0163**	**0.064**	**0.0802**
	8/25/2021	**0.105**	**0.0157**	**0.0589**	**0.104**
	3/8/2022	**0.0874**	**0.0149**	**0.0588**	**0.0784**
	6/22/2022	**0.0789**	**0.0169**	**0.0588**	**0.0684**
	2/21/2023	**0.0606**	**0.0217**	N/A	**0.0951**
	7/25/2023	**0.0426**	**0.015**	N/A	**0.105**
	7/25/2023	**0.0438**	N/A	N/A	N/A
	6/4/2024	**0.0577**	**0.0147**	**0.0995**	**0.114**
	10/14/2024	**0.0598**	**0.0171**	**0.0812**	**0.113**
Beryllium, mg/L (CAS NO - 7440-41-7)	10/22/2018	< 0.001	< 0.001	N/A	N/A
	4/1/2019	< 0.001	< 0.001	N/A	N/A
	8/26/2019	< 0.001	< 0.001	< 0.001	0.000887*
	6/16/2020	< 0.001	< 0.001	< 0.001	**0.00245**
	11/3/2020	< 0.001	< 0.001	< 0.001	**0.00283**
	4/5/2021	< 0.001	< 0.002	< 0.004	0.00323*
	8/25/2021	< 0.001	< 0.001	< 0.001	0.000821*
	3/8/2022	< 0.001	< 0.004	< 0.001	< 0.001
	6/22/2022	< 0.001	0.000307*	0.000348*	< 0.001

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - Source

Total Metals Constituents	Sample Date	93-MW-31R DNG	MW-61R DNG	MW-73 DNG	MW-79 DNG
Beryllium, mg/L (CAS NO - 7440-41-7)	2/21/2023	< 0.001	0.00046*	N/A	< 0.001
	7/25/2023	< 0.001	< 0.001	N/A	< 0.001
	7/25/2023	< 0.001	N/A	N/A	N/A
	6/4/2024	< 0.001	< 0.001	< 0.001	< 0.001
	10/14/2024	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium, mg/L (CAS NO - 7440-43-9)	8/21/2014	N/A	N/A	**0.00367**	N/A
	10/9/2014	N/A	N/A	**0.00842**	N/A
	10/22/2018	0.000308*	< 0.0005	N/A	N/A
	4/1/2019	0.000189*	< 0.0005	N/A	N/A
	8/26/2019	**0.00392**	< 0.0001	**0.014**	**0.00627**
	6/16/2020	0.000086*	**0.000137**	**0.0082**	**0.0922**
	11/3/2020	**0.00346**	**0.000187**	**0.0706**	**0.0916**
	4/5/2021	**0.00095**	< 0.0002	**0.019**	**0.0199**
	8/25/2021	**0.00101**	< 0.0001	**0.0108**	**0.0382**
	3/8/2022	**0.000741**	< 0.0001	**0.00605**	**0.00702**
	6/22/2022	**0.000365**	**0.000498**	**0.00417**	**0.00162**
	2/21/2023	**0.000793**	**0.00135**	N/A	**0.0017**
	7/25/2023	**0.000887**	**0.000242**	N/A	**0.00143**
	7/25/2023	**0.00094**	N/A	N/A	N/A
	6/4/2024	**0.000736**	**0.000277**	**0.107**	**0.0235**
	10/14/2024	**0.000515**	**0.000484**	**0.024**	**0.0108**
Chromium, mg/L (CAS NO - 7440-47-3)	10/22/2018	0.000997*	0.00101*	N/A	N/A
	4/1/2019	< 0.005	< 0.005	N/A	N/A
	8/26/2019	**0.00784**	< 0.005	< 0.005	< 0.005
	6/16/2020	< 0.005	0.00206*	< 0.005	< 0.005
	11/3/2020	< 0.005	< 0.005	< 0.005	< 0.005
	4/5/2021	< 0.005	< 0.01	< 0.02	< 0.035
	8/25/2021	< 0.005	< 0.005	< 0.005	0.00187*
	3/8/2022	< 0.005	< 0.005	< 0.005	< 0.005
	6/22/2022	< 0.005	0.00159*	< 0.005	< 0.005
	2/21/2023	< 0.005	0.00218*	N/A	< 0.005
	7/25/2023	< 0.005	< 0.005	N/A	< 0.005
	7/25/2023	< 0.005	N/A	N/A	N/A
	6/4/2024	< 0.005	< 0.005	< 0.005	< 0.005
	10/14/2024	< 0.005	0.00188*	0.00191*	< 0.005
Cobalt, mg/L (CAS NO - 7440-48-4)	8/21/2014	N/A	N/A	**0.105**	N/A
	10/9/2014	N/A	N/A	**0.112**	N/A
	5/18/2015	N/A	N/A	**0.0932**	N/A
	8/13/2015	N/A	N/A	N/A	**0.00789**
	8/14/2015	N/A	N/A	**0.0905**	N/A
	4/5/2016	N/A	N/A	**0.0824**	N/A
	9/13/2016	N/A	N/A	**0.0679**	N/A
	4/19/2017	N/A	N/A	**0.0703**	N/A
	8/3/2017	N/A	N/A	**0.0636**	N/A
	3/5/2018	N/A	N/A	**0.0571**	N/A
	10/22/2018	**0.00128**	**0.0199**	N/A	N/A
	4/1/2019	**0.000519**	**0.0263**	N/A	N/A
	8/26/2019	**0.00227**	**0.0247**	**0.073**	**0.0032**
	6/16/2020	< 0.0005	**0.00497**	**0.0644**	**0.00379**
	11/3/2020	**0.0185**	**0.00579**	**0.0592**	**0.0046**
	4/5/2021	0.000288*	**0.00797**	**0.0677**	**0.00434**
	8/25/2021	**0.0194**	**0.0135**	**0.0579**	**0.00702**

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - Source

Total Metals Constituents	Sample Date	93-MW-31R DNG	MW-61R DNG	MW-73 DNG	MW-79 DNG
Cobalt, mg/L (CAS NO - 7440-48-4)	3/8/2022	**0.0118**	**0.00914**	**0.0552**	**0.00272**
	6/22/2022	**0.0109**	**0.0087**	**0.0512**	**0.00185**
	2/21/2023	**0.00679**	**0.0117**	N/A	**0.00245**
	7/25/2023	**0.00702**	**0.00986**	N/A	**0.0028**
	7/25/2023	**0.00738**	N/A	N/A	N/A
	6/4/2024	**0.00187**	**0.0103**	**0.0639**	**0.00324**
	10/14/2024	**0.00309**	**0.0135**	**0.0546**	**0.00371**
Copper, mg/L (CAS NO - 7440-50-8)	10/22/2018	< 0.005	< 0.005	N/A	N/A
	4/1/2019	< 0.005	< 0.005	N/A	N/A
	8/26/2019	< 0.005	< 0.005	< 0.005	**0.0212**
	6/16/2020	< 0.005	< 0.005	< 0.005	**0.0453**
	11/3/2020	**0.00307**	< 0.005	**0.00419**	**0.0974**
	4/5/2021	< 0.005	< 0.01	0.00624*	**0.303**
	8/25/2021	< 0.005	< 0.005	0.00208*	**0.00536**
	3/8/2022	0.00199*	**0.00634**	< 0.005	0.00223*
	6/22/2022	< 0.005	**0.00711**	0.00275*	< 0.005
	2/21/2023	0.00245*	**0.012**	N/A	< 0.005
	7/25/2023	< 0.005	**0.0101**	N/A	< 0.005
	7/25/2023	< 0.005	N/A	N/A	N/A
	6/4/2024	0.00274*	0.00411*	**0.0165**	0.00257*
	10/14/2024	< 0.005	**0.00711**	**0.00518**	< 0.005
Lead, mg/L (CAS NO - 7439-92-1)	10/22/2018	**0.00131**	**0.000977**	N/A	N/A
	4/1/2019	0.000324*	< 0.0005	N/A	N/A
	8/26/2019	< 0.0005	< 0.0005	0.000402*	< 0.0005
	6/16/2020	< 0.0005	0.000169*	0.000173*	**0.00224**
	11/3/2020	**0.000236**	**0.000967**	**0.00105**	**0.0024**
	4/5/2021	0.000262*	0.00051*	< 0.002	< 0.0035
	8/25/2021	0.000281*	< 0.0005	0.000257*	**0.00687**
	3/8/2022	0.000286*	< 0.0005	< 0.0005	**0.000933**
	6/22/2022	0.000406*	**0.00357**	< 0.0005	< 0.0005
	2/21/2023	< 0.0005	**0.00456**	N/A	< 0.0005
	7/25/2023	< 0.0005	**0.000785**	N/A	< 0.0005
	7/25/2023	< 0.0005	N/A	N/A	N/A
	6/4/2024	**0.000937**	**0.00172**	**0.00283**	**0.000839**
	10/14/2024	**0.00151**	**0.00314**	**0.00111**	**0.00127**
Mercury, mg/L (CAS NO - 7439-97-6)	10/22/2018	N/A	< 0.0002	N/A	N/A
Nickel, mg/L (CAS NO - 7440-02-0)	8/21/2014	N/A	N/A	**0.0584**	N/A
	10/9/2014	N/A	N/A	**0.0573**	N/A
	10/22/2018	**0.0157**	**0.0194**	N/A	N/A
	4/1/2019	**0.0111**	**0.0341**	N/A	N/A
	8/26/2019	**0.0633**	**0.036**	**0.0291**	**0.0334**
	6/16/2020	< 0.005	**0.0147**	**0.028**	**0.0357**
	11/3/2020	**0.0409**	**0.0169**	**0.0259**	**0.0383**
	4/5/2021	0.00437*	**0.018**	**0.0286**	**0.0354**
	8/25/2021	**0.0198**	**0.0203**	**0.0249**	**0.0739**
	3/8/2022	**0.0153**	**0.0203**	**0.0228**	**0.024**
	6/22/2022	**0.02**	**0.0241**	**0.0229**	**0.0167**
	2/21/2023	**0.0193**	**0.0279**	N/A	**0.0223**
	7/25/2023	**0.0132**	**0.0321**	N/A	**0.0223**
	7/25/2023	**0.0137**	N/A	N/A	N/A
	6/4/2024	< 0.005	**0.0335**	**0.0263**	**0.0304**
	10/14/2024	**0.0109**	**0.0434**	**0.0275**	**0.0309**

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - Source

Total Metals Constituents	Sample Date	93-MW-31R DNG	MW-61R DNG	MW-73 DNG	MW-79 DNG
Selenium, mg/L (CAS NO - 7782-49-2)	10/22/2018	**0.00879**	< 0.005	N/A	N/A
	4/1/2019	**0.00913**	< 0.005	N/A	N/A
	8/26/2019	< 0.005	< 0.005	< 0.005	< 0.005
	6/16/2020	**0.00638**	< 0.005	< 0.005	< 0.005
	11/3/2020	< 0.005	< 0.005	< 0.005	< 0.005
	4/5/2021	0.00478*	< 0.01	< 0.02	< 0.035
	8/25/2021	0.00138*	< 0.005	< 0.005	< 0.005
	3/8/2022	< 0.005	< 0.005	< 0.005	< 0.005
	6/22/2022	0.00132*	0.00127*	< 0.005	< 0.005
	2/21/2023	0.00293*	0.00199*	N/A	< 0.005
	7/25/2023	0.00238*	< 0.005	N/A	< 0.005
	7/25/2023	0.00253*	N/A	N/A	N/A
	6/4/2024	0.00401*	< 0.005	< 0.005	< 0.005
	10/14/2024	0.00315*	0.00154*	< 0.005	< 0.005
Silver, mg/L (CAS NO - 7440-22-4)	10/22/2018	< 0.001	< 0.001	N/A	N/A
	4/1/2019	< 0.001	< 0.001	N/A	N/A
	8/26/2019	< 0.001	< 0.001	< 0.001	< 0.001
	6/16/2020	< 0.001	< 0.001	< 0.001	< 0.001
	11/3/2020	< 0.001	< 0.001	< 0.001	< 0.001
	4/5/2021	< 0.001	< 0.002	< 0.004	< 0.007
	8/25/2021	< 0.001	< 0.001	< 0.001	< 0.001
	3/8/2022	< 0.001	< 0.001	< 0.001	< 0.001
	6/22/2022	< 0.001	< 0.001	< 0.001	< 0.001
	2/21/2023	< 0.001	< 0.001	N/A	< 0.001
	7/25/2023	< 0.001	< 0.001	N/A	< 0.001
	7/25/2023	< 0.001	N/A	N/A	N/A
	6/4/2024	< 0.001	< 0.001	< 0.001	< 0.001
	10/14/2024	< 0.001	< 0.001	< 0.001	< 0.001
Thallium, mg/L (CAS NO - 7440-28-0)	10/22/2018	< 0.001	< 0.001	N/A	N/A
	4/1/2019	< 0.001	< 0.001	N/A	N/A
	8/26/2019	< 0.001	< 0.001	< 0.001	< 0.001
	6/16/2020	< 0.001	< 0.001	< 0.001	< 0.001
	11/3/2020	< 0.001	< 0.001	< 0.001	< 0.001
	4/5/2021	**0.00157**	< 0.002	< 0.004	< 0.007
	8/25/2021	0.000765*	< 0.001	< 0.001	< 0.001
	3/8/2022	< 0.001	< 0.001	< 0.001	< 0.001
	6/22/2022	< 0.001	< 0.001	< 0.001	< 0.001
	2/21/2023	< 0.001	< 0.001	N/A	< 0.001
	7/25/2023	< 0.001	< 0.001	N/A	< 0.001
	7/25/2023	< 0.001	N/A	N/A	N/A
	6/4/2024	< 0.001	< 0.001	< 0.001	< 0.001
	10/14/2024	< 0.001	< 0.001	< 0.001	< 0.001
Tin, mg/L (CAS NO - 7440-31-5)	10/22/2018	N/A	< 0.005	N/A	N/A
Vanadium, mg/L (CAS NO - 7440-62-2)	10/22/2018	0.00297*	0.000943*	N/A	N/A
	4/1/2019	< 0.005	< 0.005	N/A	N/A
	8/26/2019	< 0.005	< 0.005	< 0.005	< 0.005
	6/16/2020	< 0.005	< 0.005	< 0.005	0.00317*
	11/3/2020	< 0.005	**0.00107**	< 0.005	**0.00466**
	4/5/2021	< 0.005	< 0.01	< 0.02	< 0.035
	8/25/2021	< 0.005	< 0.005	< 0.005	**0.0192**
	3/8/2022	< 0.005	< 0.005	< 0.005	0.00214*
	6/22/2022	< 0.005	0.00472*	< 0.005	< 0.005

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - Source

Total Metals Constituents	Sample Date	93-MW-31R DNG	MW-61R DNG	MW-73 DNG	MW-79 DNG
Vanadium, mg/L (CAS NO - 7440-62-2)	2/21/2023	< 0.005	**0.00567**	N/A	< 0.005
	7/25/2023	< 0.005	< 0.005	N/A	< 0.005
	7/25/2023	< 0.005	N/A	N/A	N/A
	6/4/2024	0.00366*	0.00192*	< 0.005	0.0021*
	10/14/2024	0.0023*	0.00373*	< 0.005	0.00414*
Zinc, mg/L (CAS NO - 7440-66-6)	10/22/2018	0.0111*	**1.44**	N/A	N/A
	4/1/2019	< 0.02	< 0.02	N/A	N/A
	8/26/2019	0.017*	< 0.02	**0.125**	**0.0644**
	6/16/2020	< 0.02	**0.0291**	**0.0741**	**0.424**
	11/3/2020	**0.0118**	**0.0209**	**0.372**	**0.471**
	4/5/2021	< 0.02	< 0.04	**0.167**	**0.154**
	8/25/2021	0.0106*	0.0116*	**0.131**	**0.136**
	3/8/2022	< 0.02	0.0129*	**0.0691**	**0.0275**
	6/22/2022	< 0.02	**0.0431**	**0.0603**	< 0.02
	2/21/2023	< 0.02	**0.048**	N/A	0.0105*
	7/25/2023	< 0.02	**0.0234**	N/A	0.0117*
	7/25/2023	0.00777*	N/A	N/A	N/A
	6/4/2024	0.0158*	**0.0233**	**0.383**	**0.175**
	10/14/2024	< 0.02	**0.0332**	**0.0824**	**0.0606**
Total Suspended Solids, mg/L (CAS NO - TSS)	8/21/2014	N/A	N/A	**5060**	N/A
	10/9/2014	N/A	N/A	**480**	N/A
	5/18/2015	N/A	N/A	**2620**	N/A
	8/13/2015	N/A	N/A	N/A	**2200**
	8/14/2015	N/A	N/A	**3160**	N/A
	4/5/2016	N/A	N/A	**2400**	**373**
	9/13/2016	N/A	N/A	**226**	**218**
	4/19/2017	N/A	N/A	**37.6**	N/A
	8/3/2017	N/A	N/A	**4.88**	N/A
	3/5/2018	N/A	N/A	**55.3**	N/A
	10/3/2018	N/A	N/A	**22.9**	N/A
	10/22/2018	**97**	**74.5**	N/A	N/A
	4/1/2019	**21.1**	**25.5**	**3.38**	N/A
	8/26/2019	1.75*	**15.1**	**7**	**4.62**
	6/16/2020	1.13*	**12.3**	**4.5**	**38**
	11/3/2020	**10.5**	**46**	**23.5**	**81**
	4/5/2021	**4.38**	**37**	**14.5**	**49.7**
	8/25/2021	**7**	**18.5**	**25.5**	**508**
	3/8/2022	**13**	**17.7**	**6**	**31.7**
	6/22/2022	**12.8**	**334**	**15.7**	**3.38**
	2/21/2023	**8.63**	**378**	N/A	**2**
	7/25/2023	3.5*	**86**	N/A	**5.75**
	7/25/2023	3.5*	N/A	N/A	N/A
	6/4/2024	**85**	**139**	**239**	**21.3**
	10/14/2024	**65.7**	**292**	**81**	**60**

Note: * indicates 'J flag'. Detection is below the reporting limit, but greater than the MDL (Method Detection Limit). The concentration is estimated.

Denotes Detection.
Denotes Confirmed Outlier. Statistically Excluded.

Sampling performed over multiple dates is recorded on the first date sampled. Refer to field forms for exact sample date.

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - Source

Appendix I VOC Constituents	Sample Date	93-MW-31R DNG	MW-61R DNG	MW-73 DNG	MW-79 DNG
1,1,1,2-Tetrachloroethane, ug/L (CAS NO - 630-20-6)	10/22/2018	< 1	< 1	N/A	N/A
	4/1/2019	< 1	< 1	N/A	N/A
	8/26/2019	< 1	< 1	< 1	< 1
	6/16/2020	< 1	< 1	< 1	< 1
	11/3/2020	< 1	< 1	< 1	< 1
	4/5/2021	< 1	< 1	< 1	< 1
	8/25/2021	< 1	< 1	< 1	< 1
	3/8/2022	< 1	< 1	< 1	< 1
	6/22/2022	< 1	< 1	< 1	< 1
	2/21/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	N/A	N/A	N/A
	6/4/2024	< 1	< 1	< 1	< 1
	10/14/2024	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane, ug/L (CAS NO - 71-55-6)	10/22/2018	< 1	< 1	N/A	N/A
	4/1/2019	< 1	< 1	N/A	N/A
	8/26/2019	< 1	< 1	< 1	< 1
	6/16/2020	< 1	< 1	< 1	< 1
	11/3/2020	< 1	< 1	< 1	< 1
	4/5/2021	< 1	< 1	< 1	< 1
	8/25/2021	< 1	< 1	< 1	< 1
	3/8/2022	< 1	< 1	< 1	< 1
	6/22/2022	< 1	< 1	< 1	< 1
	2/21/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	N/A	N/A	N/A
	6/4/2024	< 1	< 1	< 1	< 1
	10/14/2024	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane, ug/L (CAS NO - 79-34-5)	10/22/2018	< 1	< 1	N/A	N/A
	4/1/2019	< 1	< 1	N/A	N/A
	8/26/2019	< 1	< 1	< 1	< 1
	6/16/2020	< 1	< 1	< 1	< 1
	11/3/2020	< 1	< 1	< 1	< 1
	4/5/2021	< 1	< 1	< 1	< 1
	8/25/2021	< 1	< 1	< 1	< 1
	3/8/2022	< 1	< 1	< 1	< 1
	6/22/2022	< 1	< 1	< 1	< 1
	2/21/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	N/A	N/A	N/A
	6/4/2024	< 1	< 1	< 1	< 1
	10/14/2024	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane, ug/L (CAS NO - 79-00-5)	10/22/2018	< 1	< 1	N/A	N/A
	4/1/2019	< 1	< 1	N/A	N/A
	8/26/2019	< 1	< 1	< 1	< 1
	6/16/2020	< 1	< 1	< 1	< 1
	11/3/2020	< 1	< 1	< 1	< 1
	4/5/2021	< 1	< 1	< 1	< 1
	8/25/2021	< 1	< 1	< 1	< 1
	3/8/2022	< 1	< 1	< 1	< 1
	6/22/2022	< 1	< 1	< 1	< 1
	2/21/2023	< 1	< 1	N/A	< 1

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - Source

Appendix I VOC Constituents	Sample Date	93-MW-31R DNG	MW-61R DNG	MW-73 DNG	MW-79 DNG
1,1,2-Trichloroethane, ug/L (CAS NO - 79-00-5)	7/25/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	N/A	N/A	N/A
	6/4/2024	< 1	< 1	< 1	< 1
	10/14/2024	< 1	< 1	< 1	< 1
1,1-Dichloroethane, ug/L (CAS NO - 75-34-3)	10/22/2018	< 1	< 1	N/A	N/A
	4/1/2019	< 1	< 1	N/A	N/A
	8/26/2019	**1.04**	0.332*	**5.8**	**5.1**
	6/16/2020	< 1	0.673*	**4.76**	**4.16**
	11/3/2020	**1.51**	**0.844**	**4.81**	**2.69**
	4/5/2021	< 1	0.995*	**4.7**	**3.36**
	8/25/2021	**1.05**	0.807*	**3.61**	**2.85**
	3/8/2022	**1.11**	0.722*	**3.43**	**1.1**
	6/22/2022	**1.07**	0.9*	**3.29**	**1.26**
	2/21/2023	0.59*	0.623*	N/A	**2.74**
	7/25/2023	< 1	< 1	N/A	**2.26**
	7/25/2023	< 1	N/A	N/A	N/A
	6/4/2024	< 1	0.54*	**3.5**	**3.65**
	10/14/2024	< 1	0.618*	**3.32**	**2.89**
1,1-Dichloroethene, ug/L (CAS NO - 75-35-4)	10/22/2018	< 2	< 2	N/A	N/A
	4/1/2019	< 2	< 2	N/A	N/A
	8/26/2019	< 2	< 2	< 2	< 2
	6/16/2020	< 2	< 2	< 2	< 2
	11/3/2020	< 2	< 2	< 2	< 2
	4/5/2021	< 2	< 2	< 2	< 2
	8/25/2021	< 2	< 2	< 2	< 2
	3/8/2022	0.688*	< 2	< 2	< 2
	6/22/2022	< 2	< 2	< 2	< 2
	2/21/2023	< 2	< 2	N/A	< 2
	7/25/2023	< 2	< 2	N/A	< 2
	7/25/2023	< 2	N/A	N/A	N/A
	6/4/2024	< 2	< 2	< 2	< 2
	10/14/2024	< 2	< 2	< 2	< 2
1,2,3-Trichloropropane, ug/L (CAS NO - 96-18-4)	10/22/2018	< 1	< 1	N/A	N/A
	4/1/2019	< 1	< 1	N/A	N/A
	8/26/2019	< 1	< 1	< 1	< 1
	6/16/2020	< 1	< 1	< 1	< 1
	11/3/2020	< 1	< 1	< 1	< 1
	4/5/2021	< 1	< 1	< 1	< 1
	8/25/2021	< 1	< 1	< 1	< 1
	3/8/2022	< 1	< 1	< 1	< 1
	6/22/2022	< 1	< 1	< 1	< 1
	2/21/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	N/A	N/A	N/A
	6/4/2024	< 1	< 1	< 1	< 1
	10/14/2024	< 1	< 1	< 1	< 1
1,2-Dibromo-3-Chloropropane, ug/L (CAS NO - 96-12-8)	10/22/2018	< 1.2	< 1.2	N/A	N/A
	4/1/2019	< 1.2	< 1.2	N/A	N/A
	8/26/2019	< 1.2	< 1.2	< 1.2	< 1.2
	6/16/2020	< 5	< 5	< 5	< 5
	11/3/2020	< 5	< 5	< 5	< 5
	4/5/2021	< 5	< 5	< 5	< 5

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - Source

Appendix I VOC Constituents	Sample Date	93-MW-31R DNG	MW-61R DNG	MW-73 DNG	MW-79 DNG
1,2-Dibromo-3-Chloropropane, ug/L (CAS NO - 96-12-8)	8/25/2021	< 5	< 5	< 5	< 5
	3/8/2022	< 5	< 5	< 5	< 5
	6/22/2022	< 5	< 5	< 5	< 5
	2/21/2023	< 5	< 5	N/A	< 5
	7/25/2023	< 5	< 5	N/A	< 5
	7/25/2023	< 5	N/A	N/A	N/A
	6/4/2024	< 5	< 5	< 5	< 5
	10/14/2024	< 5	< 5	< 5	< 5
1,2-Dibromoethane [EDB], ug/L (CAS NO - 106-93-4)	10/22/2018	< 0.34	< 0.34	N/A	N/A
	4/1/2019	< 0.34	< 0.34	N/A	N/A
	8/26/2019	< 0.34	< 0.34	< 0.34	< 0.34
	6/16/2020	< 1	< 1	< 1	< 1
	11/3/2020	< 1	< 1	< 1	< 1
	4/5/2021	< 1	< 1	< 1	< 1
	8/25/2021	< 1	< 1	< 1	< 1
	3/8/2022	< 1	< 1	< 1	< 1
	6/22/2022	< 1	< 1	< 1	< 1
	2/21/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	N/A	N/A	N/A
	6/4/2024	< 1	< 1	< 1	< 1
	10/14/2024	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene, ug/L (CAS NO - 95-50-1)	10/22/2018	< 1	< 1	N/A	N/A
	4/1/2019	< 1	< 1	N/A	N/A
	8/26/2019	< 1	< 1	< 1	< 1
	6/16/2020	< 1	< 1	< 1	< 1
	11/3/2020	< 1	< 1	< 1	< 1
	4/5/2021	< 1	< 1	< 1	< 1
	8/25/2021	< 1	< 1	< 1	< 1
	3/8/2022	< 1	< 1	< 1	< 1
	6/22/2022	< 1	< 1	< 1	< 1
	2/21/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	N/A	N/A	N/A
	6/4/2024	< 1	< 1	< 1	< 1
	10/14/2024	< 1	< 1	< 1	< 1
1,2-Dichloroethane, ug/L (CAS NO - 107-06-2)	10/22/2018	< 1	< 1	N/A	N/A
	4/1/2019	< 1	< 1	N/A	N/A
	8/26/2019	< 1	< 1	< 1	< 1
	6/16/2020	< 1	< 1	< 1	< 1
	11/3/2020	< 1	< 1	< 1	< 1
	4/5/2021	< 1	< 1	< 1	< 1
	8/25/2021	< 1	< 1	< 1	< 1
	3/8/2022	< 1	< 1	< 1	< 1
	6/22/2022	< 1	< 1	< 1	< 1
	2/21/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	N/A	N/A	N/A
	6/4/2024	< 1	< 1	< 1	< 1
	10/14/2024	< 1	< 1	< 1	< 1

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - Source

Appendix I VOC Constituents	Sample Date	93-MW-31R DNG	MW-61R DNG	MW-73 DNG	MW-79 DNG
1,2-Dichloropropane, ug/L (CAS NO - 78-87-5)	10/22/2018	< 1	< 1	N/A	N/A
	4/1/2019	< 1	< 1	N/A	N/A
	8/26/2019	< 1	< 1	**1.34**	0.644*
	6/16/2020	< 1	< 1	**1.32**	0.829*
	11/3/2020	**0.354**	< 1	**1.08**	**0.648**
	4/5/2021	< 1	< 1	**1.18**	0.702*
	8/25/2021	< 1	< 1	0.728*	0.436*
	3/8/2022	< 1	< 1	0.744*	< 1
	6/22/2022	0.278*	< 1	0.747*	< 1
	2/21/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	N/A	N/A	N/A
	6/4/2024	< 1	< 1	0.918*	0.404*
	10/14/2024	< 1	< 1	0.821*	0.344*
1,4-Dichlorobenzene, ug/L (CAS NO - 106-46-7)	10/22/2018	< 1	< 1	N/A	N/A
	4/1/2019	< 1	0.3*	N/A	N/A
	8/26/2019	< 1	< 1	< 1	0.394*
	6/16/2020	< 1	< 1	0.261*	**1.12**
	11/3/2020	< 1	< 1	< 1	**1.27**
	4/5/2021	< 1	< 1	0.446*	< 1
	8/25/2021	< 1	< 1	0.379*	0.638*
	3/8/2022	< 1	< 1	0.388*	0.563*
	6/22/2022	< 1	< 1	0.397*	0.546*
	2/21/2023	< 1	< 1	N/A	0.612*
	7/25/2023	< 1	< 1	N/A	0.753*
	7/25/2023	< 1	N/A	N/A	N/A
	6/4/2024	< 1	< 1	0.232*	< 1
	10/14/2024	< 1	< 1	< 1	0.96*
2-Butanone, ug/L (CAS NO - 78-93-3)	10/22/2018	< 10	< 10	N/A	N/A
	4/1/2019	< 10	< 10	N/A	N/A
	8/26/2019	< 10	< 10	< 10	< 10
	6/16/2020	< 10	< 10	< 10	< 10
	11/3/2020	< 10	< 10	< 10	< 10
	4/5/2021	< 10	< 10	< 10	< 10
	8/25/2021	< 10	< 10	< 10	< 10
	3/8/2022	< 10	< 10	< 10	< 10
	6/22/2022	< 10	< 10	< 10	2.55*
	2/21/2023	< 10	< 10	N/A	< 10
	7/25/2023	< 10	< 10	N/A	< 10
	7/25/2023	< 10	N/A	N/A	N/A
	6/4/2024	< 10	< 10	< 10	< 10
	10/14/2024	< 10	< 10	< 10	< 10
2-Hexanone, ug/L (CAS NO - 591-78-6)	10/22/2018	< 10	< 10	N/A	N/A
	4/1/2019	< 10	< 10	N/A	N/A
	8/26/2019	< 10	< 10	< 10	< 10
	6/16/2020	< 10	< 10	< 10	< 10
	11/3/2020	< 10	< 10	< 10	< 10
	4/5/2021	< 10	< 10	< 10	< 10
	8/25/2021	< 10	< 10	< 10	< 10
	3/8/2022	< 10	< 10	< 10	< 10
	6/22/2022	< 10	< 10	< 10	< 10
	2/21/2023	< 10	< 10	N/A	< 10

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - Source

Appendix I VOC Constituents	Sample Date	93-MW-31R DNG	MW-61R DNG	MW-73 DNG	MW-79 DNG
2-Hexanone, ug/L (CAS NO - 591-78-6)	7/25/2023	< 10	< 10	N/A	< 10
	7/25/2023	< 10	N/A	N/A	N/A
	6/4/2024	< 10	< 10	< 10	< 10
	10/14/2024	< 10	< 10	< 10	< 10
4-Methyl-2-Pentanone, ug/L (CAS NO - 108-10-1)	10/22/2018	< 10	< 10	N/A	N/A
	4/1/2019	< 10	< 10	N/A	N/A
	8/26/2019	< 10	< 10	< 10	< 10
	6/16/2020	< 10	< 10	< 10	< 10
	11/3/2020	< 10	< 10	< 10	< 10
	4/5/2021	< 10	< 10	< 10	< 10
	8/25/2021	< 10	< 10	< 10	< 10
	3/8/2022	< 10	< 10	< 10	< 10
	6/22/2022	< 10	< 10	< 10	< 10
	2/21/2023	< 10	< 10	N/A	< 10
	7/25/2023	< 10	< 10	N/A	< 10
	7/25/2023	< 10	N/A	N/A	N/A
	6/4/2024	< 10	< 10	< 10	< 10
	10/14/2024	< 10	< 10	< 10	< 10
Acetone, ug/L (CAS NO - 67-64-1)	10/22/2018	< 10	3.23*	N/A	N/A
	4/1/2019	< 10	< 10	N/A	N/A
	8/26/2019	< 10	< 10	< 10	3.4*
	6/16/2020	< 10	< 10	< 10	< 10
	11/3/2020	< 10	< 10	< 10	< 10
	4/5/2021	< 10	< 10	< 10	< 10
	8/25/2021	< 10	< 10	< 10	< 10
	3/8/2022	< 10	< 10	< 10	< 10
	6/22/2022	< 10	< 10	< 10	5.53*
	2/21/2023	< 10	< 10	N/A	< 10
	7/25/2023	< 10	< 10	N/A	< 10
	7/25/2023	< 10	N/A	N/A	N/A
	6/4/2024	< 10	< 10	< 10	< 10
	10/14/2024	< 10	< 10	< 10	< 10
Acrylonitrile, ug/L (CAS NO - 107-13-1)	10/22/2018	< 10	< 10	N/A	N/A
	4/1/2019	< 10	< 10	N/A	N/A
	8/26/2019	< 10	< 10	< 10	< 10
	6/16/2020	< 5	< 5	< 5	< 5
	11/3/2020	< 5	< 5	< 5	< 5
	4/5/2021	< 5	< 5	< 5	< 5
	8/25/2021	< 5	< 5	< 5	< 5
	3/8/2022	< 5	< 5	< 5	< 5
	6/22/2022	< 5	< 5	< 5	< 5
	2/21/2023	< 5	< 5	N/A	< 5
	7/25/2023	< 5	< 5	N/A	< 5
	7/25/2023	< 5	N/A	N/A	N/A
	6/4/2024	< 5	< 5	< 5	< 5
	10/14/2024	< 5	< 5	< 5	< 5
Benzene, ug/L (CAS NO - 71-43-2)	8/21/2014	N/A	N/A	**0.535**	N/A
	10/9/2014	N/A	N/A	**0.586**	N/A
	5/18/2015	N/A	N/A	**0.515**	N/A
	8/13/2015	N/A	N/A	N/A	0.421*
	8/14/2015	N/A	N/A	**0.651**	N/A
	4/5/2016	N/A	N/A	**0.658**	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - Source

Appendix I VOC Constituents	Sample Date	93-MW-31R DNG	MW-61R DNG	MW-73 DNG	MW-79 DNG
Benzene, ug/L (CAS NO - 71-43-2)	9/13/2016	N/A	N/A	**0.553**	N/A
	4/19/2017	N/A	N/A	**0.503**	N/A
	8/3/2017	N/A	N/A	**0.599**	N/A
	3/5/2018	N/A	N/A	0.491*	N/A
	10/3/2018	N/A	N/A	**0.772**	0.43*
	10/22/2018	< 0.5	< 0.5	N/A	N/A
	4/1/2019	< 0.5	< 0.5	**1.06**	**0.624**
	8/26/2019	0.241*	< 0.5	**0.91**	**0.631**
	6/16/2020	< 0.5	< 0.5	**0.617**	0.462*
	11/3/2020	**1**	< 0.5	**0.541**	**0.438**
	4/5/2021	< 0.5	< 0.5	0.487*	0.416*
	8/25/2021	**0.696**	0.269*	**0.507**	0.455*
	3/8/2022	< 0.5	< 0.5	0.416*	< 0.5
	6/22/2022	**0.501**	< 0.5	0.371*	< 0.5
	2/21/2023	0.346*	< 0.5	N/A	**0.526**
	7/25/2023	< 0.5	< 0.5	N/A	0.358*
	7/25/2023	< 0.5	N/A	N/A	N/A
	6/4/2024	< 0.5	< 0.5	0.479*	0.301*
	10/14/2024	< 0.5	< 0.5	**0.514**	0.349*
Bromochloromethane, ug/L (CAS NO - 74-97-5)	10/22/2018	< 5	< 5	N/A	N/A
	4/1/2019	< 5	< 5	N/A	N/A
	8/26/2019	< 5	< 5	< 5	< 5
	6/16/2020	< 5	< 5	< 5	< 5
	11/3/2020	< 5	< 5	< 5	< 5
	4/5/2021	< 5	< 5	< 5	< 5
	8/25/2021	< 5	< 5	< 5	< 5
	3/8/2022	< 5	< 5	< 5	< 5
	6/22/2022	< 5	< 5	< 5	< 5
	2/21/2023	< 5	< 5	N/A	< 5
	7/25/2023	< 5	< 5	N/A	< 5
	7/25/2023	< 5	N/A	N/A	N/A
	6/4/2024	< 5	< 5	< 5	< 5
	10/14/2024	< 5	< 5	< 5	< 5
Bromodichloromethane, ug/L (CAS NO - 75-27-4)	10/22/2018	< 1	< 1	N/A	N/A
	4/1/2019	< 1	< 1	N/A	N/A
	8/26/2019	< 1	< 1	< 1	< 1
	6/16/2020	< 1	< 1	< 1	< 1
	11/3/2020	< 1	< 1	< 1	< 1
	4/5/2021	< 1	< 1	< 1	< 1
	8/25/2021	< 1	< 1	< 1	< 1
	3/8/2022	< 1	< 1	< 1	< 1
	6/22/2022	< 1	< 1	< 1	< 1
	2/21/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	N/A	N/A	N/A
	6/4/2024	< 1	< 1	< 1	< 1
	10/14/2024	< 1	< 1	< 1	< 1
Bromoform, ug/L (CAS NO - 75-25-2)	10/22/2018	< 5	< 5	N/A	N/A
	4/1/2019	< 5	< 5	N/A	N/A
	8/26/2019	< 5	< 5	< 5	< 5
	6/16/2020	< 5	< 5	< 5	< 5
	11/3/2020	< 5	< 5	< 5	< 5

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - Source

Appendix I VOC Constituents	Sample Date	93-MW-31R DNG	MW-61R DNG	MW-73 DNG	MW-79 DNG
Bromoform, ug/L (CAS NO - 75-25-2)	4/5/2021	< 5	< 5	< 5	< 5
	8/25/2021	< 5	< 5	< 5	< 5
	3/8/2022	< 5	< 5	< 5	< 5
	6/22/2022	< 5	< 5	< 5	< 5
	2/21/2023	< 5	< 5	N/A	< 5
	7/25/2023	< 5	< 5	N/A	< 5
	7/25/2023	< 5	N/A	N/A	N/A
	6/4/2024	< 5	< 5	< 5	< 5
	10/14/2024	< 5	< 5	< 5	< 5
Bromomethane, ug/L (CAS NO - 74-83-9)	10/22/2018	< 4	< 4	N/A	N/A
	4/1/2019	< 4	< 4	N/A	N/A
	8/26/2019	< 4	< 4	< 4	< 4
	6/16/2020	< 4	< 4	< 4	< 4
	11/3/2020	< 4	< 4	< 4	< 4
	4/5/2021	< 4	< 4	< 4	< 4
	8/25/2021	< 4	< 4	< 4	< 4
	3/8/2022	< 4	< 4	< 4	< 4
	6/22/2022	< 4	< 4	< 4	< 4
	2/21/2023	< 4	< 4	N/A	< 4
	7/25/2023	< 4	< 4	N/A	< 4
	7/25/2023	< 4	N/A	N/A	N/A
	6/4/2024	< 4	< 4	< 4	< 4
	10/14/2024	< 4	< 4	< 4	< 4
Carbon Disulfide, ug/L (CAS NO - 75-15-0)	10/22/2018	< 1	< 1	N/A	N/A
	4/1/2019	< 1	< 1	N/A	N/A
	8/26/2019	< 1	< 1	0.513*	< 1
	6/16/2020	< 1	< 1	< 1	< 1
	11/3/2020	< 1	< 1	< 1	< 1
	4/5/2021	< 1	< 1	< 1	< 1
	8/25/2021	< 1	< 1	< 1	< 1
	3/8/2022	< 1	< 1	0.518*	< 1
	6/22/2022	< 1	< 1	< 1	0.525*
	2/21/2023	< 1	< 1	N/A	**5.98**
	7/25/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	N/A	N/A	N/A
	6/4/2024	< 1	< 1	< 1	< 1
	10/14/2024	< 1	< 1	< 1	< 1
Carbon Tetrachloride, ug/L (CAS NO - 56-23-5)	10/22/2018	< 2	< 2	N/A	N/A
	4/1/2019	< 2	< 2	N/A	N/A
	8/26/2019	< 2	< 2	< 2	< 2
	6/16/2020	< 2	< 2	< 2	< 2
	11/3/2020	< 2	< 2	< 2	< 2
	4/5/2021	< 2	< 2	< 2	< 2
	8/25/2021	< 2	< 2	< 2	< 2
	3/8/2022	< 2	< 2	< 2	< 2
	6/22/2022	< 2	< 2	< 2	< 2
	2/21/2023	< 2	< 2	N/A	< 2
	7/25/2023	< 2	< 2	N/A	< 2
	7/25/2023	< 2	N/A	N/A	N/A
	6/4/2024	< 2	< 2	< 2	< 2
	10/14/2024	< 2	< 2	< 2	< 2

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - Source

Appendix I VOC Constituents	Sample Date	93-MW-31R DNG	MW-61R DNG	MW-73 DNG	MW-79 DNG
Chlorobenzene, ug/L (CAS NO - 108-90-7)	10/22/2018	< 1	< 1	N/A	N/A
	4/1/2019	< 1	< 1	N/A	N/A
	8/26/2019	< 1	< 1	< 1	< 1
	6/16/2020	< 1	< 1	< 1	< 1
	11/3/2020	< 1	< 1	< 1	< 1
	4/5/2021	< 1	< 1	< 1	< 1
	8/25/2021	< 1	< 1	0.422*	< 1
	3/8/2022	< 1	< 1	< 1	< 1
	6/22/2022	< 1	< 1	< 1	< 1
	2/21/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	N/A	N/A	N/A
	6/4/2024	< 1	< 1	< 1	< 1
	10/14/2024	< 1	< 1	< 1	< 1
Chlorodibromomethane, ug/L (CAS NO - 124-48-1)	10/22/2018	< 5	< 5	N/A	N/A
	4/1/2019	< 5	< 5	N/A	N/A
	8/26/2019	< 5	< 5	< 5	< 5
	6/16/2020	< 5	< 5	< 5	< 5
	11/3/2020	< 5	< 5	< 5	< 5
	4/5/2021	< 5	< 5	< 5	< 5
	8/25/2021	< 5	< 5	< 5	< 5
	3/8/2022	< 5	< 5	< 5	< 5
	6/22/2022	< 5	< 5	< 5	< 5
	2/21/2023	< 5	< 5	N/A	< 5
	7/25/2023	< 5	< 5	N/A	< 5
	7/25/2023	< 5	N/A	N/A	N/A
	6/4/2024	< 5	< 5	< 5	< 5
	10/14/2024	< 5	< 5	< 5	< 5
Chloroethane, ug/L (CAS NO - 75-00-3)	10/22/2018	< 4	< 4	N/A	N/A
	4/1/2019	< 4	< 4	N/A	N/A
	8/26/2019	< 4	< 4	< 4	< 4
	6/16/2020	< 4	< 4	< 4	< 4
	11/3/2020	< 4	< 4	< 4	< 4
	4/5/2021	< 4	< 4	< 4	0.815*
	8/25/2021	< 4	< 4	< 4	< 4
	3/8/2022	< 4	< 4	< 4	< 4
	6/22/2022	< 4	< 4	< 4	< 4
	2/21/2023	< 4	< 4	N/A	< 4
	7/25/2023	< 4	< 4	N/A	< 4
	7/25/2023	< 4	N/A	N/A	N/A
	6/4/2024	< 4	< 4	< 4	< 4
	10/14/2024	< 4	< 4	< 4	< 4
Chloroform, ug/L (CAS NO - 67-66-3)	10/22/2018	< 3	**4.03**	N/A	N/A
	4/1/2019	< 3	< 3	N/A	N/A
	8/26/2019	< 3	< 3	< 3	< 3
	6/16/2020	< 3	< 3	< 3	< 3
	11/3/2020	< 3	< 3	< 3	< 3
	4/5/2021	< 3	< 3	< 3	< 3
	8/25/2021	< 3	< 3	< 3	< 3
	3/8/2022	< 3	< 3	< 3	< 3
	6/22/2022	< 3	< 3	< 3	< 3
	2/21/2023	< 3	< 3	N/A	< 3

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - Source

Appendix I VOC Constituents	Sample Date	93-MW-31R DNG	MW-61R DNG	MW-73 DNG	MW-79 DNG
Chloroform, ug/L (CAS NO - 67-66-3)	7/25/2023	< 3	< 3	N/A	< 3
	7/25/2023	< 3	N/A	N/A	N/A
	6/4/2024	< 3	< 3	< 3	< 3
	10/14/2024	< 3	< 3	< 3	< 3
Chloromethane, ug/L (CAS NO - 74-87-3)	10/22/2018	< 3	< 3	N/A	N/A
	4/1/2019	< 3	< 3	N/A	N/A
	8/26/2019	< 3	< 3	< 3	< 3
	6/16/2020	< 3	< 3	< 3	< 3
	11/3/2020	< 3	< 3	< 3	< 3
	4/5/2021	< 3	< 3	< 3	< 3
	8/25/2021	< 3	< 3	< 3	< 3
	3/8/2022	< 3	< 3	< 3	< 3
	6/22/2022	< 3	< 3	1.83*	< 3
	2/21/2023	< 3	< 3	N/A	< 3
	7/25/2023	< 3	< 3	N/A	< 3
	7/25/2023	< 3	N/A	N/A	N/A
	6/4/2024	< 3	< 3	< 3	< 3
	10/14/2024	< 3	< 3	< 3	< 3
cis-1,2-Dichloroethene, ug/L (CAS NO - 156-59-2)	8/21/2014	N/A	N/A	**44.7**	N/A
	10/9/2014	N/A	N/A	**46.4**	N/A
	5/18/2015	N/A	N/A	**38.7**	N/A
	8/13/2015	N/A	N/A	N/A	**66.3**
	8/14/2015	N/A	N/A	**40.3**	N/A
	4/5/2016	N/A	N/A	**35.9**	**69.6**
	9/13/2016	N/A	N/A	**35.7**	**53**
	4/19/2017	N/A	N/A	**36.4**	**94.7**
	8/3/2017	N/A	N/A	**42.8**	**84.4**
	3/5/2018	N/A	N/A	**39.6**	**72.9**
	10/3/2018	N/A	N/A	**51.5**	**64**
	10/22/2018	0.875*	**1.43**	N/A	N/A
	4/1/2019	0.913*	**2.95**	**57.2**	**67.1**
	8/26/2019	**8.15**	**1.86**	**54.3**	**78.4**
	6/16/2020	0.546*	**2.68**	**51.9**	**68.8**
	11/3/2020	**24.7**	**7.6**	**40.1**	**61.8**
	4/5/2021	< 1	**12.7**	**46.1**	**60**
	8/25/2021	**20.5**	**7.46**	**34.9**	**46.8**
	3/8/2022	**20.7**	**10.5**	**31.8**	**17.2**
	6/22/2022	**15.6**	**10.4**	**29.2**	**17.6**
	2/21/2023	**4.84**	**7.37**	N/A	**38.8**
	7/25/2023	**5.88**	**17.3**	N/A	**38.2**
	7/25/2023	**5.72**	N/A	N/A	N/A
	6/4/2024	< 1	**12.5**	**37.5**	**38.2**
	10/14/2024	**1.5**	**16**	**38.7**	**35.7**
cis-1,3-Dichloropropene, ug/L (CAS NO - 10061-01-5)	10/22/2018	< 5	< 5	N/A	N/A
	4/1/2019	< 5	< 5	N/A	N/A
	8/26/2019	< 5	< 5	< 5	< 5
	6/16/2020	< 5	< 5	< 5	< 5
	11/3/2020	< 5	< 5	< 5	< 5
	4/5/2021	< 5	< 5	< 5	< 5
	8/25/2021	< 5	< 5	< 5	< 5
	3/8/2022	< 5	< 5	< 5	< 5
	6/22/2022	< 5	< 5	< 5	< 5

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - Source

Appendix I VOC Constituents	Sample Date	93-MW-31R DNG	MW-61R DNG	MW-73 DNG	MW-79 DNG
cis-1,3-Dichloropropene, ug/L (CAS NO - 10061-01-5)	2/21/2023	< 5	< 5	N/A	< 5
	7/25/2023	< 5	< 5	N/A	< 5
	7/25/2023	< 5	N/A	N/A	N/A
	6/4/2024	< 5	< 5	< 5	< 5
	10/14/2024	< 5	< 5	< 5	< 5
Ethylbenzene, ug/L (CAS NO - 100-41-4)	10/22/2018	< 1	< 1	N/A	N/A
	4/1/2019	< 1	< 1	N/A	N/A
	8/26/2019	< 1	< 1	< 1	< 1
	6/16/2020	< 1	< 1	< 1	< 1
	11/3/2020	< 1	< 1	< 1	< 1
	4/5/2021	< 1	< 1	< 1	< 1
	8/25/2021	< 1	< 1	< 1	< 1
	3/8/2022	< 1	< 1	< 1	< 1
	6/22/2022	< 1	< 1	< 1	< 1
	2/21/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	N/A	N/A	N/A
	6/4/2024	< 1	< 1	< 1	< 1
	10/14/2024	< 1	< 1	< 1	< 1
Iodomethane, ug/L (CAS NO - 74-88-4)	10/22/2018	< 10	< 10	N/A	N/A
	4/1/2019	< 10	< 10	N/A	N/A
	8/26/2019	< 10	< 10	< 10	< 10
	6/16/2020	< 10	< 10	< 10	< 10
	11/3/2020	< 10	< 10	< 10	< 10
	4/5/2021	< 10	< 10	< 10	< 10
	8/25/2021	< 10	< 10	< 10	< 10
	3/8/2022	< 10	< 10	< 10	< 10
	6/22/2022	< 10	< 10	< 10	< 10
	2/21/2023	< 10	< 10	N/A	< 10
	7/25/2023	< 10	< 10	N/A	< 10
	7/25/2023	< 10	N/A	N/A	N/A
	6/4/2024	< 10	< 10	< 10	< 10
	10/14/2024	< 10	< 10	< 10	< 10
Methylene Bromide, ug/L (CAS NO - 74-95-3)	10/22/2018	< 1	< 1	N/A	N/A
	4/1/2019	< 1	< 1	N/A	N/A
	8/26/2019	< 1	< 1	< 1	< 1
	6/16/2020	< 1	< 1	< 1	< 1
	11/3/2020	< 1	< 1	< 1	< 1
	4/5/2021	< 1	< 1	< 1	< 1
	8/25/2021	< 1	< 1	< 1	< 1
	3/8/2022	< 1	< 1	< 1	< 1
	6/22/2022	< 1	< 1	< 1	< 1
	2/21/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	N/A	N/A	N/A
	6/4/2024	< 1	< 1	< 1	< 1
	10/14/2024	< 1	< 1	< 1	< 1
Methylene Chloride, ug/L (CAS NO - 75-09-2)	10/9/2014	N/A	N/A	< 5	N/A
	10/22/2018	< 5	< 5	N/A	N/A
	4/1/2019	< 5	< 5	N/A	N/A
	8/26/2019	< 5	< 5	< 5	< 5
	6/16/2020	< 5	< 5	< 5	< 5

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - Source

Appendix I VOC Constituents	Sample Date	93-MW-31R DNG	MW-61R DNG	MW-73 DNG	MW-79 DNG
Methylene Chloride, ug/L (CAS NO - 75-09-2)	11/3/2020	< 5	< 5	< 5	< 5
	4/5/2021	< 5	< 5	< 5	< 5
	8/25/2021	< 5	< 5	< 5	< 5
	3/8/2022	< 5	< 5	< 5	< 5
	6/22/2022	< 5	< 5	< 5	< 5
	2/21/2023	< 5	< 5	N/A	< 5
	7/25/2023	< 5	< 5	N/A	< 5
	7/25/2023	< 5	N/A	N/A	N/A
	6/4/2024	< 5	< 5	< 5	< 5
	10/14/2024	< 5	< 5	< 5	< 5
Styrene, ug/L (CAS NO - 100-42-5)	10/22/2018	< 1	< 1	N/A	N/A
	4/1/2019	< 1	< 1	N/A	N/A
	8/26/2019	< 1	< 1	< 1	< 1
	6/16/2020	< 1	< 1	< 1	< 1
	11/3/2020	< 1	< 1	< 1	< 1
	4/5/2021	< 1	< 1	< 1	< 1
	8/25/2021	< 1	< 1	< 1	< 1
	3/8/2022	< 1	< 1	< 1	< 1
	6/22/2022	< 1	< 1	< 1	< 1
	2/21/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	N/A	N/A	N/A
	6/4/2024	< 1	< 1	< 1	< 1
	10/14/2024	< 1	< 1	< 1	< 1
Tetrachloroethene, ug/L (CAS NO - 127-18-4)	8/21/2014	N/A	N/A	**18.4**	N/A
	10/9/2014	N/A	N/A	**19.5**	N/A
	5/18/2015	N/A	N/A	**17**	N/A
	8/13/2015	N/A	N/A	N/A	< 1
	8/14/2015	N/A	N/A	**16.8**	N/A
	4/5/2016	N/A	N/A	**14.4**	0.372*
	9/13/2016	N/A	N/A	**14.2**	< 1
	4/19/2017	N/A	N/A	**10.8**	N/A
	8/3/2017	N/A	N/A	**14.7**	N/A
	3/5/2018	N/A	N/A	**10.2**	N/A
	10/3/2018	N/A	N/A	**9.54**	N/A
	10/22/2018	< 1	< 1	N/A	N/A
	4/1/2019	< 1	0.643*	**8.8**	< 1
	8/26/2019	**2.31**	0.698*	**8.15**	< 1
	6/16/2020	< 1	0.653*	**5.43**	< 1
	11/3/2020	< 1	< 1	**3.97**	< 1
	4/5/2021	< 1	< 1	**4.28**	< 1
	8/25/2021	< 1	< 1	**3.69**	< 1
	3/8/2022	< 1	< 1	**2.9**	< 1
	6/22/2022	< 1	< 1	**2.98**	< 1
	2/21/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	N/A	N/A	N/A
	6/4/2024	< 1	< 1	**2.36**	< 1
	10/14/2024	< 1	< 1	**1.77**	< 1

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - Source

Appendix I VOC Constituents	Sample Date	93-MW-31R DNG	MW-61R DNG	MW-73 DNG	MW-79 DNG
Toluene, ug/L (CAS NO - 108-88-3)	10/22/2018	< 1	< 1	N/A	N/A
	4/1/2019	< 1	< 1	N/A	N/A
	8/26/2019	< 1	< 1	< 1	< 1
	6/16/2020	< 1	< 1	< 1	< 1
	11/3/2020	< 1	< 1	< 1	< 1
	4/5/2021	< 1	< 1	< 1	< 1
	8/25/2021	< 1	< 1	< 1	< 1
	3/8/2022	< 1	< 1	< 1	< 1
	6/22/2022	< 1	< 1	< 1	< 1
	2/21/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	N/A	N/A	N/A
	6/4/2024	< 1	< 1	< 1	< 1
	10/14/2024	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene, ug/L (CAS NO - 156-60-5)	10/22/2018	< 1	< 1	N/A	N/A
	4/1/2019	< 1	< 1	N/A	N/A
	8/26/2019	< 1	< 1	**1.16**	**1.27**
	6/16/2020	< 1	< 1	**1.04**	**1.01**
	11/3/2020	**0.684**	< 1	**0.911**	**1.04**
	4/5/2021	< 1	0.275*	0.915*	**1.07**
	8/25/2021	0.71*	0.376*	0.779*	0.77*
	3/8/2022	0.521*	< 1	0.827*	0.295*
	6/22/2022	0.326*	< 1	0.681*	< 1
	2/21/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	N/A	N/A	N/A
	6/4/2024	< 1	0.273*	0.702*	0.766*
	10/14/2024	< 1	0.443*	0.776*	0.632*
trans-1,3-Dichloropropene, ug/L (CAS NO - 10061-02-6)	10/22/2018	< 5	< 5	N/A	N/A
	4/1/2019	< 5	< 5	N/A	N/A
	8/26/2019	< 5	< 5	< 5	< 5
	6/16/2020	< 5	< 5	< 5	< 5
	11/3/2020	< 5	< 5	< 5	< 5
	4/5/2021	< 5	< 5	< 5	< 5
	8/25/2021	< 5	< 5	< 5	< 5
	3/8/2022	< 5	< 5	< 5	< 5
	6/22/2022	< 5	< 5	< 5	< 5
	2/21/2023	< 5	< 5	N/A	< 5
	7/25/2023	< 5	< 5	N/A	< 5
	7/25/2023	< 5	N/A	N/A	N/A
	6/4/2024	< 5	< 5	< 5	< 5
	10/14/2024	< 5	< 5	< 5	< 5
trans-1,4-Dichloro-2-Butene, ug/L (CAS NO - 110-57-6)	10/22/2018	< 10	< 10	N/A	N/A
	4/1/2019	< 10	< 10	N/A	N/A
	8/26/2019	< 10	< 10	< 10	< 10
	6/16/2020	< 10	< 10	< 10	< 10
	11/3/2020	< 10	< 10	< 10	< 10
	4/5/2021	< 10	< 10	< 10	< 10
	8/25/2021	< 10	< 10	< 10	< 10
	3/8/2022	< 10	< 10	< 10	< 10
	6/22/2022	< 10	< 10	< 10	< 10
	2/21/2023	< 10	< 10	N/A	< 10

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - Source

Appendix I VOC Constituents	Sample Date	93-MW-31R DNG	MW-61R DNG	MW-73 DNG	MW-79 DNG
trans-1,4-Dichloro-2-Butene, ug/L (CAS NO - 110-57-6)	7/25/2023	< 10	< 10	N/A	< 10
	7/25/2023	< 10	N/A	N/A	N/A
	6/4/2024	< 10	< 10	< 10	< 10
	10/14/2024	< 10	< 10	< 10	< 10
Trichloroethene, ug/L (CAS NO - 79-01-6)	8/21/2014	N/A	N/A	**13.6**	N/A
	10/9/2014	N/A	N/A	**13.1**	N/A
	5/18/2015	N/A	N/A	**11.9**	N/A
	8/13/2015	N/A	N/A	N/A	0.339*
	8/14/2015	N/A	N/A	**10.9**	N/A
	4/5/2016	N/A	N/A	**9.95**	0.539*
	9/13/2016	N/A	N/A	**10.6**	0.298*
	4/19/2017	N/A	N/A	**8.99**	0.533*
	8/3/2017	N/A	N/A	**11.2**	0.67*
	3/5/2018	N/A	N/A	**9.85**	0.427*
	10/3/2018	N/A	N/A	**9.91**	< 1
	10/22/2018	< 1	< 1	N/A	N/A
	4/1/2019	< 1	0.676*	**10.2**	< 1
	8/26/2019	**2.1**	0.691*	**9.67**	0.439*
	6/16/2020	< 1	< 1	**8.51**	< 1
	11/3/2020	**1.12**	< 1	**7.66**	< 1
	4/5/2021	< 1	< 1	**7.49**	< 1
	8/25/2021	0.553*	< 1	**6.35**	< 1
	3/8/2022	< 1	< 1	**6.15**	< 1
	6/22/2022	< 1	< 1	**5.78**	< 1
	2/21/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	< 1	N/A	< 1
	7/25/2023	< 1	N/A	N/A	N/A
	6/4/2024	< 1	< 1	**5.02**	< 1
	10/14/2024	< 1	< 1	**4.2**	< 1
Trichlorofluoromethane, ug/L (CAS NO - 75-69-4)	10/22/2018	< 4	< 4	N/A	N/A
	4/1/2019	< 4	< 4	N/A	N/A
	8/26/2019	< 4	< 4	< 4	< 4
	6/16/2020	< 4	< 4	< 4	< 4
	11/3/2020	< 4	< 4	< 4	< 4
	4/5/2021	< 4	< 4	< 4	< 4
	8/25/2021	< 4	< 4	< 4	< 4
	3/8/2022	< 4	< 4	< 4	< 4
	6/22/2022	< 4	< 4	< 4	< 4
	2/21/2023	< 4	< 4	N/A	< 4
	7/25/2023	< 4	< 4	N/A	< 4
	7/25/2023	< 4	N/A	N/A	N/A
	6/4/2024	< 4	< 4	< 4	< 4
	10/14/2024	< 4	< 4	< 4	< 4
Vinyl Acetate, ug/L (CAS NO - 108-05-4)	10/22/2018	< 10	< 10	N/A	N/A
	4/1/2019	< 10	< 10	N/A	N/A
	8/26/2019	< 10	< 10	< 10	< 10
	6/16/2020	< 10	< 10	< 10	< 10
	11/3/2020	< 10	< 10	< 10	< 10
	4/5/2021	< 10	< 10	< 10	< 10
	8/25/2021	< 10	< 10	< 10	< 10
	3/8/2022	< 10	< 10	< 10	< 10
	6/22/2022	< 10	< 10	< 10	< 10

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - Source

Appendix I VOC Constituents	Sample Date	93-MW-31R DNG	MW-61R DNG	MW-73 DNG	MW-79 DNG
Vinyl Acetate, ug/L (CAS NO - 108-05-4)	2/21/2023	< 10	< 10	N/A	< 10
	7/25/2023	< 10	< 10	N/A	< 10
	7/25/2023	< 10	N/A	N/A	N/A
	6/4/2024	< 10	< 10	< 10	< 10
	10/14/2024	< 10	< 10	< 10	< 10
Vinyl Chloride, ug/L (CAS NO - 75-01-4)	8/21/2014	N/A	N/A	**5.49**	N/A
	10/9/2014	N/A	N/A	**4.71**	N/A
	5/18/2015	N/A	N/A	**3.64**	N/A
	8/13/2015	N/A	N/A	N/A	**2.37**
	8/14/2015	N/A	N/A	**3.94**	N/A
	4/5/2016	N/A	N/A	**3.9**	**3.21**
	9/13/2016	N/A	N/A	**3.09**	**1.71**
	4/19/2017	N/A	N/A	**3.04**	**2.89**
	8/3/2017	N/A	N/A	**4.02**	**2.22**
	3/5/2018	N/A	N/A	**3.85**	**2.73**
	10/3/2018	N/A	N/A	**4.27**	**3.63**
	10/22/2018	< 1	< 1	N/A	N/A
	4/1/2019	< 1	< 1	**7.15**	**4.71**
	8/26/2019	0.556*	< 1	**5.81**	**5.02**
	6/16/2020	< 1	< 1	**5.01**	**3.63**
	11/3/2020	**2.08**	< 1	**3.62**	**3.2**
	4/5/2021	< 1	< 1	**4.56**	**4.46**
	8/25/2021	**2.43**	< 1	**2.99**	**2.37**
	3/8/2022	**2.4**	< 1	**2.63**	0.796*
	6/22/2022	**1.7**	< 1	**3.23**	**1.15**
	2/21/2023	0.403*	< 1	N/A	**4.54**
	7/25/2023	< 1	< 1	N/A	**4.98**
	7/25/2023	< 1	N/A	N/A	N/A
	6/4/2024	< 1	< 1	**3.66**	**5.19**
	10/14/2024	< 1	< 1	**3.18**	**6.36**
Xylenes, total, ug/L (CAS NO - 1330-20-7)	10/22/2018	< 3	< 3	N/A	N/A
	4/1/2019	< 3	< 3	N/A	N/A
	8/26/2019	< 3	< 3	< 3	< 3
	6/16/2020	< 3	< 3	< 3	< 3
	11/3/2020	< 3	< 3	< 3	< 3
	4/5/2021	< 3	< 3	< 3	< 3
	8/25/2021	< 3	< 3	< 3	0.519*
	3/8/2022	< 3	< 3	< 3	< 3
	6/22/2022	< 3	< 3	< 3	< 3
	2/21/2023	< 3	< 3	N/A	< 3
	7/25/2023	< 3	< 3	N/A	< 3
	7/25/2023	< 3	N/A	N/A	N/A
	6/4/2024	< 3	< 3	< 3	< 3
	10/14/2024	< 3	< 3	< 3	< 3

Note: * indicates 'J flag'. Detection is below the reporting limit, but greater than the MDL (Method Detection Limit). The concentration is estimated.

Denotes Detection.
Denotes Confirmed Outlier. Statistically Excluded.

Sampling performed over multiple dates is recorded on the first date sampled. Refer to field forms for exact sample date.

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - Source

Other Constituents	Sample Date	93-MW-31R DNG	MW-61R DNG	MW-73 DNG	MW-79 DNG
Endosulfan I, ug/L (CAS NO - 959-98-8)	10/22/2018	N/A	**0.132**	N/A	N/A
	4/1/2019	N/A	**0.0654**	N/A	N/A
	8/26/2019	N/A	< 0.033	N/A	N/A
	6/16/2020	N/A	< 0.034	N/A	N/A
	11/3/2020	N/A	< 0.0337	N/A	N/A
	4/5/2021	N/A	0.00495*	N/A	N/A
	8/25/2021	N/A	< 0.034	N/A	N/A
	3/8/2022	N/A	< 0.064	N/A	N/A
	6/22/2022	N/A	< 0.0627	N/A	N/A
	7/25/2023	N/A	< 0.0604	N/A	N/A
	6/4/2024	N/A	< 0.0909	N/A	N/A

Note: * indicates 'J flag'. Detection is below the reporting limit, but greater than the MDL (Method Detection Limit). The concentration is estimated.

Denotes Detection.
Denotes Confirmed Outlier. Statistically Excluded.

Sampling performed over multiple dates is recorded on the first date sampled. Refer to field forms for exact sample date.

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - Source

Total Natural_Attenuations Constituents	Sample Date	93-MW-31R DNG	MW-61R DNG	MW-73 DNG	MW-79 DNG
Iron, Total, mg/L (CAS NO - 7439-89-6)	8/21/2014	N/A	N/A	**6.18**	N/A
	8/13/2015	N/A	N/A	N/A	**16.5**
	8/14/2015	N/A	N/A	**9.88**	N/A
	6/16/2020	0.245*	**2.51**	**6.59**	**1.2**
	4/5/2021	**0.823**	**3.7**	**7.76**	**0.822**
	8/25/2021	**4.64**	**11.2**	**8.98**	**1.81**
	3/8/2022	**10.1**	**6.16**	**5.57**	0.257*
	2/21/2023	**3.86**	**6.48**	N/A	**0.197**
	6/4/2024	**14.5**	**6.17**	**11.1**	0.264*
Manganese, mg/L (CAS NO - 7439-96-5)	8/21/2014	N/A	N/A	**5.99**	N/A
	8/13/2015	N/A	N/A	N/A	**6.2**
	8/14/2015	N/A	N/A	**6.93**	N/A
	6/16/2020	**0.182**	**4.09**	**5.66**	**14.9**
	4/5/2021	**0.196**	**5.99**	**6.19**	**18.1**
	8/25/2021	**38.1**	**7.51**	**5.23**	**21.1**
	3/8/2022	**40.5**	**6.04**	**5.35**	**13.1**
	2/21/2023	**6.84**	**3.54**	N/A	**19.3**
	6/4/2024	**0.397**	**6.41**	**5.54**	**16.3**
Nitrate (NO3), mg/L (CAS NO - 14797-55-8)	8/21/2014	N/A	N/A	< 0.1	N/A
	8/13/2015	N/A	N/A	N/A	< 0.1
	8/14/2015	N/A	N/A	< 0.1	N/A
	6/16/2020	**2.43**	< 0.1	< 0.1	< 0.1
	6/16/2020	N/A	< 0.1	< 0.1	< 0.1
	4/5/2021	**3.46**	< 0.1	**0.988**	**1.02**
	8/25/2021	< 0.1	< 0.1	< 0.1	< 0.1
	3/8/2022	< 0.1	< 0.1	< 0.1	< 0.1
	2/21/2023	N/A	**0.116**	N/A	< 0.1
	10/14/2024	**2.21**	< 0.2	< 0.2	< 0.2
Sulfate, mg/L (CAS NO - 14808-79-8)	8/21/2014	N/A	N/A	**70.8**	N/A
	5/18/2015	N/A	N/A	**64.2**	N/A
	8/13/2015	N/A	N/A	N/A	**118**
	8/14/2015	N/A	N/A	**77.9**	N/A
	6/16/2020	**139**	**1720**	**79.7**	**196**
	4/5/2021	**105**	**1720**	**71.7**	**146**
	8/25/2021	**214**	**1560**	**64.3**	**122**
	3/8/2022	**169**	**1610**	**64.8**	**82.5**
	2/21/2023	**135**	**760**	N/A	**55.4**
	6/4/2024	**150**	**1460**	**63.3**	**95.8**
Total Organic Carbon, mg/L (CAS NO - TOC)	8/21/2014	N/A	N/A	0.987*	N/A
	8/13/2015	N/A	N/A	N/A	0.997*
	8/14/2015	N/A	N/A	**1.15**	N/A
	6/16/2020	**3.39**	**1.42**	**2.84**	0.769*
	4/5/2021	0.731*	**3.31**	**1.16**	**1.98**
	8/25/2021	**2.16**	3.92*	0.812*	0.71*
	3/8/2022	**2.67**	**3.29**	**1.09**	0.743*
	2/21/2023	**2.42**	**3.41**	N/A	**7.83**
	6/4/2024	**1.29**	**3.35**	**1.09**	**1.03**

Note: * indicates 'J flag'. Detection is below the reporting limit, but greater than the MDL (Method Detection Limit). The concentration is estimated.

Denotes Detection.
Denotes Confirmed Outlier. Statistically Excluded.

Sampling performed over multiple dates is recorded on the first date sampled. Refer to field forms for exact sample date.

Appendix C-3

Summary of Groundwater Chemistry – Corrective Action

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - Corrective Action

Total Metals Constituents	Sample Date	MW-66 DNG	MW-67 DNG	MW-68 DNG	MW-71 DNG	MW-74 DNG	MW-75 DNG	MW-78 DNG	MW-80 DNG
Arsenic, mg/L (CAS NO - 7440-38-2)	2/13/2014	**0.00422**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	**0.00532**	N/A	N/A	0.00171*	N/A
	4/1/2019	N/A	N/A	N/A	**0.0033**	**0.00852**	N/A	< 0.002	N/A
	8/26/2019	N/A	N/A	N/A	**0.00553**	**0.0507**	N/A	< 0.002	N/A
	8/20/2020	N/A	N/A	N/A	**0.0294**	**0.101**	N/A	**0.00213**	N/A
	11/3/2020	N/A	N/A	N/A	**0.0167**	**0.0412**	N/A	N/A	N/A
	11/24/2020	< 0.002	< 0.002	< 0.002	N/A	N/A	N/A	N/A	N/A
	4/5/2021	< 0.002	< 0.002	< 0.002	**0.00773**	**0.0219**	N/A	N/A	N/A
	8/25/2021	N/A	< 0.002	N/A	**0.01**	**0.0338**	N/A	N/A	N/A
	3/8/2022	< 0.002	< 0.002	< 0.002	**0.00905**	**0.0264**	N/A	N/A	N/A
	6/22/2022	N/A	< 0.002	N/A	**0.0122**	**0.0161**	N/A	< 0.002	N/A
	2/21/2023	< 0.002	N/A	< 0.002	**0.00762**	**0.0288**	N/A	N/A	N/A
	6/4/2024	< 0.002	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A
	10/14/2024	N/A	0.000772*	N/A	**0.00406**	**0.0299**	N/A	N/A	N/A
Cobalt, mg/L (CAS NO - 7440-48-4)	8/8/2012	**0.212**	**0.347**	N/A	N/A	N/A	N/A	N/A	N/A
	12/27/2012	**0.238**	**0.293**	N/A	N/A	N/A	N/A	N/A	N/A
	12/27/2012	**0.238**	**0.293**	N/A	N/A	N/A	N/A	N/A	N/A
	2/13/2014	**0.0391**	**0.119**	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	**0.0173**	**0.0273**	**0.267**	**0.0702**	**0.0471**	**0.0132**	N/A	N/A
	5/18/2015	N/A	**0.0369**	N/A	**0.0639**	**0.0361**	**0.0119**	N/A	N/A
	5/19/2015	N/A	N/A	**0.0281**	N/A	N/A	N/A	N/A	N/A
	8/13/2015	N/A	**0.0119**	**0.00737**	N/A	N/A	N/A	**0.024**	N/A
	8/14/2015	N/A	N/A	N/A	**0.034**	**0.0525**	N/A	N/A	N/A
	4/4/2016	0.000441*	**0.027**	N/A	N/A	**0.0421**	N/A	N/A	N/A
	4/5/2016	N/A	N/A	**0.00265**	**0.0343**	N/A	N/A	N/A	N/A
	9/13/2016	**0.00171**	**0.0195**	N/A	**0.025**	**0.0354**	**0.0106**	**0.00922**	N/A
	4/19/2017	0.000117*	**0.00597**	**0.00107**	**0.0164**	**0.0473**	N/A	N/A	N/A
	8/3/2017	N/A	N/A	N/A	**0.0159**	**0.03**	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	**0.00742**	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	**0.0461**	N/A	N/A	N/A
	8/26/2019	N/A	N/A	N/A	**0.00802**	**0.0115**	N/A	**0.00876**	N/A
	8/20/2020	N/A	N/A	N/A	**0.0336**	**0.0172**	N/A	**0.013**	N/A
	11/3/2020	N/A	N/A	N/A	**0.0094**	**0.00277**	N/A	**0.0073**	N/A
	11/24/2020	**0.00208**	**0.000689**	**0.00144**	N/A	N/A	N/A	N/A	N/A
	4/5/2021	< 0.0005	0.000329*	**0.00105**	**0.00788**	**0.0273**	N/A	**0.00802**	N/A
	8/25/2021	N/A	0.000375*	N/A	**0.0168**	**0.0166**	N/A	**0.0128**	N/A
	3/8/2022	**0.00306**	**0.00105**	**0.000665**	**0.00464**	**0.0018**	N/A	**0.00694**	N/A
	6/22/2022	N/A	0.000199*	N/A	**0.00605**	**0.00377**	N/A	**0.00682**	N/A
	2/21/2023	**0.00168**	N/A	0.000255*	**0.002**	**0.00587**	N/A	**0.00342**	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	**0.00559**	N/A
	6/4/2024	0.000281*	N/A	**0.00298**	N/A	N/A	N/A	**0.0171**	N/A
	10/14/2024	N/A	**0.00131**	N/A	**0.00305**	**0.0108**	N/A	**0.0122**	N/A
Total Suspended Solids, mg/L (CAS NO - TSS)	2/13/2014	**8530**	**4980**	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	**905**	**585**	**9920**	**1640**	**3620**	**1200**	N/A	N/A
	5/18/2015	N/A	**716**	N/A	**1090**	**3510**	**583**	N/A	N/A
	5/19/2015	N/A	N/A	**7840**	N/A	N/A	N/A	N/A	N/A
	8/12/2015	**18.5**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/13/2015	N/A	**37.1**	**213**	N/A	N/A	N/A	**1210**	N/A
	8/14/2015	N/A	N/A	N/A	**1070**	**4660**	N/A	N/A	N/A
	4/4/2016	**10.9**	**150**	N/A	N/A	**1020**	N/A	N/A	N/A
	4/5/2016	N/A	N/A	**285**	**560**	N/A	**253**	**515**	N/A
	9/13/2016	**8**	**50.6**	N/A	**39.2**	**88.5**	**12.9**	**900**	N/A
	4/19/2017	**15.3**	**76.3**	**10**	**25.3**	**24.8**	**35.4**	N/A	N/A
	8/3/2017	N/A	N/A	N/A	**23**	**3.13**	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	**34.4**	N/A	N/A	N/A	N/A
	10/22/2018	N/A	N/A	N/A	**29.6**	N/A	N/A	**671**	N/A
	4/1/2019	N/A	N/A	N/A	**11.8**	**4.13**	N/A	**21**	N/A
	8/26/2019	N/A	N/A	N/A	**16.6**	**62.7**	N/A	**24.3**	N/A
	8/20/2020	N/A	N/A	N/A	**7440**	**84**	N/A	**118**	N/A
	11/3/2020	N/A	N/A	N/A	**1500**	**120**	N/A	**6.12**	N/A
	11/24/2020	**5.5**	**2.75**	**90**	N/A	N/A	N/A	N/A	N/A
	4/5/2021	**1.88**	1*	**66.3**	**1050**	**65.1**	N/A	**9.63**	N/A
	8/25/2021	N/A	1.63*	N/A	**2290**	**22**	N/A	**708**	N/A
	3/8/2022	4*	4.33*	**12.7**	**532**	**85**	N/A	**18.7**	N/A
	6/22/2022	N/A	< 1.88	N/A	**568**	**61**	N/A	**9.87**	N/A
	2/21/2023	**29.7**	N/A	1.75*	**216**	**16**	N/A	**10.4**	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	**16.5**	N/A
	6/4/2024	**2.75**	N/A	**15.5**	N/A	N/A	N/A	**164**	N/A
	10/14/2024	N/A	**3.63**	N/A	**153**	**42**	N/A	**13.3**	N/A

Note: * indicates 'J flag'. Detection is below the reporting limit, but greater than the MDL (Method Detection Limit). The concentration is estimated.

Denotes Detection.
Denotes Confirmed Outlier. Statistically Excluded.

Sampling performed over multiple dates is recorded on the first date sampled. Refer to field forms for exact sample date.

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - Corrective Action

Appendix I VOC Constituents	Sample Date	MW-66 DNG	MW-67 DNG	MW-68 DNG	MW-71 DNG	MW-74 DNG	MW-75 DNG	MW-78 DNG	MW-80 DNG
Benzene, ug/L (CAS NO - 71-43-2)	8/8/2012	< 0.5	**0.95**	< 0.5	N/A	N/A	N/A	N/A	N/A
	12/27/2012	< 0.5	**0.78**	N/A	N/A	N/A	N/A	N/A	N/A
	12/27/2012	< 0.5	**0.78**	N/A	N/A	N/A	N/A	N/A	N/A
	10/10/2013	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A
	2/13/2014	< 0.5	< 0.5	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 0.5	< 0.5	N/A	< 0.5	**0.958**	< 0.5	N/A	N/A
	5/18/2015	N/A	< 0.5	N/A	< 0.5	**0.79**	< 0.5	N/A	N/A
	8/13/2015	N/A	< 0.5	N/A	N/A	N/A	N/A	< 0.5	N/A
	8/14/2015	N/A	N/A	N/A	N/A	**0.815**	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	N/A	**1.55**	N/A	N/A	N/A
	4/5/2016	N/A	N/A	N/A	0.126*	N/A	< 0.5	N/A	N/A
	9/13/2016	N/A	N/A	N/A	0.148*	**2.12**	< 0.5	N/A	N/A
	4/19/2017	N/A	N/A	N/A	< 0.5	**0.717**	< 0.5	N/A	N/A
	8/3/2017	N/A	N/A	N/A	< 0.5	0.422*	N/A	N/A	N/A
	3/5/2018	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A
	10/3/2018	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A
	10/22/2018	N/A	N/A	N/A	< 0.5	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	< 0.5	**0.551**	N/A	< 0.5	N/A
	8/26/2019	N/A	N/A	N/A	< 0.5	**0.756**	< 0.5	< 0.5	N/A
	8/20/2020	N/A	N/A	N/A	< 0.5	**1.05**	N/A	< 0.5	N/A
	11/3/2020	N/A	N/A	N/A	N/A	**1.8**	N/A	N/A	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A
	4/5/2021	N/A	N/A	N/A	N/A	**0.976**	< 0.5	N/A	N/A
	8/25/2021	N/A	N/A	N/A	N/A	**0.648**	N/A	N/A	N/A
	3/8/2022	N/A	N/A	N/A	N/A	**1.68**	< 0.5	N/A	N/A
	6/22/2022	N/A	N/A	N/A	N/A	**1.41**	N/A	N/A	N/A
	2/21/2023	N/A	N/A	N/A	N/A	0.499*	< 0.5	N/A	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A
	10/14/2024	N/A	N/A	N/A	N/A	**0.778**	N/A	N/A	N/A
cis-1,2-Dichloroethene, ug/L (CAS NO - 156-59-2)	8/8/2012	**1.43**	**4.5**	< 1	N/A	N/A	N/A	N/A	N/A
	12/27/2012	< 1	**3.52**	N/A	N/A	N/A	N/A	N/A	N/A
	12/27/2012	< 1	**3.52**	N/A	N/A	N/A	N/A	N/A	N/A
	10/10/2013	N/A	N/A	N/A	**1.09**	N/A	N/A	N/A	N/A
	2/13/2014	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	< 1	N/A	< 1	**50.7**	< 1	N/A	N/A
	5/18/2015	N/A	< 1	N/A	**2.4**	**47.9**	< 1	N/A	N/A
	8/13/2015	N/A	< 1	< 1	N/A	N/A	N/A	**1.97**	N/A
	8/14/2015	N/A	N/A	N/A	**1.67**	**42.7**	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	N/A	**58.1**	N/A	N/A	N/A
	4/5/2016	N/A	N/A	N/A	**3.16**	N/A	< 1	**1.94**	N/A
	9/13/2016	N/A	N/A	N/A	**4.39**	**56.5**	< 1	**1.84**	N/A
	4/19/2017	N/A	N/A	N/A	**1.87**	**39.3**	< 1	**1.18**	1.75*
	8/3/2017	N/A	N/A	N/A	**2.05**	**36**	N/A	**1.69**	0.993*
	3/5/2018	N/A	N/A	N/A	0.316*	N/A	N/A	**1.15**	**11**
	10/3/2018	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	10/22/2018	N/A	N/A	N/A	< 1	N/A	N/A	**1.75**	**70.7**
	4/1/2019	N/A	N/A	N/A	0.563*	**40.6**	N/A	**2.78**	**48.2**
	8/26/2019	N/A	N/A	N/A	**2.31**	**53.6**	< 1	**3.11**	**9.67**
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.722*
	8/20/2020	N/A	N/A	N/A	0.393*	**54.1**	N/A	0.976*	N/A
	11/3/2020	N/A	N/A	N/A	< 1	**61.8**	N/A	**0.648**	**11.5**
	11/24/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	4/5/2021	N/A	N/A	N/A	< 1	**56.3**	< 1	0.805*	0.969*
	8/25/2021	N/A	N/A	N/A	0.319*	**44.8**	N/A	**1.02**	0.474*
	3/8/2022	N/A	N/A	N/A	0.273*	**63.7**	< 1	0.577*	0.249*
	6/22/2022	N/A	N/A	N/A	0.4*	**57.7**	N/A	0.621*	0.25*
	2/21/2023	N/A	N/A	N/A	< 1	**25.9**	< 1	0.634*	**9.28**
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	0.61*	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	< 1	**1.34**	N/A
	10/14/2024	N/A	N/A	N/A	< 1	**52.9**	N/A	**2.34**	**12.5**
Tetrachloroethene, ug/L (CAS NO - 127-18-4)	8/8/2012	< 1	**9.15**	< 1	N/A	N/A	N/A	N/A	N/A
	12/27/2012	< 1	**8.33**	N/A	N/A	N/A	N/A	N/A	N/A
	12/27/2012	< 1	**8.33**	N/A	N/A	N/A	N/A	N/A	N/A
	10/10/2013	N/A	N/A	N/A	**1.21**	N/A	N/A	N/A	N/A
	2/13/2014	< 1	**2.74**	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	**1.49**	< 1	0.701*	**17.3**	< 1	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - Corrective Action

Appendix I VOC Constituents	Sample Date	MW-66 DNG	MW-67 DNG	MW-68 DNG	MW-71 DNG	MW-74 DNG	MW-75 DNG	MW-78 DNG	MW-80 DNG
Tetrachloroethene, ug/L (CAS NO - 127-18-4)	5/18/2015	N/A	**1.47**	N/A	**3.7**	**16.9**	< 1	N/A	N/A
	5/19/2015	N/A	N/A	< 1	N/A	N/A	N/A	N/A	N/A
	8/12/2015	< 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	8/13/2015	N/A	0.738*	< 1	N/A	N/A	N/A	**4.47**	N/A
	8/14/2015	N/A	N/A	N/A	**3.67**	**12.1**	N/A	N/A	N/A
	4/4/2016	N/A	0.651*	N/A	N/A	**14.9**	N/A	N/A	N/A
	4/5/2016	N/A	N/A	N/A	**3.77**	N/A	< 1	**3.94**	N/A
	9/13/2016	N/A	**1.37**	N/A	**3.65**	**16.9**	< 1	**3.4**	N/A
	4/19/2017	N/A	0.847*	N/A	**2.12**	**9.17**	< 1	**2.44**	N/A
	8/3/2017	N/A	N/A	N/A	**1.26**	**9.59**	N/A	**3.83**	N/A
	3/5/2018	N/A	N/A	N/A	0.325*	N/A	N/A	**2.48**	N/A
	10/3/2018	< 1	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	10/22/2018	N/A	N/A	N/A	< 1	N/A	N/A	**2.76**	N/A
	4/1/2019	N/A	N/A	N/A	< 1	**4.72**	N/A	**2.47**	N/A
	8/26/2019	< 1	< 1	N/A	0.83*	**2.13**	< 1	**2.89**	N/A
	8/20/2020	N/A	N/A	N/A	< 1	< 1	N/A	**1.24**	N/A
	11/3/2020	N/A	N/A	N/A	N/A	< 1	N/A	**1.7**	N/A
	11/24/2020	N/A	< 1	N/A	N/A	N/A	< 1	N/A	N/A
	4/5/2021	N/A	0.539*	N/A	N/A	**4.79**	< 1	**1.28**	N/A
	8/25/2021	N/A	< 1	N/A	N/A	< 1	N/A	**1.51**	N/A
	3/8/2022	N/A	0.5*	N/A	N/A	< 1	< 1	**1.15**	N/A
	6/22/2022	N/A	0.615*	N/A	N/A	< 1	N/A	**1.2**	N/A
	2/21/2023	N/A	N/A	N/A	N/A	< 1	< 1	0.788*	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	**1.24**	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	< 1	**1.05**	N/A
	10/14/2024	N/A	< 1	N/A	N/A	< 1	N/A	**1.01**	N/A
Trichloroethene, ug/L (CAS NO - 79-01-6)	8/8/2012	< 1	**3.95**	< 1	N/A	N/A	N/A	N/A	N/A
	12/27/2012	< 1	**4.12**	N/A	N/A	N/A	N/A	N/A	N/A
	12/27/2012	< 1	**4.12**	N/A	N/A	N/A	N/A	N/A	N/A
	10/10/2013	N/A	N/A	N/A	0.707*	N/A	N/A	N/A	N/A
	2/13/2014	< 1	0.623*	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	< 1	N/A	< 1	**10.5**	< 1	N/A	N/A
	5/18/2015	N/A	0.267*	N/A	**1.73**	**9.56**	< 1	N/A	N/A
	8/13/2015	N/A	< 1	< 1	N/A	N/A	N/A	**2.09**	N/A
	8/14/2015	N/A	N/A	N/A	**1.32**	**7.64**	N/A	N/A	N/A
	4/4/2016	N/A	< 1	N/A	N/A	**8.71**	N/A	N/A	N/A
	4/5/2016	N/A	N/A	< 1	**2.26**	N/A	< 1	**2.02**	N/A
	9/13/2016	N/A	< 1	N/A	**4.53**	**9.09**	< 1	**1.64**	N/A
	4/19/2017	N/A	< 1	< 1	**1.54**	**6.69**	< 1	**1.24**	N/A
	8/3/2017	N/A	N/A	N/A	**1.99**	**6.55**	N/A	**1.5**	N/A
	3/5/2018	N/A	N/A	N/A	0.435*	N/A	N/A	**1.23**	N/A
	10/3/2018	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	10/22/2018	N/A	N/A	N/A	< 1	N/A	N/A	**1.63**	N/A
	4/1/2019	N/A	N/A	N/A	< 1	**5.89**	N/A	**1.66**	N/A
	8/26/2019	N/A	N/A	N/A	**1.59**	**2.67**	< 1	**1.8**	N/A
	8/20/2020	N/A	N/A	N/A	< 1	**1.71**	N/A	0.793*	N/A
	11/3/2020	N/A	N/A	N/A	< 1	< 1	N/A	**0.646**	N/A
	11/24/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	4/5/2021	N/A	N/A	N/A	< 1	**9.17**	< 1	0.77*	N/A
	8/25/2021	N/A	N/A	N/A	< 1	**4.1**	N/A	0.728*	N/A
	3/8/2022	N/A	N/A	N/A	< 1	< 1	< 1	0.605*	N/A
	6/22/2022	N/A	N/A	N/A	< 1	0.926*	N/A	0.543*	N/A
	2/21/2023	N/A	N/A	N/A	< 1	**1.07**	< 1	< 1	N/A
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	< 1	0.556*	N/A
	10/14/2024	N/A	N/A	N/A	< 1	**2.97**	N/A	0.661*	N/A
Vinyl Chloride, ug/L (CAS NO - 75-01-4)	10/10/2013	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	2/13/2014	< 1	< 1	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	< 1	< 1	N/A	< 1	**3.01**	< 1	N/A	N/A
	5/18/2015	N/A	< 1	N/A	< 1	**2.1**	< 1	N/A	N/A
	8/13/2015	N/A	< 1	N/A	N/A	N/A	N/A	< 1	N/A
	8/14/2015	N/A	N/A	N/A	< 1	**2.12**	N/A	N/A	N/A
	4/4/2016	N/A	N/A	N/A	N/A	**3.09**	N/A	N/A	N/A
	4/5/2016	N/A	N/A	N/A	< 1	N/A	< 1	0.214*	N/A
	9/13/2016	N/A	N/A	N/A	0.673*	**2.65**	< 1	< 1	N/A
	4/19/2017	N/A	N/A	N/A	0.146*	**1.82**	< 1	< 1	1.34*
	8/3/2017	N/A	N/A	N/A	< 1	0.982*	N/A	< 1	0.767*
	3/5/2018	N/A	N/A	N/A	< 1	N/A	N/A	< 1	**6.28**
	10/3/2018	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A
	10/22/2018	N/A	N/A	< 1	< 1	N/A	N/A	< 1	**9.85**
	4/1/2019	N/A	N/A	N/A	< 1	**2.97**	N/A	< 1	**6.81**
	8/26/2019	N/A	N/A	< 1	< 1	**2.65**	< 1	0.449*	**1.78**
	6/16/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.183*
	8/20/2020	N/A	N/A	N/A	< 1	**2.77**	N/A	< 1	N/A
	11/3/2020	N/A	N/A	N/A	N/A	**1.95**	N/A	< 1	**2.22**
	11/24/2020	N/A	N/A	N/A	N/A	N/A	< 1	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - Corrective Action

Appendix I VOC Constituents	Sample Date	MW-66 DNG	MW-67 DNG	MW-68 DNG	MW-71 DNG	MW-74 DNG	MW-75 DNG	MW-78 DNG	MW-80 DNG
Vinyl Chloride, ug/L (CAS NO - 75-01-4)	4/5/2021	N/A	N/A	N/A	N/A	**2.89**	< 1	< 1	**1.94**
	8/25/2021	N/A	N/A	N/A	N/A	**1.36**	N/A	< 1	< 1
	3/8/2022	N/A	N/A	N/A	N/A	**1.65**	< 1	< 1	< 1
	6/22/2022	N/A	N/A	N/A	N/A	**1.92**	N/A	< 1	< 1
	2/21/2023	N/A	N/A	N/A	N/A	0.926*	< 1	< 1	**2.26**
	7/25/2023	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
	6/4/2024	N/A	N/A	N/A	N/A	N/A	< 1	< 1	N/A
	10/14/2024	N/A	N/A	N/A	N/A	**1.51**	N/A	< 1	**7.56**

Note: * indicates 'J flag'. Detection is below the reporting limit, but greater than the MDL (Method Detection Limit). The concentration is estimated.

Denotes Detection.
Denotes Confirmed Outlier. Statistically Excluded.

Sampling performed over multiple dates is recorded on the first date sampled. Refer to field forms for exact sample date.

Appendix C-4

Summary of Groundwater Chemistry – Acid Mine Drainage

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - AMD

AMD Constituents	Sample Date	MW-39R DNG	MW-40 DNG	04-MW-56 DNG	MW-58 DNG	MW-59 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG
Alkalinity, Total [CaCO3], mg/L (CAS NO - TALK)	8/8/2012	345	N/A	N/A	206	738	N/A	454	506
	10/24/2012	N/A	49.3	N/A	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	74	N/A	N/A	735	N/A	434	N/A
	8/20/2013	469	N/A	N/A	227	N/A	N/A	N/A	528
	8/21/2014	N/A	N/A	217	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	489	N/A	N/A
	6/16/2020	559	327	554	< 5	619	535	1290	614
	11/3/2020	435	246	511	237	814	416	1050	672
	4/5/2021	485	228	547	171	447	428	918	619
	8/25/2021	594	248	604	277	N/A	505	901	743
	3/8/2022	363	127	725	274	470	480	804	764
	2/21/2023	823	308	750	179	277	513	753	823
	2/21/2023	N/A	N/A	N/A	N/A	N/A	507	N/A	N/A
	6/4/2024	529	212	524	175	613	421	635	873
	6/4/2024	N/A	N/A	N/A	180	N/A	N/A	N/A	N/A
Bicarbonate, mg/L (CAS NO - BICARB)	8/8/2012	345	N/A	N/A	206	738	N/A	454	506
	10/24/2012	N/A	49.3	N/A	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	74	N/A	N/A	735	N/A	434	N/A
	8/20/2013	469	N/A	N/A	227	N/A	N/A	N/A	528
	8/21/2014	N/A	N/A	217	N/A	N/A	N/A	N/A	N/A
	8/12/2015	N/A	191	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	489	N/A	N/A
	11/3/2020	435	246	511	237	814	416	1050	672
	4/5/2021	485	228	547	171	447	428	918	619
	8/25/2021	594	248	604	277	N/A	505	901	743
	3/8/2022	363	127	725	274	470	480	804	764
	2/21/2023	823	308	750	179	277	513	753	823
	2/21/2023	N/A	N/A	N/A	N/A	N/A	507	N/A	N/A
	6/4/2024	529	212	524	175	613	421	635	873
	6/4/2024	N/A	N/A	N/A	180	N/A	N/A	N/A	N/A
Carbonate, mg/L (CAS NO - CARB)	8/8/2012	< 5	N/A	N/A	< 5	< 5	N/A	< 5	< 5
	10/24/2012	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	< 5	N/A	N/A	< 5	N/A	< 5	N/A
	8/20/2013	< 5	N/A	N/A	< 5	N/A	N/A	N/A	< 5
	8/21/2014	N/A	N/A	< 10	N/A	N/A	N/A	N/A	N/A
	8/12/2015	N/A	< 5	N/A	N/A	N/A	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A
	11/3/2020	< 10	< 10	< 10	< 5	< 10	< 10	< 9.09	< 10
	4/5/2021	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
	8/25/2021	< 10	< 10	< 10	< 10	N/A	< 10	< 10	< 10
	3/8/2022	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
	2/21/2023	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
	2/21/2023	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A
	6/4/2024	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
	6/4/2024	N/A	N/A	N/A	< 5	N/A	N/A	N/A	N/A
Iron, Total, mg/L (CAS NO - 7439-89-6)	8/19/2013	N/A	46.9	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	N/A	18	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	31.2	5.09	N/A	14.3	41.5	N/A	N/A	62.8
	8/12/2015	N/A	N/A	N/A	43	37.5	N/A	N/A	N/A
	6/16/2020	37.7	39.3	48.9	0.341*	37.7	< 0.5	15.8	37.7
	11/3/2020	42.9	44.6	41.9	46.5	106	1.93	14.4	60.6
	4/5/2021	63.6	37.4	45.7	12.9	35.4	< 0.1	2.84	39.7
	4/5/2021	N/A	N/A	43.7	N/A	N/A	N/A	N/A	N/A
	8/25/2021	50.1	43.8	34.6	45.9	N/A	< 0.1	9.88	56.8
	3/8/2022	130	58	40.8	24.8	47.8	< 0.5	3.45	79.8
	2/21/2023	46.5	12	30.7	1.55	17.5	0.107	2.17	66.1
	2/21/2023	N/A	N/A	N/A	N/A	N/A	0.415	N/A	N/A
	6/4/2024	253	61.1	20	5.39	38.8	0.113*	2.47	58.2
	6/4/2024	N/A	N/A	N/A	5.87	N/A	N/A	N/A	N/A
Manganese, mg/L (CAS NO - 7439-96-5)	8/19/2013	N/A	27	N/A	N/A	N/A	N/A	N/A	N/A
	8/21/2014	N/A	26.5	N/A	N/A	N/A	N/A	N/A	N/A
	8/12/2015	35.4	32.8	N/A	7.64	9.71	N/A	N/A	6.03
	8/12/2015	N/A	N/A	N/A	4.39	9.02	N/A	N/A	N/A
	6/16/2020	51.1	33.3	13.4	9.43	7.94	0.923	0.283	2.85
	11/3/2020	17	33.6	12.4	4.98	10.6	8.25	0.253	2.95
	4/5/2021	47.6	40.9	10.9	4.08	10.8	0.157	0.201	2.45
	4/5/2021	N/A	N/A	10.2	N/A	N/A	N/A	N/A	N/A
	8/25/2021	31.2	36	9.13	4.98	N/A	1.58	0.214	3.32
	3/8/2022	15.5	26.6	10.2	2.58	9.31	0.218	0.199	3.34
	2/21/2023	4.4	31.2	8.26	0.508	7.17	0.51	0.182	3.97
	2/21/2023	N/A	N/A	N/A	N/A	N/A	1.06	N/A	N/A
	6/4/2024	32.9	38.7	7.22	4.24	12.4	0.564	0.16	2.63
	6/4/2024	N/A	N/A	N/A	4.25	N/A	N/A	N/A	N/A

SCS ENGINEERS

Summary of Groundwater Chemistry

Ottumwa-Wapello County Landfill - 90-SDP-01-75P - AMD

AMD Constituents	Sample Date	MW-39R DNG	MW-40 DNG	04-MW-56 DNG	MW-58 DNG	MW-59 DNG	MW-63R DNG	MW-64 DNG	MW-65 DNG
Sulfate, mg/L (CAS NO - 14808-79-8)	8/8/2012	**2010**	N/A	N/A	**1710**	**929**	N/A	**197**	**1020**
	10/24/2012	N/A	**585**	N/A	N/A	N/A	N/A	N/A	N/A
	8/19/2013	N/A	**577**	N/A	N/A	**672**	N/A	**273**	N/A
	8/19/2013	N/A	**519**	N/A	N/A	N/A	N/A	N/A	N/A
	8/20/2013	**1860**	N/A	N/A	**1440**	N/A	N/A	N/A	**770**
	8/21/2014	N/A	**49.9**	**679**	N/A	N/A	N/A	N/A	N/A
	8/12/2015	**2260**	**520**	N/A	**1400**	**762**	N/A	N/A	**781**
	8/12/2015	N/A	N/A	N/A	**1670**	**752**	N/A	N/A	N/A
	4/1/2019	N/A	N/A	N/A	N/A	N/A	**1880**	N/A	N/A
	6/16/2020	**2220**	**387**	**634**	**1320**	**829**	**1890**	**39.7**	**622**
	11/3/2020	**2170**	**452**	**412**	**1700**	**884**	**2390**	**43.1**	**268**
	4/5/2021	**2550**	**602**	**737**	**1680**	**793**	**3040**	**347**	**516**
	8/25/2021	**2120**	**594**	**327**	**1690**	N/A	**2010**	**56.7**	**256**
	3/8/2022	**2410**	**640**	**256**	**1490**	**697**	**2040**	**53.9**	**313**
	2/21/2023	**1430**	**473**	**272**	**762**	**953**	**1950**	**56.6**	**280**
	2/21/2023	N/A	N/A	N/A	N/A	N/A	**1970**	N/A	N/A
	6/4/2024	**2510**	**610**	**460**	**911**	**953**	**2020**	**68.7**	**150**
	6/4/2024	N/A	N/A	N/A	**907**	N/A	N/A	N/A	N/A
Aluminum, mg/L (CAS NO - 7429-90-5)	8/12/2015	0.0681*	0.056*	N/A	**0.347**	0.0855*	N/A	N/A	**0.169**
	6/16/2020	< 0.1	< 0.1	< 0.1	**22.9**	< 0.1	**0.119**	0.0669*	< 0.1
	11/3/2020	< 0.1	**0.159**	< 0.1	< 0.1	< 0.1	**4.75**	< 0.1	< 0.1
	4/5/2021	0.0338*	**0.0682**	< 0.2	**0.0571**	< 0.05	**0.462**	< 0.05	< 0.05
	4/5/2021	N/A	N/A	< 0.05	N/A	N/A	N/A	N/A	N/A
	8/25/2021	0.0207*	**0.0703**	< 0.05	< 0.05	N/A	0.0395*	< 0.05	0.0168*
	3/8/2022	< 0.4	**0.23**	< 0.2	< 0.2	< 0.2	**0.294**	< 0.2	0.133*
	2/21/2023	< 0.05	0.0393*	< 0.05	< 0.05	0.0215*	**0.124**	< 0.05	< 0.05
	2/21/2023	N/A	N/A	N/A	N/A	N/A	**0.688**	N/A	N/A
	6/4/2024	< 0.2	0.0884*	< 0.1	0.057*	0.0361*	**0.645**	< 0.1	< 0.1
	6/4/2024	N/A	N/A	N/A	0.0769*	N/A	N/A	N/A	N/A

Note: * indicates 'J flag'. Detection is below the reporting limit, but greater than the MDL (Method Detection Limit). The concentration is estimated.

Denotes Detection.
Denotes Confirmed Outlier. Statistically Excluded.

Sampling performed over multiple dates is recorded on the first date sampled. Refer to field forms for exact sample date.

Appendix D

Statistical Method and Output

Statistical Method and Output

The purpose of this document is to describe the statistical methods used in the evaluation of groundwater analytical data collected from the groundwater monitoring network of the West municipal solid waste landfill unit (West MSWLF unit) at the Ottumwa-Wapello County Landfill.

Diagnostic and Exploratory Evaluations and Tests of Assumptions

The detection and assessment/corrective action monitoring statistical programs include diagnostic and exploratory evaluations and statistical tests of assumptions, as appropriate, including the following:

- Time Series Plots
- Shapiro-Wilk test for normality
- Ohio Environmental Protection Agency (EPA) Method for outliers
- Mann-Kendall/Sen's Slope trend test

Management of Non-Detect Data

Non-detect values in the dataset are managed using simple substitution or the Kaplan-Meier estimator. If less than 15% of the data are non-detects, simple substitution is used, where non-detect values are assigned a concentration of one-half (½) of the practical quantification limit (PQL). If greater than 15% but less than 50% of the data are non-detects, the Kaplan-Meier estimator is used to define the distribution for the dataset. If non-detects comprise greater than 50% of the available data, non-parametric statistical methods are used.

Management of Outliers

Background datasets are evaluated for outliers using the Ohio EPA Method as included in the Sanitas™ statistical software program and described below, which includes the use of Dixon's, Rosner's, and Tukey's outlier tests, as appropriate based on the diagnostic tests, for the datasets that contain less than 75% of the measured concentrations below the PQL. Outliers are not confirmed unless a physical cause or explanation for the outlier is determined.

Management of Data (ND data < 75%)

If less than 75% of the background dataset is below the PQL, outliers are statistically evaluated using the following guidelines.

- A parametric dataset with $n < 20$ is evaluated with the Dixon's outlier test.
- A parametric dataset with $n \geq 20$ is evaluated with the Rosner's outlier test.
- A non-parametric dataset is evaluated with the Tukey's outlier test.

In accordance with the Ohio EPA Method, if a statistically significant outlier is not found using the above tests, but the highest value data point exceeds the second highest data point by an order of magnitude, the highest point is considered an outlier.

Management of Data (ND data ≥ 75%)

If greater than or equal to 75% of the background dataset is less than the PQL, outliers are statistically evaluated using the following guidelines.

- Single detection ≥ the PQL:
  - If ≥ 50% of the background dataset has detections ≥ the method detection limit (MDL), any value ≥ two times the PQL of background is considered an outlier.
  - If < 50% of the background dataset has detections ≥ the MDL, any value ≥ the PQL of background is considered an outlier.
- Two or more detections ≥ the PQL:
  - If ≥ 50% of the background dataset has detections ≥ the MDL, any value ≥ three times the PQL of background is considered an outlier.
  - If < 50% of the background dataset has detections ≥ the MDL, any value ≥ two times the PQL of background is considered an outlier.

Confirmed outliers, if any, are shown in the Summary of Groundwater Chemistry included in the Annual Water Quality Report.

Detection Monitoring Statistical Program/Inorganic Acid Mine Drainage Statistical Evaluation

Groundwater monitoring data associated with the West MSWLF unit for the detection monitoring program and inorganic data from acid mine drainage (AMD) impacted monitoring wells is statistically analyzed by the diagnostic evaluations listed above and by interwell prediction limits, intrawell prediction limits, and the double quantification method. The procedures for these evaluations are described below.

For acid mine drainage wells, both interwell and intrawell prediction limits were selected for the determination of statistically significant increases (SSIs) over background for inorganic constituents with historical detections in background. An SSI must be indicated in both the interwell and intrawell statistical evaluation for the SSI to be considered. Data from the most recent sampling event is compared to the prediction limits for the determination of SSIs.

Interwell Prediction Limits with Retesting

- If the dataset has a normal distribution (or can be transformed to a normal distribution using Ladder of Powers), parametric interwell prediction limits are calculated if at least five datasets have been collected from the background monitoring point(s).
- If the dataset does not have a normal distribution (and cannot be transformed to a normal distribution using Ladder of Powers) or has greater than 50% non-detects, nonparametric interwell prediction limits are calculated if at least five datasets have been collected from the background monitoring point(s).
- If an SSI above the prediction limit is indicated, retesting samples using the 1-of-2 retesting scheme should be collected prior to the next regularly scheduled sampling event with temporal sample spacing consideration to provide samples with greater independence. If the retesting result is above the prediction limit, the SSI is confirmed, and the monitoring point should be placed into the assessment monitoring program for the monitoring wells or treated with the leachate for the groundwater underdrains. If the retesting sample concentration is below the prediction limit, the SSI is not confirmed, and the monitoring point continues in the detection monitoring program.
- If an SSI above the prediction limit is indicated for AMD wells using both interwell and intrawell statistical methods, further evaluation will be performed regarding the impact of AMD on affected parameters.

Intrawell Prediction Limits

- If the dataset has a normal distribution (or can be transformed to a normal distribution using Ladder of Powers), parametric intrawell prediction limits are calculated if at least six samples have been collected.
- If the dataset does not have a normal distribution (and cannot be transformed to a normal distribution using Ladder of Powers) or has greater than 50% non-detects, non-parametric intrawell prediction limits are calculated if at least six samples have been collected.
- If an SSI above the prediction limit is indicated for AMD wells using both interwell and intrawell statistical methods, further evaluation will be performed regarding the impact of AMD on affected parameters.
- If an SSI above the prediction limit is indicated for the groundwater underdrains, retesting samples using the 1-of-2 retesting scheme should be collected prior to the next regularly scheduled sampling event with temporal sample spacing consideration to provide samples with greater independence. If the retesting result is above the prediction limit, the SSI is confirmed, and the discharge will be treated with the leachate. If the retesting sample concentration is below the prediction limit, the SSI is not confirmed, and the monitoring point continues in the detection monitoring program.

Updating the Background Dataset for Intrawell Prediction Limits

If no SSI is confirmed for any two-year period, the intrawell background datasets are updated using the following procedure:

- Test the new dataset for normal distribution either outright or through a transformation using Ladder of Powers using the Shapiro-Wilk test.
- Test the new dataset for statistically significant outliers using the Ohio EPA Method and remove the confirmed outliers (see the "Management of Outliers" section).
- Test the new dataset for statistically significant trends using the Mann-Kendall/Sen's Slope trend test. If a statistically significantly increasing trend is detected, the monitoring point will be placed into the assessment monitoring program or treated with the leachate, whichever is appropriate.
- If the dataset has a normal distribution and no statistically significant increasing trend is present, a two-sample Welch's t-test at a 0.01 significance level is performed to compare the current background to the most recent two years of detection monitoring data. If the Welch's t-test is significant and shows that the most recent two years of concentration data appear to be increasing, the background will not be updated.
- If the dataset does not have a normal distribution and no statistically significant increasing trend is present, a two-sample non-parametric Wilcoxon rank-sum test (also known as the Mann-Whitney test) at a 0.01 significance level is performed to compare current background to the most recent two years of detection monitoring data. If the Wilcoxon rank-sum test is significant and shows that the most recent two years of concentration data appear to be increasing, the background will not be updated.
- If the Welch's t-test or the Wilcoxon rank-sum tests are not significant, the most recent two years of detection monitoring data will be added to the intrawell background dataset. The process will repeat every two years in which an SSI is not confirmed.

Double Quantification Method

The quasi-statistical "double quantification" method is used for constituents not detected in the background dataset. If a constituent is detected in the compliance dataset that has not been historically detected in the background dataset, that constituent must be retested before the next

regularly scheduled sampling event. If the retesting results confirm the original detection with a quantifiable detection, the SSI is confirmed, and the monitoring point must be placed into the assessment monitoring program or treated with the leachate for the groundwater underdrain discharges.

Assessment Monitoring Program/Organic Acid Mine Drainage Statistical Evaluation

The assessment monitoring statistical evaluations are performed using the most recent eight samples or all samples if less than eight samples are available. Transformation of the distribution is not considered. The analysis is performed for detected Appendix II parameters for the assessment monitoring program and for organic parameters and sulfide for the AMD-impacted monitoring wells.

Confidence Intervals or Confidence Bands

- A parametric confidence interval around a normal mean is calculated if the dataset has a normal distribution and no statistically significant trend is present.
- A non-parametric confidence interval around a median is calculated if the dataset does not have a normal distribution and no statistically significant trend is present.
- Non-parametric confidence bands around a Theil-Sen trend line are calculated if the dataset has a statistically significant trend.

In the event that the lower confidence limit or any part of the lower confidence band, as appropriate, exceeds the GWPS, then the monitoring point is declared out of compliance, and an assessment of corrective measures (ACM) is required. An ACM report for the West MSWLF unit was submitted September 23, 2019 (Doc #95983) and approved in correspondence dated July 29, 2020 (Doc #98166).

Statistical Software Output

Sanitas™ statistical software is used to perform the statistical evaluations. The statistical output for the 1st and 2nd 2024 statistical evaluations are included in Attachments A and B of this appendix, respectively.

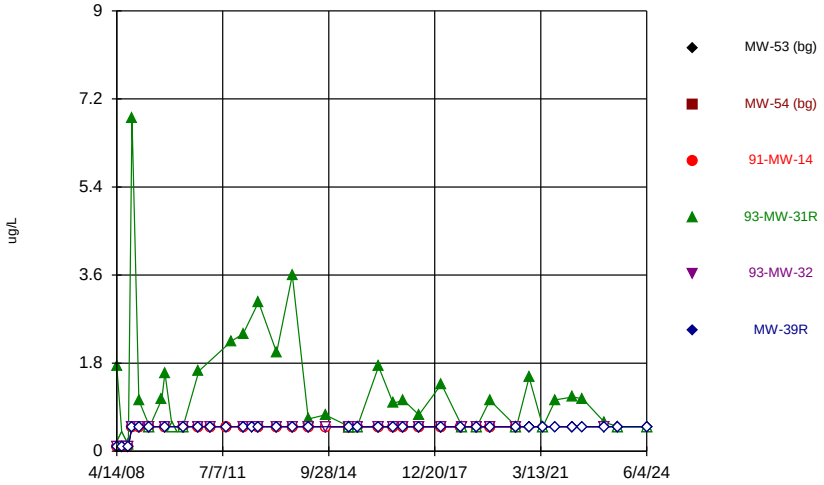
Attachment A

1st 2024 Statistical Evaluation Output

Time Series Plots

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

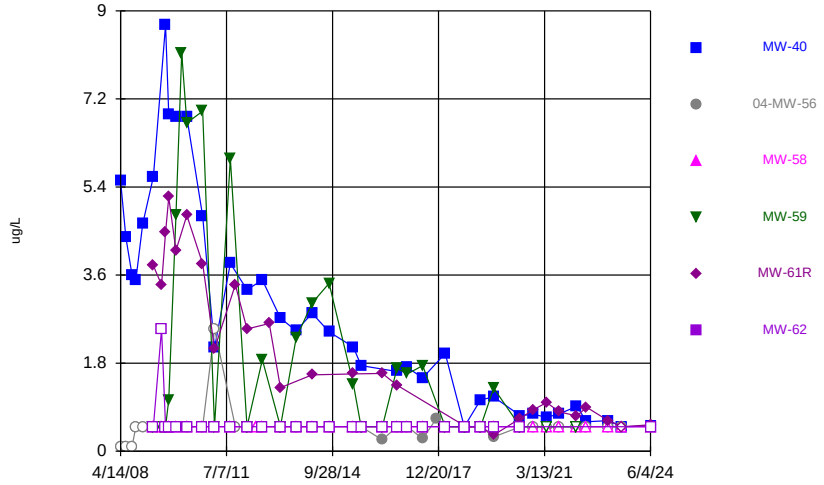
Time Series



Constituent: 1,1-Dichloroethane Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

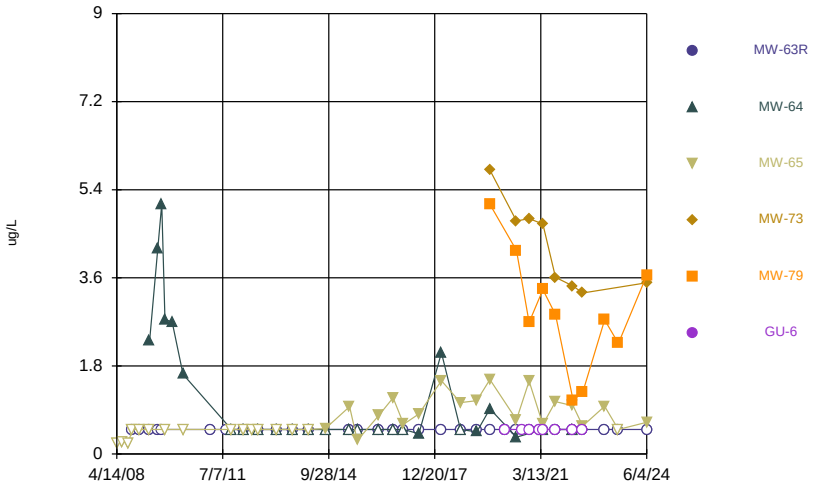
Time Series



Constituent: 1,1-Dichloroethane Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

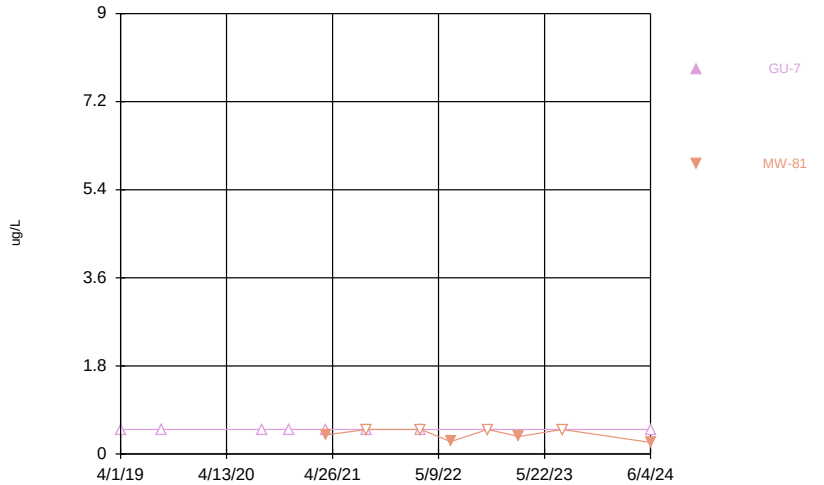
Time Series



Constituent: 1,1-Dichloroethane Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

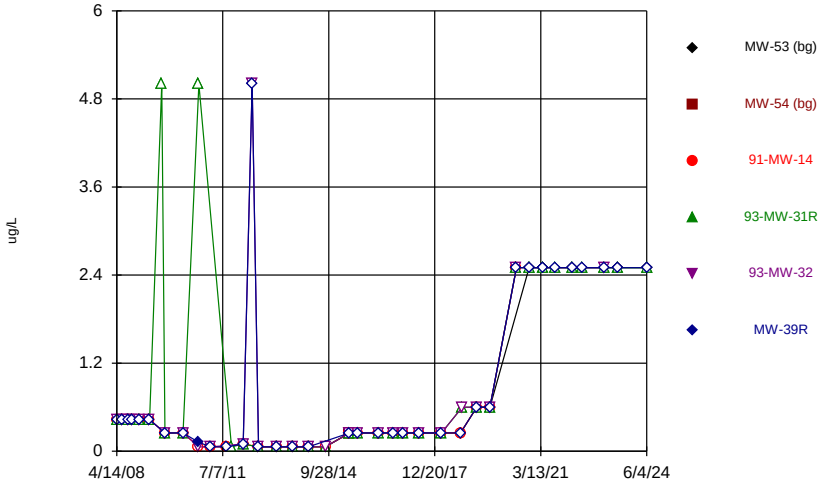
Time Series



Constituent: 1,1-Dichloroethane Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

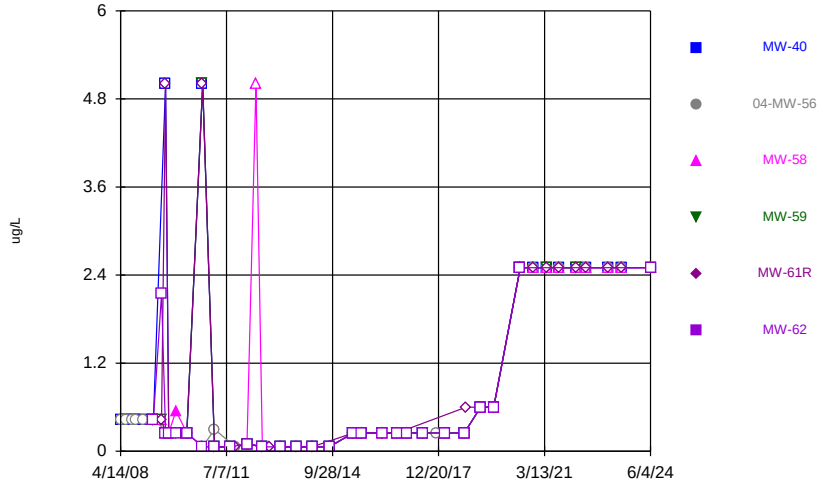
Time Series



Constituent: 1,2-Dibromo-3-chloropropane Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Seri
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

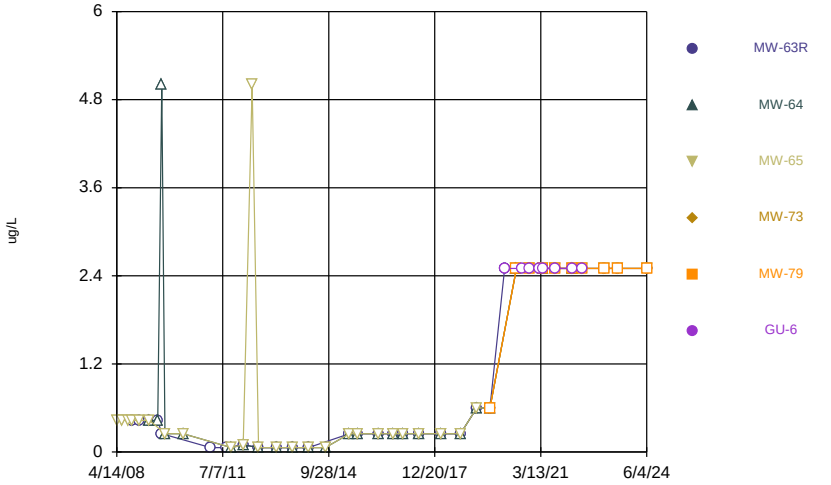
Time Series



Constituent: 1,2-Dibromo-3-chloropropane Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Seri
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

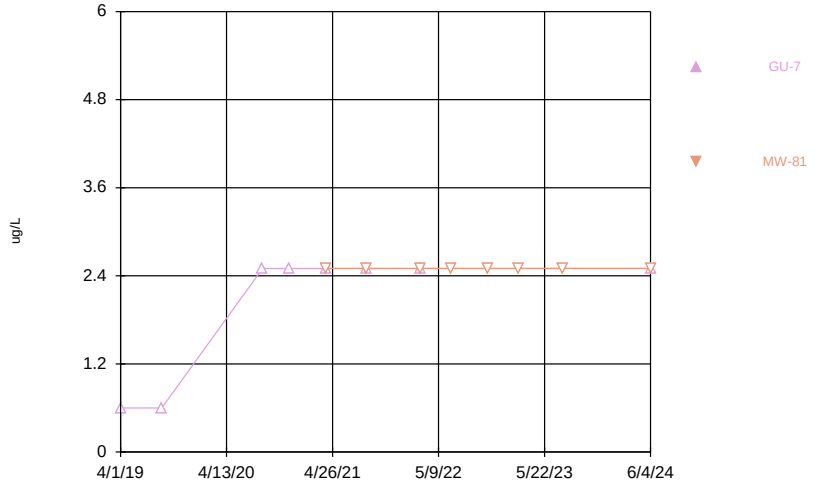
Time Series



Constituent: 1,2-Dibromo-3-chloropropane Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Seri
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

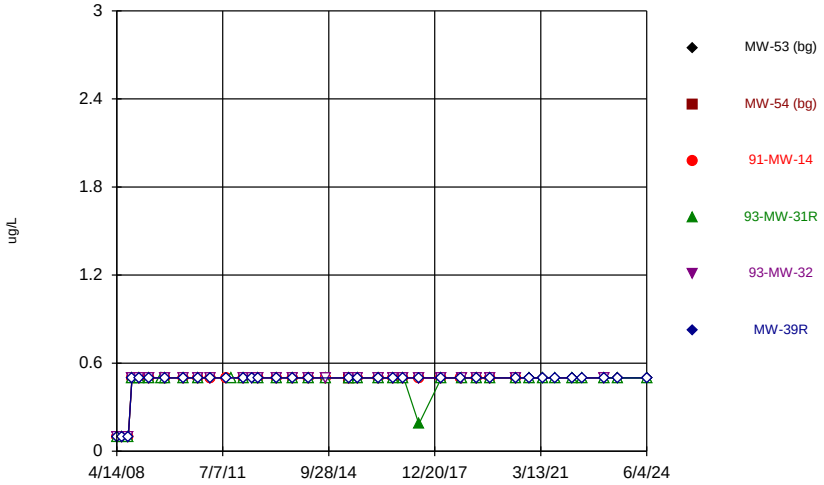
Time Series



Constituent: 1,2-Dibromo-3-chloropropane Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Seri
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

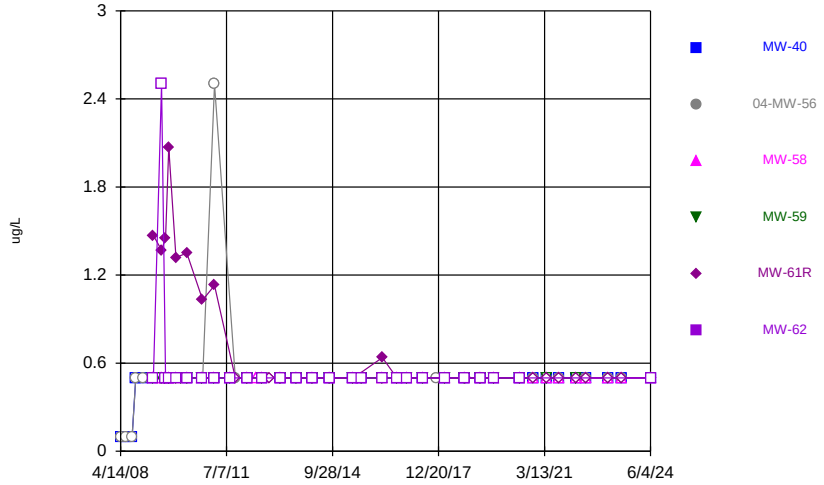
Time Series



Constituent: 1,2-Dichloroethane Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

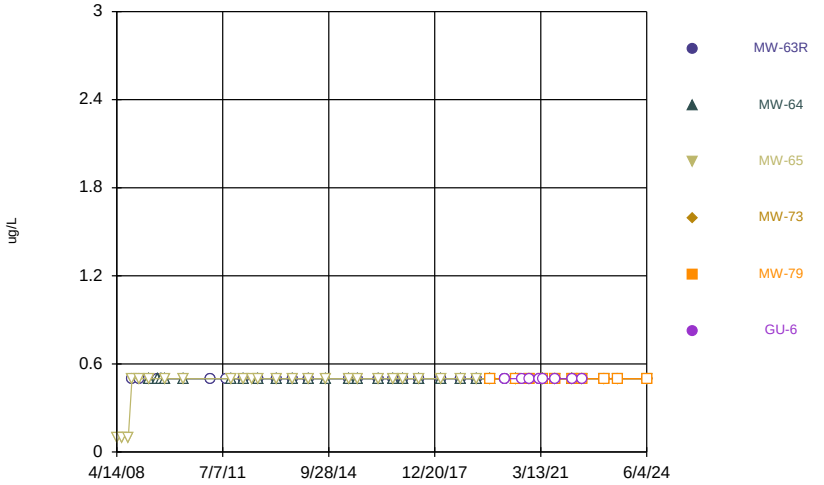
Time Series



Constituent: 1,2-Dichloroethane Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

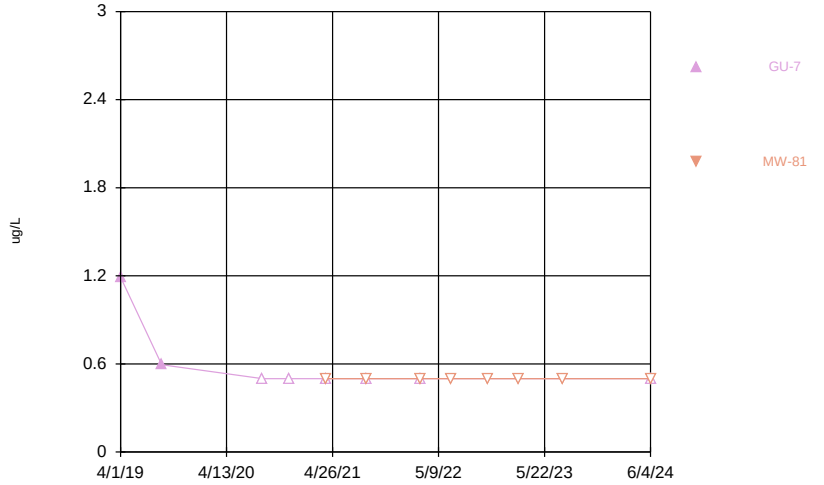
Time Series



Constituent: 1,2-Dichloroethane Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

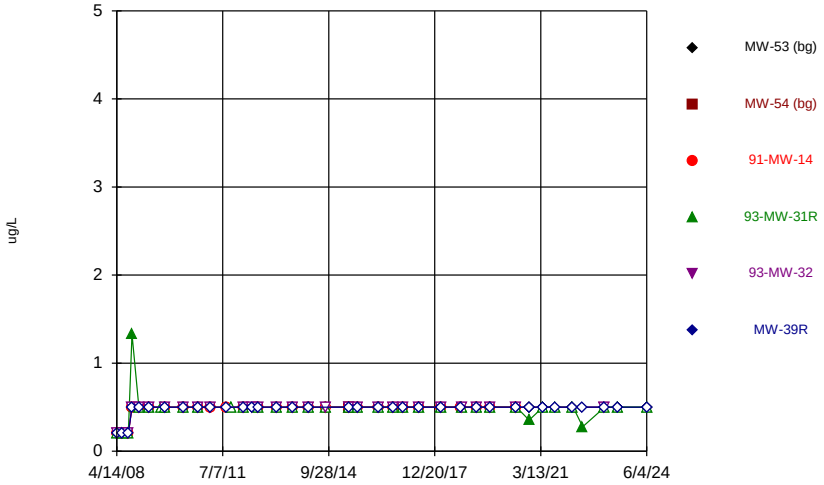
Time Series



Constituent: 1,2-Dichloroethane Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

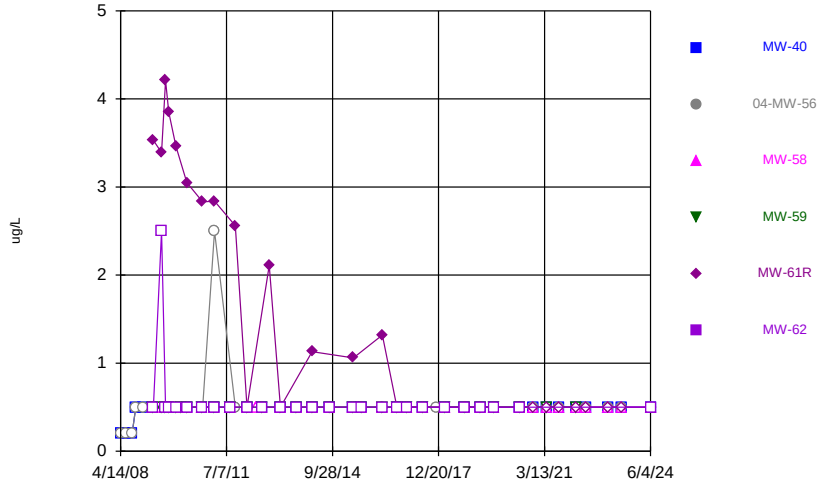
Time Series



Constituent: 1,2-Dichloropropane Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

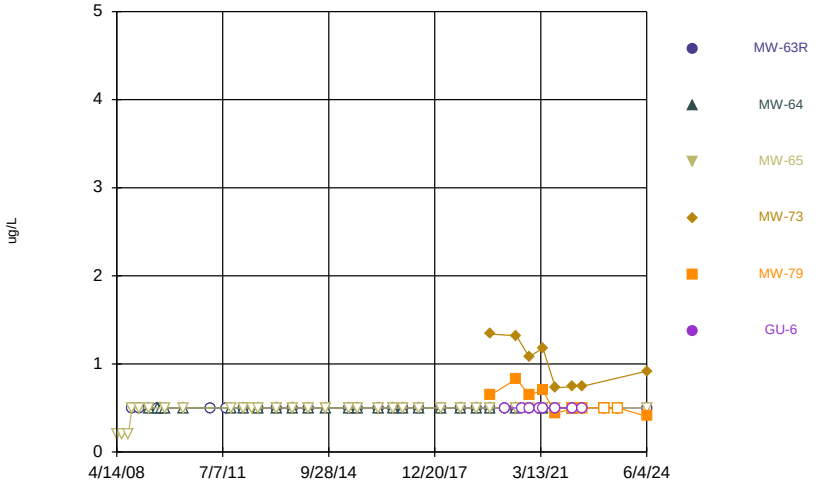
Time Series



Constituent: 1,2-Dichloropropane Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

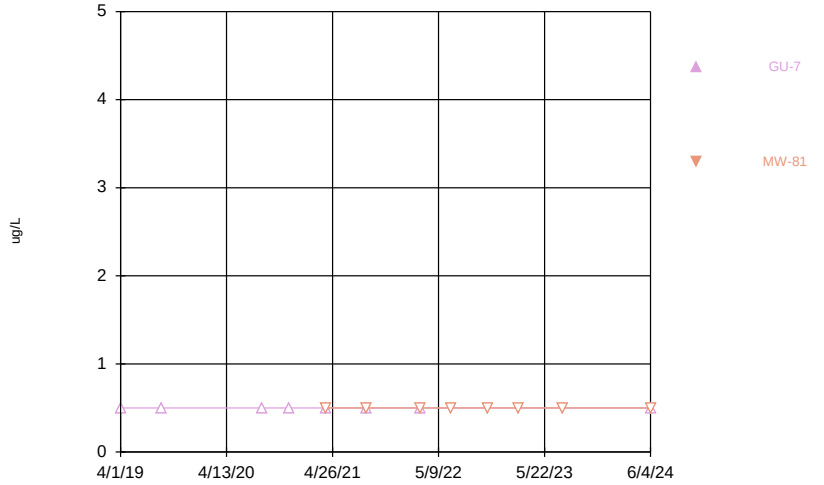
Time Series



Constituent: 1,2-Dichloropropane Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

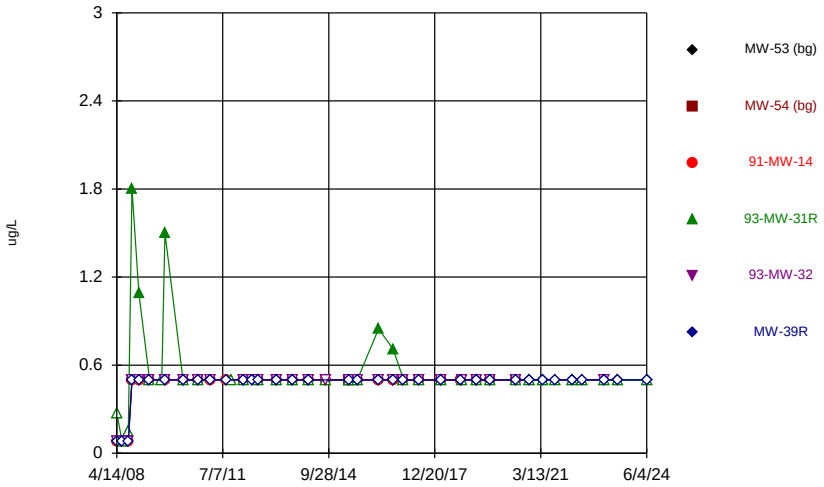
Time Series



Constituent: 1,2-Dichloropropane Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

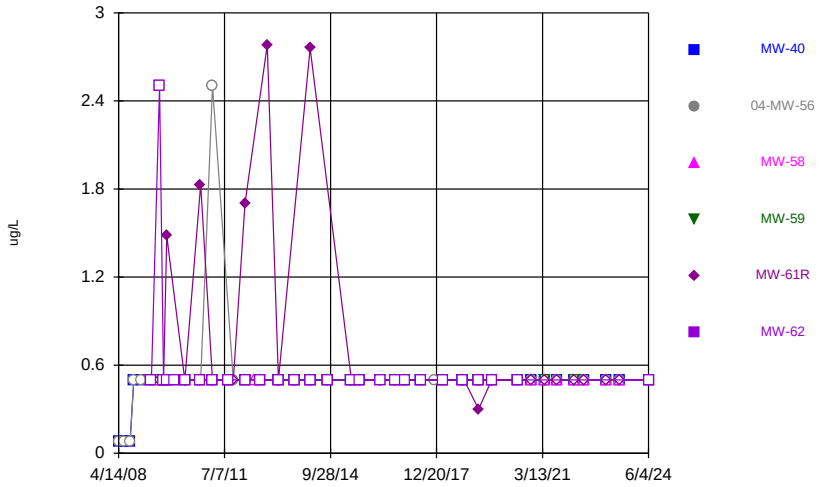
Time Series



Constituent: 1,4-Dichlorobenzene Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

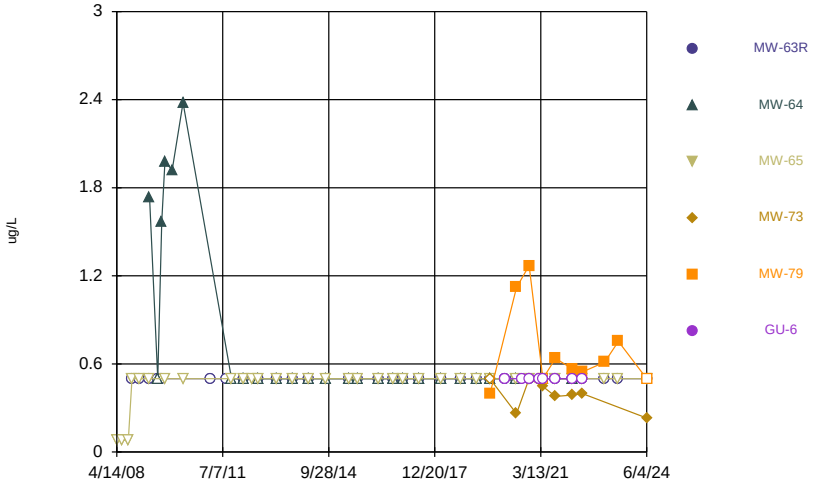
Time Series



Constituent: 1,4-Dichlorobenzene Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

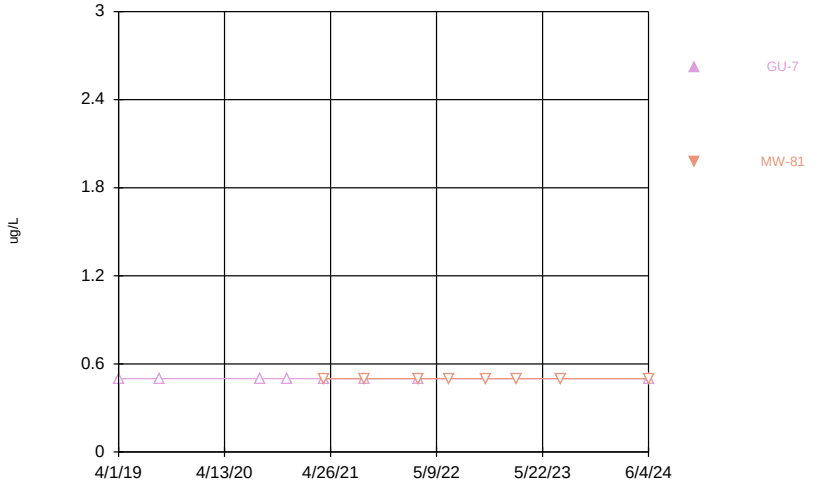
Time Series



Constituent: 1,4-Dichlorobenzene Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

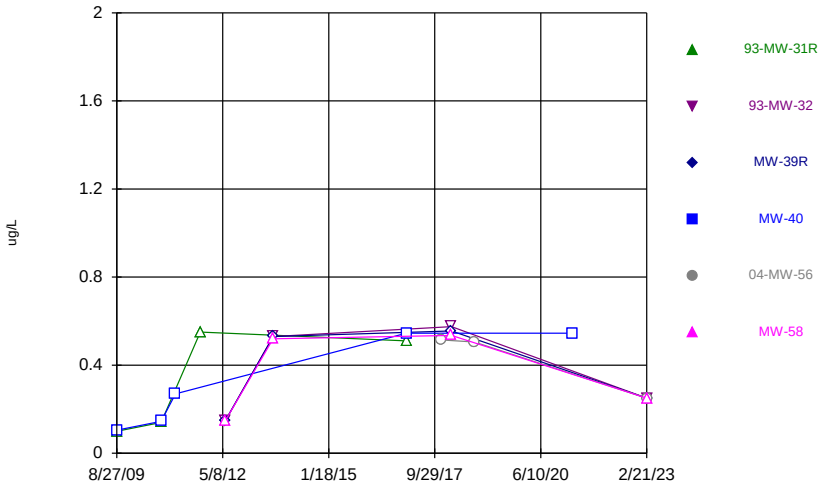
Time Series



Constituent: 1,4-Dichlorobenzene Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

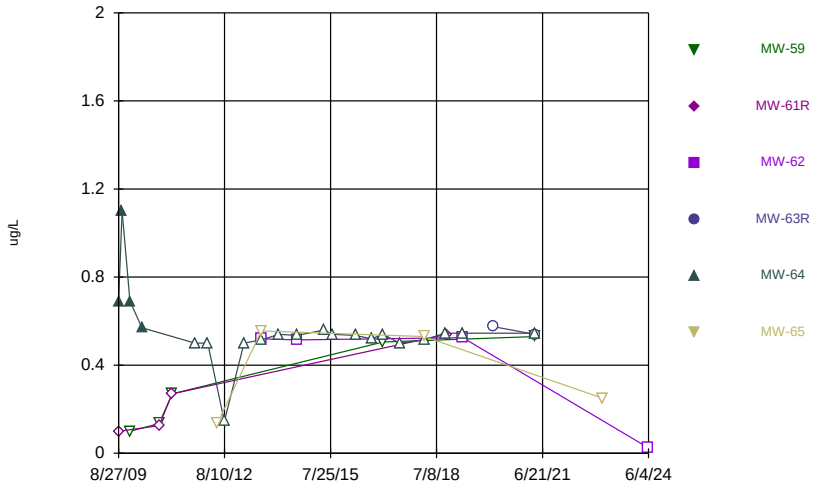
Time Series



Constituent: 2,4,5-TP [Silvex] [2C] Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

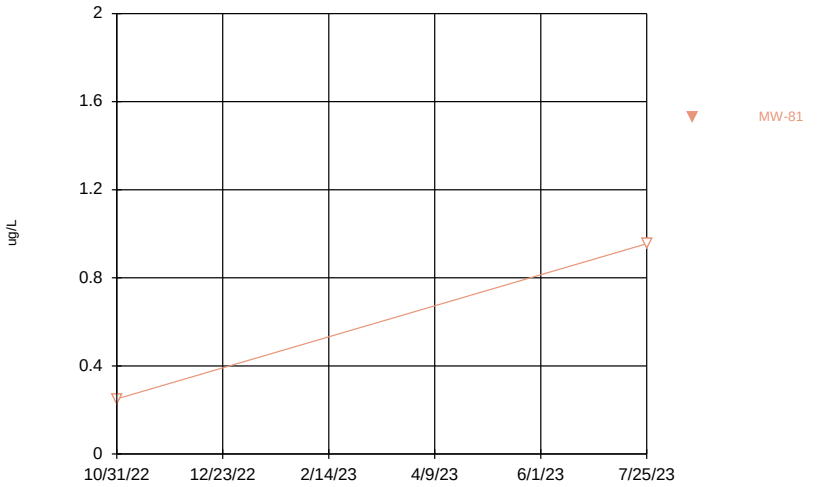
Time Series



Constituent: 2,4,5-TP [Silvex] [2C] Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

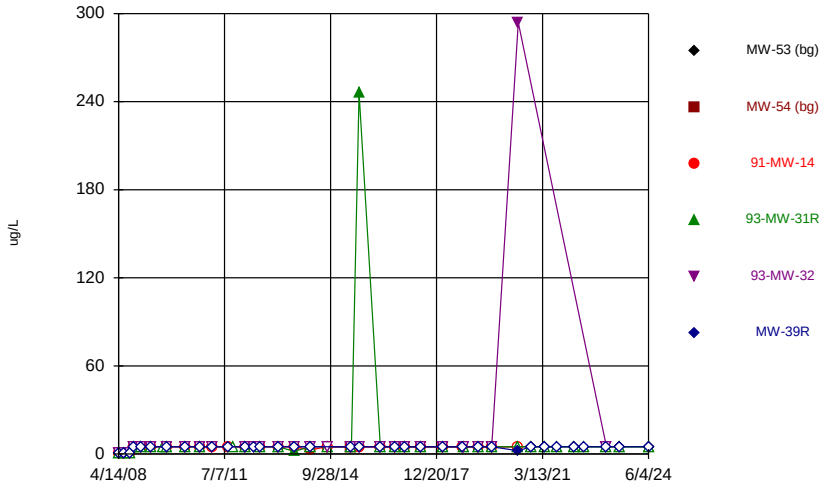
Time Series



Constituent: 2,4,5-TP [Silvex] [2C] Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

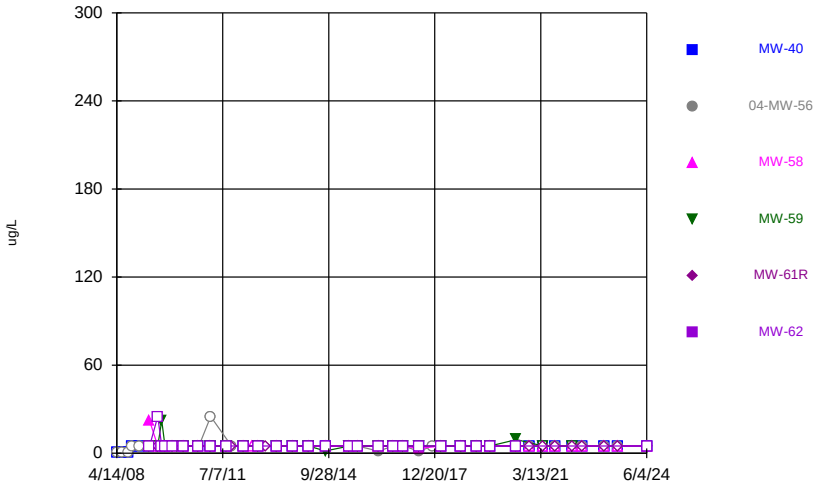
Time Series



Constituent: 2-Butanone Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

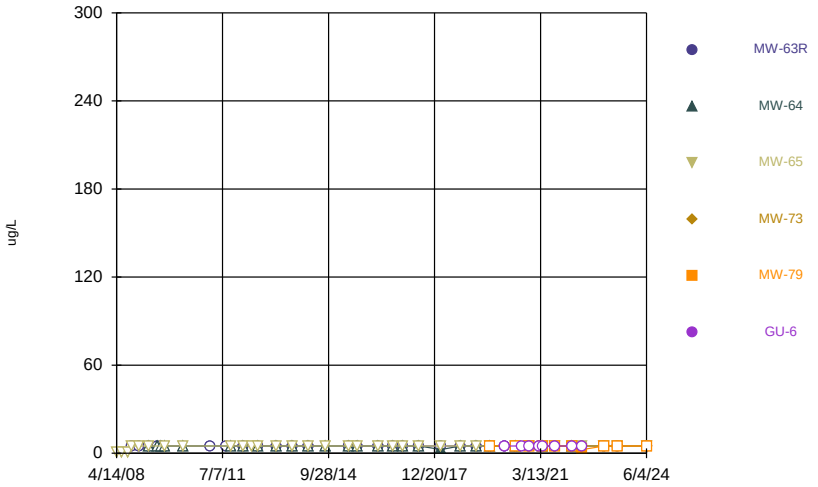
Time Series



Constituent: 2-Butanone Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

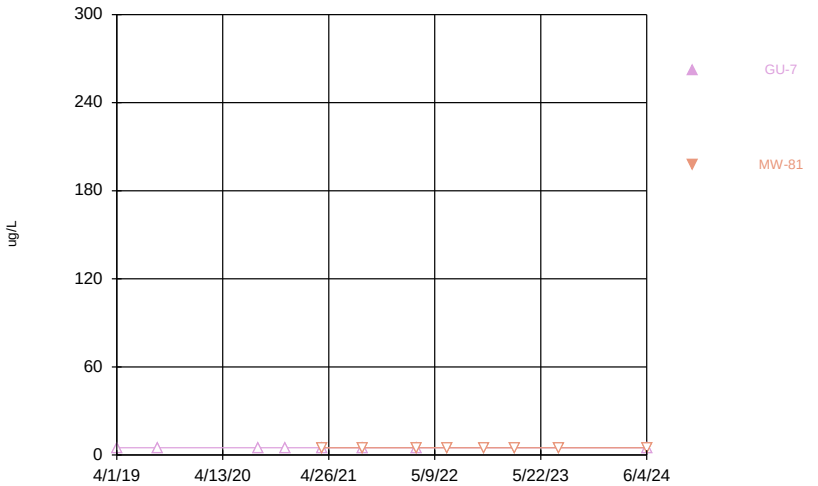
Time Series



Constituent: 2-Butanone Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

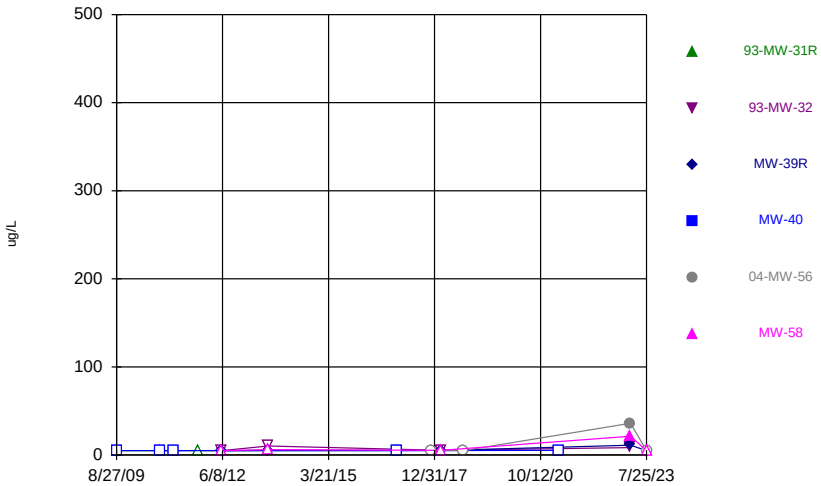
Time Series



Constituent: 2-Butanone Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

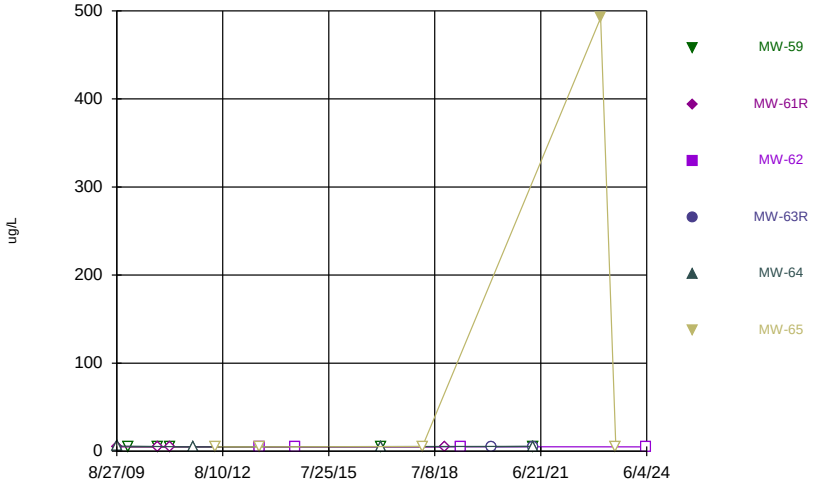
Time Series



Constituent: 2-Methylnaphthalene Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

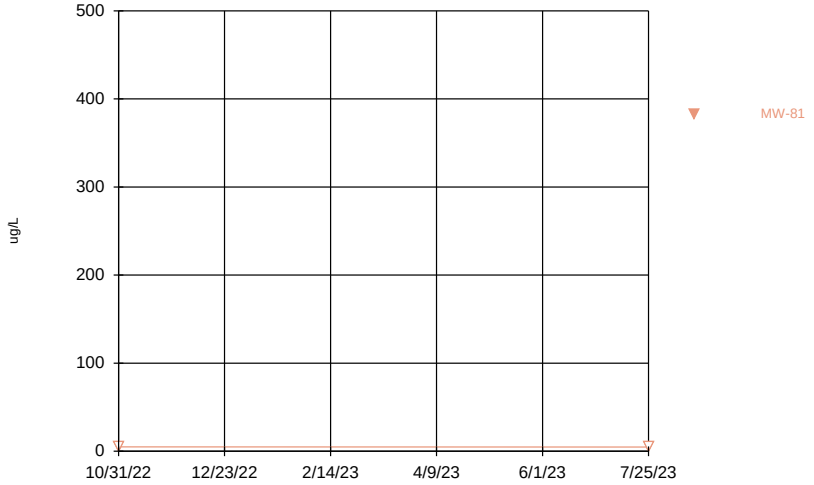
Time Series



Constituent: 2-Methylnaphthalene Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

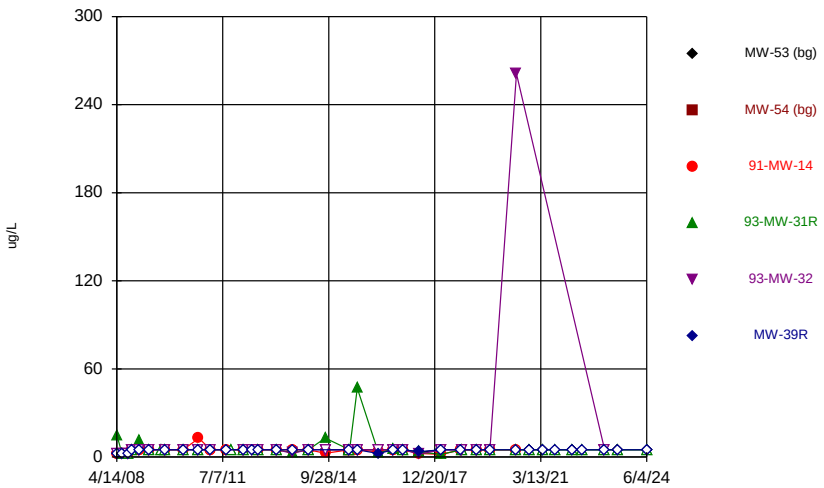
Time Series



Constituent: 2-Methylnaphthalene Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

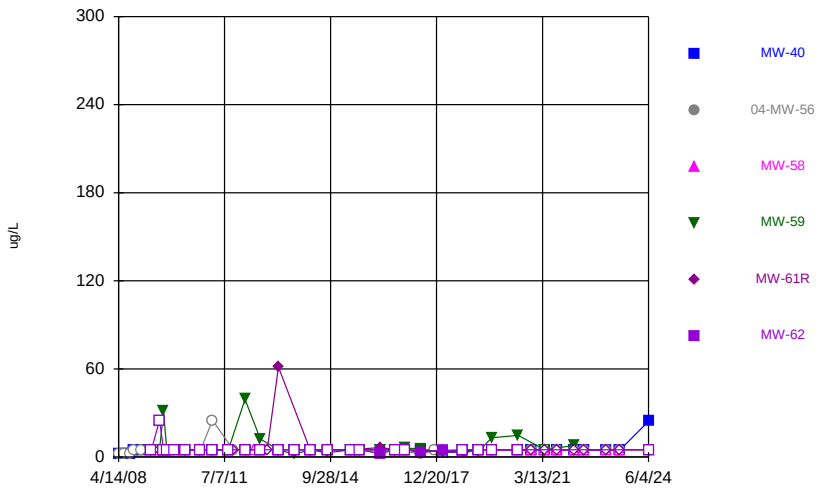
Time Series



Constituent: Acetone Analysis Run 10/23/2024 2:12 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

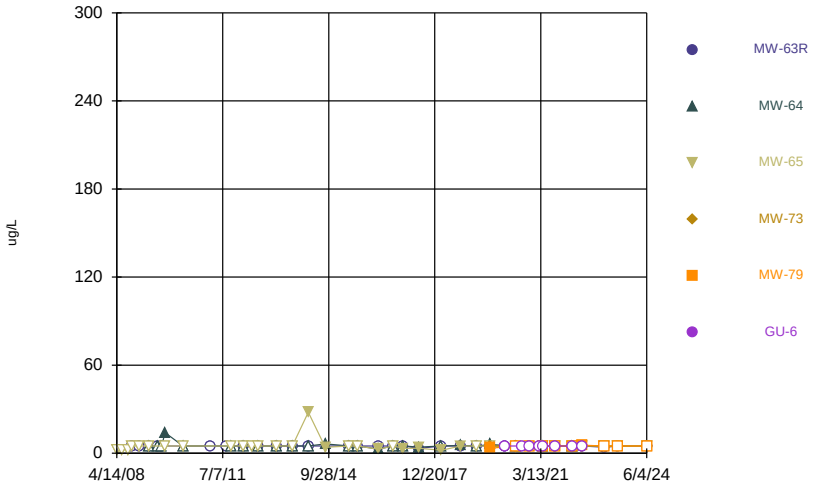
Time Series



Constituent: Acetone Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

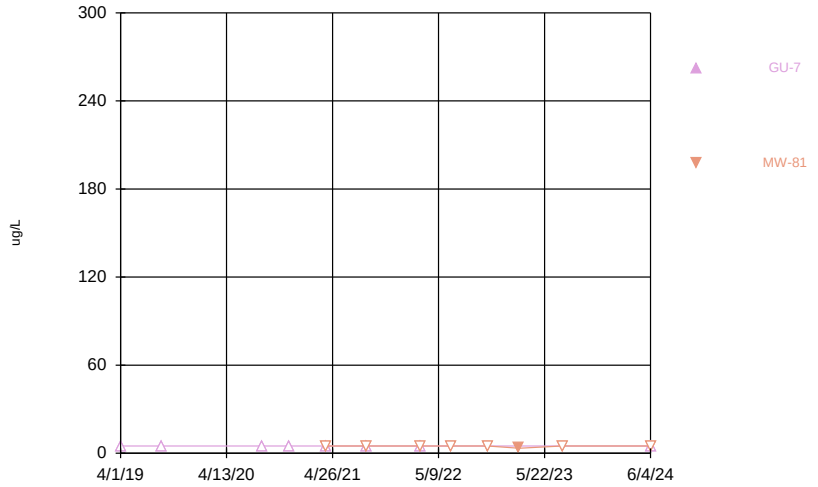
Time Series



Constituent: Acetone Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

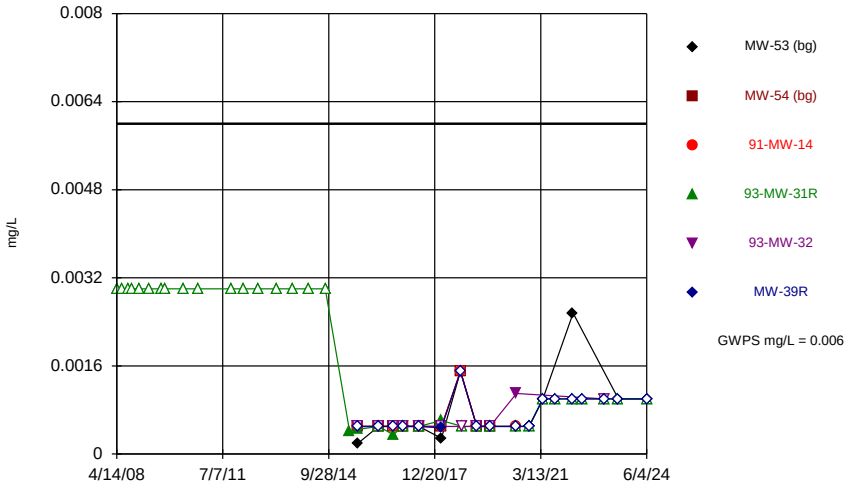
Time Series



Constituent: Acetone Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

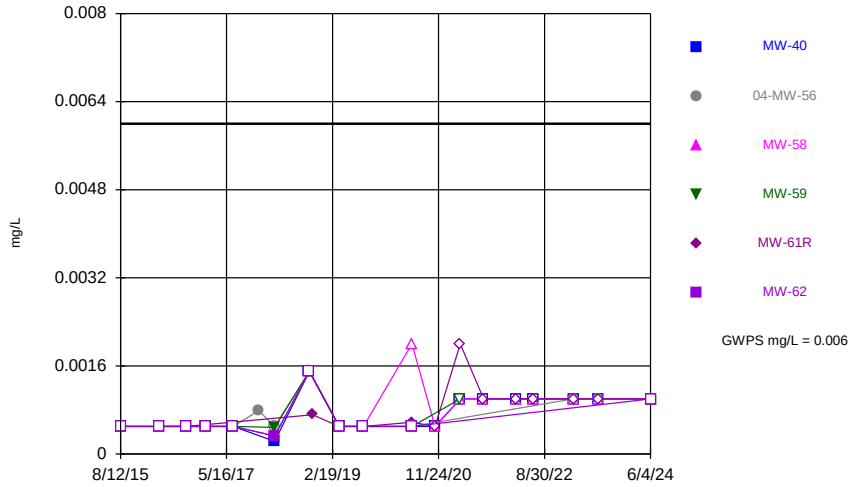
Time Series



Constituent: Antimony Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

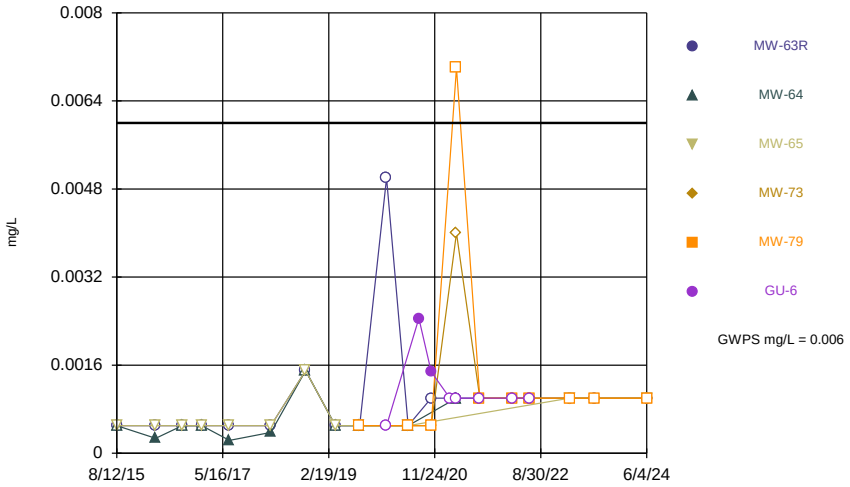
Time Series



Constituent: Antimony Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

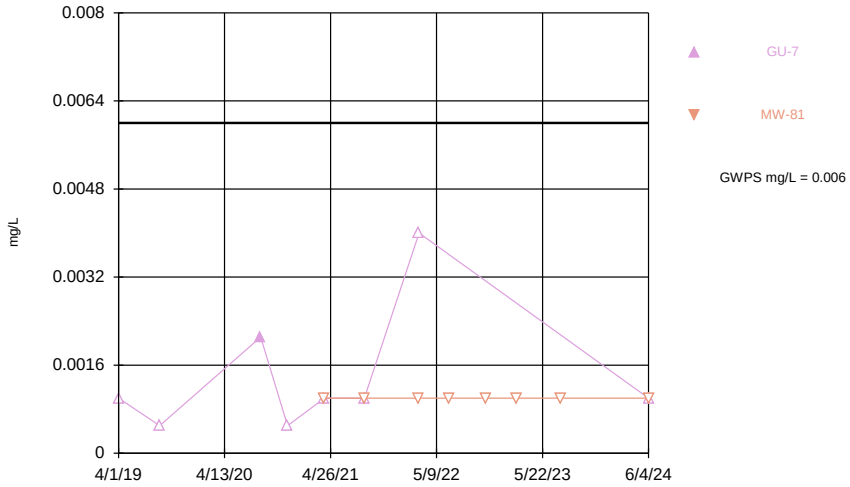
Time Series



Constituent: Antimony Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

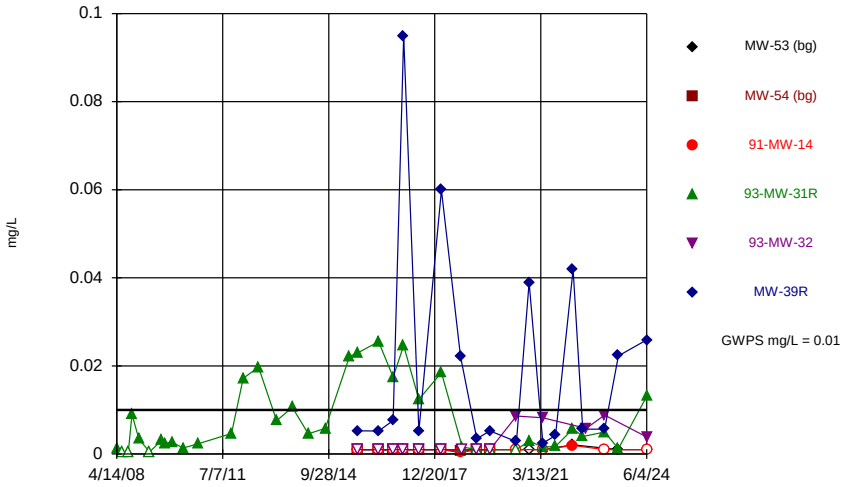
Time Series



Constituent: Antimony Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

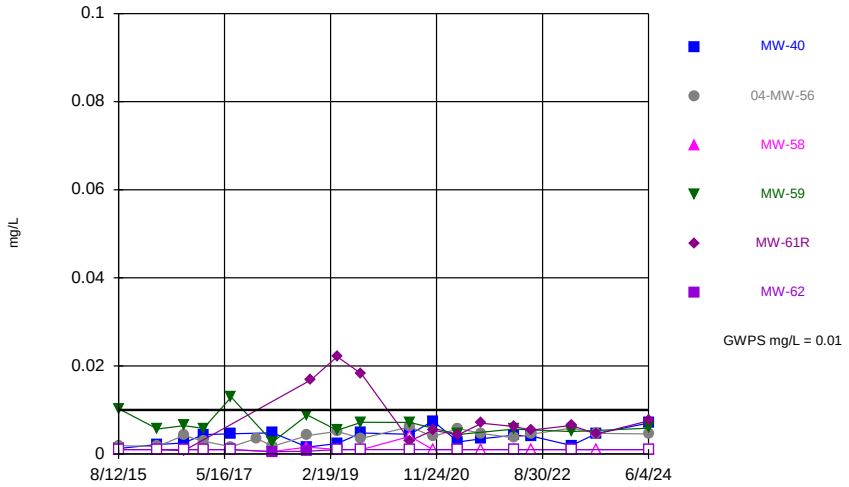
Time Series



Constituent: Arsenic Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

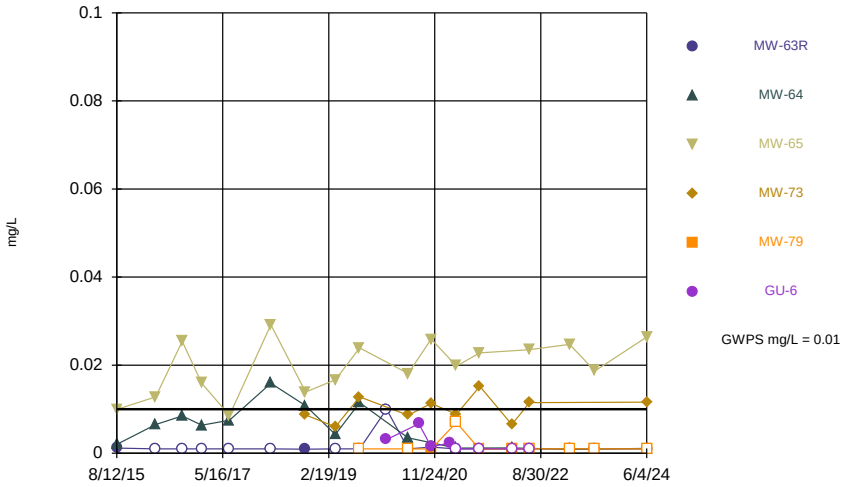
Time Series



Constituent: Arsenic Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

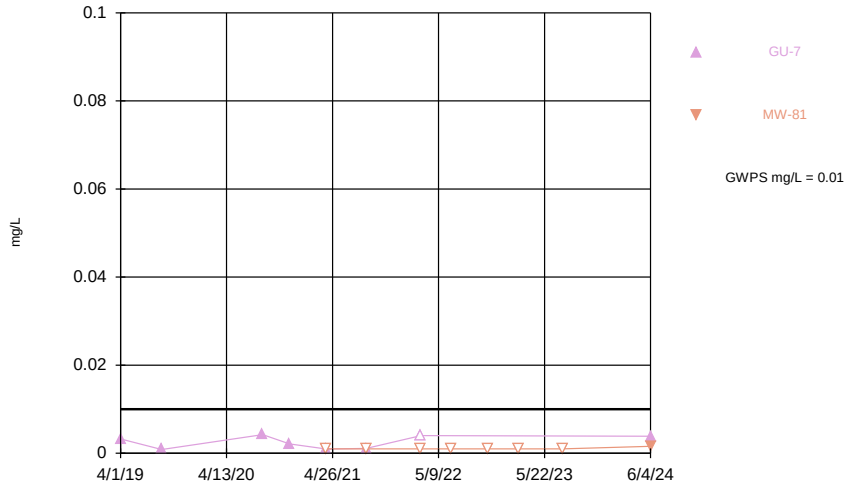
Time Series



Constituent: Arsenic Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

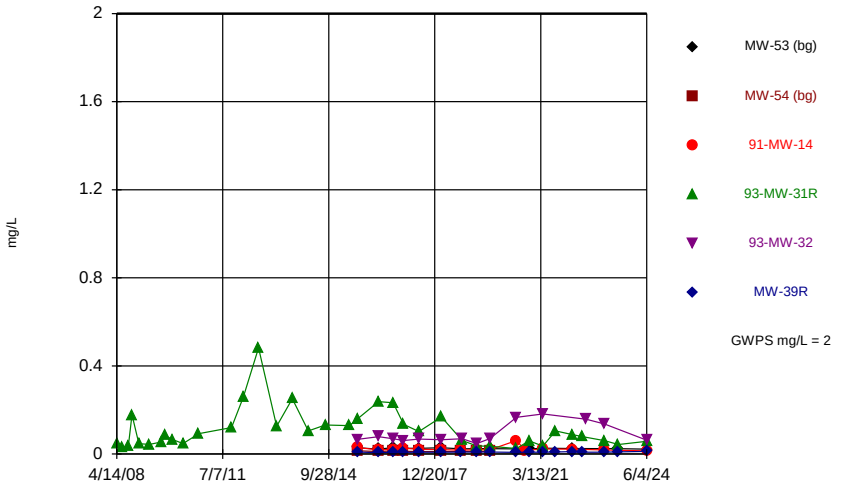
Time Series



Constituent: Arsenic Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG

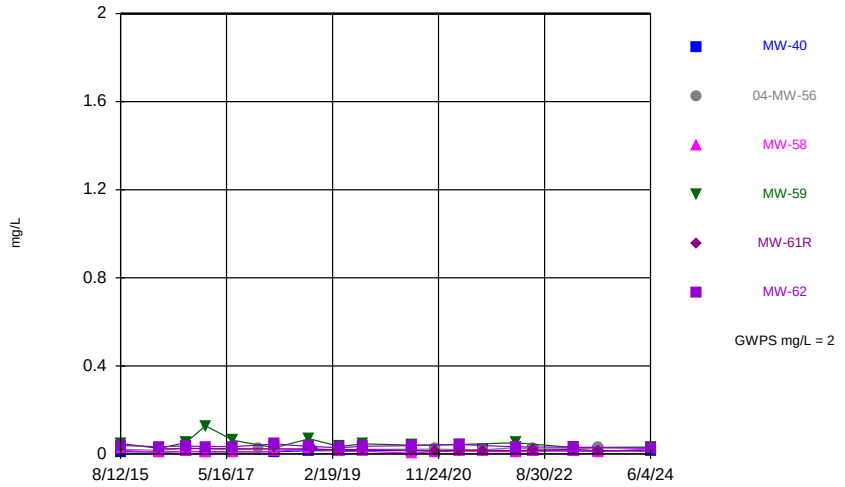
Time Series



Constituent: Barium Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG

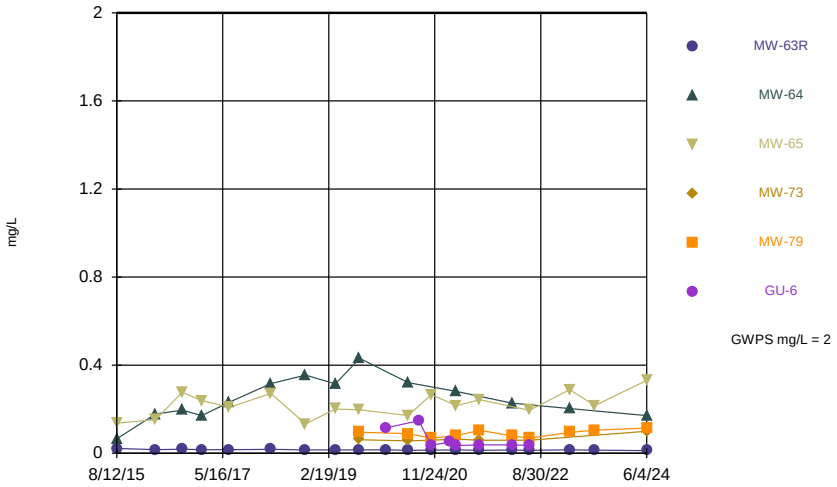
Time Series



Constituent: Barium Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG

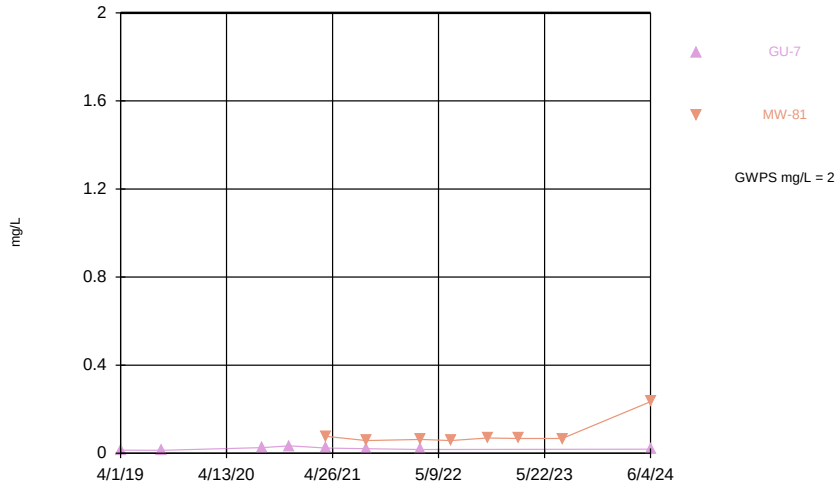
Time Series



Constituent: Barium Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG

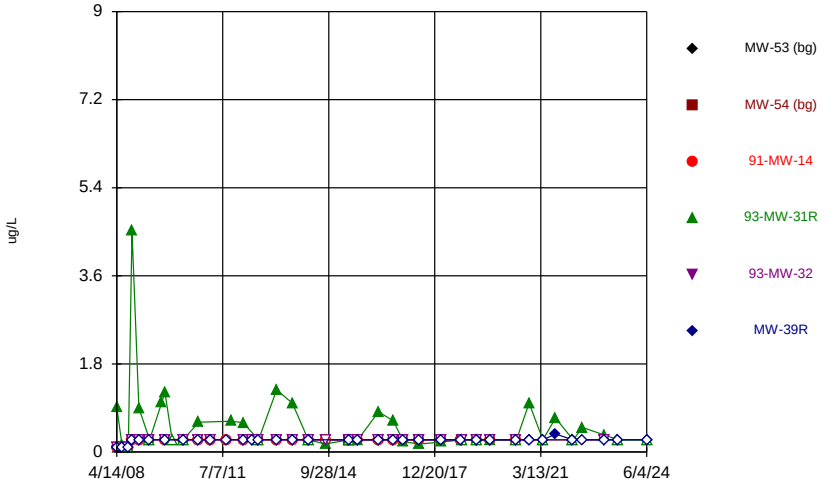
Time Series



Constituent: Barium Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

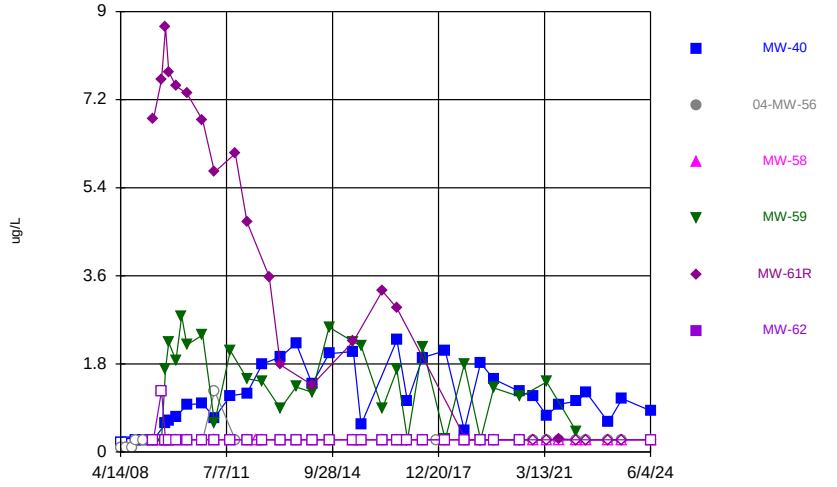
Time Series



Constituent: Benzene Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

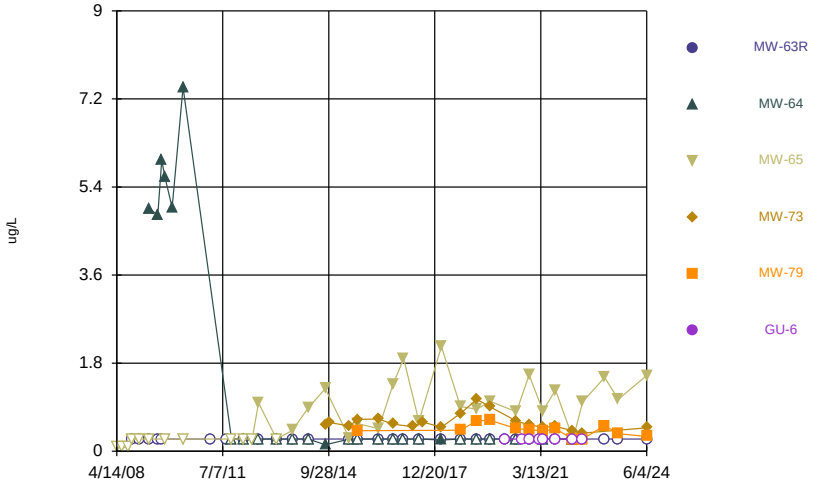
Time Series



Constituent: Benzene Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

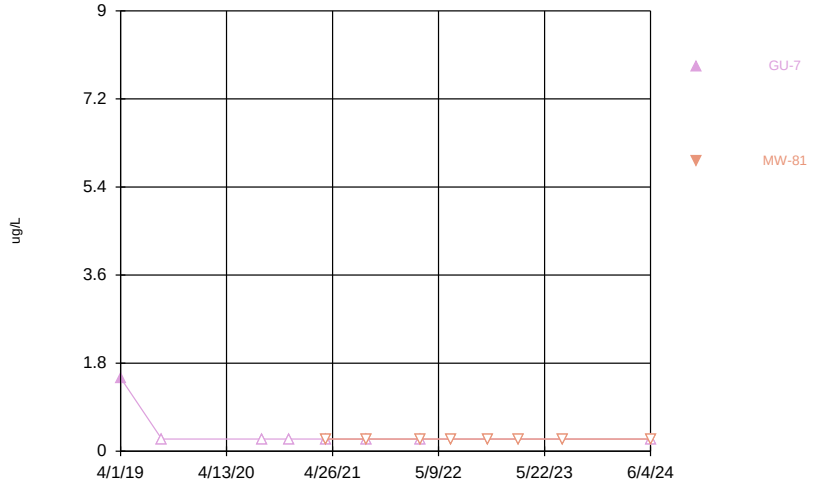
Time Series



Constituent: Benzene Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

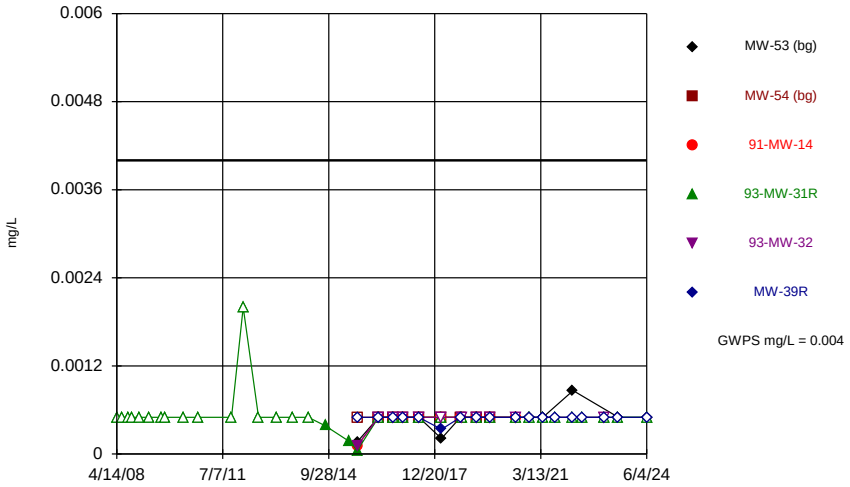
Time Series



Constituent: Benzene Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

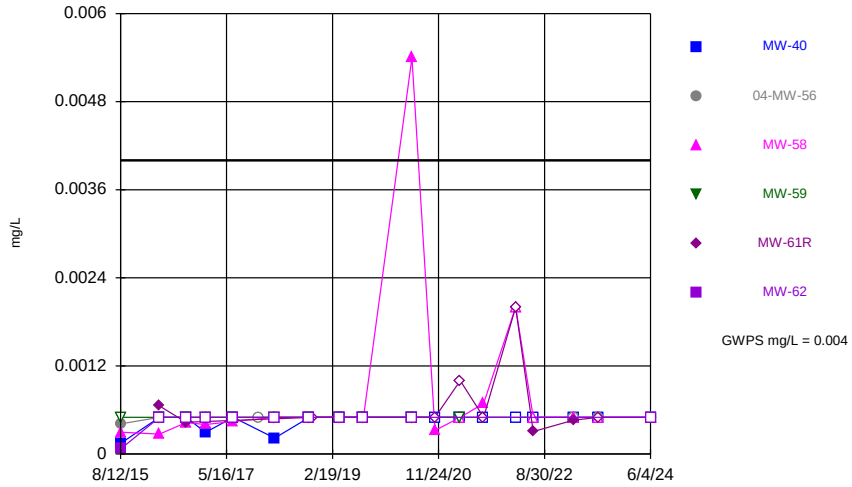
Time Series



Constituent: Beryllium Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

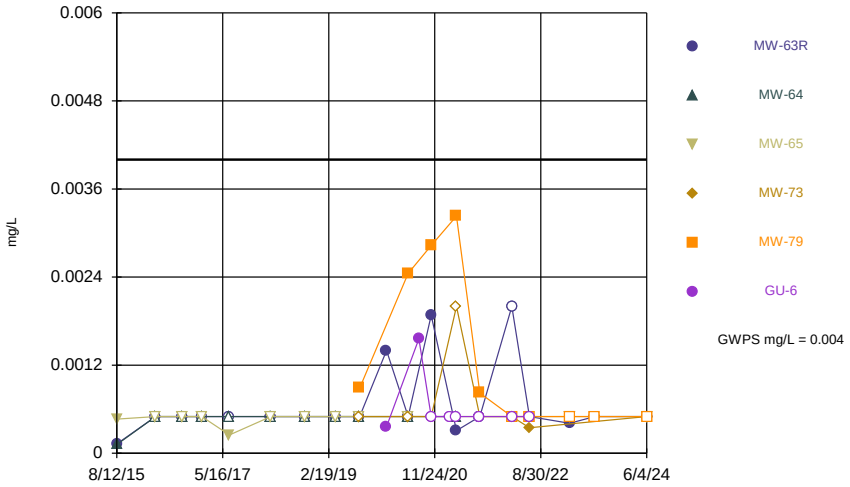
Time Series



Constituent: Beryllium Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

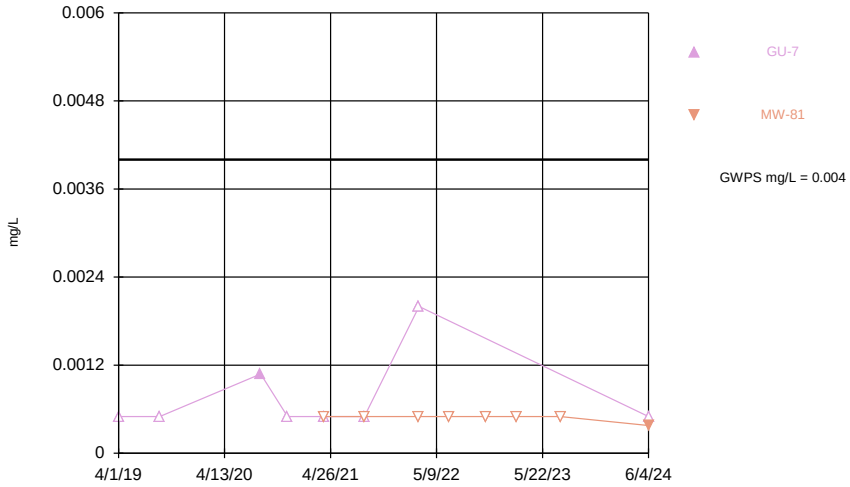
Time Series



Constituent: Beryllium Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

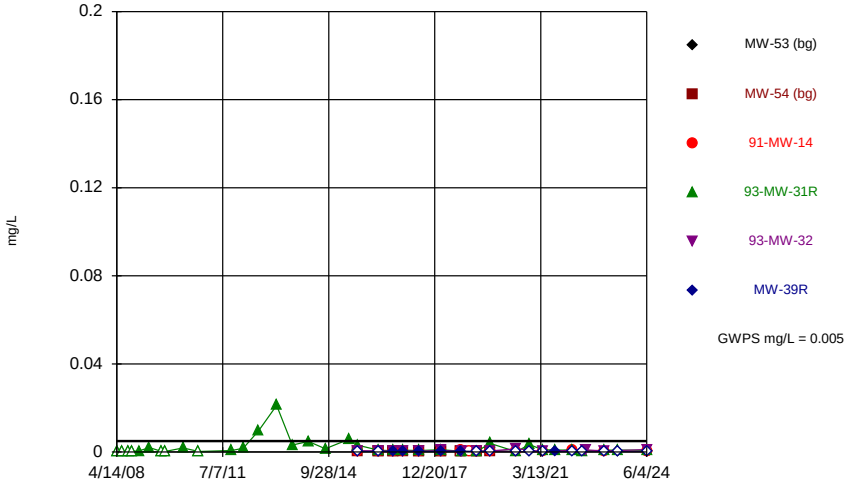
Time Series



Constituent: Beryllium Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

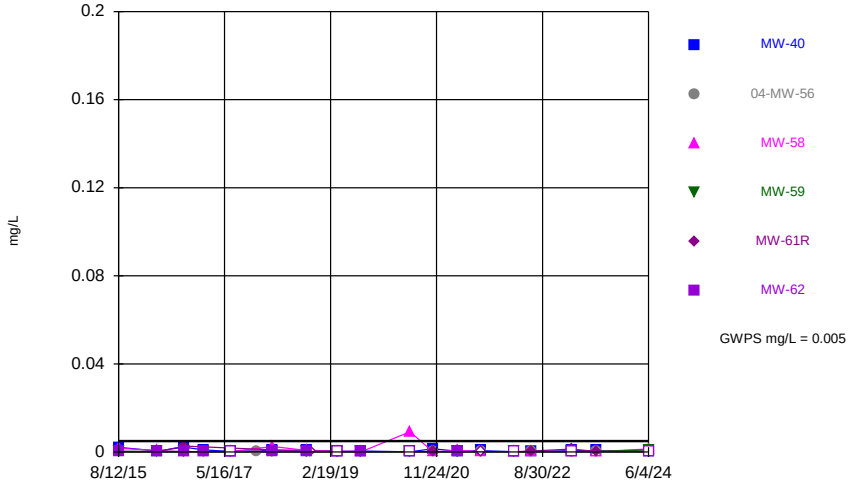
Time Series



Constituent: Cadmium Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

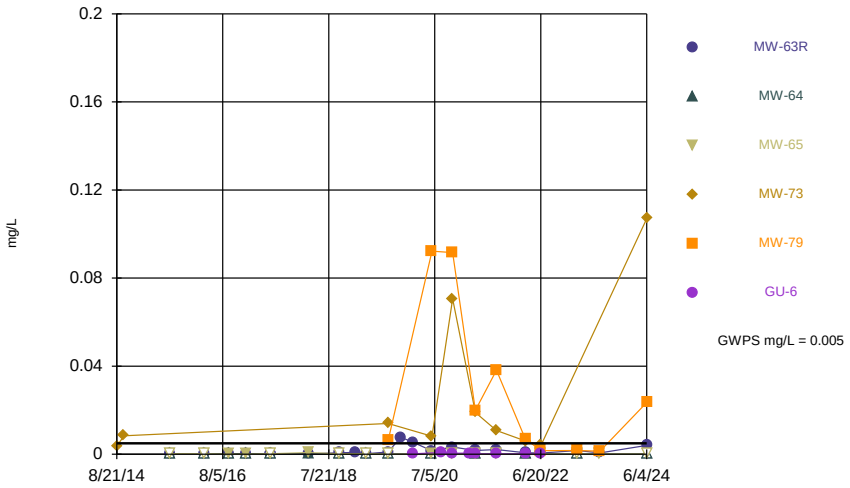
Time Series



Constituent: Cadmium Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

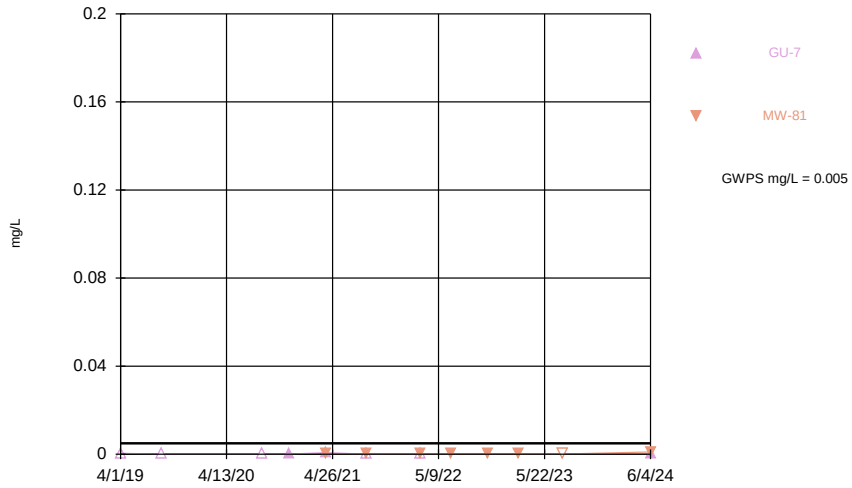
Time Series



Constituent: Cadmium Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

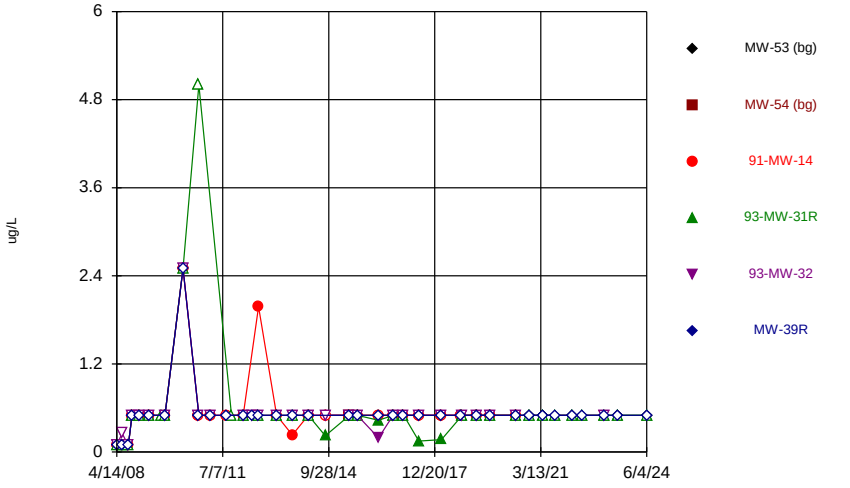
Time Series



Constituent: Cadmium Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

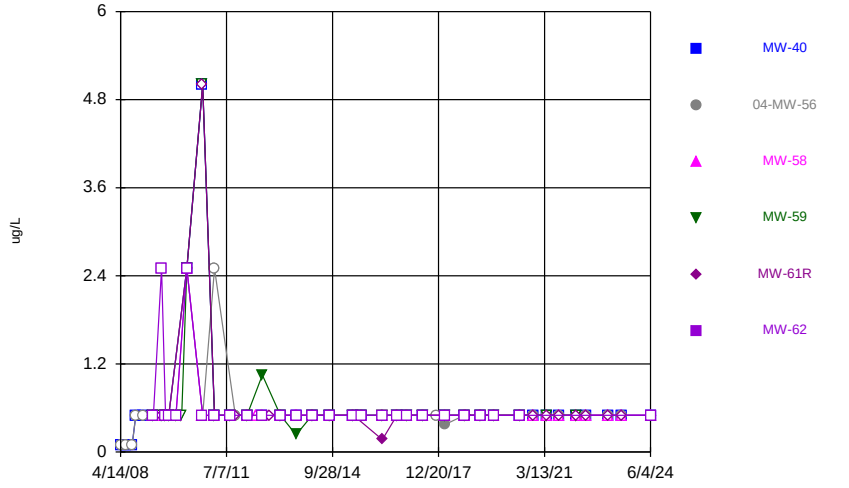
Time Series



Constituent: Carbon disulfide Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

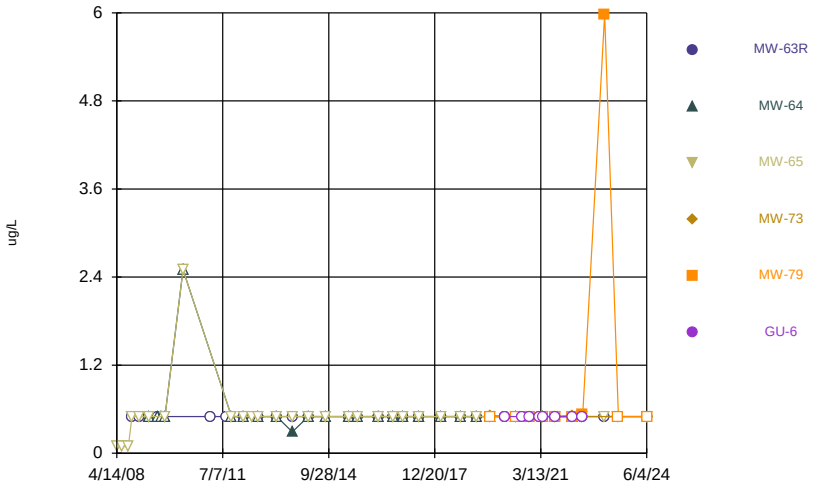
Time Series



Constituent: Carbon disulfide Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

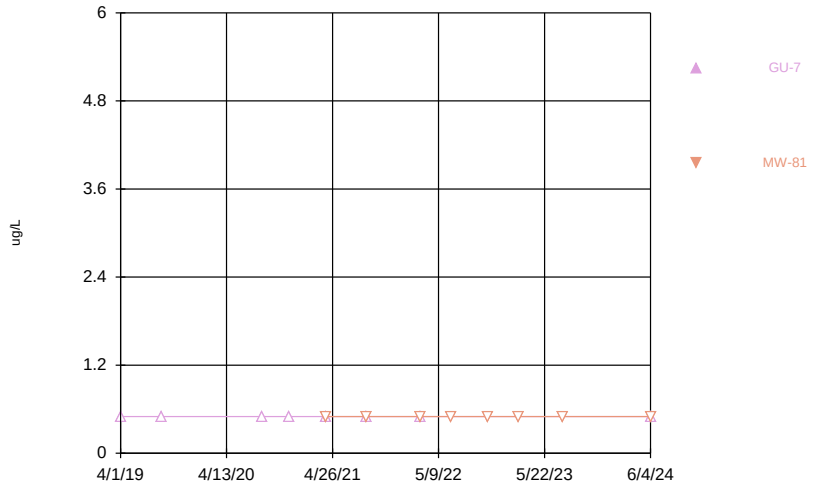
Time Series



Constituent: Carbon disulfide Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

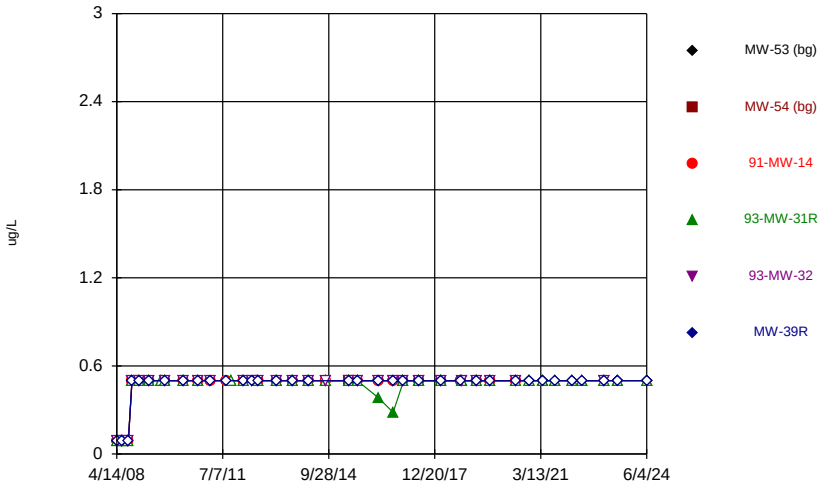
Time Series



Constituent: Carbon disulfide Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

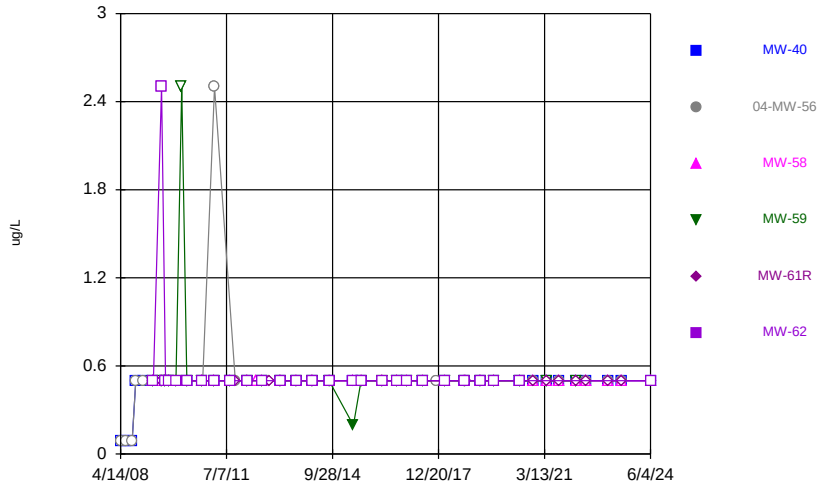
Time Series



Constituent: Chlorobenzene Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

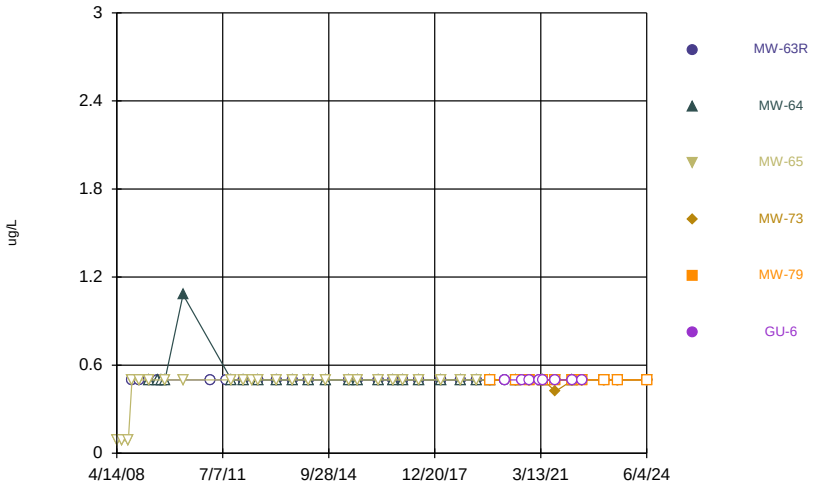
Time Series



Constituent: Chlorobenzene Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

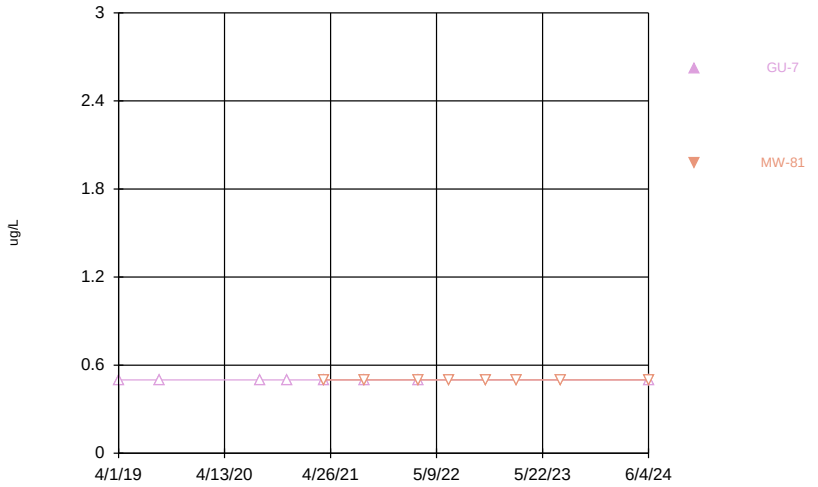
Time Series



Constituent: Chlorobenzene Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

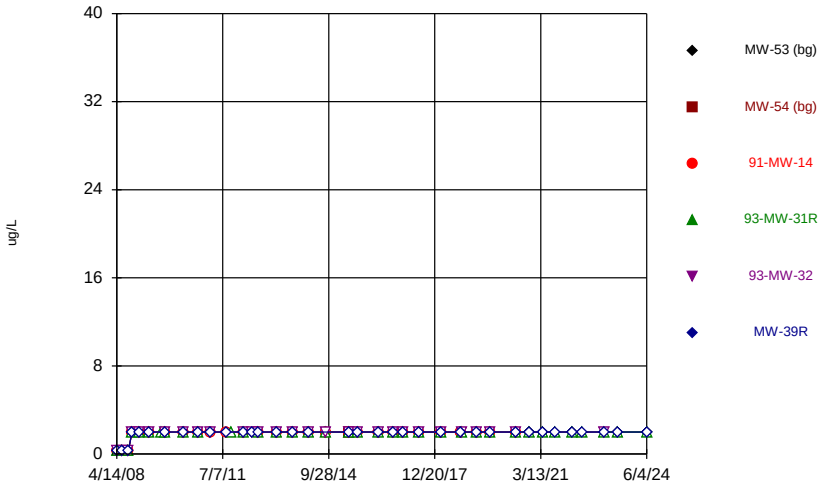
Time Series



Constituent: Chlorobenzene Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

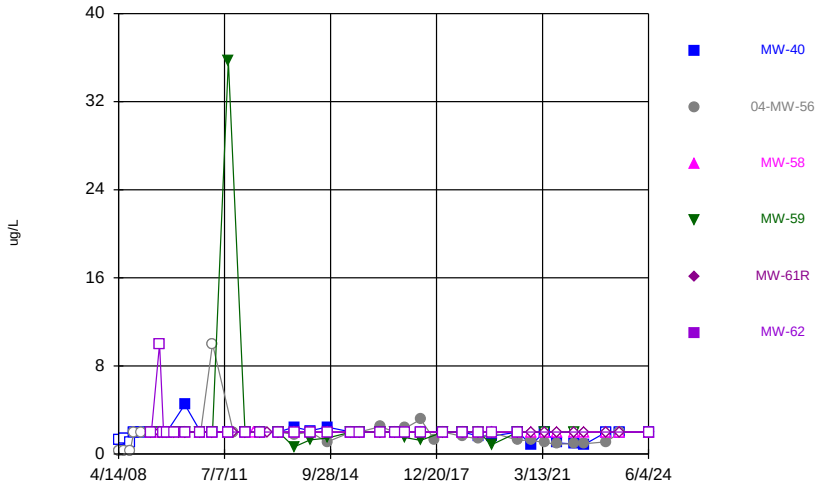
Time Series



Constituent: Chloroethane Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

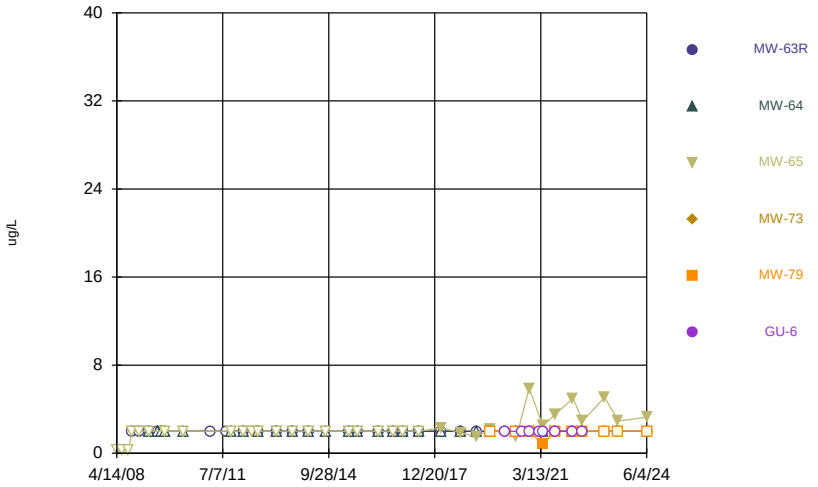
Time Series



Constituent: Chloroethane Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

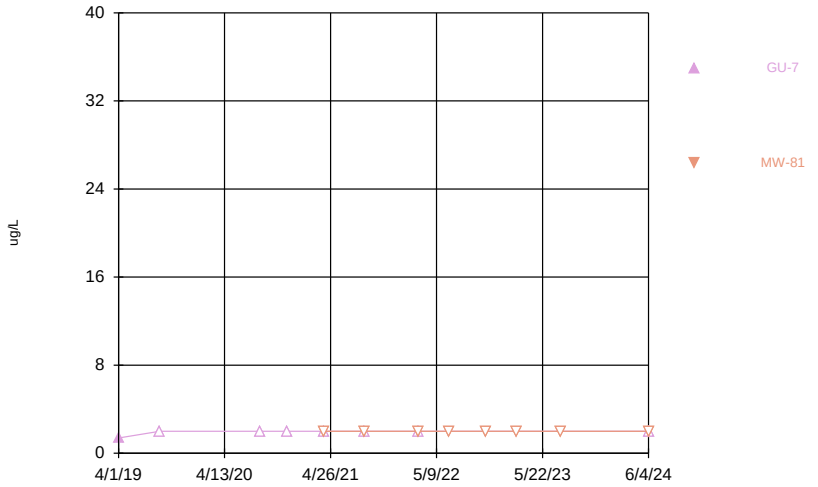
Time Series



Constituent: Chloroethane Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

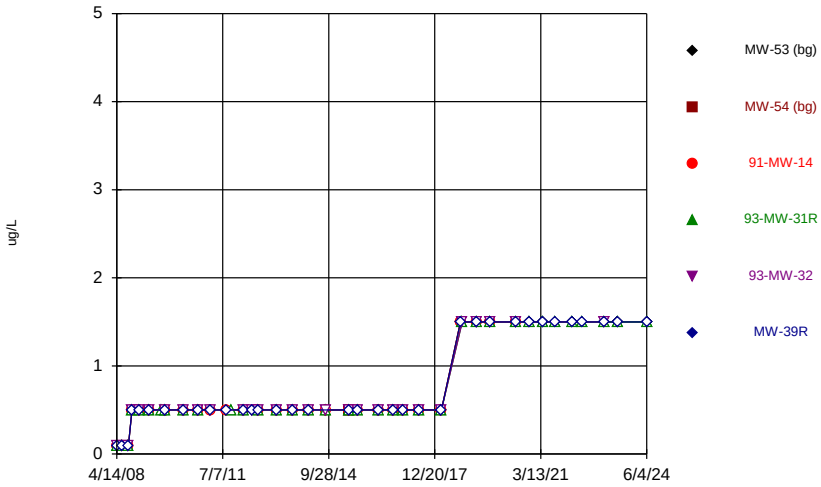
Time Series



Constituent: Chloroethane Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

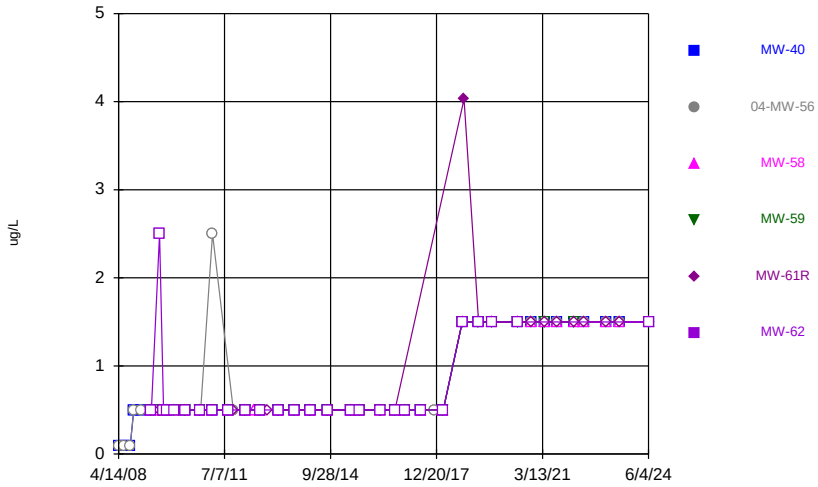
Time Series



Constituent: Chloroform Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

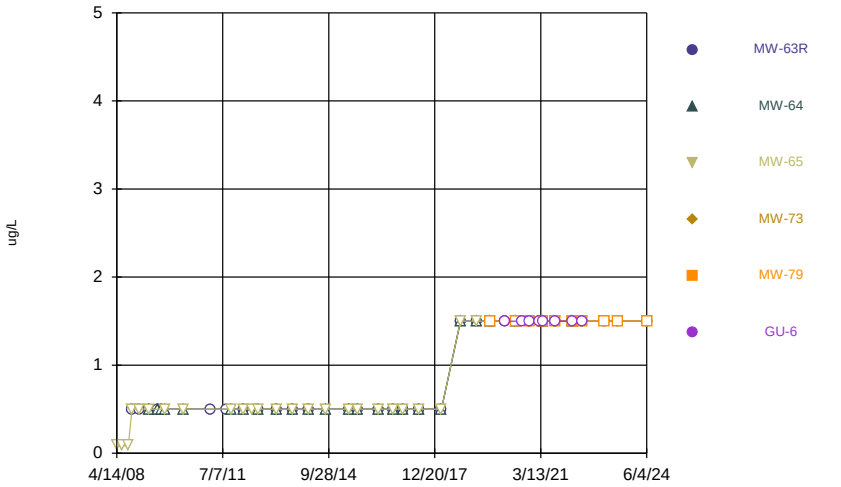
Time Series



Constituent: Chloroform Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

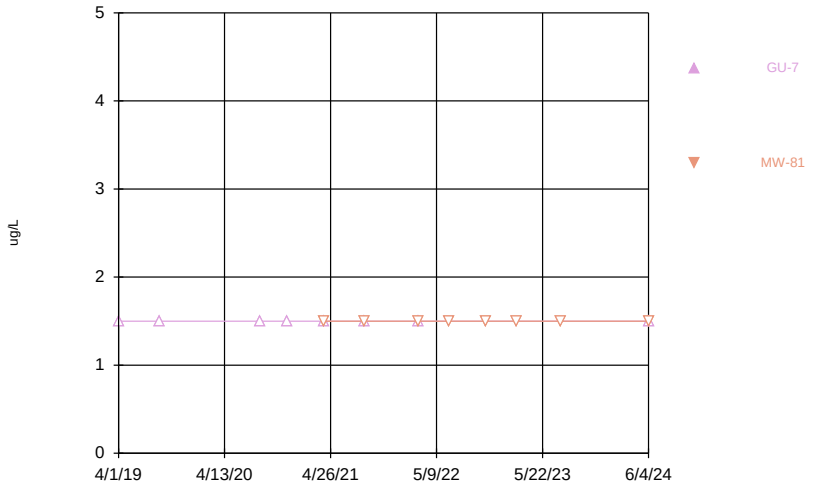
Time Series



Constituent: Chloroform Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

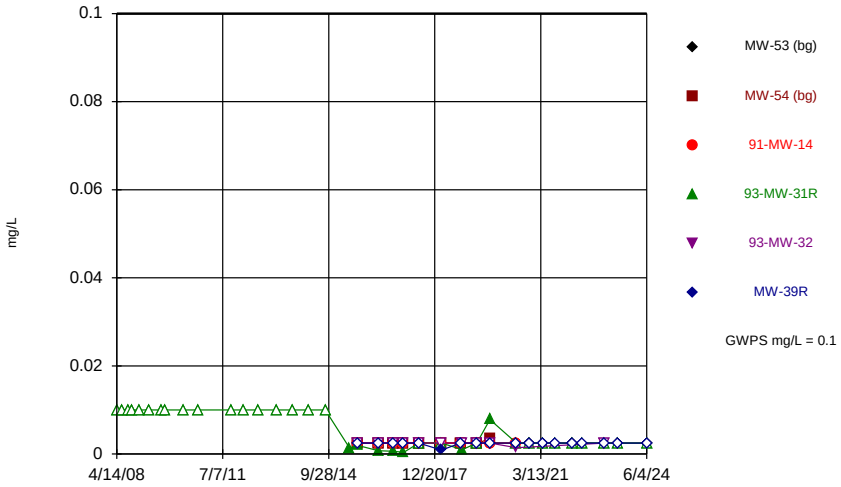
Time Series



Constituent: Chloroform Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

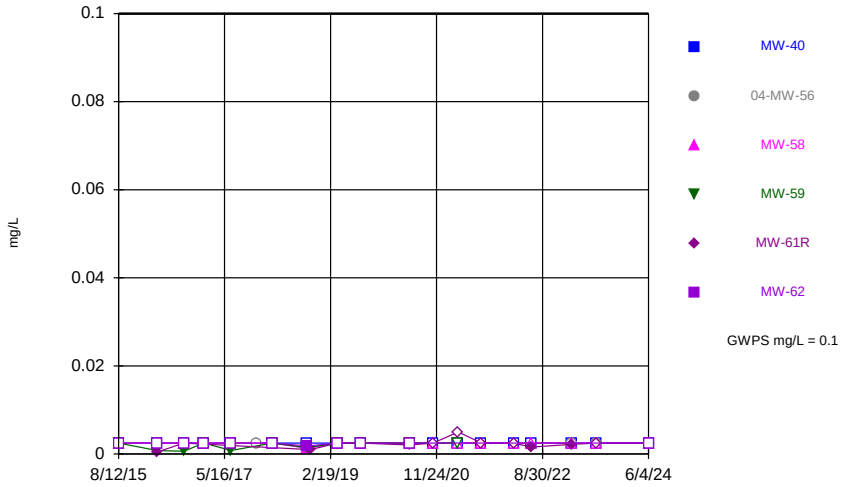
Time Series



Constituent: Chromium Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

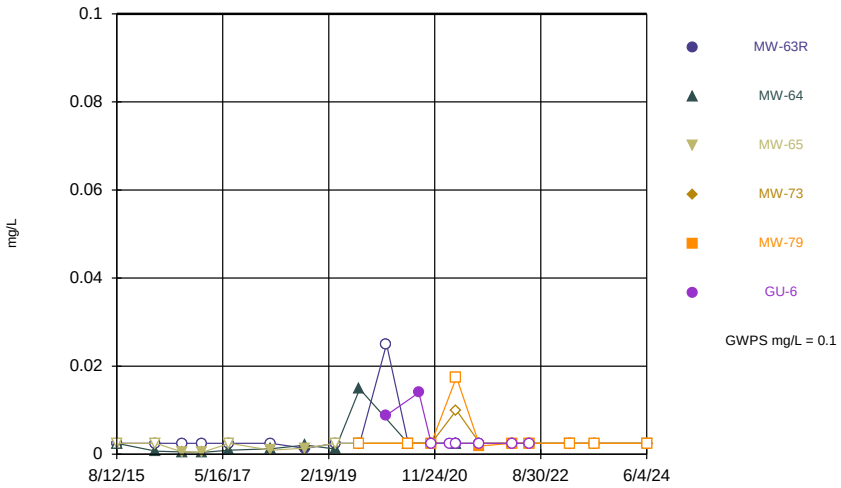
Time Series



Constituent: Chromium Analysis Run 10/23/2024 2:13 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

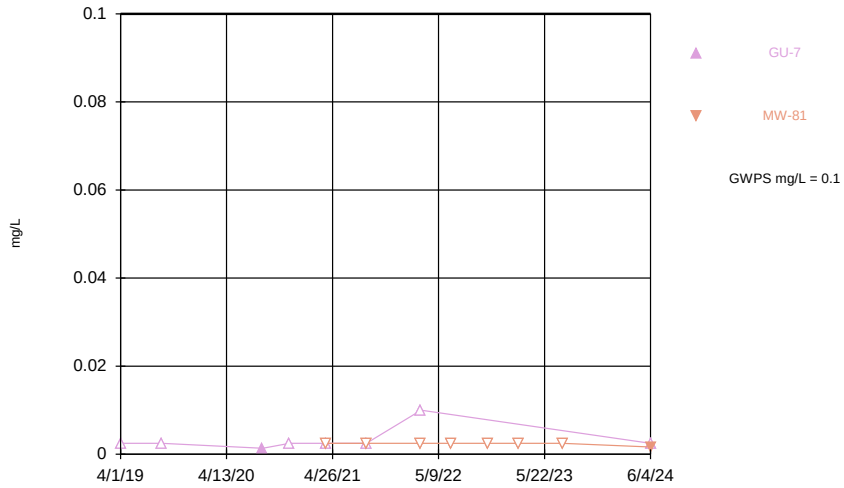
Time Series



Constituent: Chromium Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

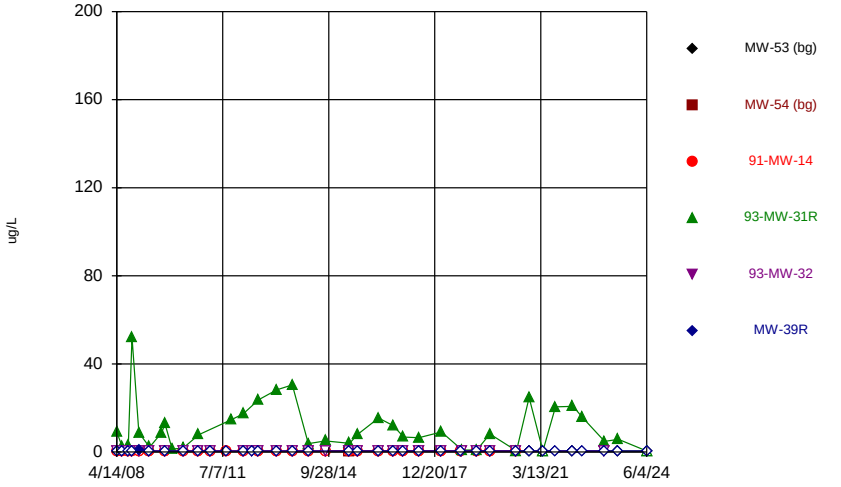
Time Series



Constituent: Chromium Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

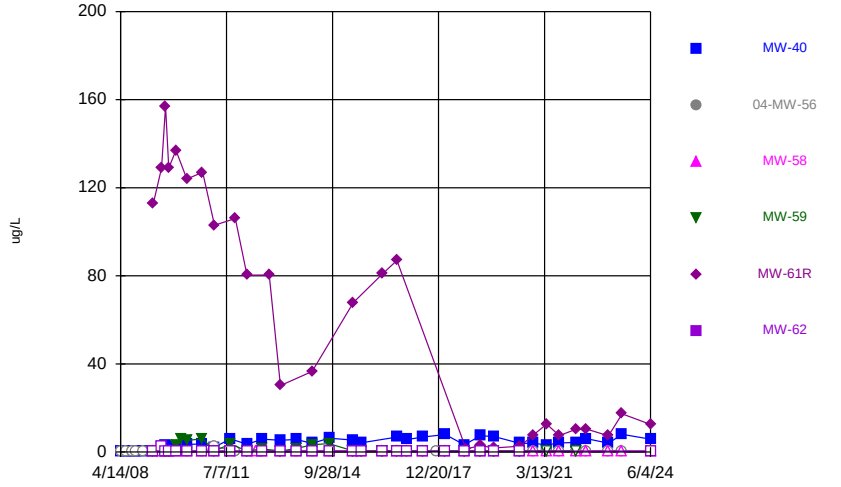
Time Series



Constituent: cis-1,2-Dichloroethene Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

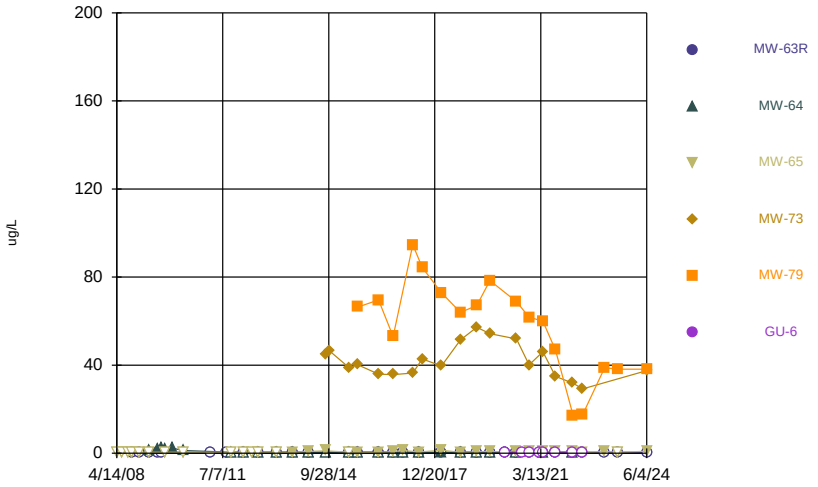
Time Series



Constituent: cis-1,2-Dichloroethene Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

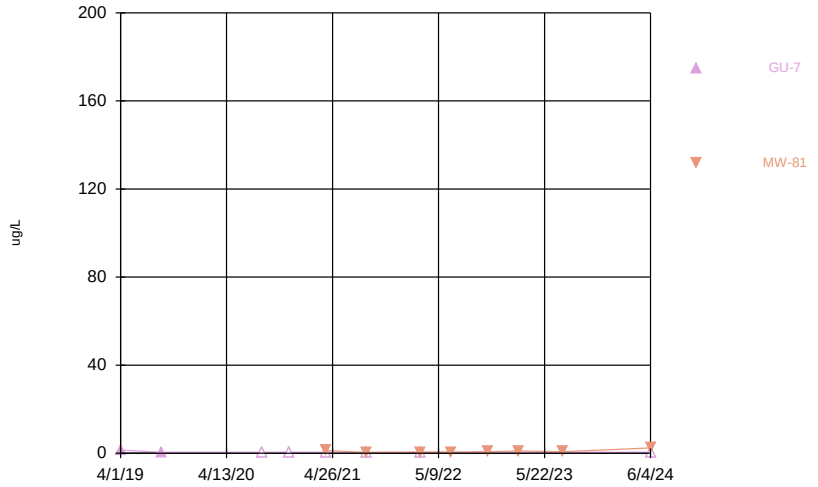
Time Series



Constituent: cis-1,2-Dichloroethene Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

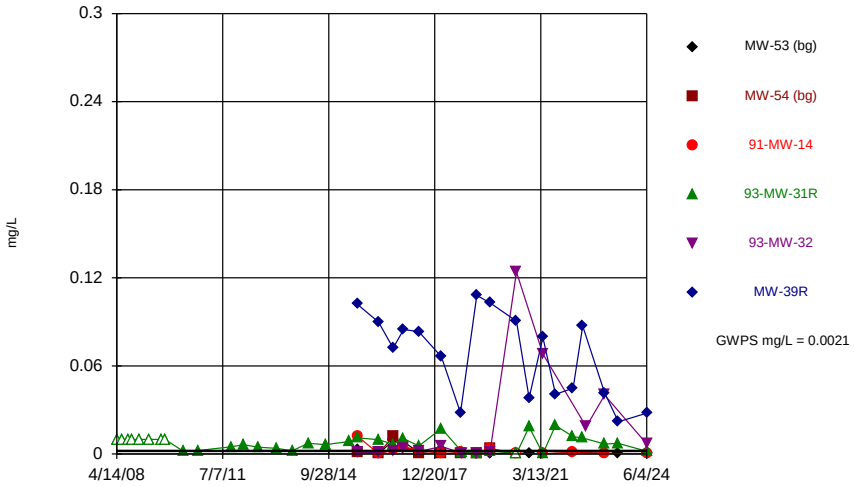
Time Series



Constituent: cis-1,2-Dichloroethene Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

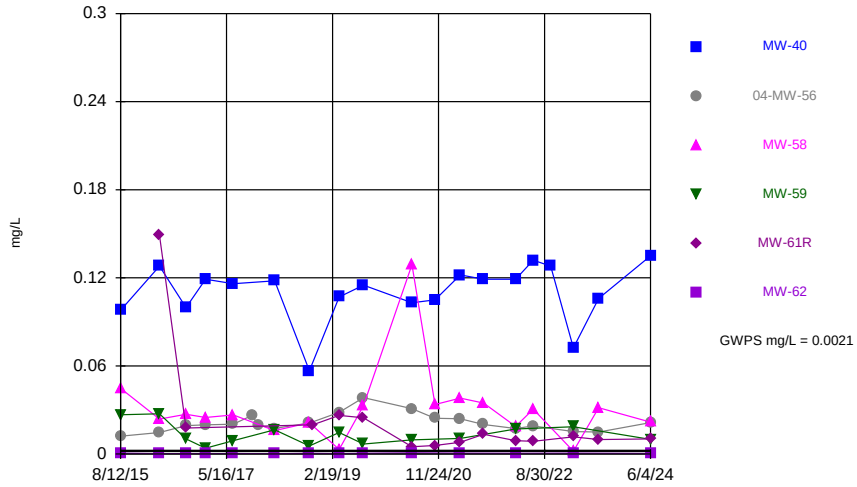
Time Series



Constituent: Cobalt Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG

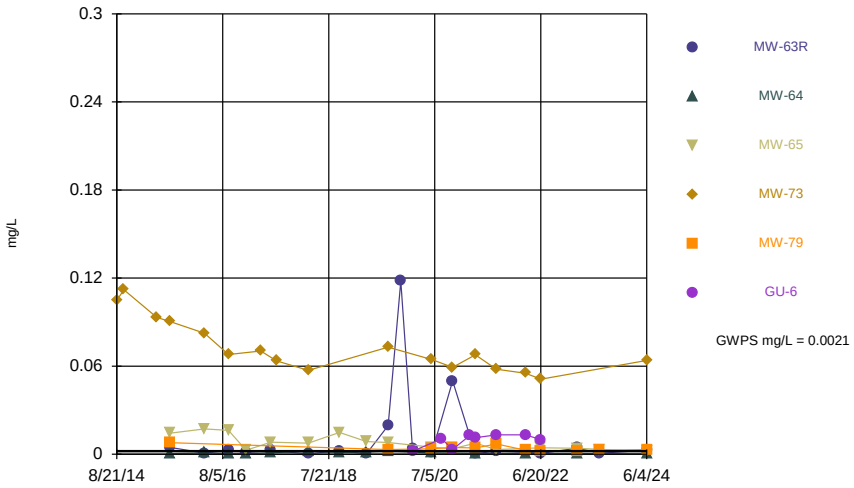
Time Series



Constituent: Cobalt Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG

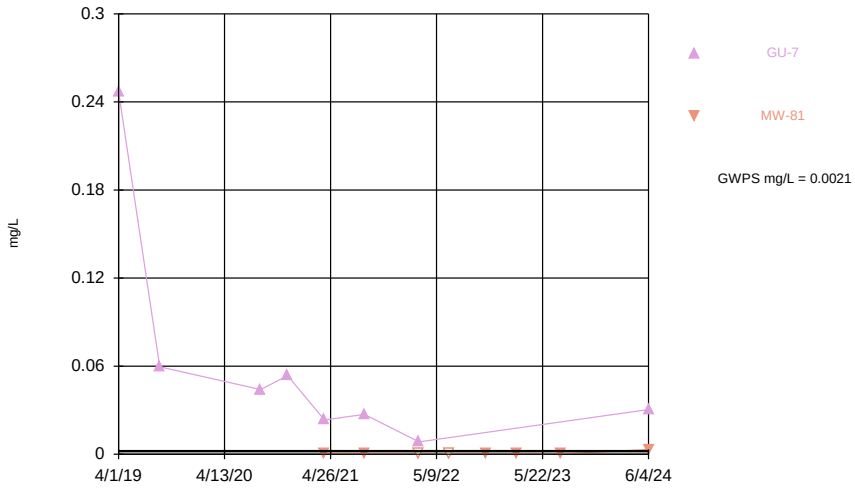
Time Series



Constituent: Cobalt Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

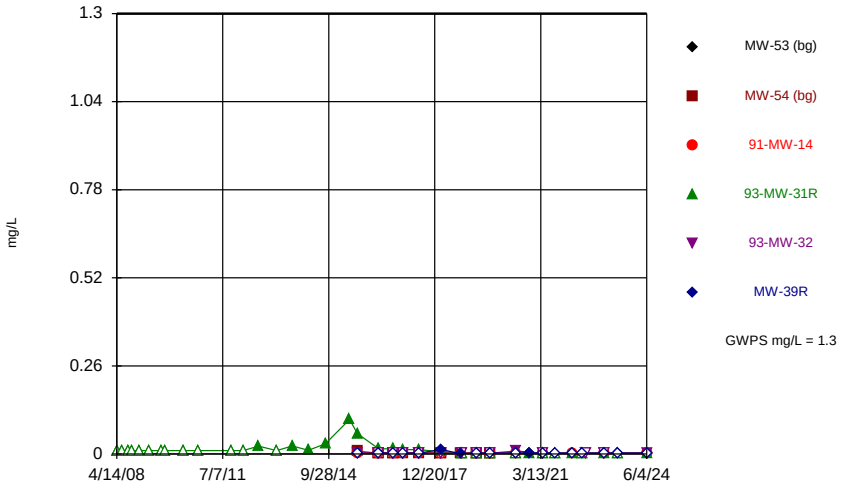
Time Series



Constituent: Cobalt Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

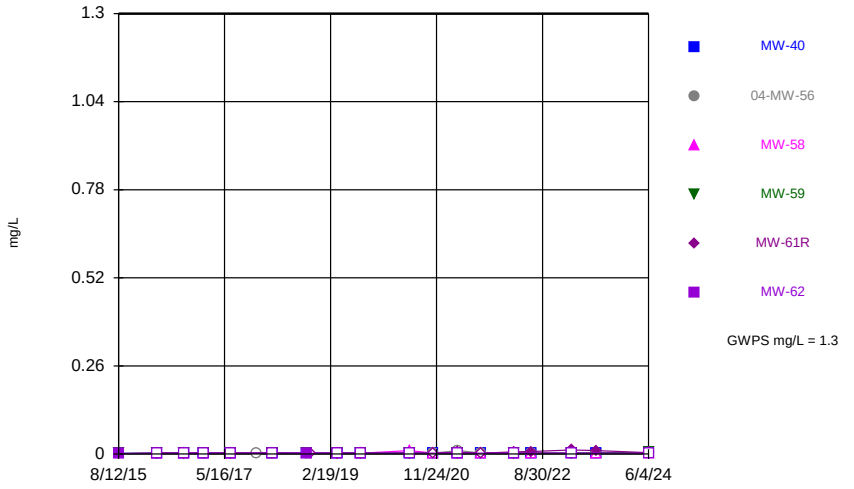
Time Series



Constituent: Copper Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

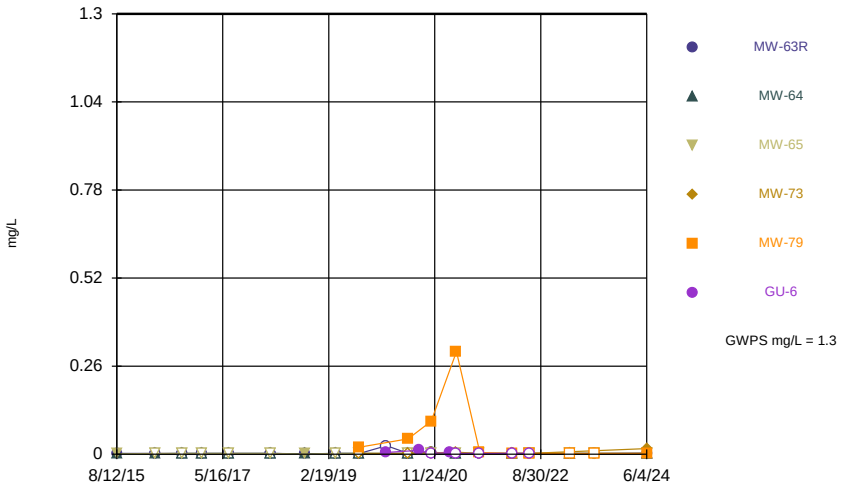
Time Series



Constituent: Copper Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

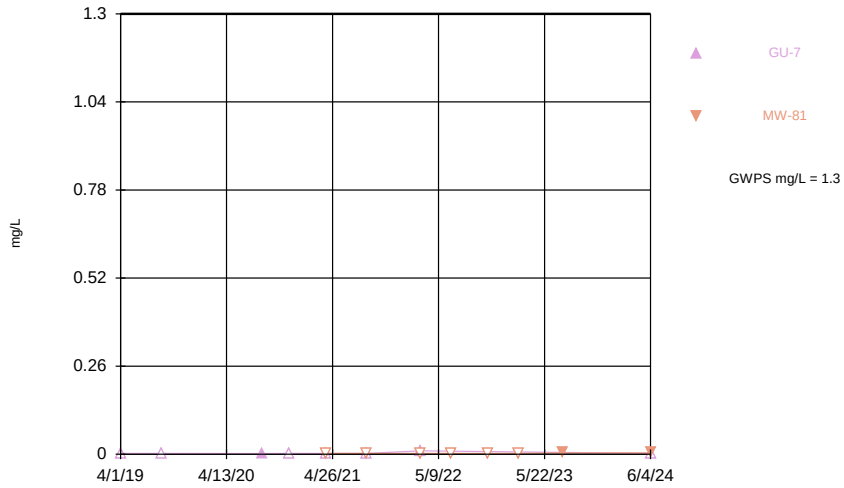
Time Series



Constituent: Copper Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

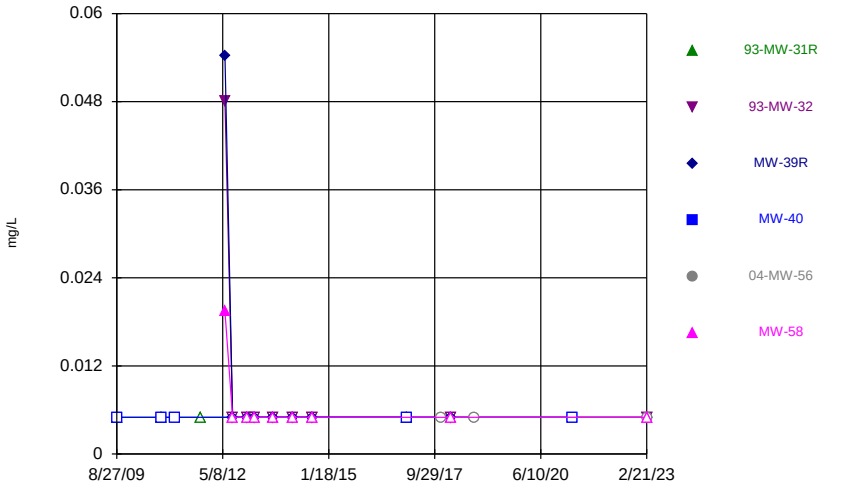
Time Series



Constituent: Copper Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

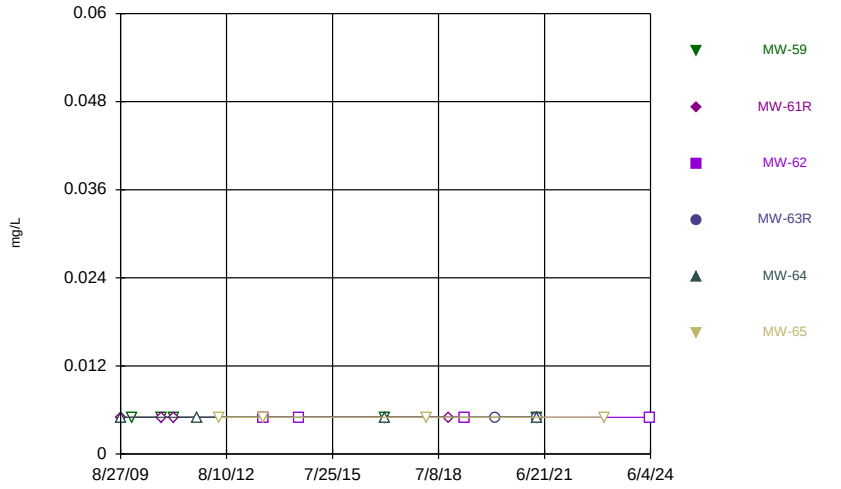
Time Series



Constituent: Cyanide Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

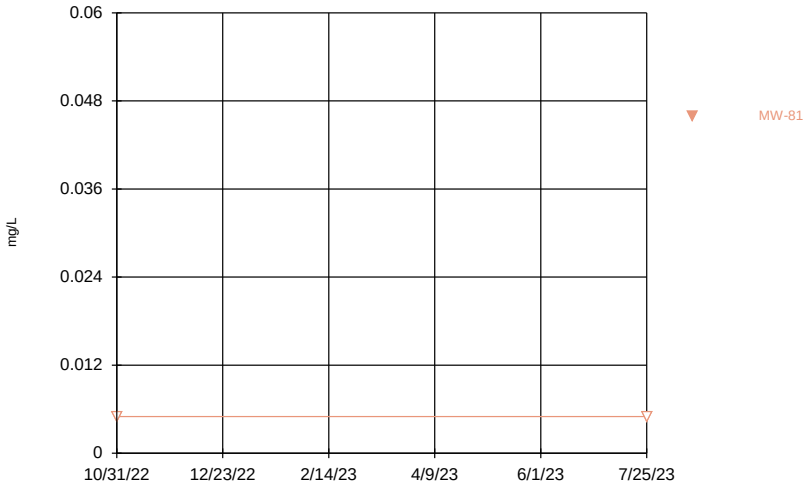
Time Series



Constituent: Cyanide Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

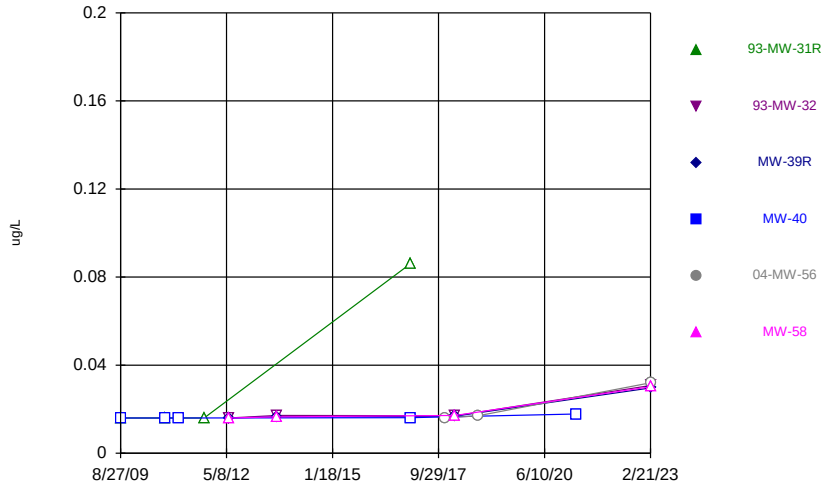
Time Series



Constituent: Cyanide Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

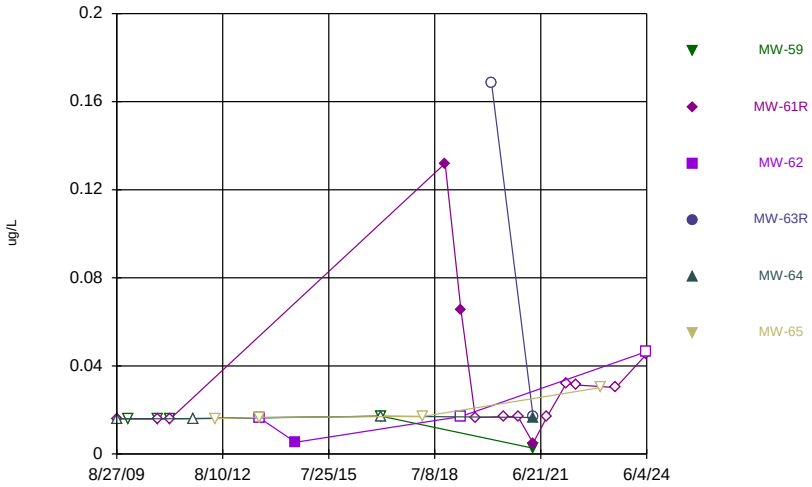
Time Series



Constituent: Endosulfan I Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

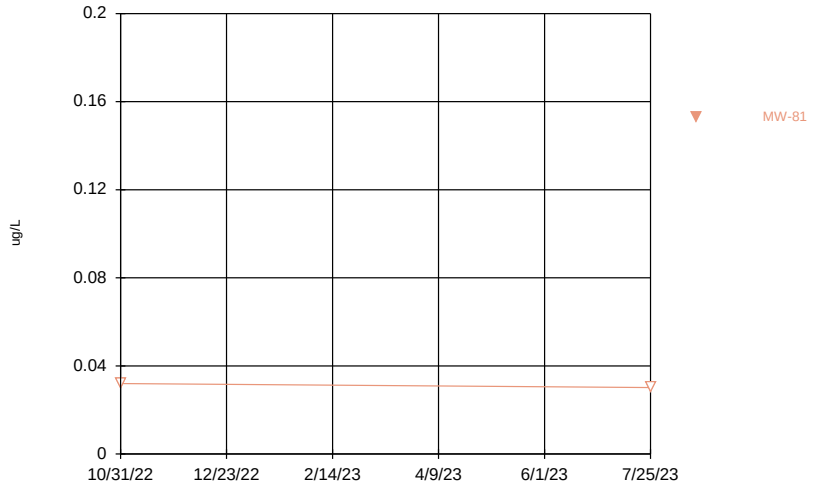
Time Series



Constituent: Endosulfan I Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

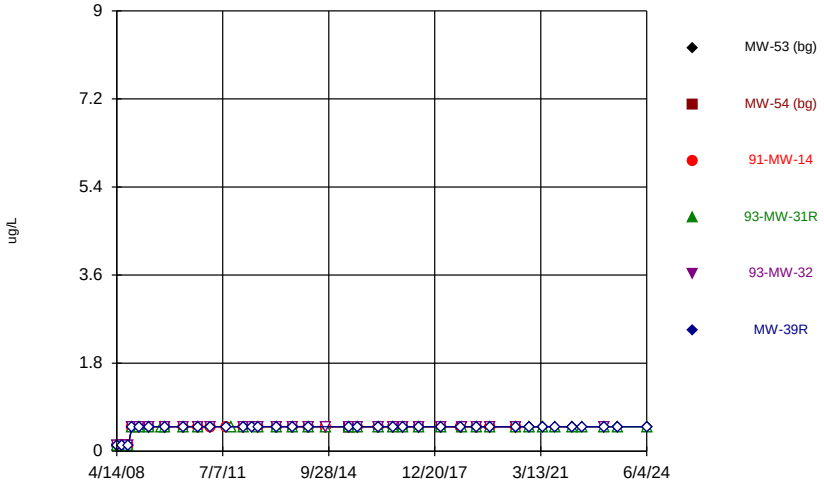
Time Series



Constituent: Endosulfan I Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

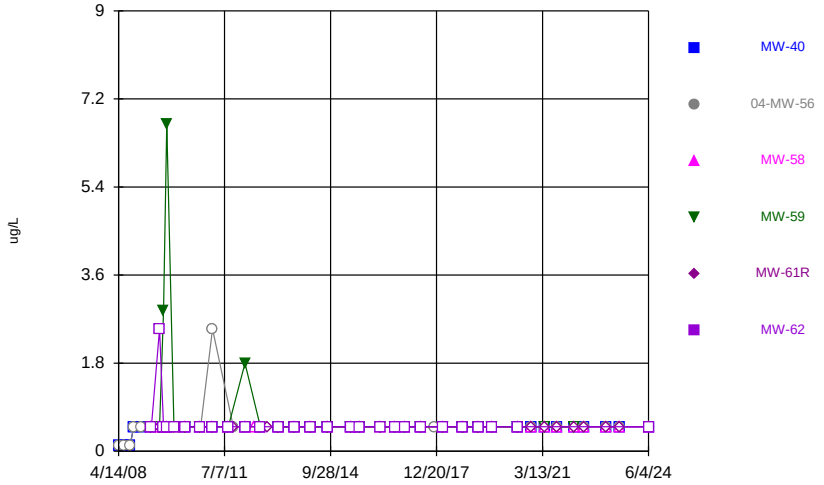
Time Series



Constituent: Ethylbenzene Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

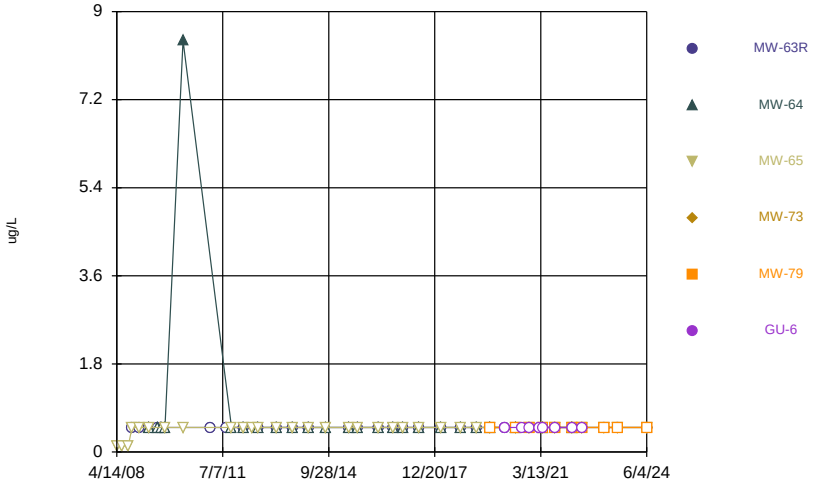
Time Series



Constituent: Ethylbenzene Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

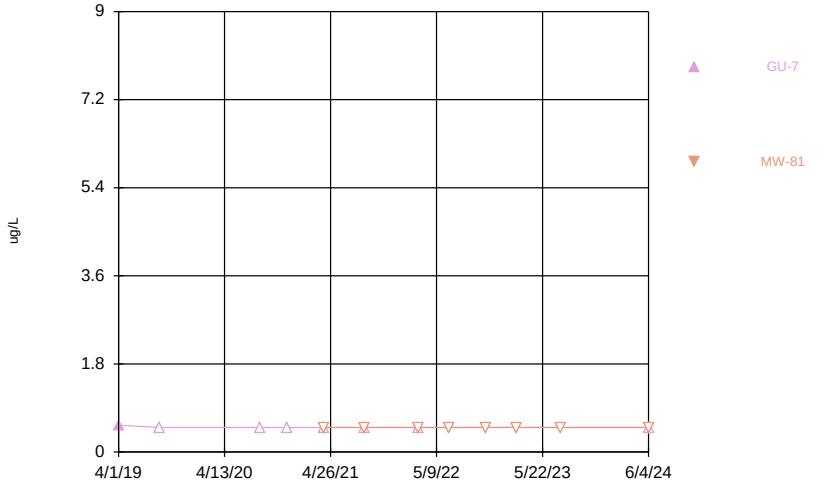
Time Series



Constituent: Ethylbenzene Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

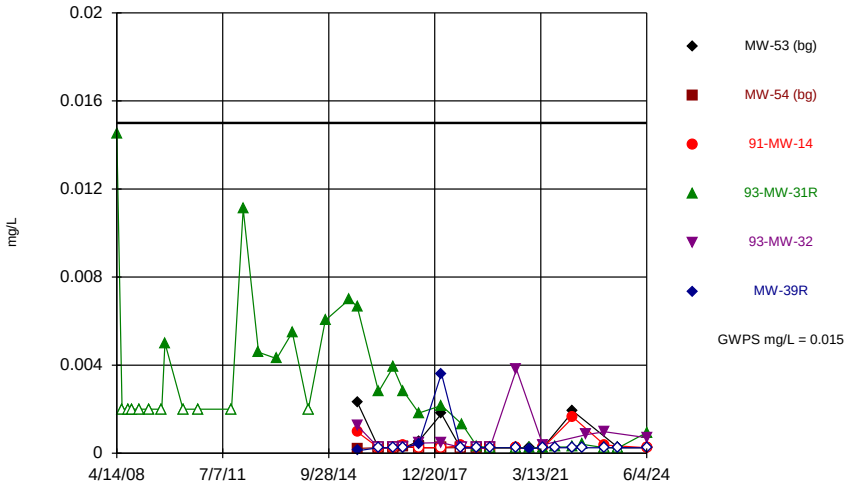
Time Series



Constituent: Ethylbenzene Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

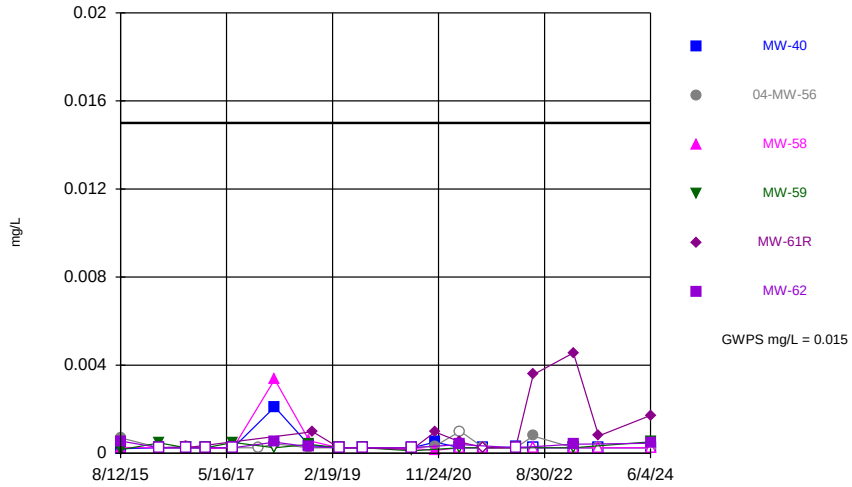
Time Series



Constituent: Lead Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

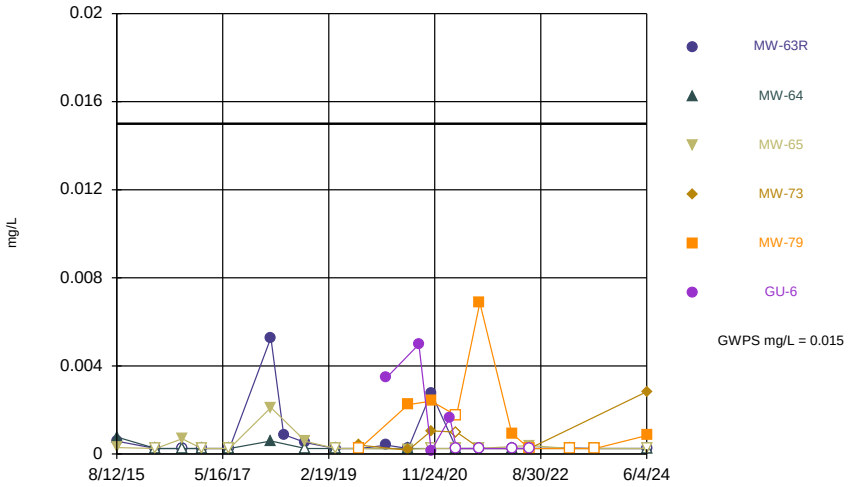
Time Series



Constituent: Lead Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

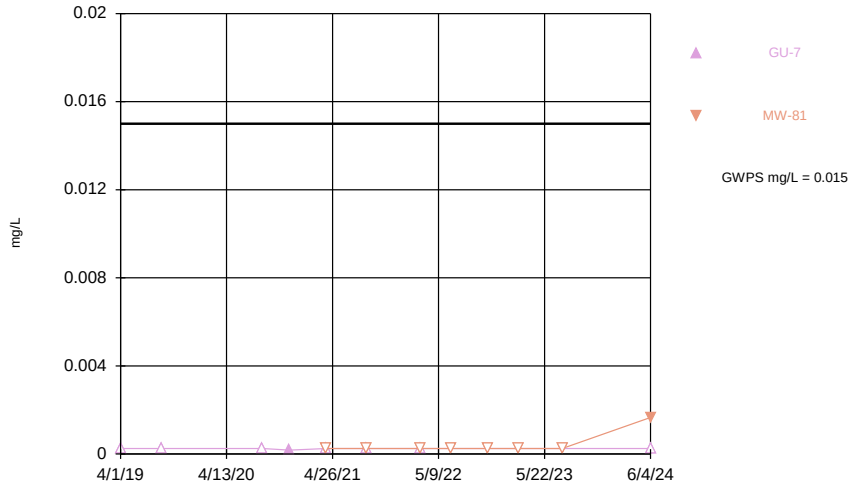
Time Series



Constituent: Lead Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

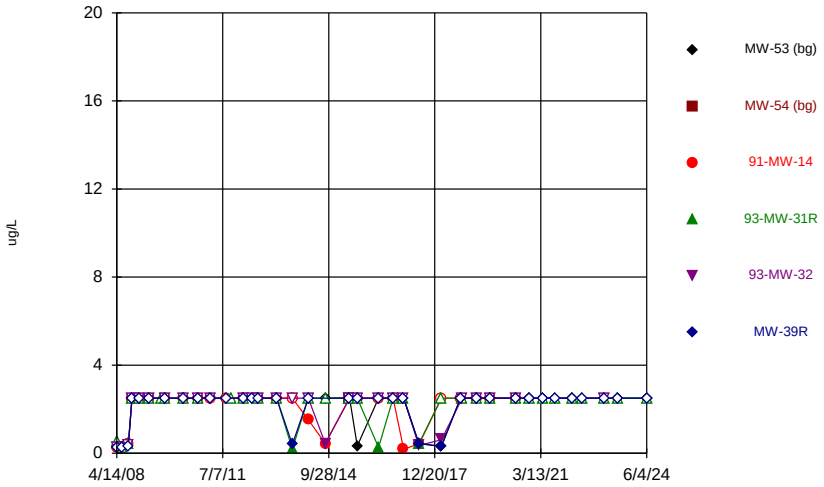
Time Series



Constituent: Lead Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

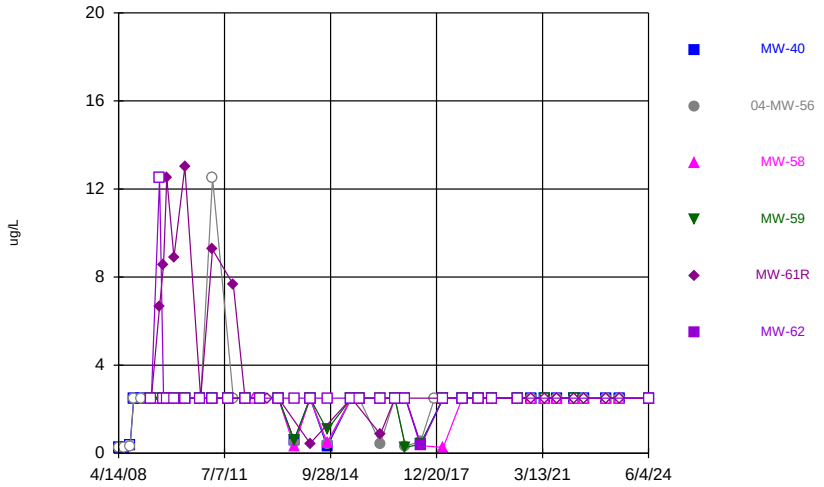
Time Series



Constituent: Methylene Chloride Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

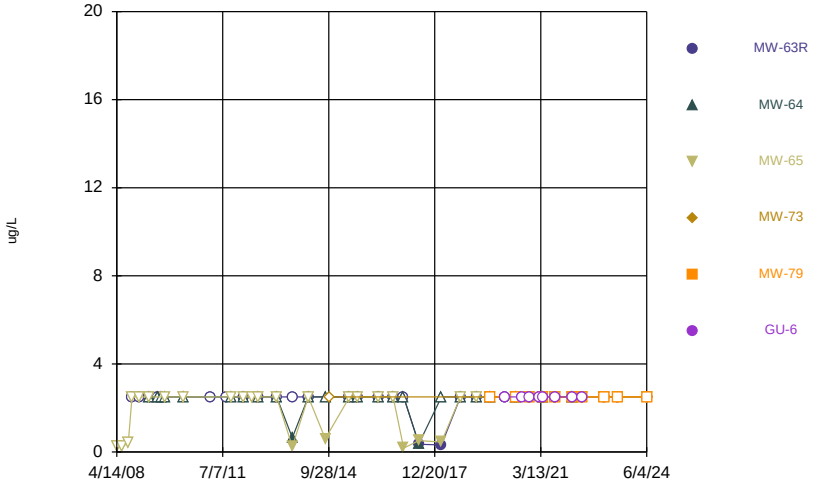
Time Series



Constituent: Methylene Chloride Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

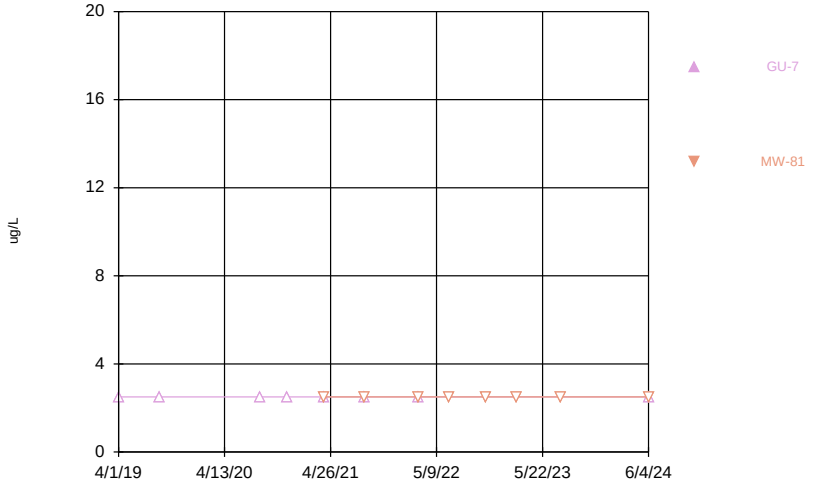
Time Series



Constituent: Methylene Chloride Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

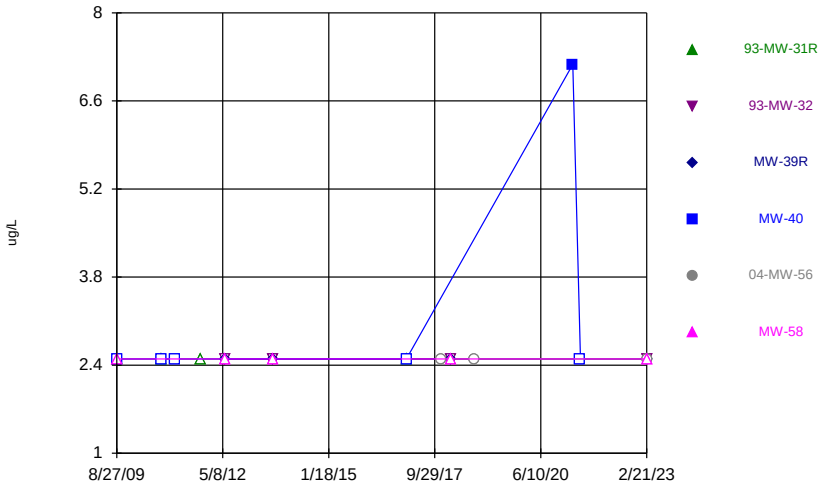
Time Series



Constituent: Methylene Chloride Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

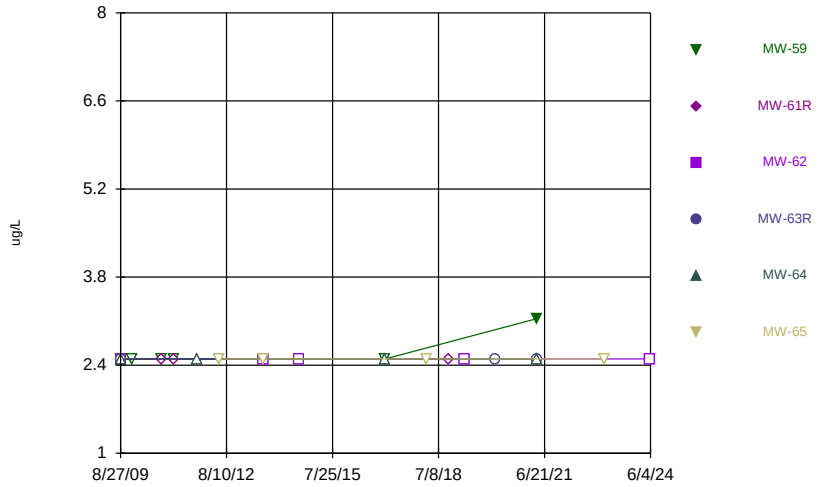
Time Series



Constituent: Naphthalene Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

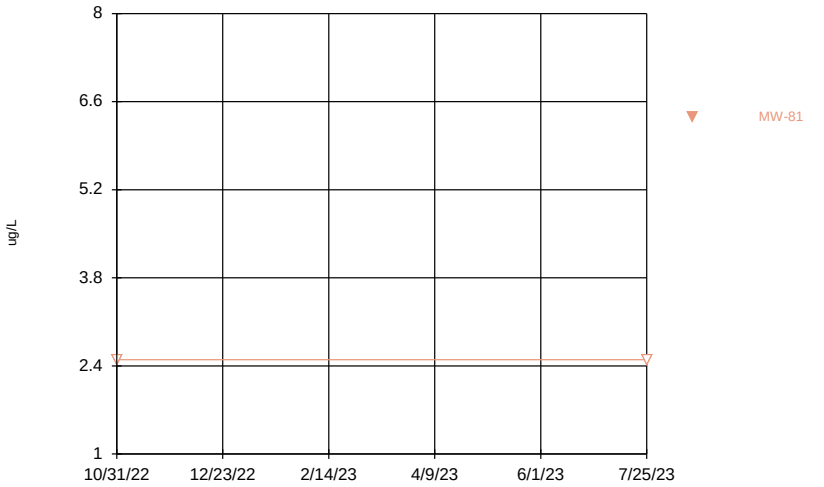
Time Series



Constituent: Naphthalene Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

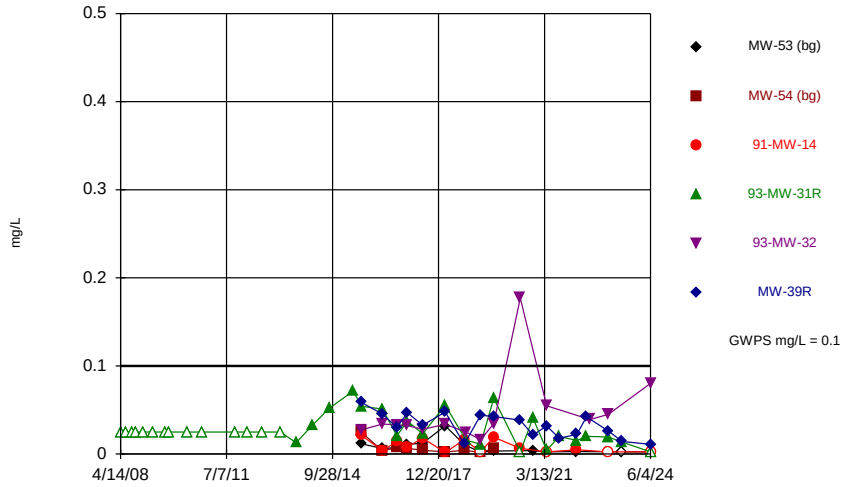
Time Series



Constituent: Naphthalene Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

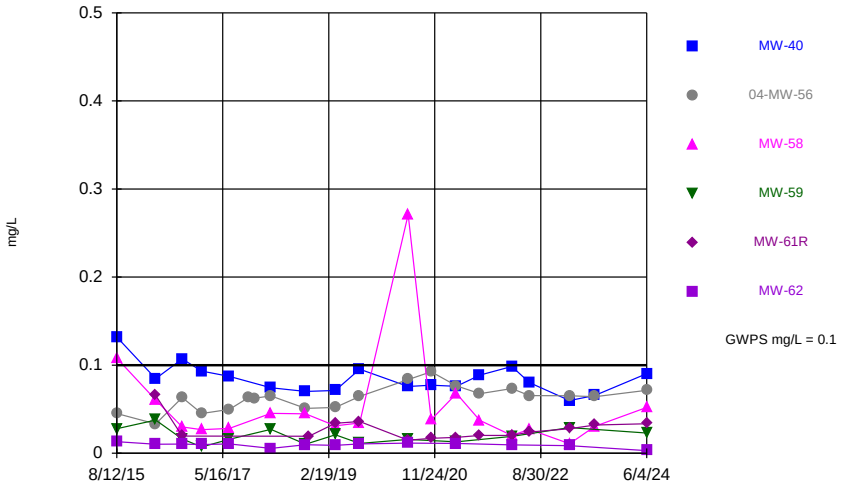
Time Series



Constituent: Nickel Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG

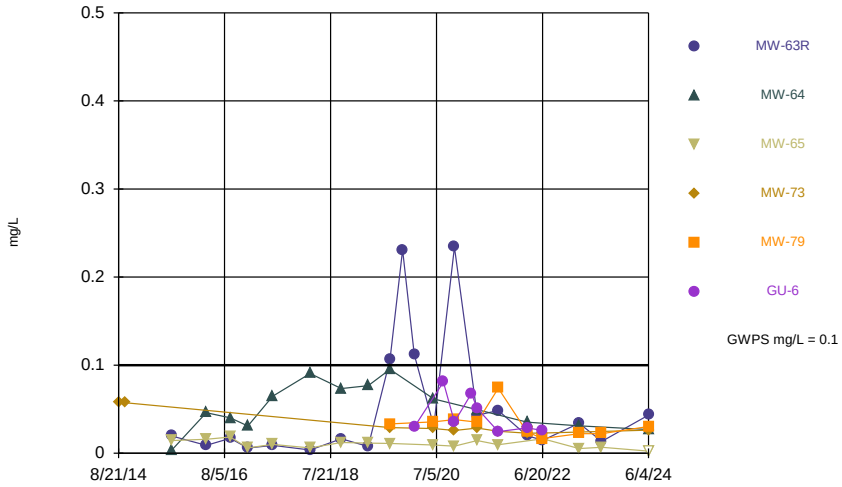
Time Series



Constituent: Nickel Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

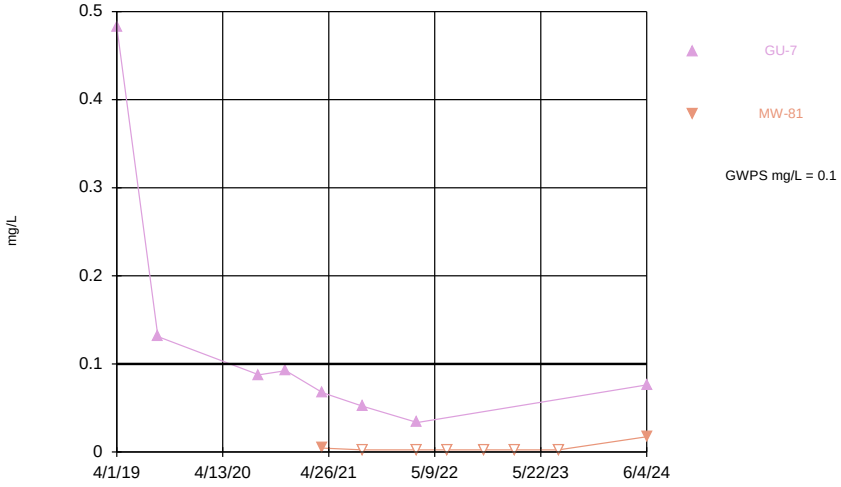
Time Series



Constituent: Nickel Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

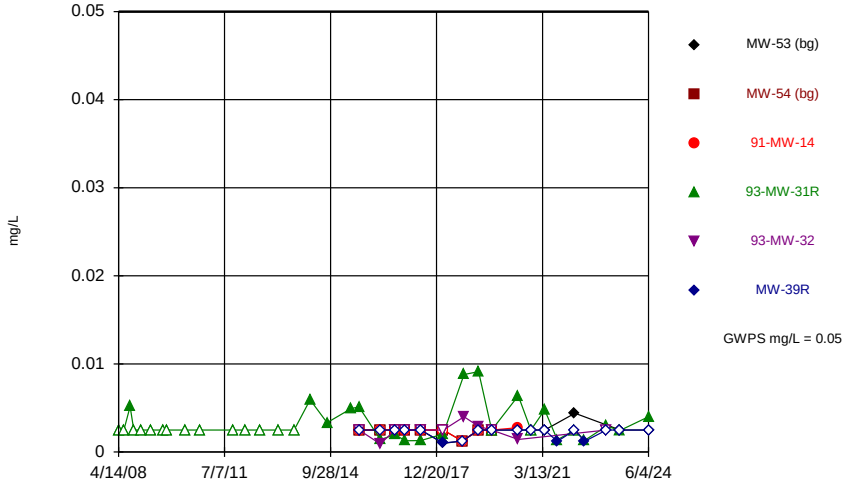
Time Series



Constituent: Nickel Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

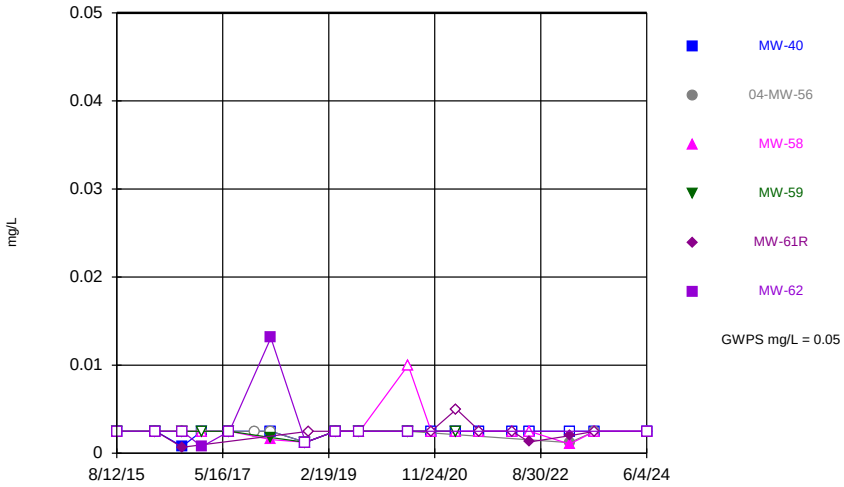
Time Series



Constituent: Selenium Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

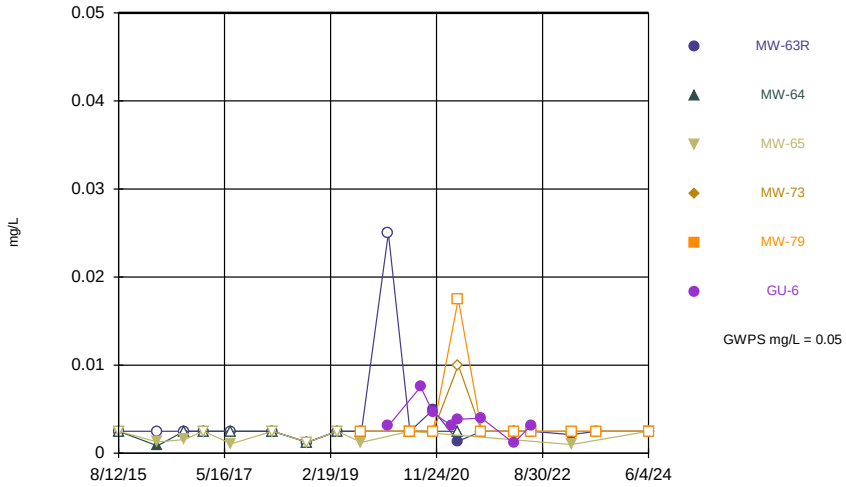
Time Series



Constituent: Selenium Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

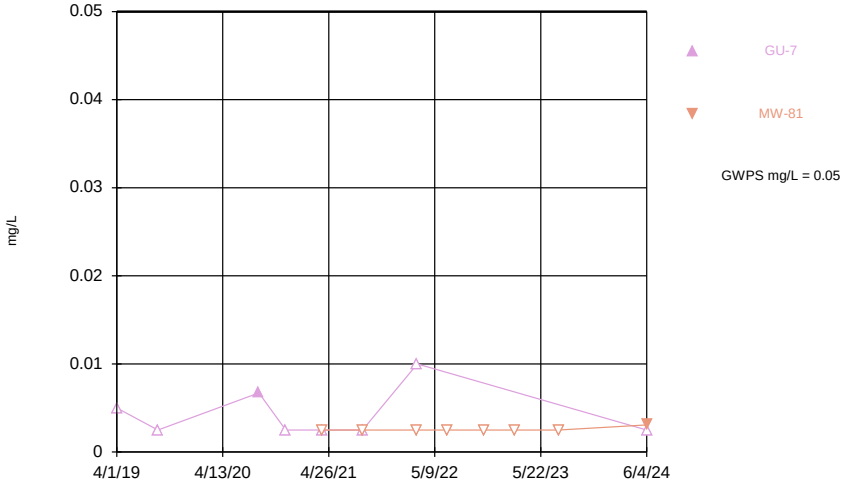
Time Series



Constituent: Selenium Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

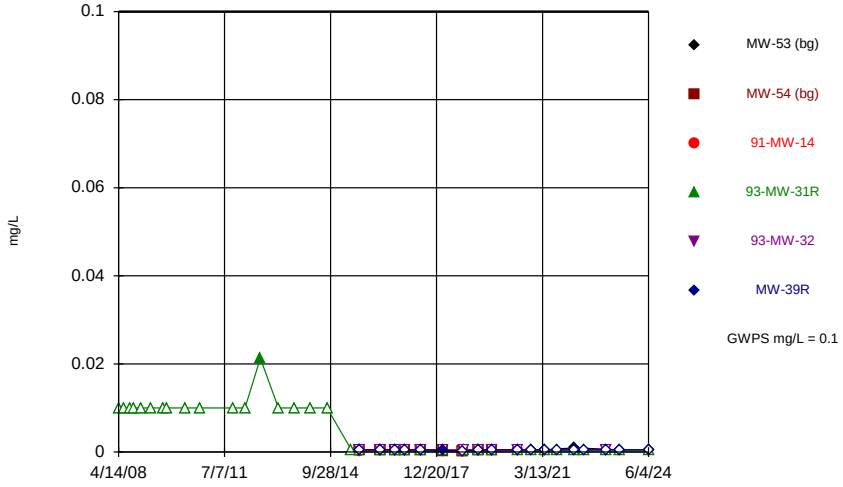
Time Series



Constituent: Selenium Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

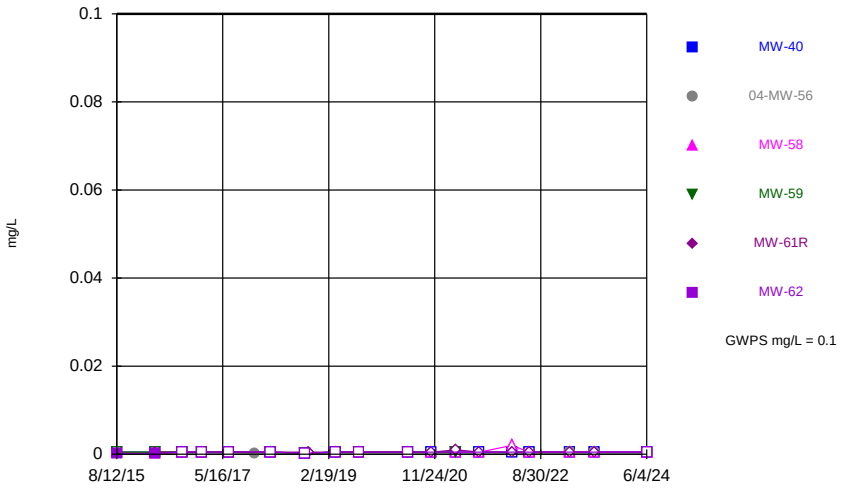
Time Series



Constituent: Silver Analysis Run 10/23/2024 2:14 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

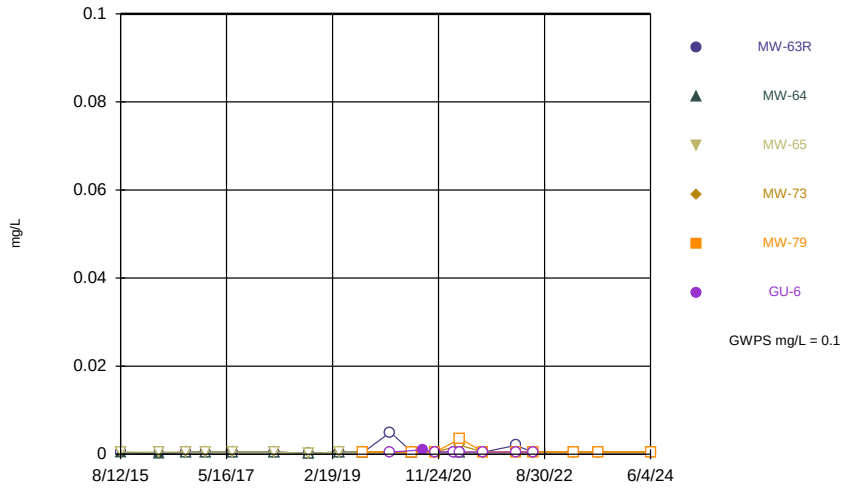
Time Series



Constituent: Silver Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

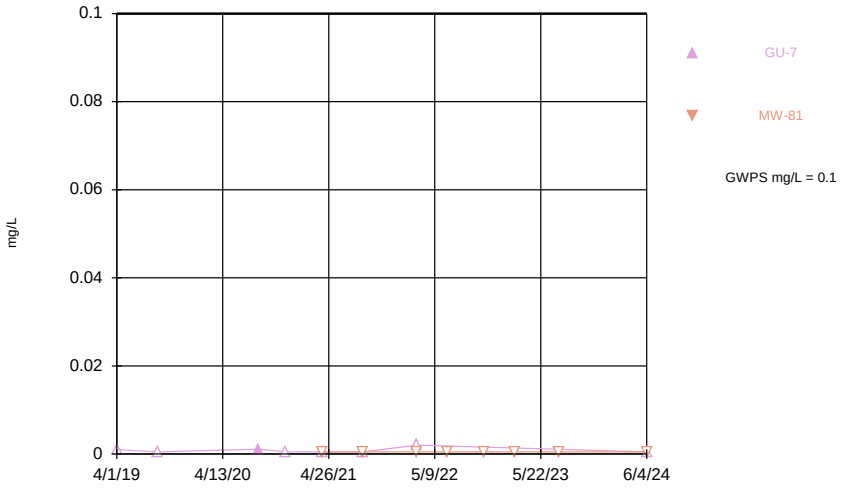
Time Series



Constituent: Silver Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

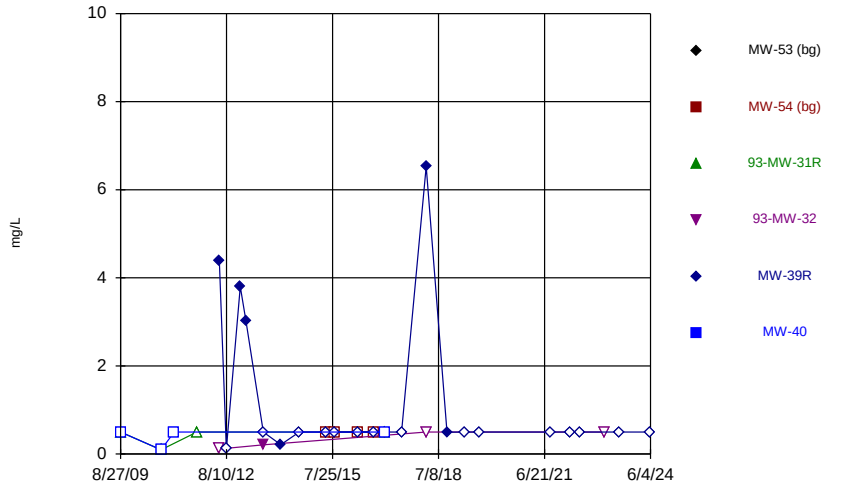
Time Series



Constituent: Silver Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

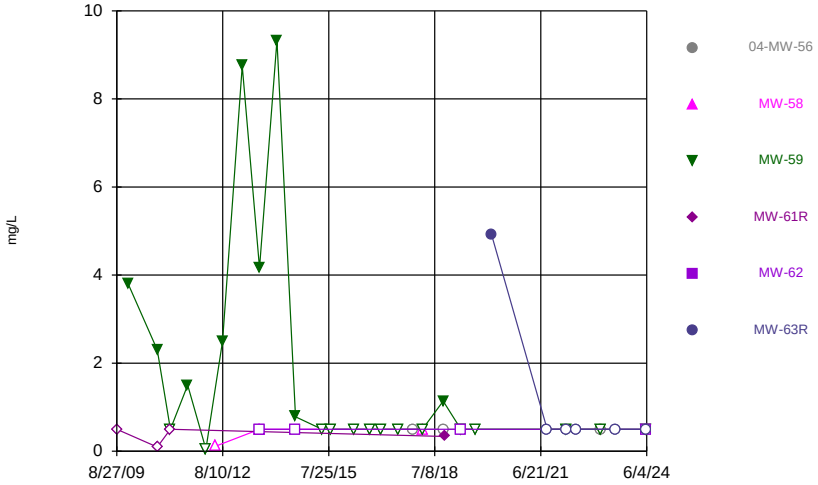
Time Series



Constituent: Sulfide Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

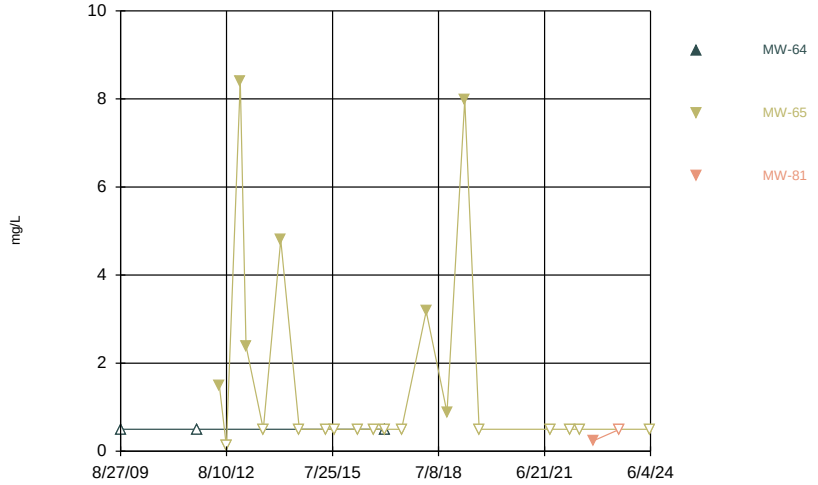
Time Series



Constituent: Sulfide Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

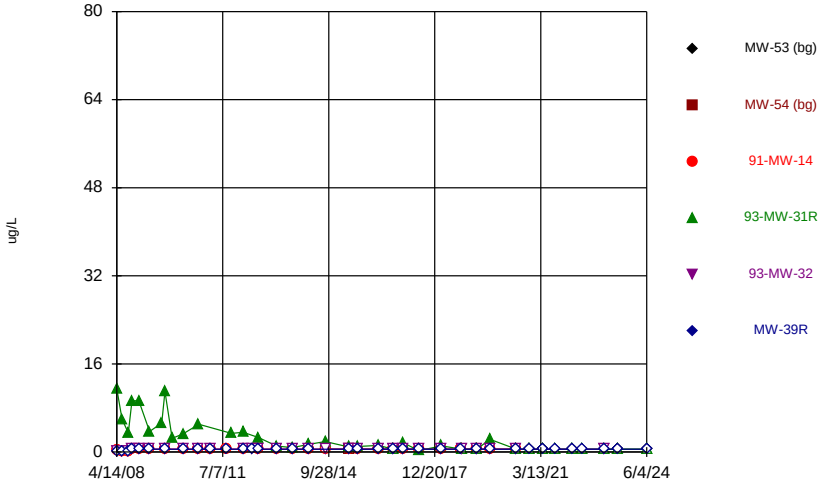
Time Series



Constituent: Sulfide Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

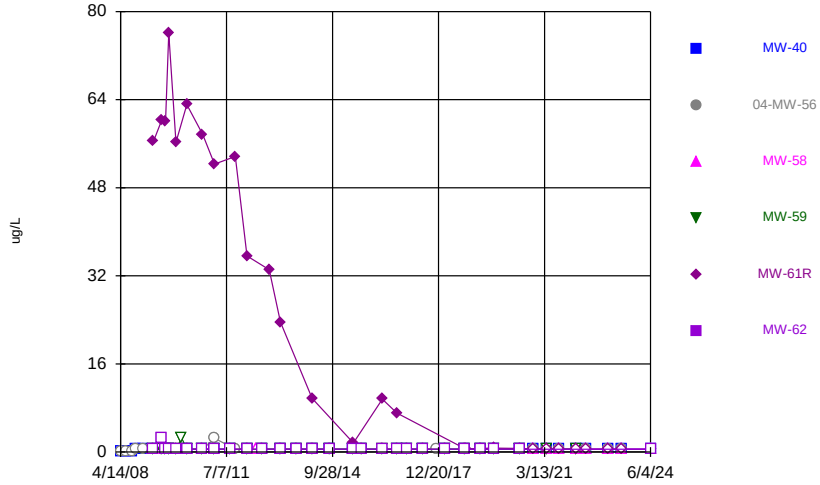
Time Series



Constituent: Tetrachloroethene Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

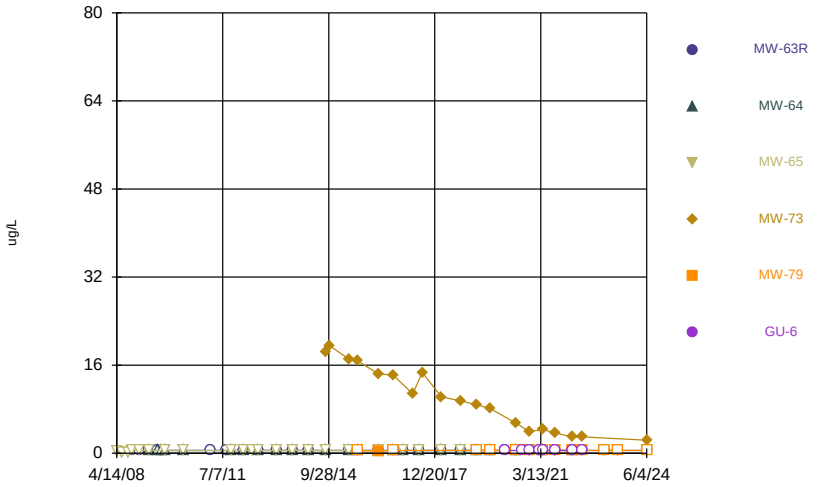
Time Series



Constituent: Tetrachloroethene Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

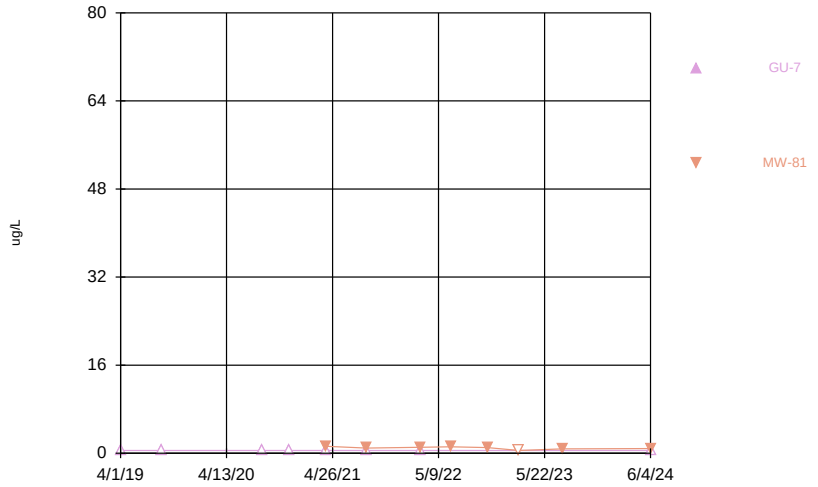
Time Series



Constituent: Tetrachloroethene Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

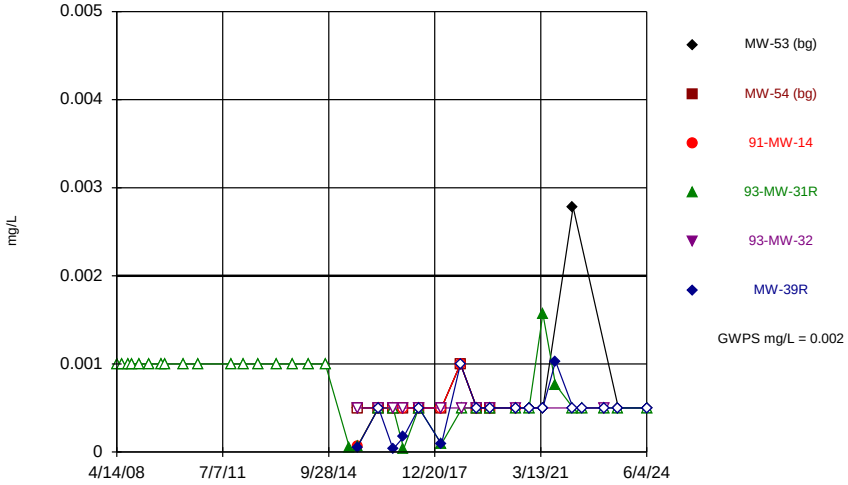
Time Series



Constituent: Tetrachloroethene Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

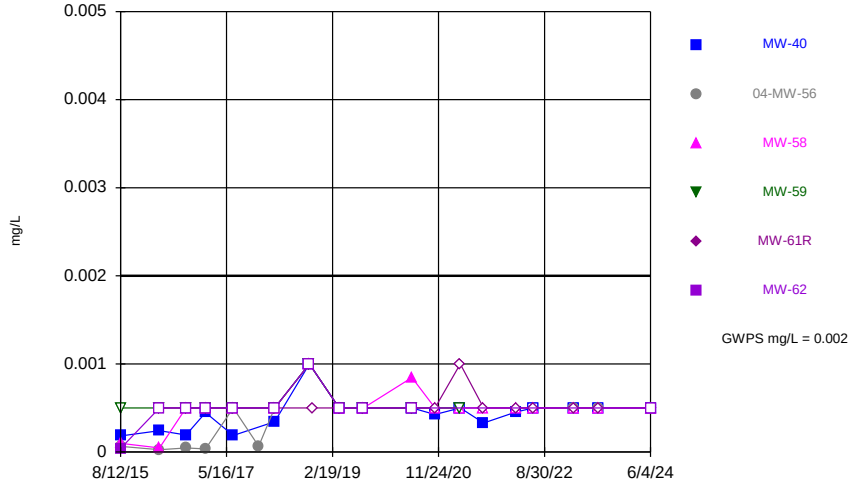
Time Series



Constituent: Thallium Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

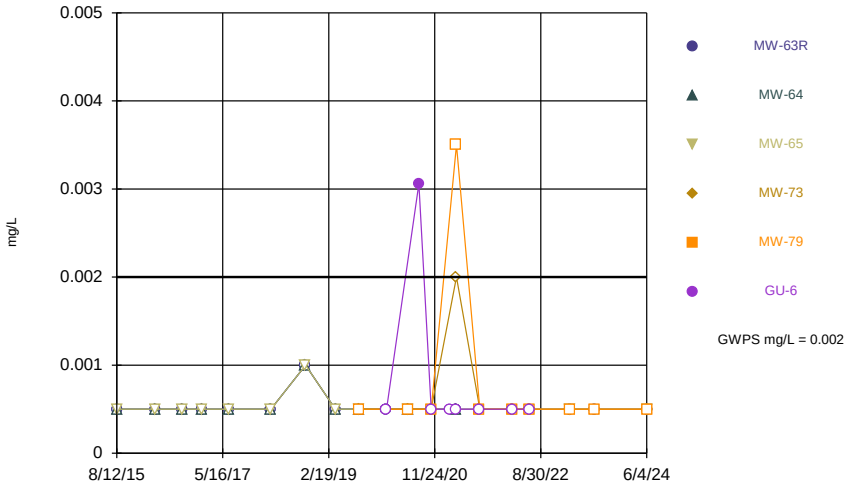
Time Series



Constituent: Thallium Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

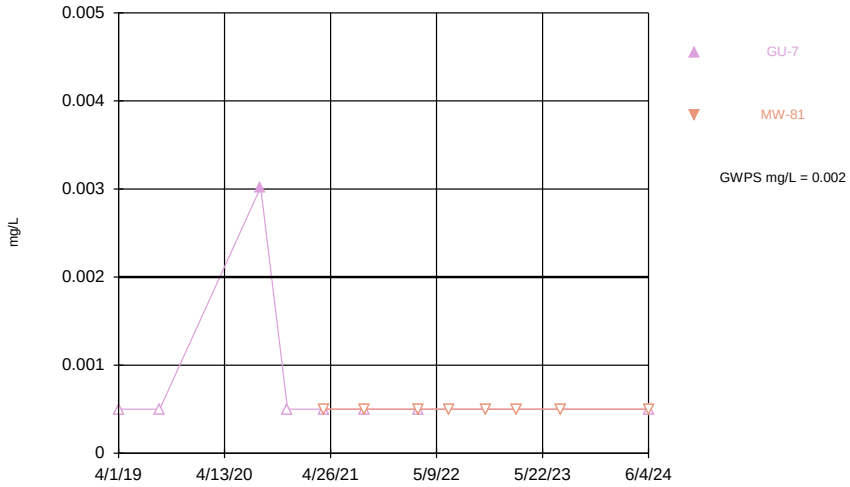
Time Series



Constituent: Thallium Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

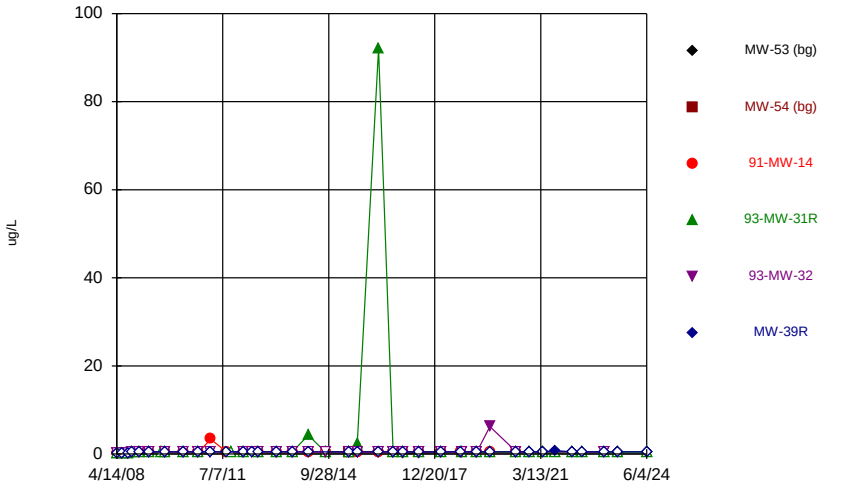
Time Series



Constituent: Thallium Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

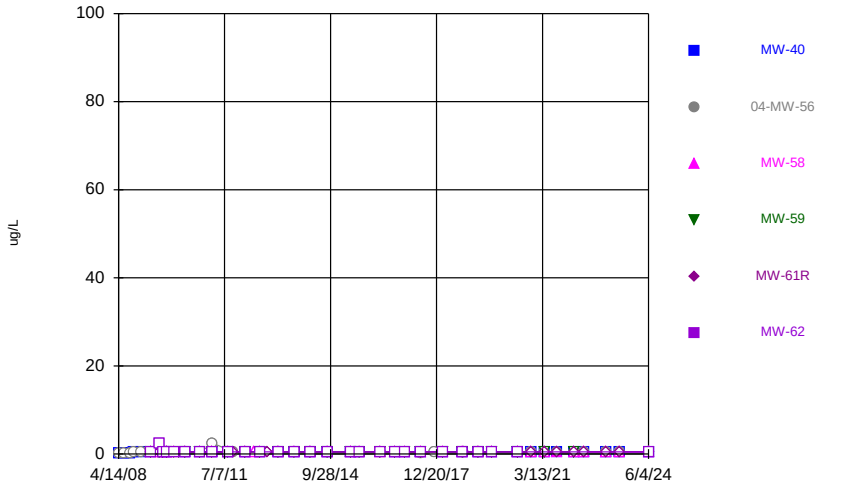
Time Series



Constituent: Toluene Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

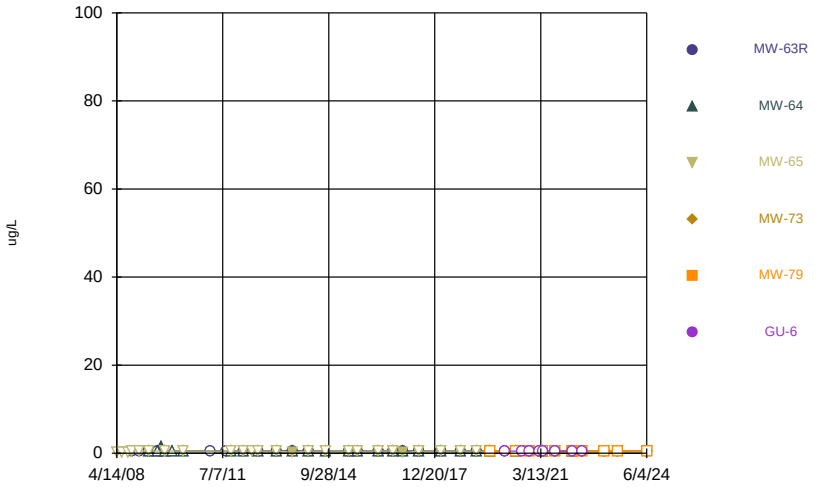
Time Series



Constituent: Toluene Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

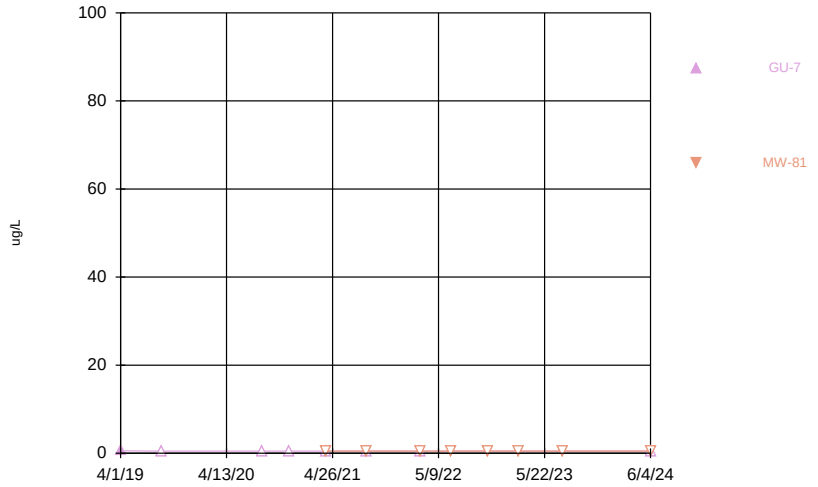
Time Series



Constituent: Toluene Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

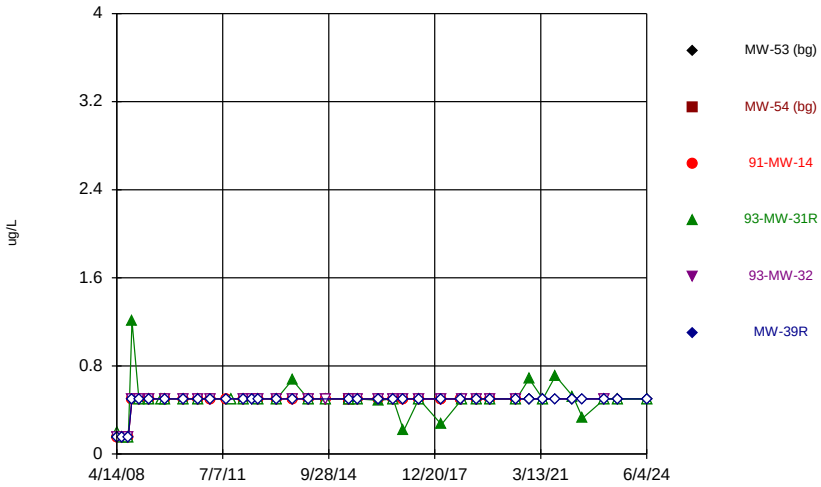
Time Series



Constituent: Toluene Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

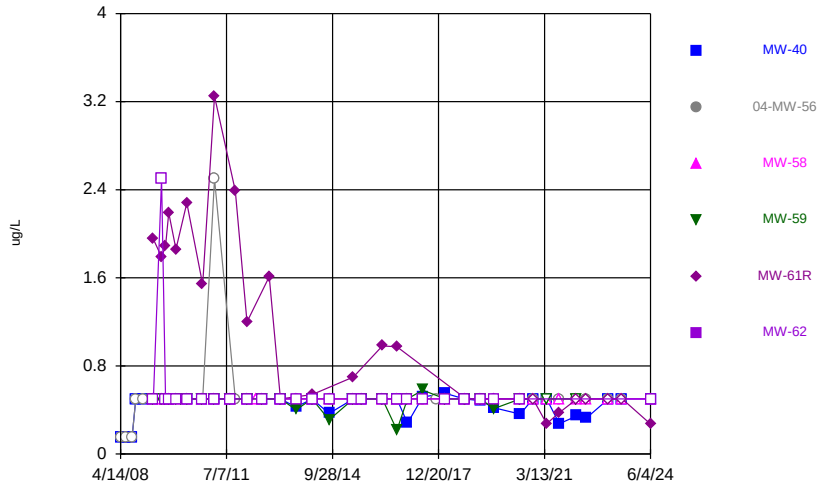
Time Series



Constituent: trans-1,2-Dichloroethene Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

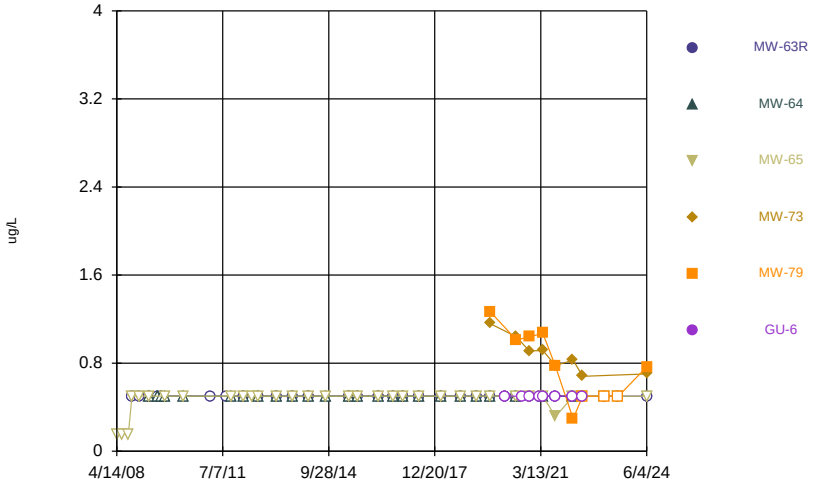
Time Series



Constituent: trans-1,2-Dichloroethene Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

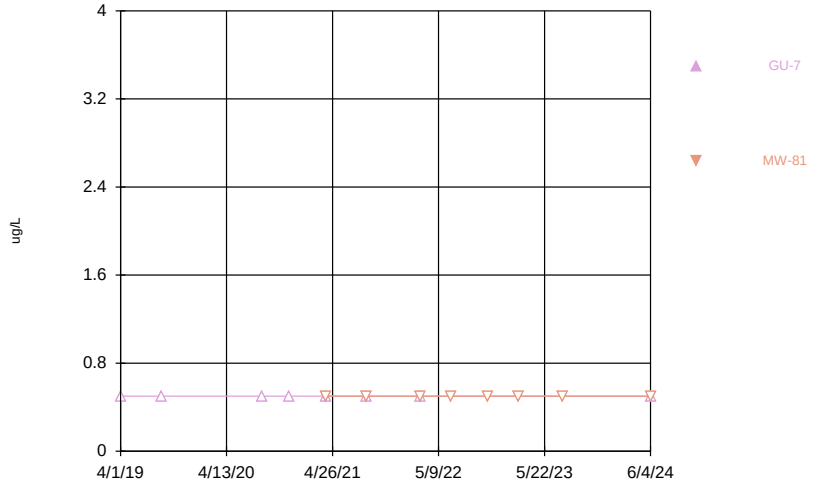
Time Series



Constituent: trans-1,2-Dichloroethene Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

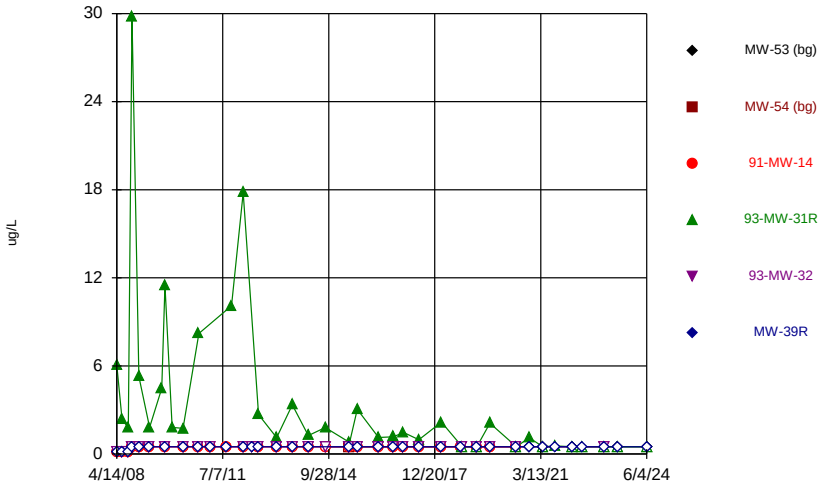
Time Series



Constituent: trans-1,2-Dichloroethene Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

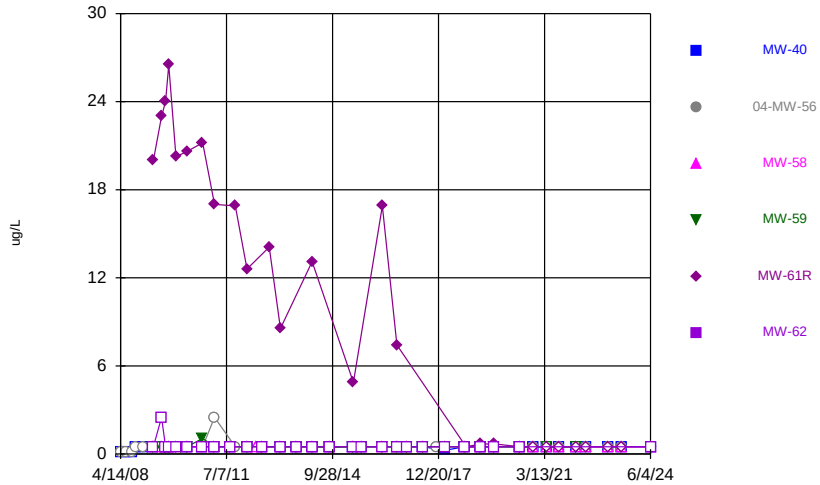
Time Series



Constituent: Trichloroethene Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

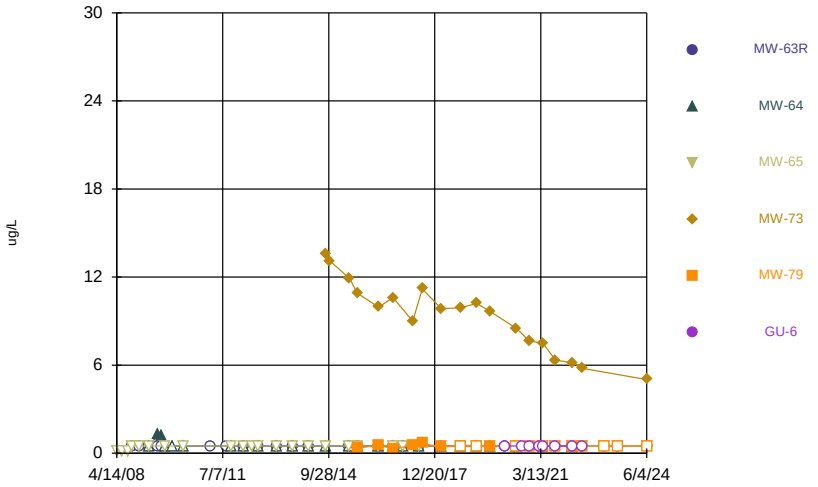
Time Series



Constituent: Trichloroethene Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

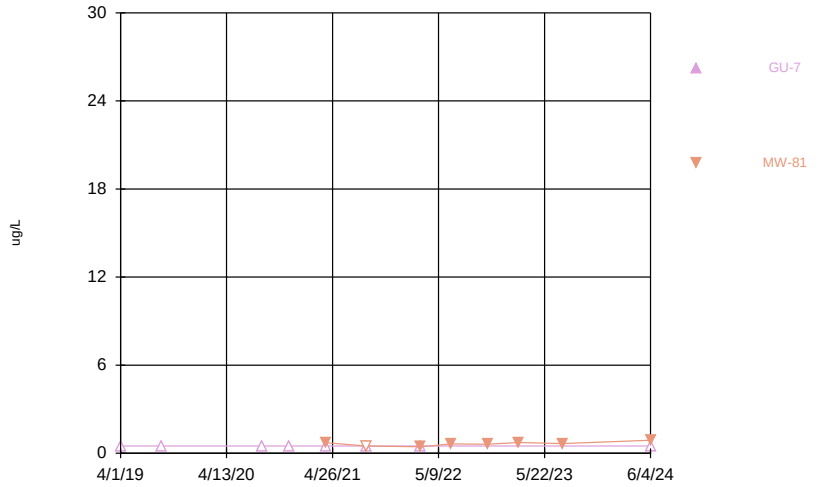
Time Series



Constituent: Trichloroethene Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

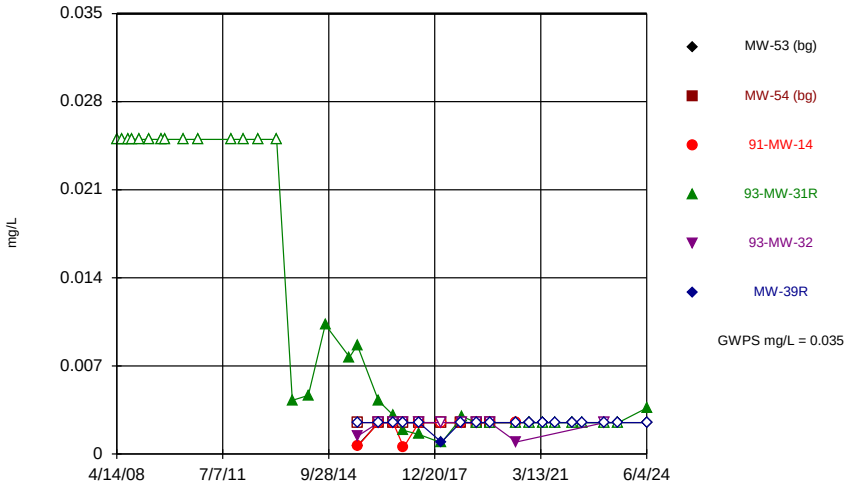
Time Series



Constituent: Trichloroethene Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

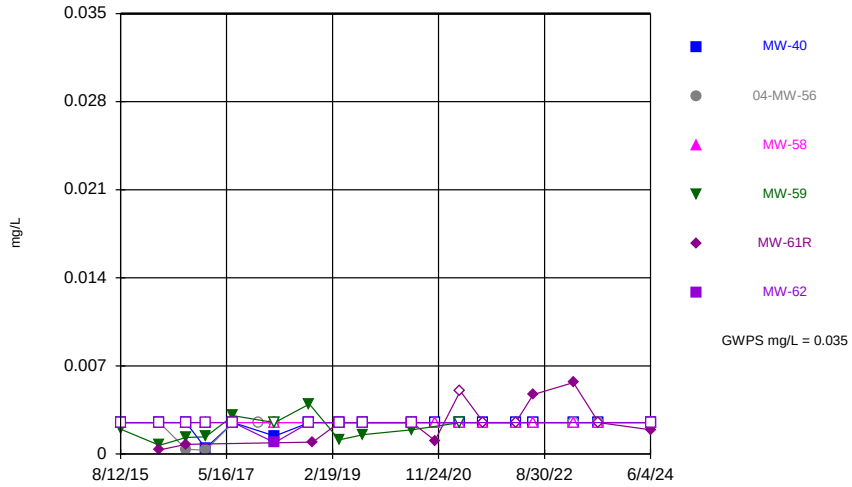
Time Series



Constituent: Vanadium Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

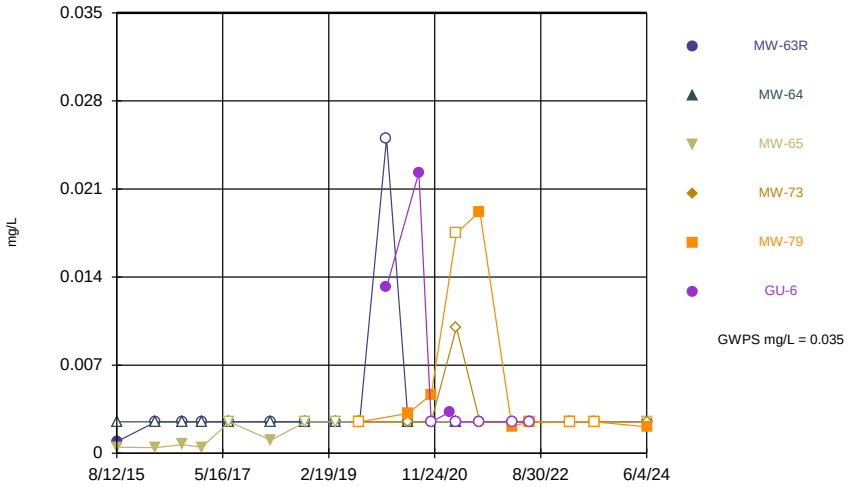
Time Series



Constituent: Vanadium Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

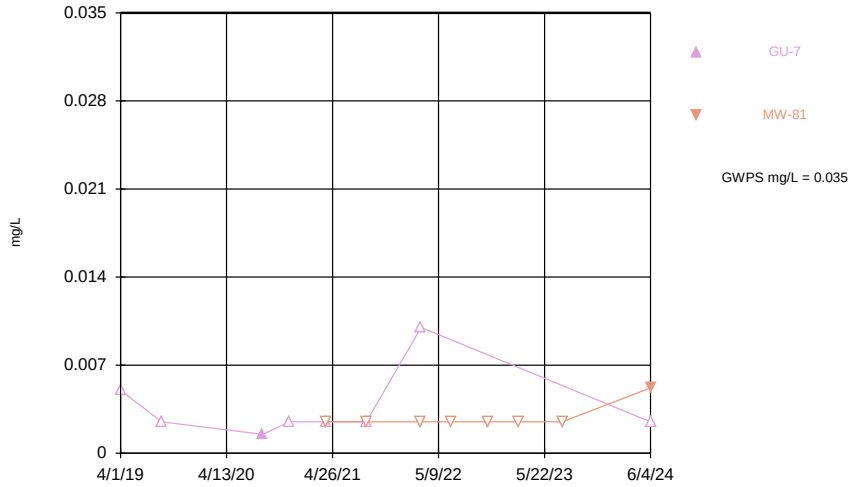
Time Series



Constituent: Vanadium Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

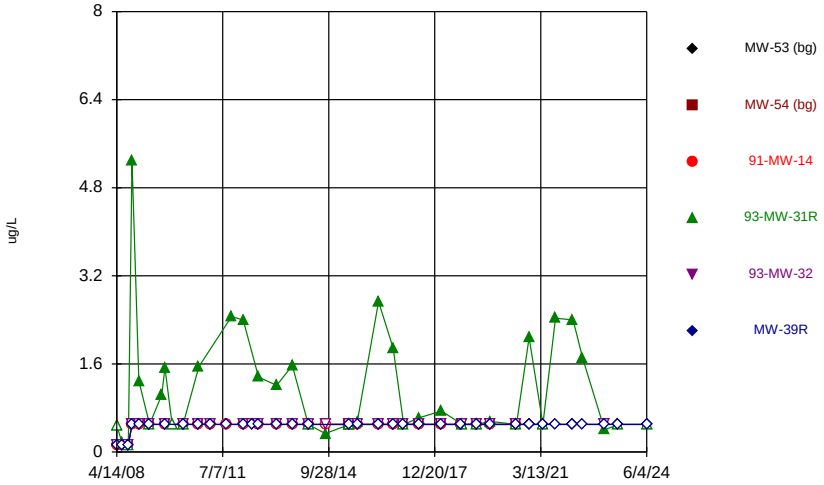
Time Series



Constituent: Vanadium Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

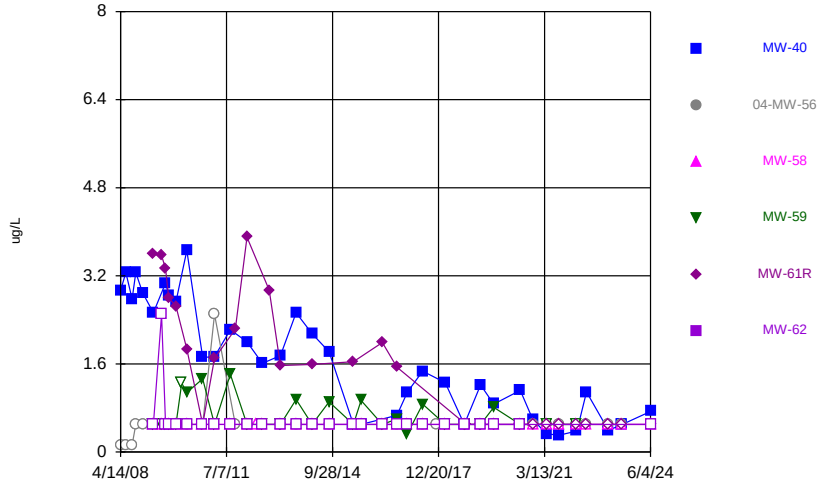
Time Series



Constituent: Vinyl chloride Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

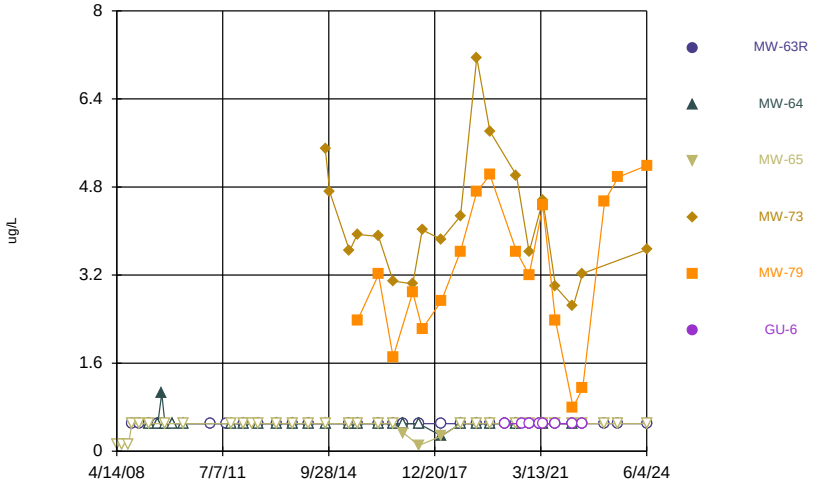
Time Series



Constituent: Vinyl chloride Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

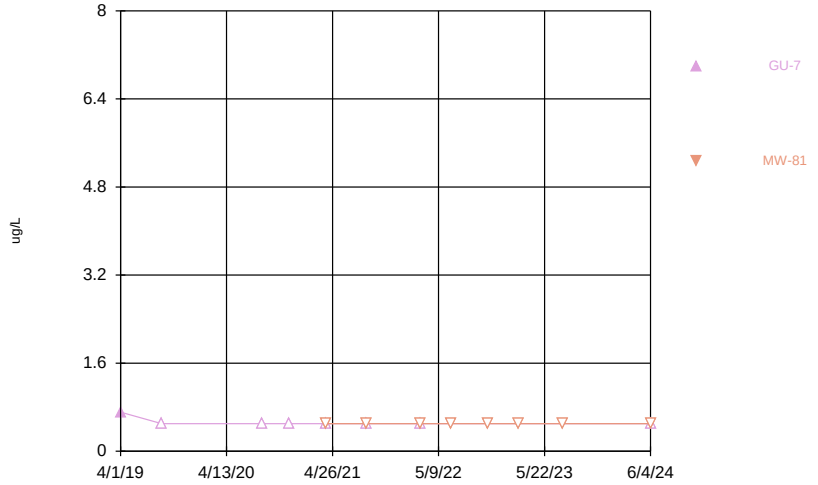
Time Series



Constituent: Vinyl chloride Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

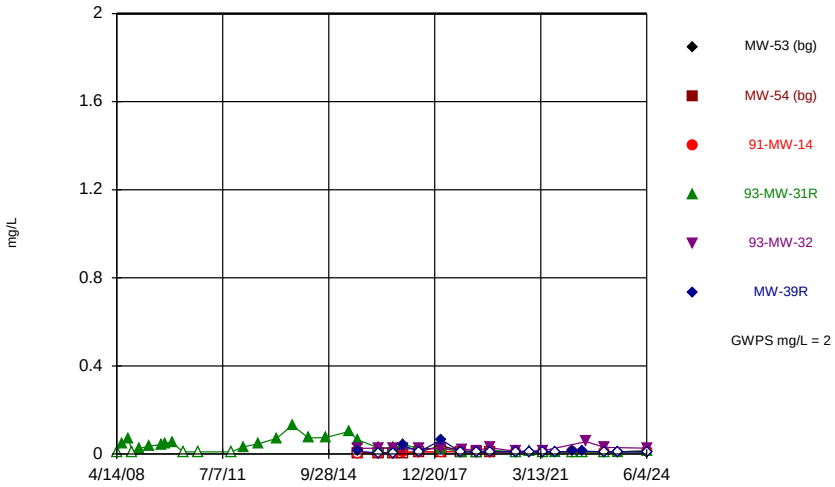
Time Series



Constituent: Vinyl chloride Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

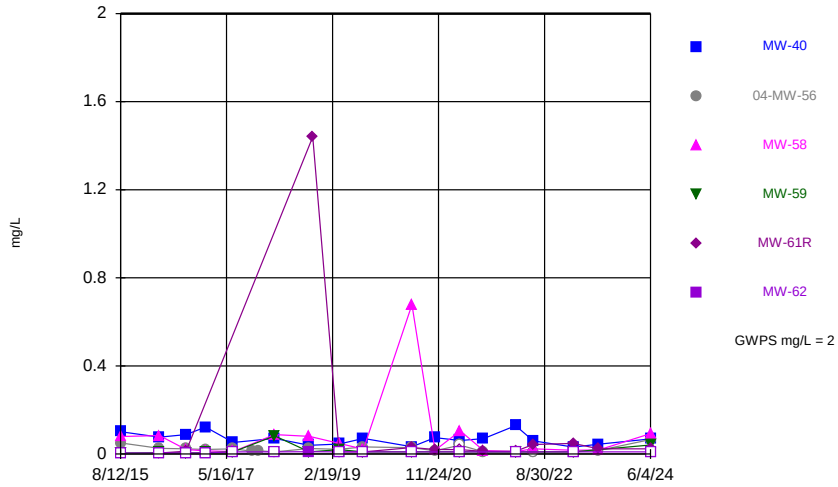
Time Series



Constituent: Zinc Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

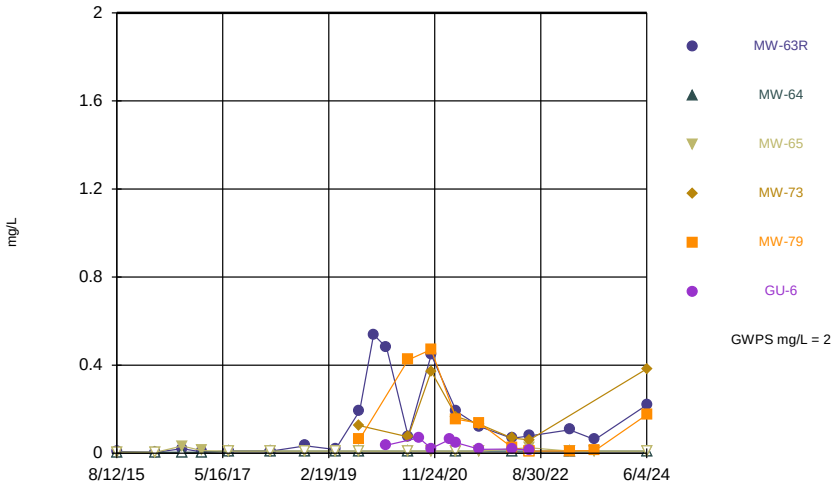
Time Series



Constituent: Zinc Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

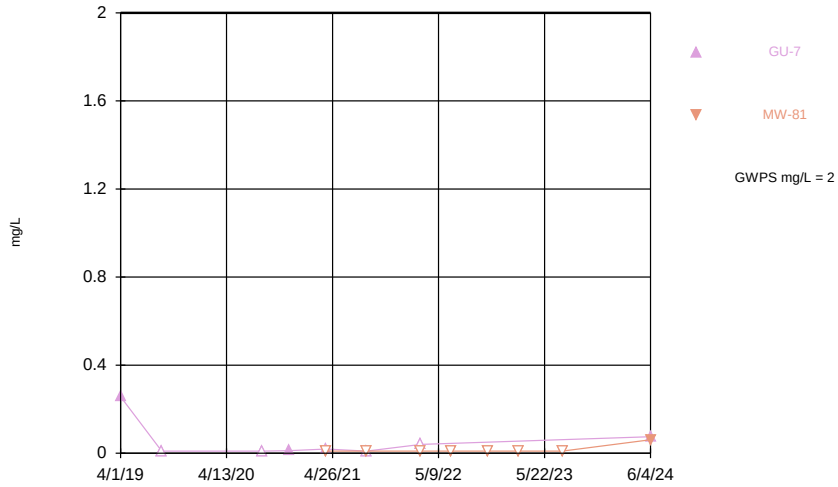
Time Series



Constituent: Zinc Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.23 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Time Series



Constituent: Zinc Analysis Run 10/23/2024 2:15 PM View: 2024SSN - Time Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Outlier Tests Summary Table and Graphs

BG Outlier Analysis

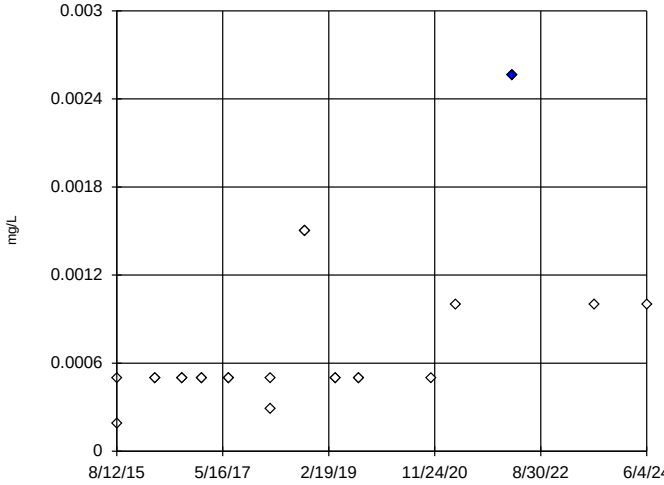
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master Printed 10/18/2024, 12:02 AM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Antimony (mg/L)	**MW-53,MW-54**	**Yes**	**0.00256**	**n/a w/combined bg**	**OH**	**NaN**	**23**	**0.0007187**	**0.000524**	**n/a**	**n/a**
Arsenic (mg/L)	MW-53,MW-54	No	n/a	n/a w/combined bg	OH	NaN	23	0.0009987	0.0002742	n/a	n/a
Barium (mg/L)	MW-53,MW-54	No	n/a	n/a w/combined bg	NP (nrm)/OH	NaN	23	0.02019	0.006763	unknown	ShapiroWilk
Beryllium (mg/L)	MW-53,MW-54	No	n/a	n/a w/combined bg	OH	NaN	23	0.0004887	0.0001215	n/a	n/a
Cadmium (mg/L)	MW-53,MW-54	No	n/a	n/a w/combined bg	EPA/OH	0.05	23	0.0002419	0.0002284	ln(x)	ShapiroWilk
Chromium (mg/L)	MW-53,MW-54	No	n/a	n/a w/combined bg	OH	NaN	23	0.002539	0.0001856	n/a	n/a
Cobalt (mg/L)	MW-53,MW-54	No	n/a	n/a w/combined bg	EPA/OH	0.05	23	0.002286	0.003372	ln(x)	ShapiroWilk
Copper (mg/L)	**MW-53,MW-54**	**Yes**	**0.00191,0.000562,0.002,0.00837,0.00163**	**n/a w/combined bg**	**NP (nrm)/OH**	**NaN**	**23**	**0.002571**	**0.00134**	**unknown**	**ShapiroWilk**
Lead (mg/L)	MW-53,MW-54	No	n/a	n/a w/combined bg	NP (nrm)/OH	NaN	23	0.0004925	0.0006088	unknown	ShapiroWilk
Nickel (mg/L)	MW-54,MW-53	No	n/a	n/a w/combined bg	EPA/OH	0.05	23	0.007474	0.007473	ln(x)	ShapiroWilk
Selenium (mg/L)	MW-53,MW-54	No	n/a	n/a w/combined bg	OH	NaN	23	0.002408	0.0006337	n/a	n/a
Silver (mg/L)	MW-53,MW-54	No	n/a	n/a w/combined bg	OH	NaN	23	0.0004746	0.0001459	n/a	n/a
Thallium (mg/L)	**MW-53,MW-54**	**Yes**	**0.00278**	**n/a w/combined bg**	**OH**	**NaN**	**23**	**0.0006426**	**0.0004876**	**n/a**	**n/a**
Vanadium (mg/L)	MW-53,MW-54	No	n/a	n/a w/combined bg	OH	NaN	23	0.002419	0.0003885	n/a	n/a
Zinc (mg/L)	MW-53,MW-54	No	n/a	n/a w/combined bg	OH	NaN	23	0.00972	0.006627	n/a	n/a

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm, Pooled Background

MW-53,MW-54



n = 23

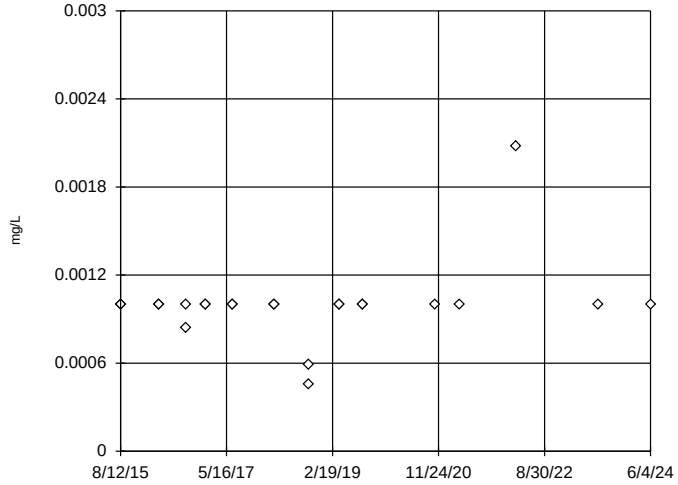
Statistical outlier is drawn as solid.
Outlier per Ohio method.

Constituent: Antimony Analysis Run 10/17/2024 11:58 PM View: 2024SSN - BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm, Pooled Background

MW-53,MW-54



n = 23

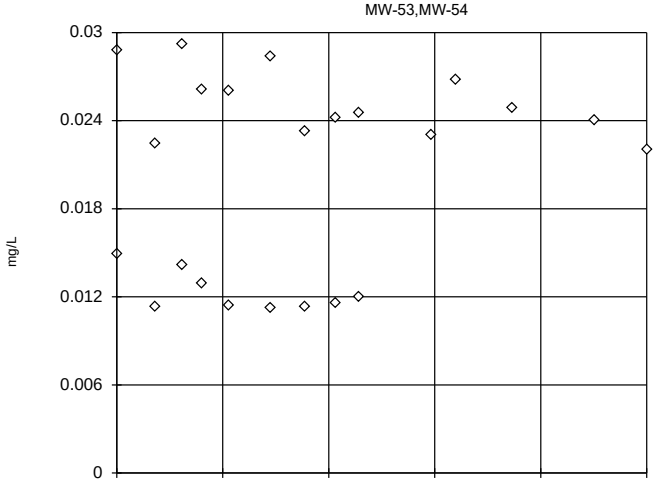
No statistical outliers.

Constituent: Arsenic Analysis Run 10/17/2024 11:58 PM View: 2024SSN - BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm, Pooled Background

MW-53,MW-54



n = 23

No outliers found.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.01 alpha level.

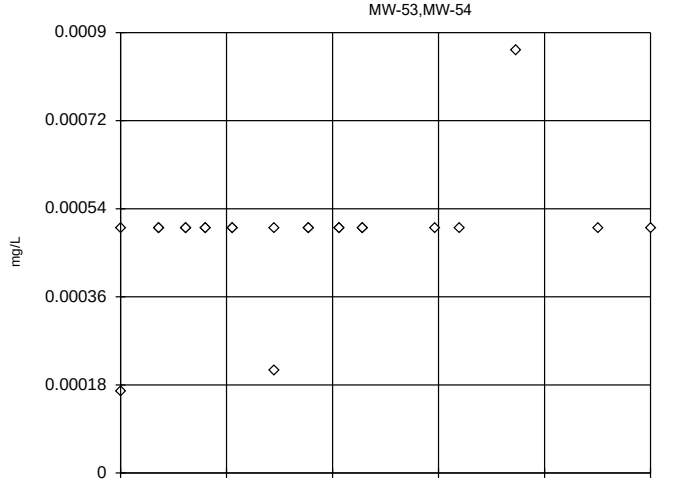
High cutoff = 0.068, low cutoff = -0.03, based on IQR multiplier of 3.

Constituent: Barium Analysis Run 10/17/2024 11:58 PM View: 2024SSN - BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm, Pooled Background

MW-53,MW-54



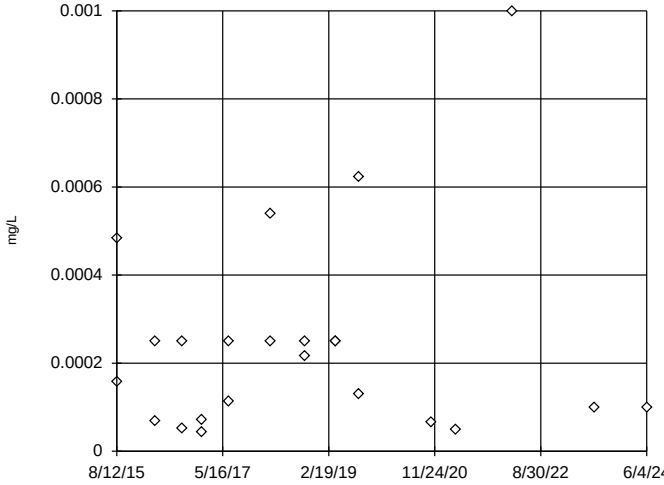
n = 23

No statistical outliers.

Constituent: Beryllium Analysis Run 10/17/2024 11:58 PM View: 2024SSN - BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

EPA Screening (suspected outliers for Rosner's Test)

MW-53,MW-54



n = 23

Rosner's will not be run.
No suspect values identified or unable to establish suspect values.
Ohio method in use.
Mean 0.0002419, std. dev. 0.0002284, critical Tn 2.624

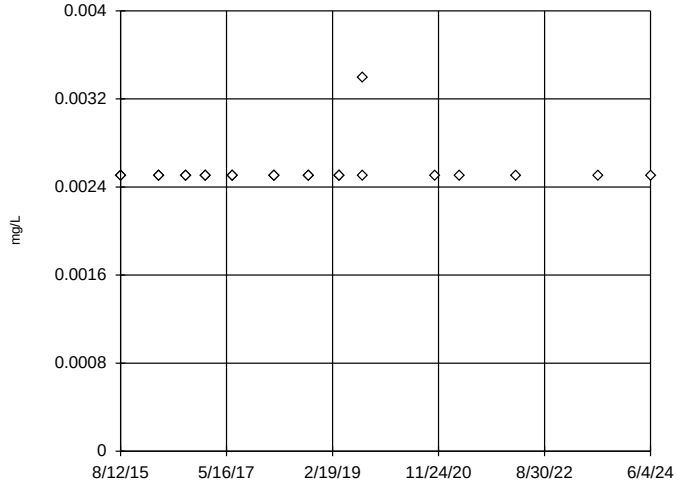
Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9523
Critical = 0.881 (after natural log transformation)
The distribution was found to be log-normal.

Constituent: Cadmium Analysis Run 10/17/2024 11:58 PM View: 2024SSN - BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm, Pooled Background

MW-53,MW-54



n = 23

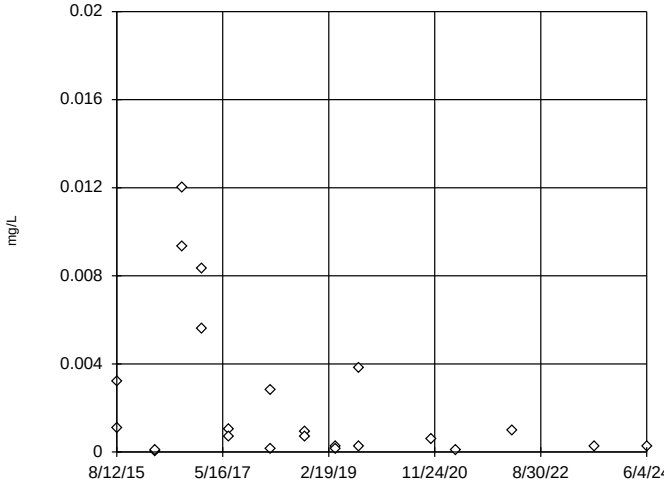
No statistical outliers.

Constituent: Chromium Analysis Run 10/17/2024 11:58 PM View: 2024SSN - BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

EPA Screening (suspected outliers for Rosner's Test)

MW-53,MW-54



n = 23

Rosner's will not be run.
No suspect values identified or unable to establish suspect values.
Ohio method in use.
Mean 0.002286, std. dev. 0.003372, critical Tn 2.624

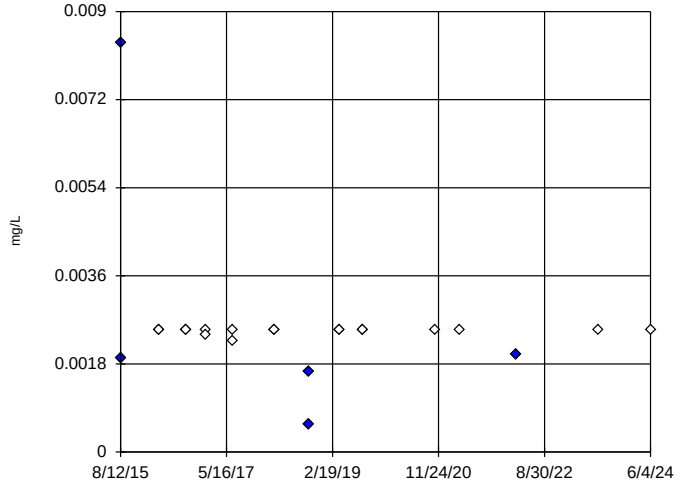
Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9555
Critical = 0.881 (after natural log transformation)
The distribution was found to be log-normal.

Constituent: Cobalt Analysis Run 10/17/2024 11:58 PM View: 2024SSN - BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm, Pooled Background

MW-53,MW-54



n = 23

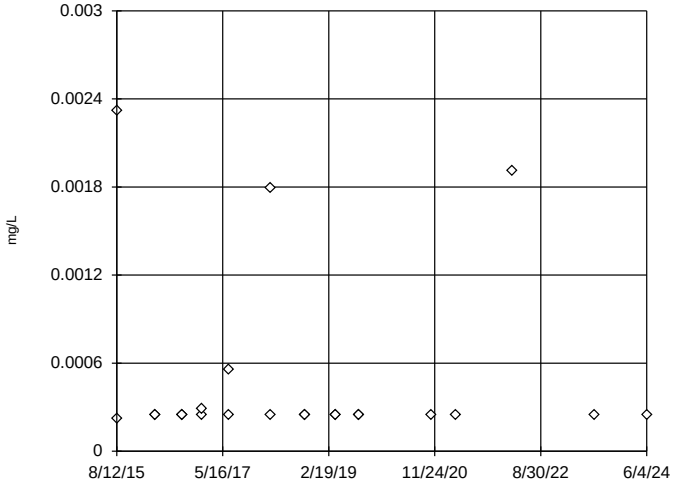
Outliers are drawn as solid.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.01 alpha level.

High cutoff = 0.00283, low cutoff = 0.00206, based on IQR multiplier of 3.

Constituent: Copper Analysis Run 10/17/2024 11:58 PM View: 2024SSN - BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm, Pooled Background

MW-53,MW-54



n = 23

No outliers found.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.01 alpha level.

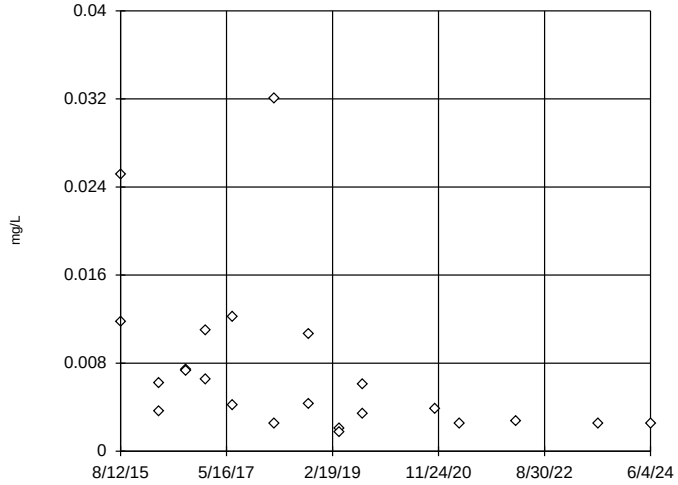
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Lead Analysis Run 10/17/2024 11:58 PM View: 2024SSN - BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

EPA Screening (suspected outliers for Rosner's Test)

MW-54,MW-53



n = 23

Rosner's will not be run.
No suspect values identified or unable to establish suspect values.
Ohio method in use.
Mean 0.007474, std. dev. 0.007473, critical Tn 2.624

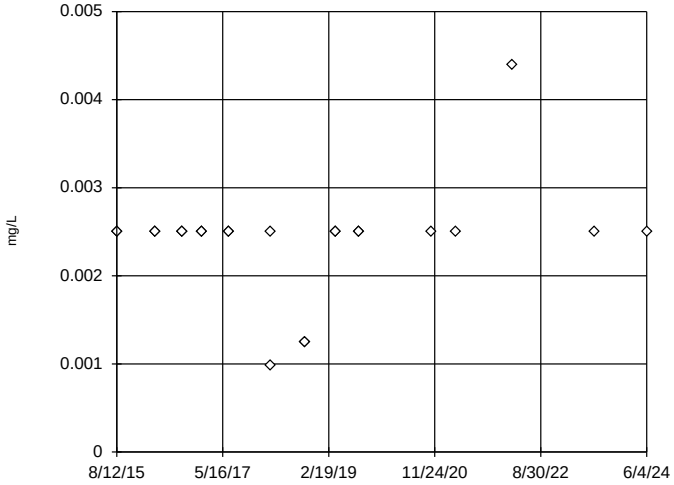
Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9378
Critical = 0.881 (after natural log transformation)
The distribution was found to be log-normal.

Constituent: Nickel Analysis Run 10/17/2024 11:58 PM View: 2024SSN - BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm, Pooled Background

MW-53,MW-54



n = 23

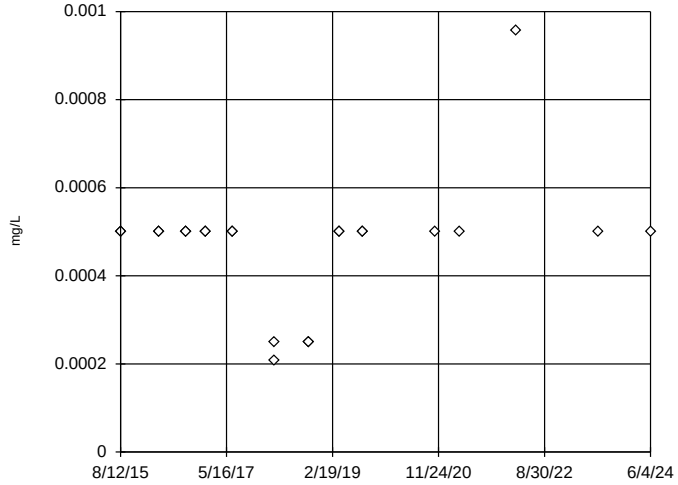
No statistical outliers.

Constituent: Selenium Analysis Run 10/17/2024 11:58 PM View: 2024SSN - BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm, Pooled Background

MW-53,MW-54



n = 23

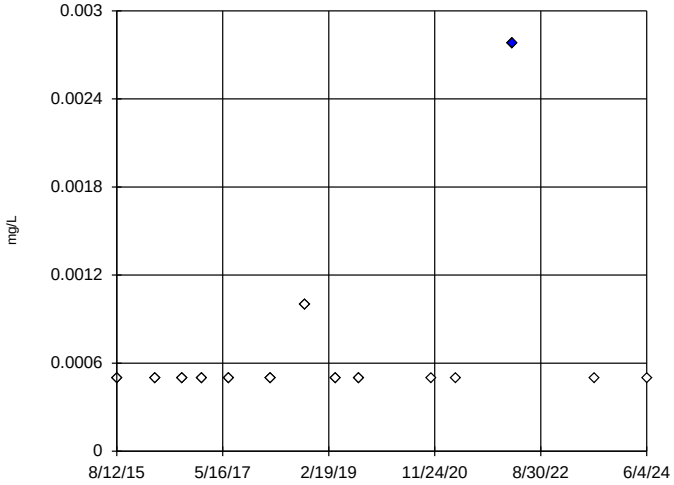
No statistical outliers.

Constituent: Silver Analysis Run 10/17/2024 11:58 PM View: 2024SSN - BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm, Pooled Background

MW-53,MW-54



n = 23

Statistical outlier is drawn as solid.
Outlier per Ohio method.

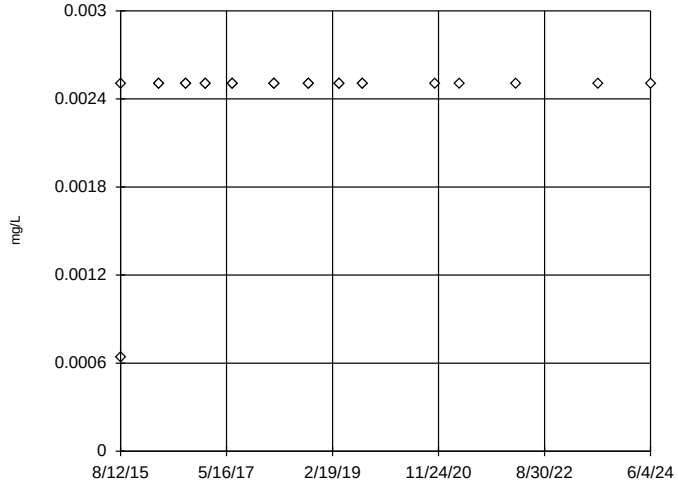
Constituent: Thallium Analysis Run 10/17/2024 11:59 PM View: 2024SSN - BG Outliers

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm, Pooled Background

MW-53,MW-54



n = 23

No statistical outliers.

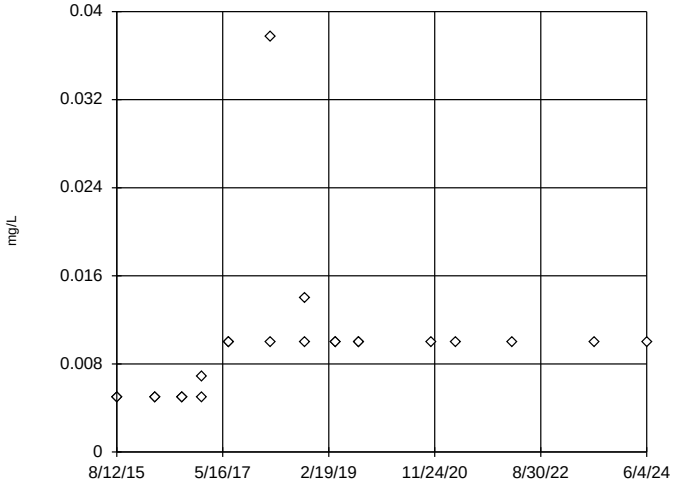
Constituent: Vanadium Analysis Run 10/17/2024 11:59 PM View: 2024SSN - BG Outliers

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm, Pooled Background

MW-53,MW-54



n = 23

No statistical outliers.

Constituent: Zinc Analysis Run 10/17/2024 11:59 PM View: 2024SSN - BG Outliers

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

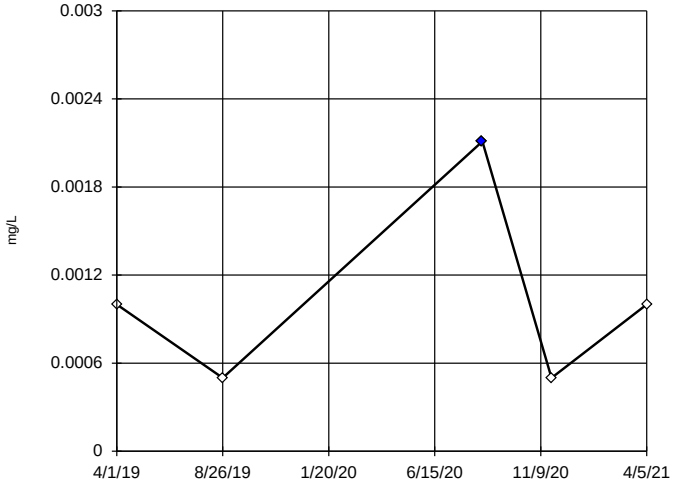
BG Outlier Analysis

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master Printed 10/18/2024, 4:10 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Antimony (mg/L)	**GU-7**	**Yes**	**0.00211**	**8/20/2020**	**OH**	**NaN**	**5**	**0.001022**	**0.0006576**	**n/a**	**n/a**
Arsenic (mg/L)	GU-7	No	n/a	n/a	EPA/OH	0.05	5	0.002277	0.001468	normal	ShapiroWilk
Barium (mg/L)	GU-7	No	n/a	n/a	EPA/OH	0.05	5	0.022	0.008473	normal	ShapiroWilk
Beryllium (mg/L)	**GU-7**	**Yes**	**0.00108**	**8/20/2020**	**OH**	**NaN**	**5**	**0.000616**	**0.0002594**	**n/a**	**n/a**
Cadmium (mg/L)	GU-7	No	n/a	n/a	EPA/OH	0.05	5	0.0002824	0.0003229	normal	ShapiroWilk
Chromium (mg/L)	GU-7	No	n/a	n/a	OH	NaN	5	0.00227	0.0005143	n/a	n/a
Cobalt (mg/L)	GU-7	No	n/a	n/a	EPA/OH	0.05	5	0.08554	0.0913	normal	ShapiroWilk
Copper (mg/L)	GU-7	No	n/a	n/a	OH	NaN	5	0.002438	0.0001386	n/a	n/a
Lead (mg/L)	GU-7	No	n/a	n/a	OH	NaN	5	0.0002354	0.00003265	n/a	n/a
Nickel (mg/L)	**GU-7**	**Yes**	**0.483**	**4/1/2019**	**Dixon/OH**	**0.01**	**5**	**0.1723**	**0.1752**	**normal**	**ShapiroWilk**
Selenium (mg/L)	**GU-7**	**Yes**	**0.00671**	**8/20/2020**	**OH**	**NaN**	**5**	**0.003842**	**0.001935**	**n/a**	**n/a**
Silver (mg/L)	**GU-7**	**Yes**	**0.00111**	**8/20/2020**	**OH**	**NaN**	**5**	**0.000722**	**0.0003065**	**n/a**	**n/a**
Thallium (mg/L)	**GU-7**	**Yes**	**0.00302**	**8/20/2020**	**OH**	**NaN**	**5**	**0.001004**	**0.001127**	**n/a**	**n/a**
Vanadium (mg/L)	**GU-7**	**Yes**	**0.005**	**4/1/2019**	**OH**	**NaN**	**5**	**0.0028**	**0.001304**	**n/a**	**n/a**
Zinc (mg/L)	**GU-7**	**Yes**	**0.257**	**4/1/2019**	**Dixon/OH**	**0.01**	**5**	**0.0617**	**0.1092**	**normal**	**ShapiroWilk**

Ohio EPA 0715 Outlier Algorithm

GU-7



n = 5

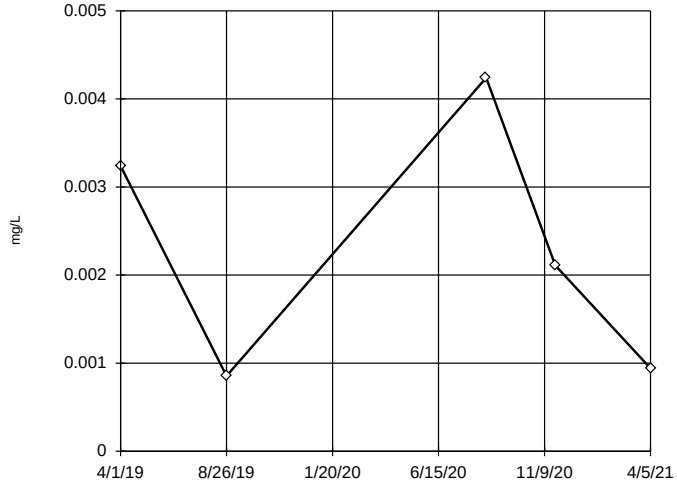
Statistical outlier is drawn as solid.
Outlier per Ohio method.

Constituent: Antimony Analysis Run 10/18/2024 4:08 PM View: 2024SSN - GU-7 BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

EPA Screening (suspected outliers for Dixon's Test)

GU-7



n = 5

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Ohio method in use.
Mean 0.002277, std. dev. 0.001468, critical Tn 1.672

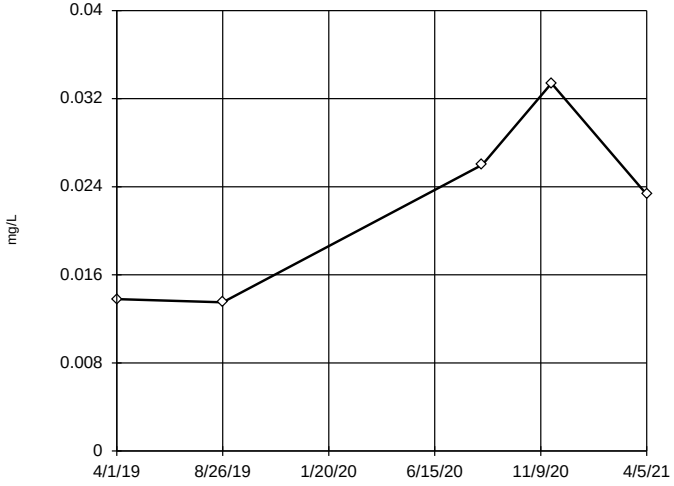
Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9131
Critical = 0.686
The distribution was found to be normally distributed.

Constituent: Arsenic Analysis Run 10/18/2024 4:08 PM View: 2024SSN - GU-7 BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

EPA Screening (suspected outliers for Dixon's Test)

GU-7



n = 5

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Ohio method in use.
Mean 0.022, std. dev. 0.008473, critical Tn 1.672

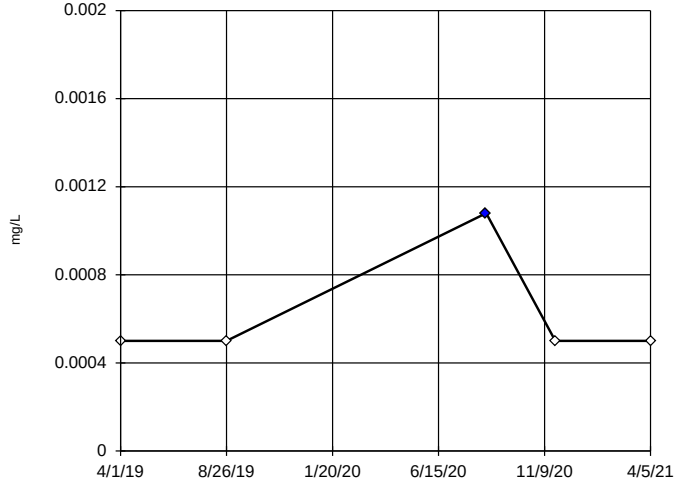
Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9105
Critical = 0.686
The distribution was found to be normally distributed.

Constituent: Barium Analysis Run 10/18/2024 4:08 PM View: 2024SSN - GU-7 BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm

GU-7



n = 5

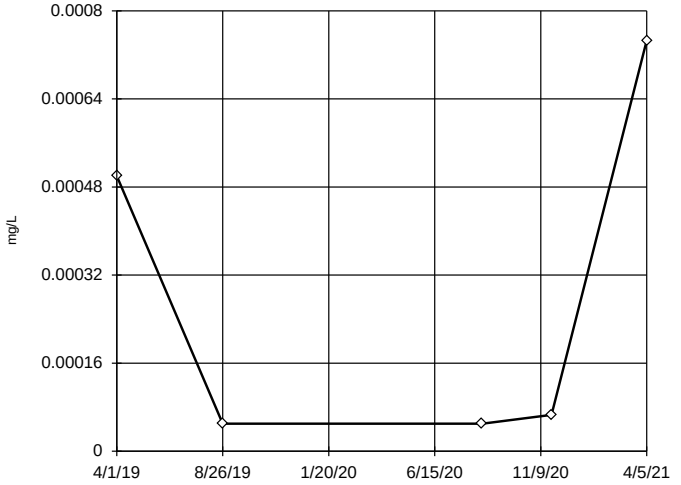
Statistical outlier is drawn as solid.
Outlier per Ohio method.

Constituent: Beryllium Analysis Run 10/18/2024 4:08 PM View: 2024SSN - GU-7 BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

EPA Screening (suspected outliers for Dixon's Test)

GU-7



n = 5

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Ohio method in use.
Mean 0.0002824, std. dev. 0.0003229, critical Tn 1.672

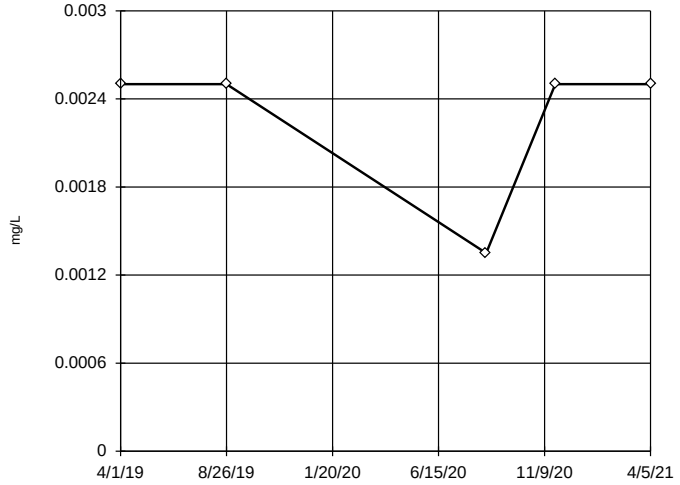
Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.782
Critical = 0.686
The distribution was found to be normally distributed.

Constituent: Cadmium Analysis Run 10/18/2024 4:08 PM View: 2024SSN - GU-7 BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm

GU-7



n = 5

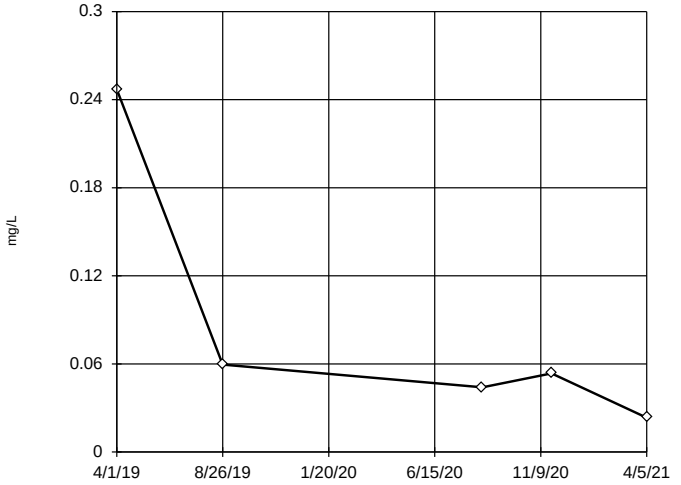
No statistical outliers.

Constituent: Chromium Analysis Run 10/18/2024 4:08 PM View: 2024SSN - GU-7 BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

EPA Screening (suspected outliers for Dixon's Test)

GU-7



n = 5

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Ohio method in use.
Mean 0.08554, std. dev. 0.0913, critical Tn 1.672

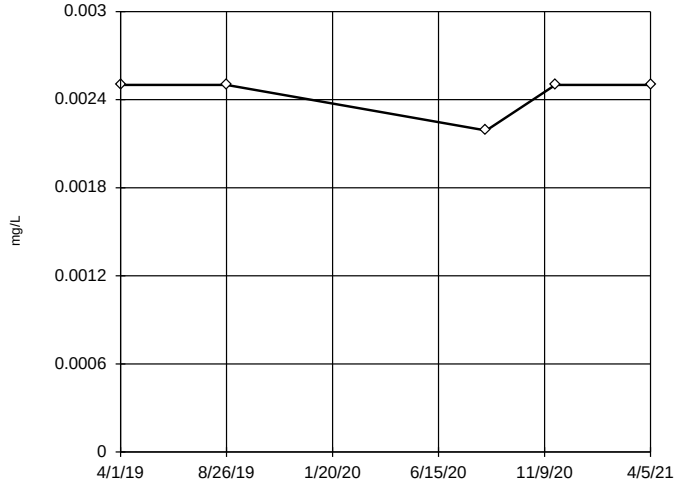
Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.6961
Critical = 0.686
The distribution was found to be normally distributed.

Constituent: Cobalt Analysis Run 10/18/2024 4:08 PM View: 2024SSN - GU-7 BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm

GU-7



n = 5

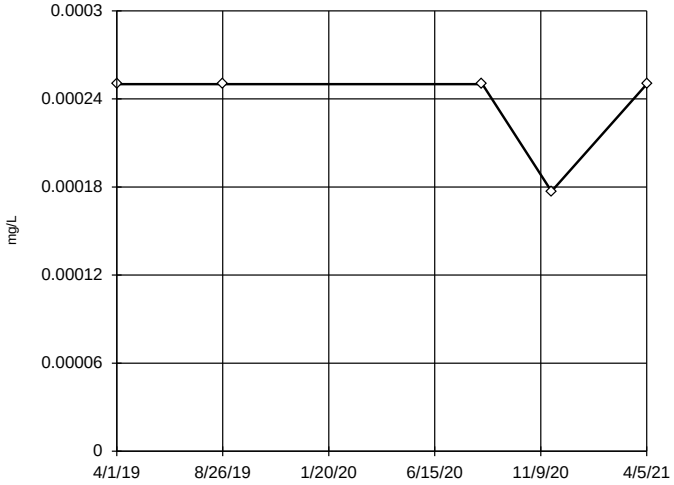
No statistical outliers.

Constituent: Copper Analysis Run 10/18/2024 4:08 PM View: 2024SSN - GU-7 BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm

GU-7



n = 5

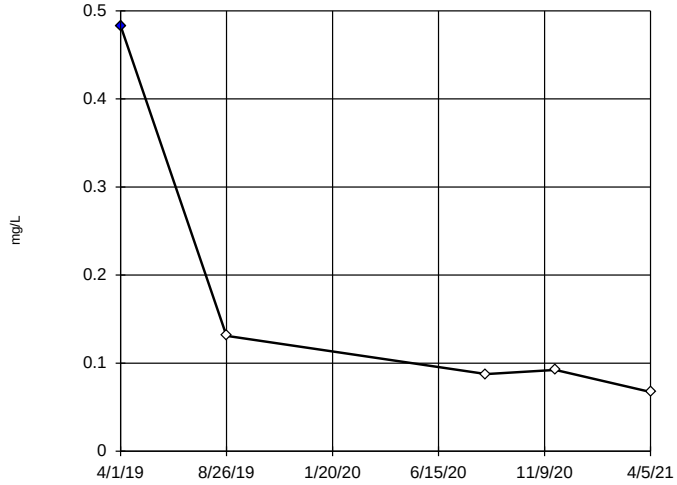
No statistical outliers.

Constituent: Lead Analysis Run 10/18/2024 4:08 PM View: 2024SSN - GU-7 BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Dixon's Outlier Test / Ohio EPA 0715 Outlier Algorithm

GU-7



n = 5

Statistical outlier is drawn as solid.
Testing for 1 high outlier.
Mean = 0.1723.
Std. Dev. = 0.1752.
0.483: c = 0.8466
tabl = 0.78.
Alpha = 0.01.

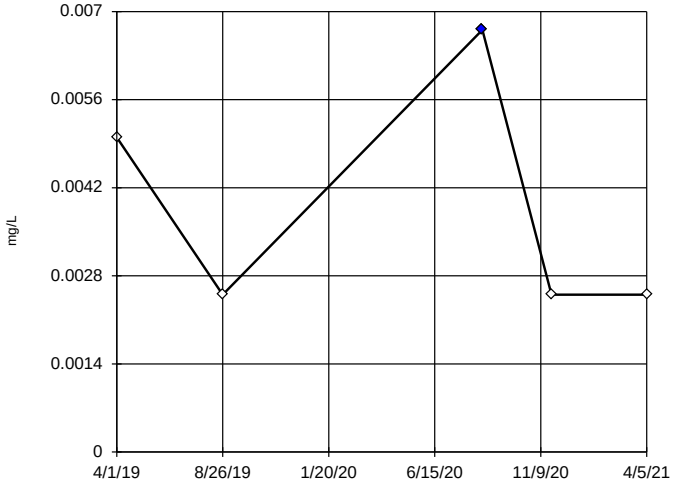
Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.936
Critical = 0.687
The distribution, after removal of suspect value, was found to be normally distributed.

Constituent: Nickel Analysis Run 10/18/2024 4:08 PM View: 2024SSN - GU-7 BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm

GU-7



n = 5

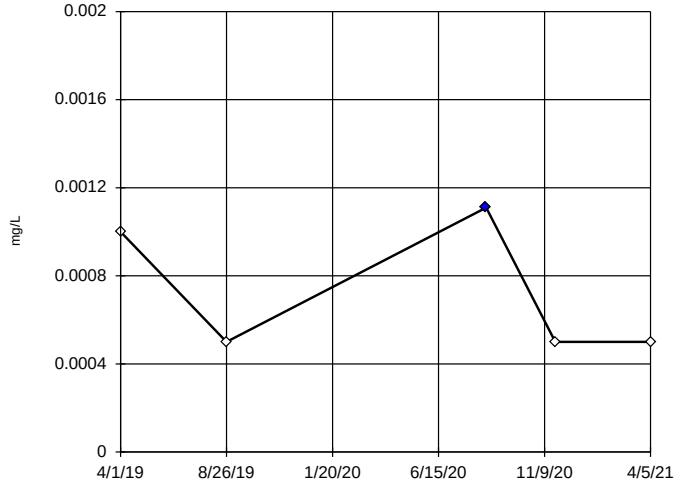
Statistical outlier is drawn as solid.
Outlier per Ohio method.

Constituent: Selenium Analysis Run 10/18/2024 4:08 PM View: 2024SSN - GU-7 BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm

GU-7



n = 5

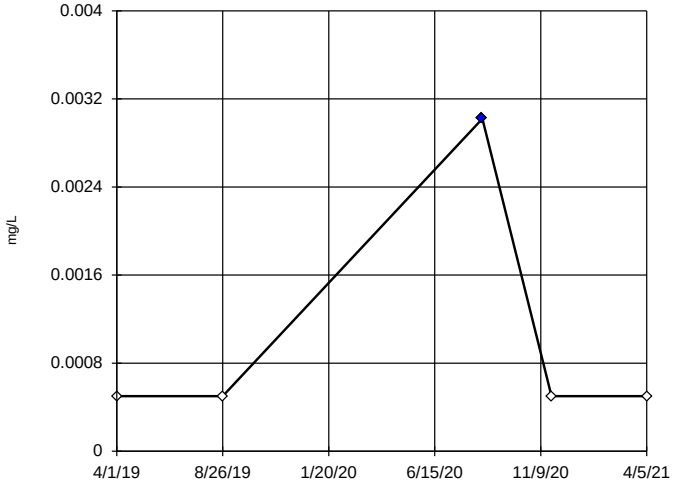
Statistical outlier is drawn as solid.
Outlier per Ohio method.

Constituent: Silver Analysis Run 10/18/2024 4:08 PM View: 2024SSN - GU-7 BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm

GU-7



n = 5

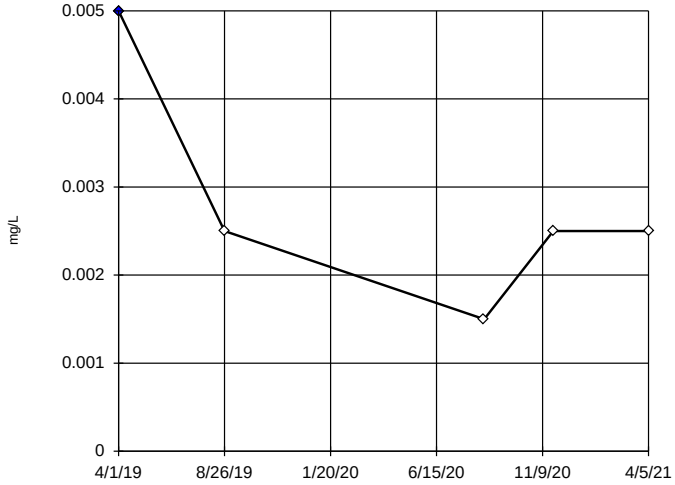
Statistical outlier is drawn as solid.
Outlier per Ohio method.

Constituent: Thallium Analysis Run 10/18/2024 4:08 PM View: 2024SSN - GU-7 BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm

GU-7



n = 5

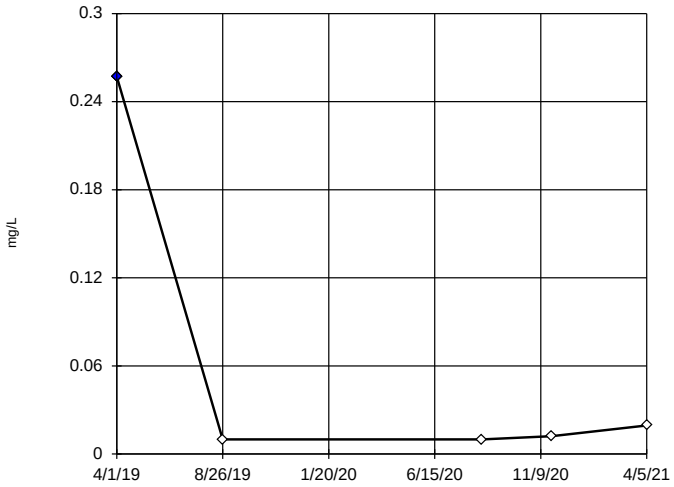
Statistical outlier is drawn as solid.
Outlier per Ohio method.

Constituent: Vanadium Analysis Run 10/18/2024 4:08 PM View: 2024SSN - GU-7 BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Dixon's Outlier Test / Ohio EPA 0715 Outlier Algorithm

GU-7



n = 5

Statistical outliers are drawn as solid.
Outliers per both outlier test and Ohio method.
Testing for 1 high outlier.
Mean = 0.0617.
Std. Dev. = 0.1092.
0.257: c = 0.9619
tabl = 0.78.
Alpha = 0.01.

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.7771
Critical = 0.687
The distribution, after removal of suspect values, was found to be normally distributed.

Constituent: Zinc Analysis Run 10/18/2024 4:08 PM View: 2024SSN - GU-7 BG Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Interwell Prediction Limit Summary Table and Graphs – AMD Wells

AMD Interwell Prediction Limit

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master Printed 10/18/2024, 12:26 PM

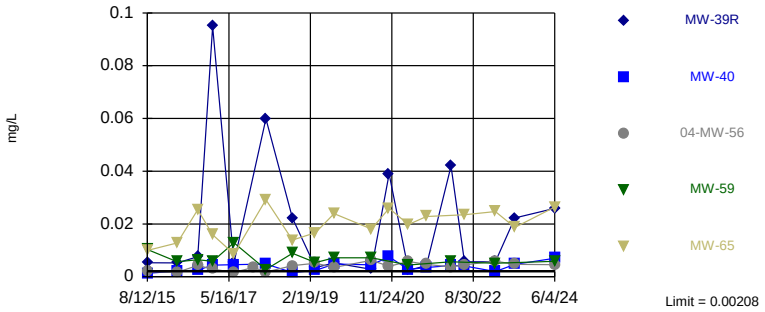
Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Arsenic (mg/L)	**MW-39R**	**0.00208**	**n/a**	**6/4/2024**	**0.0259**	**Yes**	**23**	**82.61**	**n/a**	**0.002913**	**NP Inter (NDs) 1 of 2**
Arsenic (mg/L)	**MW-40**	**0.00208**	**n/a**	**6/4/2024**	**0.00702**	**Yes**	**23**	**82.61**	**n/a**	**0.002913**	**NP Inter (NDs) 1 of 2**
Arsenic (mg/L)	**04-MW-56**	**0.00208**	**n/a**	**6/4/2024**	**0.00455**	**Yes**	**23**	**82.61**	**n/a**	**0.002913**	**NP Inter (NDs) 1 of 2**
Arsenic (mg/L)	**MW-59**	**0.00208**	**n/a**	**6/4/2024**	**0.00585**	**Yes**	**23**	**82.61**	**n/a**	**0.002913**	**NP Inter (NDs) 1 of 2**
Arsenic (mg/L)	**MW-65**	**0.00208**	**n/a**	**6/4/2024**	**0.0264**	**Yes**	**23**	**82.61**	**n/a**	**0.002913**	**NP Inter (NDs) 1 of 2**
Barium (mg/L)	MW-39R	0.03158	n/a	6/4/2024	0.0119	No	23	0	x^3	0.0002508	Param Inter 1 of 2
Barium (mg/L)	MW-40	0.03158	n/a	6/4/2024	0.014	No	23	0	x^3	0.0002508	Param Inter 1 of 2
Barium (mg/L)	04-MW-56	0.03158	n/a	6/4/2024	0.0278	No	23	0	x^3	0.0002508	Param Inter 1 of 2
Barium (mg/L)	MW-58	0.03158	n/a	6/4/2024	0.0234	No	23	0	x^3	0.0002508	Param Inter 1 of 2
Barium (mg/L)	**MW-59**	**0.03158**	**n/a**	**6/4/2024**	**0.0317**	**Yes**	**23**	**0**	**x^3**	**0.0002508**	**Param Inter 1 of 2**
Barium (mg/L)	MW-63R	0.03158	n/a	6/4/2024	0.0121	No	23	0	x^3	0.0002508	Param Inter 1 of 2
Barium (mg/L)	**MW-64**	**0.03158**	**n/a**	**6/4/2024**	**0.171**	**Yes**	**23**	**0**	**x^3**	**0.0002508**	**Param Inter 1 of 2**
Barium (mg/L)	**MW-65**	**0.03158**	**n/a**	**6/4/2024**	**0.331**	**Yes**	**23**	**0**	**x^3**	**0.0002508**	**Param Inter 1 of 2**
Cadmium (mg/L)	MW-40	0.0008857	n/a	6/4/2024	0.000228	No	23	43.48	sqrt(x)	0.0002508	Param Inter 1 of 2
Cadmium (mg/L)	04-MW-56	0.0008857	n/a	6/4/2024	0.00021	No	23	43.48	sqrt(x)	0.0002508	Param Inter 1 of 2
Cadmium (mg/L)	**MW-58**	**0.0008857**	**n/a**	**6/4/2024**	**0.00138**	**Yes**	**23**	**43.48**	**sqrt(x)**	**0.0002508**	**Param Inter 1 of 2**
Cadmium (mg/L)	MW-59	0.0008857	n/a	6/4/2024	0.00088	No	23	43.48	sqrt(x)	0.0002508	Param Inter 1 of 2
Cadmium (mg/L)	**MW-63R**	**0.0008857**	**n/a**	**6/4/2024**	**0.00403**	**Yes**	**23**	**43.48**	**sqrt(x)**	**0.0002508**	**Param Inter 1 of 2**
Cobalt (mg/L)	**MW-39R**	**0.01581**	**n/a**	**6/4/2024**	**0.0278**	**Yes**	**23**	**13.04**	**x^(1/3)**	**0.0002508**	**Param Inter 1 of 2**
Cobalt (mg/L)	**MW-40**	**0.01581**	**n/a**	**6/4/2024**	**0.135**	**Yes**	**23**	**13.04**	**x^(1/3)**	**0.0002508**	**Param Inter 1 of 2**
Cobalt (mg/L)	**04-MW-56**	**0.01581**	**n/a**	**6/4/2024**	**0.0214**	**Yes**	**23**	**13.04**	**x^(1/3)**	**0.0002508**	**Param Inter 1 of 2**
Cobalt (mg/L)	**MW-58**	**0.01581**	**n/a**	**6/4/2024**	**0.02175**	**Yes**	**23**	**13.04**	**x^(1/3)**	**0.0002508**	**Param Inter 1 of 2**
Cobalt (mg/L)	MW-59	0.01581	n/a	6/4/2024	0.00999	No	23	13.04	x^(1/3)	0.0002508	Param Inter 1 of 2
Cobalt (mg/L)	MW-63R	0.01581	n/a	6/4/2024	0.00276	No	23	13.04	x^(1/3)	0.0002508	Param Inter 1 of 2
Cobalt (mg/L)	MW-65	0.01581	n/a	6/4/2024	0.00169	No	23	13.04	x^(1/3)	0.0002508	Param Inter 1 of 2
Lead (mg/L)	MW-59	0.00232	n/a	6/4/2024	0.000522	No	23	73.91	n/a	0.002913	NP Inter (NDs) 1 of 2
Nickel (mg/L)	MW-39R	0.0305	n/a	6/4/2024	0.011	No	23	13.04	x^(1/3)	0.0002508	Param Inter 1 of 2
Nickel (mg/L)	**MW-40**	**0.0305**	**n/a**	**6/4/2024**	**0.0903**	**Yes**	**23**	**13.04**	**x^(1/3)**	**0.0002508**	**Param Inter 1 of 2**
Nickel (mg/L)	**04-MW-56**	**0.0305**	**n/a**	**6/4/2024**	**0.0715**	**Yes**	**23**	**13.04**	**x^(1/3)**	**0.0002508**	**Param Inter 1 of 2**
Nickel (mg/L)	**MW-58**	**0.0305**	**n/a**	**6/4/2024**	**0.05205**	**Yes**	**23**	**13.04**	**x^(1/3)**	**0.0002508**	**Param Inter 1 of 2**
Nickel (mg/L)	MW-59	0.0305	n/a	6/4/2024	0.023	No	23	13.04	x^(1/3)	0.0002508	Param Inter 1 of 2
Nickel (mg/L)	**MW-63R**	**0.0305**	**n/a**	**6/4/2024**	**0.0433**	**Yes**	**23**	**13.04**	**x^(1/3)**	**0.0002508**	**Param Inter 1 of 2**
Nickel (mg/L)	MW-64	0.0305	n/a	6/4/2024	0.0269	No	23	13.04	x^(1/3)	0.0002508	Param Inter 1 of 2
Zinc (mg/L)	**MW-40**	**0.0377**	**n/a**	**6/4/2024**	**0.0687**	**Yes**	**23**	**86.96**	**n/a**	**0.002913**	**NP Inter (NDs) 1 of 2**
Zinc (mg/L)	**04-MW-56**	**0.0377**	**n/a**	**6/4/2024**	**0.066**	**Yes**	**23**	**86.96**	**n/a**	**0.002913**	**NP Inter (NDs) 1 of 2**
Zinc (mg/L)	**MW-58**	**0.0377**	**n/a**	**6/4/2024**	**0.0929**	**Yes**	**23**	**86.96**	**n/a**	**0.002913**	**NP Inter (NDs) 1 of 2**
Zinc (mg/L)	**MW-59**	**0.0377**	**n/a**	**6/4/2024**	**0.0407**	**Yes**	**23**	**86.96**	**n/a**	**0.002913**	**NP Inter (NDs) 1 of 2**
Zinc (mg/L)	**MW-63R**	**0.0377**	**n/a**	**6/4/2024**	**0.219**	**Yes**	**23**	**86.96**	**n/a**	**0.002913**	**NP Inter (NDs) 1 of 2**

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Exceeds Limit: MW-39R, MW-40, 04-MW-56, MW-59, MW-65

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 23 background values. 82.61% NDs. Annual per-constituent alpha = 0.07843. Individual comparison alpha = 0.002913 (1 of 2). Comparing 5 points to limit. Assumes 9 future values.

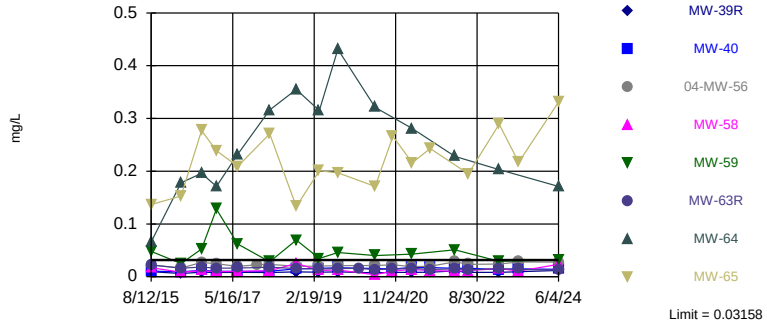
Constituent: Arsenic Analysis Run 10/18/2024 12:25 PM View: 2024SSN - AMD Interwell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Exceeds Limit: MW-59, MW-64, MW-65

Prediction Limit

Interwell Parametric



Background Data Summary (based on cube transformation): Mean=0.00001081, Std. Dev.=0.000008139, n=23. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8832, critical = 0.881. Kappa = 2.542 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.003506. Individual comparison alpha = 0.0002508. Comparing 8 points to limit. Assumes 6 future values.

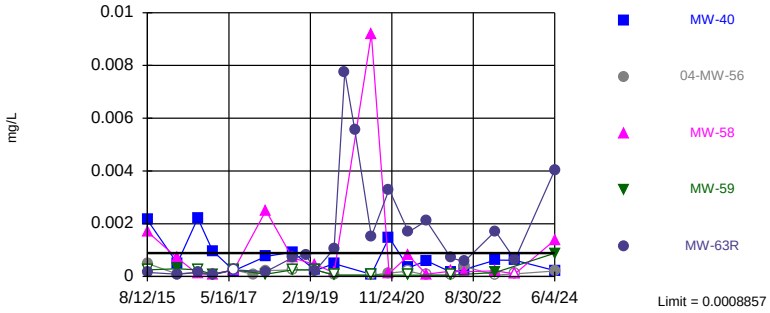
Constituent: Barium Analysis Run 10/18/2024 12:25 PM View: 2024SSN - AMD Interwell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Exceeds Limit: MW-58, MW-63R

Prediction Limit

Interwell Parametric



Background Data Summary (based on square root transformation) (after Kaplan-Meier Adjustment): Mean=0.01253, Std. Dev.=0.006777, n=23, 43.48% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8933, critical = 0.881. Kappa = 2.542 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.003506. Individual comparison alpha = 0.0002508. Comparing 5 points to limit. Assumes 9 future values.

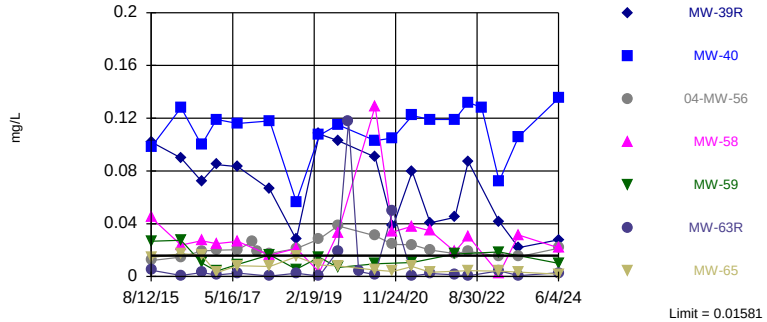
Constituent: Cadmium Analysis Run 10/18/2024 12:25 PM View: 2024SSN - AMD Interwell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Exceeds Limit: MW-39R, MW-40, 04-MW-56, MW-58

Prediction Limit

Interwell Parametric



Background Data Summary (based on cube root transformation): Mean=0.1046, Std. Dev.=0.05757, n=23, 13.04% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8896, critical = 0.881. Kappa = 2.542 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.003506. Individual comparison alpha = 0.0002508. Comparing 7 points to limit. Assumes 7 future values.

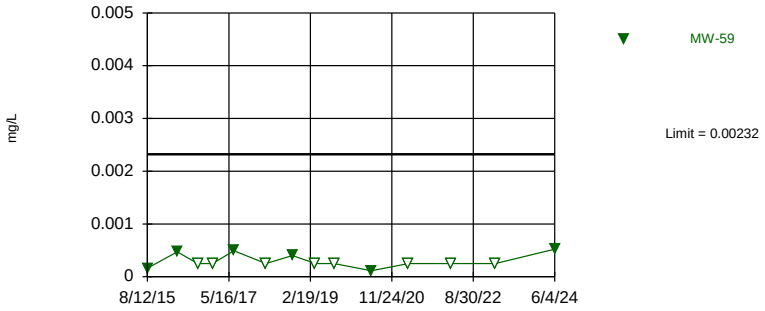
Constituent: Cobalt Analysis Run 10/18/2024 12:25 PM View: 2024SSN - AMD Interwell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 23 background values. 73.91% NDs. Annual per-constituent alpha = 0.07843. Individual comparison alpha = 0.002913 (1 of 2). Assumes 13 future values.

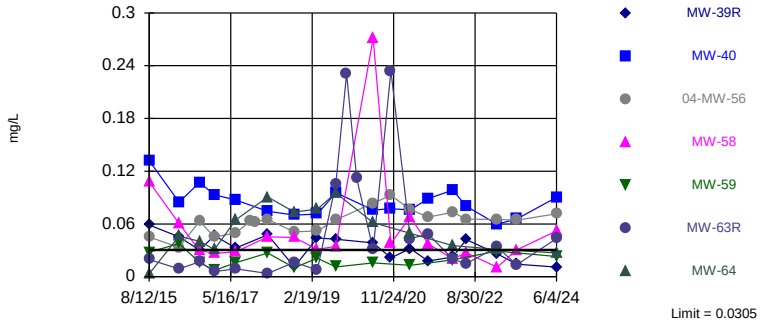
Constituent: Lead Analysis Run 10/18/2024 12:25 PM View: 2024SSN - AMD Interwell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Exceeds Limit: MW-40, 04-MW-56, MW-58, MW-63R

Prediction Limit

Interwell Parametric



Background Data Summary (based on cube root transformation): Mean=0.1811, Std. Dev.=0.05167, n=23, 13.04% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8811, critical = 0.881. Kappa = 2.542 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.003506. Individual comparison alpha = 0.0002508. Comparing 7 points to limit. Assumes 7 future values.

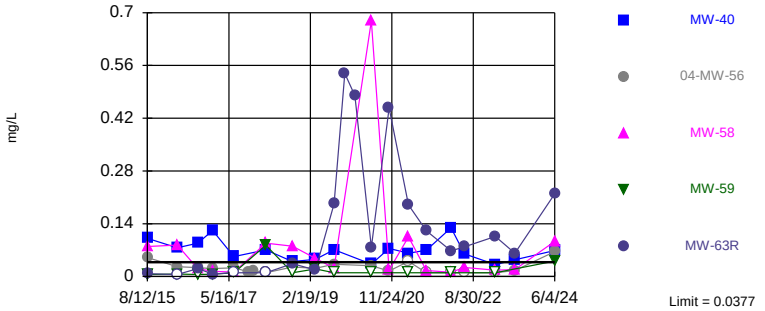
Constituent: Nickel Analysis Run 10/18/2024 12:25 PM View: 2024SSN - AMD Interwell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Exceeds Limit: MW-40, 04-MW-56, MW-58, MW-59, MW-63R

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 23 background values. 86.96% NDs. Annual per-constituent alpha = 0.07843. Individual comparison alpha = 0.002913 (1 of 2). Comparing 5 points to limit. Assumes 9 future values.

Constituent: Zinc Analysis Run 10/18/2024 12:25 PM View: 2024SSN - AMD Interwell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Intrawell Prediction Limit Summary Table and Graphs – AMD Wells

AMD Intrawell Prediction Limit

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master Printed 10/18/2024, 2:57 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Antimony (mg/L)	MW-39R	0.0015	n/a	6/4/2024	0.001ND	No	12	91.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Antimony (mg/L)	MW-40	0.0015	n/a	6/4/2024	0.001ND	No	12	91.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Antimony (mg/L)	MW-58	0.002	n/a	6/4/2024	0.001ND	No	12	91.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Arsenic (mg/L)	MW-39R	0.1791	n/a	6/4/2024	0.0259	No	12	0	x^(1/3)	0.0002508	Param Intra 1 of 2
Arsenic (mg/L)	MW-40	0.00912	n/a	6/4/2024	0.00702	No	12	0	No	0.0002508	Param Intra 1 of 2
Arsenic (mg/L)	04-MW-56	0.008195	n/a	6/4/2024	0.00455	No	13	0	No	0.0002508	Param Intra 1 of 2
Arsenic (mg/L)	MW-58	0.004	n/a	6/4/2024	0.001ND	No	12	83.33	n/a	0.01077	NP Intra (NDs) 1 of 2
Arsenic (mg/L)	MW-59	0.01606	n/a	6/4/2024	0.00585	No	11	0	No	0.0002508	Param Intra 1 of 2
Arsenic (mg/L)	MW-63R	0.01	n/a	6/4/2024	0.001ND	No	13	76.92	n/a	0.009692	NP Intra (NDs) 1 of 2
Arsenic (mg/L)	MW-64	0.02127	n/a	6/4/2024	0.00109J	No	11	0	No	0.0002508	Param Intra 1 of 2
Arsenic (mg/L)	MW-65	0.03865	n/a	6/4/2024	0.0264	No	12	0	No	0.0002508	Param Intra 1 of 2
Barium (mg/L)	**MW-39R**	**0.01096**	**n/a**	**6/4/2024**	**0.0119**	**Yes**	**12**	**0**	**No**	**0.0002508**	**Param Intra 1 of 2**
Barium (mg/L)	MW-40	0.02238	n/a	6/4/2024	0.014	No	12	0	No	0.0002508	Param Intra 1 of 2
Barium (mg/L)	04-MW-56	0.0295	n/a	6/4/2024	0.0278	No	13	0	No	0.0002508	Param Intra 1 of 2
Barium (mg/L)	MW-58	0.02799	n/a	6/4/2024	0.0234	No	12	0	No	0.0002508	Param Intra 1 of 2
Barium (mg/L)	MW-59	0.1586	n/a	6/4/2024	0.0317	No	11	0	sqrt(x)	0.0002508	Param Intra 1 of 2
Barium (mg/L)	MW-63R	0.02289	n/a	6/4/2024	0.0121	No	13	0	No	0.0002508	Param Intra 1 of 2
Barium (mg/L)	MW-64	0.5898	n/a	6/4/2024	0.171	No	11	0	No	0.0002508	Param Intra 1 of 2
Barium (mg/L)	MW-65	0.3614	n/a	6/4/2024	0.331	No	12	0	No	0.0002508	Param Intra 1 of 2
Beryllium (mg/L)	MW-39R	0.0005	n/a	6/4/2024	0.0005ND	No	12	91.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Beryllium (mg/L)	MW-40	0.0005	n/a	6/4/2024	0.0005ND	No	12	75	n/a	0.01077	NP Intra (NDs) 1 of 2
Beryllium (mg/L)	MW-58	0.0054	n/a	6/4/2024	0.0005ND	No	12	41.67	n/a	0.01077	NP Intra (normality) ...
Beryllium (mg/L)	MW-63R	0.00188	n/a	6/4/2024	0.0005ND	No	13	69.23	n/a	0.009692	NP Intra (NDs) 1 of 2
Beryllium (mg/L)	MW-65	0.0005	n/a	6/4/2024	0.0005ND	No	10	80	n/a	0.01476	NP Intra (NDs) 1 of 2
Cadmium (mg/L)	MW-39R	0.000319	n/a	6/4/2024	0.0001ND	No	12	58.33	n/a	0.01077	NP Intra (NDs) 1 of 2
Cadmium (mg/L)	MW-40	0.003094	n/a	6/4/2024	0.000228	No	12	0	No	0.0002508	Param Intra 1 of 2
Cadmium (mg/L)	04-MW-56	0.0005274	n/a	6/4/2024	0.00021	No	13	38.46	No	0.0002508	Param Intra 1 of 2
Cadmium (mg/L)	MW-58	0.01314	n/a	6/4/2024	0.00138	No	12	8.333	x^(1/3)	0.0002508	Param Intra 1 of 2
Cadmium (mg/L)	**MW-59**	**0.000295**	**n/a**	**6/4/2024**	**0.00088**	**Yes**	**11**	**72.73**	**n/a**	**0.01276**	**NP Intra (NDs) 1 of 2**
Cadmium (mg/L)	MW-63R	0.01037	n/a	6/4/2024	0.00403	No	15	6.667	sqrt(x)	0.0002508	Param Intra 1 of 2
Cadmium (mg/L)	MW-64	0.00025	n/a	6/4/2024	0.0001ND	No	11	90.91	n/a	0.01276	NP Intra (NDs) 1 of 2
Cadmium (mg/L)	MW-65	0.000735	n/a	6/4/2024	0.0001ND	No	12	66.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Chromium (mg/L)	MW-39R	0.0025	n/a	6/4/2024	0.0025ND	No	12	91.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Chromium (mg/L)	MW-58	0.0025	n/a	6/4/2024	0.0025ND	No	12	91.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Chromium (mg/L)	MW-63R	0.025	n/a	6/4/2024	0.0025ND	No	13	92.31	n/a	0.009692	NP Intra (NDs) 1 of 2
Chromium (mg/L)	MW-65	0.0025	n/a	6/4/2024	0.0025ND	No	10	60	n/a	0.01476	NP Intra (NDs) 1 of 2
Cobalt (mg/L)	MW-39R	0.1546	n/a	6/4/2024	0.0278	No	12	0	No	0.0002508	Param Intra 1 of 2
Cobalt (mg/L)	MW-40	0.164	n/a	6/4/2024	0.135	No	12	0	No	0.0002508	Param Intra 1 of 2
Cobalt (mg/L)	04-MW-56	0.04254	n/a	6/4/2024	0.0214	No	14	0	No	0.0002508	Param Intra 1 of 2
Cobalt (mg/L)	MW-58	0.1521	n/a	6/4/2024	0.02175	No	12	0	sqrt(x)	0.0002508	Param Intra 1 of 2
Cobalt (mg/L)	MW-59	0.03815	n/a	6/4/2024	0.00999	No	11	0	No	0.0002508	Param Intra 1 of 2
Cobalt (mg/L)	MW-63R	0.6753	n/a	6/4/2024	0.00276	No	14	0	ln(x)	0.0002508	Param Intra 1 of 2
Cobalt (mg/L)	MW-64	0.003095	n/a	6/4/2024	0.000308J	No	11	0	No	0.0002508	Param Intra 1 of 2
Cobalt (mg/L)	MW-65	0.02472	n/a	6/4/2024	0.00169	No	12	0	No	0.0002508	Param Intra 1 of 2
Copper (mg/L)	MW-39R	0.0136	n/a	6/4/2024	0.0025ND	No	12	75	n/a	0.01077	NP Intra (NDs) 1 of 2
Copper (mg/L)	MW-40	0.00326	n/a	6/4/2024	0.00457J	No	12	83.33	n/a	0.01077	NP Intra (NDs) 1 of 2
Copper (mg/L)	04-MW-56	0.01	n/a	6/4/2024	0.0027J	No	13	84.62	n/a	0.009692	NP Intra (NDs) 1 of 2
Copper (mg/L)	MW-58	0.01	n/a	6/4/2024	0.002095J	No	12	66.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Copper (mg/L)	MW-59	0.0025	n/a	6/4/2024	0.00449J	No	11	81.82	n/a	0.01276	NP Intra (NDs) 1 of 2
Copper (mg/L)	MW-63R	0.025	n/a	6/4/2024	0.00331J	No	13	76.92	n/a	0.009692	NP Intra (NDs) 1 of 2

AMD Intrawell Prediction Limit

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master Printed 10/18/2024, 2:57 PM

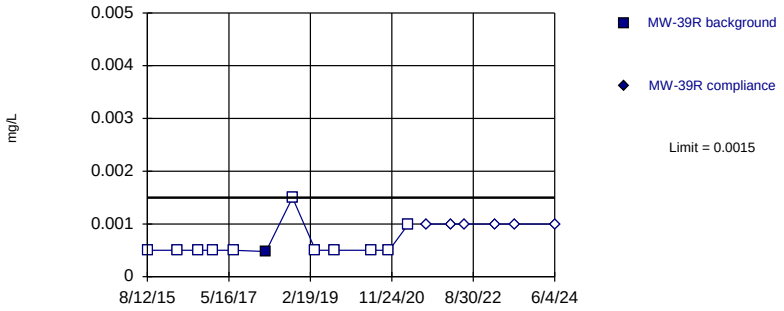
Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Copper (mg/L)	MW-64	0.0025	n/a	6/4/2024	0.0025ND	No	11	72.73	n/a	0.01276	NP Intra (NDs) 1 of 2
Copper (mg/L)	MW-65	0.0025	n/a	6/4/2024	0.0025ND	No	12	83.33	n/a	0.01077	NP Intra (NDs) 1 of 2
Lead (mg/L)	MW-39R	0.00362	n/a	6/4/2024	0.00025ND	No	12	66.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Lead (mg/L)	MW-40	0.0021	n/a	6/4/2024	0.00025ND	No	12	66.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Lead (mg/L)	04-MW-56	0.001	n/a	6/4/2024	0.00025ND	No	13	53.85	n/a	0.009692	NP Intra (NDs) 1 of 2
Lead (mg/L)	MW-58	0.00335	n/a	6/4/2024	0.00025ND	No	12	41.67	n/a	0.01077	NP Intra (normality) ...
Lead (mg/L)	**MW-59**	**0.000491**	**n/a**	**6/4/2024**	**0.000522**	**Yes**	**11**	**54.55**	**n/a**	**0.01276**	**NP Intra (NDs) 1 of 2**
Lead (mg/L)	MW-63R	0.00528	n/a	6/4/2024	0.00025ND	No	14	57.14	n/a	0.008612	NP Intra (NDs) 1 of 2
Lead (mg/L)	MW-64	0.000771	n/a	6/4/2024	0.00025ND	No	11	81.82	n/a	0.01276	NP Intra (NDs) 1 of 2
Lead (mg/L)	MW-65	0.00211	n/a	6/4/2024	0.00025ND	No	12	58.33	n/a	0.01077	NP Intra (NDs) 1 of 2
Nickel (mg/L)	MW-39R	0.07721	n/a	6/4/2024	0.011	No	12	0	No	0.0002508	Param Intra 1 of 2
Nickel (mg/L)	MW-40	0.1424	n/a	6/4/2024	0.0903	No	12	0	No	0.0002508	Param Intra 1 of 2
Nickel (mg/L)	04-MW-56	0.1075	n/a	6/4/2024	0.0715	No	14	0	No	0.0002508	Param Intra 1 of 2
Nickel (mg/L)	MW-58	0.3946	n/a	6/4/2024	0.05205	No	12	0	ln(x)	0.0002508	Param Intra 1 of 2
Nickel (mg/L)	MW-59	0.04773	n/a	6/4/2024	0.023	No	11	0	No	0.0002508	Param Intra 1 of 2
Nickel (mg/L)	MW-63R	0.4863	n/a	6/4/2024	0.0433	No	14	0	x^(1/3)	0.0002508	Param Intra 1 of 2
Nickel (mg/L)	MW-64	0.1444	n/a	6/4/2024	0.0269	No	11	0	No	0.0002508	Param Intra 1 of 2
Nickel (mg/L)	MW-65	0.02329	n/a	6/4/2024	0.0025ND	No	12	0	No	0.0002508	Param Intra 1 of 2
Selenium (mg/L)	MW-39R	0.0025	n/a	6/4/2024	0.0025ND	No	12	91.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Selenium (mg/L)	MW-40	0.0025	n/a	6/4/2024	0.0025ND	No	12	91.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Selenium (mg/L)	MW-58	0.01	n/a	6/4/2024	0.0025ND	No	12	91.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Selenium (mg/L)	MW-63R	0.025	n/a	6/4/2024	0.0025ND	No	13	84.62	n/a	0.009692	NP Intra (NDs) 1 of 2
Selenium (mg/L)	MW-65	0.0025	n/a	6/4/2024	0.0025ND	No	10	60	n/a	0.01476	NP Intra (NDs) 1 of 2
Silver (mg/L)	MW-39R	0.0005	n/a	6/4/2024	0.0005ND	No	12	91.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Silver (mg/L)	MW-58	0.0005	n/a	6/4/2024	0.0005ND	No	12	91.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Silver (mg/L)	MW-63R	0.005	n/a	6/4/2024	0.0005ND	No	13	92.31	n/a	0.009692	NP Intra (NDs) 1 of 2
Thallium (mg/L)	MW-39R	0.001	n/a	6/4/2024	0.0005ND	No	12	66.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Thallium (mg/L)	MW-40	0.0006159	n/a	6/4/2024	0.0005ND	No	12	41.67	No	0.0002508	Param Intra 1 of 2
Thallium (mg/L)	MW-58	0.001	n/a	6/4/2024	0.0005ND	No	12	75	n/a	0.01077	NP Intra (NDs) 1 of 2
Vanadium (mg/L)	MW-39R	0.0025	n/a	6/4/2024	0.0025ND	No	12	91.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Vanadium (mg/L)	MW-40	0.0025	n/a	6/4/2024	0.0025ND	No	12	83.33	n/a	0.01077	NP Intra (NDs) 1 of 2
Vanadium (mg/L)	MW-63R	0.025	n/a	6/4/2024	0.0025ND	No	13	92.31	n/a	0.009692	NP Intra (NDs) 1 of 2
Vanadium (mg/L)	MW-65	0.0025	n/a	6/4/2024	0.0025ND	No	10	50	n/a	0.01476	NP Intra (normality) ...
Zinc (mg/L)	MW-39R	0.0644	n/a	6/4/2024	0.01ND	No	12	75	n/a	0.01077	NP Intra (NDs) 1 of 2
Zinc (mg/L)	MW-40	0.1489	n/a	6/4/2024	0.0687	No	12	0	No	0.0002508	Param Intra 1 of 2
Zinc (mg/L)	**04-MW-56**	**0.05628**	**n/a**	**6/4/2024**	**0.066**	**Yes**	**14**	**14.29**	**No**	**0.0002508**	**Param Intra 1 of 2**
Zinc (mg/L)	MW-58	1.716	n/a	6/4/2024	0.0929	No	12	0	ln(x)	0.0002508	Param Intra 1 of 2
Zinc (mg/L)	MW-59	0.0827	n/a	6/4/2024	0.0407	No	11	63.64	n/a	0.01276	NP Intra (NDs) 1 of 2
Zinc (mg/L)	MW-63R	1.309	n/a	6/4/2024	0.219	No	14	21.43	x^(1/3)	0.0002508	Param Intra 1 of 2
Zinc (mg/L)	MW-65	0.0327	n/a	6/4/2024	0.01ND	No	12	83.33	n/a	0.01077	NP Intra (NDs) 1 of 2

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 91.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

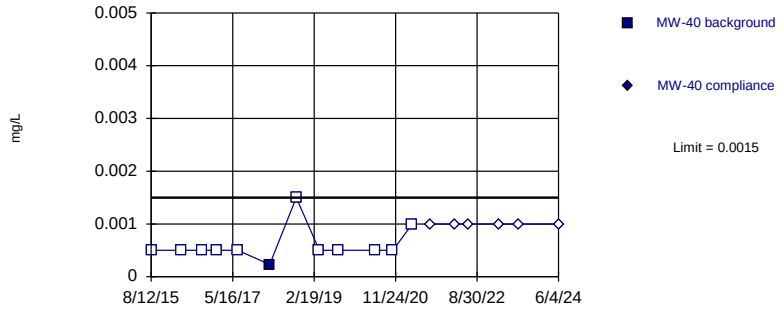
Constituent: Antimony Analysis Run 10/18/2024 2:54 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 91.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

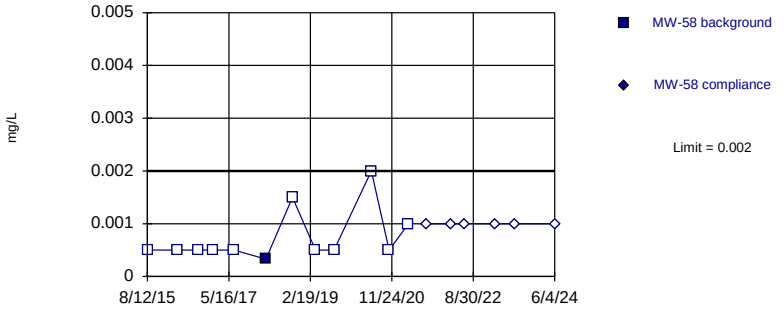
Constituent: Antimony Analysis Run 10/18/2024 2:54 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 91.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

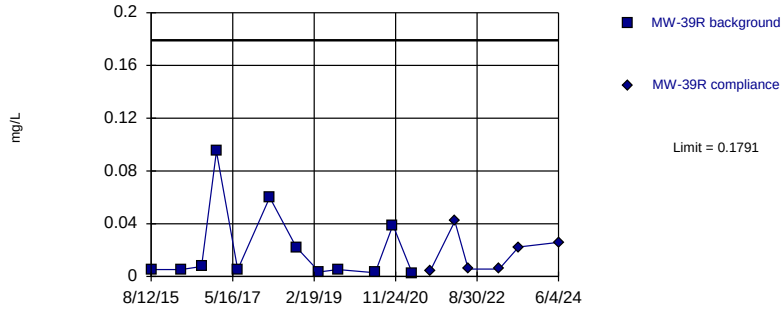
Constituent: Antimony Analysis Run 10/18/2024 2:54 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on cube root transformation): Mean=0.2322, Std. Dev.=0.108, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8078, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

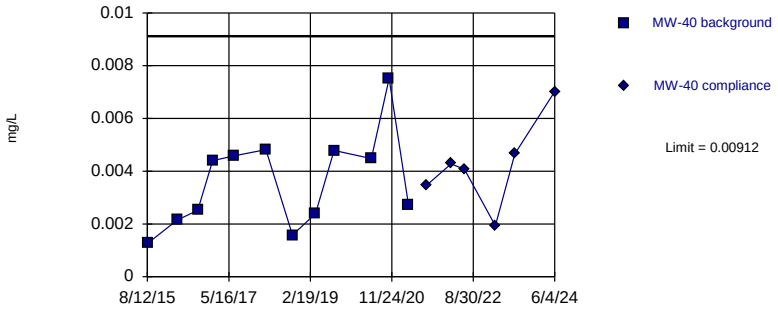
Constituent: Arsenic Analysis Run 10/18/2024 2:54 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.003601, Std. Dev.=0.001799, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9115, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Arsenic Analysis Run 10/18/2024 2:54 PM View: 2024SSN - AMD Intrawell PL

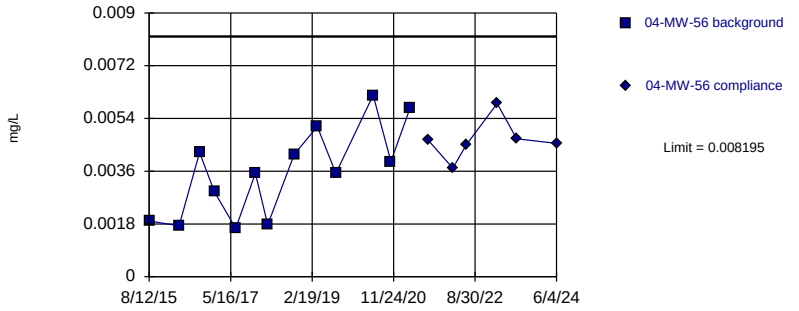
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.003573, Std. Dev.=0.001544, n=13. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9254, critical = 0.814. Kappa = 2.994 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Arsenic Analysis Run 10/18/2024 2:54 PM View: 2024SSN - AMD Intrawell PL

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

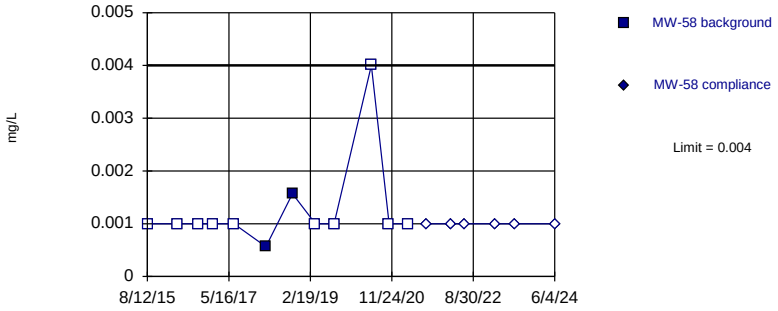
Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 83.33% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

Constituent: Arsenic Analysis Run 10/18/2024 2:54 PM View: 2024SSN - AMD Intrawell PL

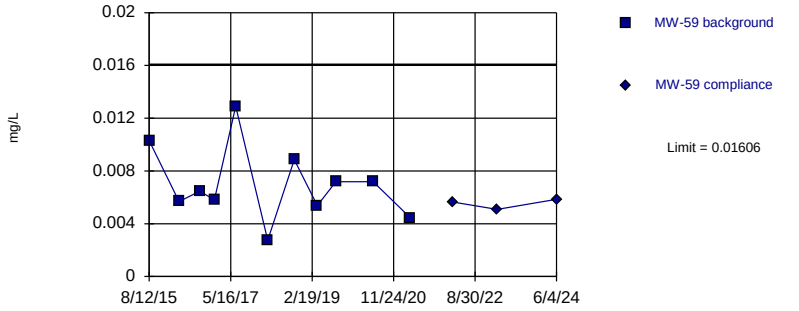
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.006998, Std. Dev.=0.002826, n=11. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9528, critical = 0.792. Kappa = 3.205 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Arsenic Analysis Run 10/18/2024 2:54 PM View: 2024SSN - AMD Intrawell PL

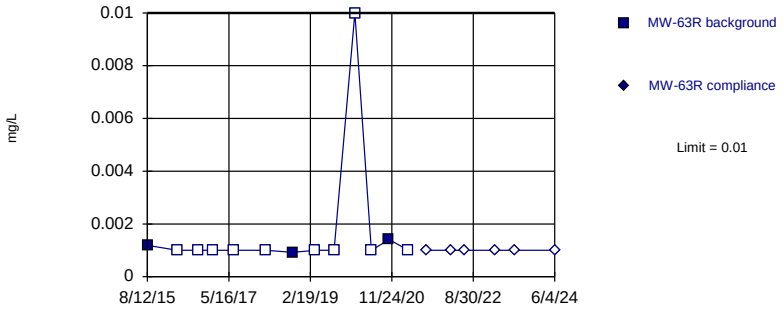
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 76.92% NDs. Well-constituent pair annual alpha = 0.01929. Individual comparison alpha = 0.009692 (1 of 2).

Constituent: Arsenic Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL

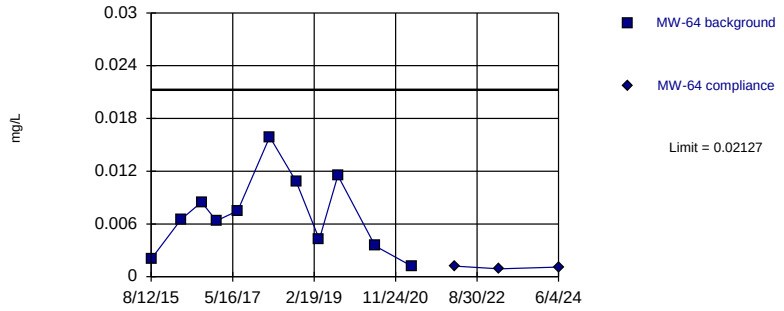
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.00709, Std. Dev.=0.004423, n=11. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9637, critical = 0.792. Kappa = 3.205 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Arsenic Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL

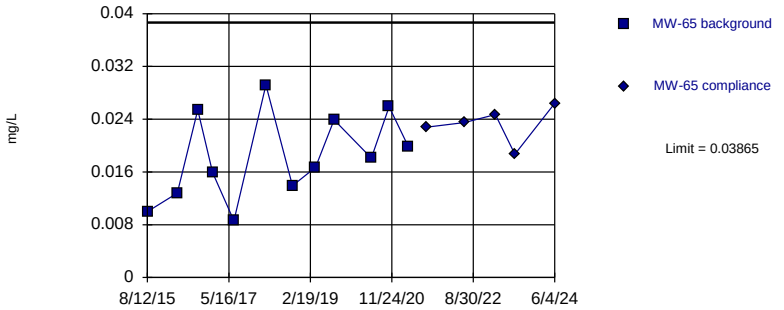
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.01835, Std. Dev.=0.00662, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9608, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Arsenic Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL

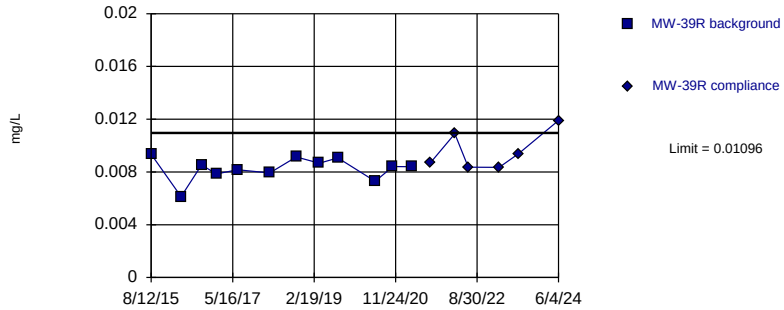
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.008242, Std. Dev.=0.0008849, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9139, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Barium Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL

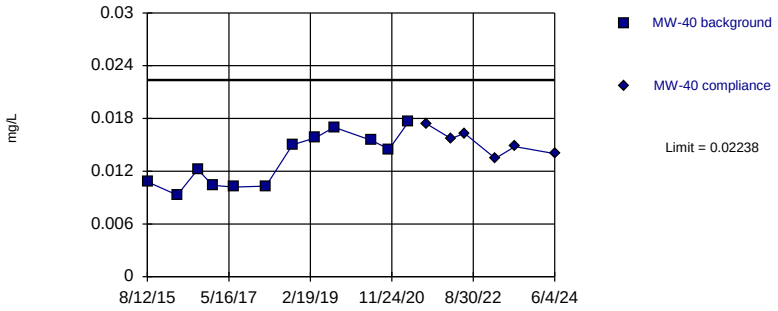
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.01322, Std. Dev.=0.002986, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8947, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Barium Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL

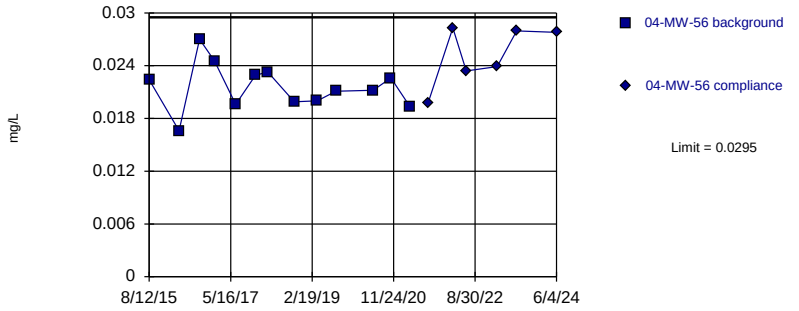
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.02157, Std. Dev.=0.002649, n=13. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9788, critical = 0.814. Kappa = 2.994 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Barium Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL

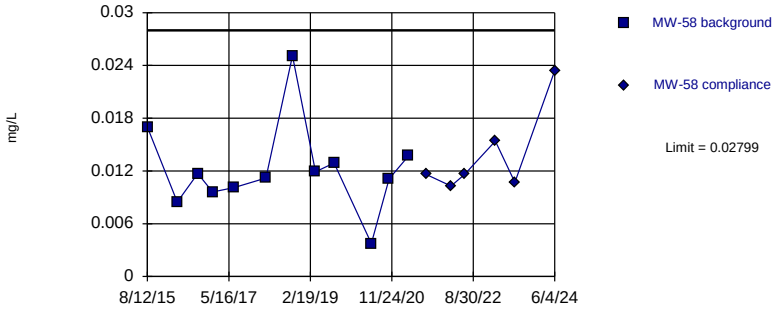
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.01221, Std. Dev.=0.005143, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.881, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Barium Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL

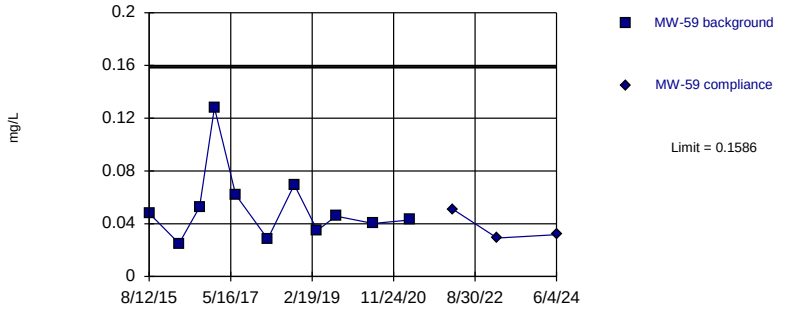
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on square root transformation): Mean=0.223, Std. Dev.=0.05466, n=11. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8819, critical = 0.792. Kappa = 3.205 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Barium Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL

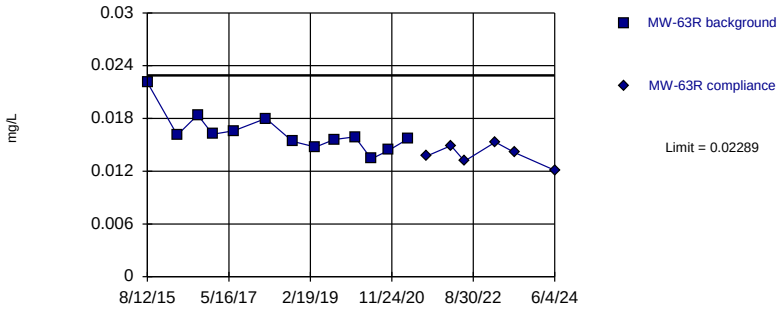
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.01635, Std. Dev.=0.002185, n=13. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8721, critical = 0.814. Kappa = 2.994 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Barium Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL

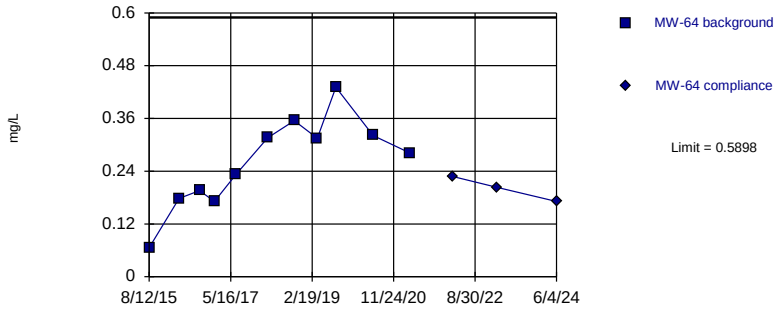
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.2602, Std. Dev.=0.1028, n=11. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9724, critical = 0.792. Kappa = 3.205 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Barium Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL

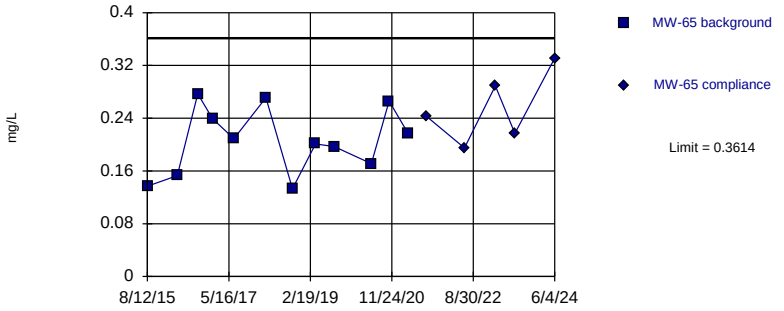
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.2058, Std. Dev.=0.05072, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9355, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Barium Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

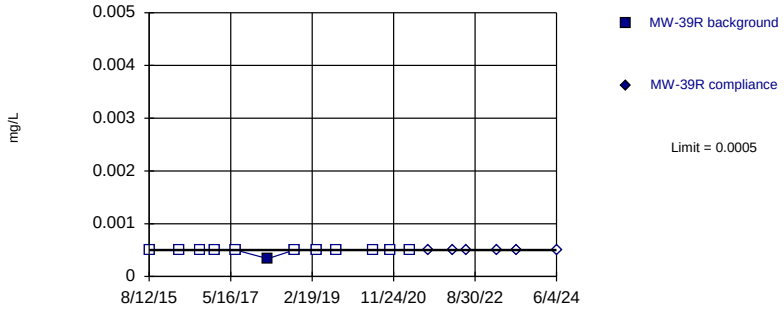
Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 91.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

Constituent: Beryllium Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL

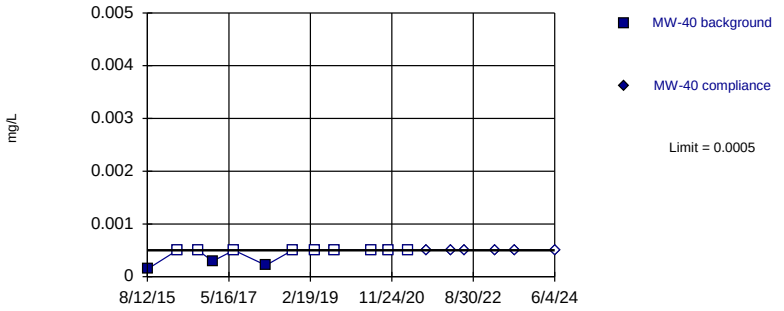
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 75% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

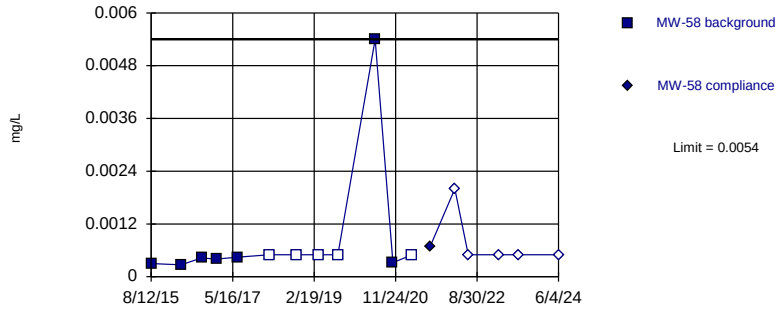
Constituent: Beryllium Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 12 background values. 41.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

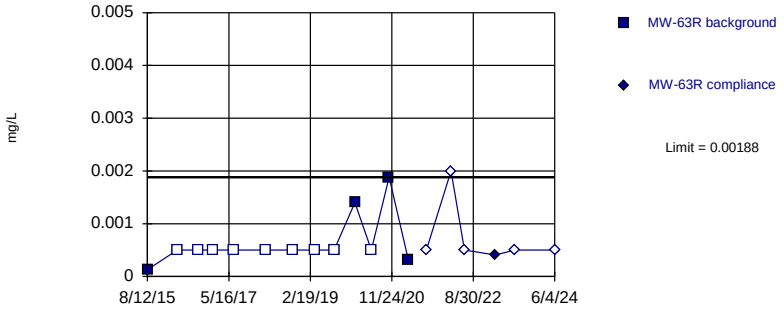
Constituent: Beryllium Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 69.23% NDs. Well-constituent pair annual alpha = 0.01929. Individual comparison alpha = 0.009692 (1 of 2).

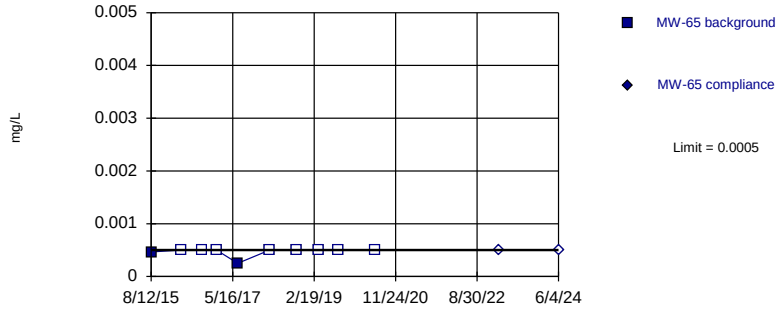
Constituent: Beryllium Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 10 background values. 80% NDs. Well-constituent pair annual alpha = 0.0293. Individual comparison alpha = 0.01476 (1 of 2).

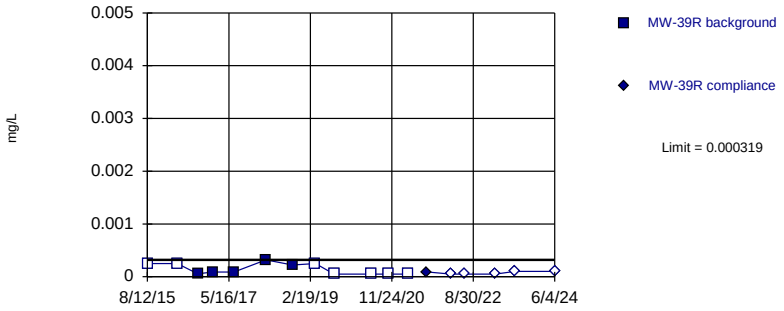
Constituent: Beryllium Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 58.33% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

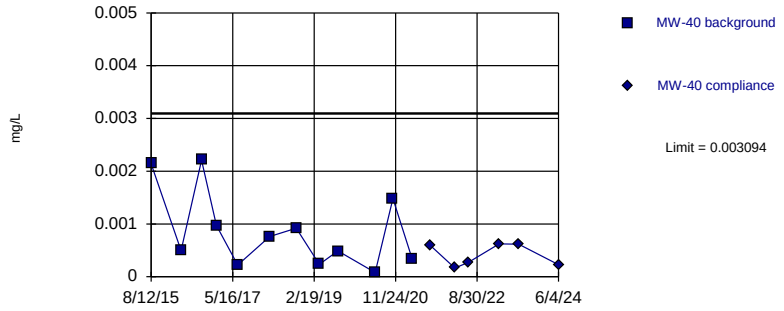
Constituent: Cadmium Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.0008613, Std. Dev.=0.0007278, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8651, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

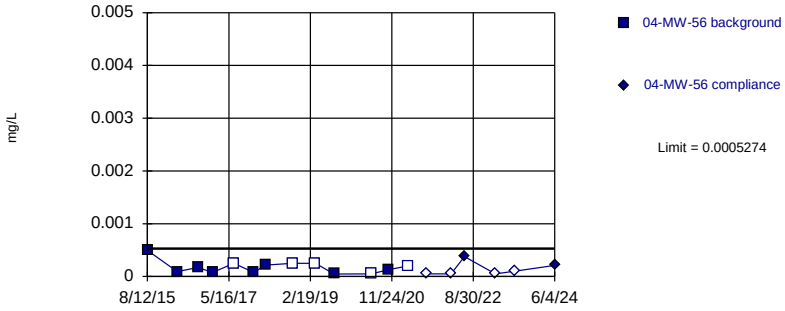
Constituent: Cadmium Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (after Kaplan-Meier Adjustment): Mean=0.0001493, Std. Dev.=0.0001263, n=13, 38.46% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8604, critical = 0.814. Kappa = 2.994 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

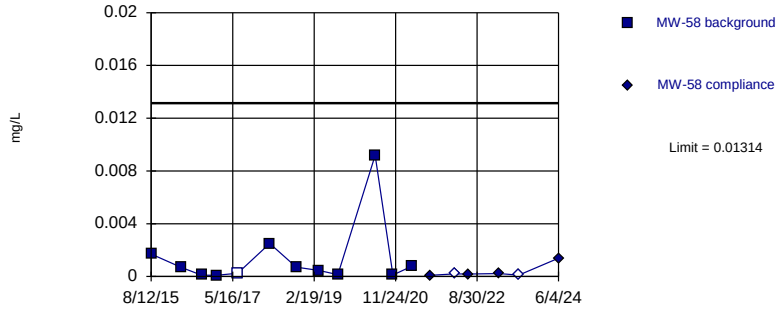
Constituent: Cadmium Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on cube root transformation): Mean=0.08872, Std. Dev.=0.04801, n=12, 8.333% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8416, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

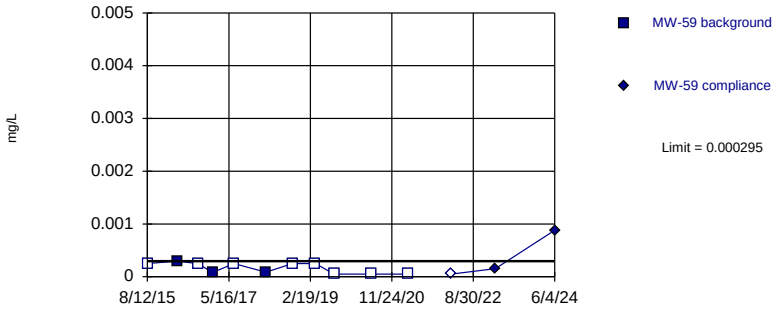
Constituent: Cadmium Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Exceeds Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 11 background values. 72.73% NDs. Well-constituent pair annual alpha = 0.02537. Individual comparison alpha = 0.01276 (1 of 2).

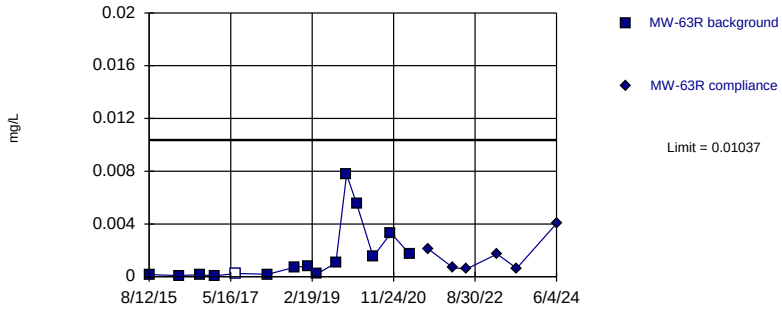
Constituent: Cadmium Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on square root transformation): Mean=0.03157, Std. Dev.=0.02468, n=15, 6.667% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8489, critical = 0.835. Kappa = 2.846 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

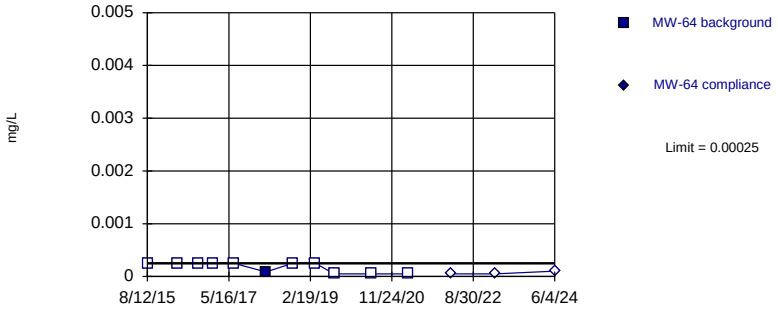
Constituent: Cadmium Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 11 background values. 90.91% NDs. Well-constituent pair annual alpha = 0.02537. Individual comparison alpha = 0.01276 (1 of 2).

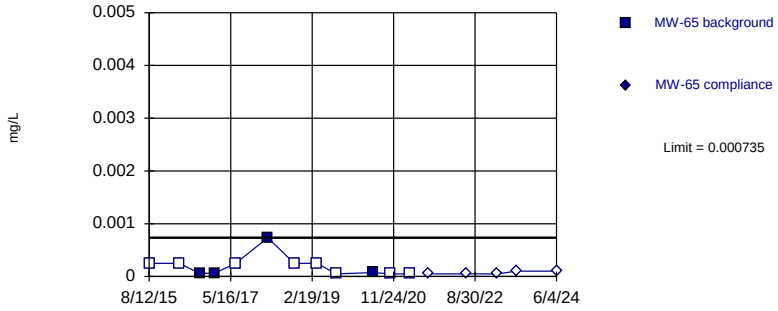
Constituent: Cadmium Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 66.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

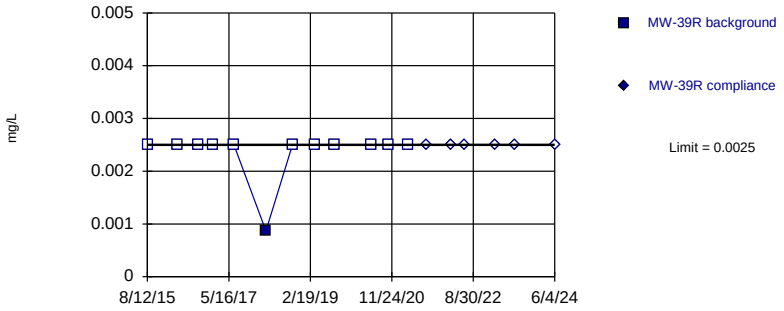
Constituent: Cadmium Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 91.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

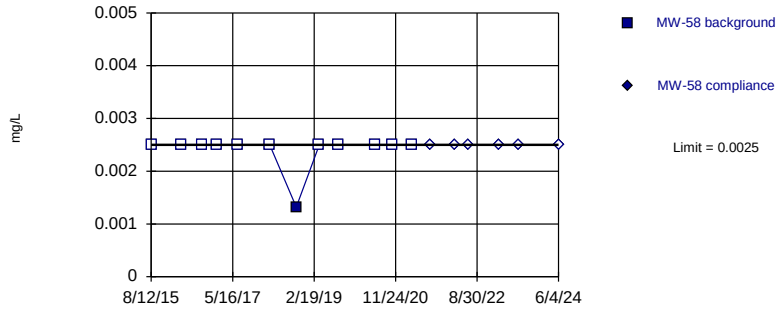
Constituent: Chromium Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 91.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

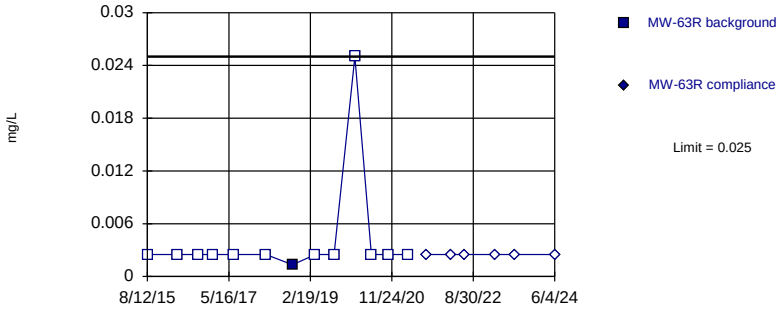
Constituent: Chromium Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 92.31% NDs. Well-constituent pair annual alpha = 0.01929. Individual comparison alpha = 0.009692 (1 of 2).

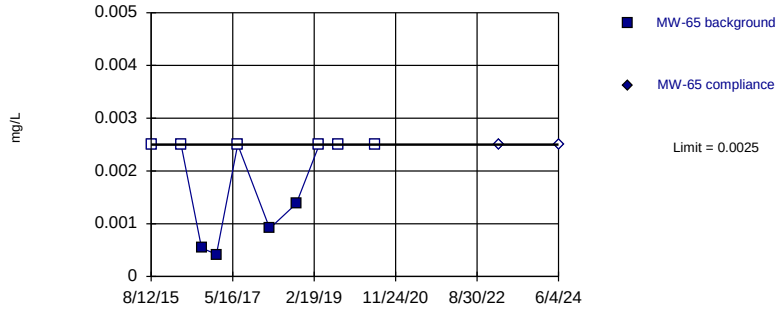
Constituent: Chromium Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 10 background values. 60% NDs. Well-constituent pair annual alpha = 0.0293. Individual comparison alpha = 0.01476 (1 of 2).

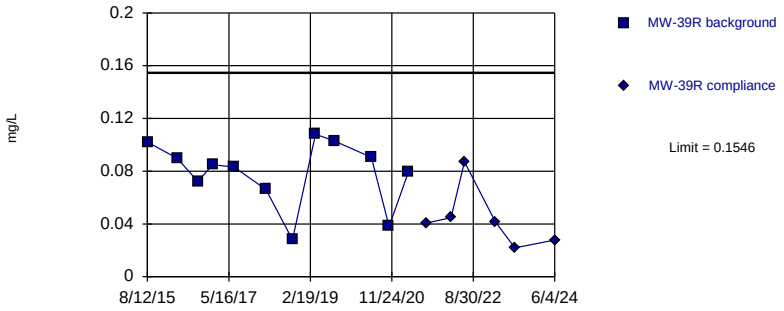
Constituent: Chromium Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.0788, Std. Dev.=0.02471, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8968, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Cobalt Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL

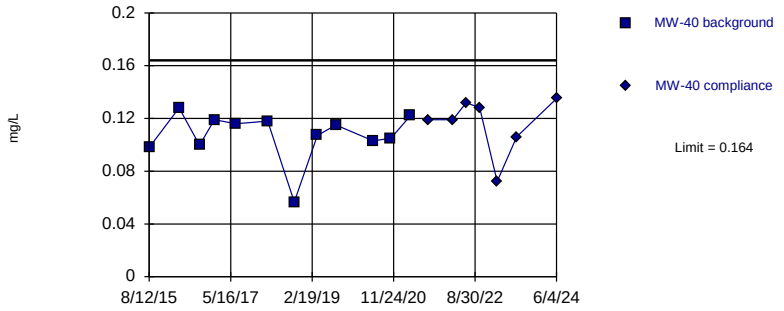
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.1073, Std. Dev.=0.01849, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8102, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Cobalt Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL

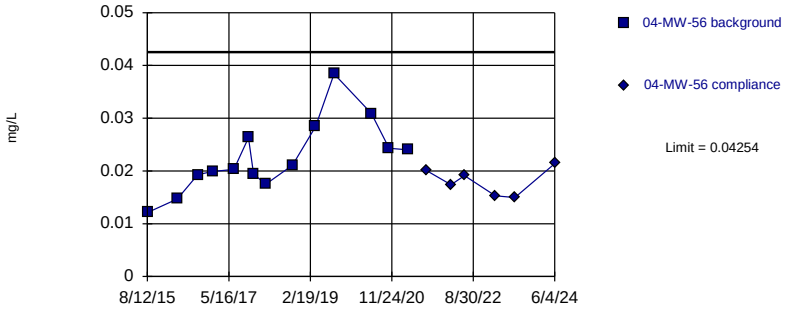
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.02261, Std. Dev.=0.006824, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9557, critical = 0.825. Kappa = 2.92 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Cobalt Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL

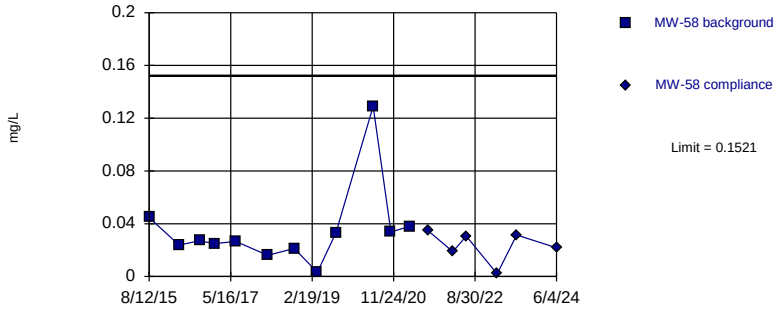
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on square root transformation): Mean=0.1749, Std. Dev.=0.07013, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.836, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Cobalt Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL

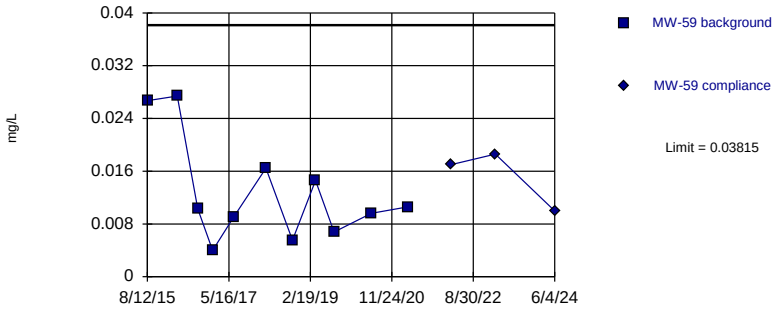
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.01283, Std. Dev.=0.007901, n=11. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8595, critical = 0.792. Kappa = 3.205 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Cobalt Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL

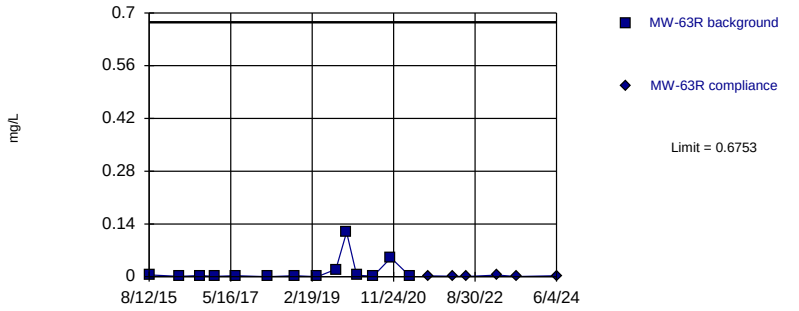
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on natural log transformation): Mean=-5.947, Std. Dev.=1.902, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9406, critical = 0.825. Kappa = 2.92 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Cobalt Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL

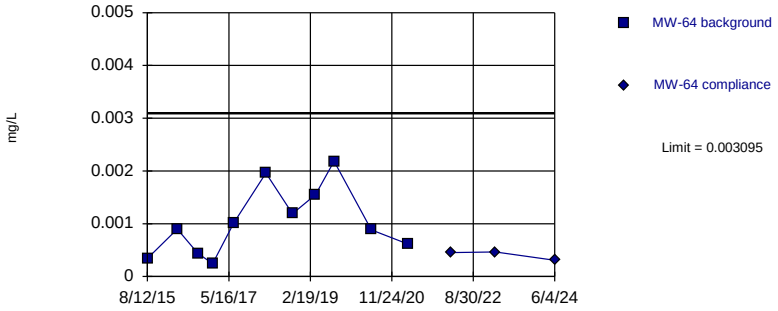
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.001029, Std. Dev.=0.0006445, n=11. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9326, critical = 0.792. Kappa = 3.205 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Cobalt Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL

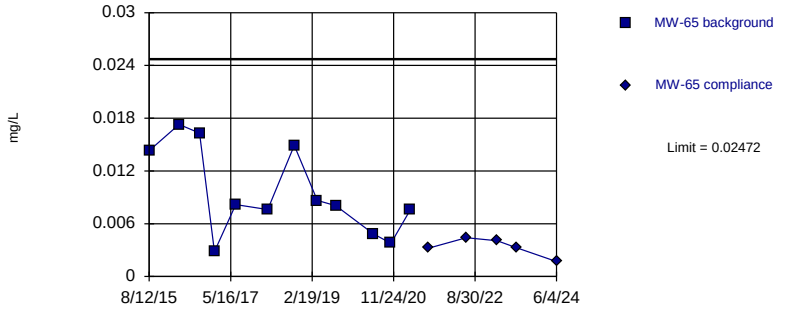
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.009528, Std. Dev.=0.004953, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9029, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Cobalt Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL

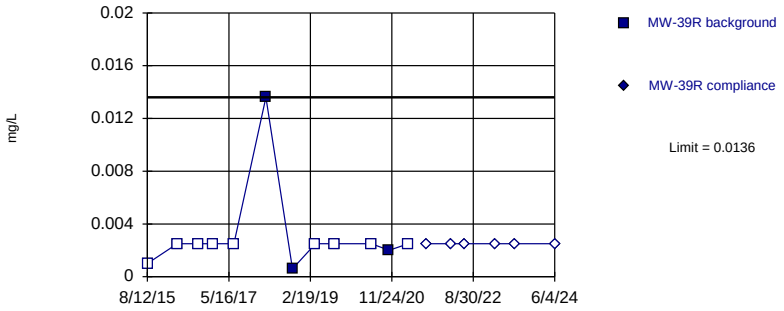
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 75% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

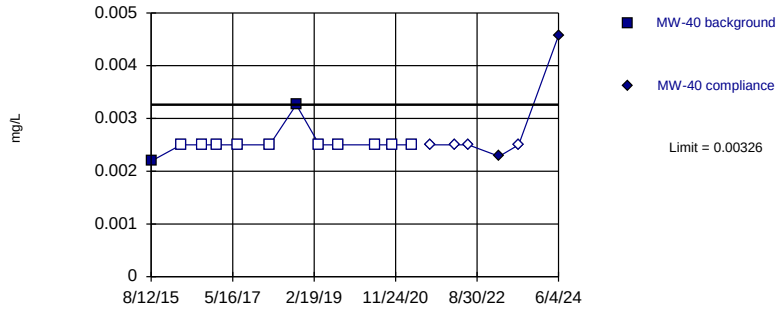
Constituent: Copper Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 83.33% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

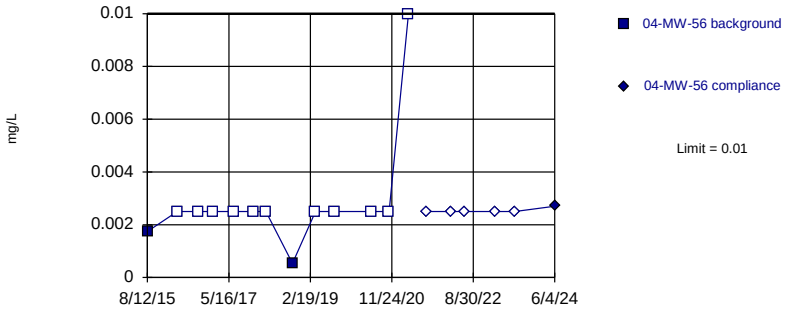
Constituent: Copper Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 84.62% NDs. Well-constituent pair annual alpha = 0.01929. Individual comparison alpha = 0.009692 (1 of 2).

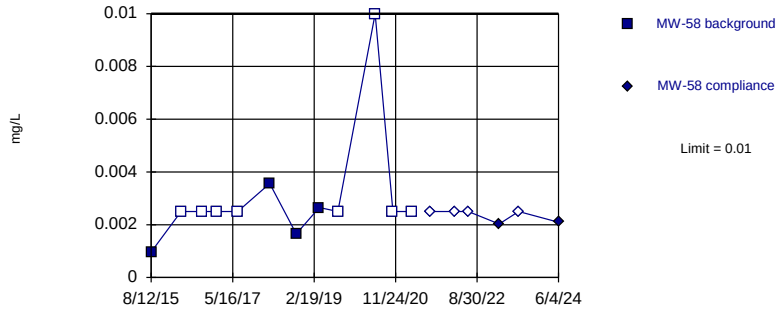
Constituent: Copper Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 66.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

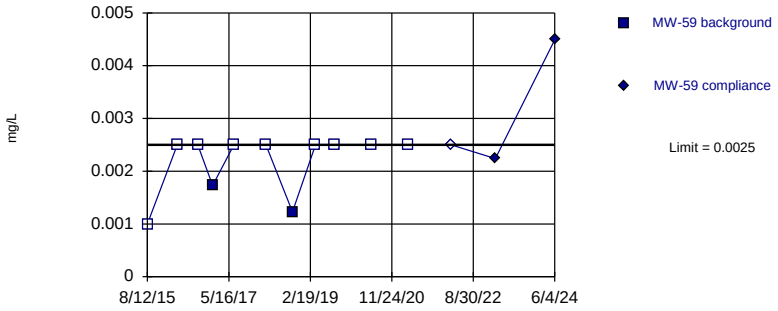
Constituent: Copper Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 11 background values. 81.82% NDs. Well-constituent pair annual alpha = 0.02537. Individual comparison alpha = 0.01276 (1 of 2).

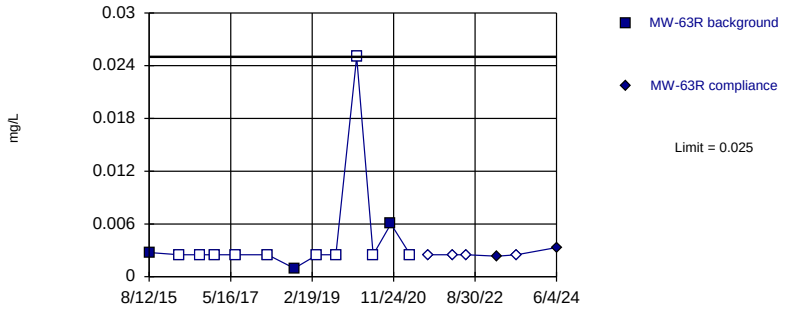
Constituent: Copper Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 76.92% NDs. Well-constituent pair annual alpha = 0.01929. Individual comparison alpha = 0.009692 (1 of 2).

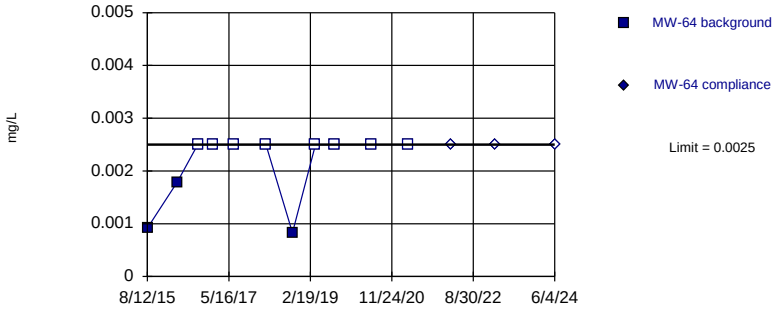
Constituent: Copper Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 11 background values. 72.73% NDs. Well-constituent pair annual alpha = 0.02537. Individual comparison alpha = 0.01276 (1 of 2).

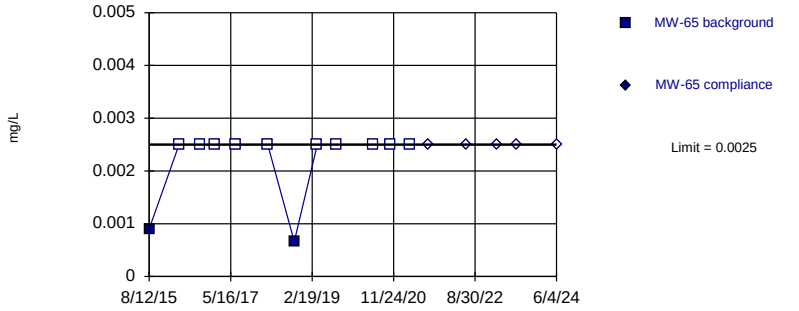
Constituent: Copper Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 83.33% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

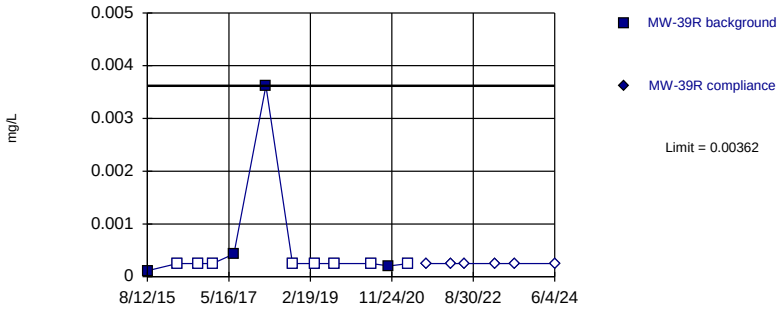
Constituent: Copper Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 66.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

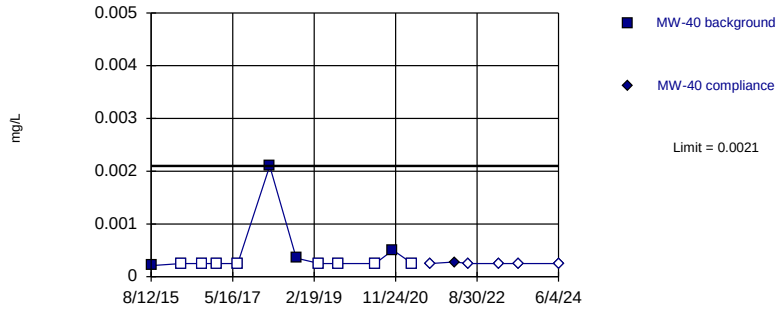
Constituent: Lead Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 66.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

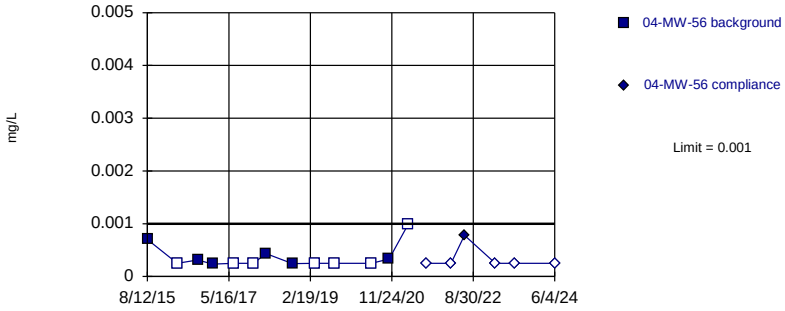
Constituent: Lead Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 53.85% NDs. Well-constituent pair annual alpha = 0.01929. Individual comparison alpha = 0.009692 (1 of 2).

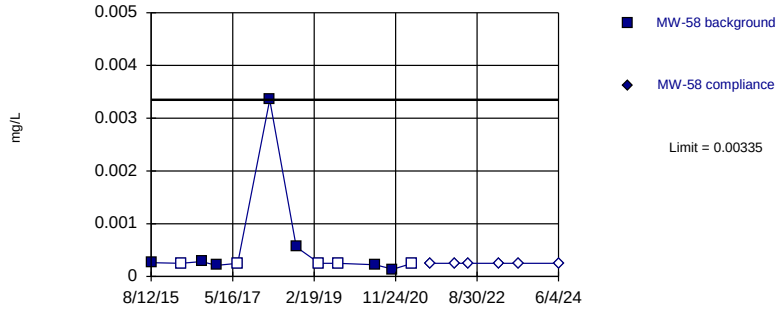
Constituent: Lead Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 12 background values. 41.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

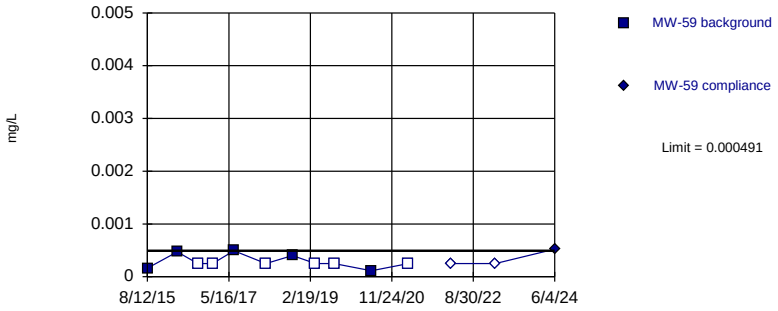
Constituent: Lead Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Exceeds Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 11 background values. 54.55% NDs. Well-constituent pair annual alpha = 0.02537. Individual comparison alpha = 0.01276 (1 of 2).

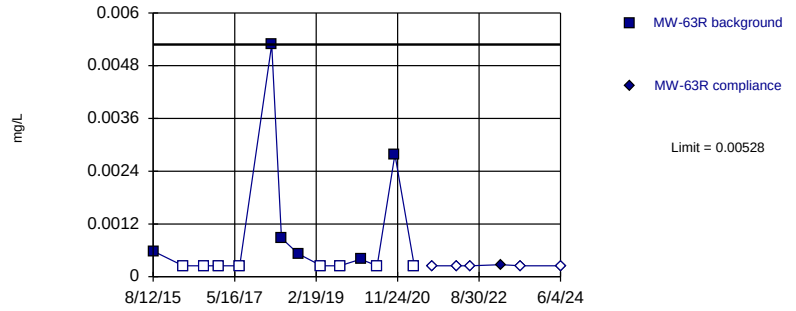
Constituent: Lead Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 14 background values. 57.14% NDs. Well-constituent pair annual alpha = 0.01715. Individual comparison alpha = 0.008612 (1 of 2).

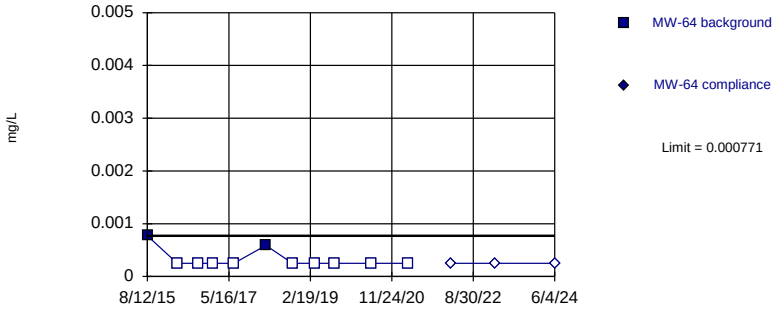
Constituent: Lead Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 11 background values. 81.82% NDs. Well-constituent pair annual alpha = 0.02537. Individual comparison alpha = 0.01276 (1 of 2).

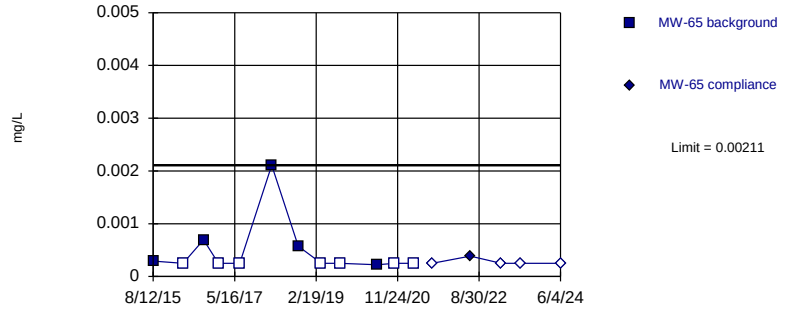
Constituent: Lead Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 58.33% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

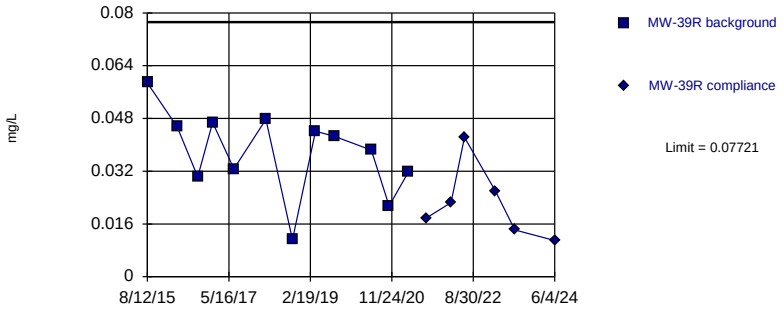
Constituent: Lead Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.0376, Std. Dev.=0.01291, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9619, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Nickel Analysis Run 10/18/2024 2:55 PM View: 2024SSN - AMD Intrawell PL

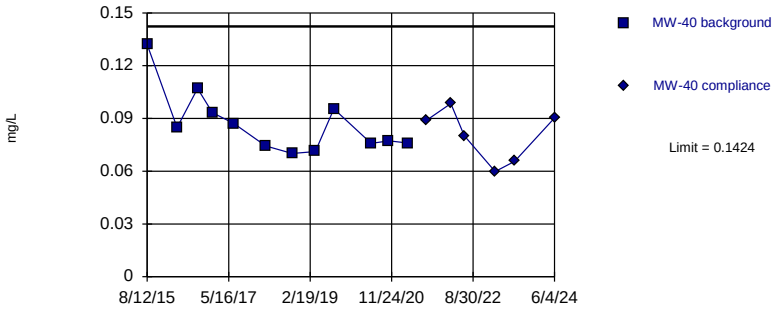
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.08705, Std. Dev.=0.01803, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8391, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Nickel Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL

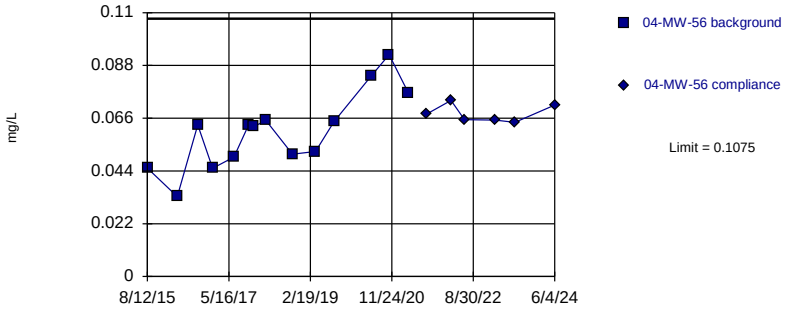
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.06055, Std. Dev.=0.01608, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.962, critical = 0.825. Kappa = 2.92 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Nickel Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL

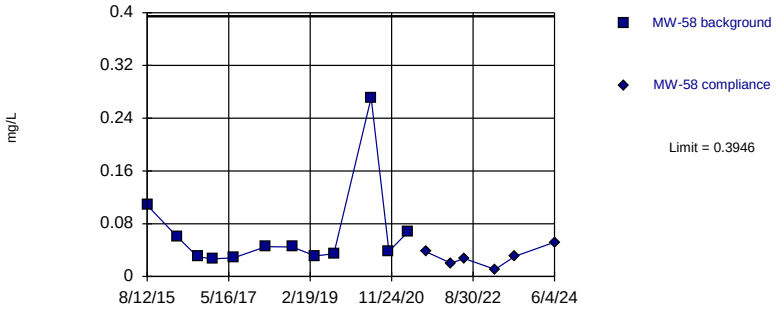
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on natural log transformation): Mean=-3.003, Std. Dev.=0.6758, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8309, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Nickel Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL

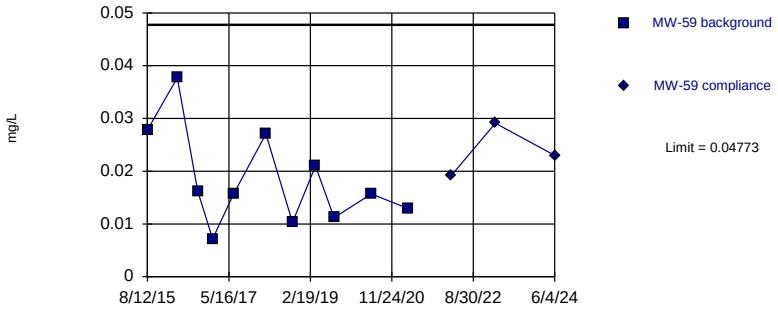
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.01844, Std. Dev.=0.00914, n=11. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9173, critical = 0.792. Kappa = 3.205 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Nickel Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL

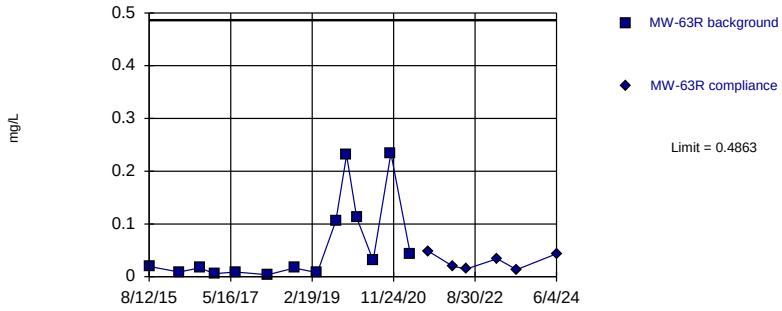
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on cube root transformation): Mean=0.327, Std. Dev.=0.1573, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8596, critical = 0.825. Kappa = 2.92 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Nickel Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL

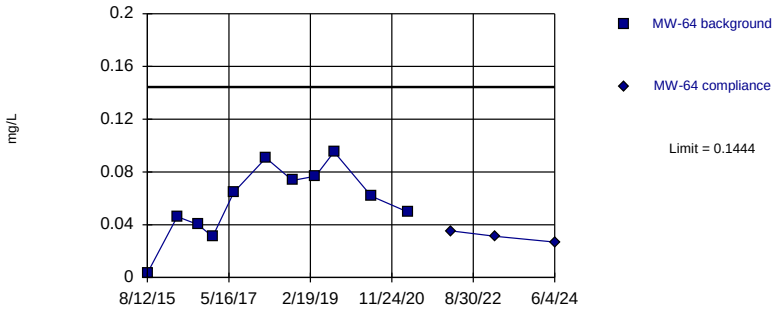
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.05749, Std. Dev.=0.02713, n=11. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9713, critical = 0.792. Kappa = 3.205 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Nickel Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

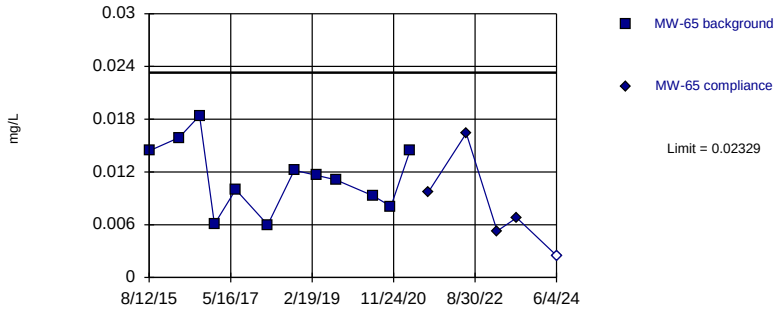
Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.01146, Std. Dev.=0.003858, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9696, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Nickel Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL

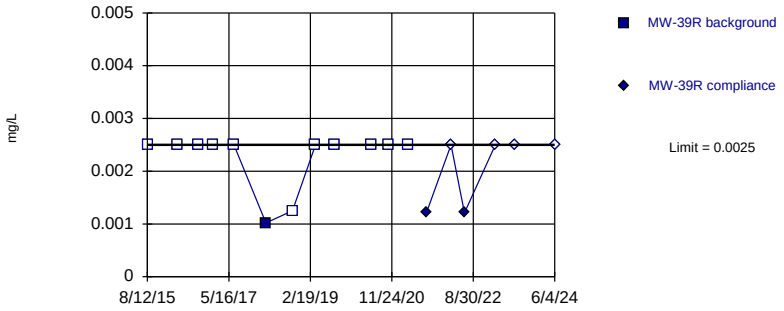
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 91.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

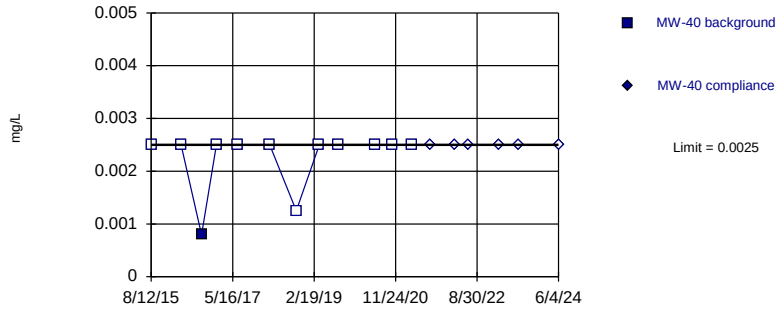
Constituent: Selenium Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 91.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

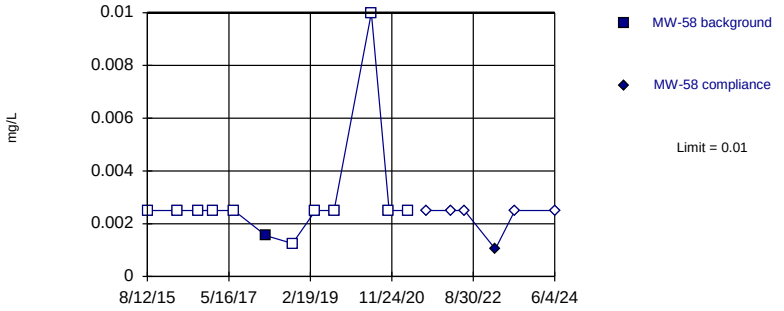
Constituent: Selenium Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 91.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

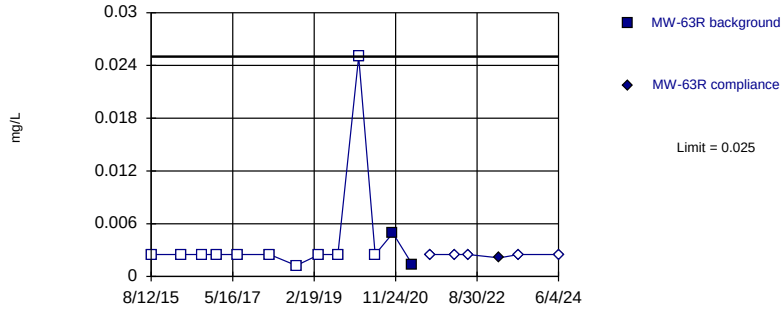
Constituent: Selenium Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 84.62% NDs. Well-constituent pair annual alpha = 0.01929. Individual comparison alpha = 0.009692 (1 of 2).

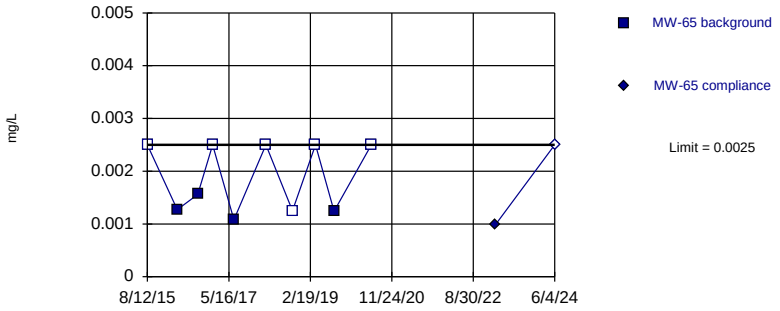
Constituent: Selenium Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 10 background values. 60% NDs. Well-constituent pair annual alpha = 0.0293. Individual comparison alpha = 0.01476 (1 of 2).

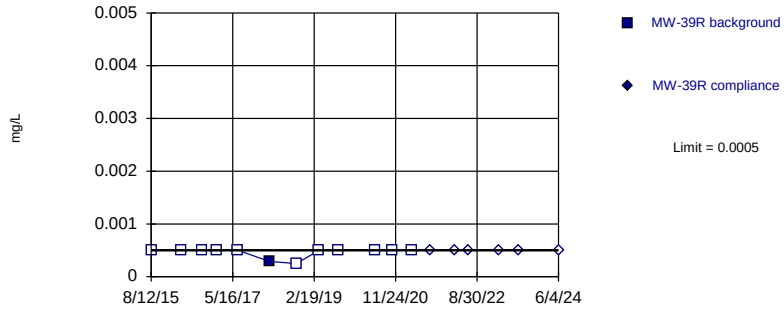
Constituent: Selenium Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 91.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

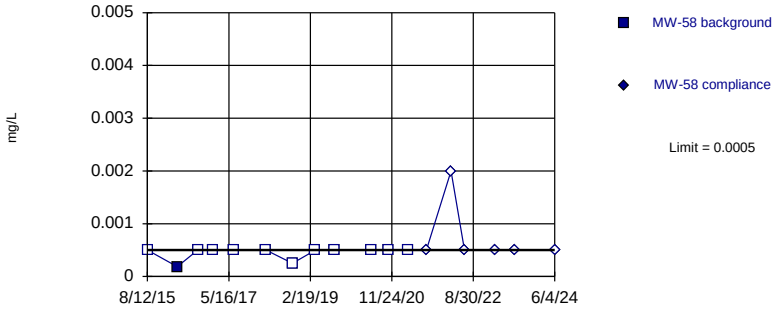
Constituent: Silver Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 91.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

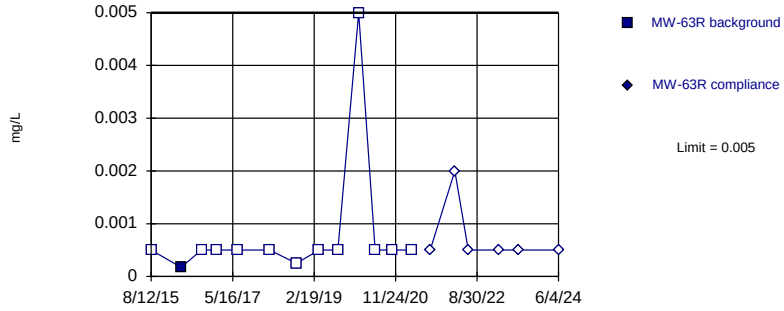
Constituent: Silver Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 92.31% NDs. Well-constituent pair annual alpha = 0.01929. Individual comparison alpha = 0.009692 (1 of 2).

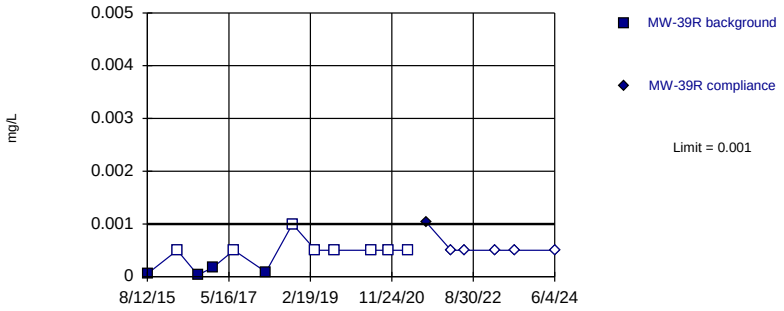
Constituent: Silver Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 66.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

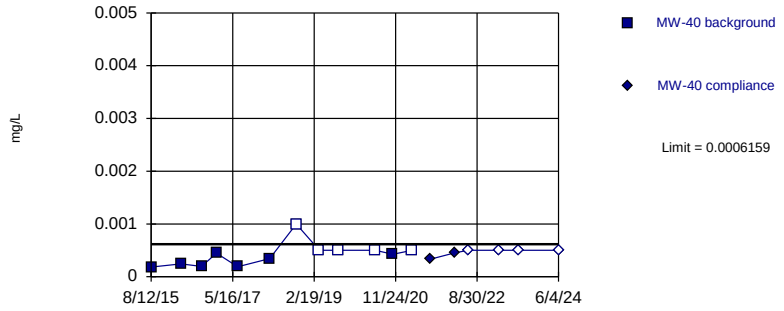
Constituent: Thallium Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (after Kaplan-Meier Adjustment): Mean=0.0002893, Std. Dev.=0.0001065, n=12, 41.67% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8212, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

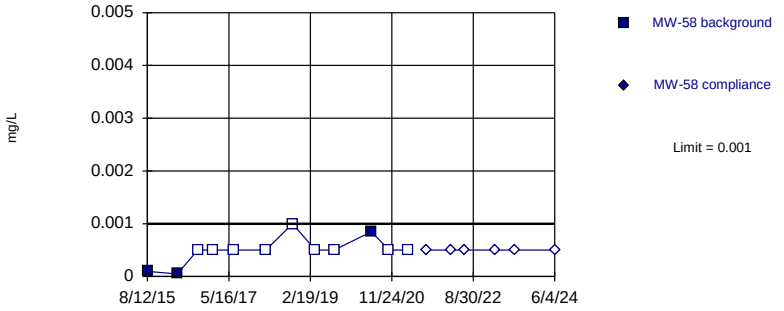
Constituent: Thallium Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 75% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

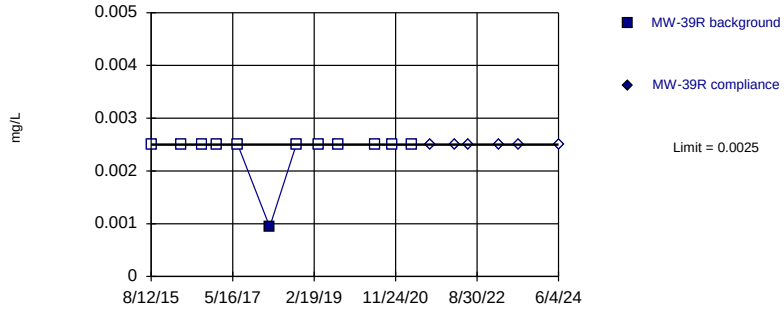
Constituent: Thallium Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 91.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

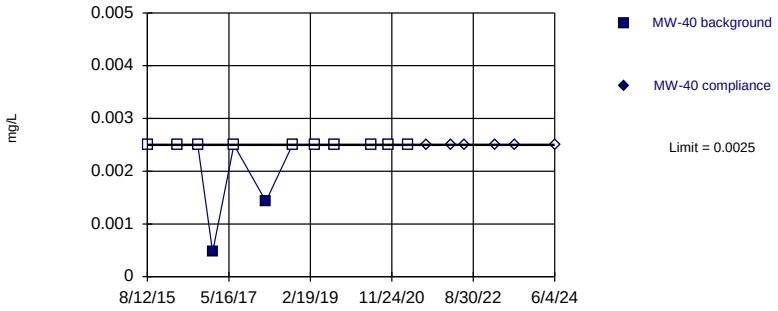
Constituent: Vanadium Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 83.33% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

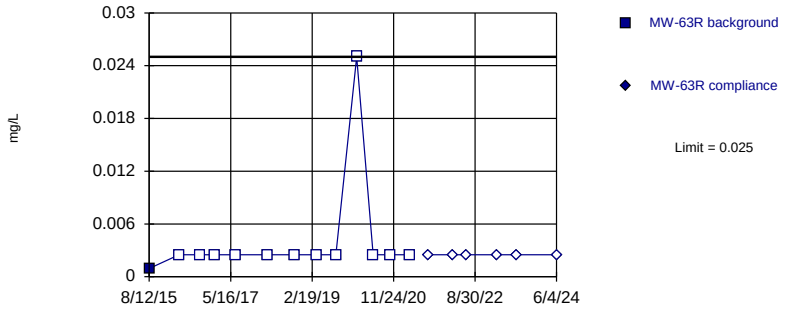
Constituent: Vanadium Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 92.31% NDs. Well-constituent pair annual alpha = 0.01929. Individual comparison alpha = 0.009692 (1 of 2).

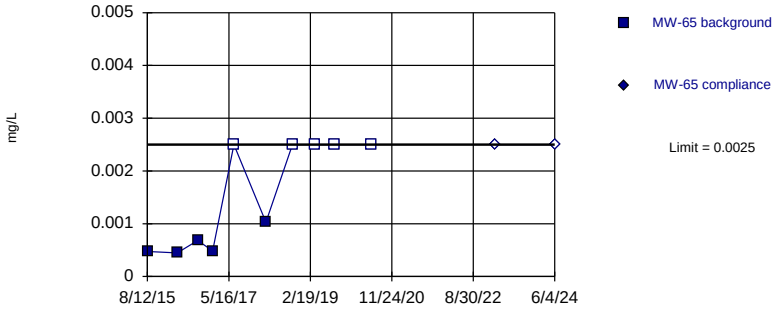
Constituent: Vanadium Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 10 background values. 50% NDs. Well-constituent pair annual alpha = 0.0293. Individual comparison alpha = 0.01476 (1 of 2).

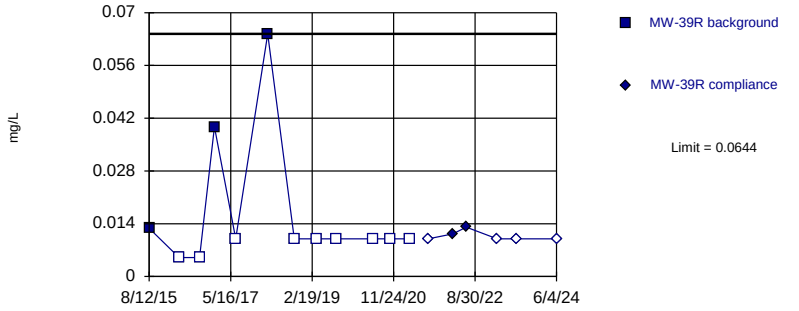
Constituent: Vanadium Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 75% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

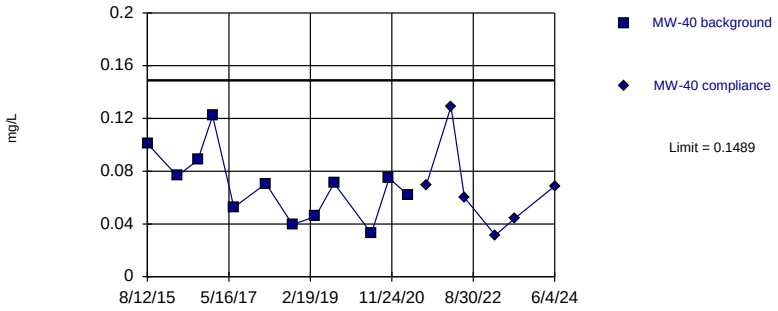
Constituent: Zinc Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.06968, Std. Dev.=0.02582, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9673, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Zinc Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

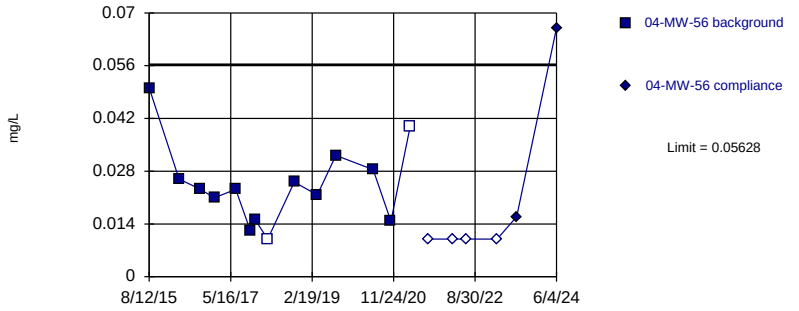
Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Hollow symbols indicate censored values.

Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.02449, Std. Dev.=0.01089, n=14, 14.29% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9285, critical = 0.825. Kappa = 2.92 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Zinc Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL

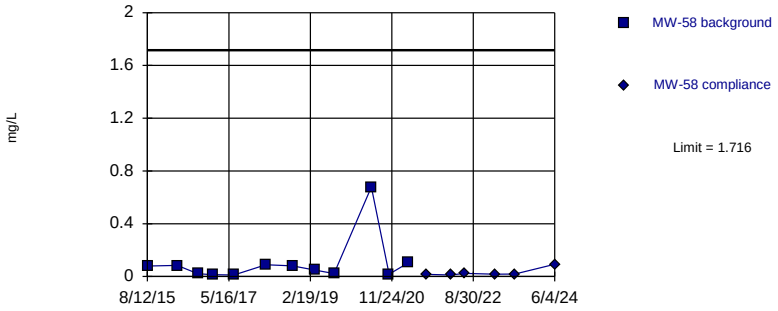
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on natural log transformation): Mean=-3.01, Std. Dev.=1.157, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8998, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Zinc Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

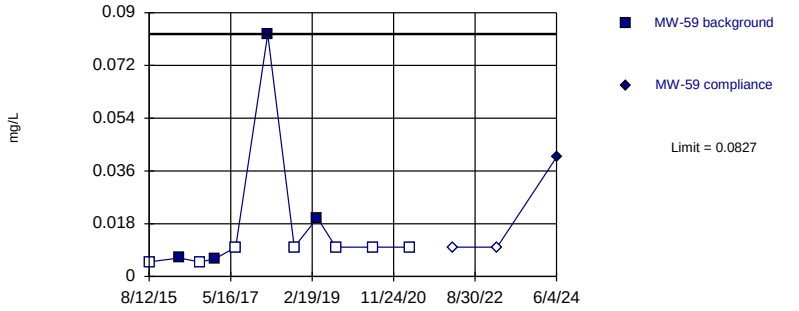
Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 11 background values. 63.64% NDs. Well-constituent pair annual alpha = 0.02537. Individual comparison alpha = 0.01276 (1 of 2).

Constituent: Zinc Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL

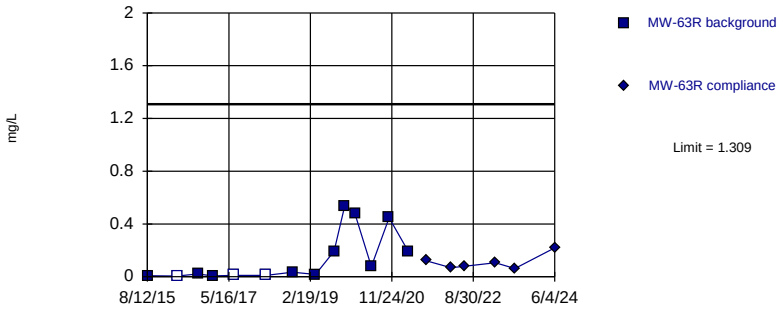
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on cube root transformation) (after Kaplan-Meier Adjustment): Mean=0.4131, Std. Dev.=0.2331, n=14, 21.43% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8389, critical = 0.825. Kappa = 2.92 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Zinc Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL

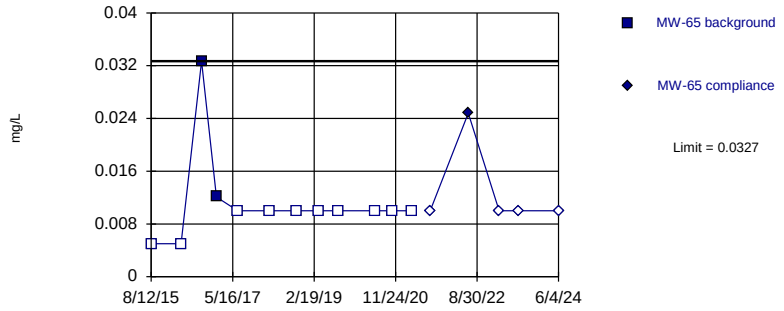
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 83.33% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

Constituent: Zinc Analysis Run 10/18/2024 2:56 PM View: 2024SSN - AMD Intrawell PL

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Intrawell Prediction Limit Summary Table and Graphs – Groundwater Underdrains

GU-7 Intrawell Prediction Limit

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master Printed 10/18/2024, 4:37 PM

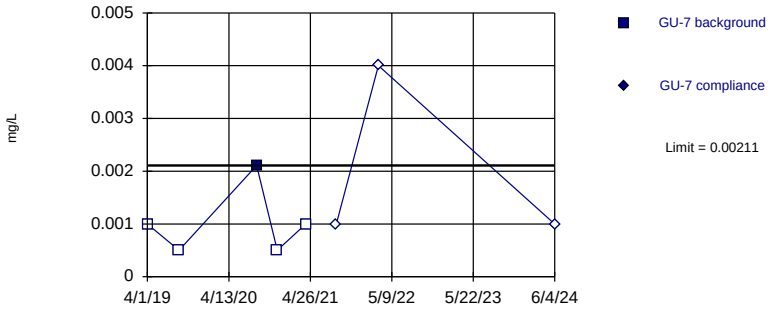
Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Antimony (mg/L)	GU-7	0.00211	n/a	6/4/2024	0.001ND	No	5	80	n/a	0.04755	NP Intra (NDs) 1 of 2
Arsenic (mg/L)	GU-7	0.01315	n/a	6/4/2024	0.00385	No	5	0	No	0.0002508	Param Intra 1 of 2
Barium (mg/L)	GU-7	0.08479	n/a	6/4/2024	0.0184	No	5	0	No	0.0002508	Param Intra 1 of 2
Beryllium (mg/L)	GU-7	0.00108	n/a	6/4/2024	0.0005ND	No	5	80	n/a	0.04755	NP Intra (NDs) 1 of 2
Cadmium (mg/L)	GU-7	0.000746	n/a	6/4/2024	0.000261	No	5	60	n/a	0.04755	NP Intra (NDs) 1 of 2
Chromium (mg/L)	GU-7	0.0025	n/a	6/4/2024	0.0025ND	No	5	80	n/a	0.04755	NP Intra (NDs) 1 of 2
Cobalt (mg/L)	GU-7	0.7622	n/a	6/4/2024	0.0305	No	5	0	No	0.0002508	Param Intra 1 of 2
Copper (mg/L)	GU-7	0.0025	n/a	6/4/2024	0.0025ND	No	5	80	n/a	0.04755	NP Intra (NDs) 1 of 2
Lead (mg/L)	GU-7	0.00025	n/a	6/4/2024	0.00025ND	No	5	80	n/a	0.04755	NP Intra (NDs) 1 of 2
Nickel (mg/L)	GU-7	2.901	n/a	6/4/2024	0.0761	No	5	0	sqrt(x)	0.0002508	Param Intra 1 of 2
Selenium (mg/L)	GU-7	0.00671	n/a	6/4/2024	0.0025ND	No	5	80	n/a	0.04755	NP Intra (NDs) 1 of 2
Silver (mg/L)	GU-7	0.00111	n/a	6/4/2024	0.0005ND	No	5	80	n/a	0.04755	NP Intra (NDs) 1 of 2
Thallium (mg/L)	GU-7	0.00302	n/a	6/4/2024	0.0005ND	No	5	80	n/a	0.04755	NP Intra (NDs) 1 of 2
Vanadium (mg/L)	GU-7	0.005	n/a	6/4/2024	0.0025ND	No	5	80	n/a	0.04755	NP Intra (NDs) 1 of 2
Zinc (mg/L)	GU-7	0.257	n/a	6/4/2024	0.0748	No	5	40	n/a	0.04755	NP Intra (xform) 1 of 2

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 5 background values. 80% NDs. Well-constituent pair annual alpha = 0.09284. Individual comparison alpha = 0.04755 (1 of 2).

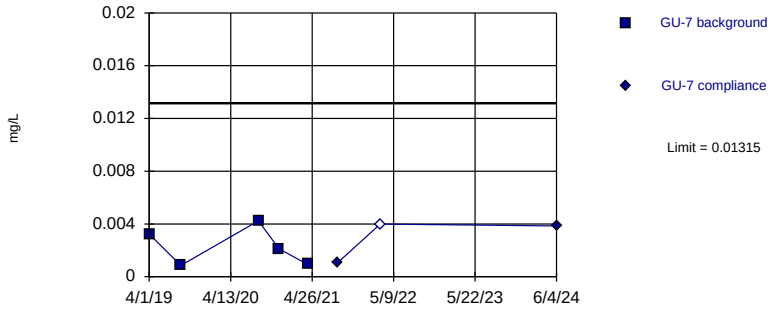
Constituent: Antimony Analysis Run 10/18/2024 4:35 PM View: 2024SSN - GU-7 IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.002277, Std. Dev.=0.001468, n=5. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9131, critical = 0.686. Kappa = 7.411 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

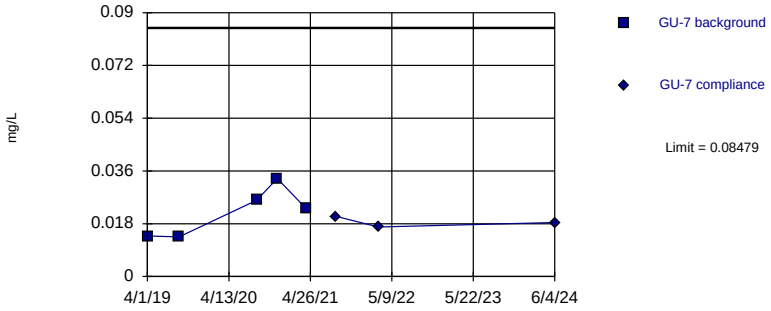
Constituent: Arsenic Analysis Run 10/18/2024 4:35 PM View: 2024SSN - GU-7 IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.022, Std. Dev.=0.008473, n=5. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9105, critical = 0.686. Kappa = 7.411 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

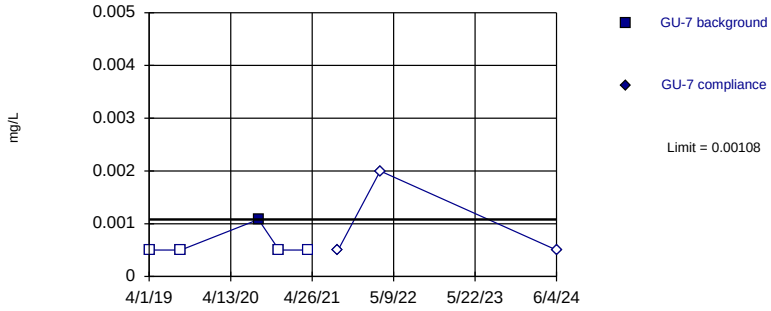
Constituent: Barium Analysis Run 10/18/2024 4:35 PM View: 2024SSN - GU-7 IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 5 background values. 80% NDs. Well-constituent pair annual alpha = 0.09284. Individual comparison alpha = 0.04755 (1 of 2).

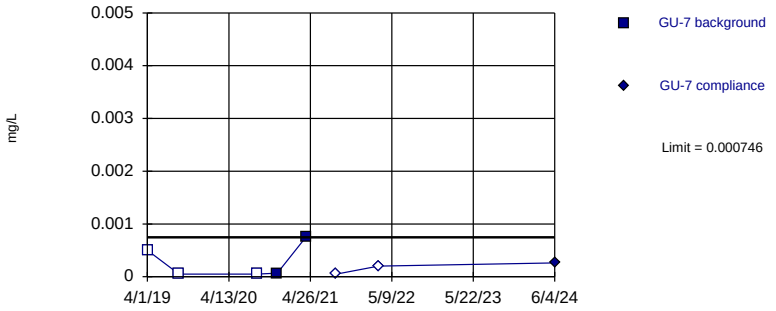
Constituent: Beryllium Analysis Run 10/18/2024 4:35 PM View: 2024SSN - GU-7 IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 5 background values. 60% NDs. Well-constituent pair annual alpha = 0.09284. Individual comparison alpha = 0.04755 (1 of 2).

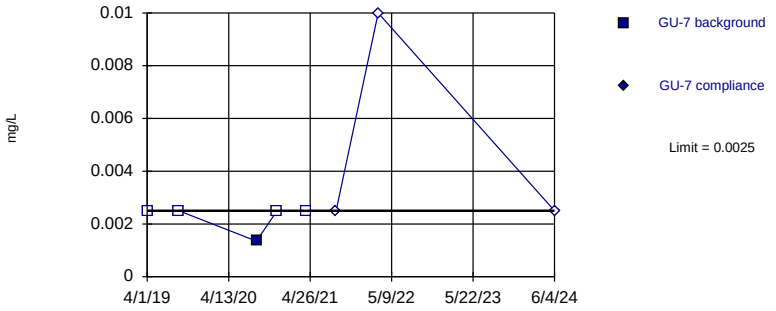
Constituent: Cadmium Analysis Run 10/18/2024 4:35 PM View: 2024SSN - GU-7 IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 5 background values. 80% NDs. Well-constituent pair annual alpha = 0.09284. Individual comparison alpha = 0.04755 (1 of 2).

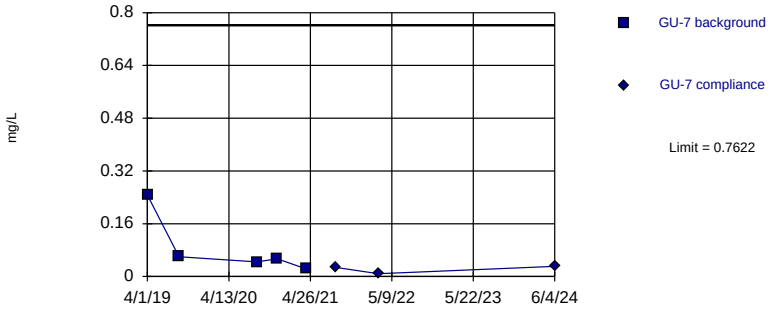
Constituent: Chromium Analysis Run 10/18/2024 4:35 PM View: 2024SSN - GU-7 IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.08554, Std. Dev.=0.0913, n=5. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.6961, critical = 0.686. Kappa = 7.411 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

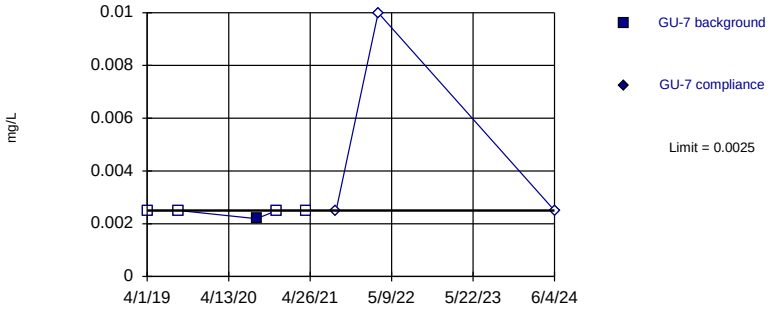
Constituent: Cobalt Analysis Run 10/18/2024 4:35 PM View: 2024SSN - GU-7 IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 5 background values. 80% NDs. Well-constituent pair annual alpha = 0.09284. Individual comparison alpha = 0.04755 (1 of 2).

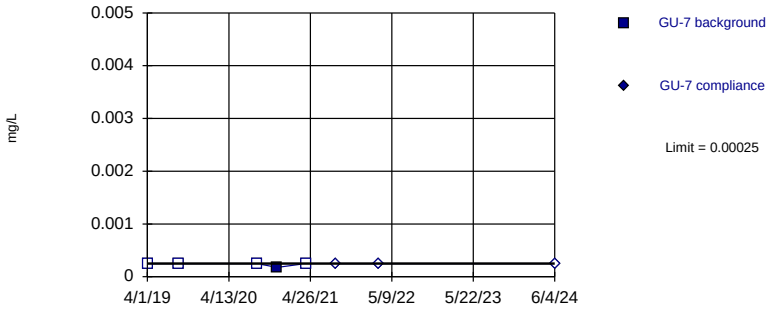
Constituent: Copper Analysis Run 10/18/2024 4:35 PM View: 2024SSN - GU-7 IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 5 background values. 80% NDs. Well-constituent pair annual alpha = 0.09284. Individual comparison alpha = 0.04755 (1 of 2).

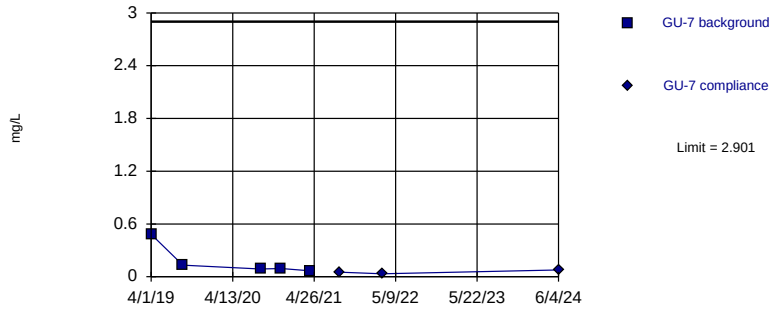
Constituent: Lead Analysis Run 10/18/2024 4:35 PM View: 2024SSN - GU-7 IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on square root transformation): Mean=0.3833, Std. Dev.=0.1781, n=5. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7354, critical = 0.686. Kappa = 7.411 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

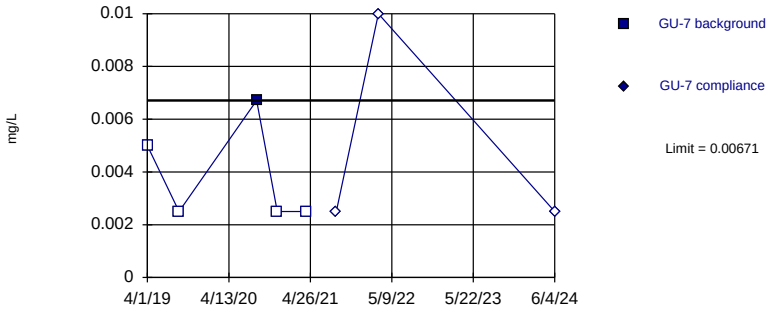
Constituent: Nickel Analysis Run 10/18/2024 4:35 PM View: 2024SSN - GU-7 IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 5 background values. 80% NDs. Well-constituent pair annual alpha = 0.09284. Individual comparison alpha = 0.04755 (1 of 2).

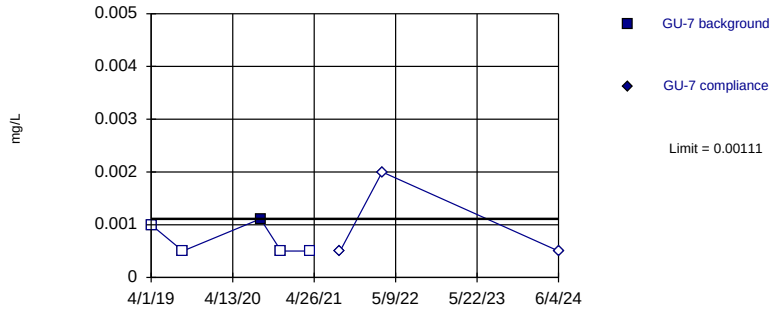
Constituent: Selenium Analysis Run 10/18/2024 4:35 PM View: 2024SSN - GU-7 IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



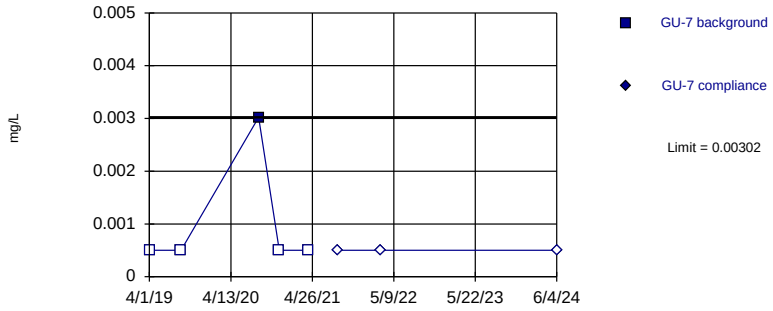
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 5 background values. 80% NDs. Well-constituent pair annual alpha = 0.09284. Individual comparison alpha = 0.04755 (1 of 2).

Constituent: Silver Analysis Run 10/18/2024 4:35 PM View: 2024SSN - GU-7 IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.
Within Limit

Prediction Limit

Intrawell Non-parametric



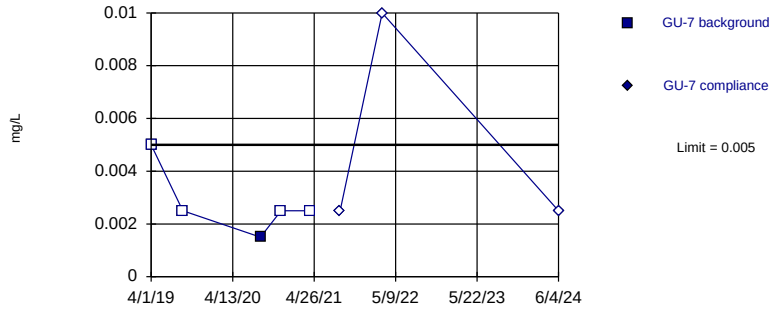
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 5 background values. 80% NDs. Well-constituent pair annual alpha = 0.09284. Individual comparison alpha = 0.04755 (1 of 2).

Constituent: Thallium Analysis Run 10/18/2024 4:35 PM View: 2024SSN - GU-7 IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.
Within Limit

Prediction Limit

Intrawell Non-parametric



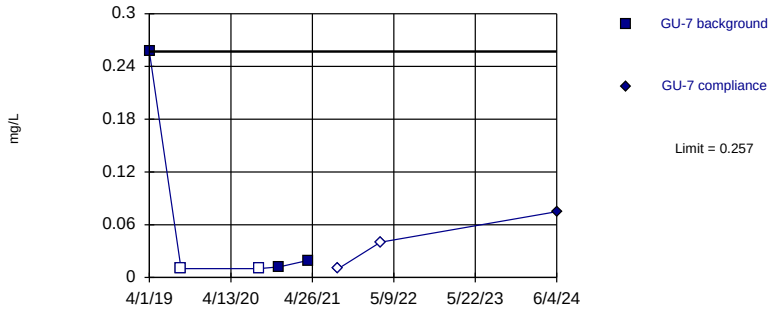
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 5 background values. 80% NDs. Well-constituent pair annual alpha = 0.09284. Individual comparison alpha = 0.04755 (1 of 2).

Constituent: Vanadium Analysis Run 10/18/2024 4:35 PM View: 2024SSN - GU-7 IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.
Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used after natural log transformation resulted in a parametric limit of 133, which exceeds 10 times the highest background value (user-adjustable cutoff). Limit is highest of 5 background values. 40% NDs. Well-constituent pair annual alpha = 0.09284. Individual comparison alpha = 0.04755 (1 of 2).

Constituent: Zinc Analysis Run 10/18/2024 4:35 PM View: 2024SSN - GU-7 IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Interwell Prediction Limit Summary Table and Graphs – Detection & Assessment Monitoring Wells

DM and AM Prediction Limit

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master Printed 10/18/2024, 12:28 PM

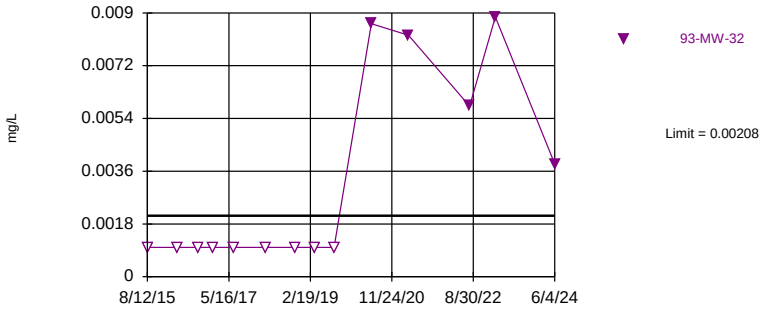
Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Arsenic (mg/L)	**93-MW-32**	**0.00208**	**n/a**	**6/4/2024**	**0.00385**	**Yes**	**23**	**82.61**	**n/a**	**0.002913**	**NP Inter (NDs) 1 of 2**
Barium (mg/L)	91-MW-14	0.03158	n/a	6/4/2024	0.0141	No	23	0	x^3	0.0002508	Param Inter 1 of 2
Barium (mg/L)	**93-MW-32**	**0.03158**	**n/a**	**6/4/2024**	**0.0627**	**Yes**	**23**	**0**	**x^3**	**0.0002508**	**Param Inter 1 of 2**
Barium (mg/L)	MW-62	0.03158	n/a	6/4/2024	0.0264	No	23	0	x^3	0.0002508	Param Inter 1 of 2
Barium (mg/L)	**MW-81**	**0.03158**	**n/a**	**6/4/2024**	**0.234**	**Yes**	**23**	**0**	**x^3**	**0.0002508**	**Param Inter 1 of 2**
Cadmium (mg/L)	**93-MW-32**	**0.0008857**	**n/a**	**6/4/2024**	**0.001085**	**Yes**	**23**	**43.48**	**sqrt(x)**	**0.0002508**	**Param Inter 1 of 2**
Cadmium (mg/L)	**MW-81**	**0.0008857**	**n/a**	**6/4/2024**	**0.00106**	**Yes**	**23**	**43.48**	**sqrt(x)**	**0.0002508**	**Param Inter 1 of 2**
Cobalt (mg/L)	93-MW-32	0.01581	n/a	6/4/2024	0.006905	No	23	13.04	x^(1/3)	0.0002508	Param Inter 1 of 2
Cobalt (mg/L)	MW-81	0.01581	n/a	6/4/2024	0.00324	No	23	13.04	x^(1/3)	0.0002508	Param Inter 1 of 2
Lead (mg/L)	93-MW-32	0.00232	n/a	6/4/2024	0.00071	No	23	73.91	n/a	0.002913	NP Inter (NDs) 1 of 2
Lead (mg/L)	MW-81	0.00232	n/a	6/4/2024	0.00166	No	23	73.91	n/a	0.002913	NP Inter (NDs) 1 of 2
Nickel (mg/L)	**93-MW-32**	**0.0305**	**n/a**	**6/4/2024**	**0.08015**	**Yes**	**23**	**13.04**	**x^(1/3)**	**0.0002508**	**Param Inter 1 of 2**
Nickel (mg/L)	MW-81	0.0305	n/a	6/4/2024	0.0174	No	23	13.04	x^(1/3)	0.0002508	Param Inter 1 of 2
Vanadium (mg/L)	**MW-81**	**0.0025**	**n/a**	**6/4/2024**	**0.00519**	**Yes**	**23**	**95.65**	**n/a**	**0.002913**	**NP Inter (NDs) 1 of 2**
Zinc (mg/L)	93-MW-32	0.0377	n/a	6/4/2024	0.02615	No	23	86.96	n/a	0.002913	NP Inter (NDs) 1 of 2
Zinc (mg/L)	**MW-81**	**0.0377**	**n/a**	**6/4/2024**	**0.0611**	**Yes**	**23**	**86.96**	**n/a**	**0.002913**	**NP Inter (NDs) 1 of 2**

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Exceeds Limit: 93-MW-32

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 23 background values. 82.61% NDs. Annual per-constituent alpha = 0.07843. Individual comparison alpha = 0.002913 (1 of 2). Assumes 13 future values.

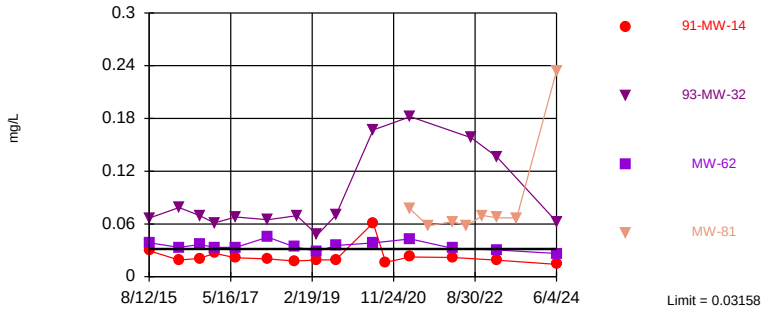
Constituent: Arsenic Analysis Run 10/18/2024 12:27 PM View: 2024SSN - DM and AM PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Exceeds Limit: 93-MW-32, MW-81

Prediction Limit

Interwell Parametric



Background Data Summary (based on cube transformation): Mean=0.00001081, Std. Dev.=0.000008139, n=23. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8832, critical = 0.881. Kappa = 2.542 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.003506. Individual comparison alpha = 0.0002508. Comparing 4 points to limit. Assumes 10 future values.

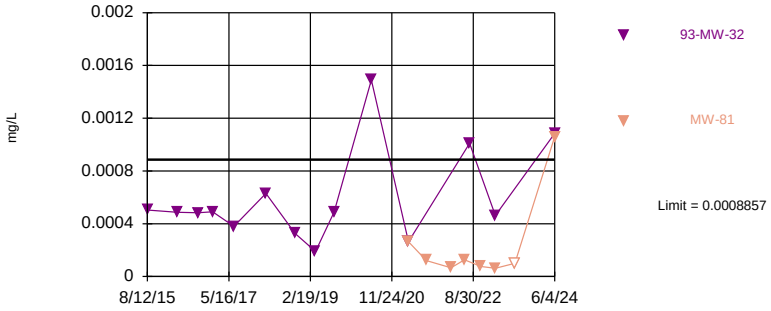
Constituent: Barium Analysis Run 10/18/2024 12:27 PM View: 2024SSN - DM and AM PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Exceeds Limit: 93-MW-32, MW-81

Prediction Limit

Interwell Parametric



Background Data Summary (based on square root transformation) (after Kaplan-Meier Adjustment): Mean=0.01253, Std. Dev.=0.006777, n=23, 43.48% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8933, critical = 0.881. Kappa = 2.542 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.003506. Individual comparison alpha = 0.0002508. Comparing 2 points to limit. Assumes 12 future values.

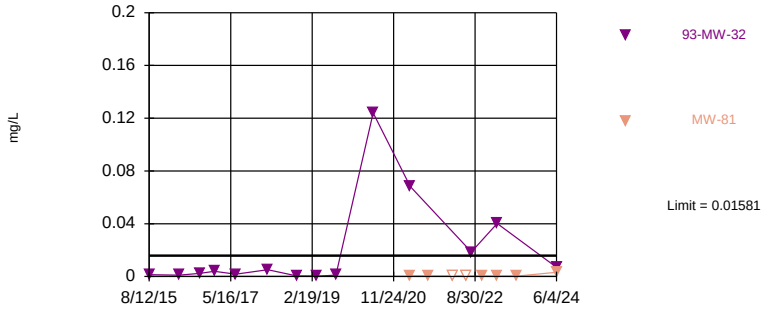
Constituent: Cadmium Analysis Run 10/18/2024 12:27 PM View: 2024SSN - DM and AM PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (based on cube root transformation): Mean=0.1046, Std. Dev.=0.05757, n=23, 13.04% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8896, critical = 0.881. Kappa = 2.542 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.003506. Individual comparison alpha = 0.0002508. Comparing 2 points to limit. Assumes 12 future values.

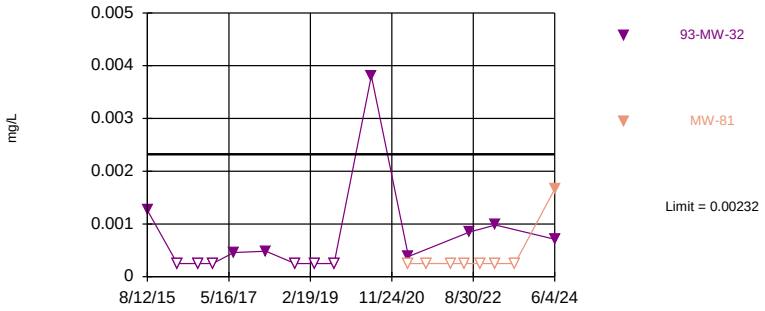
Constituent: Cobalt Analysis Run 10/18/2024 12:27 PM View: 2024SSN - DM and AM PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 23 background values. 73.91% NDs. Annual per-constituent alpha = 0.07843. Individual comparison alpha = 0.002913 (1 of 2). Comparing 2 points to limit. Assumes 12 future values.

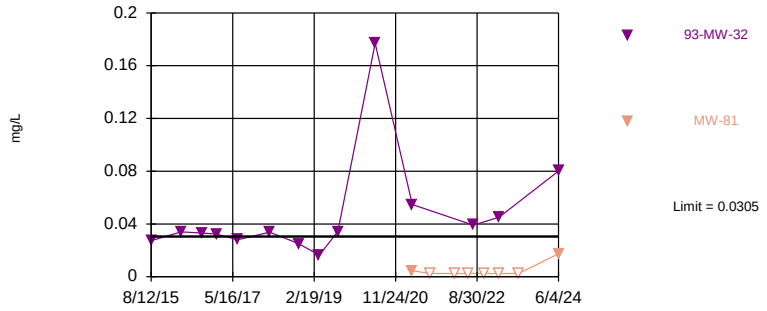
Constituent: Lead Analysis Run 10/18/2024 12:27 PM View: 2024SSN - DM and AM PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Exceeds Limit: 93-MW-32

Prediction Limit

Interwell Parametric



Background Data Summary (based on cube root transformation): Mean=0.1811, Std. Dev.=0.05167, n=23, 13.04% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8811, critical = 0.881. Kappa = 2.542 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.003506. Individual comparison alpha = 0.0002508. Comparing 2 points to limit. Assumes 12 future values.

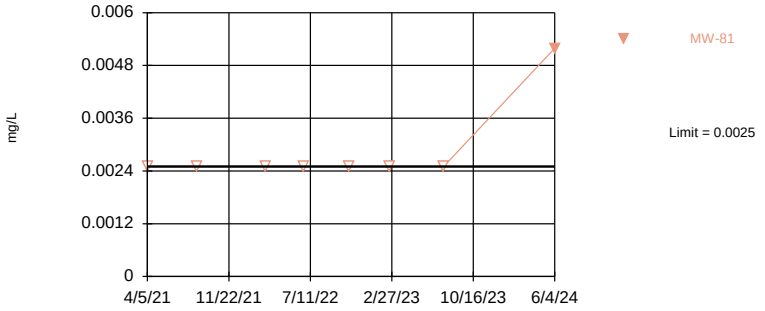
Constituent: Nickel Analysis Run 10/18/2024 12:27 PM View: 2024SSN - DM and AM PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Exceeds Limit: MW-81

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 23 background values. 95.65% NDs. Annual per-constituent alpha = 0.07843. Individual comparison alpha = 0.002913 (1 of 2). Assumes 13 future values.

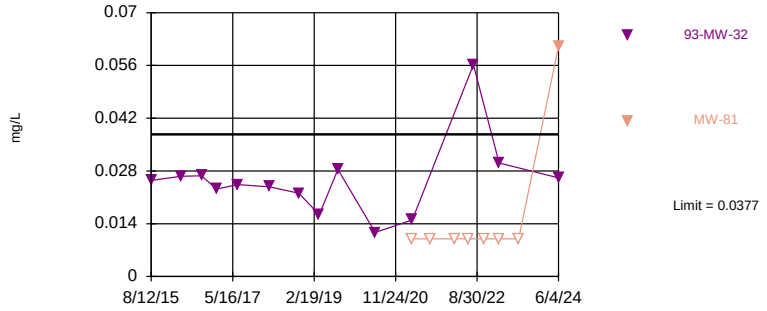
Constituent: Vanadium Analysis Run 10/18/2024 12:27 PM View: 2024SSN - DM and AM PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Exceeds Limit: MW-81

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 23 background values. 86.96% NDs. Annual per-constituent alpha = 0.07843. Individual comparison alpha = 0.002913 (1 of 2). Comparing 2 points to limit. Assumes 12 future values.

Constituent: Zinc Analysis Run 10/18/2024 12:27 PM View: 2024SSN - DM and AM PL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Mann-Kendall/Sen's Slope Trend Test Summary Table and Graphs – Assessment Monitoring Wells

AM Trend Test

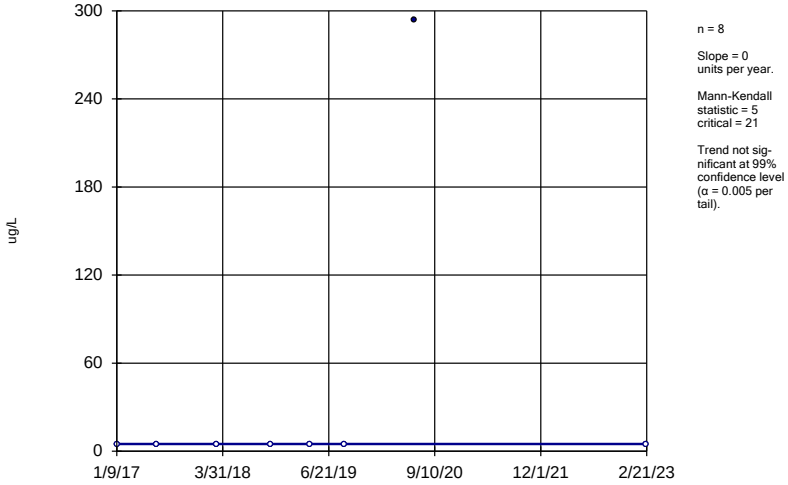
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM Printed 10/18/2024, 5:28 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Alpha	Method
2-Butanone (ug/L)	93-MW-32	0	5	21	No	8	87.5	0.01	NP
Acetone (ug/L)	93-MW-32	0	9	21	No	8	75	0.01	NP
Antimony (mg/L)	93-MW-32	0	11	21	No	8	87.5	0.01	NP
Arsenic (mg/L)	93-MW-32	0.0005733	11	21	No	8	37.5	0.01	NP
Barium (mg/L)	93-MW-32	0.009147	4	21	No	8	0	0.01	NP
Barium (mg/L)	MW-62	-0.001041	-6	-21	No	8	0	0.01	NP
Barium (mg/L)	MW-81	0.005427	7	21	No	8	0	0.01	NP
Cadmium (mg/L)	93-MW-32	0.0001156	10	21	No	8	0	0.01	NP
Cadmium (mg/L)	MW-81	-0.000007569	-2	-21	No	8	12.5	0.01	NP
cis-1,2-Dichloroethene (ug/L)	MW-81	0.2714	14	21	No	8	0	0.01	NP
Cobalt (mg/L)	93-MW-32	0.001538	8	21	No	8	0	0.01	NP
Cobalt (mg/L)	MW-62	0.00001057	4	21	No	8	0	0.01	NP
Cobalt (mg/L)	MW-81	-0.000001044	-1	-21	No	8	25	0.01	NP
Copper (mg/L)	93-MW-32	0	5	21	No	8	75	0.01	NP
Copper (mg/L)	MW-62	0	7	21	No	8	87.5	0.01	NP
Lead (mg/L)	93-MW-32	0.00009253	13	21	No	8	37.5	0.01	NP
Lead (mg/L)	MW-81	0	7	21	No	8	87.5	0.01	NP
Nickel (mg/L)	93-MW-32	0.008805	14	21	No	8	0	0.01	NP
Nickel (mg/L)	MW-62	-0.0005963	-10	-21	No	8	0	0.01	NP
Nickel (mg/L)	MW-81	0	1	21	No	8	75	0.01	NP
Selenium (mg/L)	MW-62	0	6	21	No	8	75	0.01	NP
Tetrachloroethene (ug/L)	MW-81	-0.1358	-14	-21	No	8	12.5	0.01	NP
Toluene (ug/L)	93-MW-32	0	3	21	No	8	87.5	0.01	NP
Vanadium (mg/L)	MW-81	0	7	21	No	8	87.5	0.01	NP
Zinc (mg/L)	93-MW-32	0.001863	6	21	No	8	0	0.01	NP
Zinc (mg/L)	MW-81	0	7	21	No	8	87.5	0.01	NP

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

93-MW-32

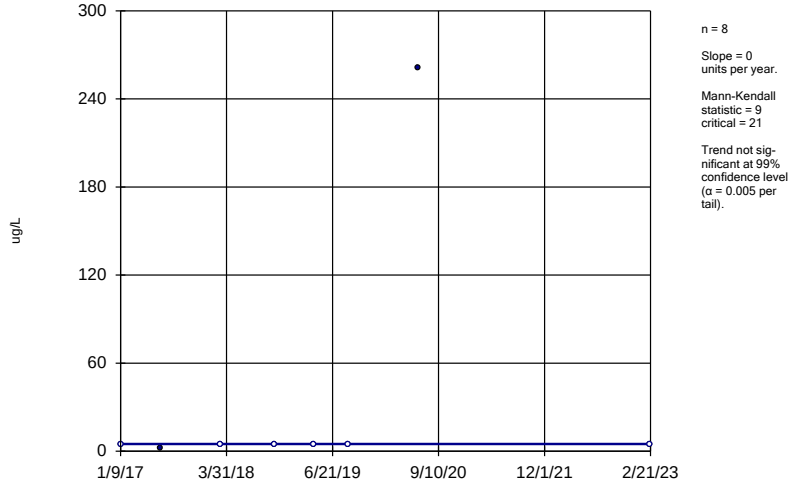


Constituent: 2-Butanone Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

93-MW-32

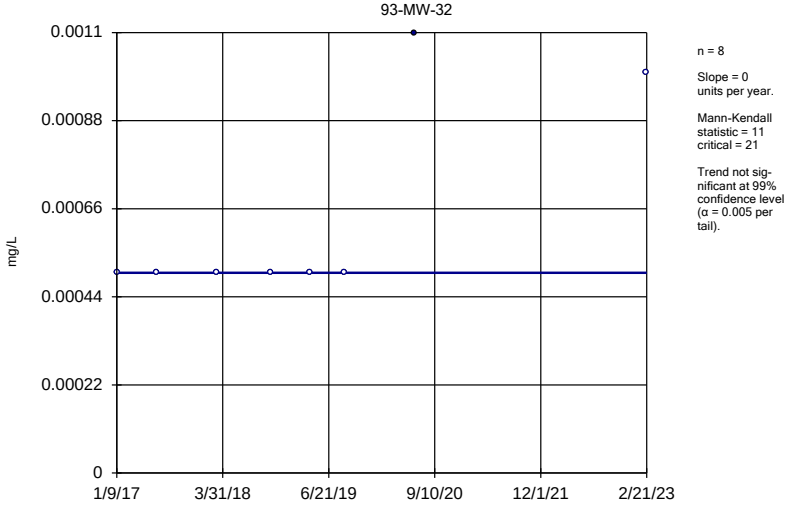


Constituent: Acetone Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

93-MW-32

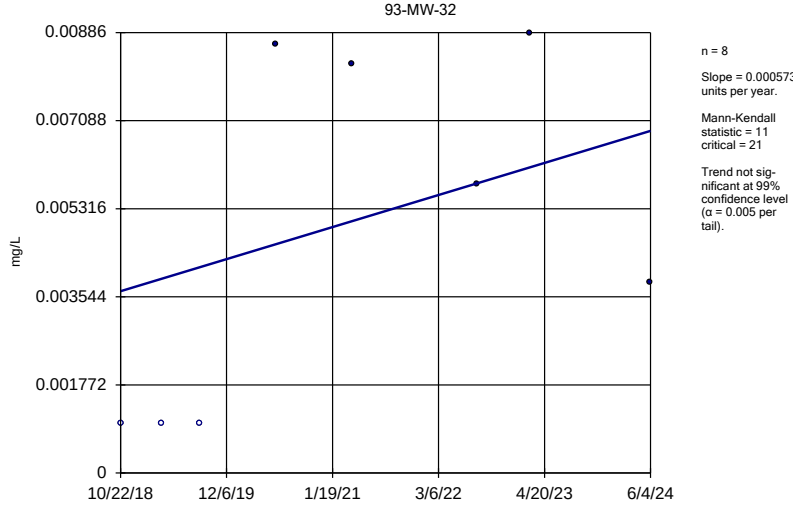


Constituent: Antimony Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

93-MW-32

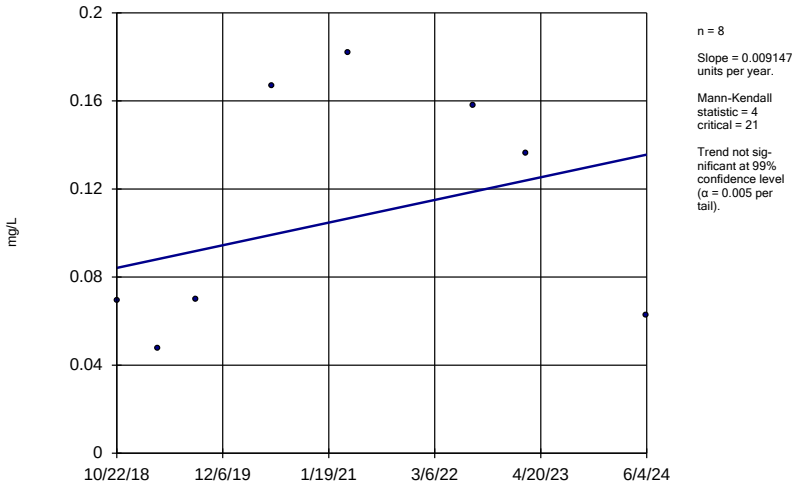


Constituent: Arsenic Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

93-MW-32



n = 8

Slope = 0.009147 units per year.

Mann-Kendall statistic = 4
critical = 21

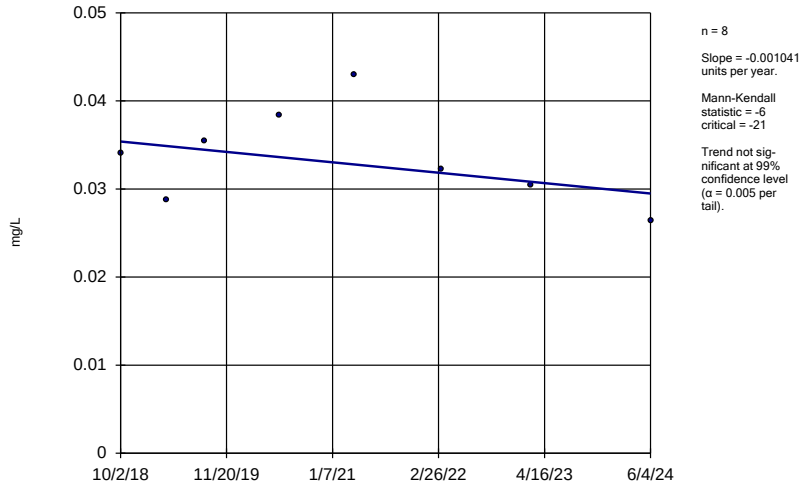
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Barium Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-62



n = 8

Slope = -0.001041 units per year.

Mann-Kendall statistic = -6
critical = -21

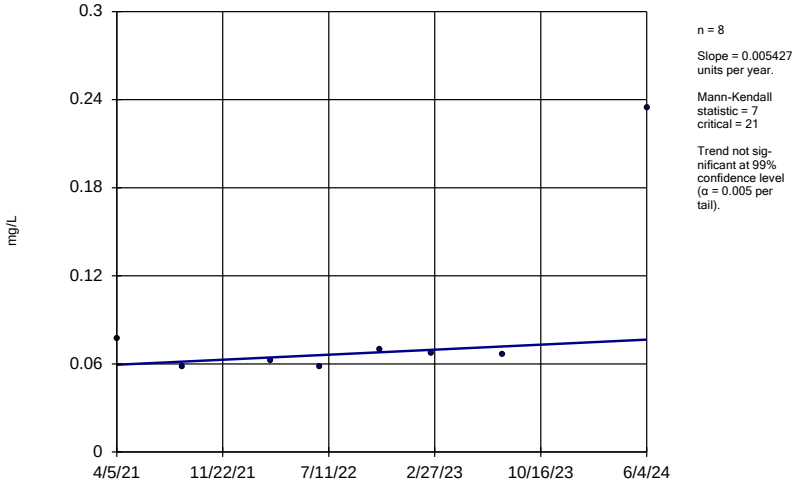
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Barium Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-81



n = 8

Slope = 0.005427 units per year.

Mann-Kendall statistic = 7
critical = 21

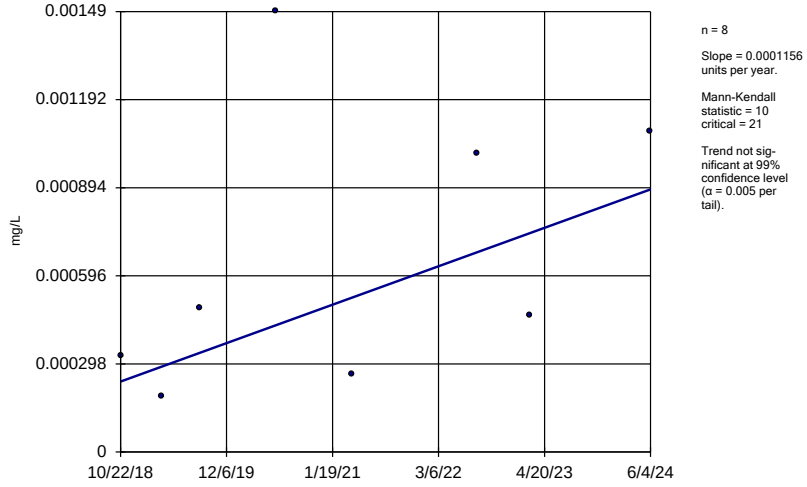
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Barium Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

93-MW-32



n = 8

Slope = 0.0001156 units per year.

Mann-Kendall statistic = 10
critical = 21

Trend not significant at 99% confidence level (α = 0.005 per tail).

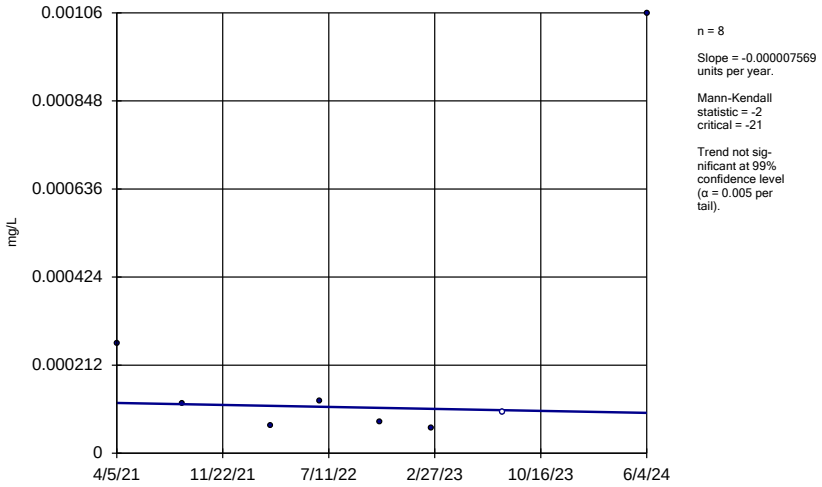
Constituent: Cadmium Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-81



n = 8

Slope = -0.000007569 units per year.

Mann-Kendall statistic = -2
critical = -21

Trend not significant at 99% confidence level (α = 0.005 per tail).

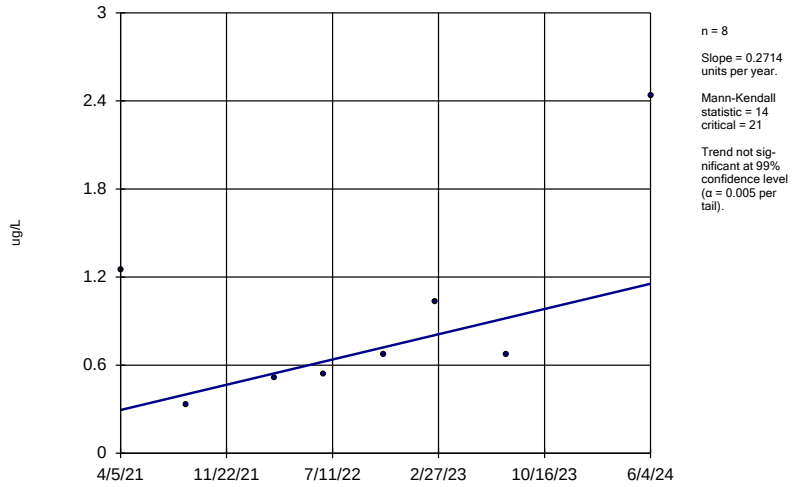
Constituent: Cadmium Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-81



n = 8

Slope = 0.2714 units per year.

Mann-Kendall statistic = 14
critical = 21

Trend not significant at 99% confidence level (α = 0.005 per tail).

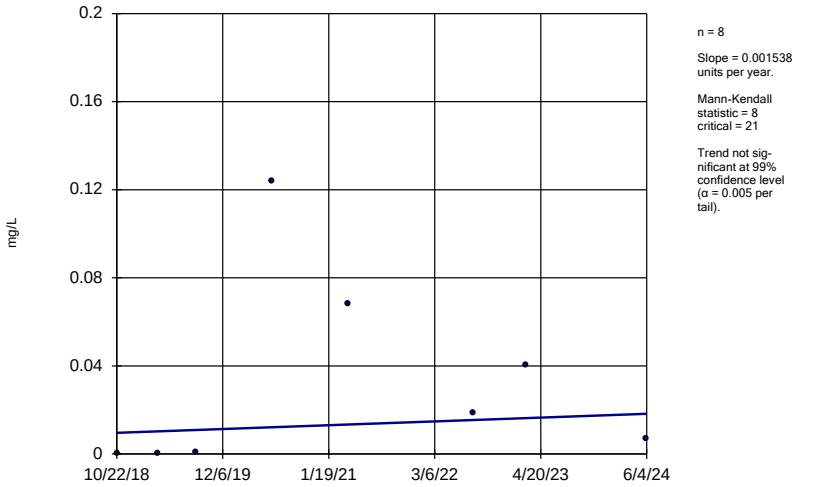
Constituent: cis-1,2-Dichloroethene Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

93-MW-32



n = 8

Slope = 0.001538 units per year.

Mann-Kendall statistic = 8
critical = 21

Trend not significant at 99% confidence level (α = 0.005 per tail).

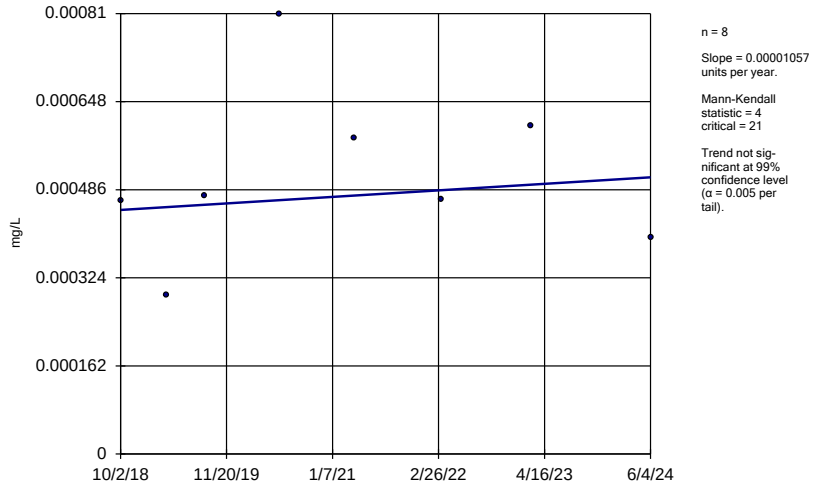
Constituent: Cobalt Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-62



n = 8

Slope = 0.00001057 units per year.

Mann-Kendall statistic = 4
critical = 21

Trend not significant at 99% confidence level (α = 0.005 per tail).

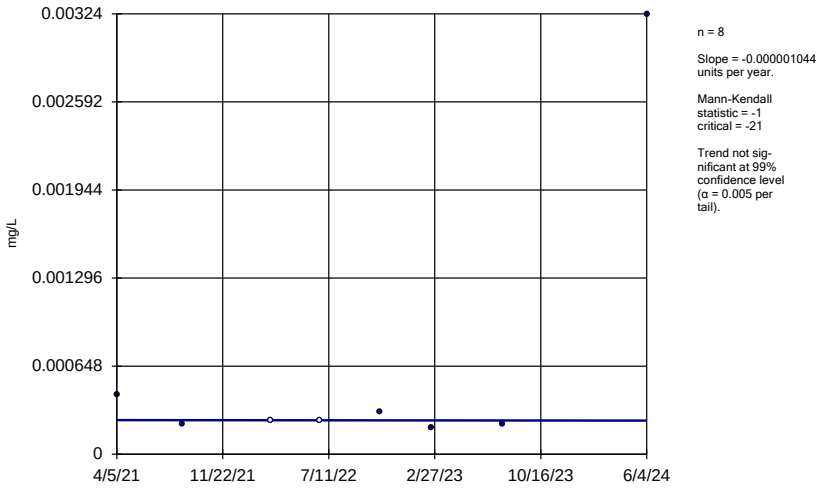
Constituent: Cobalt Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-81

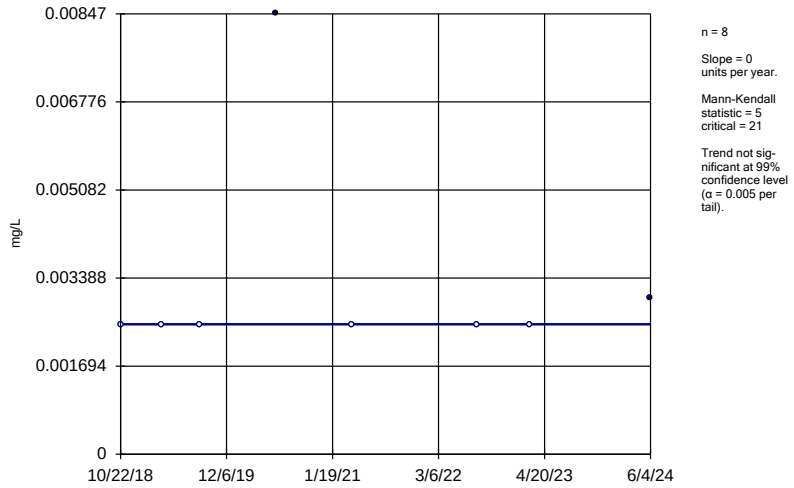


Constituent: Cobalt Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

93-MW-32

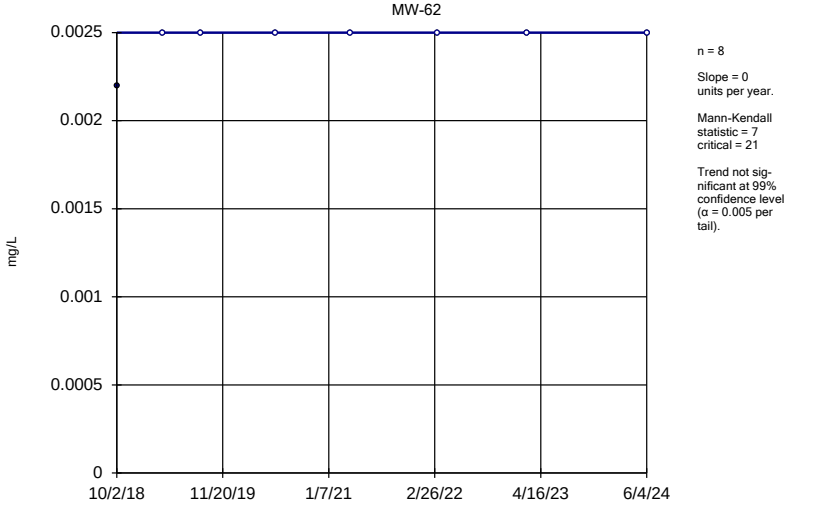


Constituent: Copper Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-62

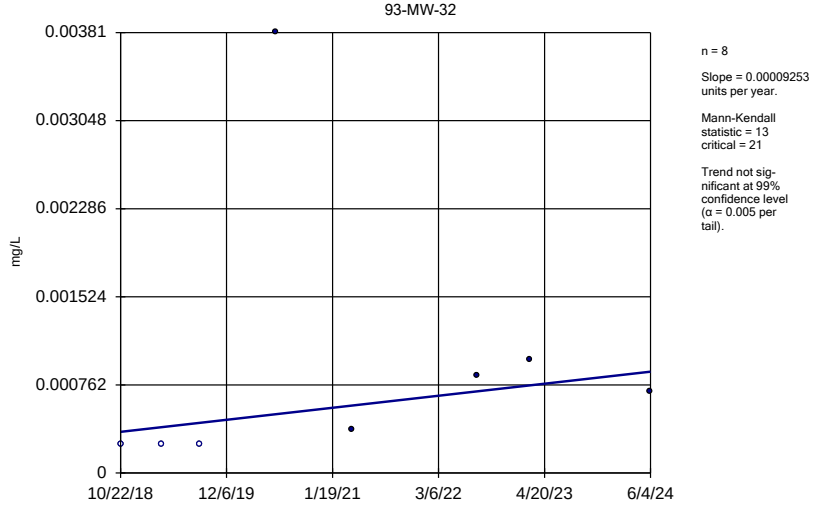


Constituent: Copper Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

93-MW-32

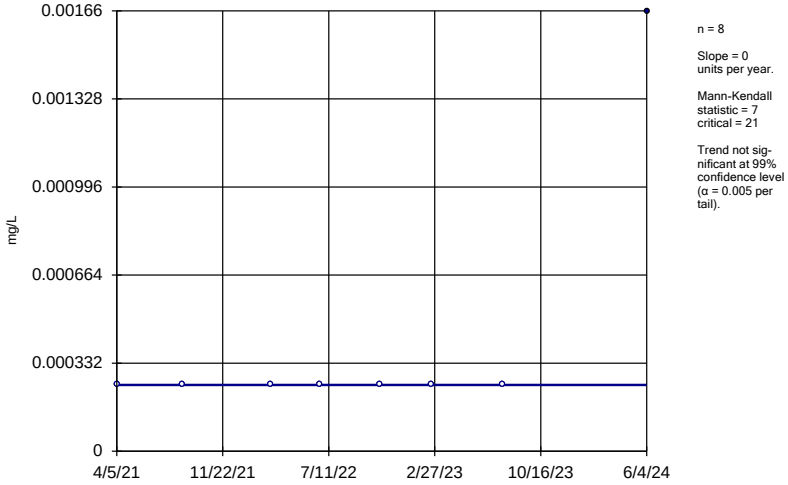


Constituent: Lead Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-81



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 7
critical = 21

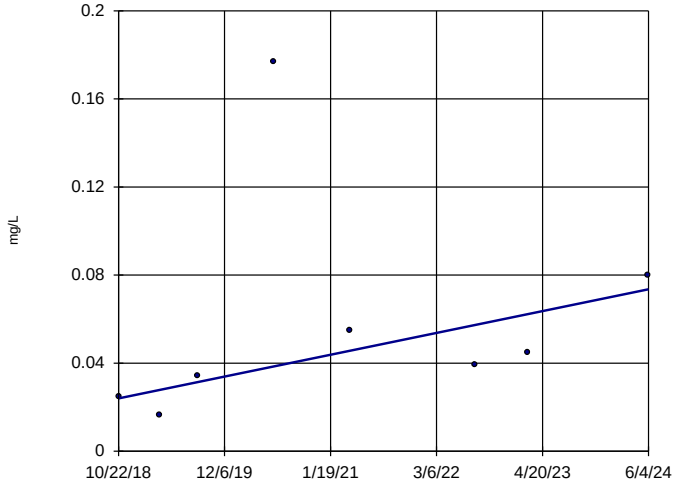
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Lead Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

93-MW-32



n = 8

Slope = 0.008805 units per year.

Mann-Kendall statistic = 14
critical = 21

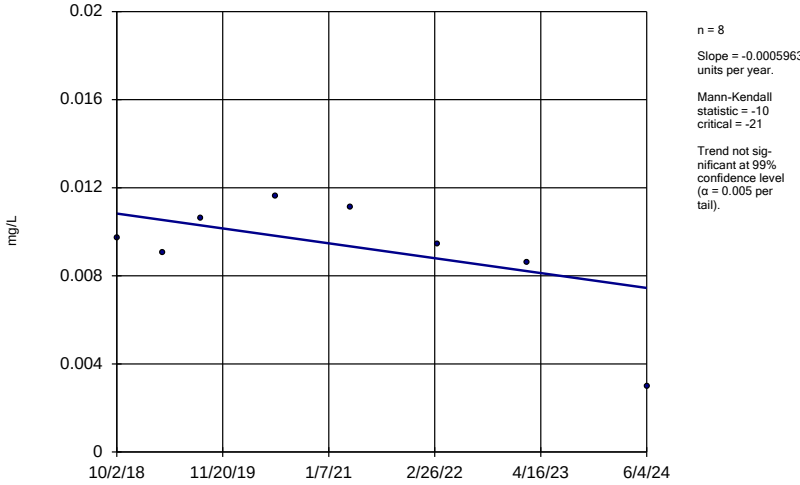
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Nickel Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-62



n = 8

Slope = -0.0005963 units per year.

Mann-Kendall statistic = -10
critical = -21

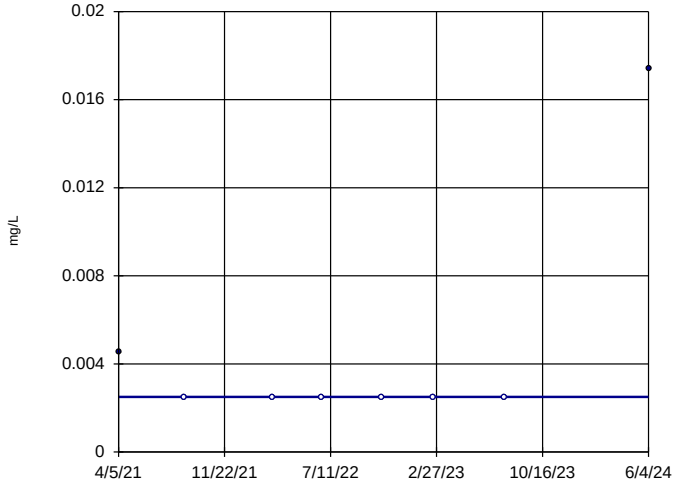
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Nickel Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-81



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 1
critical = 21

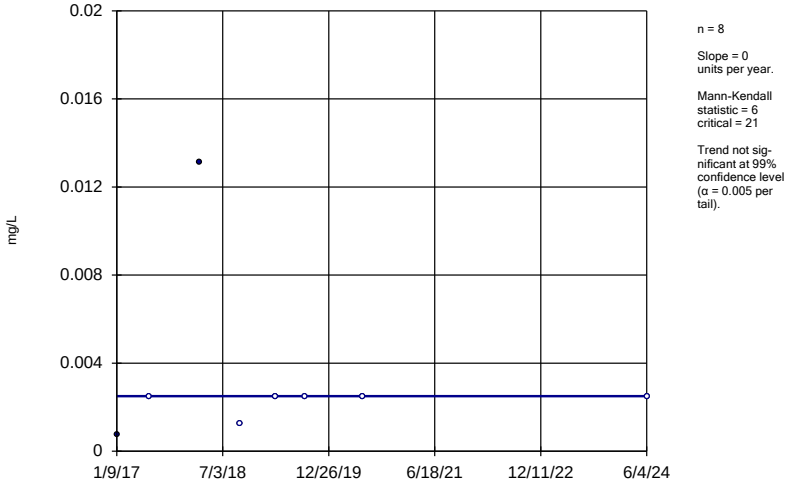
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Nickel Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-62



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 6
critical = 21

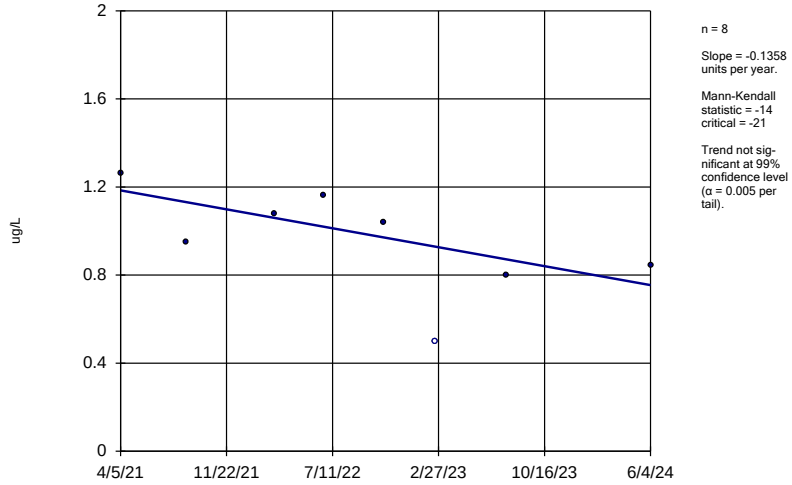
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Selenium Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-81



n = 8

Slope = -0.1358 units per year.

Mann-Kendall statistic = -14
critical = -21

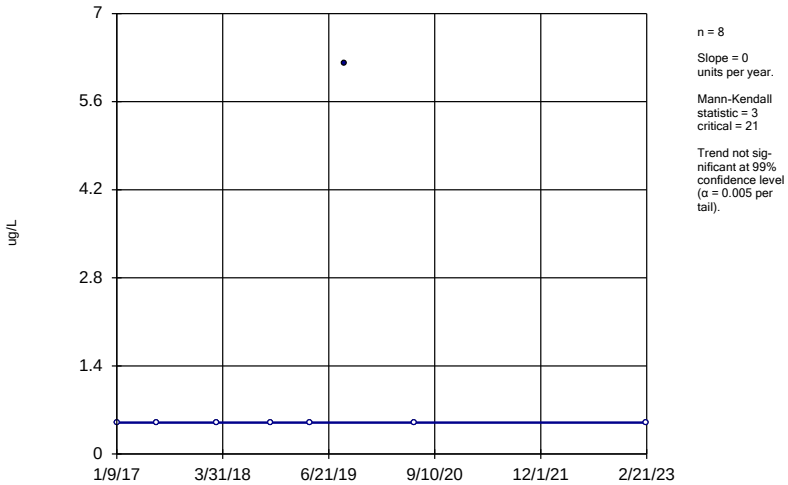
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Tetrachloroethene Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

93-MW-32



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 3
critical = 21

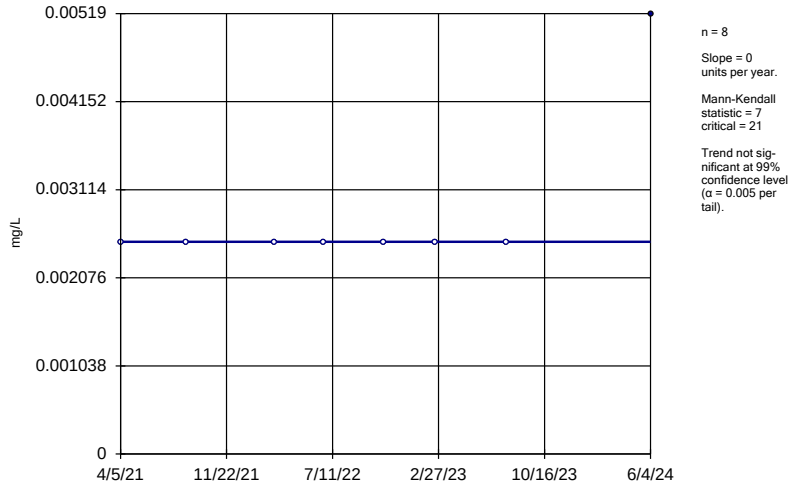
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Toluene Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-81



n = 8

Slope = 0 units per year.

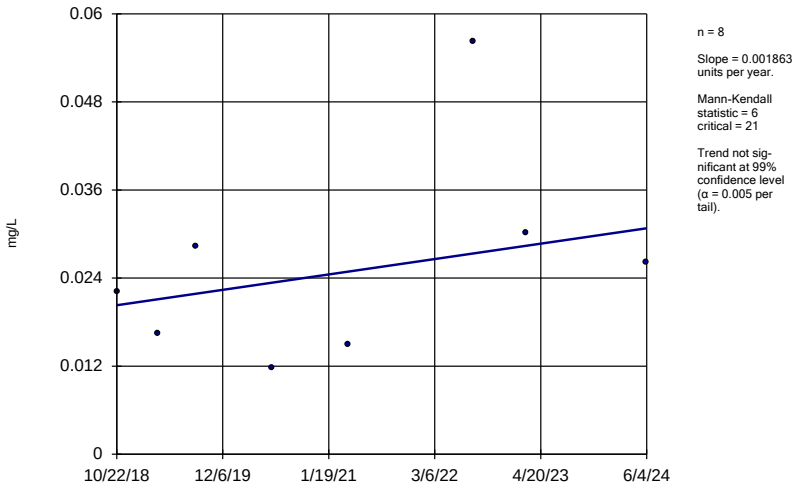
Mann-Kendall statistic = 7
critical = 21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Vanadium Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sen's Slope Estimator

93-MW-32



Constituent: Zinc Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall

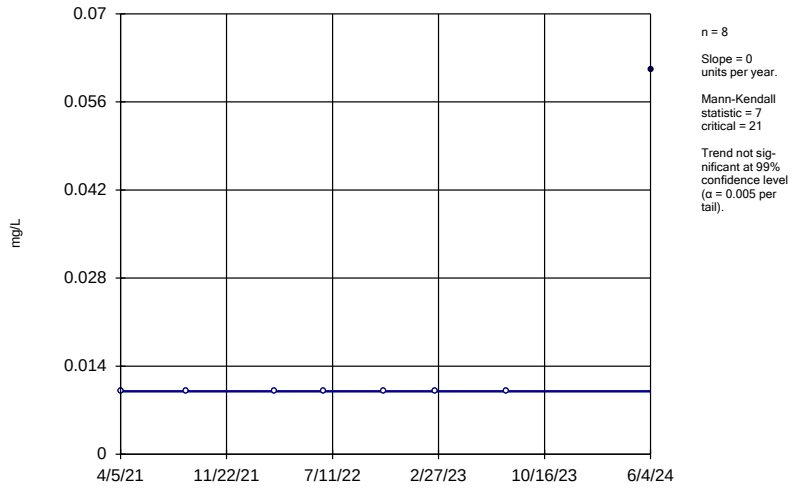
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-81



Constituent: Zinc Analysis Run 10/18/2024 5:27 PM View: 2024SSN Mann Kendall

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Mann-Kendall/Sen's Slope Trend Test Summary Table and Graphs – AMD Wells Organics and Sulfide

AMD Trend Test

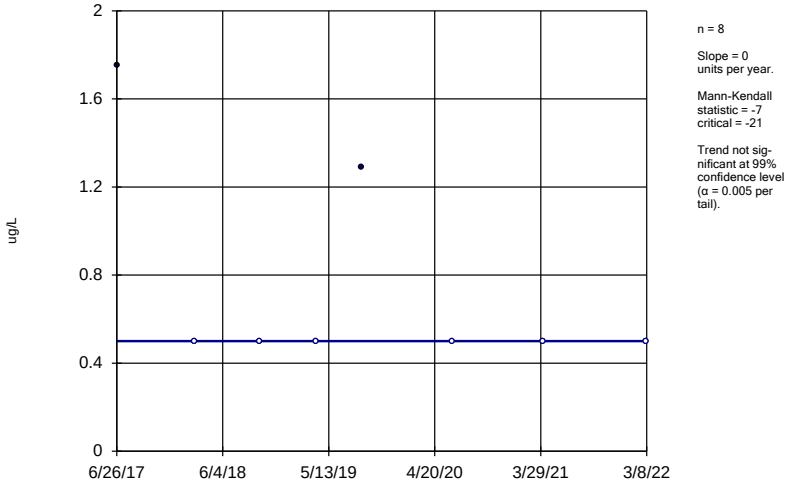
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD Printed 10/18/2024, 5:16 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Alpha	Method
1,1-Dichloroethane (ug/L)	MW-59	0	-7	-21	No	8	75	0.01	NP
1,1-Dichloroethane (ug/L)	MW-64	0	-1	-21	No	8	37.5	0.01	NP
1,1-Dichloroethane (ug/L)	MW-65	-0.1535	-14	-21	No	8	12.5	0.01	NP
2-Methylnaphthalene (ug/L)	04-MW-56	-0.004419	-1	-8	No	4	75	0.01	NP
2-Methylnaphthalene (ug/L)	MW-39R	0.008666	1	12	No	5	80	0.01	NP
2-Methylnaphthalene (ug/L)	MW-58	0.026	1	12	No	5	80	0.01	NP
2-Methylnaphthalene (ug/L)	MW-65	0.04641	3	12	No	5	80	0.01	NP
Acetone (ug/L)	MW-40	0	3	21	No	8	75	0.01	NP
Acetone (ug/L)	MW-59	0.8269	9	21	No	8	25	0.01	NP
Benzene (ug/L)	MW-40	-0.03294	-2	-21	No	8	0	0.01	NP
Benzene (ug/L)	MW-59	-0.2066	-6	-21	No	8	12.5	0.01	NP
Benzene (ug/L)	MW-65	0.07371	4	21	No	8	12.5	0.01	NP
Chloroethane (ug/L)	MW-65	-0.2175	-3	-21	No	8	0	0.01	NP
cis-1,2-Dichloroethene (ug/L)	MW-40	0.7405	14	21	No	8	0	0.01	NP
Naphthalene (ug/L)	MW-40	0	3	14	No	6	83.33	0.01	NP
Sulfide (mg/L)	MW-59	0	-5	-14	No	6	83.33	0.01	NP
Sulfide (mg/L)	MW-63R	0	-5	-14	No	6	83.33	0.01	NP
Vinyl chloride (ug/L)	MW-40	0.06597	10	21	No	8	12.5	0.01	NP

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-59



n = 8

Slope = 0
units per year.

Mann-Kendall
statistic = -7
critical = -21

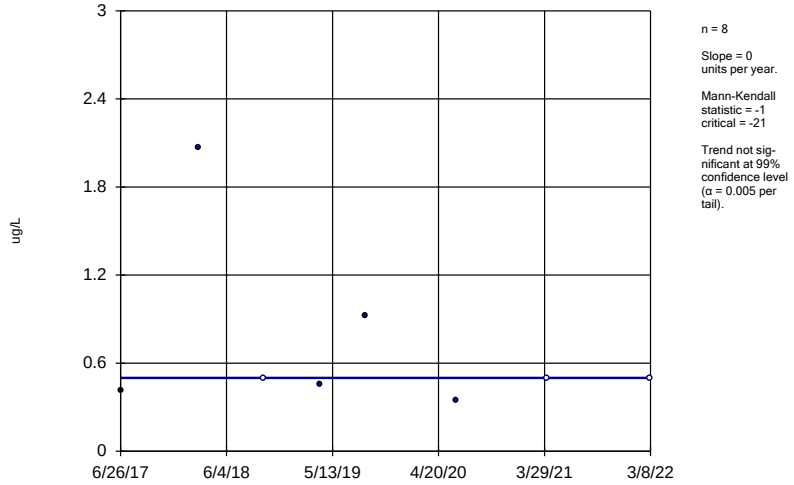
Trend not sig-
nificant at 99%
confidence level
(α = 0.005 per
tail).

Constituent: 1,1-Dichloroethane Analysis Run 10/18/2024 5:13 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-64



n = 8

Slope = 0
units per year.

Mann-Kendall
statistic = -1
critical = -21

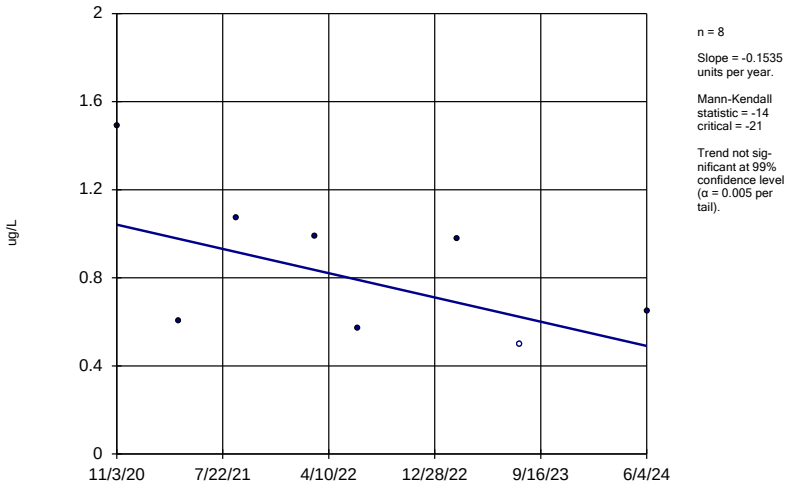
Trend not sig-
nificant at 99%
confidence level
(α = 0.005 per
tail).

Constituent: 1,1-Dichloroethane Analysis Run 10/18/2024 5:13 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-65



n = 8

Slope = -0.1535
units per year.

Mann-Kendall
statistic = -14
critical = -21

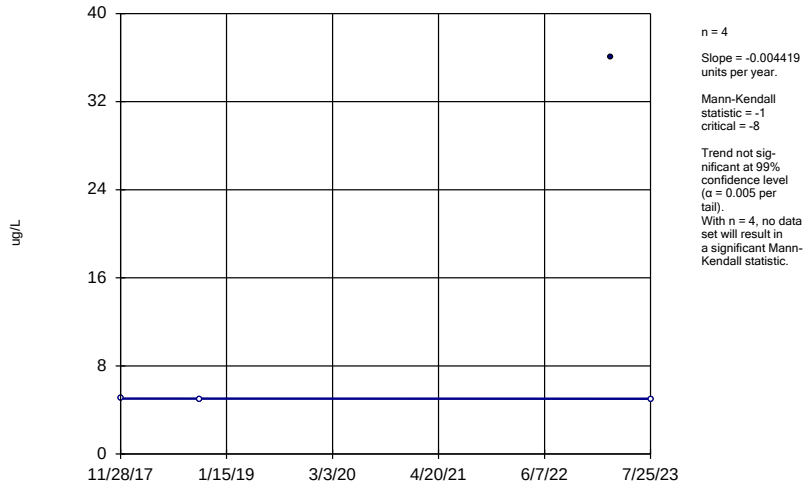
Trend not sig-
nificant at 99%
confidence level
(α = 0.005 per
tail).

Constituent: 1,1-Dichloroethane Analysis Run 10/18/2024 5:13 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

04-MW-56



n = 4

Slope = -0.004419
units per year.

Mann-Kendall
statistic = -1
critical = -8

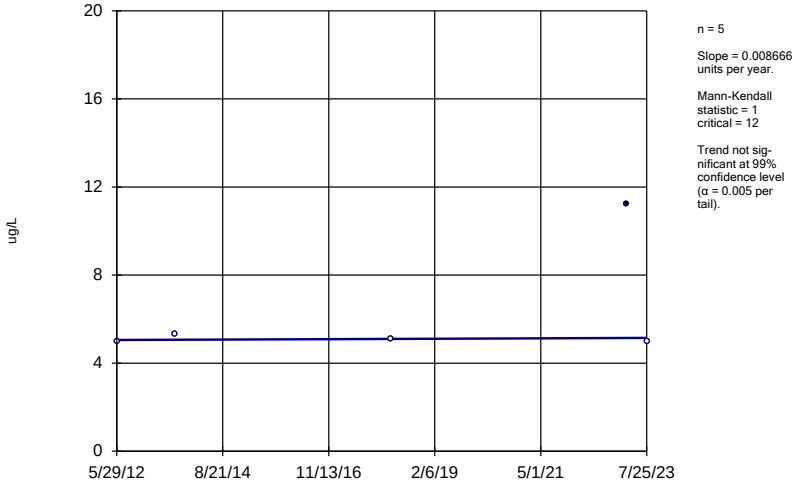
Trend not sig-
nificant at 99%
confidence level
(α = 0.005 per
tail).
With n = 4, no data
set will result in
a significant Mann-
Kendall statistic.

Constituent: 2-Methylnaphthalene Analysis Run 10/18/2024 5:13 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-39R

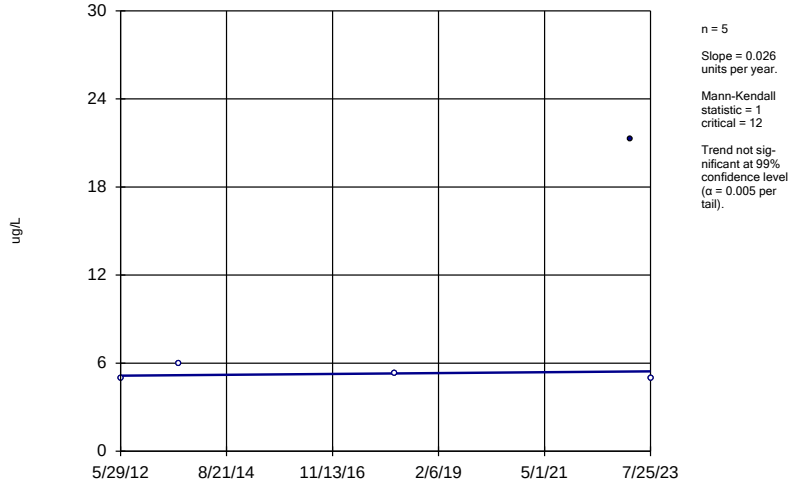


Constituent: 2-Methylnaphthalene Analysis Run 10/18/2024 5:13 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-58

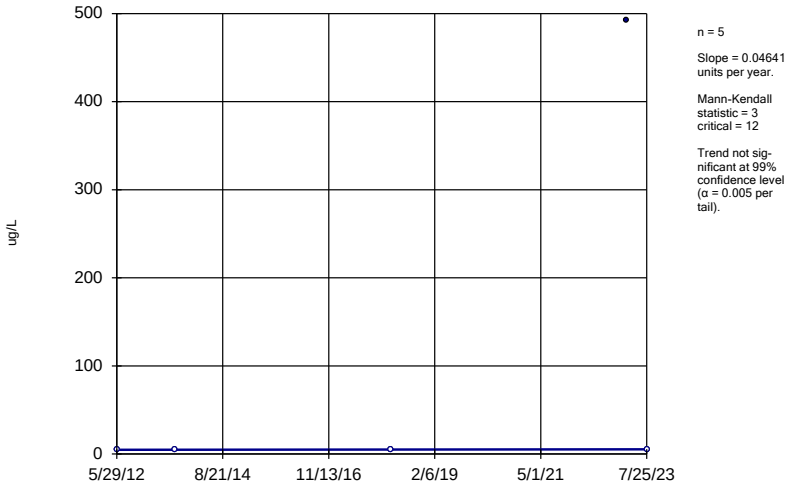


Constituent: 2-Methylnaphthalene Analysis Run 10/18/2024 5:13 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-65

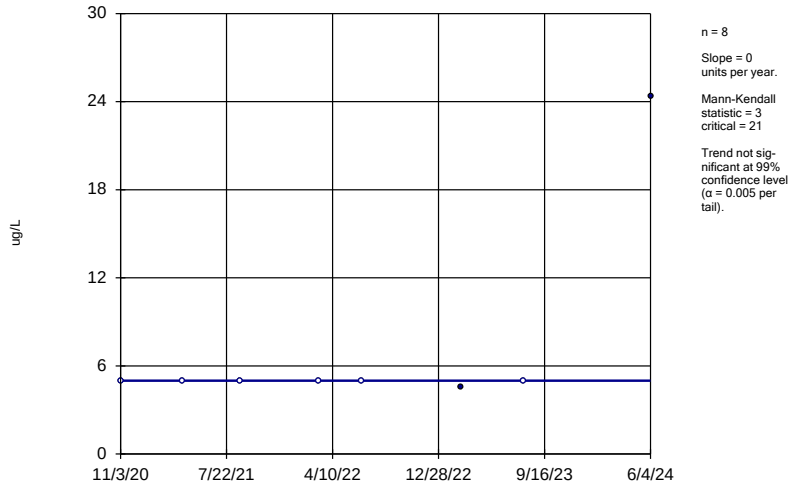


Constituent: 2-Methylnaphthalene Analysis Run 10/18/2024 5:13 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-40

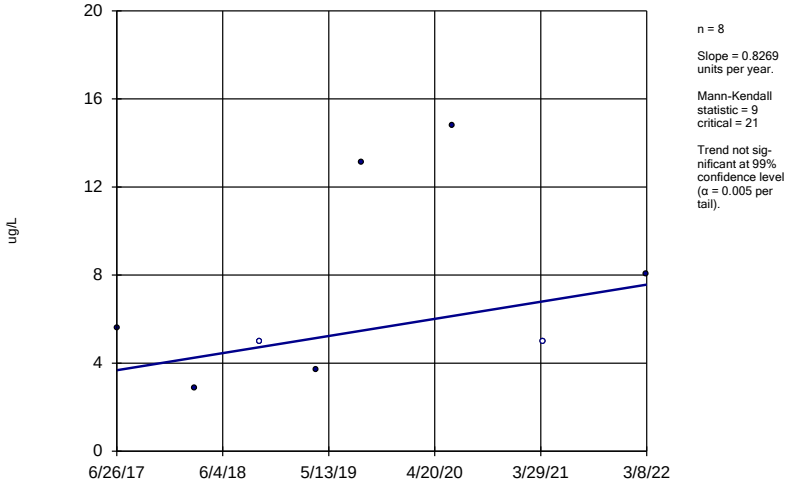


Constituent: Acetone Analysis Run 10/18/2024 5:13 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-59



n = 8

Slope = 0.8269 units per year.

Mann-Kendall statistic = 9
critical = 21

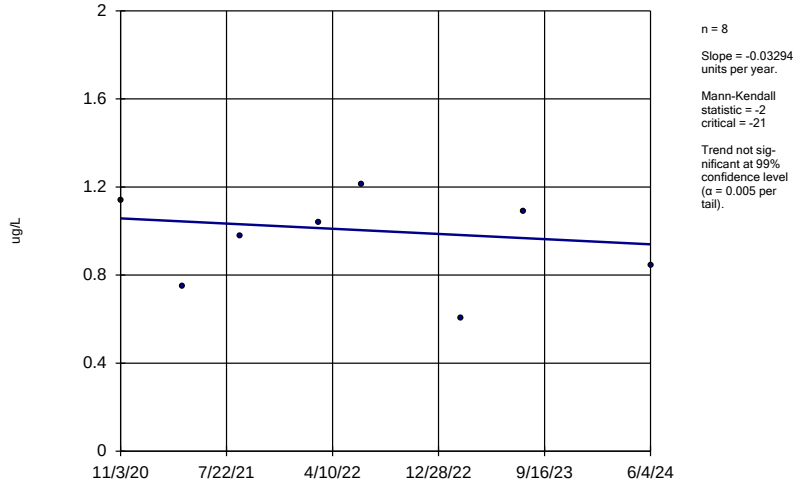
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Acetone Analysis Run 10/18/2024 5:13 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-40



n = 8

Slope = -0.03294 units per year.

Mann-Kendall statistic = -2
critical = -21

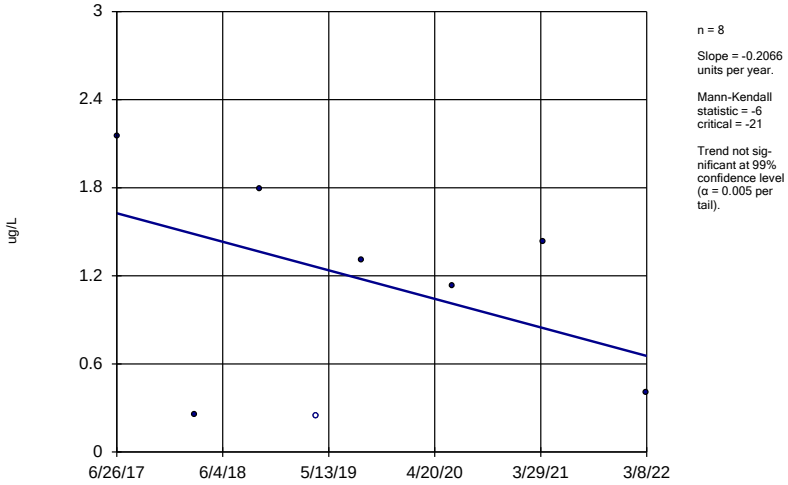
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Benzene Analysis Run 10/18/2024 5:13 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-59



n = 8

Slope = -0.2066 units per year.

Mann-Kendall statistic = -6
critical = -21

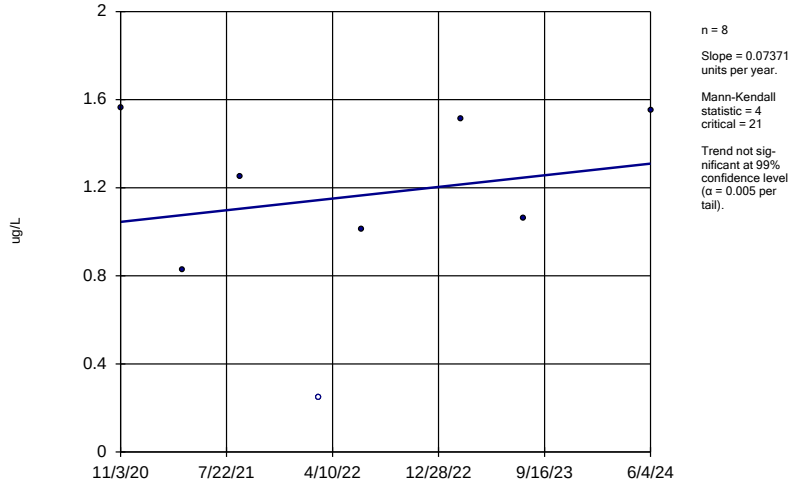
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Benzene Analysis Run 10/18/2024 5:13 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-65



n = 8

Slope = 0.07371 units per year.

Mann-Kendall statistic = 4
critical = 21

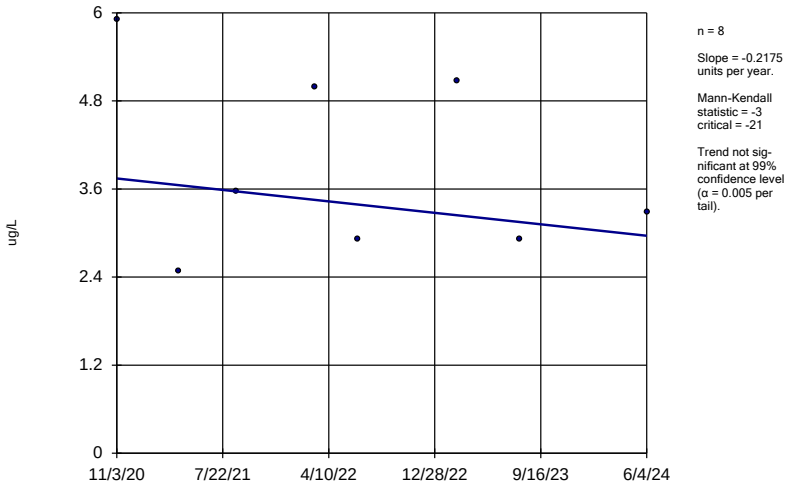
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Benzene Analysis Run 10/18/2024 5:13 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-65



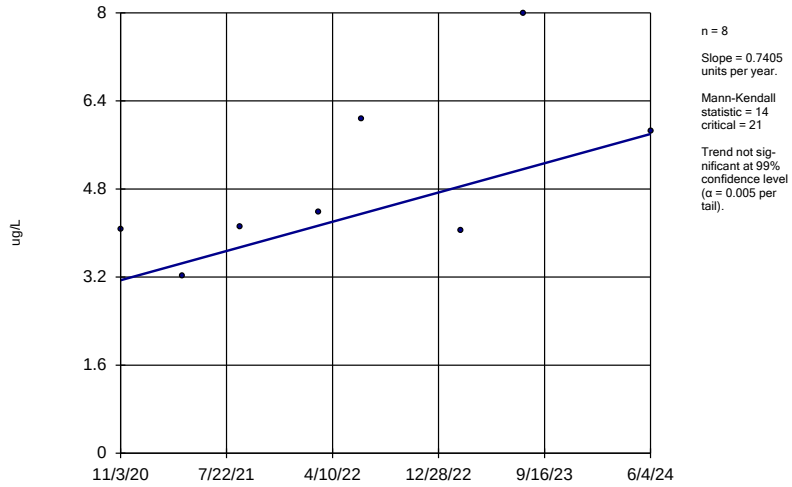
Constituent: Chloroethane Analysis Run 10/18/2024 5:13 PM View: 2024SSN Mann Kendall

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-40



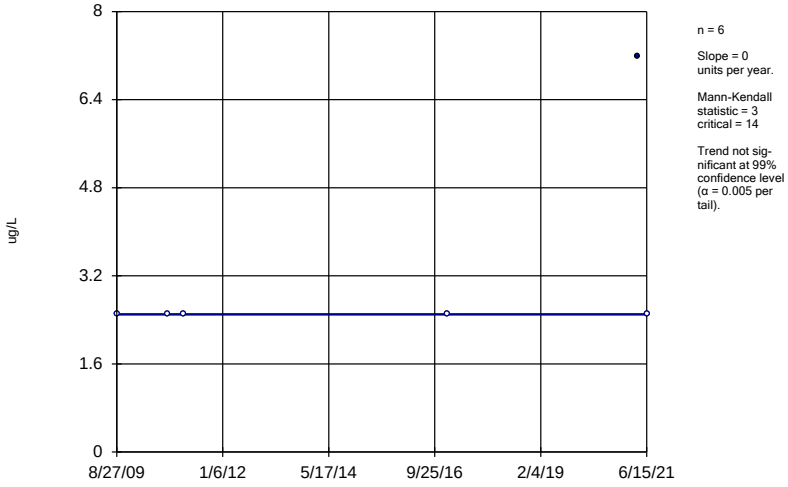
Constituent: cis-1,2-Dichloroethene Analysis Run 10/18/2024 5:13 PM View: 2024SSN Mann Kendall

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-40



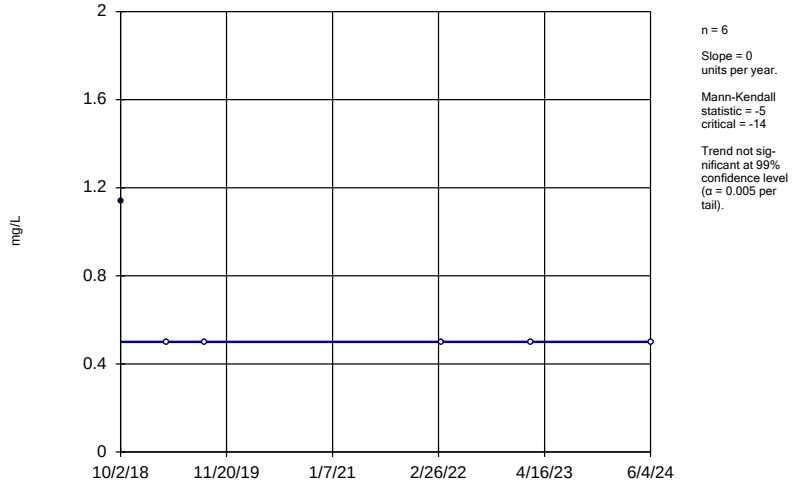
Constituent: Naphthalene Analysis Run 10/18/2024 5:13 PM View: 2024SSN Mann Kendall

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-59



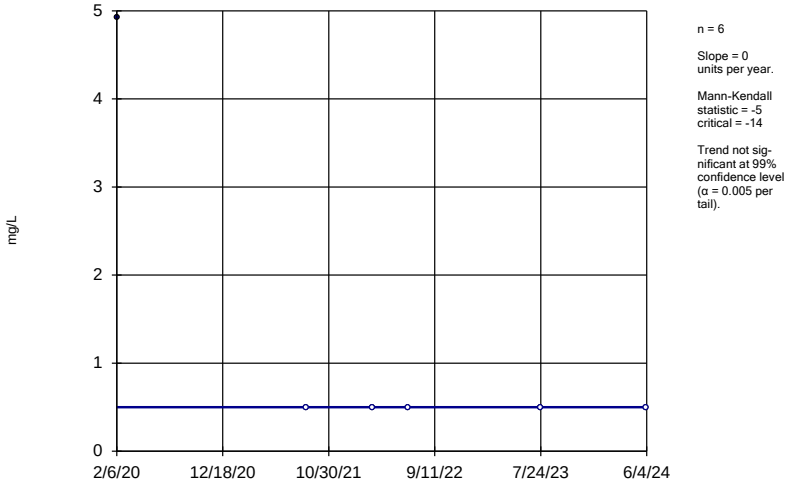
Constituent: Sulfide Analysis Run 10/18/2024 5:13 PM View: 2024SSN Mann Kendall

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-63R

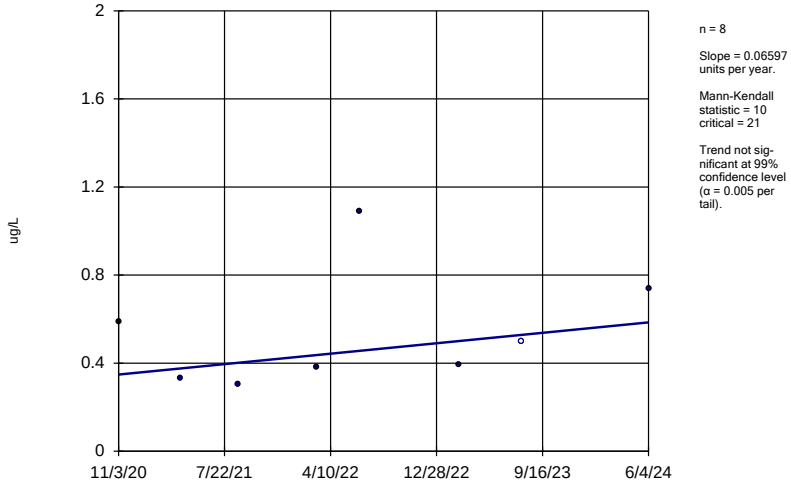


Constituent: Sulfide Analysis Run 10/18/2024 5:13 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-40



Constituent: Vinyl chloride Analysis Run 10/18/2024 5:13 PM View: 2024SSN Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Confidence Interval Summary Table and Graphs – Assessment Monitoring Wells

AM Confidence Interval

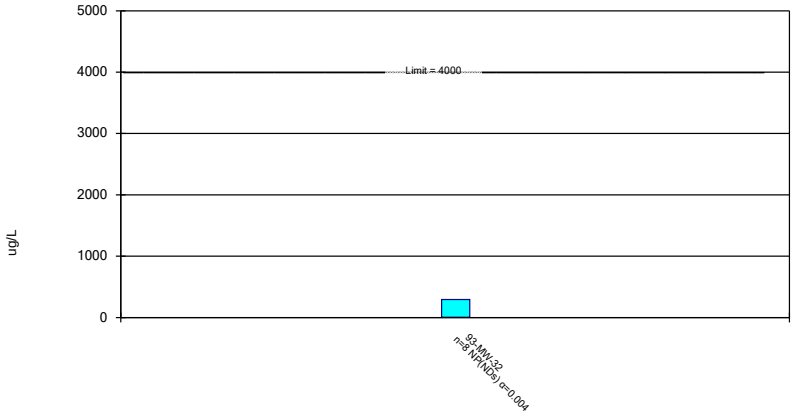
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM Printed 2/17/2025, 2:43 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
2-Butanone (ug/L)	93-MW-32	294	5	4000	No	8	87.5	No	0.004	NP (NDs)
Acetone (ug/L)	93-MW-32	261	1.91	6300	No	8	75	No	0.004	NP (NDs)
Antimony (mg/L)	93-MW-32	0.0011	0.0005	0.006	No	8	87.5	No	0.004	NP (NDs)
Arsenic (mg/L)	93-MW-32	0.00825	0.0021	0.01	No	8	37.5	No	0.01	Param.
Barium (mg/L)	93-MW-32	0.1693	0.0538	2	No	8	0	No	0.01	Param.
Barium (mg/L)	MW-62	0.03927	0.02795	2	No	8	0	No	0.01	Param.
Barium (mg/L)	MW-81	0.234	0.0579	2	No	8	0	No	0.004	NP (normality)
Cadmium (mg/L)	93-MW-32	0.001163	0.0001655	0.005	No	8	0	No	0.01	Param.
Cadmium (mg/L)	MW-81	0.00106	0.000062	0.005	No	8	12.5	No	0.004	NP (normality)
cis-1,2-Dichloroethene (ug/L)	MW-81	1.649	0.211	70	No	8	0	No	0.01	Param.
Cobalt (mg/L)	93-MW-32	0.07919	0	0.01691	No	8	0	No	0.01	Param.
Cobalt (mg/L)	MW-62	0.0006764	0.0003475	0.01691	No	8	0	No	0.01	Param.
Cobalt (mg/L)	MW-81	0.00324	0.000193	0.01691	No	8	25	No	0.004	NP (normality)
Copper (mg/L)	93-MW-32	0.00847	0.0025	1.3	No	8	75	No	0.004	NP (NDs)
Copper (mg/L)	MW-62	0.0025	0.002195	1.3	No	8	87.5	No	0.004	NP (NDs)
Lead (mg/L)	93-MW-32	0.00381	0.00025	0.015	No	8	37.5	No	0.004	NP (normality)
Lead (mg/L)	MW-81	0.00166	0.00025	0.015	No	8	87.5	No	0.004	NP (NDs)
Nickel (mg/L)	93-MW-32	0.1136	0.004385	0.1	No	8	0	No	0.01	Param.
Nickel (mg/L)	MW-62	0.01199	0.006286	0.1	No	8	0	No	0.01	Param.
Nickel (mg/L)	MW-81	0.0174	0.0025	0.1	No	8	75	No	0.004	NP (NDs)
Selenium (mg/L)	MW-62	0.0131	0.000753	0.05	No	8	75	No	0.004	NP (NDs)
Tetrachloroethene (ug/L)	MW-81	1.208	0.6997	5	No	8	12.5	No	0.01	Param.
Toluene (ug/L)	93-MW-32	6.22	0.5	1000	No	8	87.5	No	0.004	NP (NDs)
Vanadium (mg/L)	MW-81	0.00519	0.0025	0.035	No	8	87.5	No	0.004	NP (NDs)
Zinc (mg/L)	93-MW-32	0.04057	0.01094	2	No	8	0	No	0.01	Param.
Zinc (mg/L)	MW-81	0.0611	0.01	2	No	8	87.5	No	0.004	NP (NDs)

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

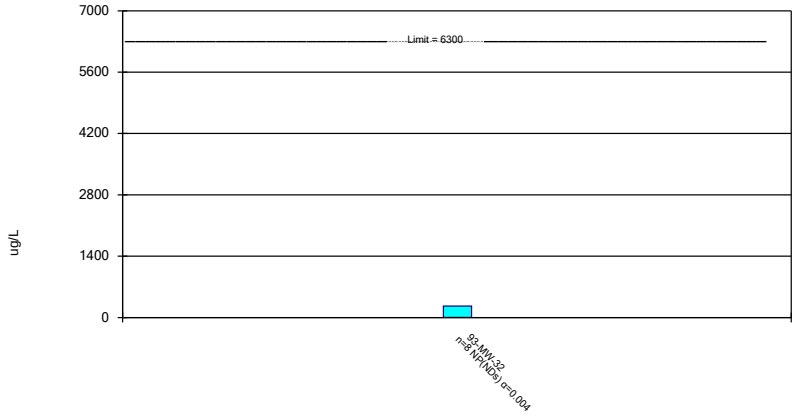


Constituent: 2-Butanone Analysis Run 2/17/2025 2:41 PM View: 2024SSN Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

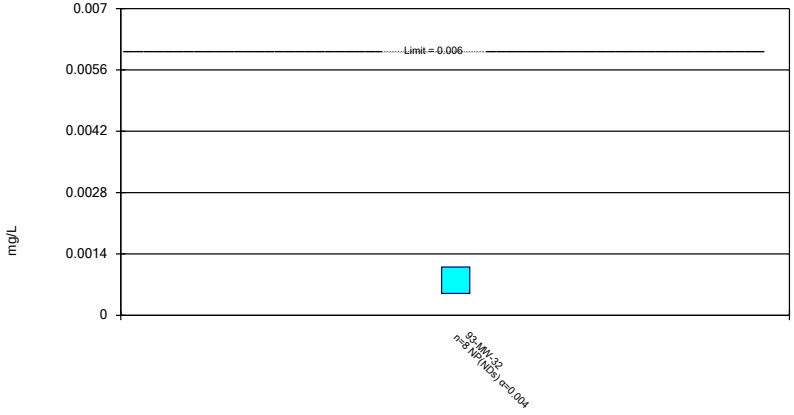


Constituent: Acetone Analysis Run 2/17/2025 2:41 PM View: 2024SSN Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

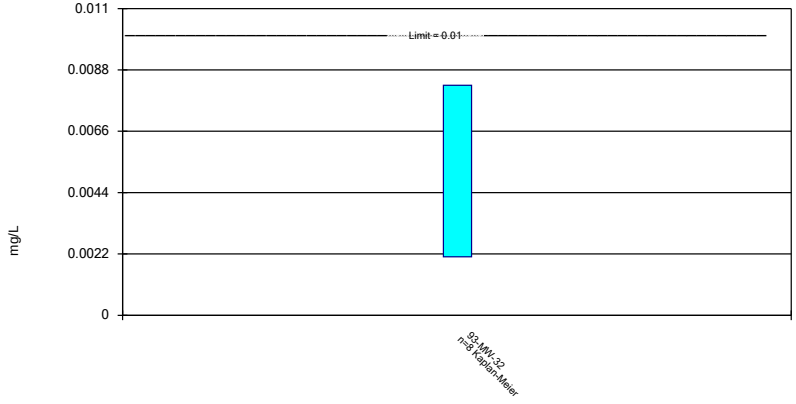


Constituent: Antimony Analysis Run 2/17/2025 2:42 PM View: 2024SSN Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

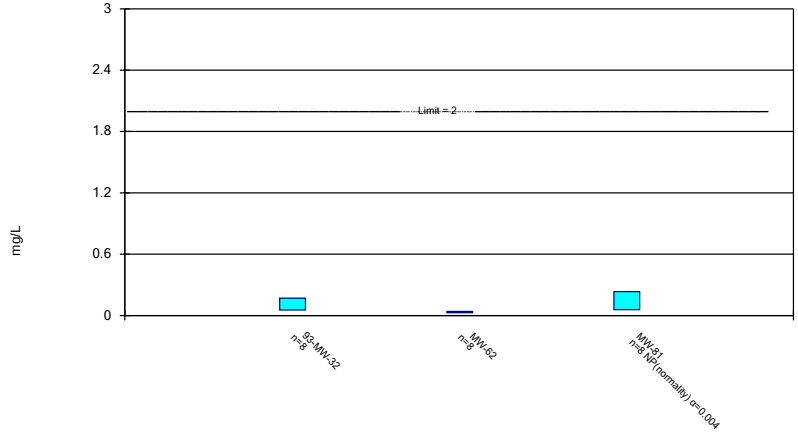


Constituent: Arsenic Analysis Run 2/17/2025 2:42 PM View: 2024SSN Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.

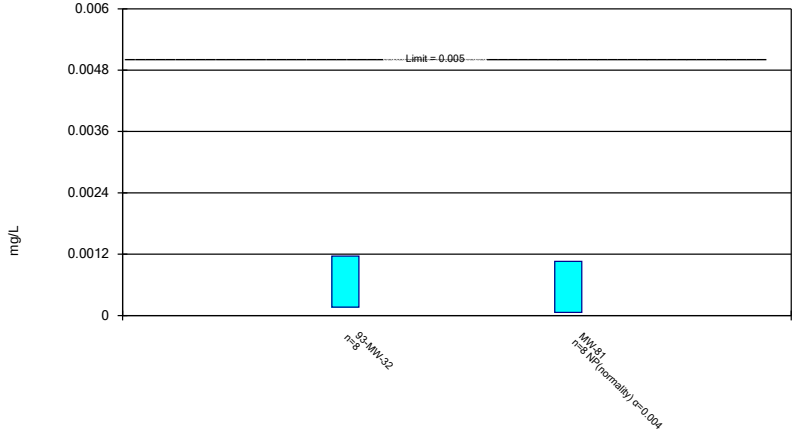


Constituent: Barium Analysis Run 2/17/2025 2:42 PM View: 2024SSN Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Cadmium Analysis Run 2/17/2025 2:42 PM View: 2024SSN Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Parametric Confidence Interval

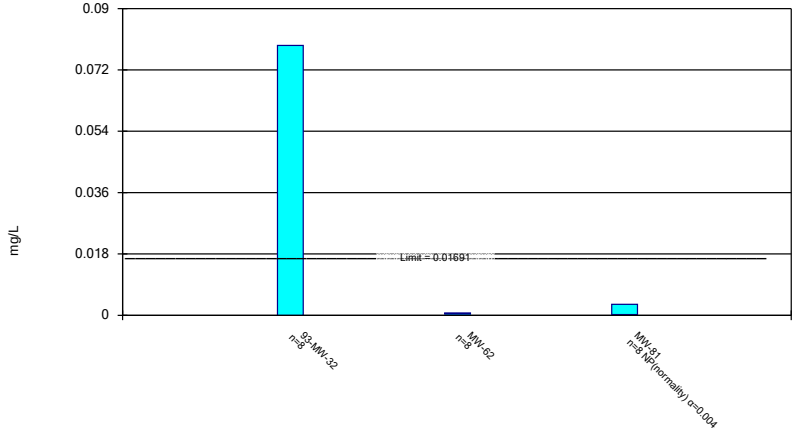
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

Constituent: cis-1,2-Dichloroethene Analysis Run 2/17/2025 2:42 PM View: 2024SSN Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.

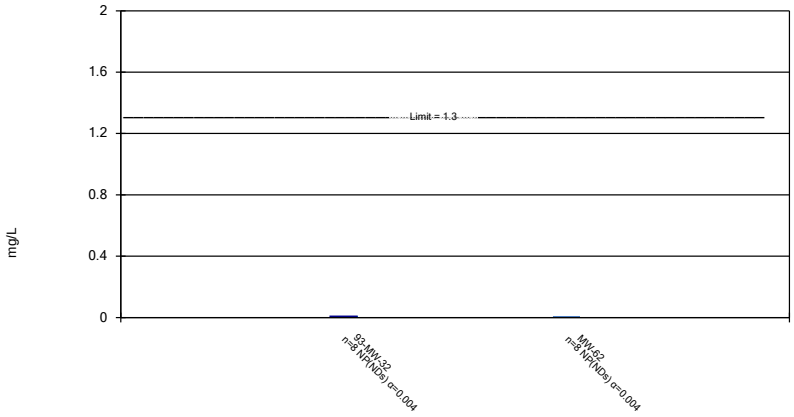


Constituent: Cobalt Analysis Run 2/17/2025 2:42 PM View: 2024SSN Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

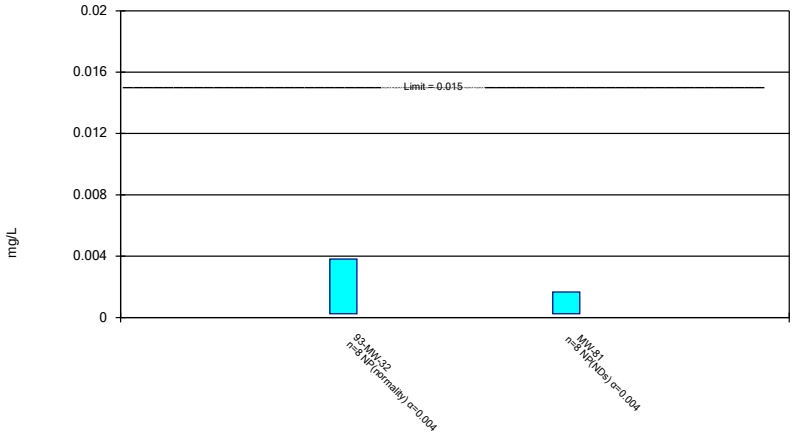


Constituent: Copper Analysis Run 2/17/2025 2:42 PM View: 2024SSN Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

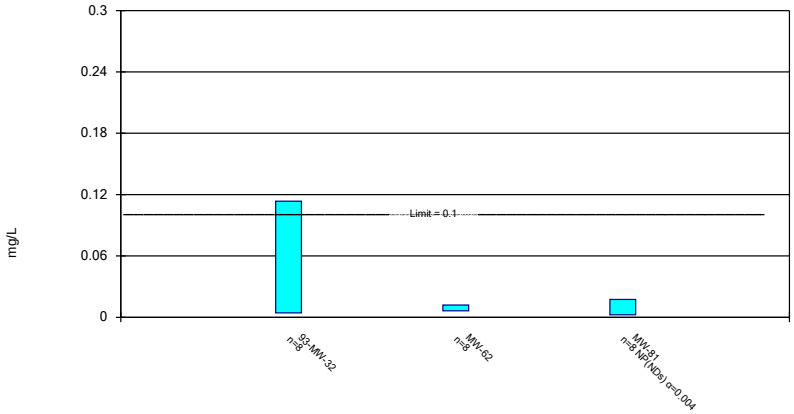


Constituent: Lead Analysis Run 2/17/2025 2:42 PM View: 2024SSN Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.

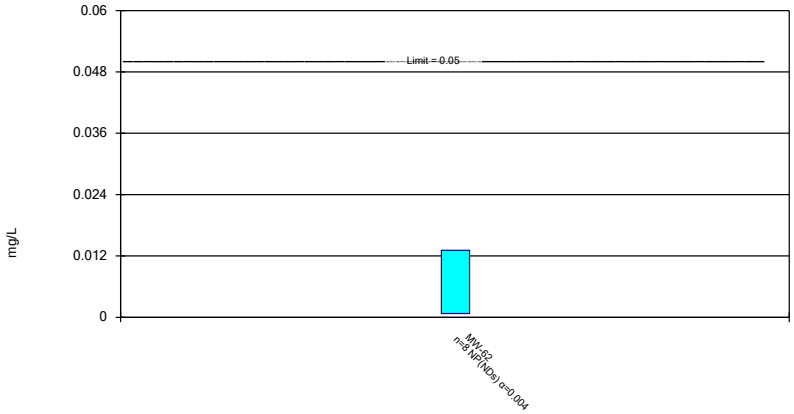


Constituent: Nickel Analysis Run 2/17/2025 2:42 PM View: 2024SSN Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

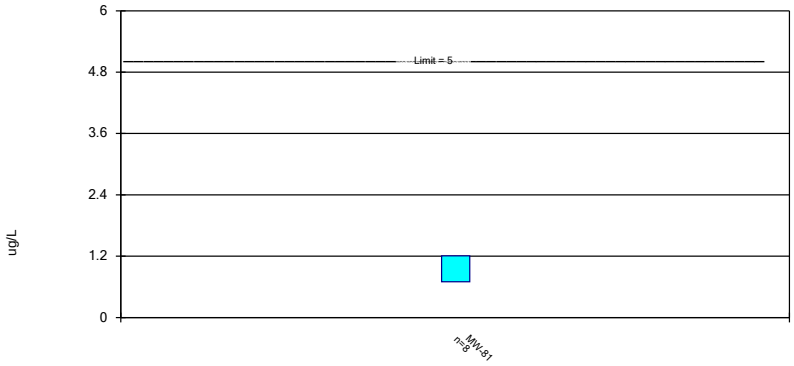


Constituent: Selenium Analysis Run 2/17/2025 2:42 PM View: 2024SSN Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

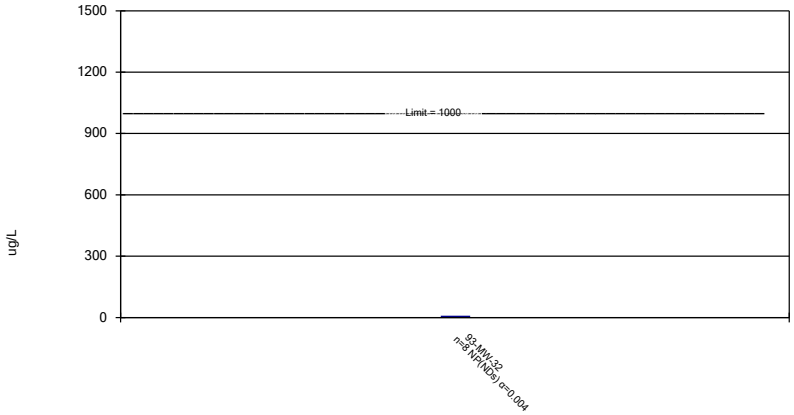


Constituent: Tetrachloroethene Analysis Run 2/17/2025 2:42 PM View: 2024SSN Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

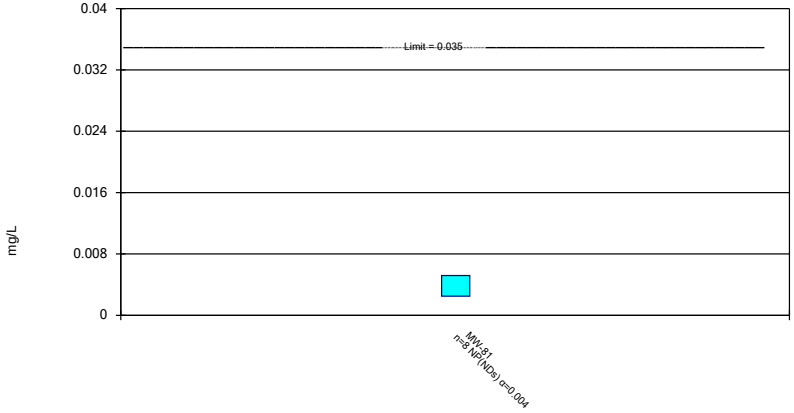


Constituent: Toluene Analysis Run 2/17/2025 2:42 PM View: 2024SSN Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

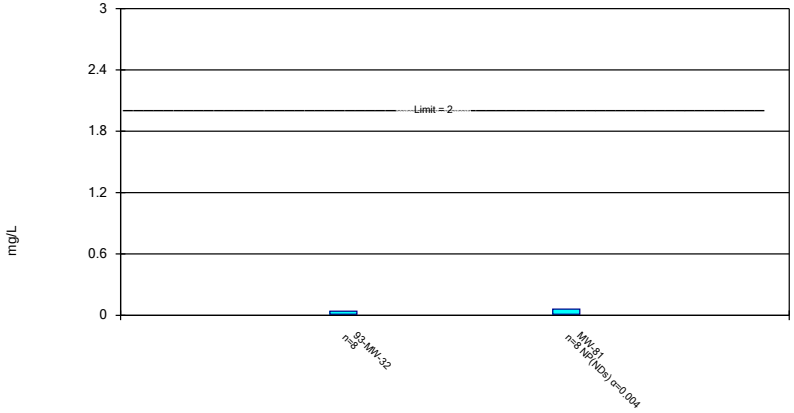


Constituent: Vanadium Analysis Run 2/17/2025 2:42 PM View: 2024SSN Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Zinc Analysis Run 2/17/2025 2:42 PM View: 2024SSN Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AM

Confidence Interval Summary Table and Graphs – AMD Wells Organics and Sulfide

AMD Confidence Interval

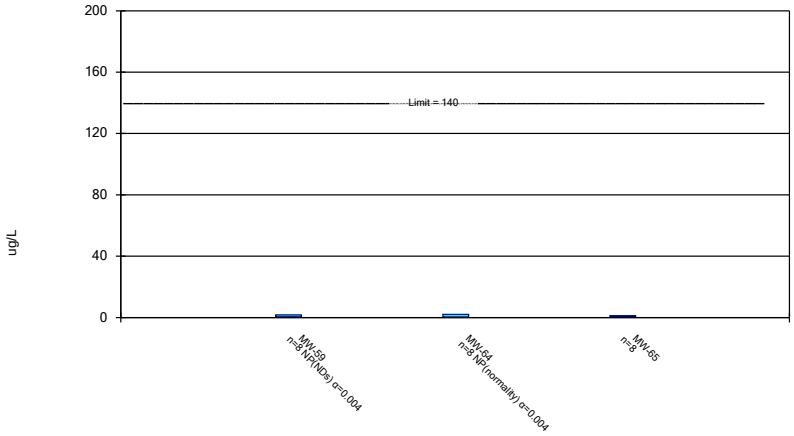
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD Printed 10/18/2024, 5:19 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
1,1-Dichloroethane (ug/L)	MW-59	1.75	0.5	140	No	8	75	No	0.004	NP (NDs)
1,1-Dichloroethane (ug/L)	MW-64	2.07	0.344	140	No	8	37.5	No	0.004	NP (normality)
1,1-Dichloroethane (ug/L)	MW-65	1.213	0.4991	140	No	8	12.5	No	0.01	Param.
2-Methylnaphthalene (ug/L)	04-MW-56	36	5	28	No	4	75	No	0.0625	NP (NDs)
2-Methylnaphthalene (ug/L)	MW-39R	11.2	5	28	No	5	80	No	0.031	NP (NDs)
2-Methylnaphthalene (ug/L)	MW-58	21.3	5	28	No	5	80	No	0.031	NP (NDs)
2-Methylnaphthalene (ug/L)	MW-65	492	5	28	No	5	80	No	0.031	NP (NDs)
Acetone (ug/L)	MW-40	24.4	4.56	6300	No	8	75	No	0.004	NP (NDs)
Acetone (ug/L)	MW-59	11.77	2.798	6300	No	8	25	No	0.01	Param.
Benzene (ug/L)	MW-40	1.177	0.7371	5	No	8	0	No	0.01	Param.
Benzene (ug/L)	MW-59	1.856	0.3235	5	No	8	12.5	No	0.01	Param.
Benzene (ug/L)	MW-65	1.602	0.6519	5	No	8	12.5	No	0.01	Param.
Chloroethane (ug/L)	MW-65	5.218	2.565	2800	No	8	0	No	0.01	Param.
cis-1,2-Dichloroethene (ug/L)	MW-40	6.615	3.314	70	No	8	0	No	0.01	Param.
Naphthalene (ug/L)	MW-40	7.18	2.5	100	No	6	83.33	No	0.0155	NP (NDs)
Sulfide (mg/L)	MW-59	1.14	0.5	1	No	6	83.33	No	0.0155	NP (NDs)
Sulfide (mg/L)	MW-63R	4.92	0.5	1	No	6	83.33	No	0.0155	NP (NDs)
Vinyl chloride (ug/L)	MW-40	0.8211	0.2603	2	No	8	12.5	No	0.01	Param.

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.

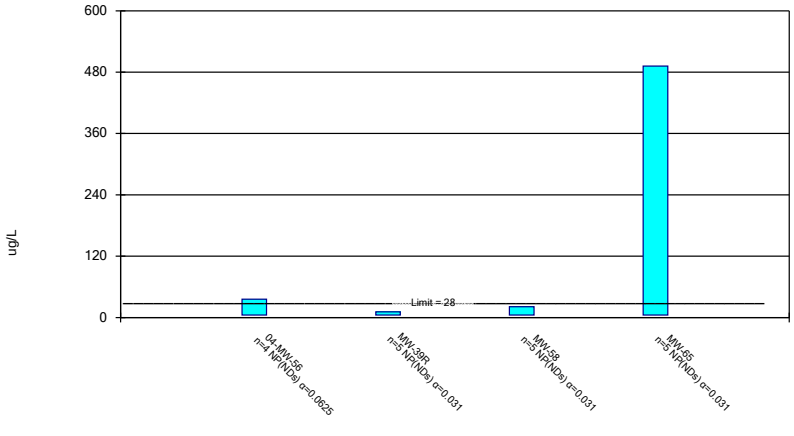


Constituent: 1,1-Dichloroethane Analysis Run 10/18/2024 5:18 PM View: 2024SSN Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

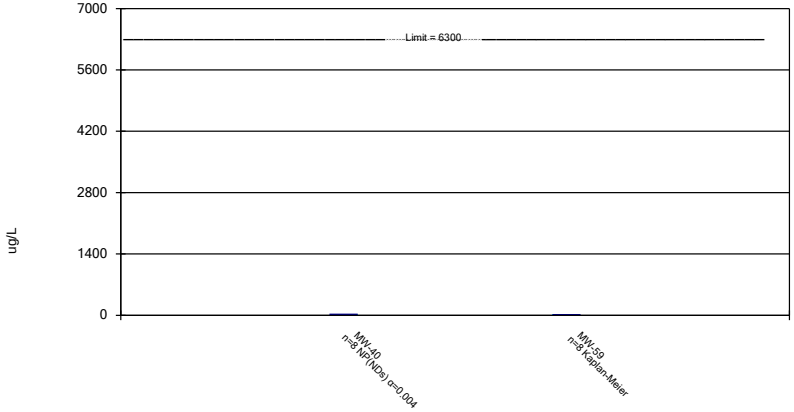


Constituent: 2-Methylnaphthalene Analysis Run 10/18/2024 5:18 PM View: 2024SSN Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.

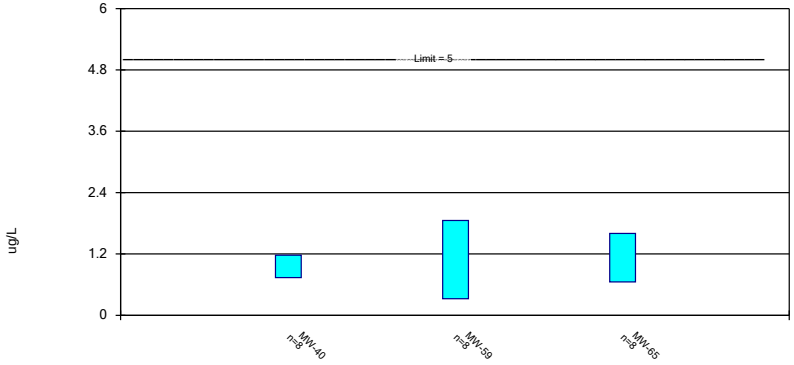


Constituent: Acetone Analysis Run 10/18/2024 5:18 PM View: 2024SSN Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

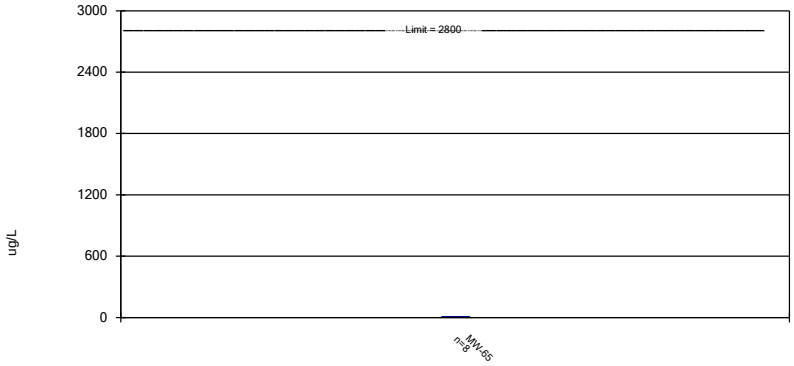


Constituent: Benzene Analysis Run 10/18/2024 5:18 PM View: 2024SSN Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

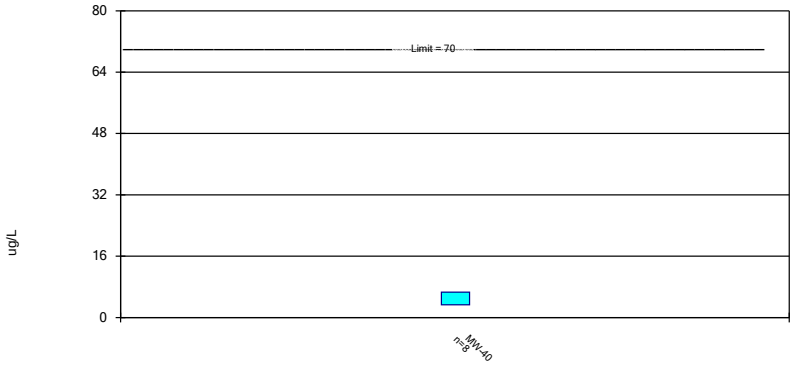


Constituent: Chloroethane Analysis Run 10/18/2024 5:18 PM View: 2024SSN Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

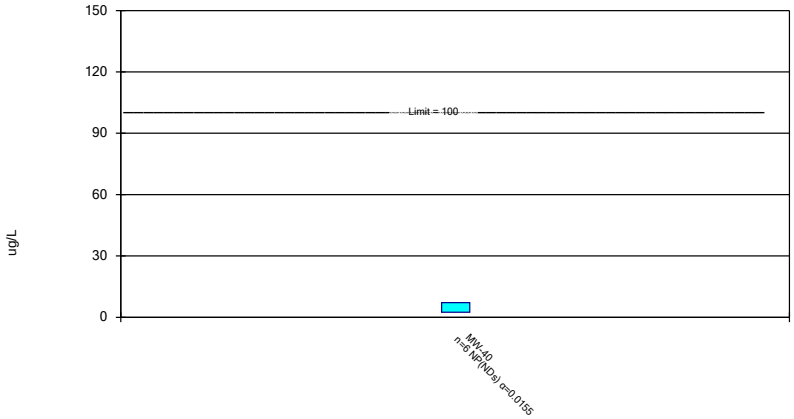


Constituent: cis-1,2-Dichloroethene Analysis Run 10/18/2024 5:18 PM View: 2024SSN Confidence Interva
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

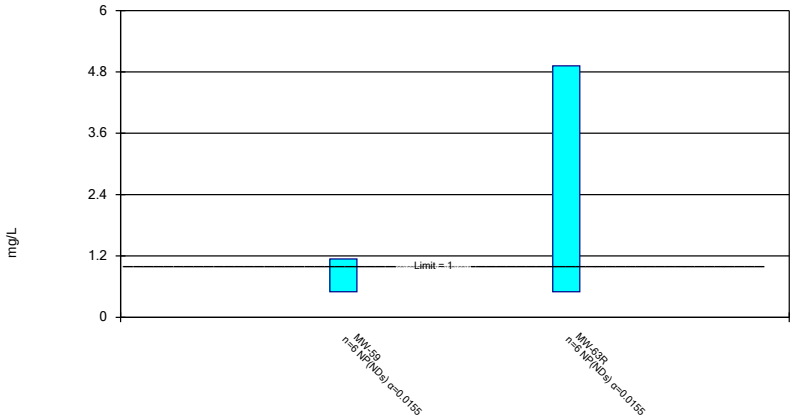


Constituent: Naphthalene Analysis Run 10/18/2024 5:18 PM View: 2024SSN Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

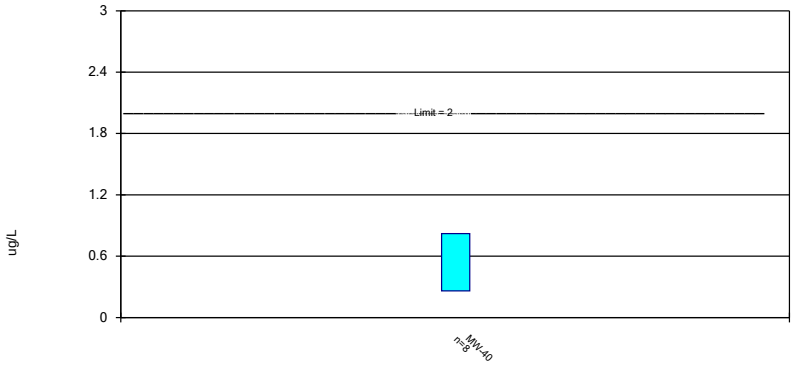


Constituent: Sulfide Analysis Run 10/18/2024 5:18 PM View: 2024SSN Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

Sanitas™ v.10.0.22 Software licensed to SCS Engineers. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Vinyl chloride Analysis Run 10/18/2024 5:18 PM View: 2024SSN Confidence Interval

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC_2024SSN-AMD

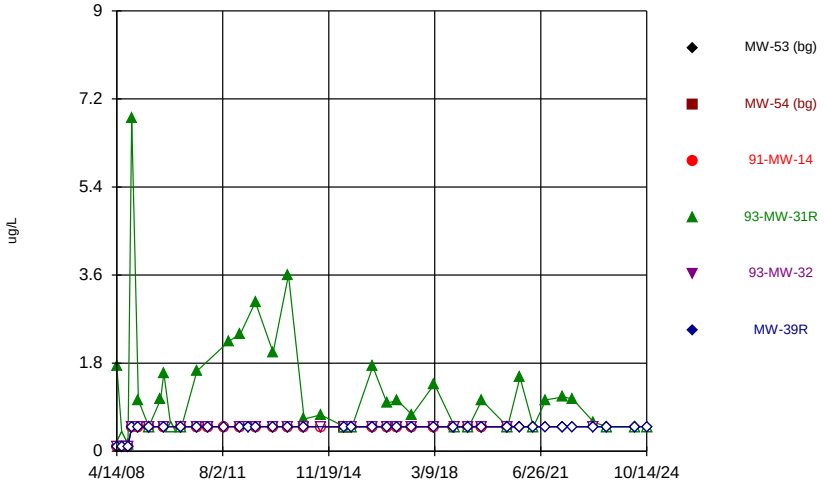
Attachment B

2nd 2024 Statistical Evaluation Output

Time Series Plots

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

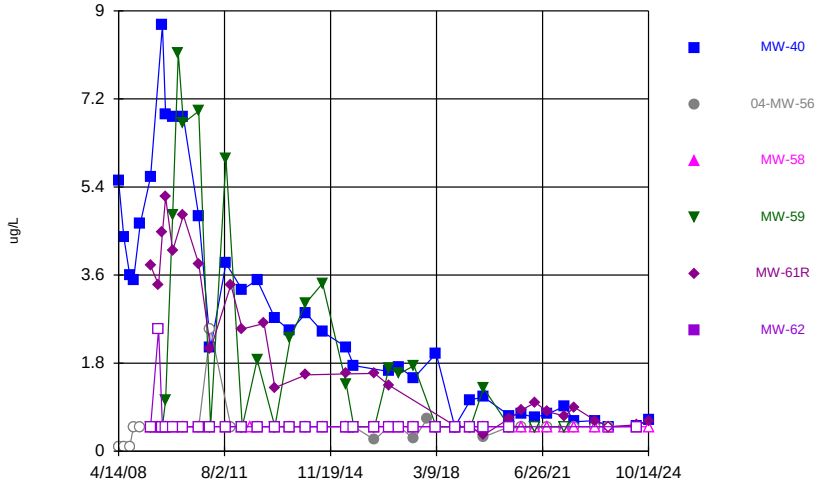
Time Series



Constituent: 1,1-Dichloroethane Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

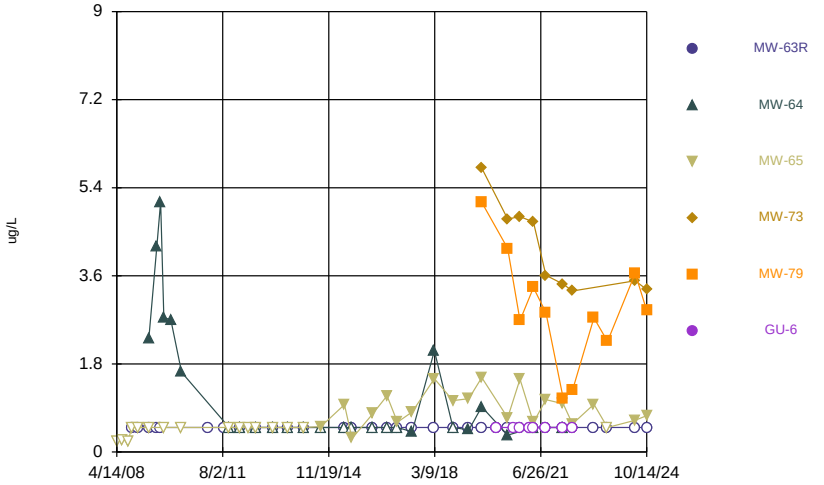
Time Series



Constituent: 1,1-Dichloroethane Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

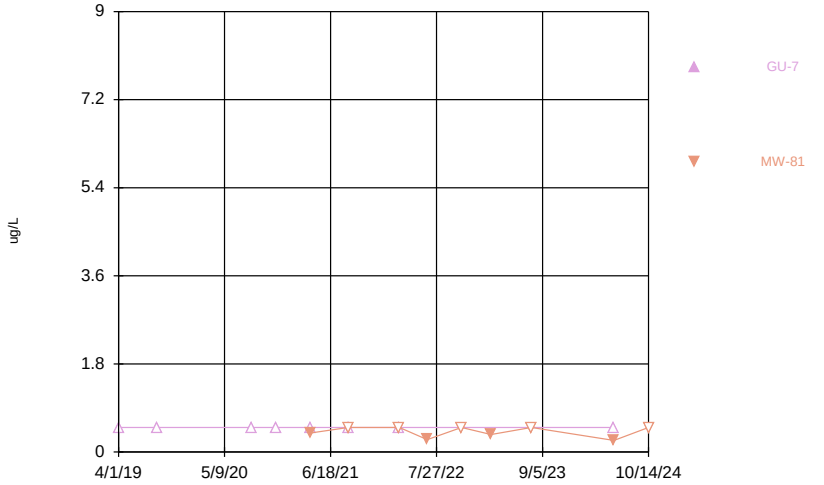
Time Series



Constituent: 1,1-Dichloroethane Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

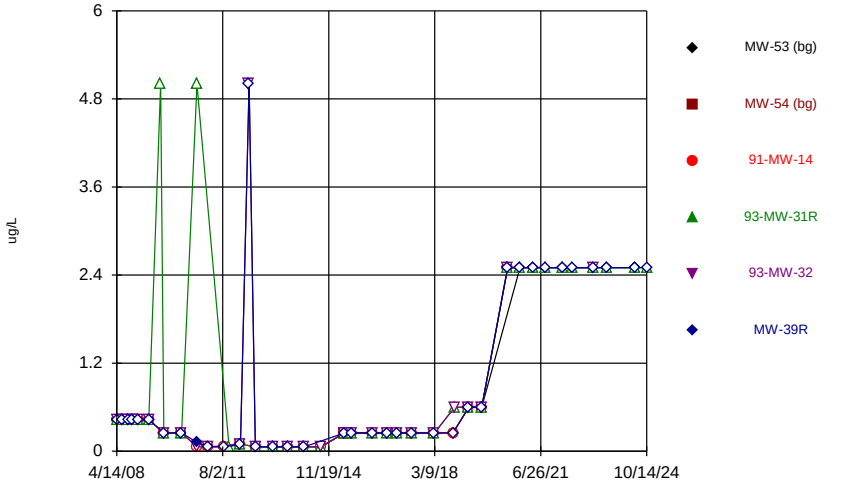
Time Series



Constituent: 1,1-Dichloroethane Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

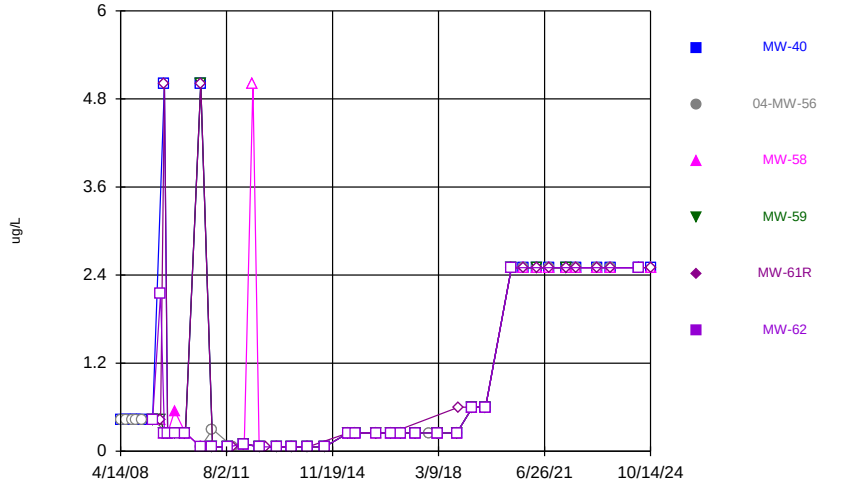
Time Series



Constituent: 1,2-Dibromo-3-chloropropane Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Se
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

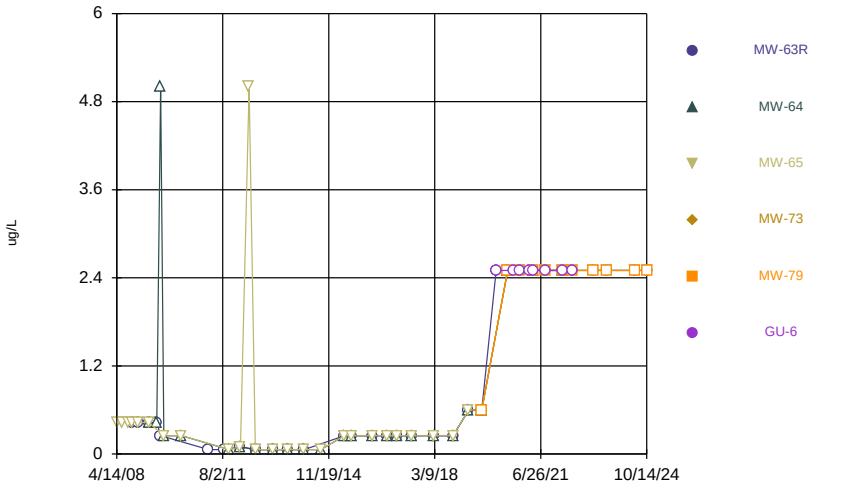
Time Series



Constituent: 1,2-Dibromo-3-chloropropane Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Se
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

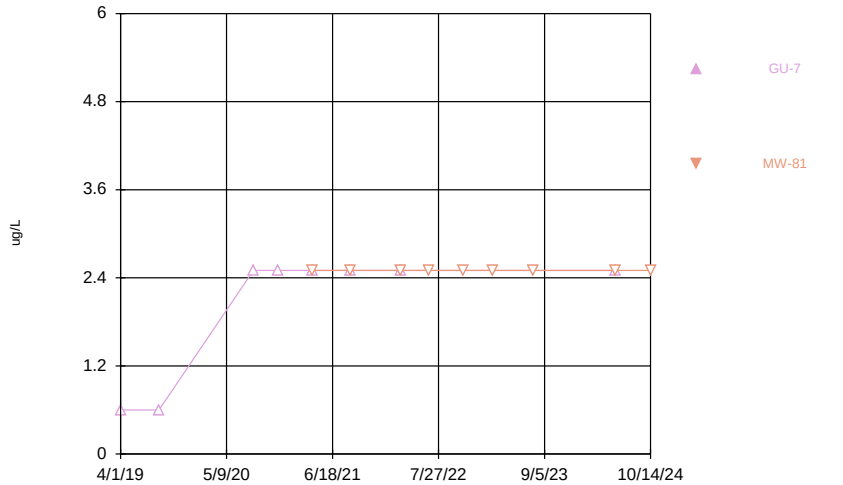
Time Series



Constituent: 1,2-Dibromo-3-chloropropane Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Se
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

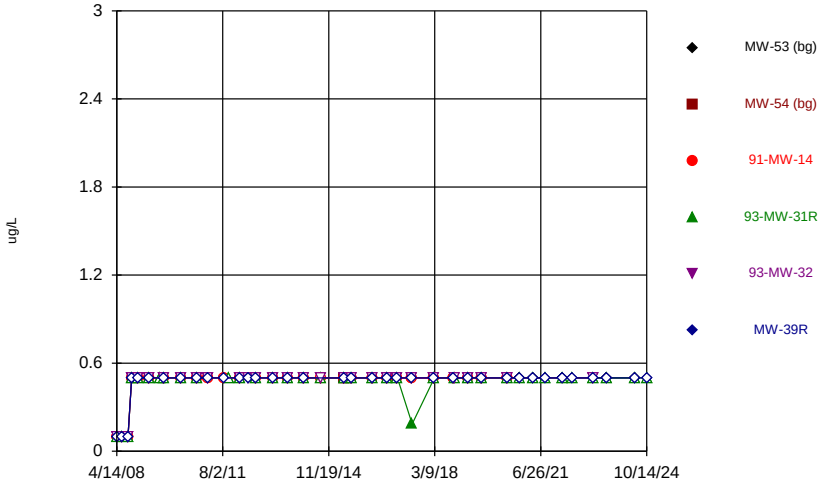
Time Series



Constituent: 1,2-Dibromo-3-chloropropane Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Se
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

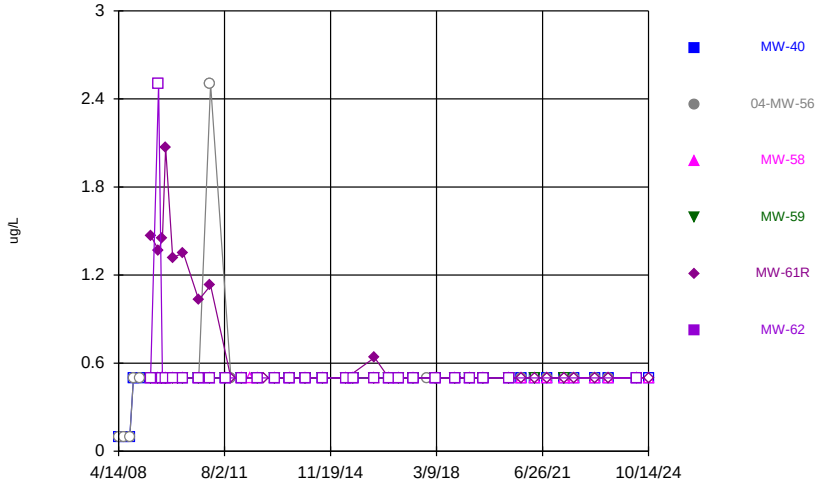
Time Series



Constituent: 1,2-Dichloroethane Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

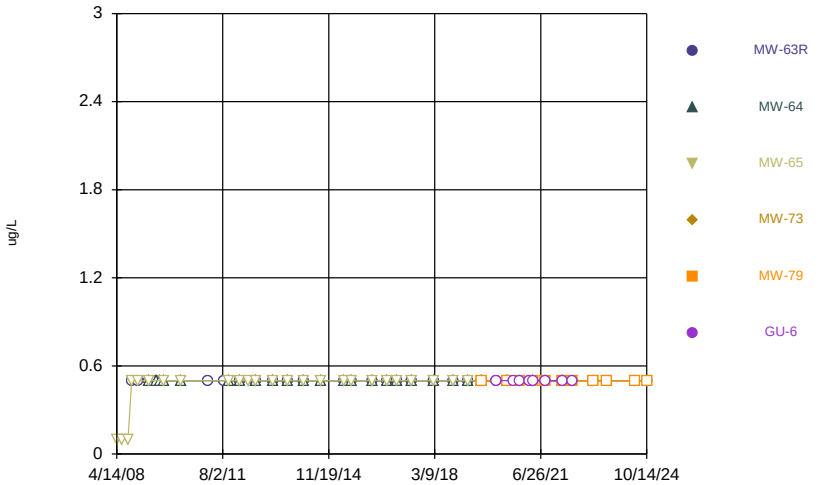
Time Series



Constituent: 1,2-Dichloroethane Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

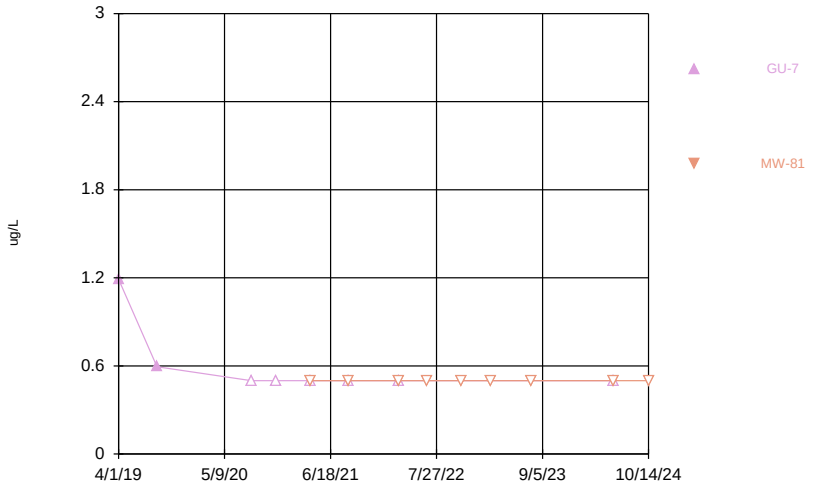
Time Series



Constituent: 1,2-Dichloroethane Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

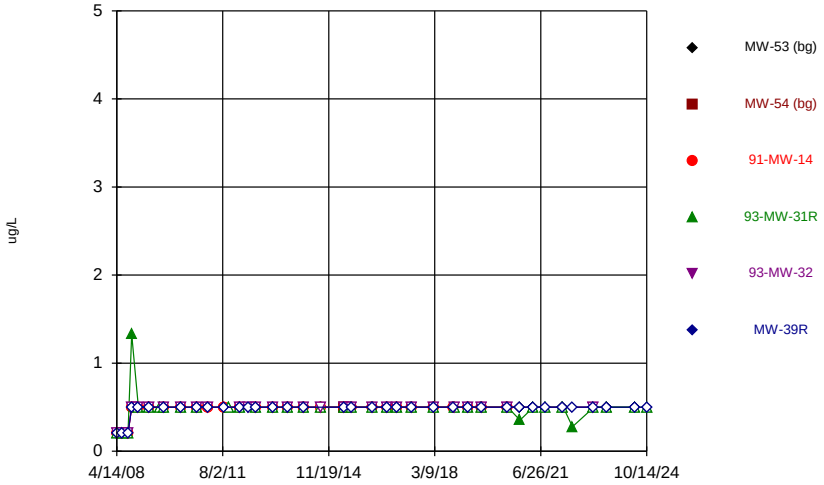
Time Series



Constituent: 1,2-Dichloroethane Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

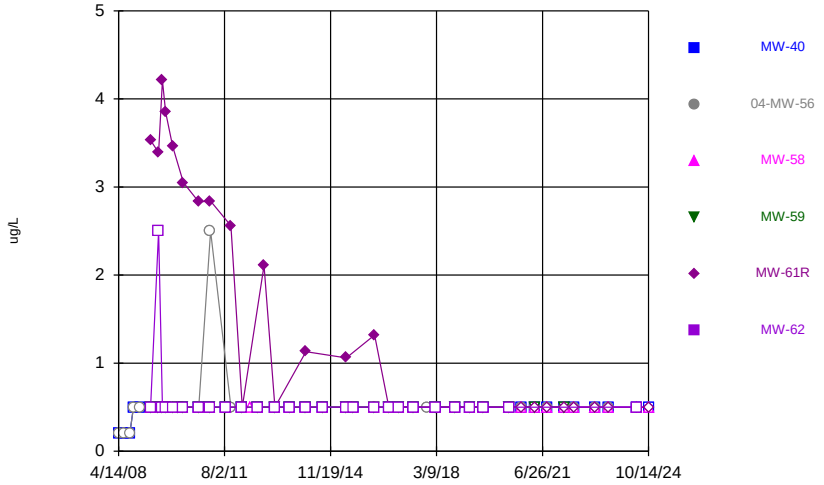
Time Series



Constituent: 1,2-Dichloropropane Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

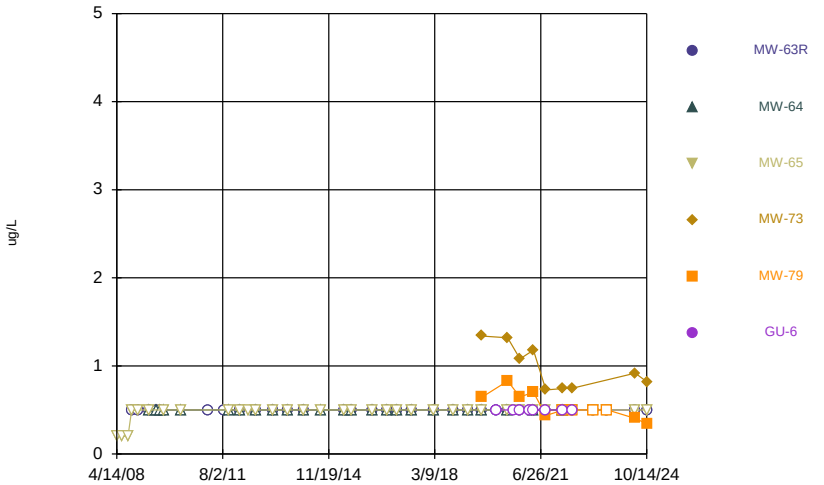
Time Series



Constituent: 1,2-Dichloropropane Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

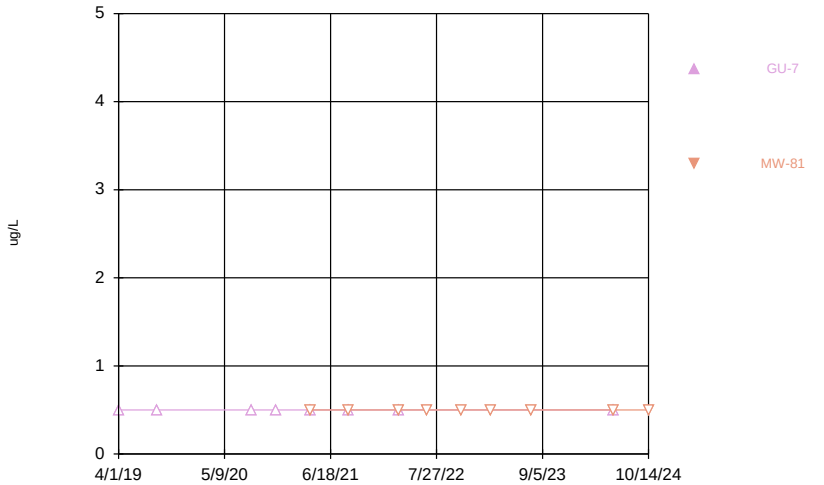
Time Series



Constituent: 1,2-Dichloropropane Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

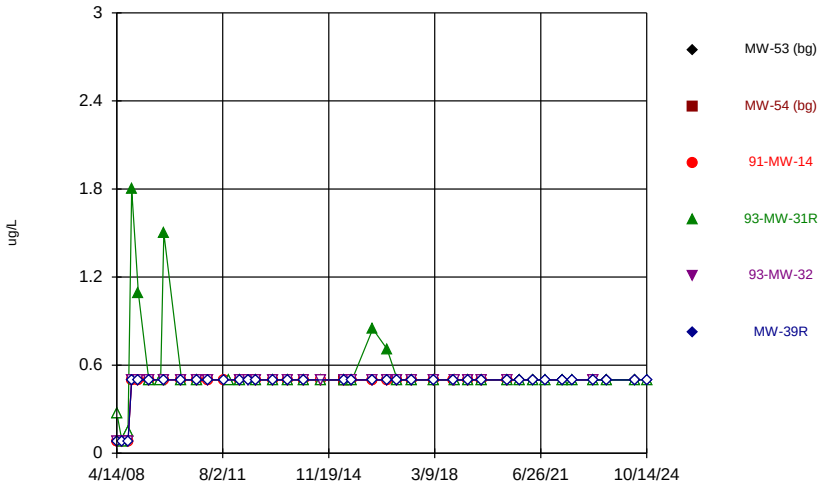
Time Series



Constituent: 1,2-Dichloropropane Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

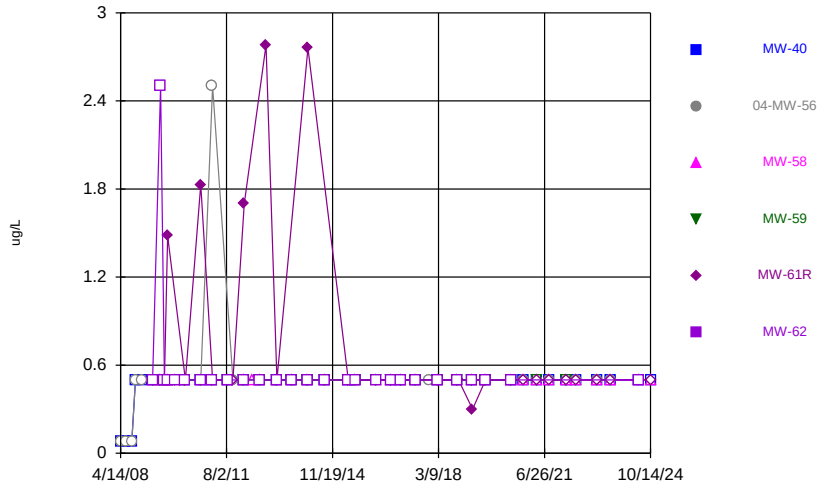
Time Series



Constituent: 1,4-Dichlorobenzene Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

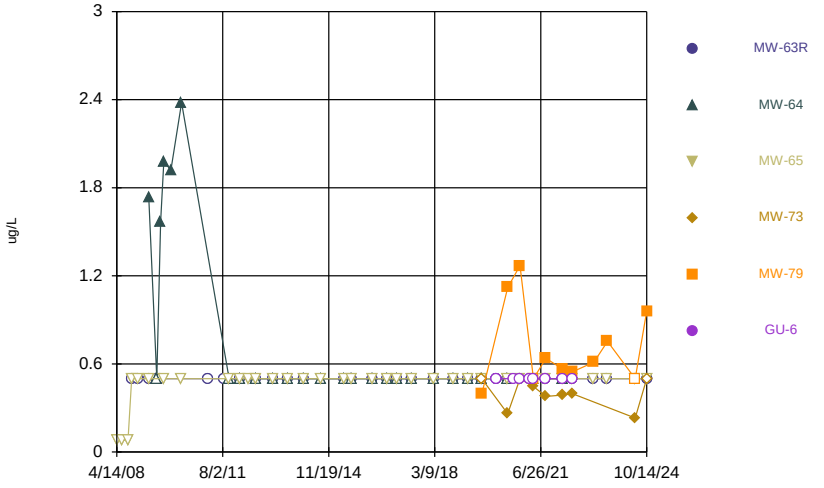
Time Series



Constituent: 1,4-Dichlorobenzene Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

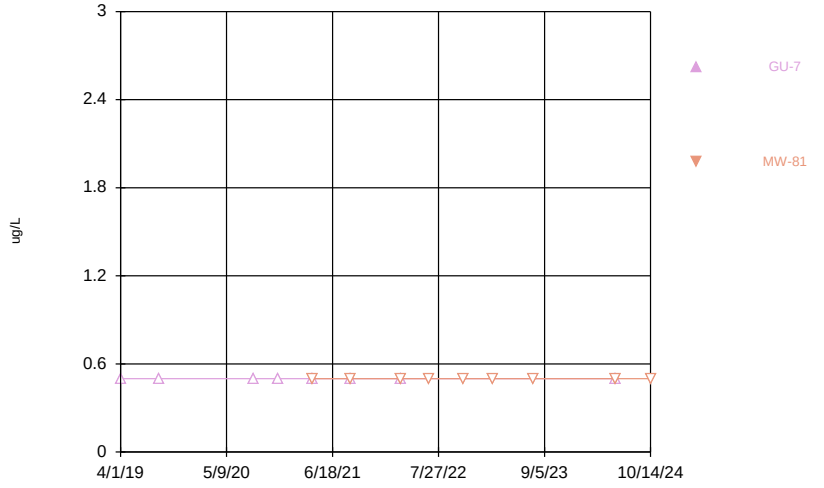
Time Series



Constituent: 1,4-Dichlorobenzene Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

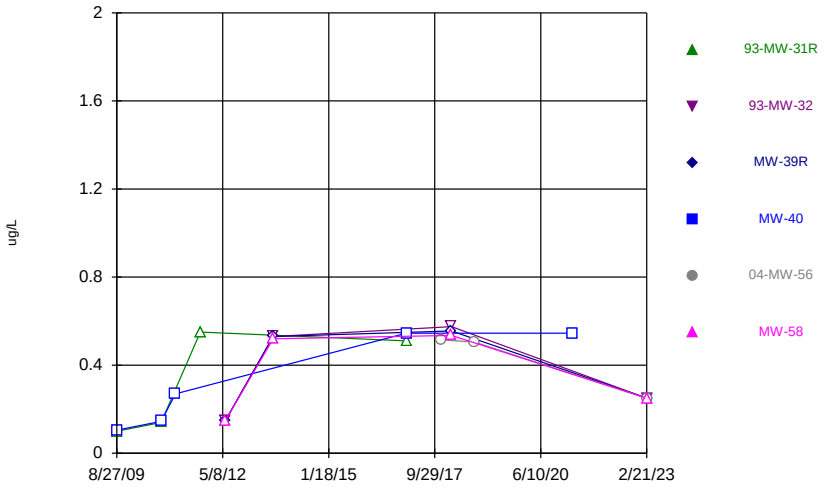
Time Series



Constituent: 1,4-Dichlorobenzene Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

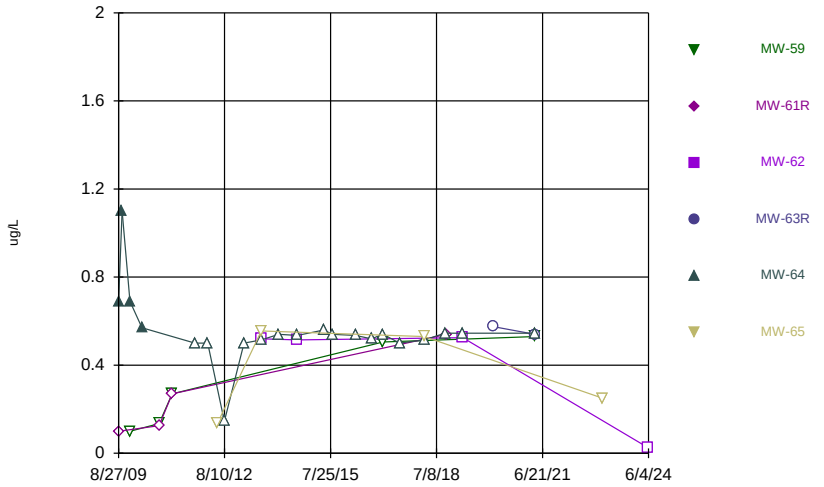
Time Series



Constituent: 2,4,5-TP [Silvex] [2C] Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

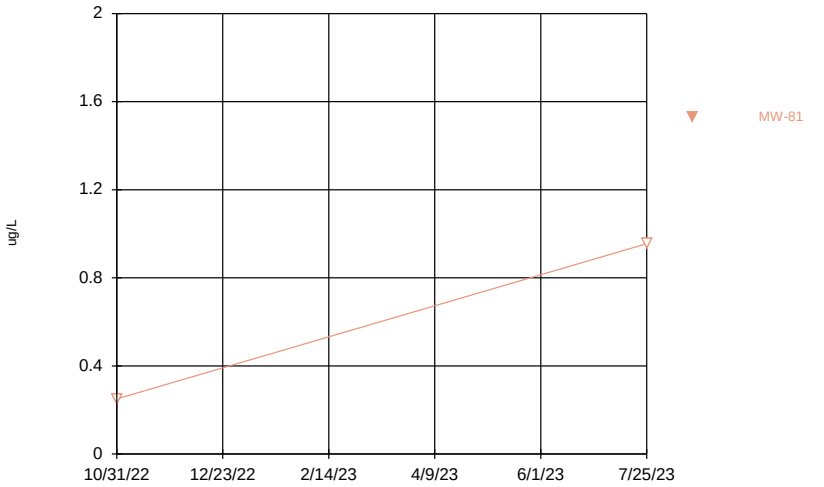
Time Series



Constituent: 2,4,5-TP [Silvex] [2C] Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

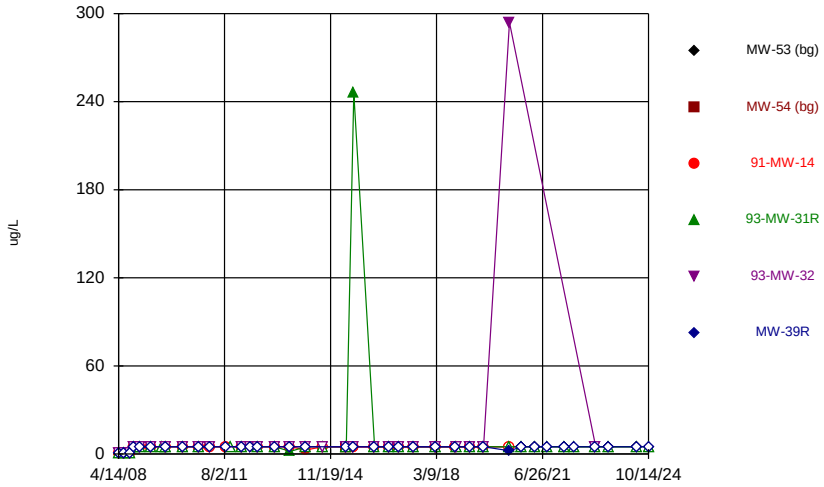
Time Series



Constituent: 2,4,5-TP [Silvex] [2C] Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

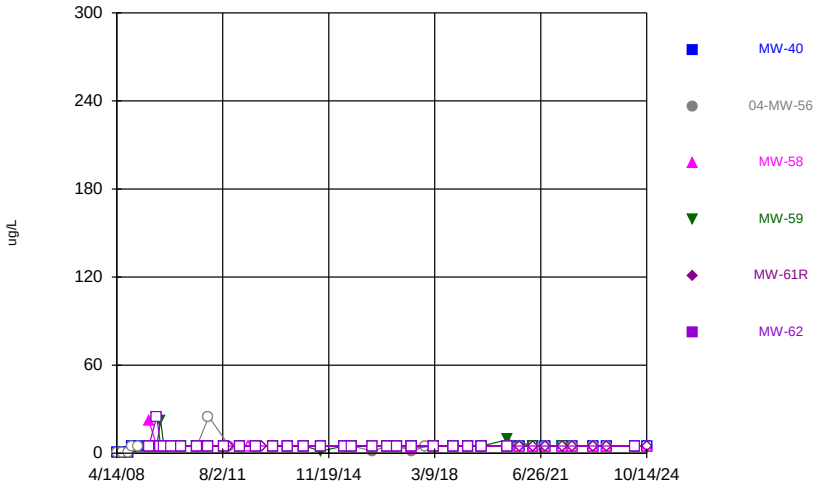
Time Series



Constituent: 2-Butanone Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

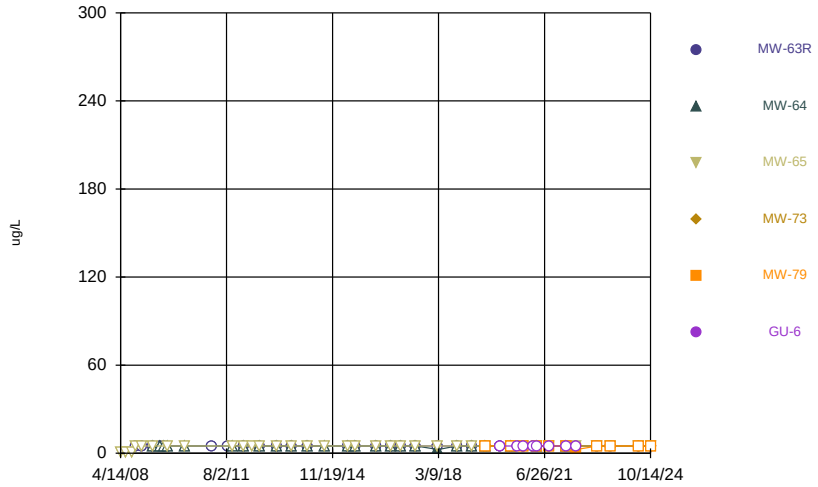
Time Series



Constituent: 2-Butanone Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

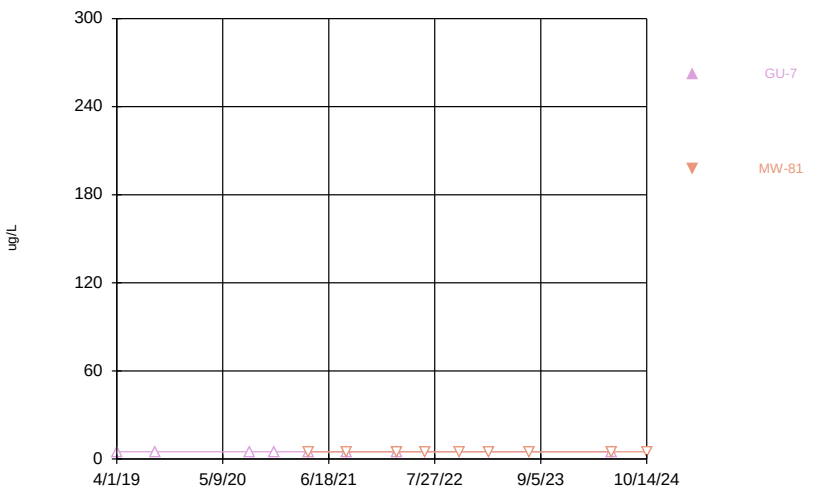
Time Series



Constituent: 2-Butanone Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

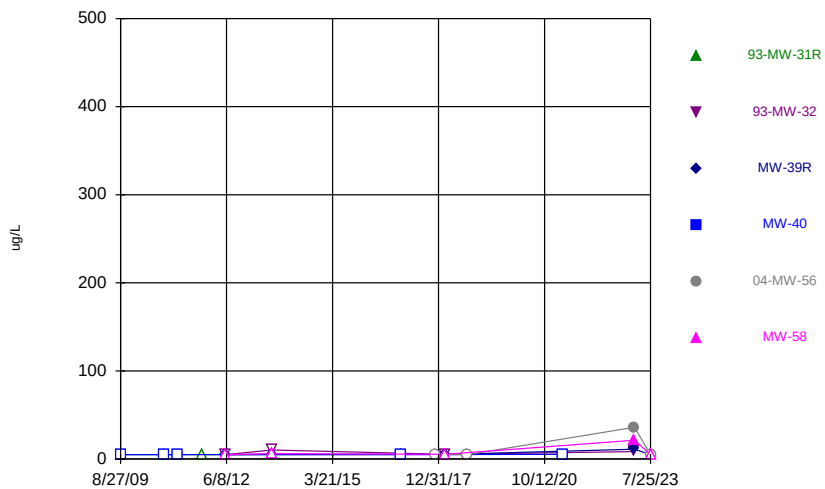
Time Series



Constituent: 2-Butanone Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

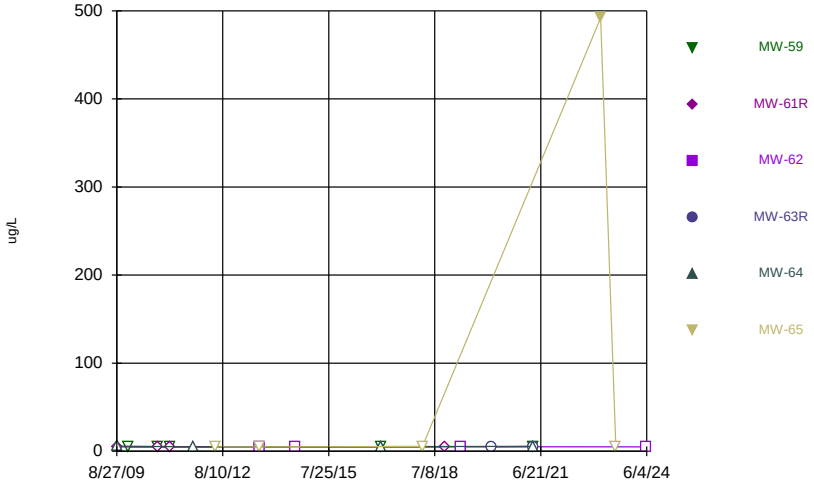
Time Series



Constituent: 2-Methylnaphthalene Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

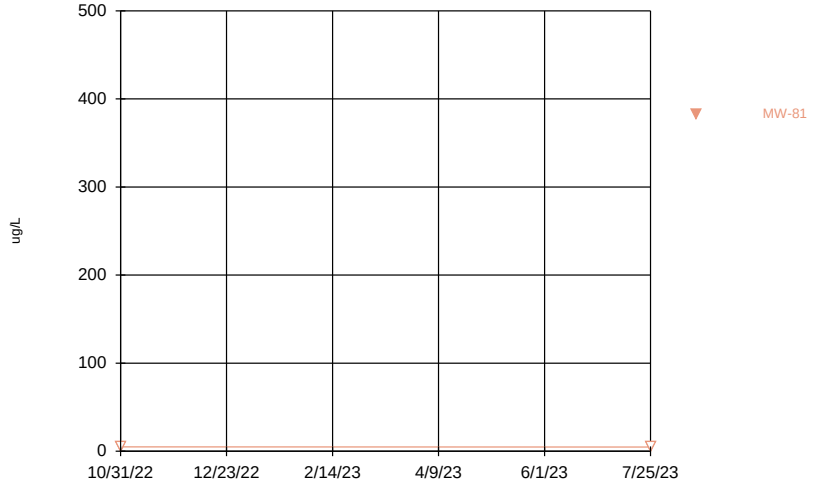
Time Series



Constituent: 2-Methylnaphthalene Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

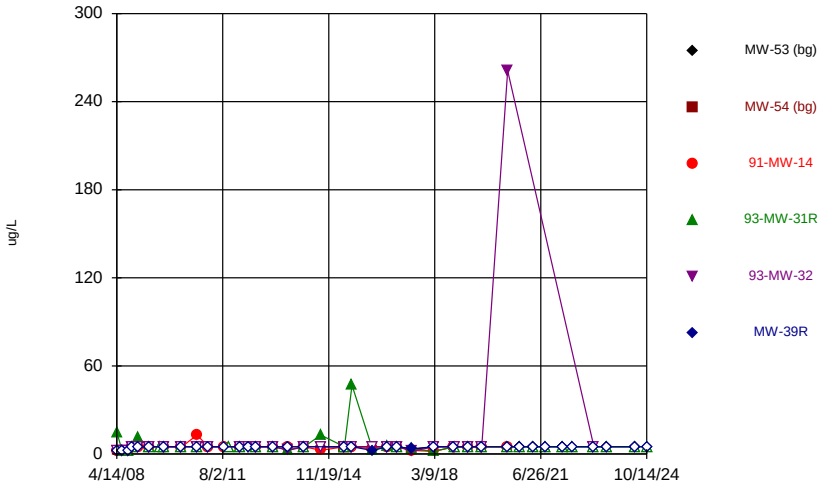
Time Series



Constituent: 2-Methylnaphthalene Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

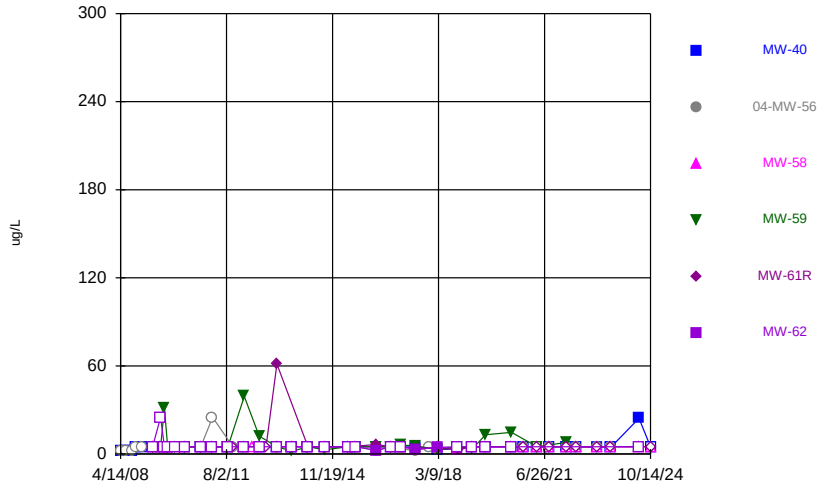
Time Series



Constituent: Acetone Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

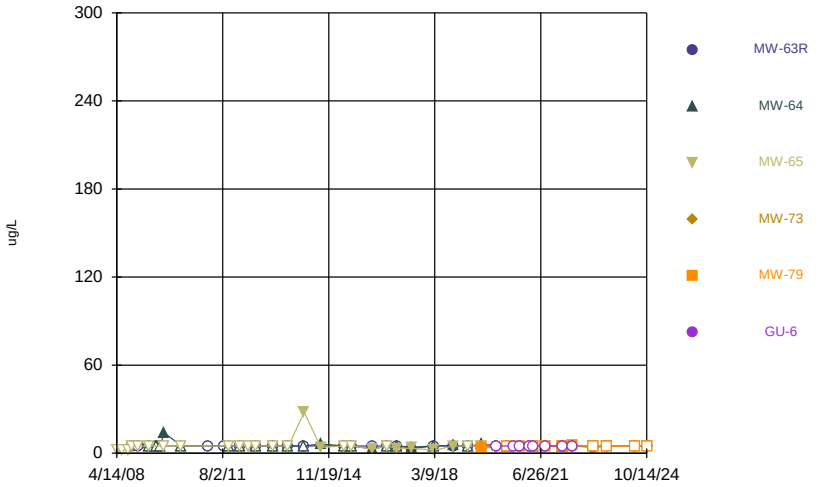
Time Series



Constituent: Acetone Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

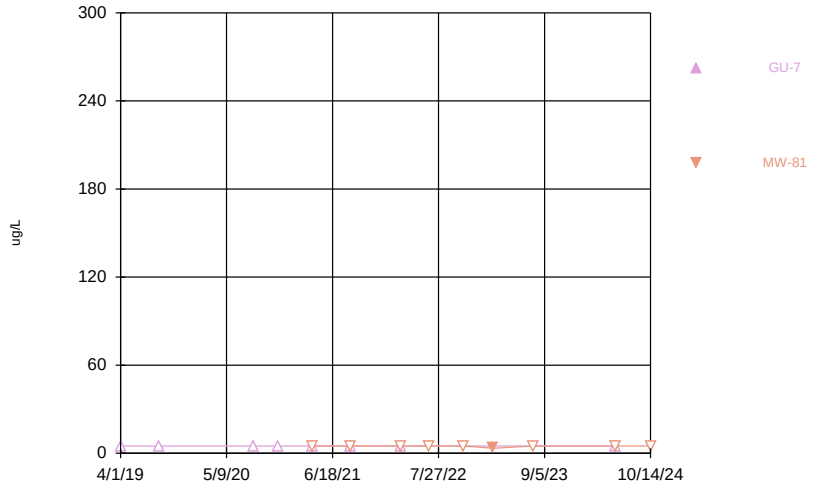
Time Series



Constituent: Acetone Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

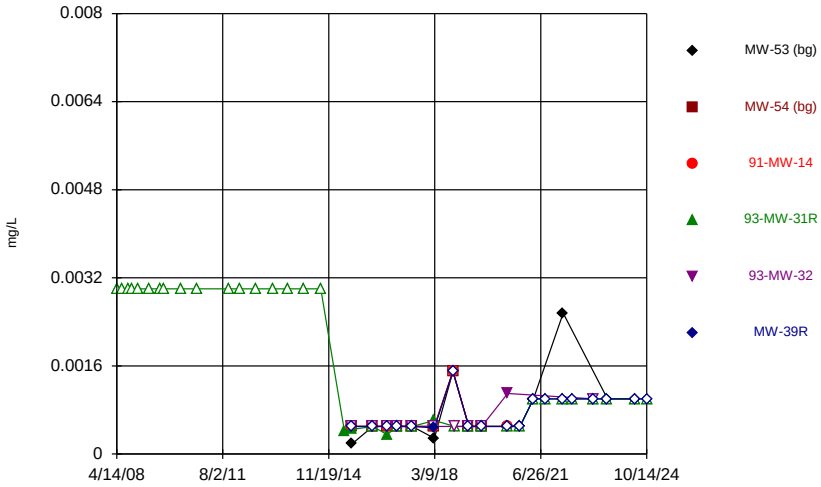
Time Series



Constituent: Acetone Analysis Run 2/18/2025 12:39 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

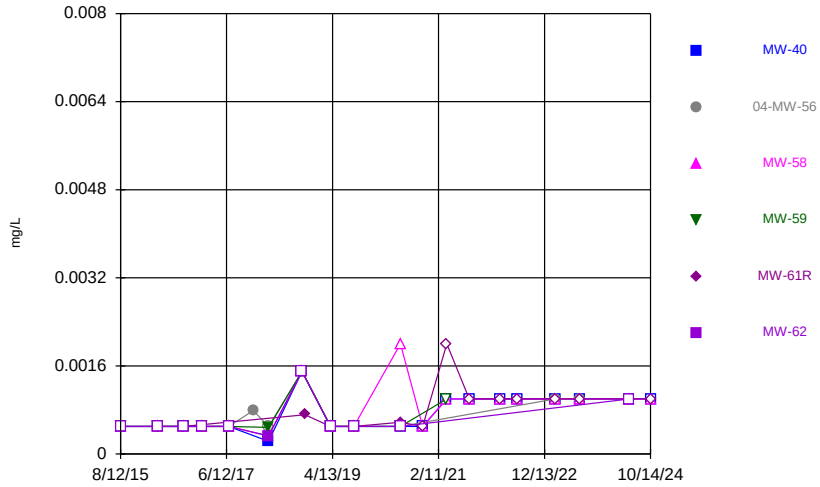
Time Series



Constituent: Antimony Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

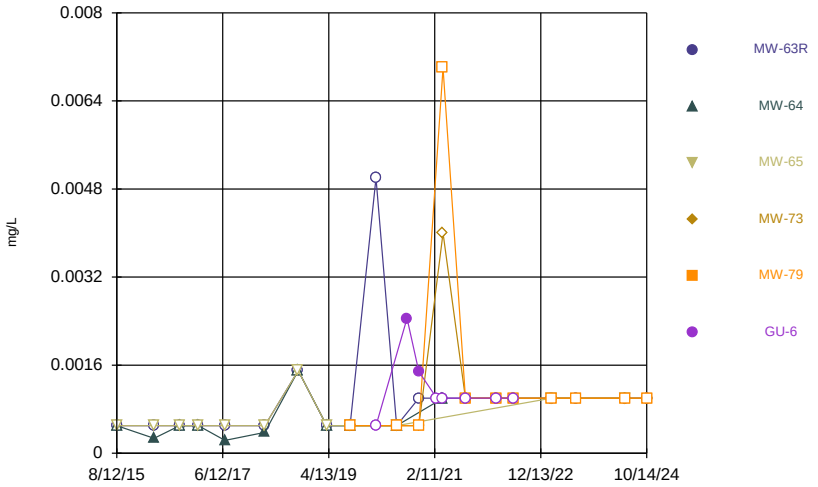
Time Series



Constituent: Antimony Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

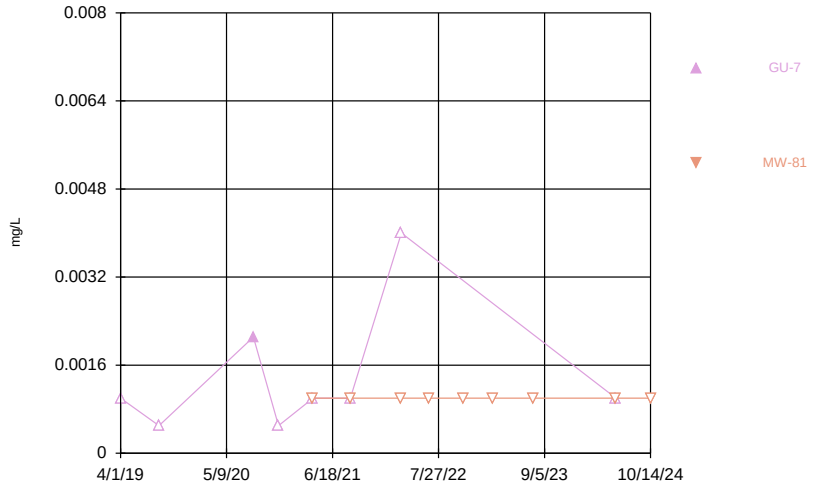
Time Series



Constituent: Antimony Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

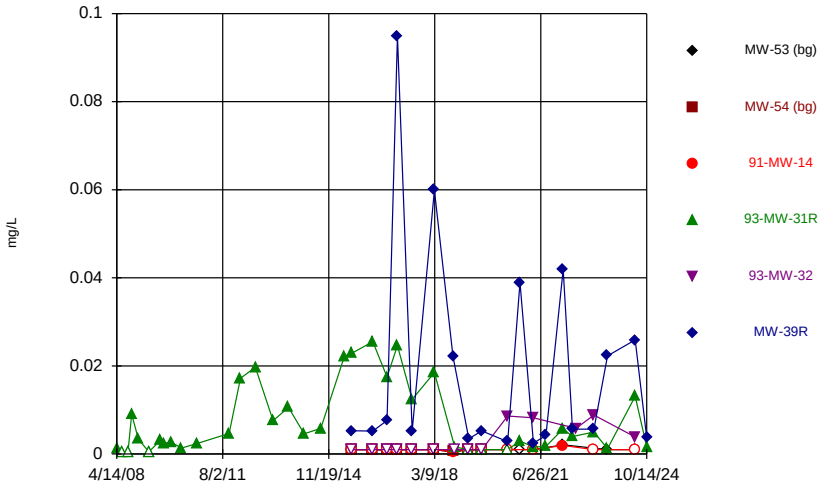
Time Series



Constituent: Antimony Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

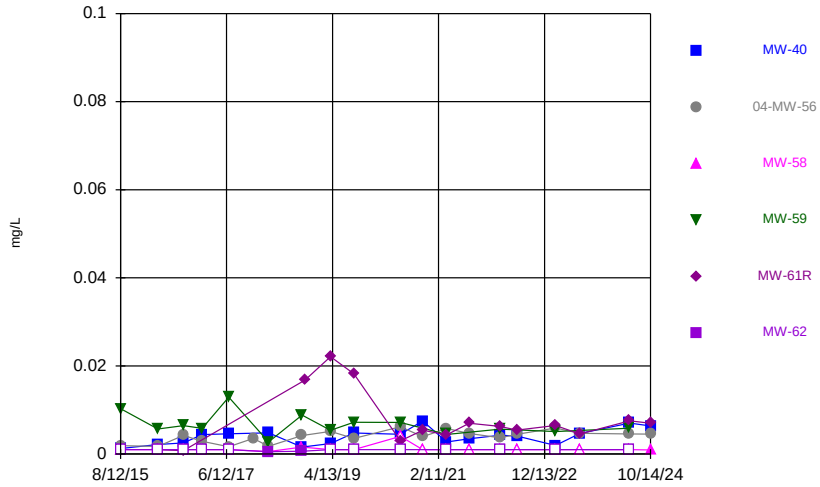
Time Series



Constituent: Arsenic Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

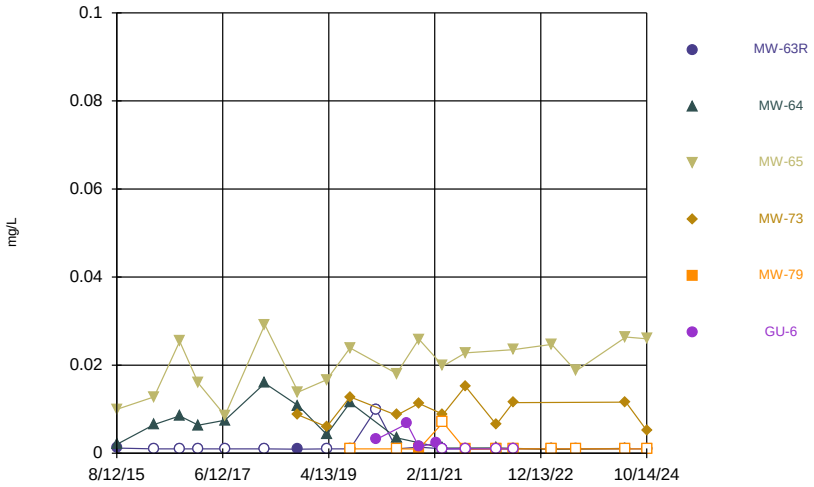
Time Series



Constituent: Arsenic Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

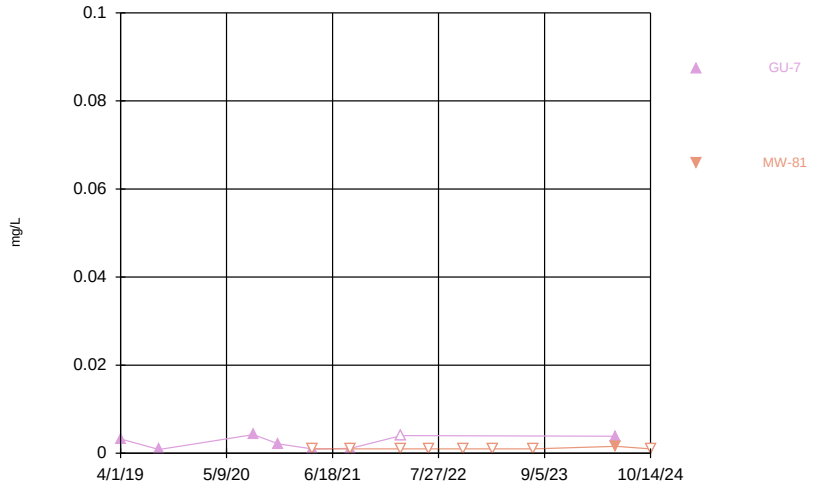
Time Series



Constituent: Arsenic Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

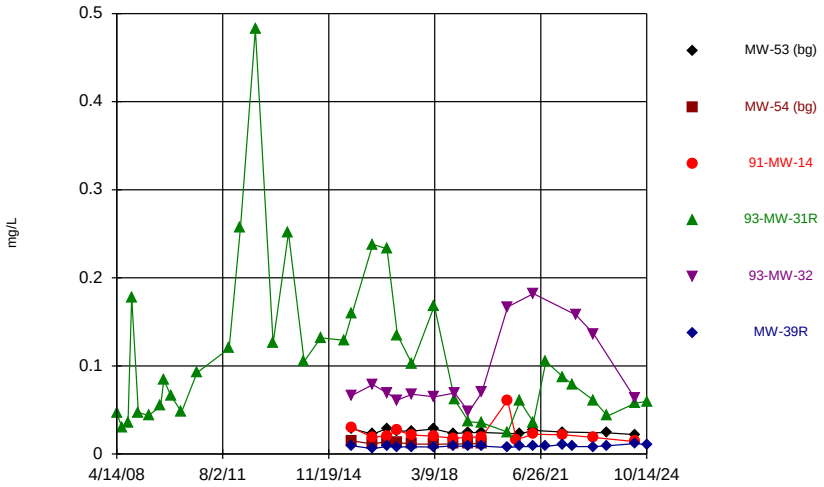
Time Series



Constituent: Arsenic Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

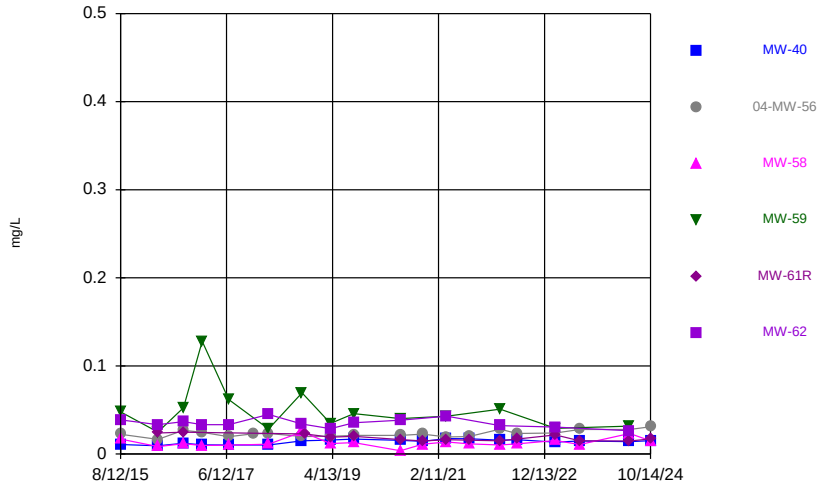
Time Series



Constituent: Barium Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

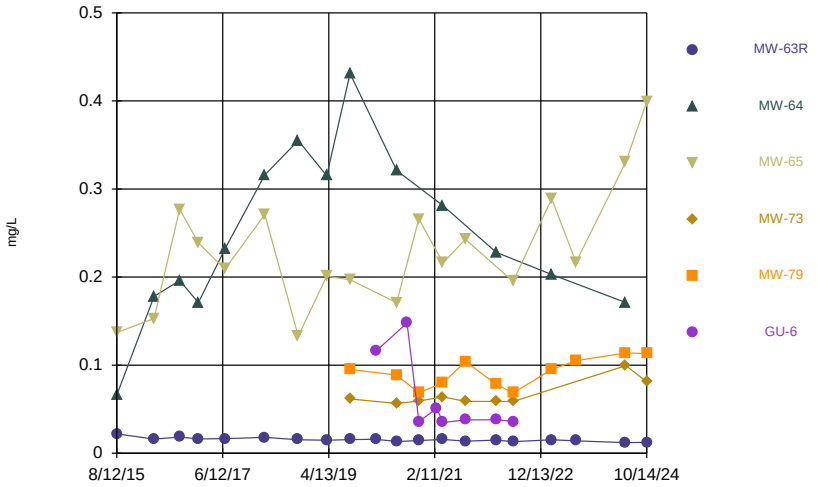
Time Series



Constituent: Barium Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

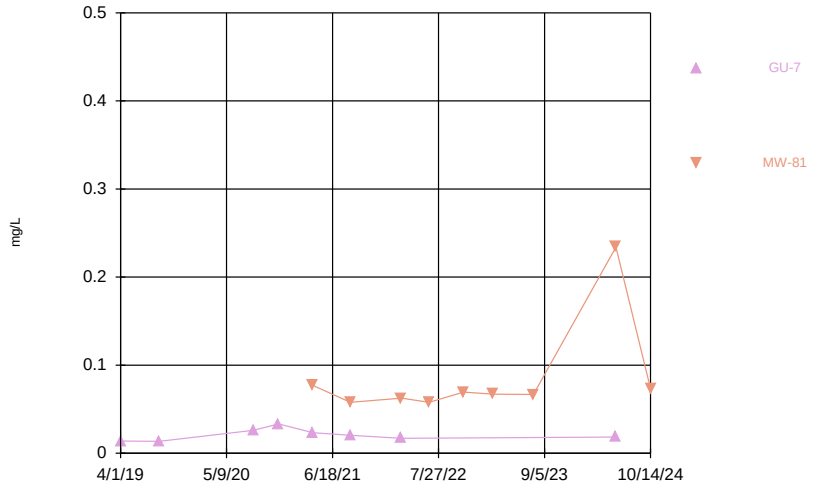
Time Series



Constituent: Barium Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

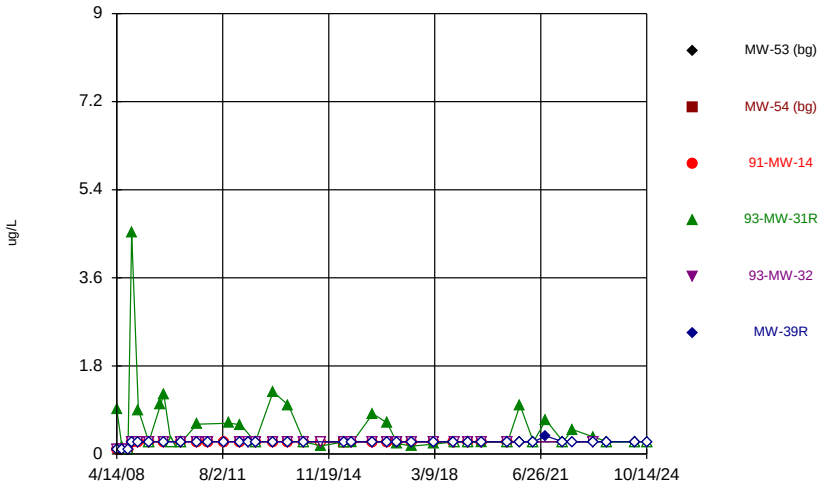
Time Series



Constituent: Barium Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

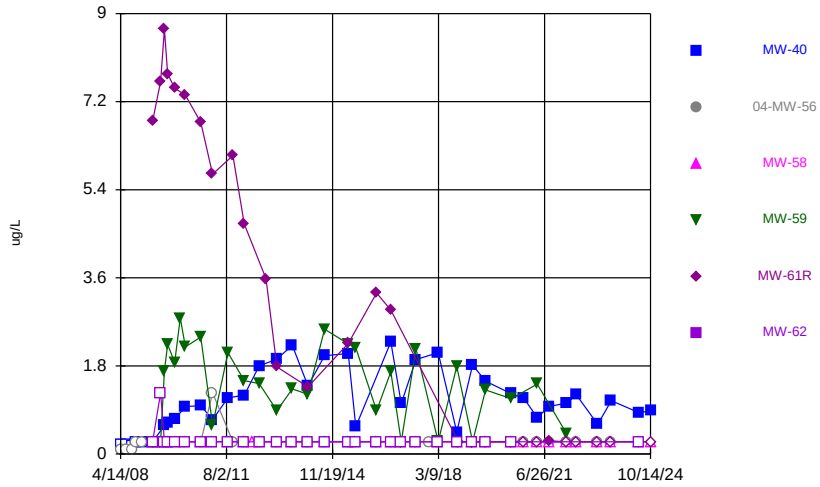
Time Series



Constituent: Benzene Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

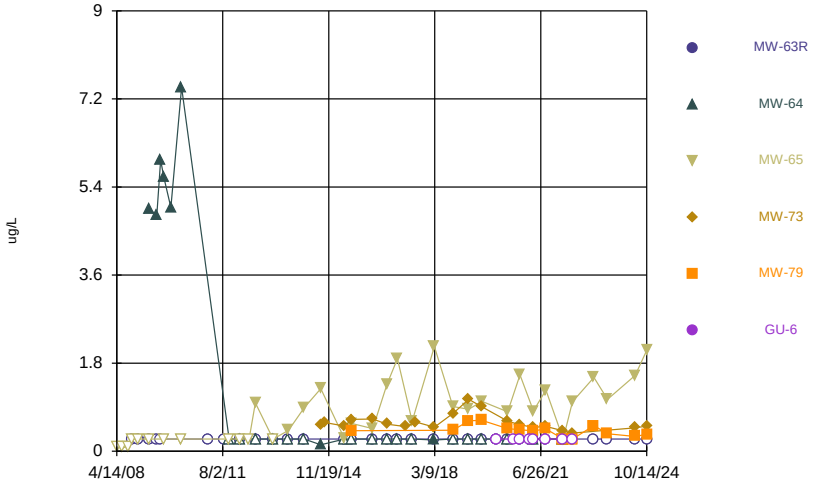
Time Series



Constituent: Benzene Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

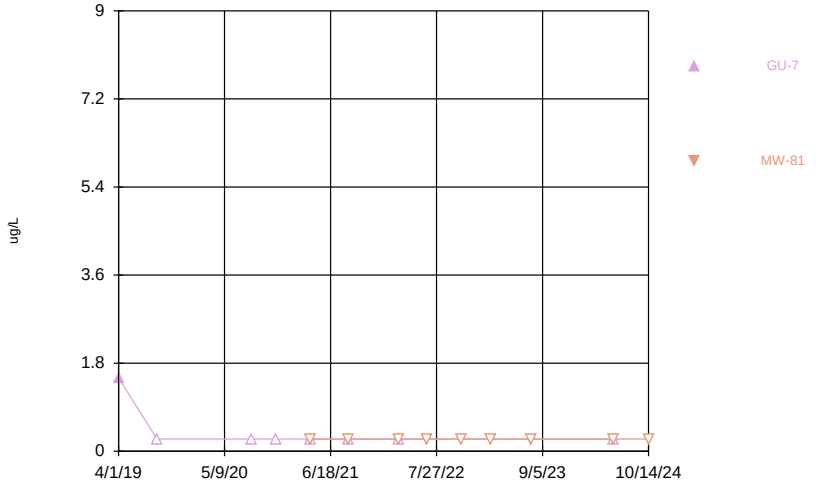
Time Series



Constituent: Benzene Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

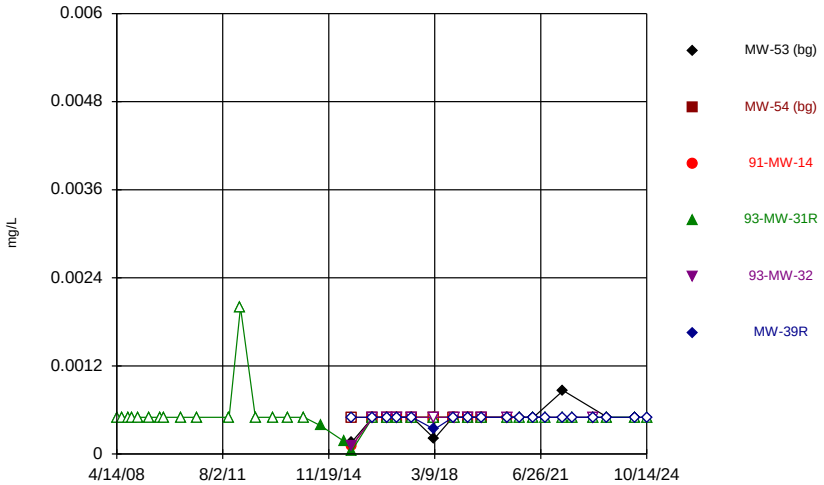
Time Series



Constituent: Benzene Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

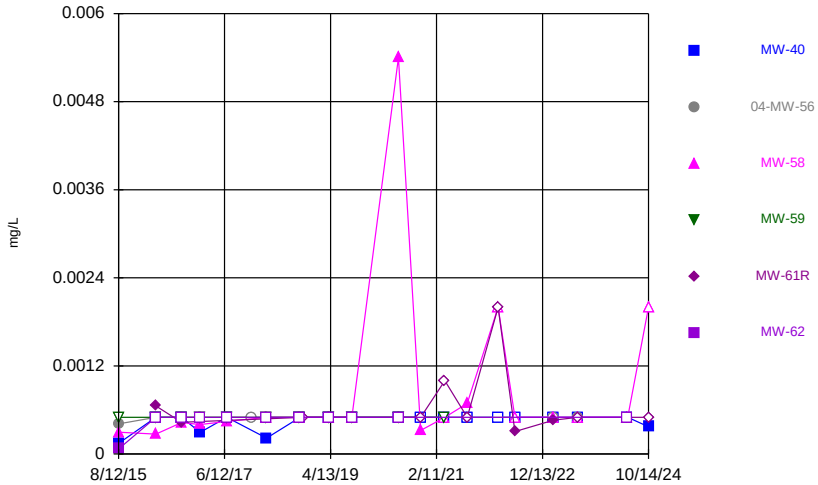
Time Series



Constituent: Beryllium Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

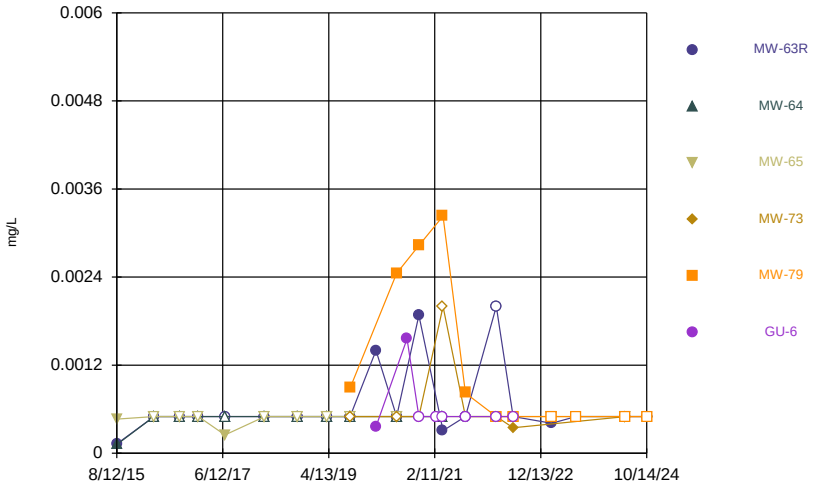
Time Series



Constituent: Beryllium Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

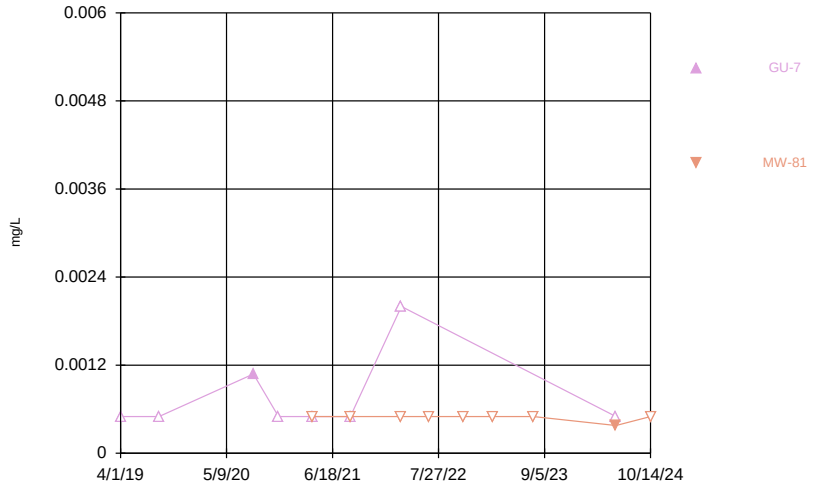
Time Series



Constituent: Beryllium Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

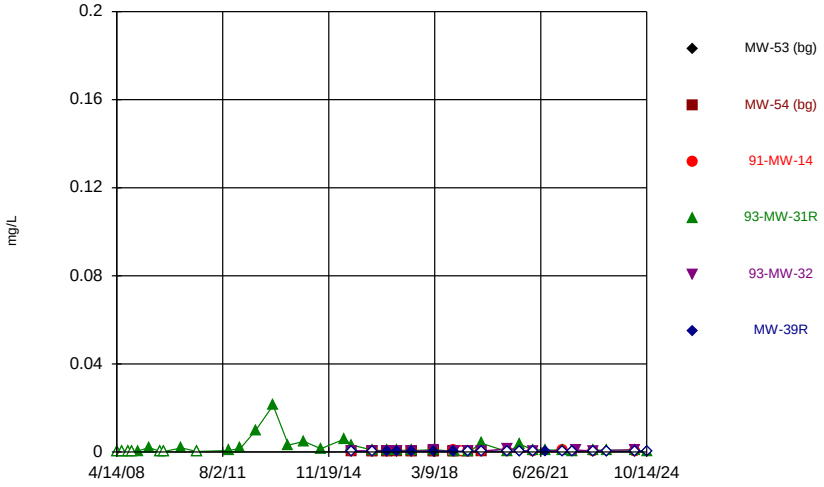
Time Series



Constituent: Beryllium Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

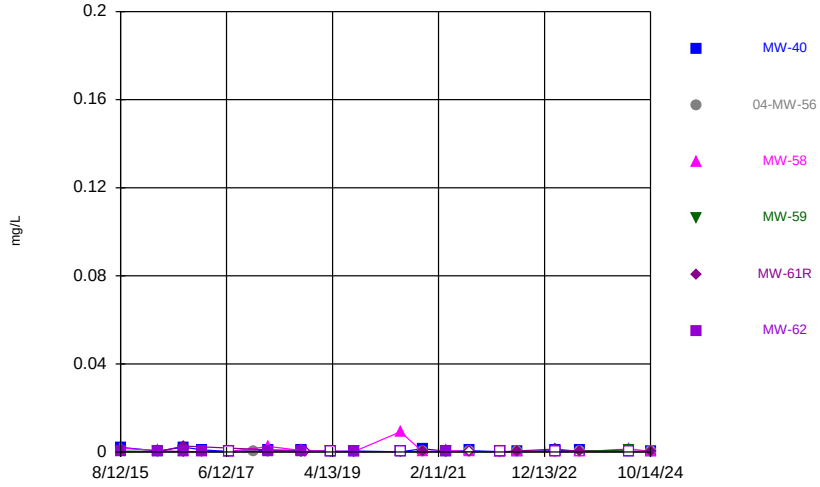
Time Series



Constituent: Cadmium Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

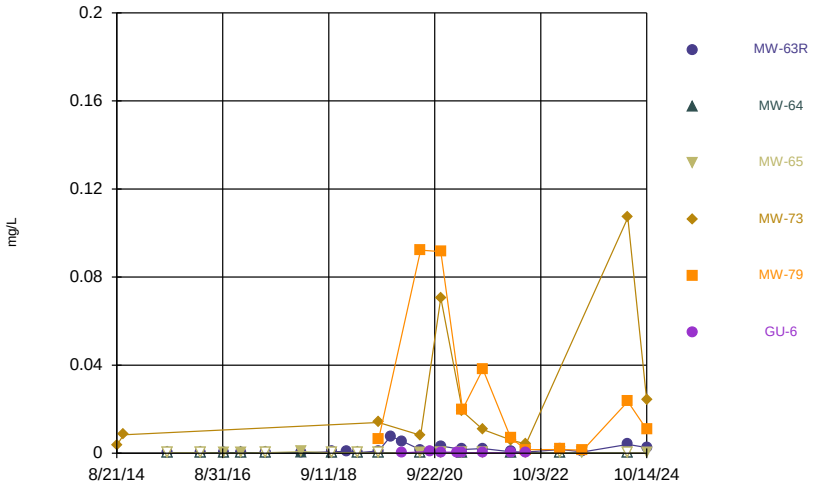
Time Series



Constituent: Cadmium Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

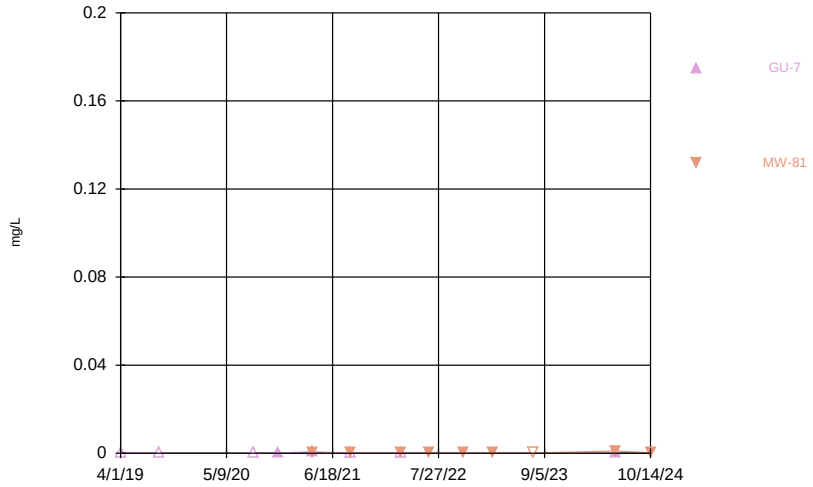
Time Series



Constituent: Cadmium Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

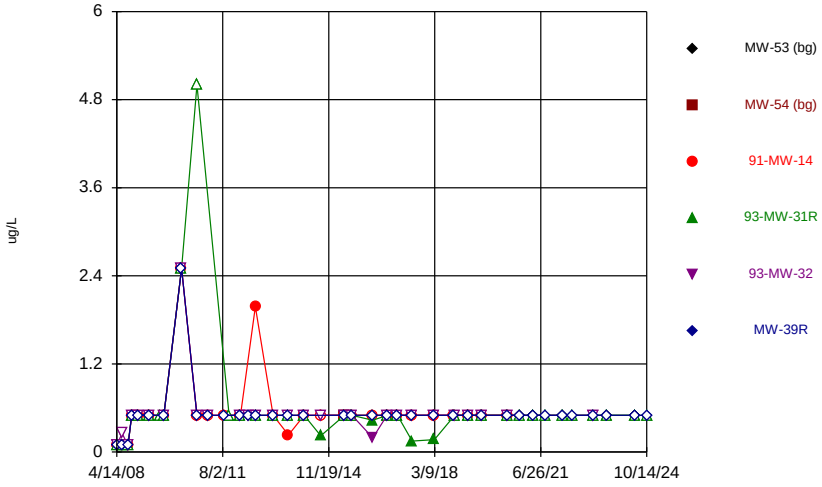
Time Series



Constituent: Cadmium Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

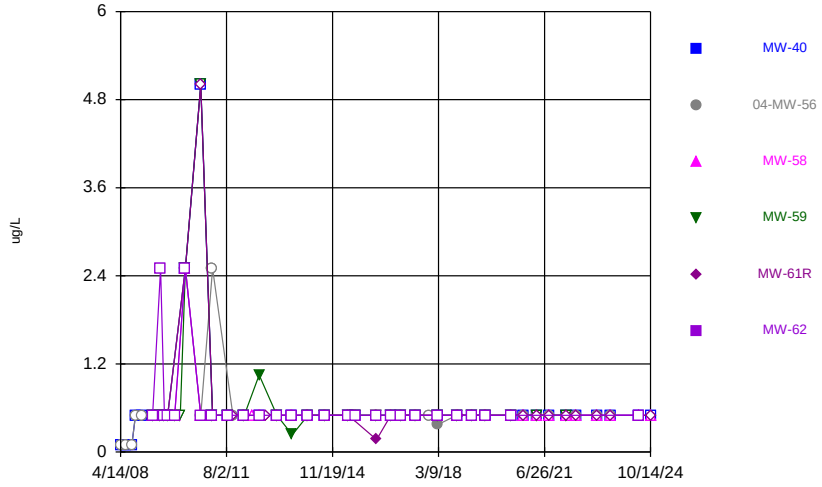
Time Series



Constituent: Carbon disulfide Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

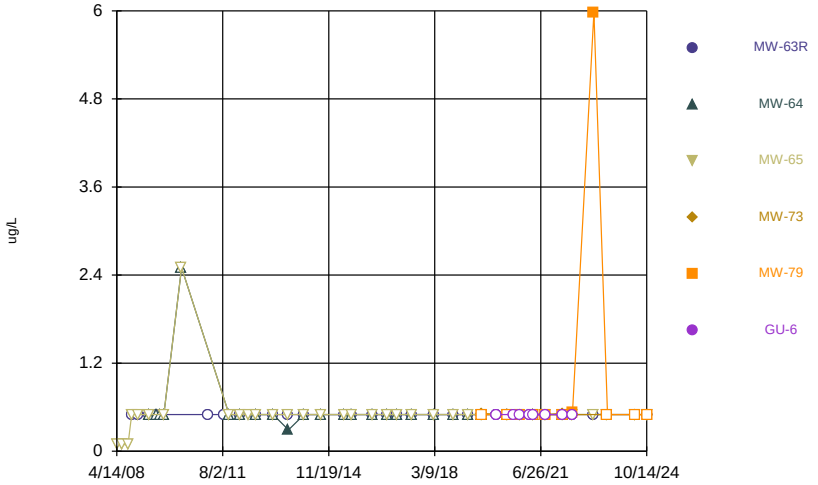
Time Series



Constituent: Carbon disulfide Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

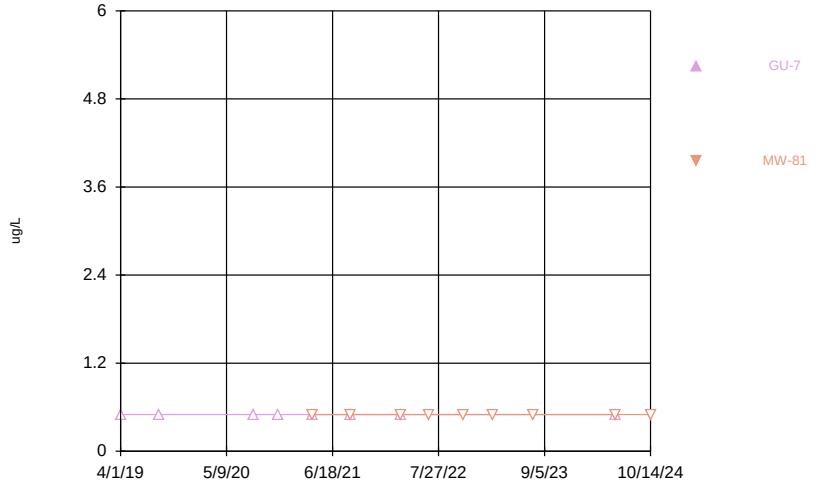
Time Series



Constituent: Carbon disulfide Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

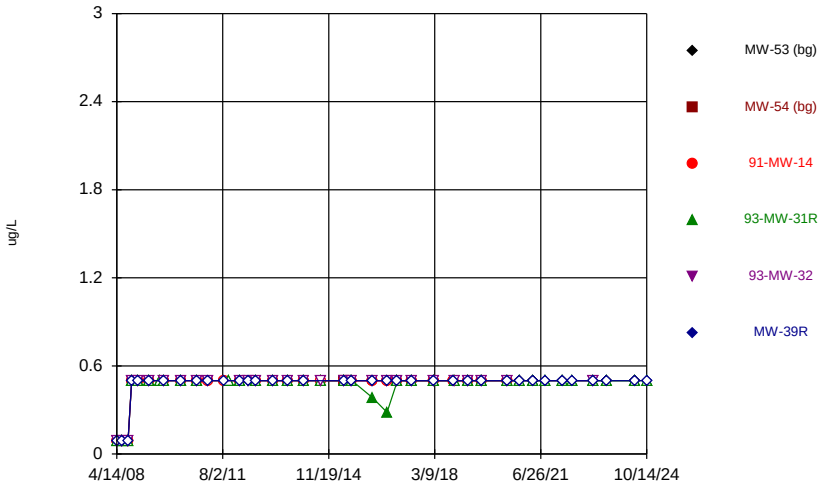
Time Series



Constituent: Carbon disulfide Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

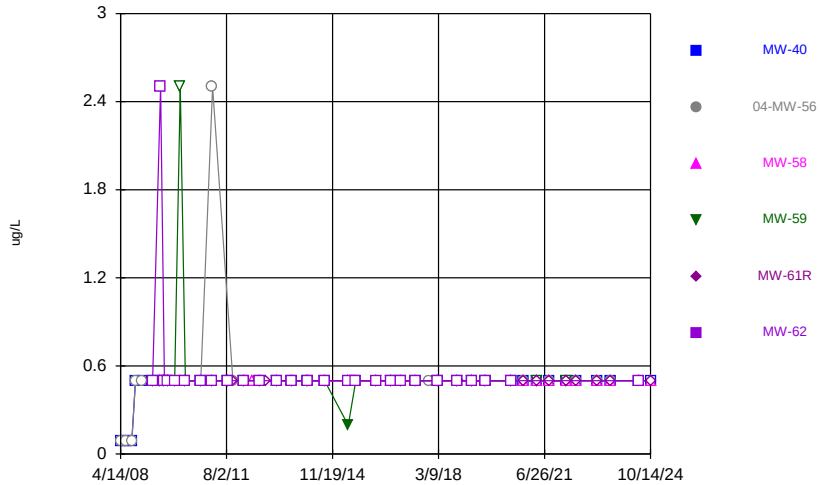
Time Series



Constituent: Chlorobenzene Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

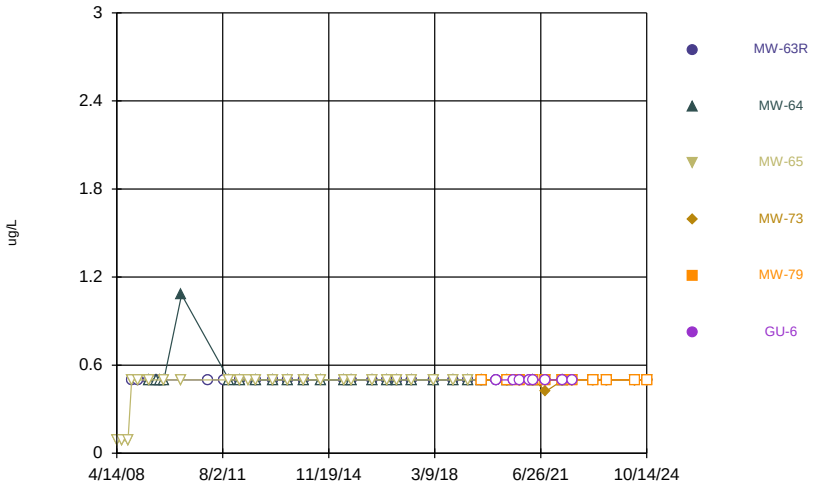
Time Series



Constituent: Chlorobenzene Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

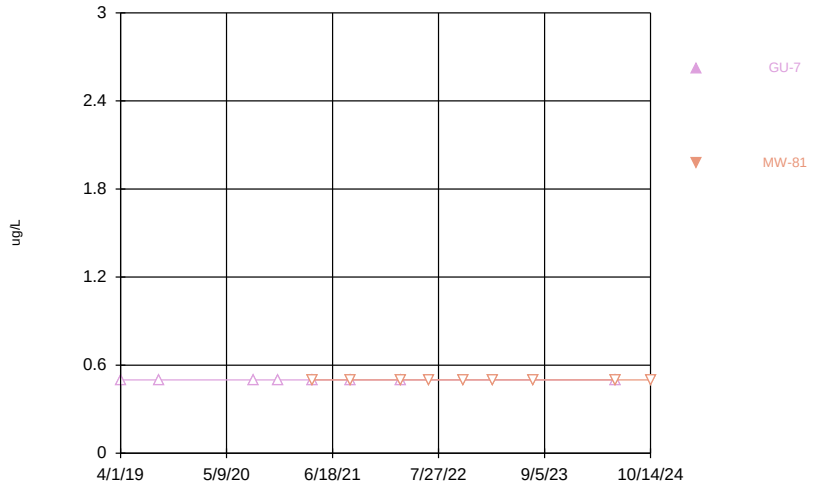
Time Series



Constituent: Chlorobenzene Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

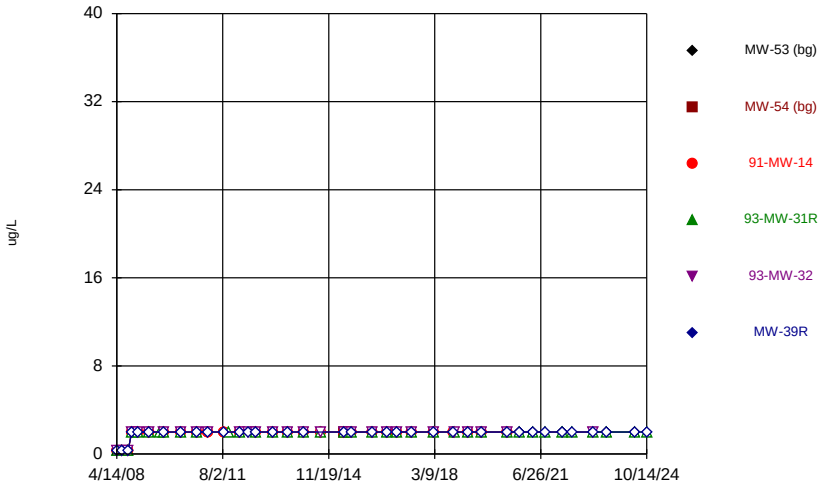
Time Series



Constituent: Chlorobenzene Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

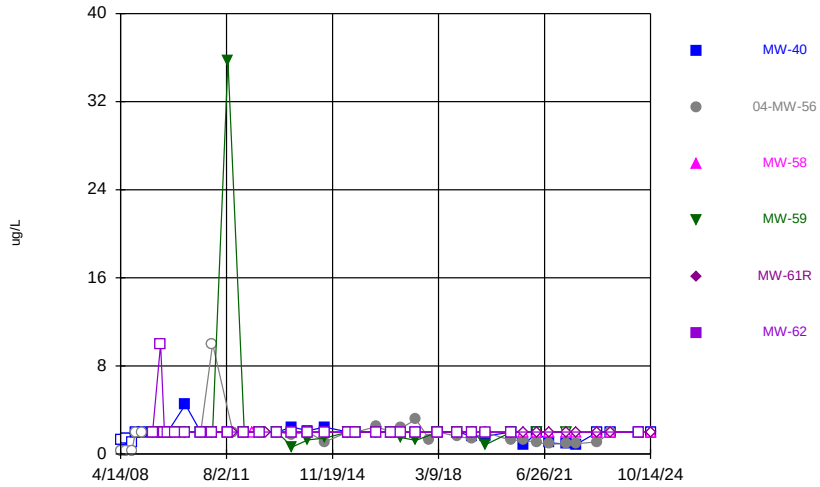
Time Series



Constituent: Chloroethane Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

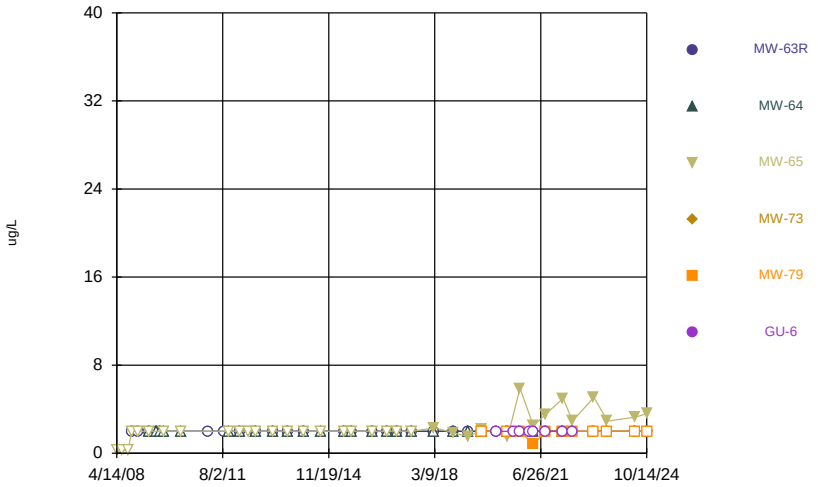
Time Series



Constituent: Chloroethane Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

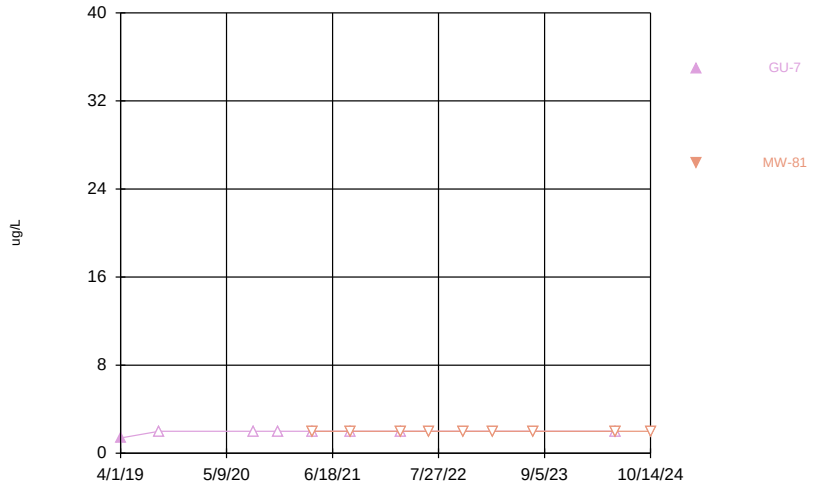
Time Series



Constituent: Chloroethane Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

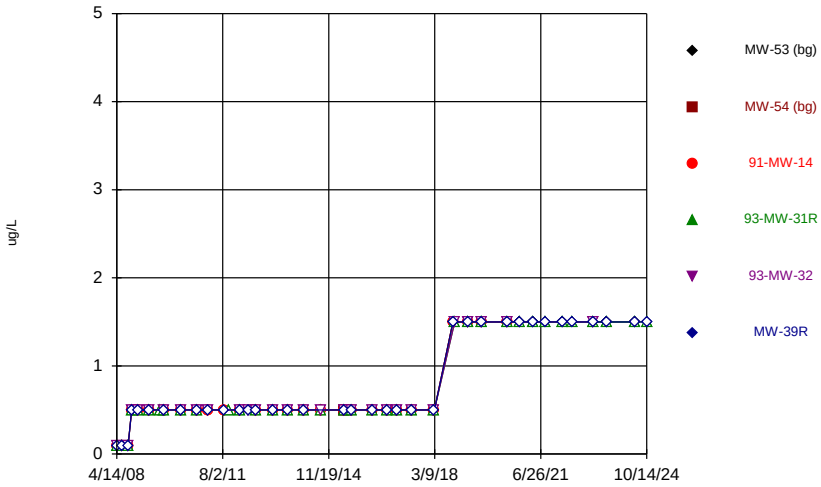
Time Series



Constituent: Chloroethane Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

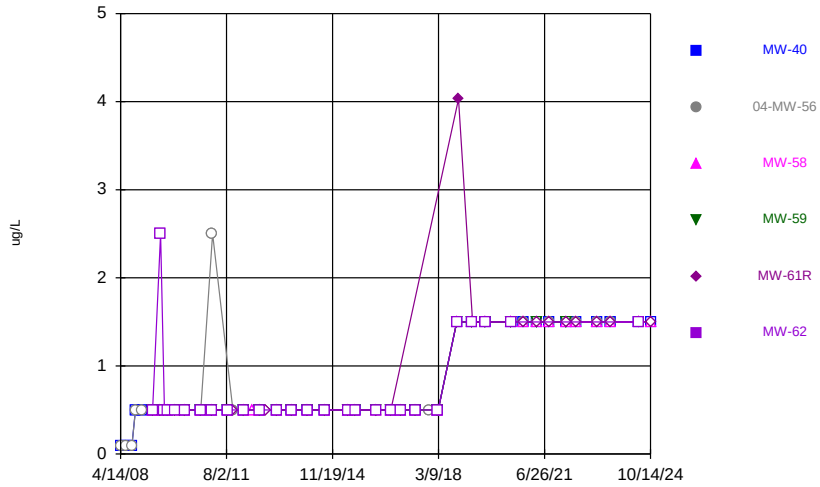
Time Series



Constituent: Chloroform Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

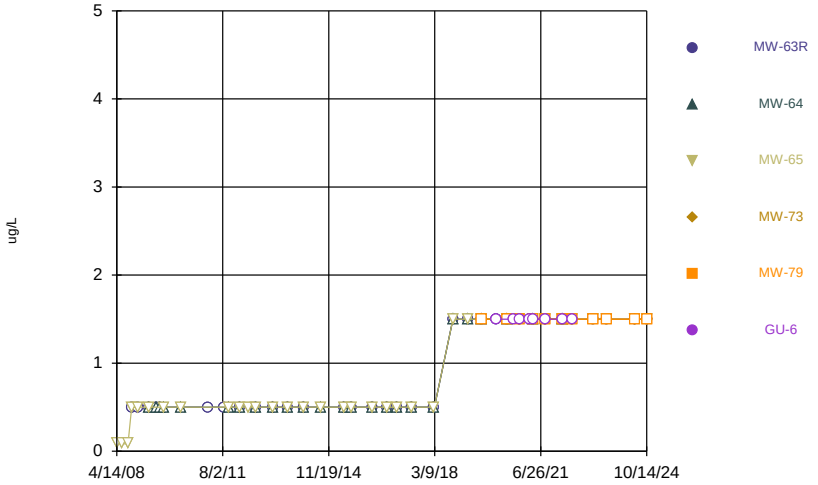
Time Series



Constituent: Chloroform Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

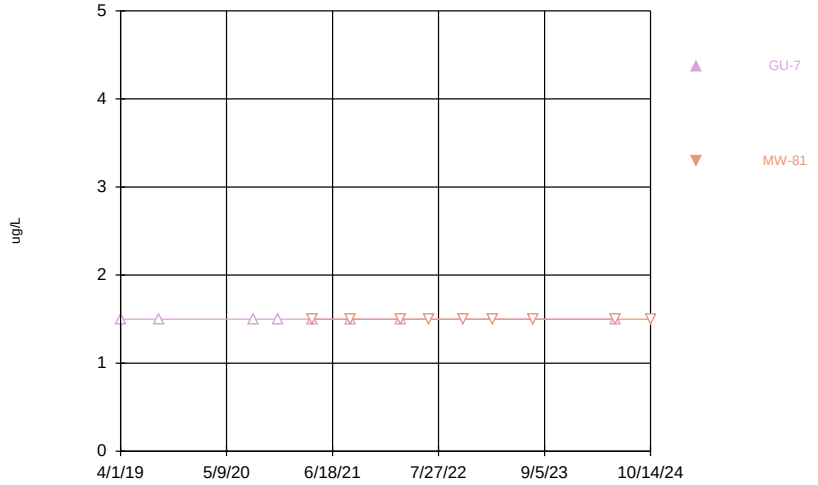
Time Series



Constituent: Chloroform Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

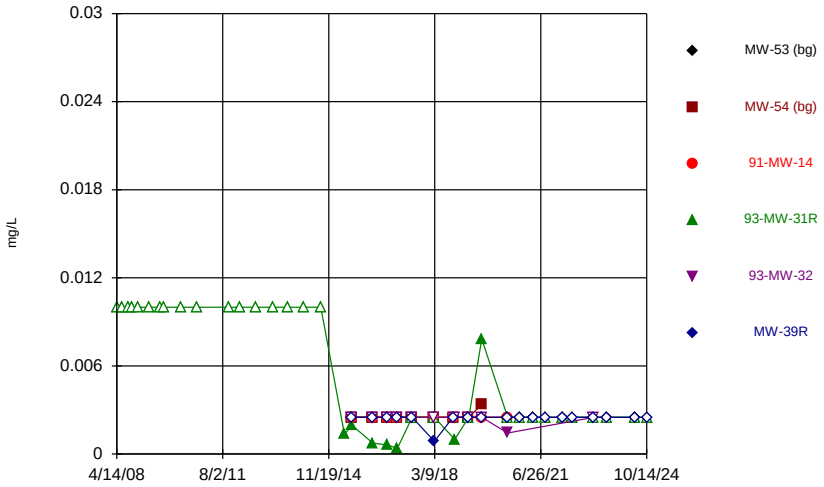
Time Series



Constituent: Chloroform Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

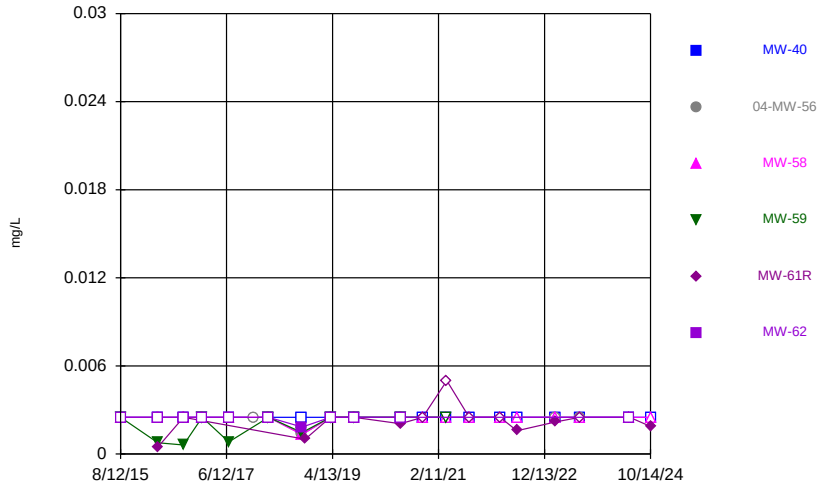
Time Series



Constituent: Chromium Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

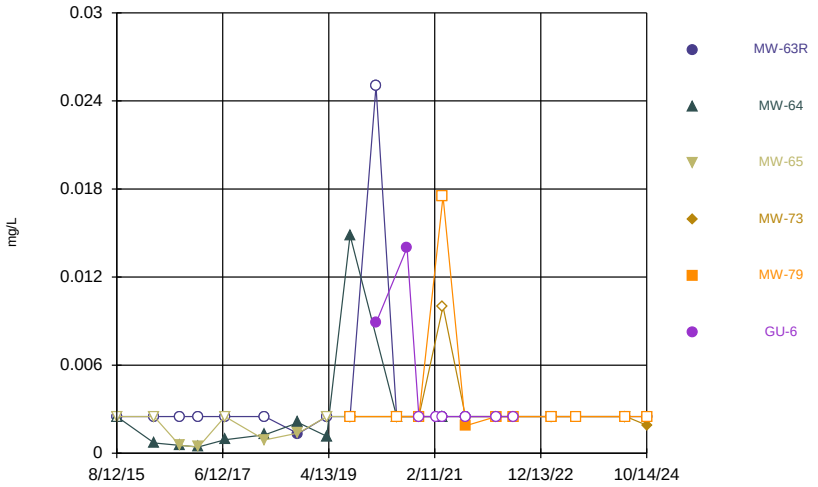
Time Series



Constituent: Chromium Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

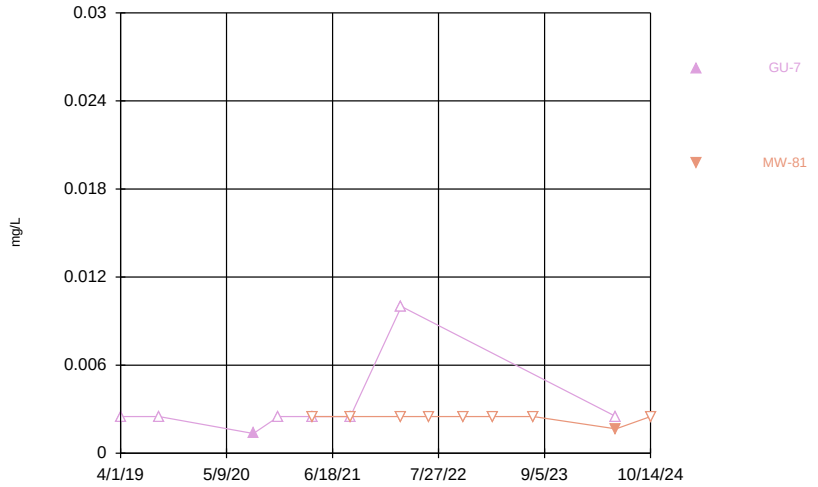
Time Series



Constituent: Chromium Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

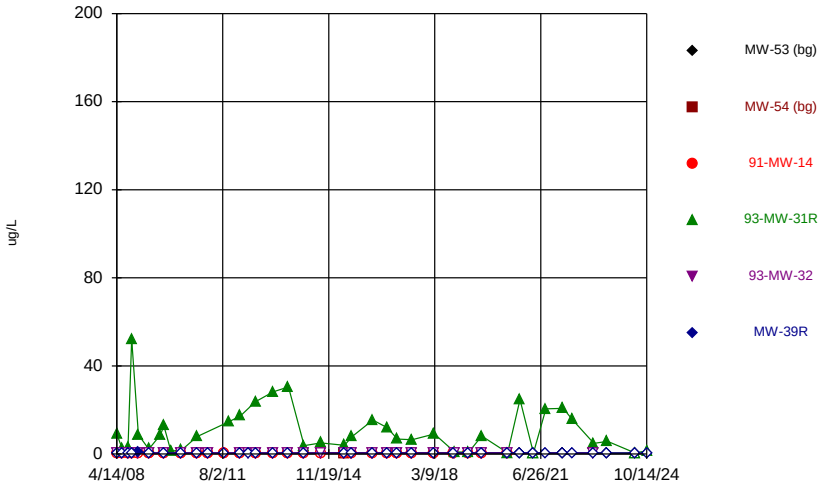
Time Series



Constituent: Chromium Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

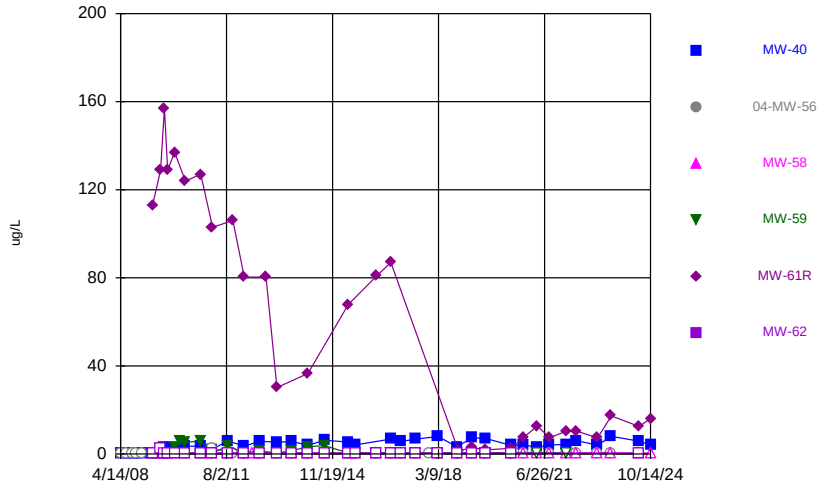
Time Series



Constituent: cis-1,2-Dichloroethene Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

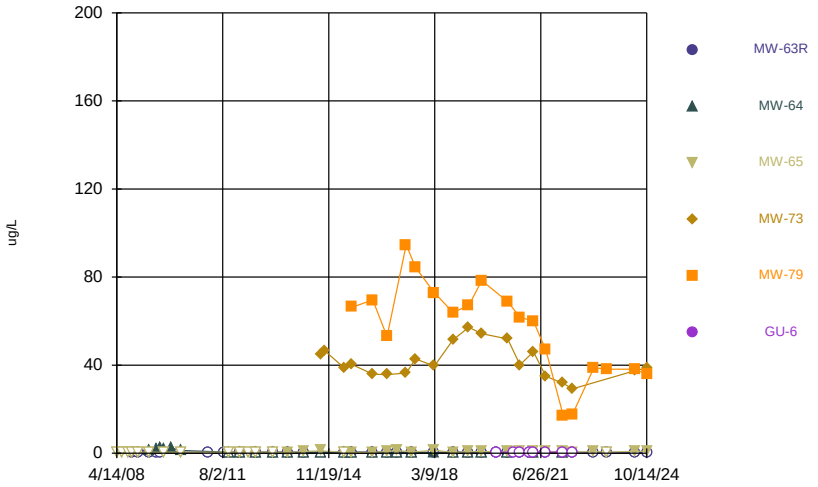
Time Series



Constituent: cis-1,2-Dichloroethene Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

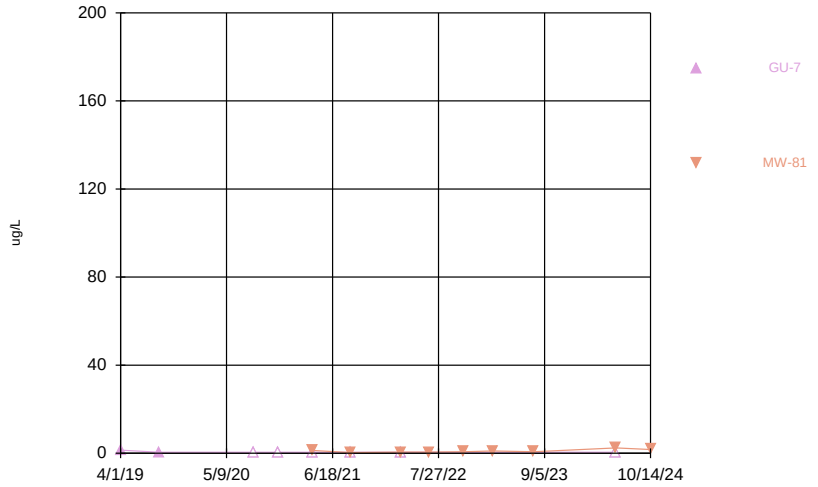
Time Series



Constituent: cis-1,2-Dichloroethene Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

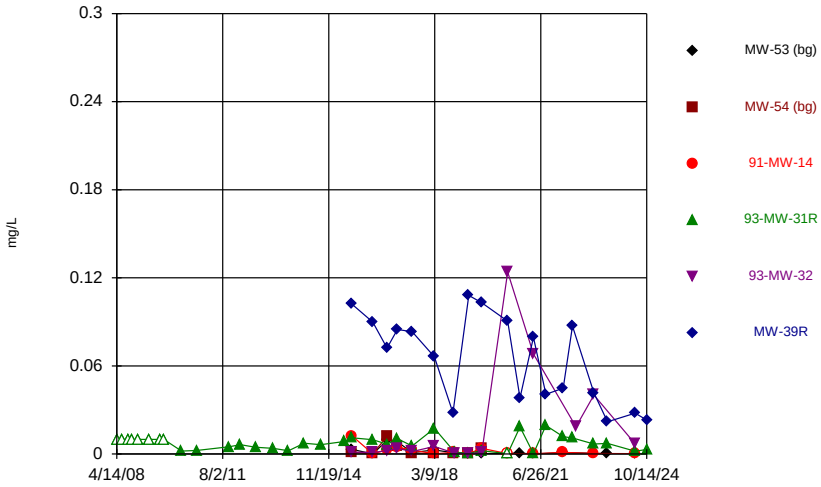
Time Series



Constituent: cis-1,2-Dichloroethene Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

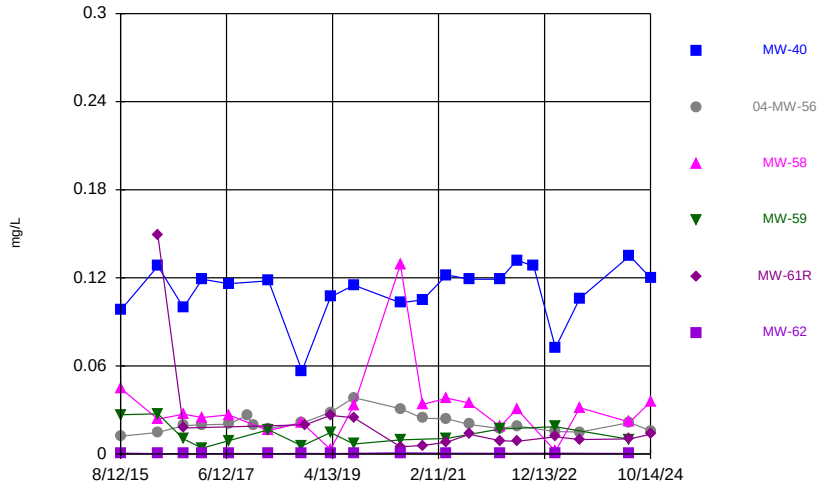
Time Series



Constituent: Cobalt Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

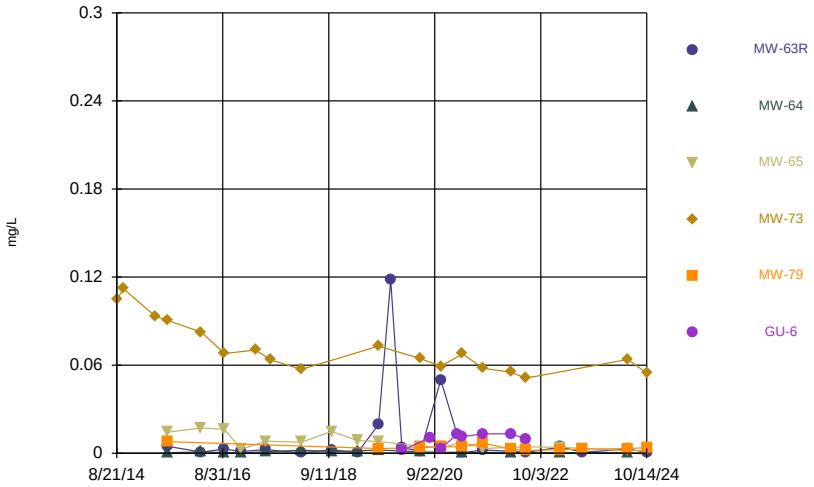
Time Series



Constituent: Cobalt Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

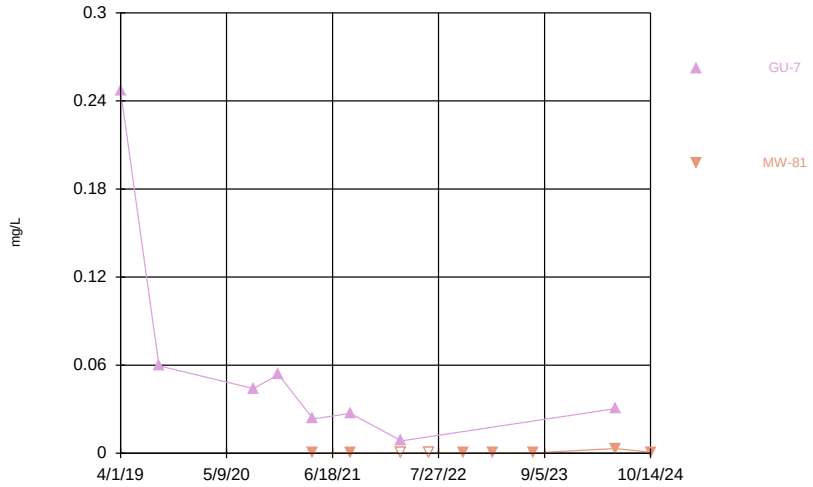
Time Series



Constituent: Cobalt Analysis Run 2/18/2025 12:40 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

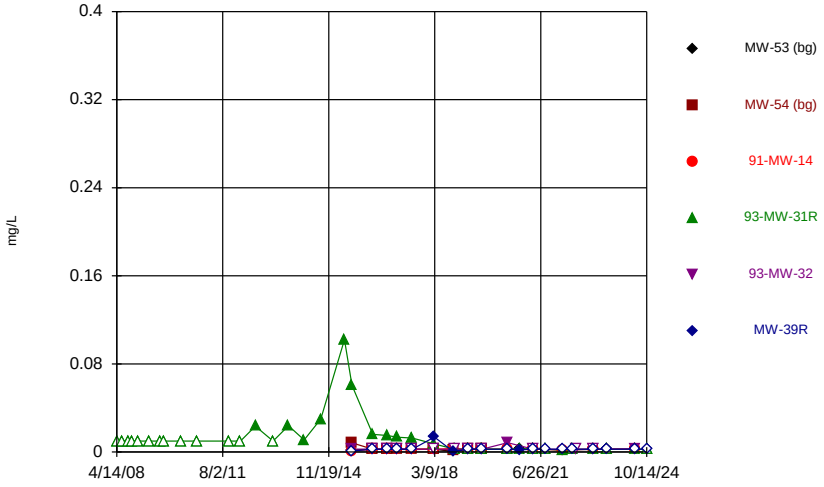
Time Series



Constituent: Cobalt Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

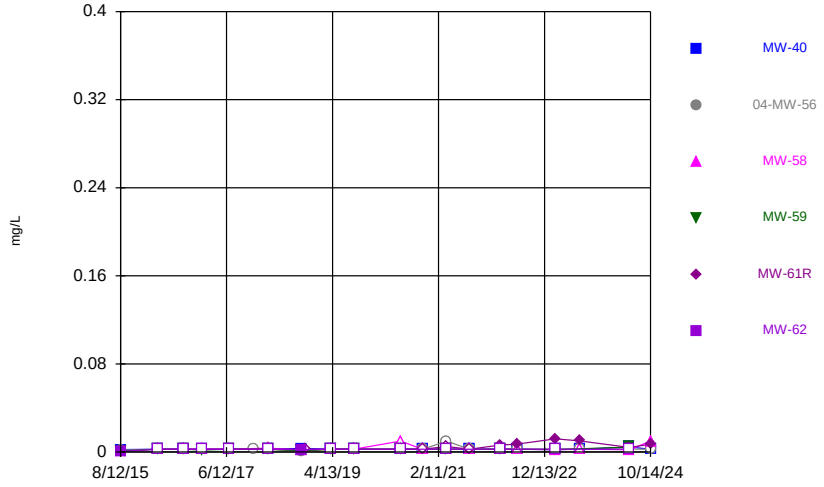
Time Series



Constituent: Copper Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

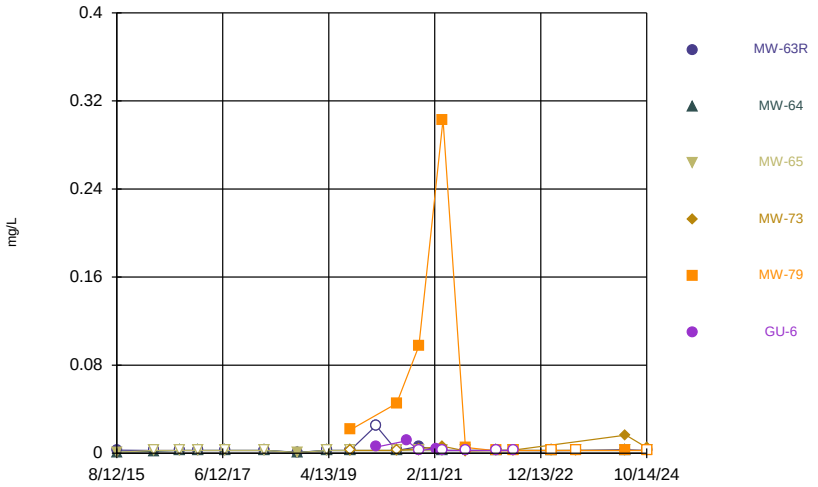
Time Series



Constituent: Copper Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

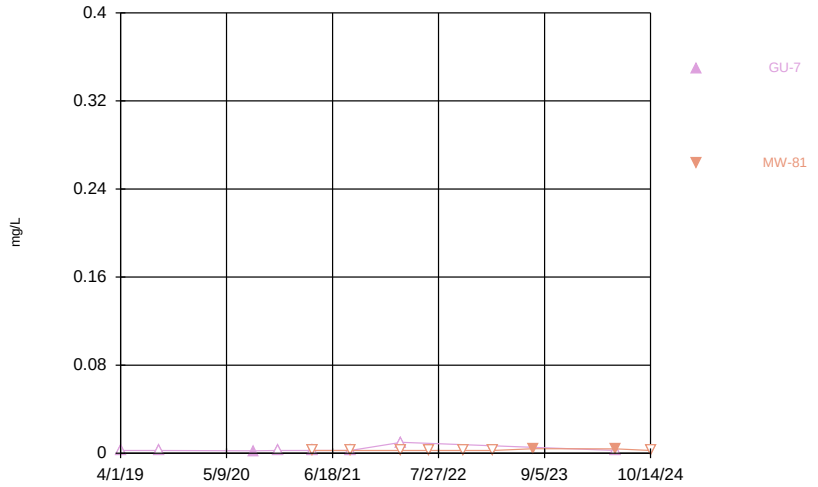
Time Series



Constituent: Copper Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

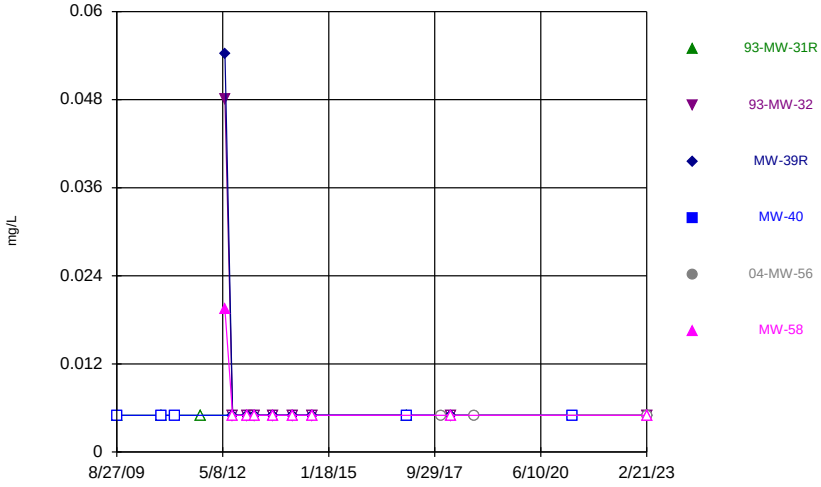
Time Series



Constituent: Copper Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

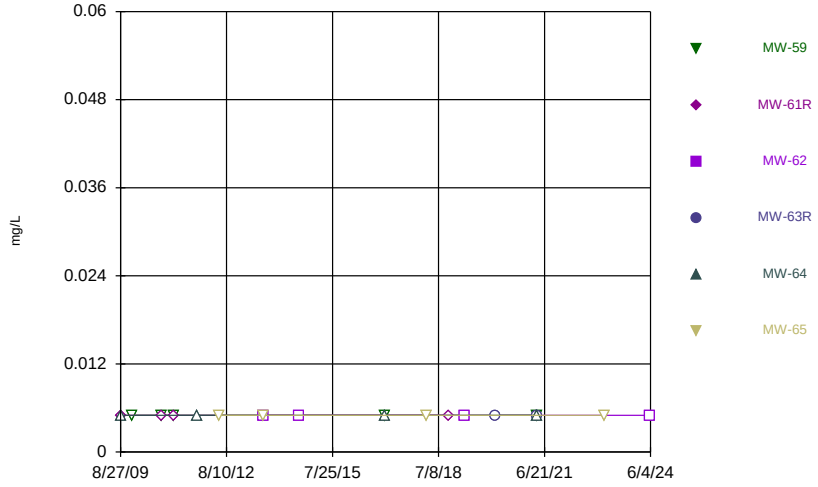
Time Series



Constituent: Cyanide Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

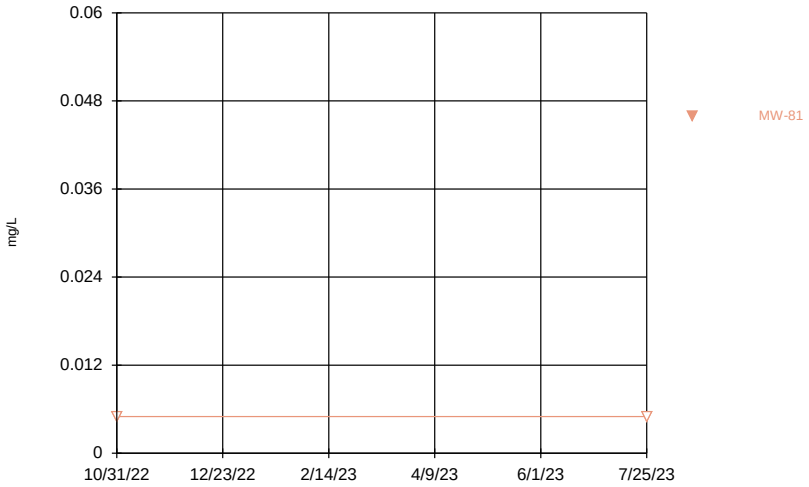
Time Series



Constituent: Cyanide Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

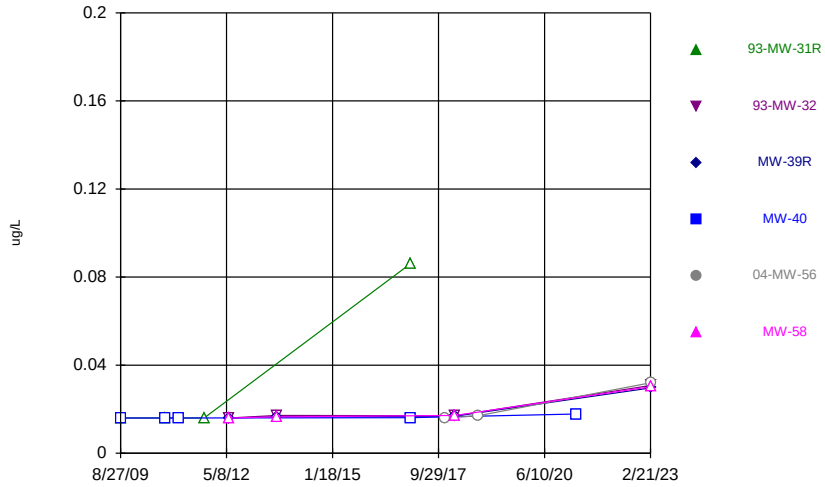
Time Series



Constituent: Cyanide Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

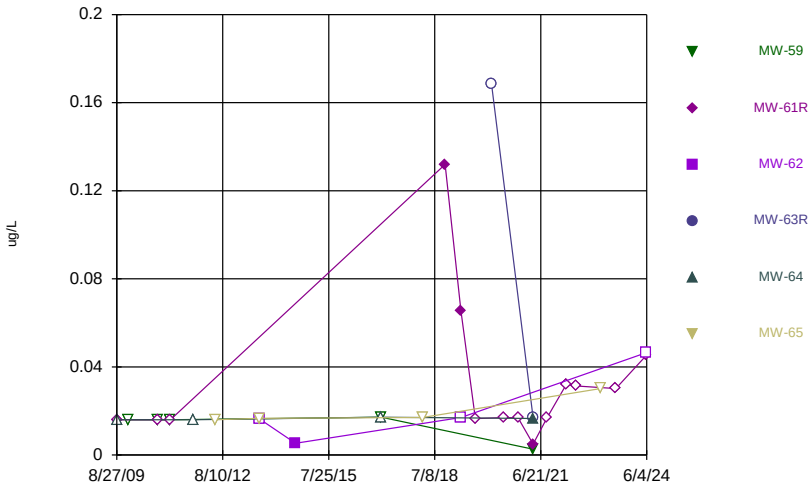
Time Series



Constituent: Endosulfan I Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

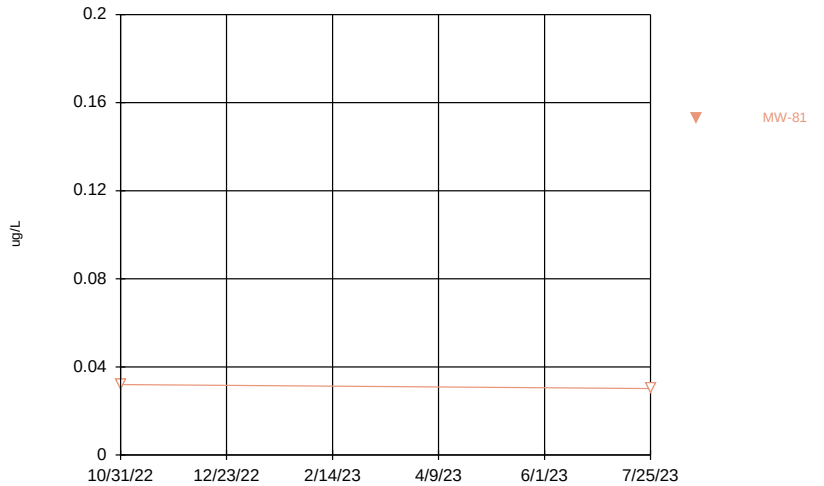
Time Series



Constituent: Endosulfan I Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

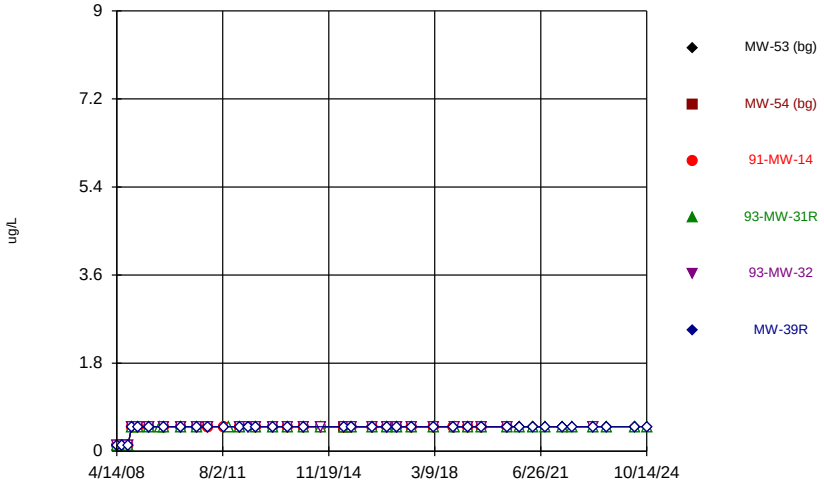
Time Series



Constituent: Endosulfan I Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

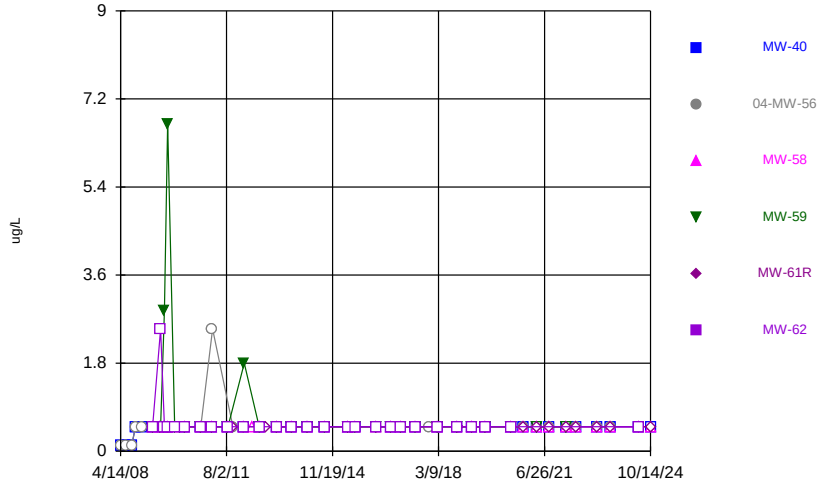
Time Series



Constituent: Ethylbenzene Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

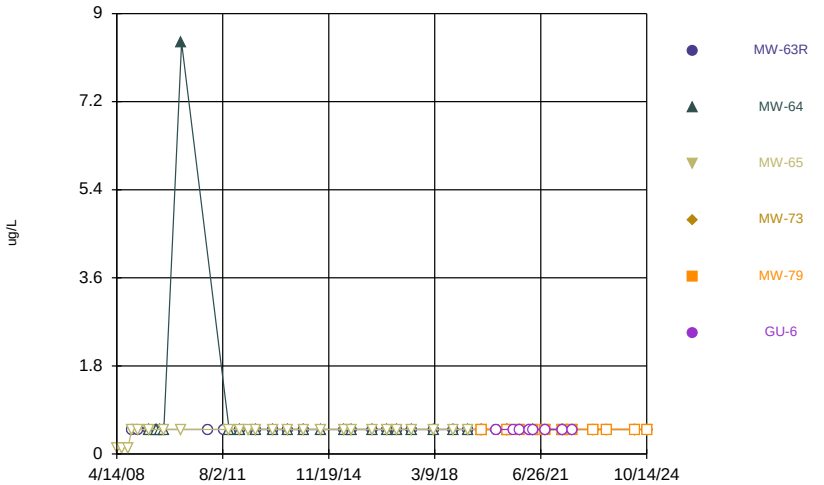
Time Series



Constituent: Ethylbenzene Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

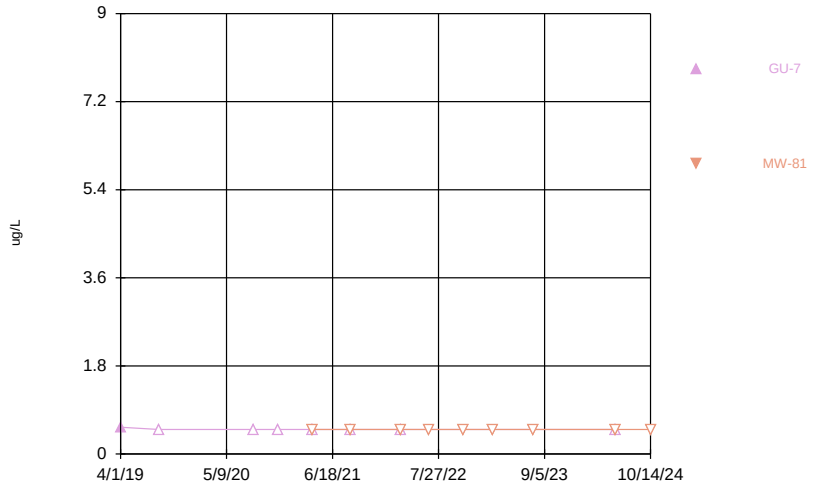
Time Series



Constituent: Ethylbenzene Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

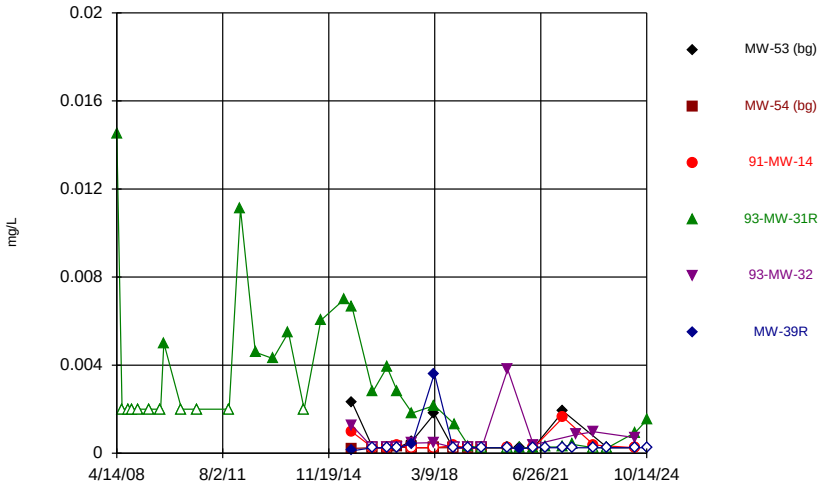
Time Series



Constituent: Ethylbenzene Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

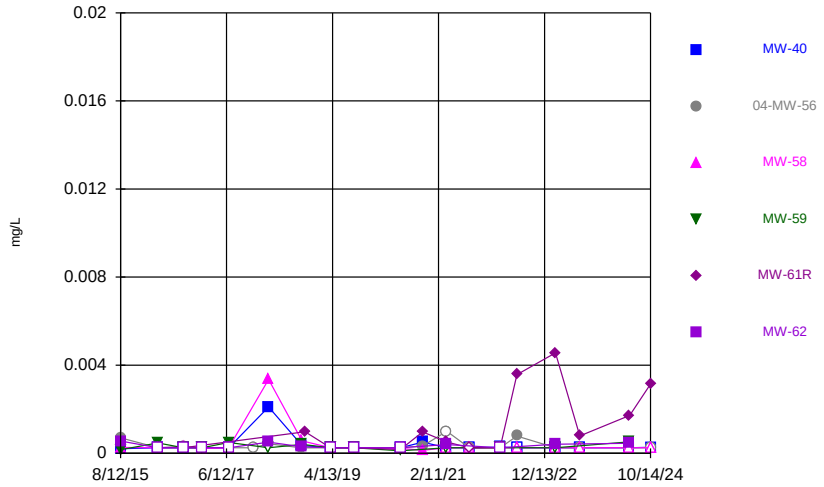
Time Series



Constituent: Lead Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

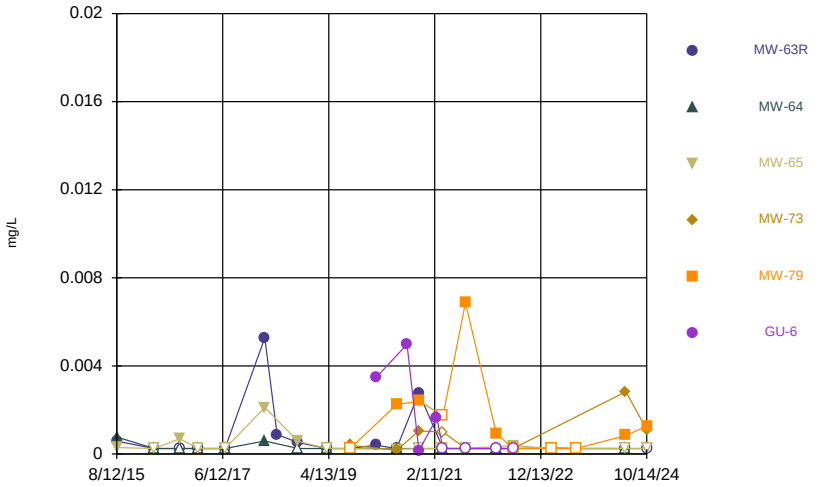
Time Series



Constituent: Lead Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

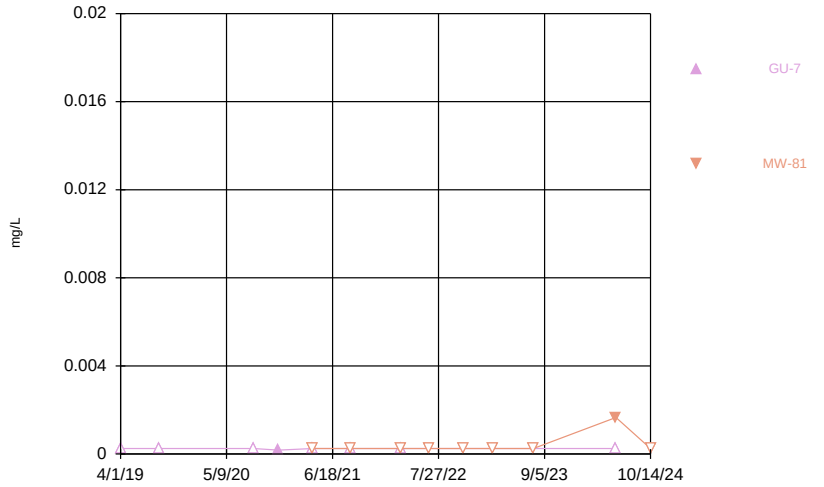
Time Series



Constituent: Lead Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

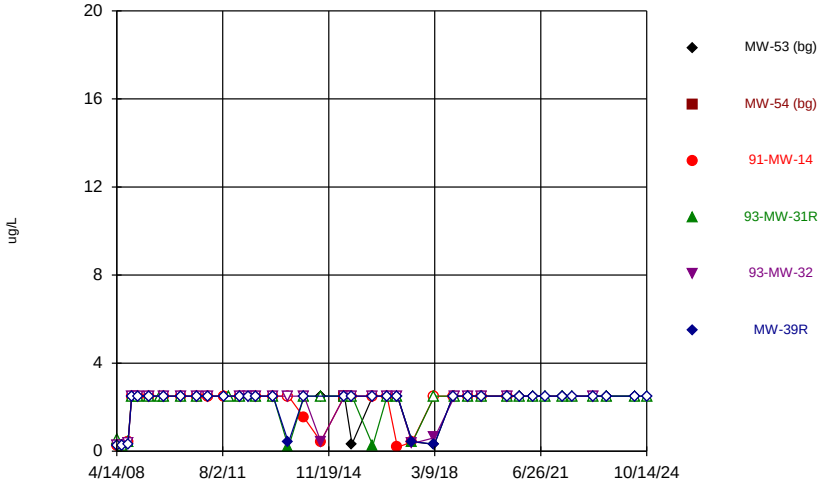
Time Series



Constituent: Lead Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

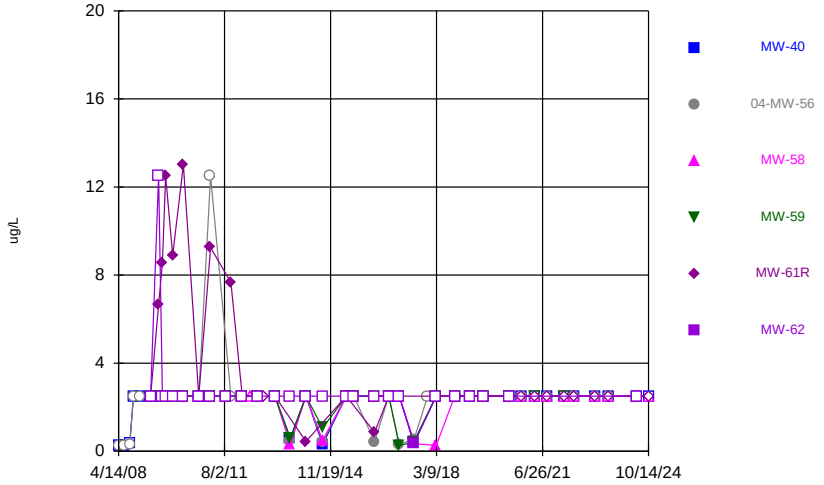
Time Series



Constituent: Methylene Chloride Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

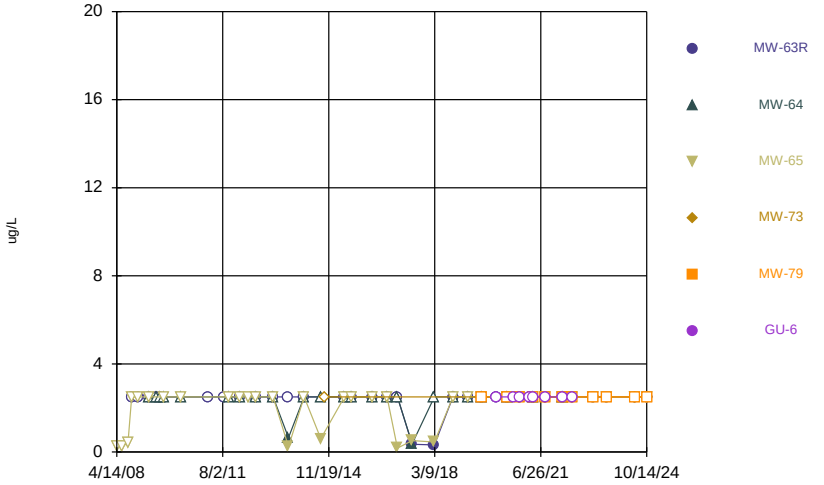
Time Series



Constituent: Methylene Chloride Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

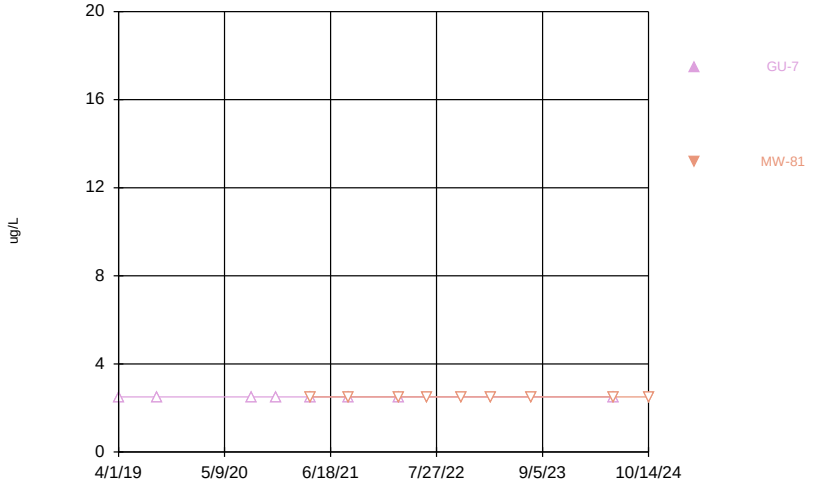
Time Series



Constituent: Methylene Chloride Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

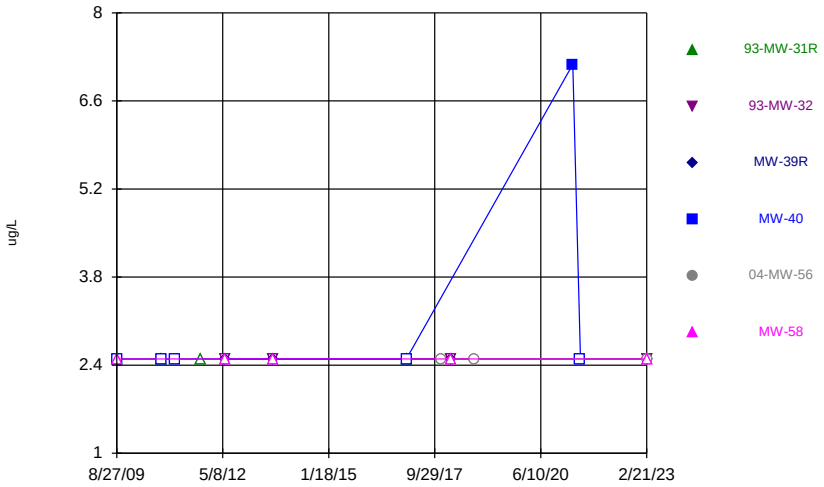
Time Series



Constituent: Methylene Chloride Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

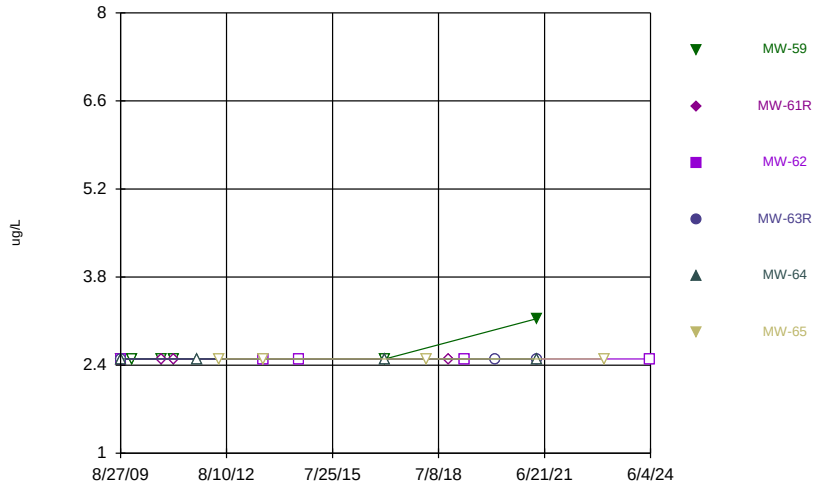
Time Series



Constituent: Naphthalene Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

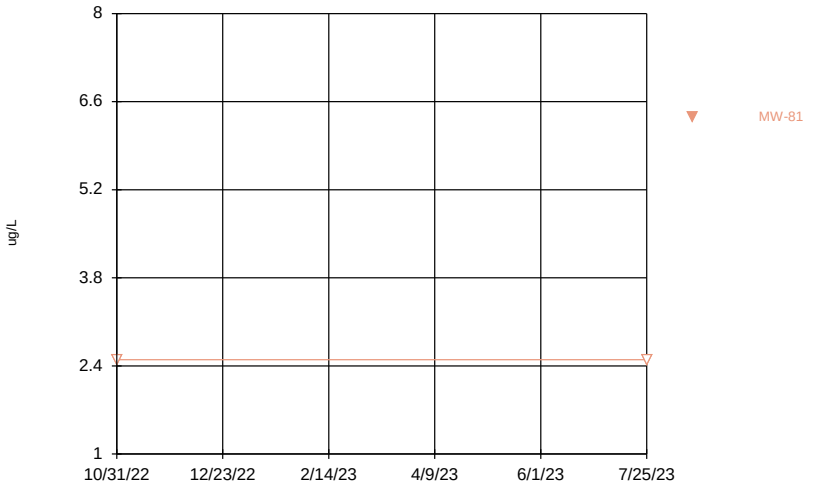
Time Series



Constituent: Naphthalene Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

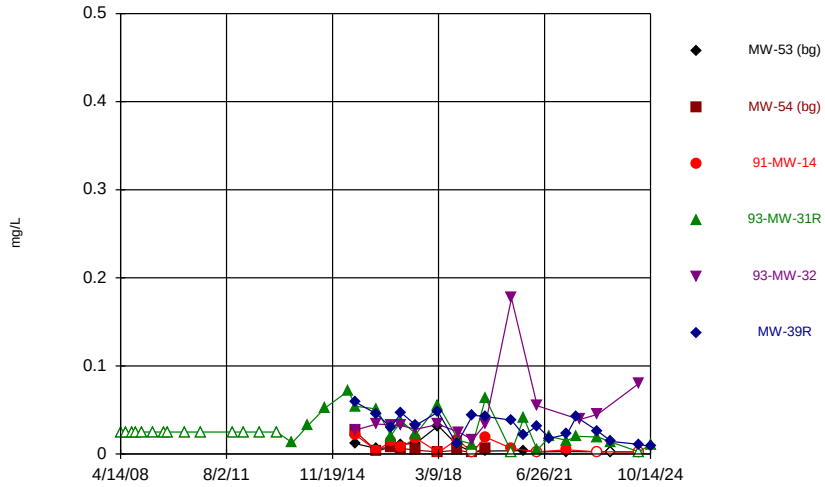
Time Series



Constituent: Naphthalene Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

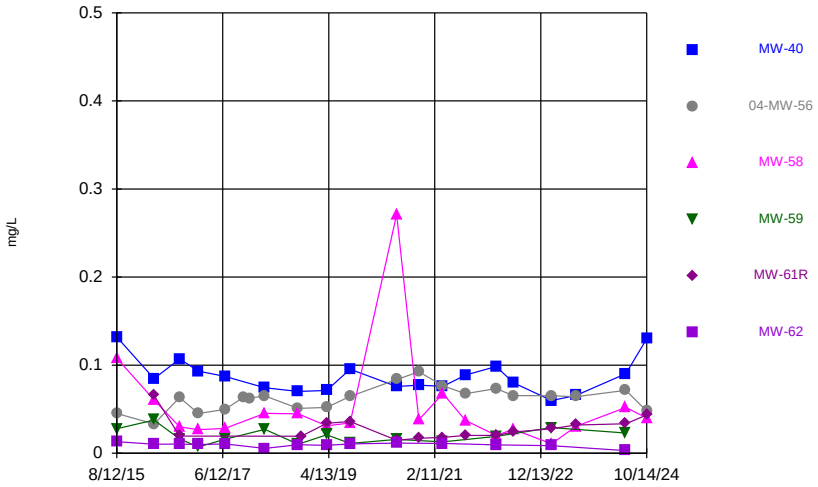
Time Series



Constituent: Nickel Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

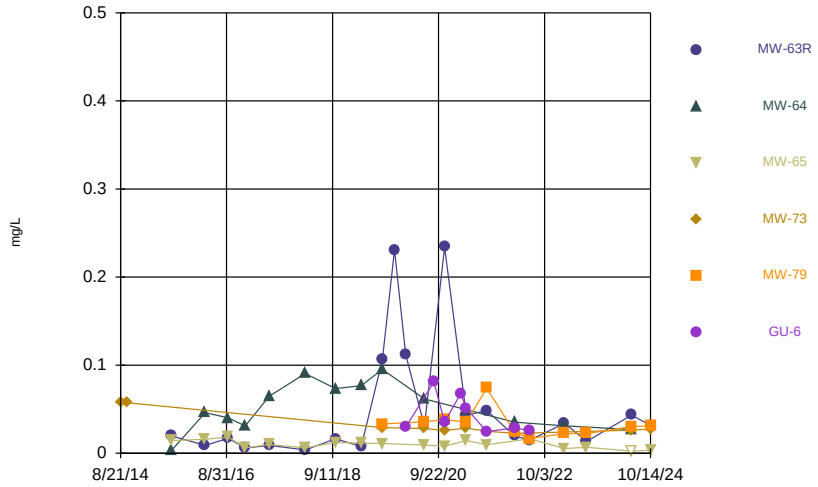
Time Series



Constituent: Nickel Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

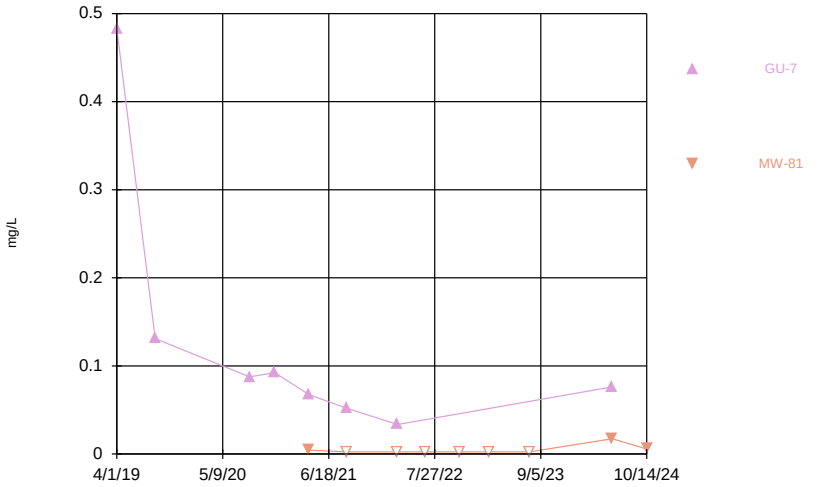
Time Series



Constituent: Nickel Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

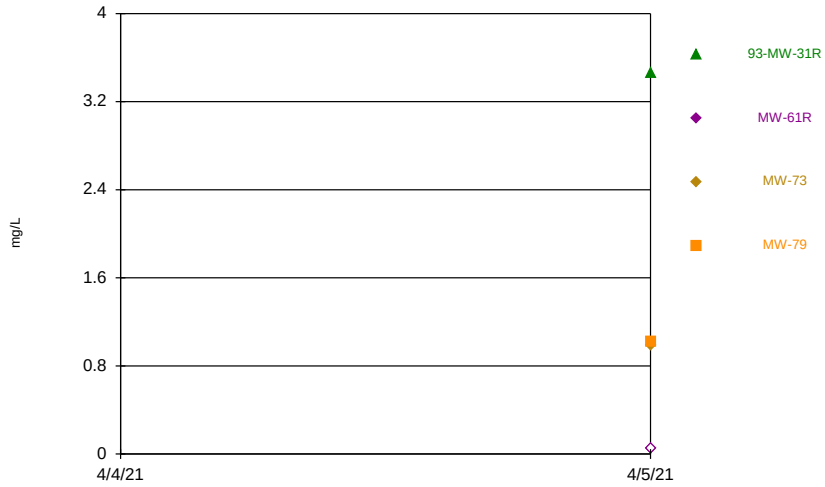
Time Series



Constituent: Nickel Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

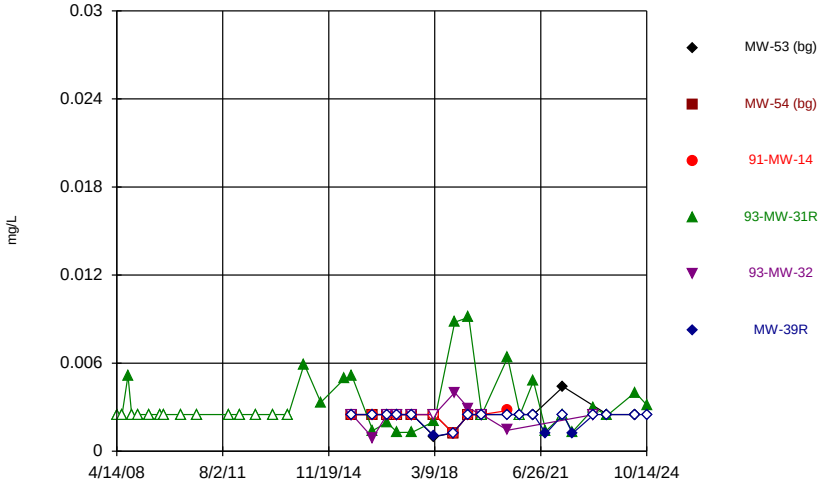
Time Series



Constituent: Nitrate as N Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

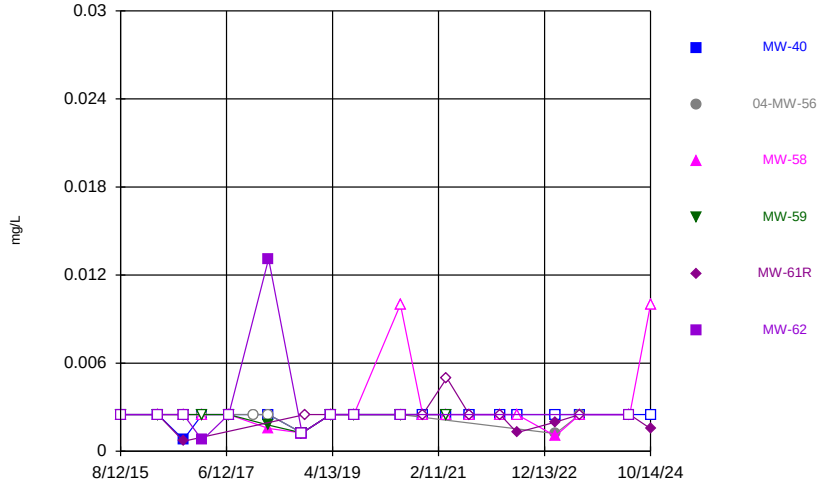
Time Series



Constituent: Selenium Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

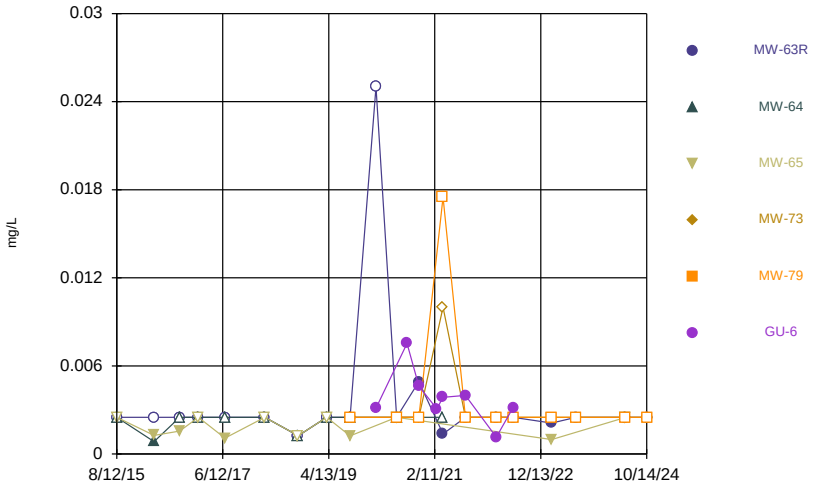
Time Series



Constituent: Selenium Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

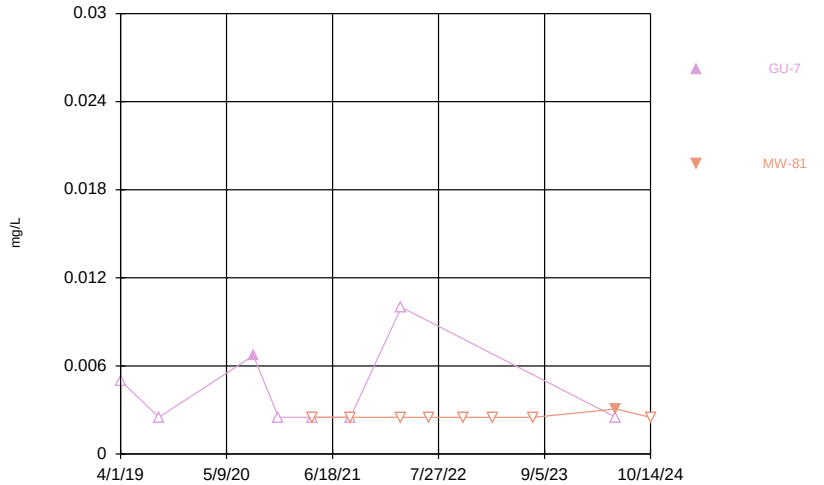
Time Series



Constituent: Selenium Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

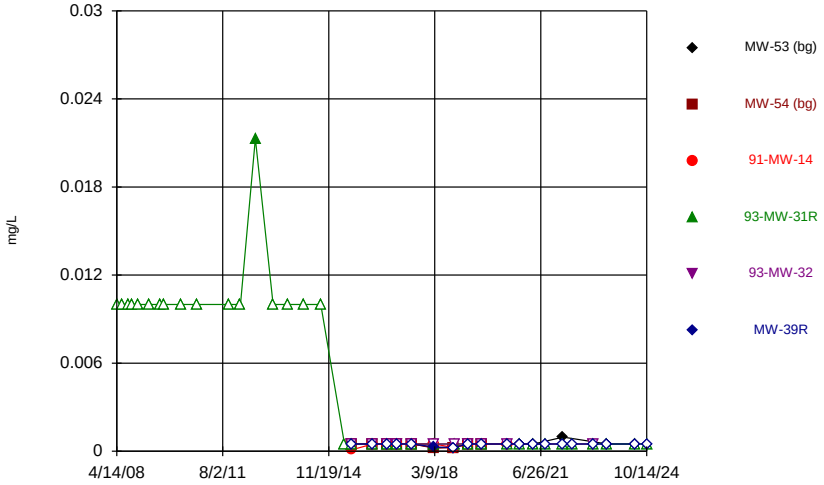
Time Series



Constituent: Selenium Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

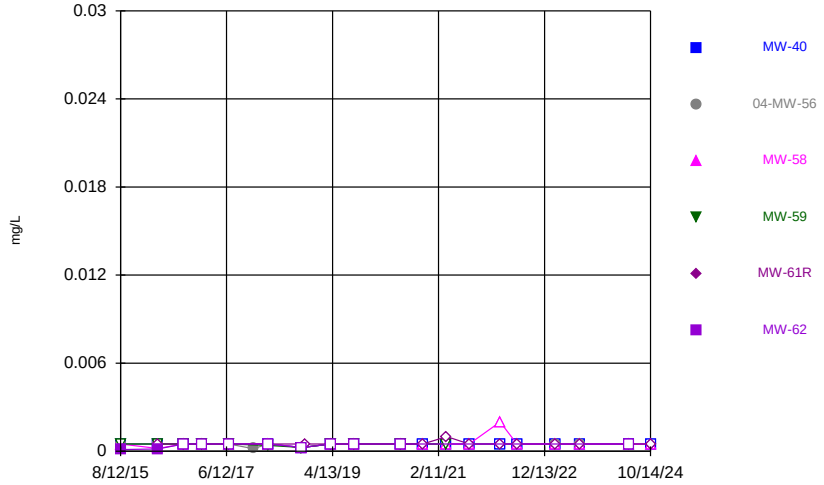
Time Series



Constituent: Silver Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

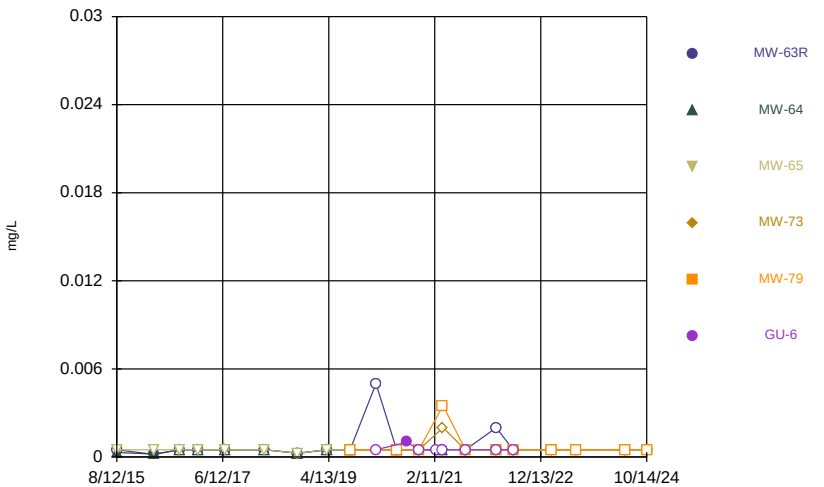
Time Series



Constituent: Silver Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

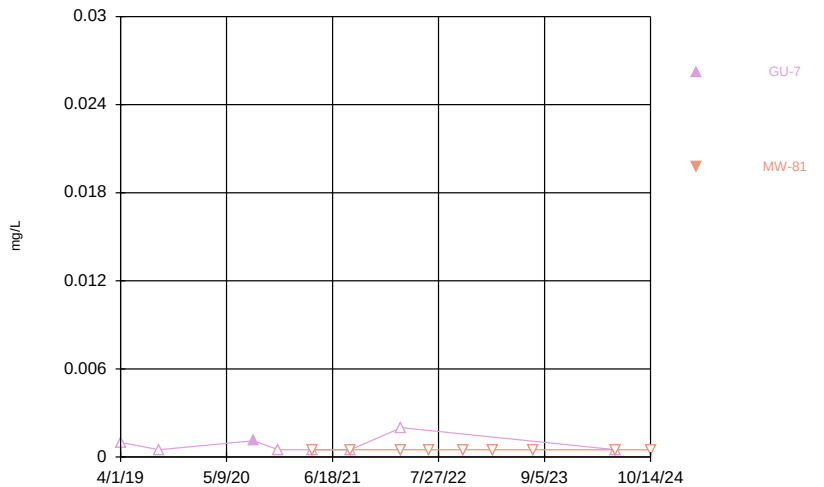
Time Series



Constituent: Silver Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

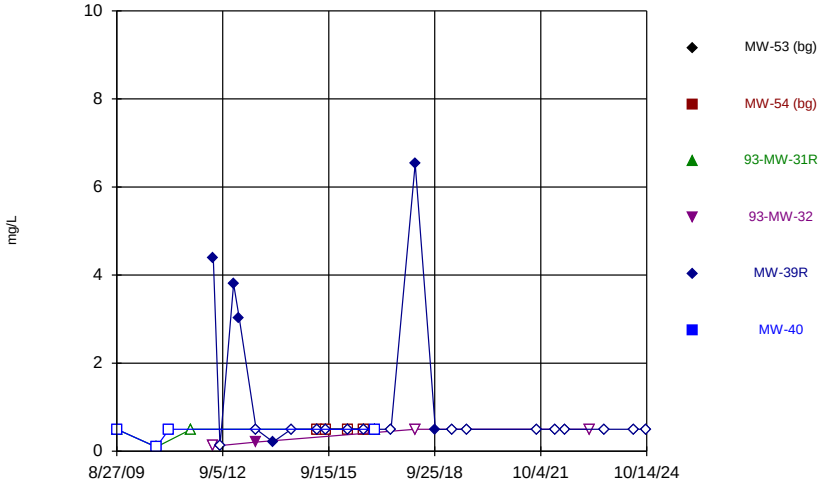
Time Series



Constituent: Silver Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

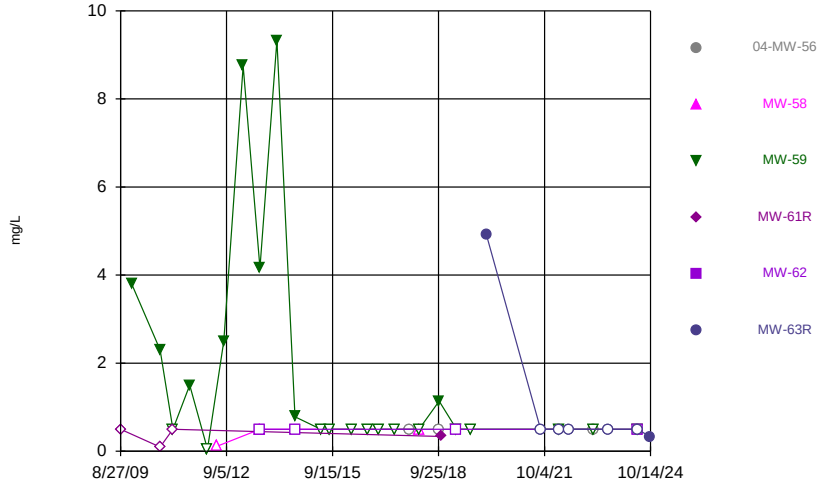
Time Series



Constituent: Sulfide Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

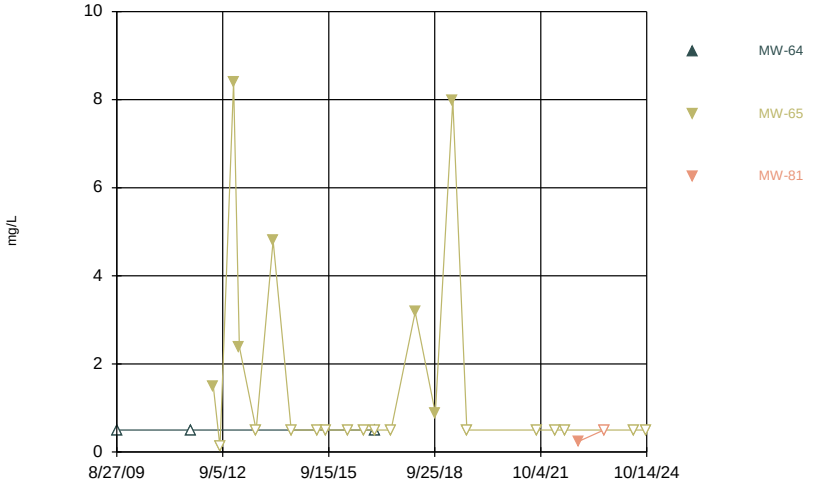
Time Series



Constituent: Sulfide Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

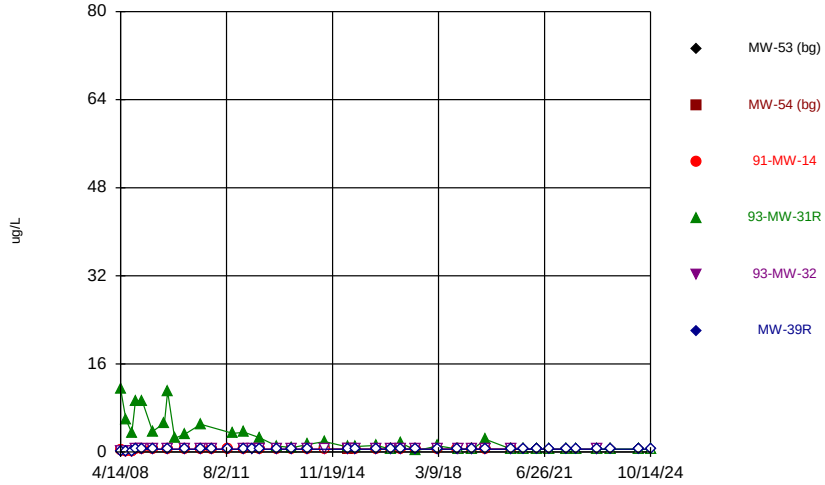
Time Series



Constituent: Sulfide Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

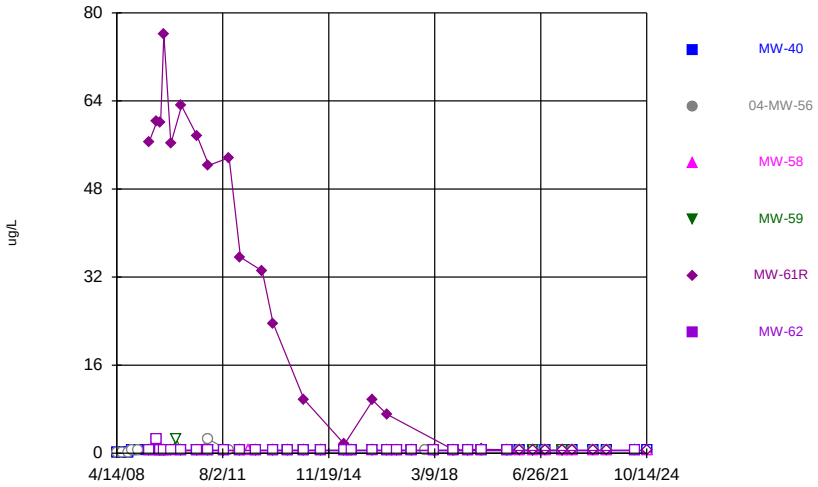
Time Series



Constituent: Tetrachloroethene Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

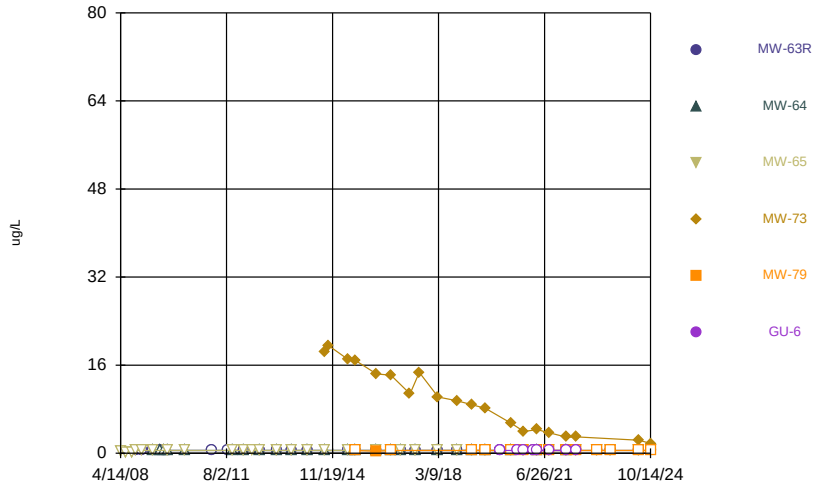
Time Series



Constituent: Tetrachloroethene Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

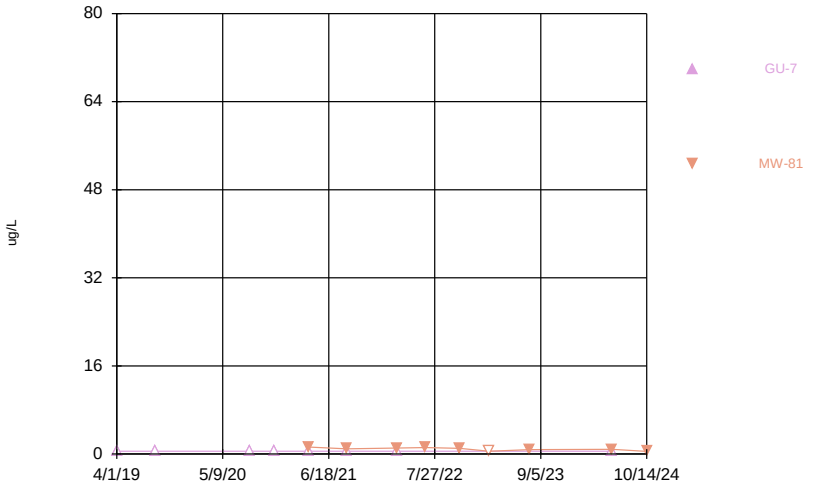
Time Series



Constituent: Tetrachloroethene Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

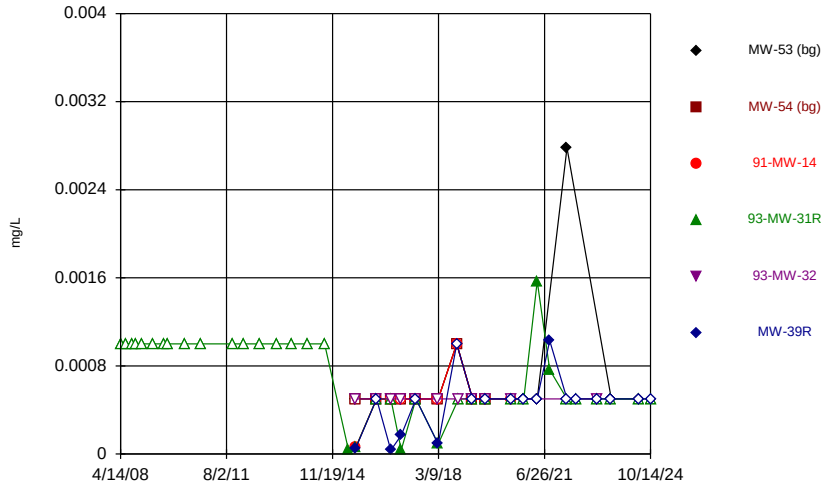
Time Series



Constituent: Tetrachloroethene Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

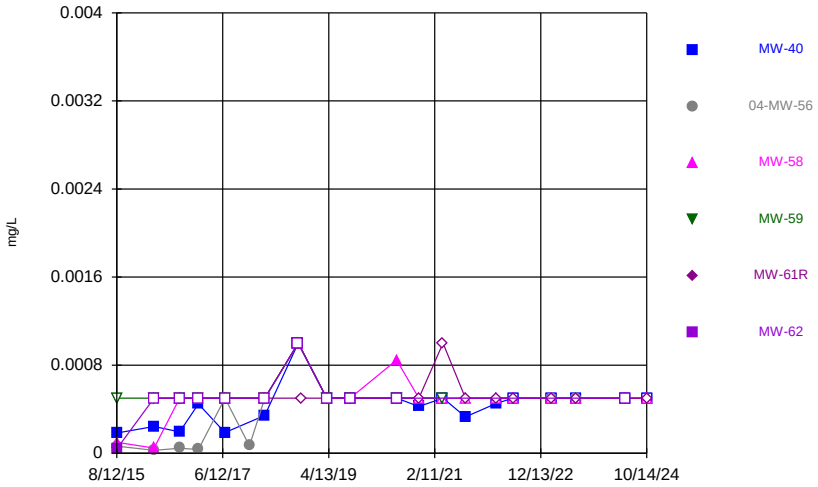
Time Series



Constituent: Thallium Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

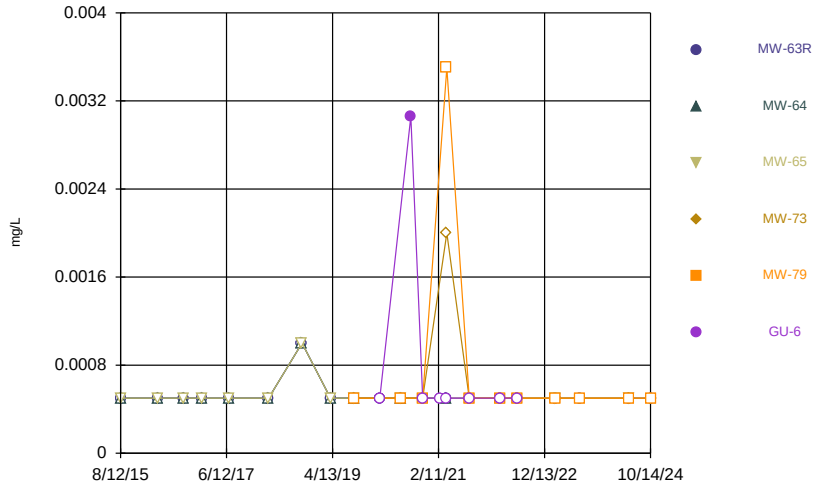
Time Series



Constituent: Thallium Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

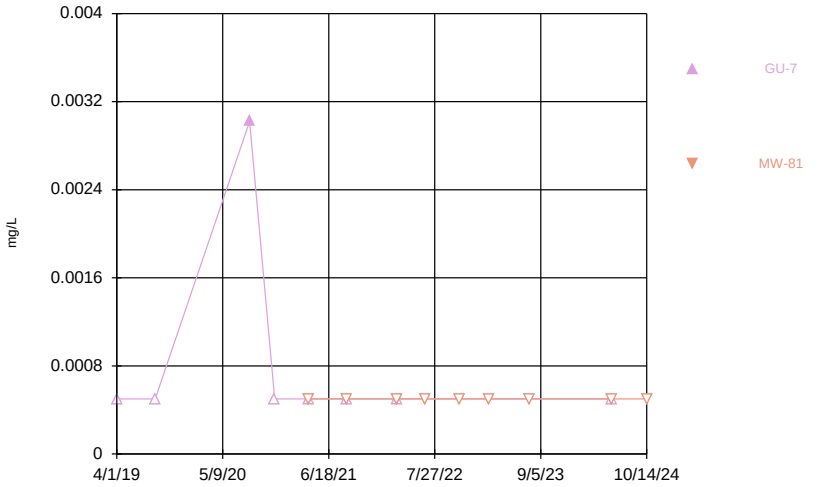
Time Series



Constituent: Thallium Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

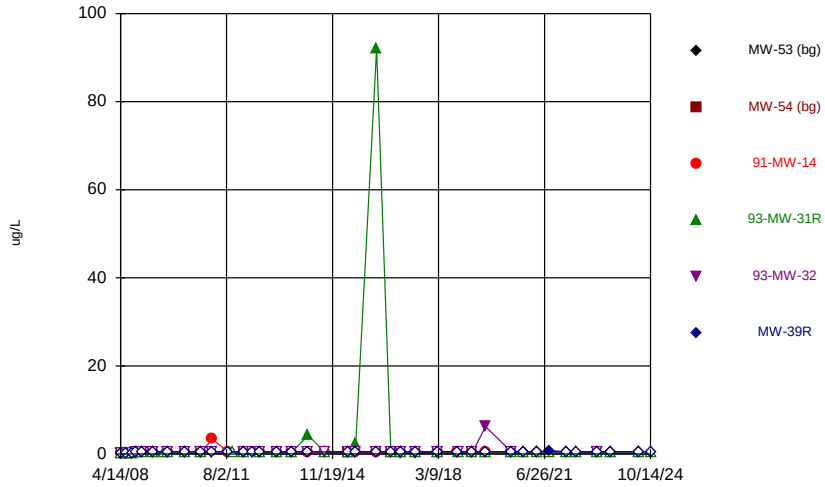
Time Series



Constituent: Thallium Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

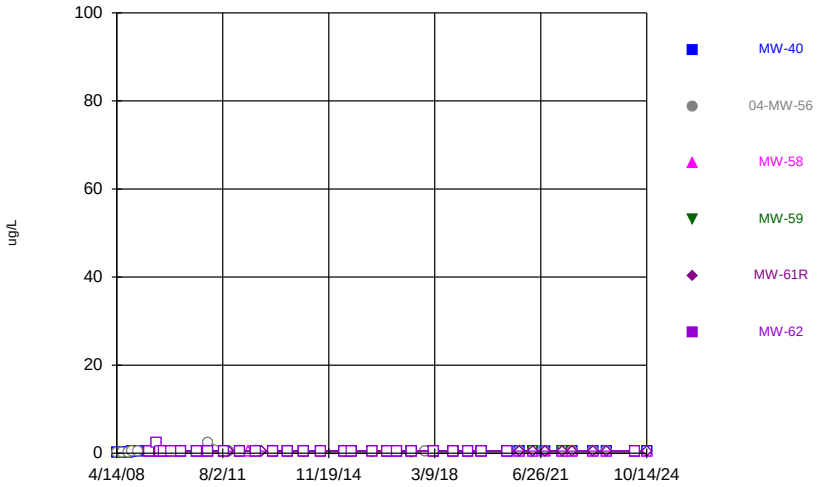
Time Series



Constituent: Toluene Analysis Run 2/18/2025 12:41 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

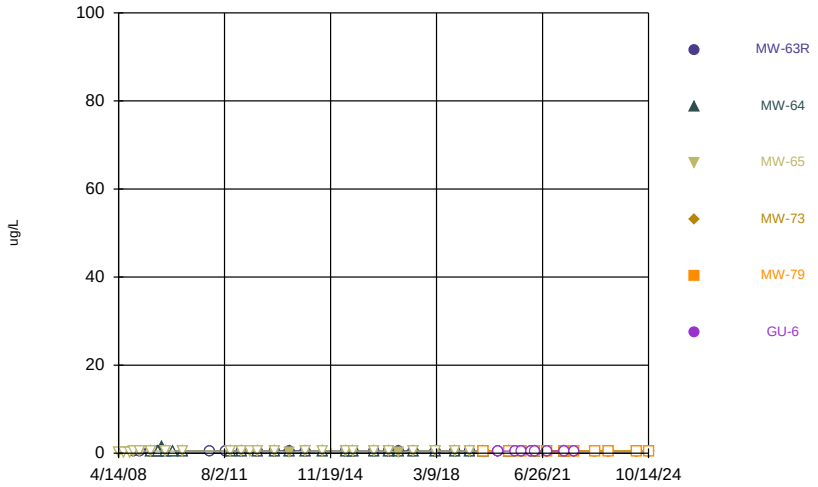
Time Series



Constituent: Toluene Analysis Run 2/18/2025 12:42 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

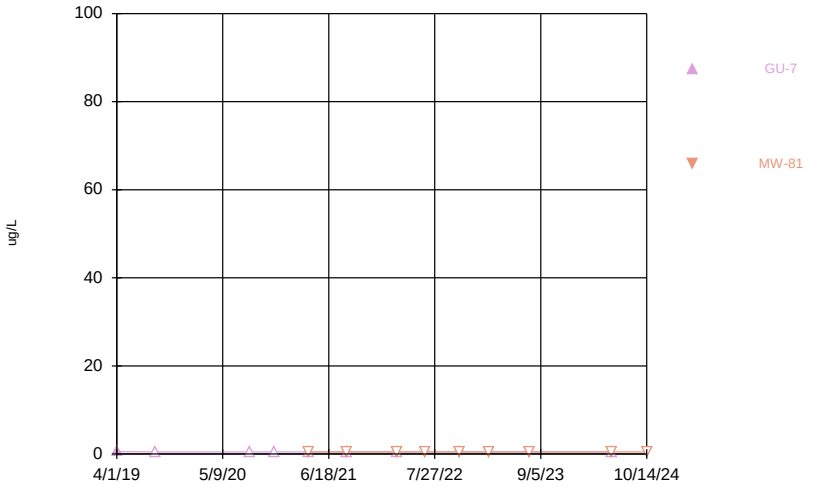
Time Series



Constituent: Toluene Analysis Run 2/18/2025 12:42 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

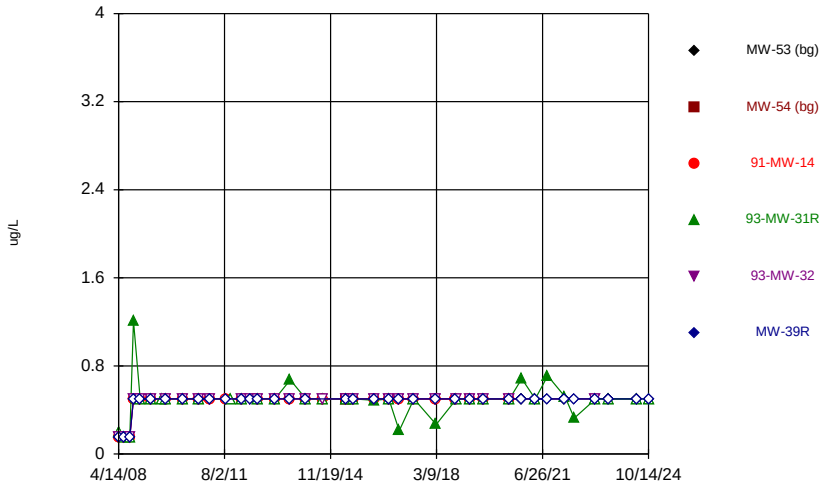
Time Series



Constituent: Toluene Analysis Run 2/18/2025 12:42 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

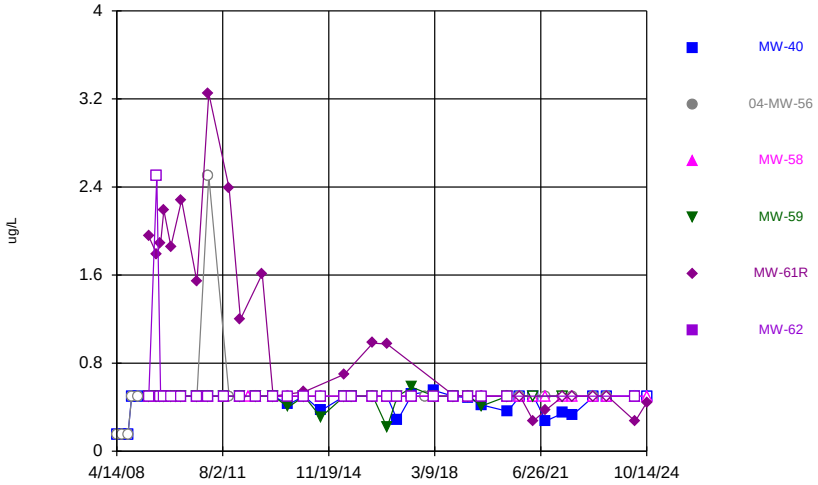
Time Series



Constituent: trans-1,2-Dichloroethene Analysis Run 2/18/2025 12:42 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

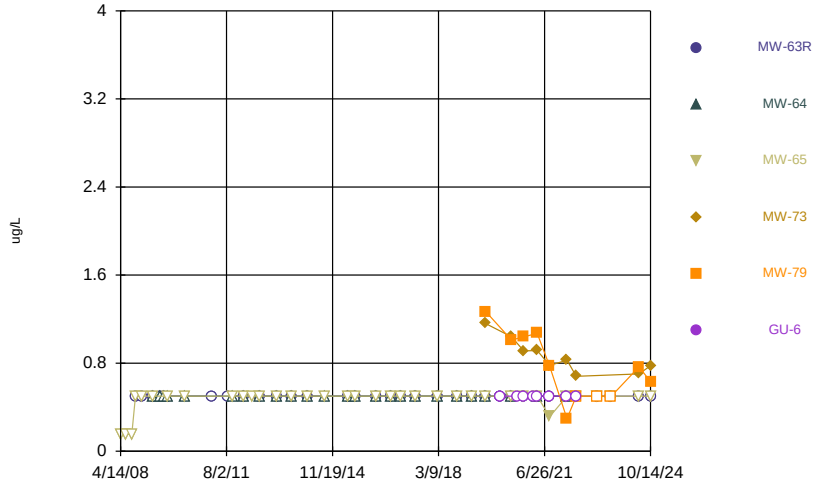
Time Series



Constituent: trans-1,2-Dichloroethene Analysis Run 2/18/2025 12:42 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

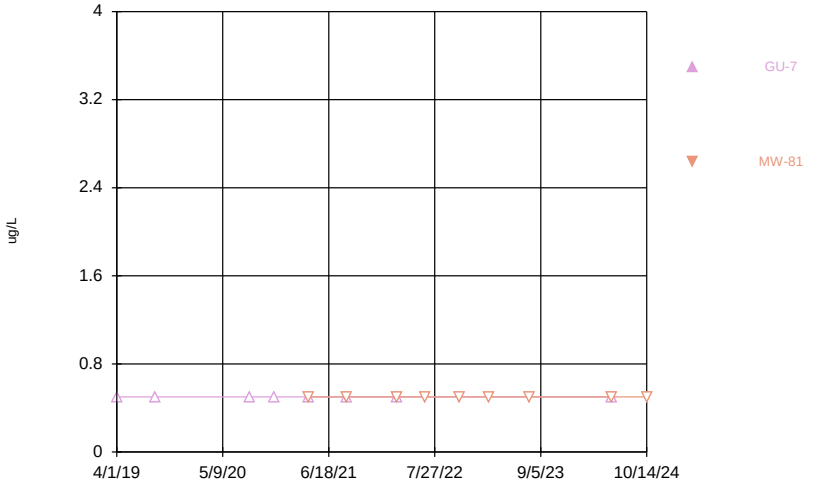
Time Series



Constituent: trans-1,2-Dichloroethene Analysis Run 2/18/2025 12:42 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

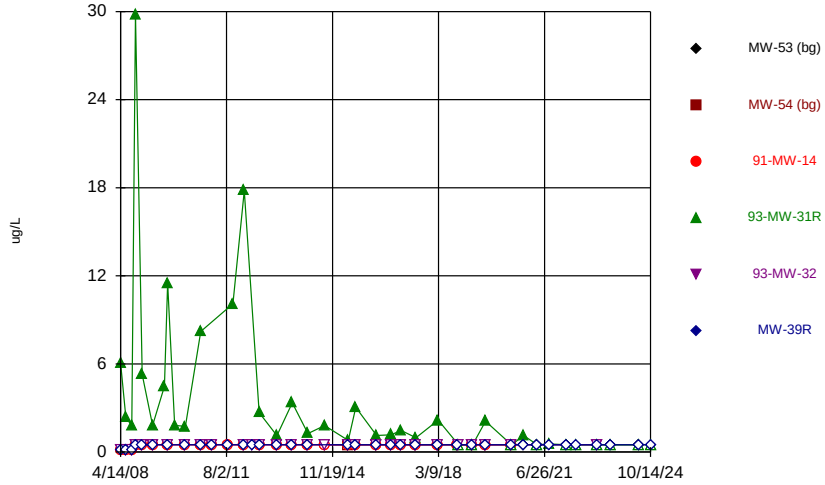
Time Series



Constituent: trans-1,2-Dichloroethene Analysis Run 2/18/2025 12:42 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

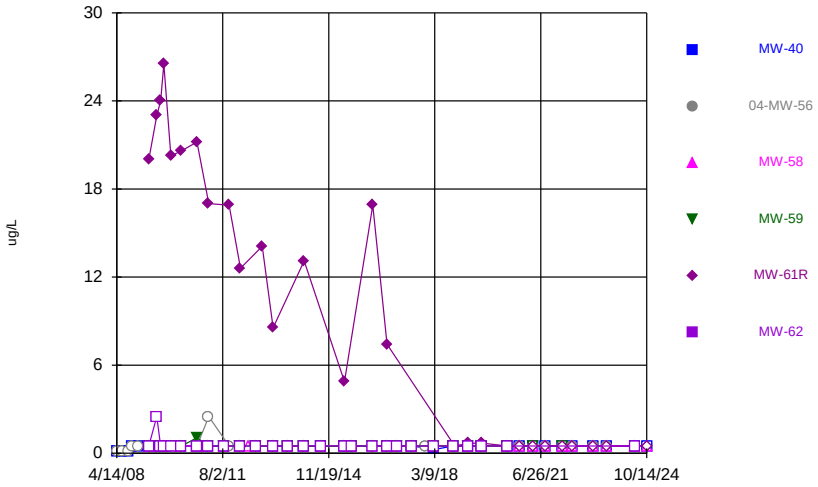
Time Series



Constituent: Trichloroethene Analysis Run 2/18/2025 12:42 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

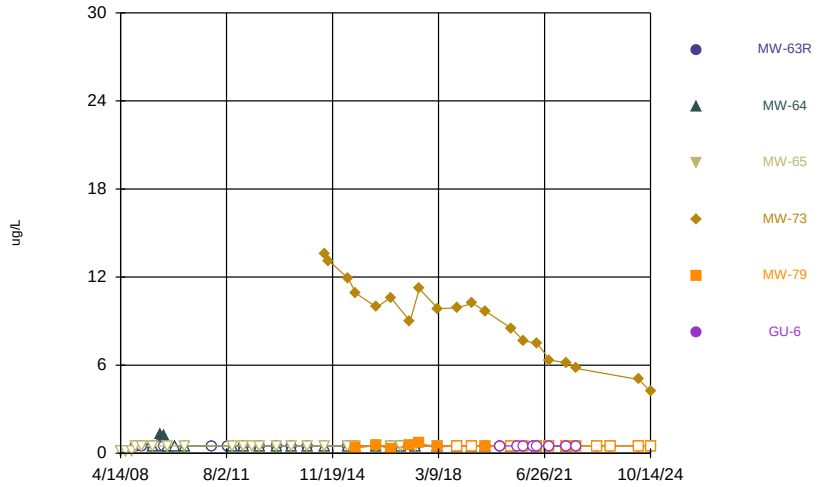
Time Series



Constituent: Trichloroethene Analysis Run 2/18/2025 12:42 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

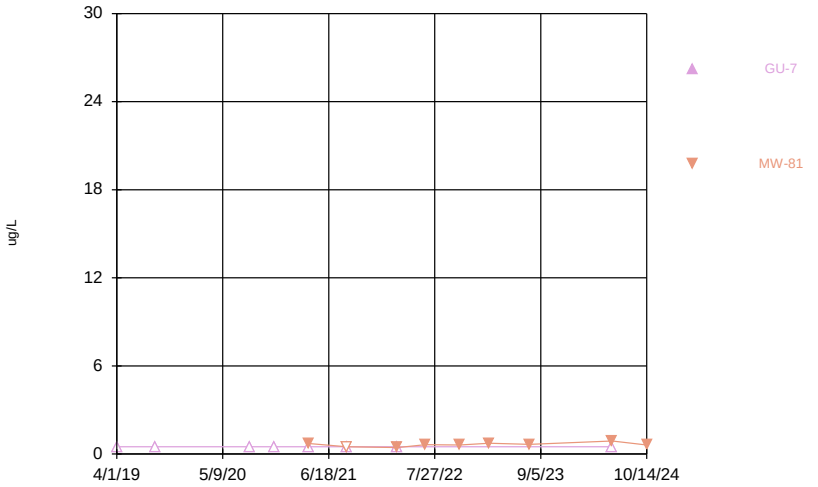
Time Series



Constituent: Trichloroethene Analysis Run 2/18/2025 12:42 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

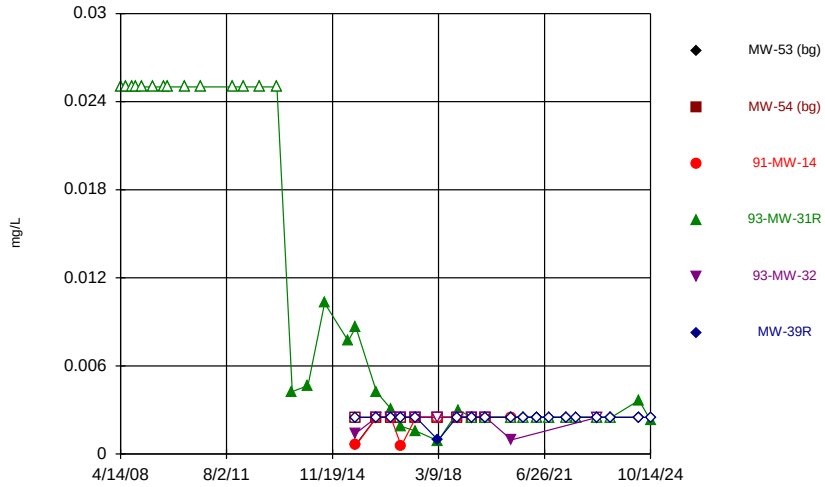
Time Series



Constituent: Trichloroethene Analysis Run 2/18/2025 12:42 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

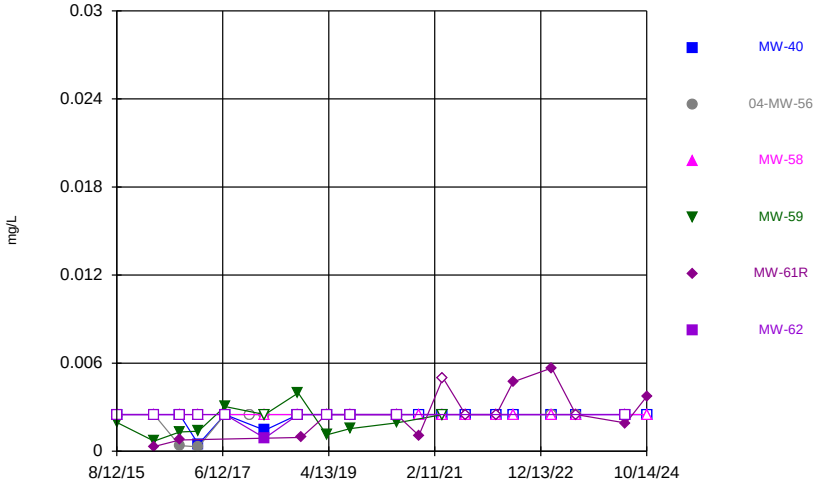
Time Series



Constituent: Vanadium Analysis Run 2/18/2025 12:42 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

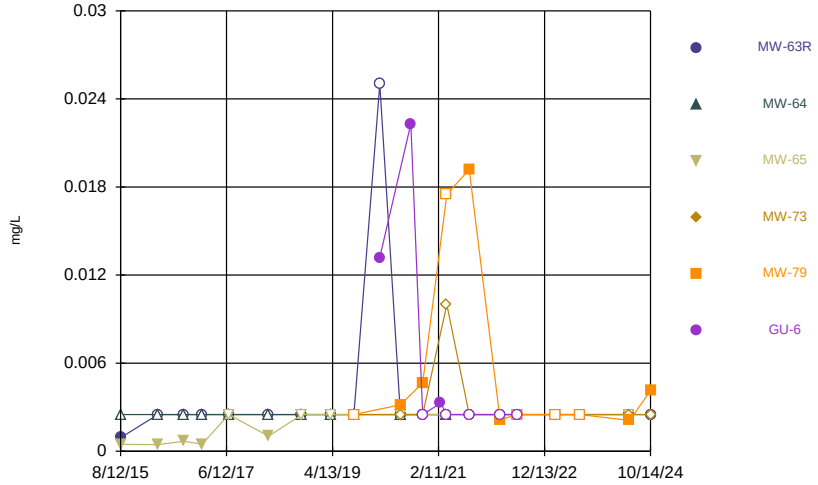
Time Series



Constituent: Vanadium Analysis Run 2/18/2025 12:42 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

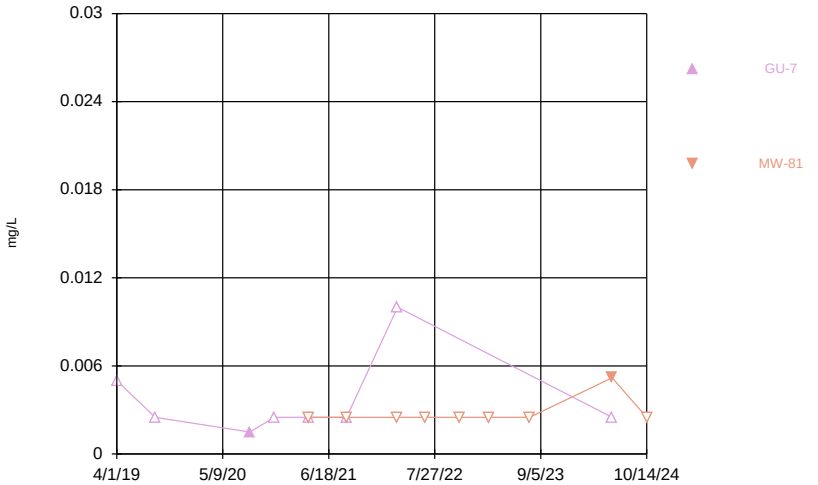
Time Series



Constituent: Vanadium Analysis Run 2/18/2025 12:42 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

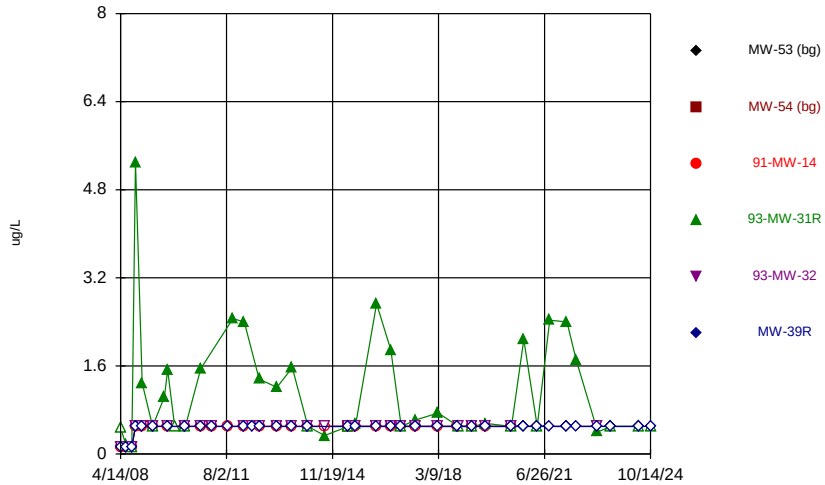
Time Series



Constituent: Vanadium Analysis Run 2/18/2025 12:42 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

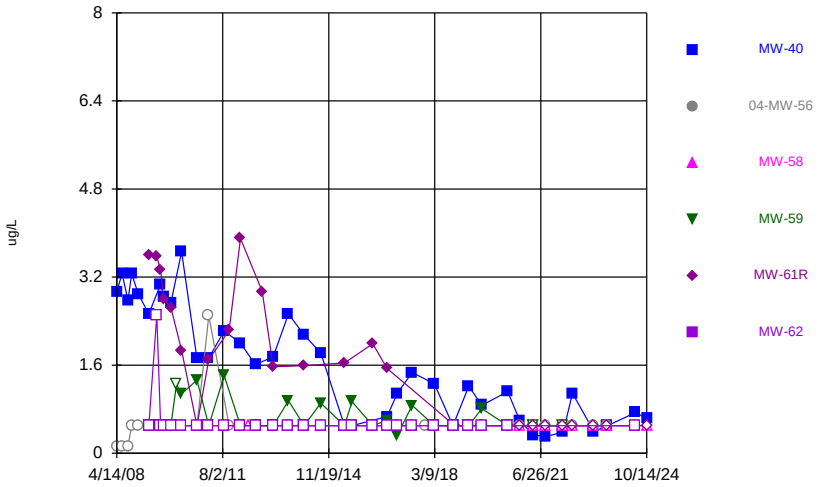
Time Series



Constituent: Vinyl chloride Analysis Run 2/18/2025 12:42 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

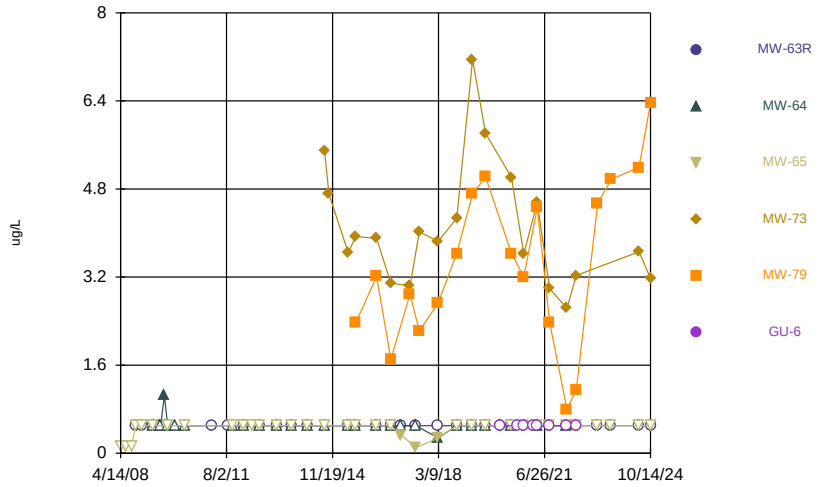
Time Series



Constituent: Vinyl chloride Analysis Run 2/18/2025 12:42 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

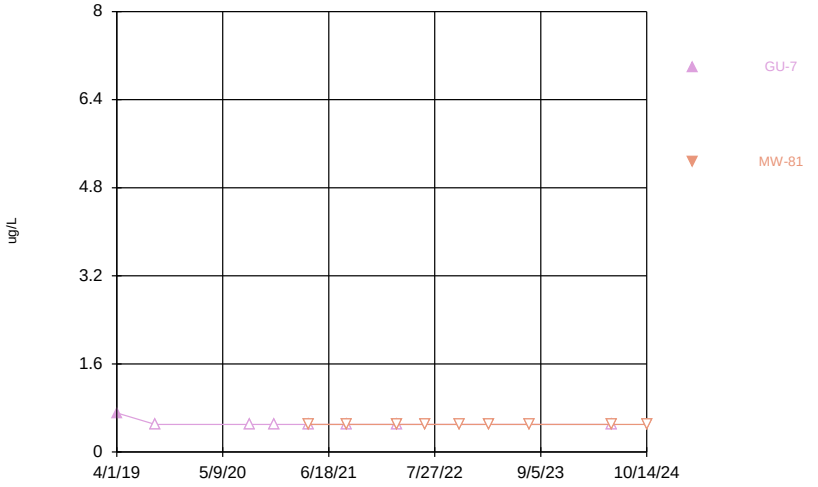
Time Series



Constituent: Vinyl chloride Analysis Run 2/18/2025 12:42 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

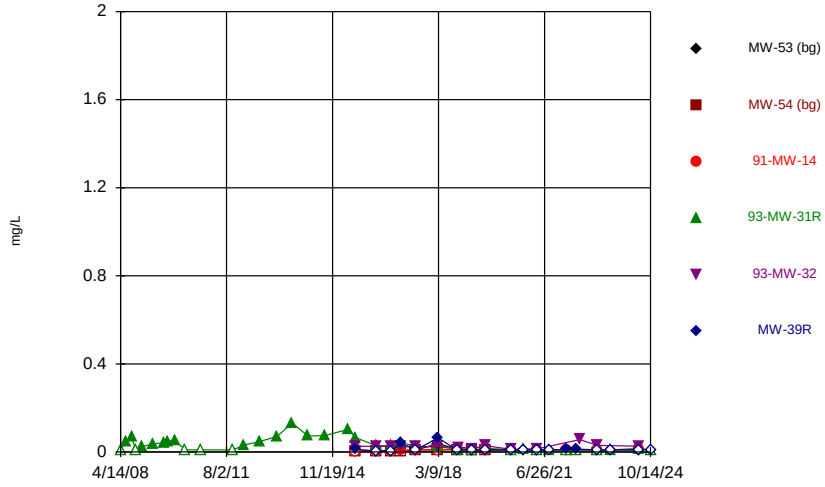
Time Series



Constituent: Vinyl chloride Analysis Run 2/18/2025 12:42 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

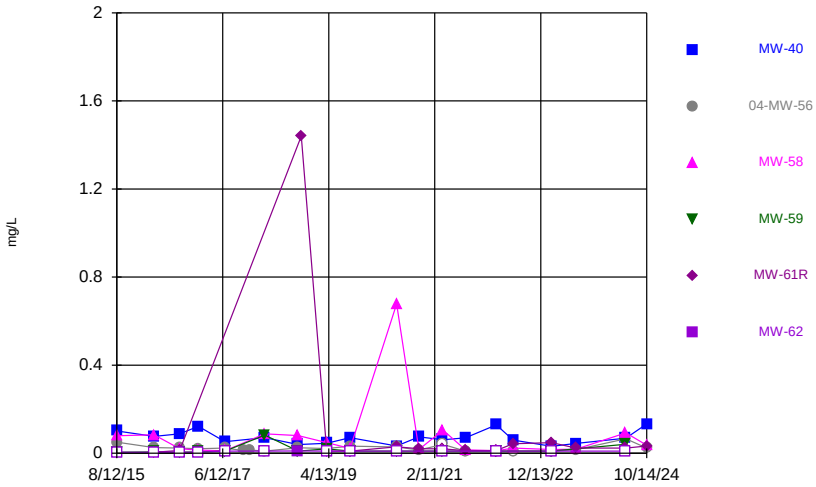
Time Series



Constituent: Zinc Analysis Run 2/18/2025 12:42 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

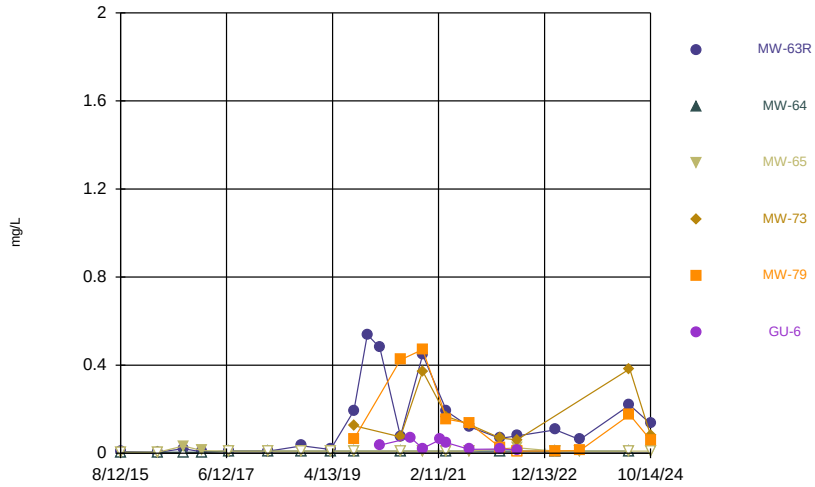
Time Series



Constituent: Zinc Analysis Run 2/18/2025 12:42 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

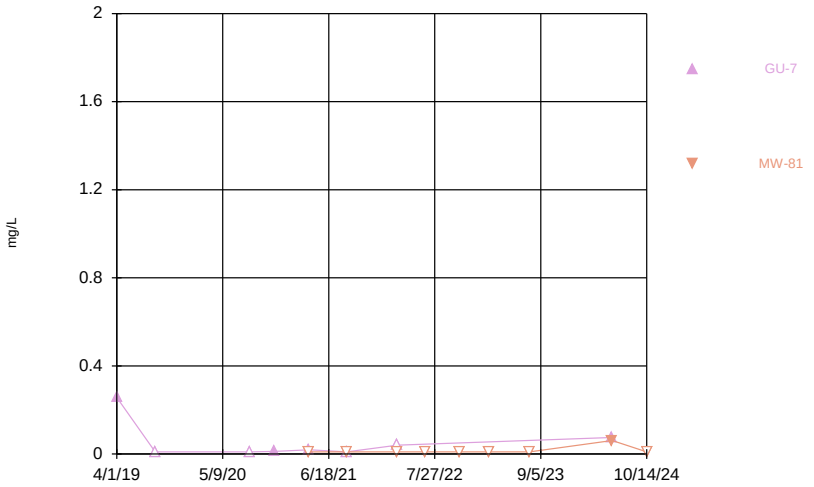
Time Series



Constituent: Zinc Analysis Run 2/18/2025 12:42 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Time Series



Constituent: Zinc Analysis Run 2/18/2025 12:42 PM View: 2024AWQR-Time_Series
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Outlier Tests Summary Table and Graphs

BG Outlier Analysis

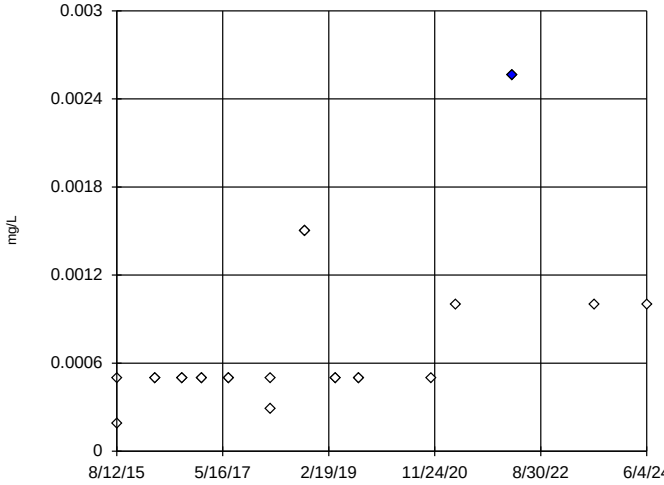
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master Printed 2/13/2025, 1:22 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Antimony (mg/L)	**MW-53,MW-54**	**Yes**	**0.00256**	**n/a w/combined bg**	**OH**	**NaN**	**23**	**0.0007187**	**0.000524**	**n/a**	**n/a**
Arsenic (mg/L)	MW-53,MW-54	No	n/a	n/a w/combined bg	OH	NaN	23	0.0009987	0.0002742	n/a	n/a
Barium (mg/L)	MW-53,MW-54	No	n/a	n/a w/combined bg	NP (nrm)/OH	NaN	23	0.02019	0.006763	unknown	ShapiroWilk
Beryllium (mg/L)	MW-53,MW-54	No	n/a	n/a w/combined bg	OH	NaN	23	0.0004887	0.0001215	n/a	n/a
Cadmium (mg/L)	MW-53,MW-54	No	n/a	n/a w/combined bg	EPA/OH	0.05	23	0.0002419	0.0002284	ln(x)	ShapiroWilk
Chromium (mg/L)	MW-53,MW-54	No	n/a	n/a w/combined bg	OH	NaN	23	0.002539	0.0001856	n/a	n/a
Cobalt (mg/L)	MW-53,MW-54	No	n/a	n/a w/combined bg	EPA/OH	0.05	23	0.002286	0.003372	ln(x)	ShapiroWilk
Copper (mg/L)	**MW-53,MW-54**	**Yes**	**0.00191,0.000562,0.002,0.00837,0.00163**	**n/a w/combined bg**	**NP (nrm)/OH**	**NaN**	**23**	**0.002571**	**0.00134**	**unknown**	**ShapiroWilk**
Lead (mg/L)	MW-53,MW-54	No	n/a	n/a w/combined bg	NP (nrm)/OH	NaN	23	0.0004925	0.0006088	unknown	ShapiroWilk
Nickel (mg/L)	MW-54,MW-53	No	n/a	n/a w/combined bg	EPA/OH	0.05	23	0.007474	0.007473	ln(x)	ShapiroWilk
Selenium (mg/L)	MW-53,MW-54	No	n/a	n/a w/combined bg	OH	NaN	23	0.002408	0.0006337	n/a	n/a
Silver (mg/L)	MW-53,MW-54	No	n/a	n/a w/combined bg	OH	NaN	23	0.0004746	0.0001459	n/a	n/a
Thallium (mg/L)	**MW-53,MW-54**	**Yes**	**0.00278**	**n/a w/combined bg**	**OH**	**NaN**	**23**	**0.0006426**	**0.0004876**	**n/a**	**n/a**
Vanadium (mg/L)	MW-53,MW-54	No	n/a	n/a w/combined bg	OH	NaN	23	0.002419	0.0003885	n/a	n/a
Zinc (mg/L)	MW-53,MW-54	No	n/a	n/a w/combined bg	OH	NaN	23	0.00972	0.006627	n/a	n/a

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm, Pooled Background

MW-53,MW-54



n = 23

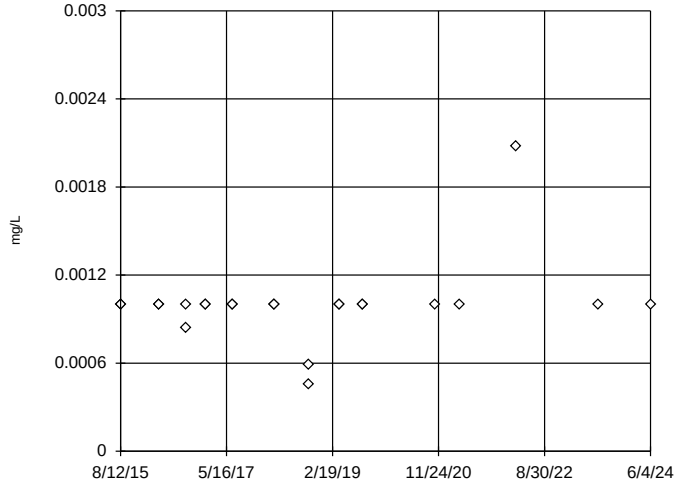
Statistical outlier is drawn as solid.
Outlier per Ohio method.

Constituent: Antimony Analysis Run 2/13/2025 1:20 PM View: 2024AWQR-BG_Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm, Pooled Background

MW-53,MW-54



n = 23

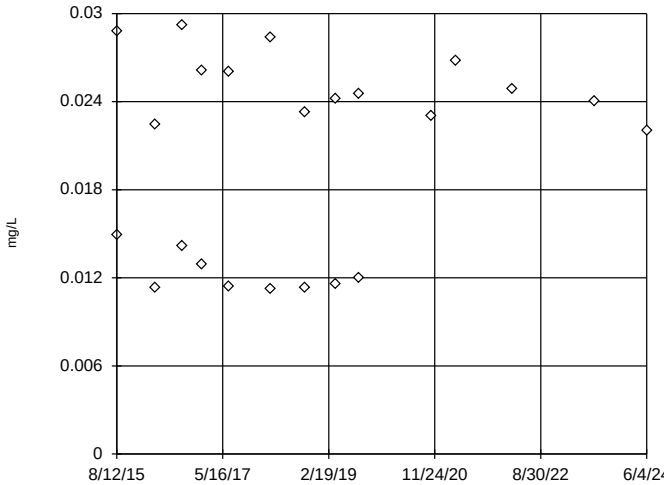
No statistical outliers.

Constituent: Arsenic Analysis Run 2/13/2025 1:20 PM View: 2024AWQR-BG_Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm, Pooled Background

MW-53,MW-54



n = 23

No outliers found.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.01 alpha level.

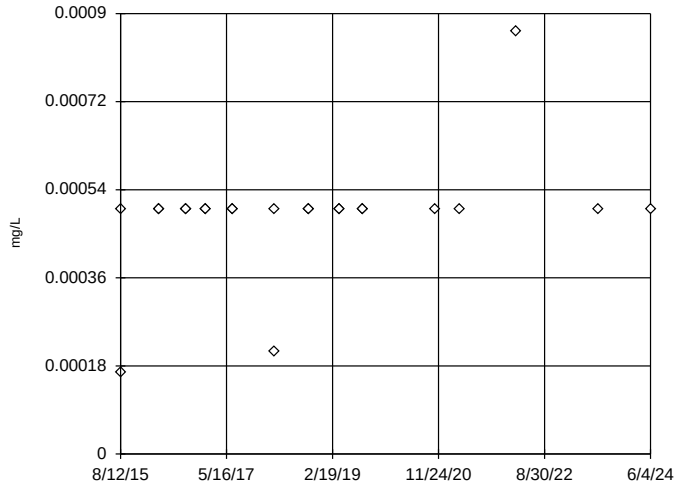
High cutoff = 0.068, low cutoff = -0.03, based on IQR multiplier of 3.

Constituent: Barium Analysis Run 2/13/2025 1:20 PM View: 2024AWQR-BG_Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm, Pooled Background

MW-53,MW-54



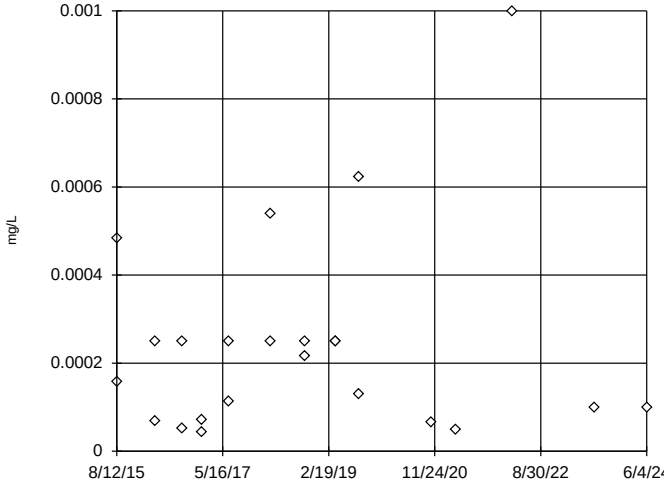
n = 23

No statistical outliers.

Constituent: Beryllium Analysis Run 2/13/2025 1:20 PM View: 2024AWQR-BG_Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

EPA Screening (suspected outliers for Rosner's Test)

MW-53,MW-54



n = 23

Rosner's will not be run.
No suspect values identified or unable to establish suspect values.
Ohio method in use.
Mean 0.0002419, std. dev. 0.0002284, critical Tn 2.624

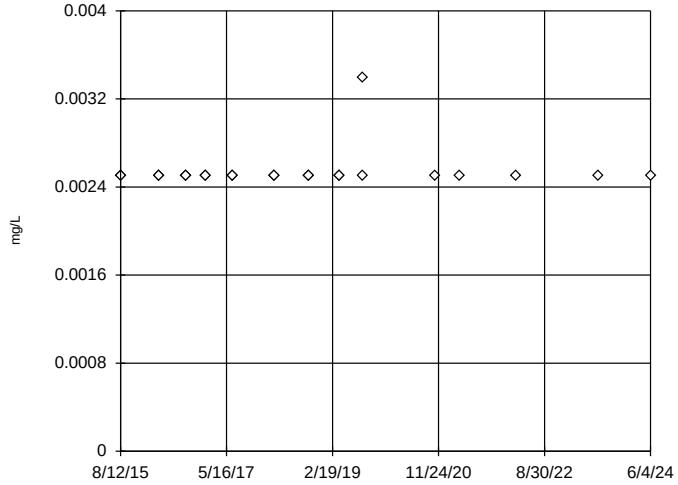
Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9523
Critical = 0.881 (after natural log transformation)
The distribution was found to be log-normal.

Constituent: Cadmium Analysis Run 2/13/2025 1:20 PM View: 2024AWQR-BG_Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm, Pooled Background

MW-53,MW-54



n = 23

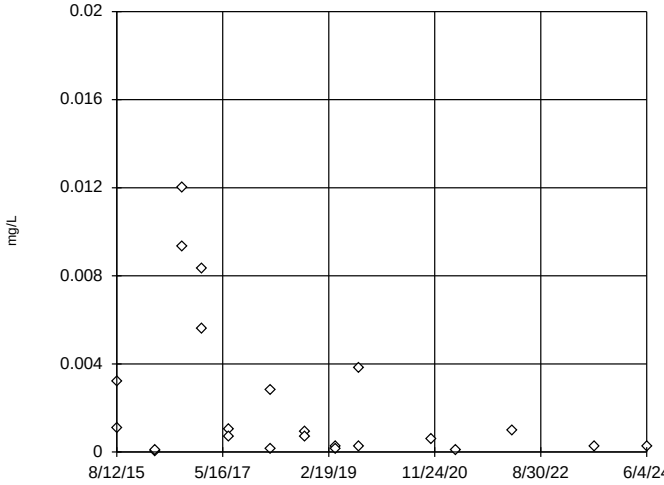
No statistical outliers.

Constituent: Chromium Analysis Run 2/13/2025 1:20 PM View: 2024AWQR-BG_Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

EPA Screening (suspected outliers for Rosner's Test)

MW-53,MW-54



n = 23

Rosner's will not be run.
No suspect values identified or unable to establish suspect values.
Ohio method in use.
Mean 0.002286, std. dev. 0.003372, critical Tn 2.624

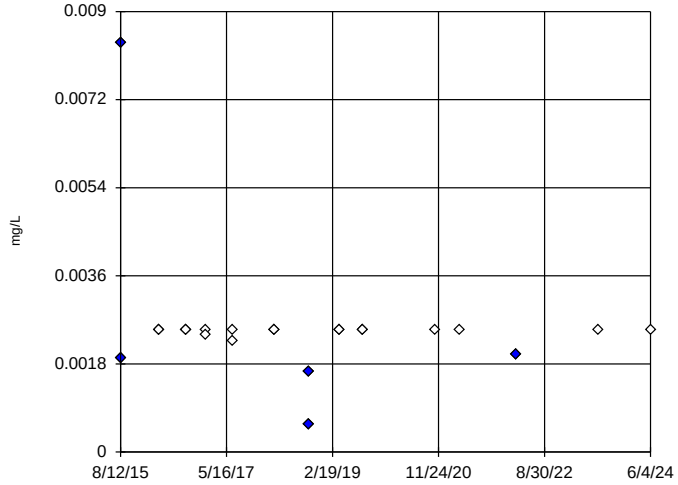
Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9555
Critical = 0.881 (after natural log transformation)
The distribution was found to be log-normal.

Constituent: Cobalt Analysis Run 2/13/2025 1:20 PM View: 2024AWQR-BG_Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm, Pooled Background

MW-53,MW-54



n = 23

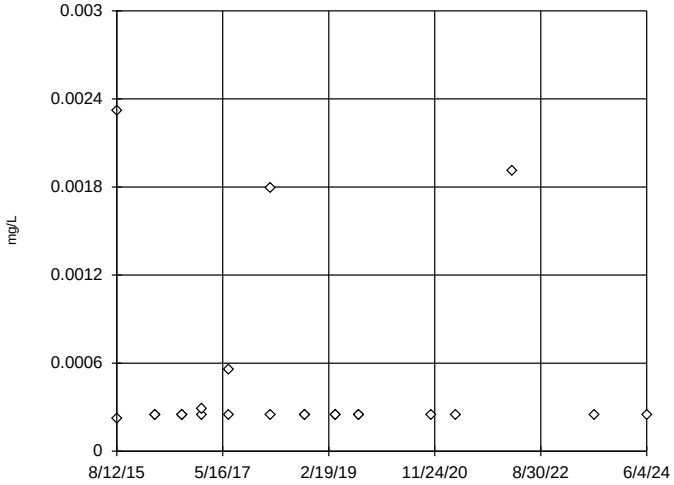
Outliers are drawn as solid.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.01 alpha level.

High cutoff = 0.00283, low cutoff = 0.00206, based on IQR multiplier of 3.

Constituent: Copper Analysis Run 2/13/2025 1:20 PM View: 2024AWQR-BG_Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm, Pooled Background

MW-53,MW-54



n = 23

No outliers found.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.01 alpha level.

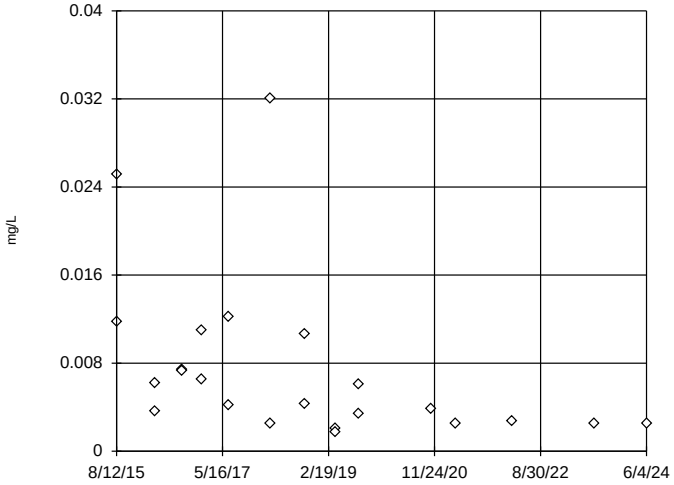
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Lead Analysis Run 2/13/2025 1:20 PM View: 2024AWQR-BG_Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

EPA Screening (suspected outliers for Rosner's Test)

MW-54,MW-53



n = 23

Rosner's will not be run.
No suspect values identified or unable to establish suspect values.
Ohio method in use.
Mean 0.007474, std. dev. 0.007473, critical Tn 2.624

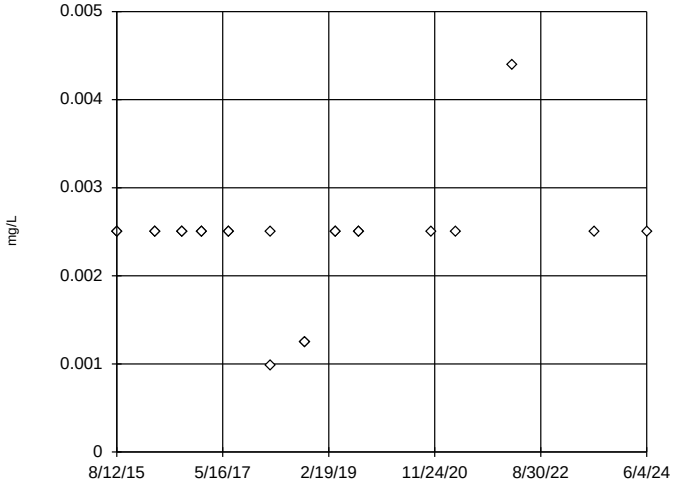
Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9378
Critical = 0.881 (after natural log transformation)
The distribution was found to be log-normal.

Constituent: Nickel Analysis Run 2/13/2025 1:20 PM View: 2024AWQR-BG_Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm, Pooled Background

MW-53,MW-54



n = 23

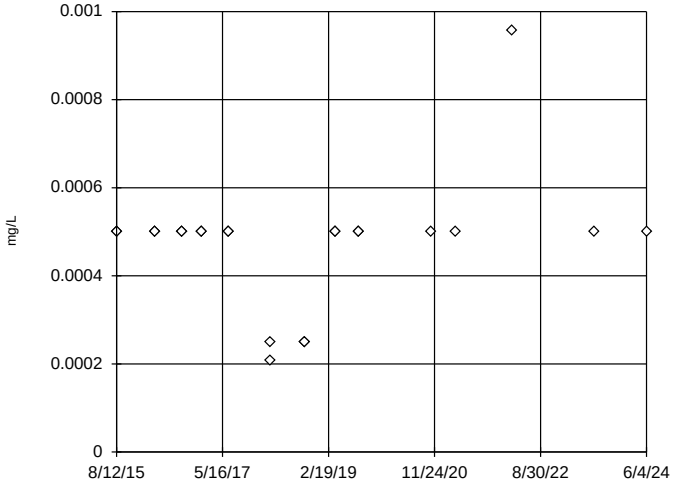
No statistical outliers.

Constituent: Selenium Analysis Run 2/13/2025 1:20 PM View: 2024AWQR-BG_Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm, Pooled Background

MW-53,MW-54



n = 23

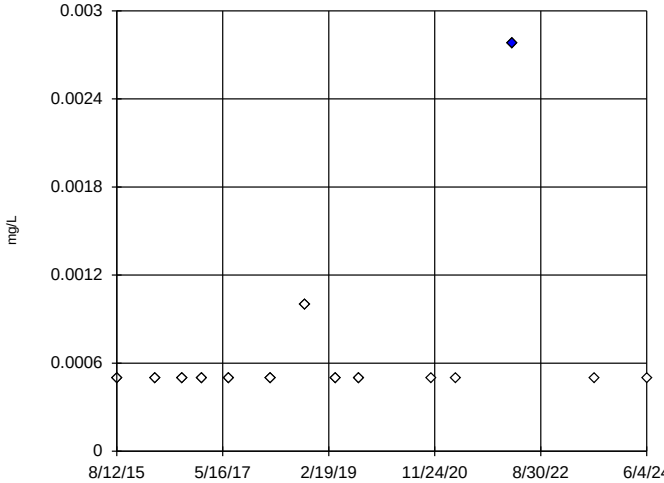
No statistical outliers.

Constituent: Silver Analysis Run 2/13/2025 1:20 PM View: 2024AWQR-BG_Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm, Pooled Background

MW-53,MW-54



n = 23

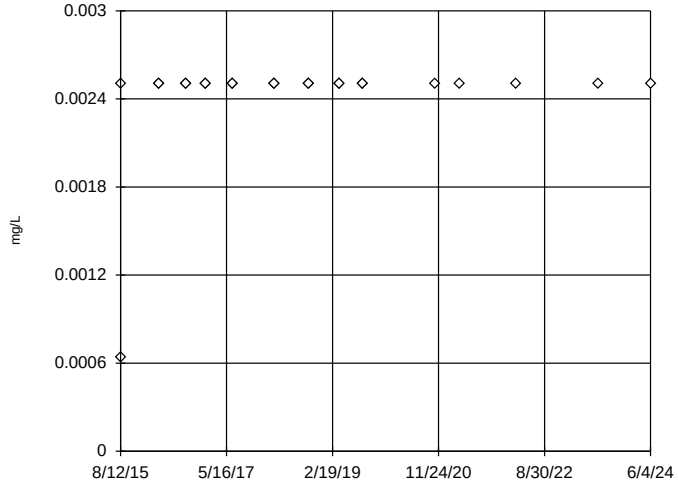
Statistical outlier is drawn as solid.
Outlier per Ohio method.

Constituent: Thallium Analysis Run 2/13/2025 1:20 PM View: 2024AWQR-BG_Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm, Pooled Background

MW-53,MW-54



n = 23

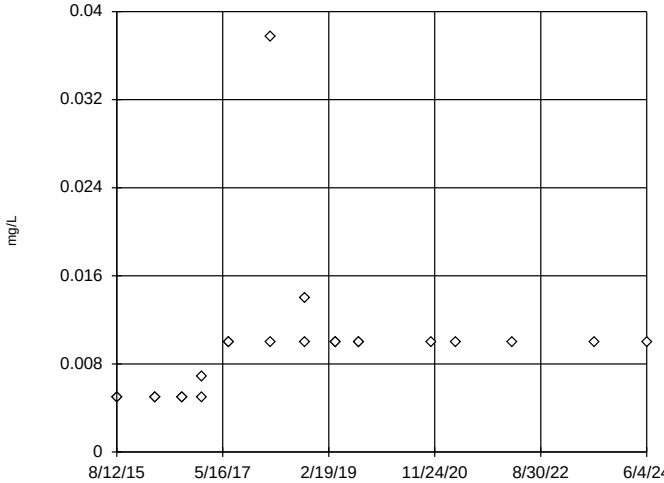
No statistical outliers.

Constituent: Vanadium Analysis Run 2/13/2025 1:20 PM View: 2024AWQR-BG_Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Ohio EPA 0715 Outlier Algorithm, Pooled Background

MW-53,MW-54



n = 23

No statistical outliers.

Constituent: Zinc Analysis Run 2/13/2025 1:20 PM View: 2024AWQR-BG_Outliers
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Interwell Prediction Limit Summary Table and Graphs – AMD Wells

AMD Interwell Prediction Limit

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master Printed 2/13/2025, 3:15 PM

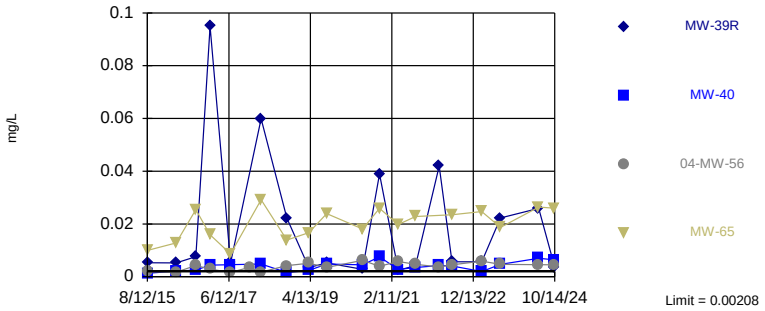
Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	Bg Wells	%NDs	Transform	Alpha	Method
Arsenic (mg/L)	**MW-39R**	**0.00208**	**n/a**	**10/14/2024**	**0.003675**	**Yes**	**23**	**MW-53,MW-54**	**82.61**	**n/a**	**0.002913**	**NP Inter (NDs) 1 of 2**
Arsenic (mg/L)	**MW-40**	**0.00208**	**n/a**	**10/14/2024**	**0.00637**	**Yes**	**23**	**MW-53,MW-54**	**82.61**	**n/a**	**0.002913**	**NP Inter (NDs) 1 of 2**
Arsenic (mg/L)	**04-MW-56**	**0.00208**	**n/a**	**10/14/2024**	**0.00451**	**Yes**	**23**	**MW-53,MW-54**	**82.61**	**n/a**	**0.002913**	**NP Inter (NDs) 1 of 2**
Arsenic (mg/L)	**MW-65**	**0.00208**	**n/a**	**10/14/2024**	**0.026**	**Yes**	**23**	**MW-53,MW-54**	**82.61**	**n/a**	**0.002913**	**NP Inter (NDs) 1 of 2**
Barium (mg/L)	MW-39R	0.03158	n/a	10/14/2024	0.0106	No	23	MW-53,MW-54	0	x^3	0.0002508	Param Inter 1 of 2
Barium (mg/L)	MW-40	0.03158	n/a	10/14/2024	0.0151	No	23	MW-53,MW-54	0	x^3	0.0002508	Param Inter 1 of 2
Barium (mg/L)	04-MW-56	0.03158	n/a	10/14/2024	0.0309	No	23	MW-53,MW-54	0	x^3	0.0002508	Param Inter 1 of 2
Barium (mg/L)	MW-58	0.03158	n/a	10/14/2024	0.015	No	23	MW-53,MW-54	0	x^3	0.0002508	Param Inter 1 of 2
Barium (mg/L)	MW-63R	0.03158	n/a	10/14/2024	0.0124	No	23	MW-53,MW-54	0	x^3	0.0002508	Param Inter 1 of 2
Barium (mg/L)	**MW-65**	**0.03158**	**n/a**	**10/14/2024**	**0.399**	**Yes**	**23**	**MW-53,MW-54**	**0**	**x^3**	**0.0002508**	**Param Inter 1 of 2**
Cadmium (mg/L)	MW-58	0.0008857	n/a	10/14/2024	0.000241	No	23	MW-53,MW-54	43.48	sqrt(x)	0.0002508	Param Inter 1 of 2
Cadmium (mg/L)	**MW-63R**	**0.0008857**	**n/a**	**10/14/2024**	**0.002565**	**Yes**	**23**	**MW-53,MW-54**	**43.48**	**sqrt(x)**	**0.0002508**	**Param Inter 1 of 2**
Cobalt (mg/L)	**MW-39R**	**0.01581**	**n/a**	**10/14/2024**	**0.02315**	**Yes**	**23**	**MW-53,MW-54**	**13.04**	**x^(1/3)**	**0.0002508**	**Param Inter 1 of 2**
Cobalt (mg/L)	**MW-40**	**0.01581**	**n/a**	**10/14/2024**	**0.12**	**Yes**	**23**	**MW-53,MW-54**	**13.04**	**x^(1/3)**	**0.0002508**	**Param Inter 1 of 2**
Cobalt (mg/L)	04-MW-56	0.01581	n/a	10/14/2024	0.0158	No	23	MW-53,MW-54	13.04	x^(1/3)	0.0002508	Param Inter 1 of 2
Cobalt (mg/L)	**MW-58**	**0.01581**	**n/a**	**10/14/2024**	**0.0355**	**Yes**	**23**	**MW-53,MW-54**	**13.04**	**x^(1/3)**	**0.0002508**	**Param Inter 1 of 2**
Cobalt (mg/L)	MW-63R	0.01581	n/a	10/14/2024	0.00081J	No	23	MW-53,MW-54	13.04	x^(1/3)	0.0002508	Param Inter 1 of 2
Cobalt (mg/L)	MW-65	0.01581	n/a	10/14/2024	0.00224	No	23	MW-53,MW-54	13.04	x^(1/3)	0.0002508	Param Inter 1 of 2
Nickel (mg/L)	MW-39R	0.0305	n/a	10/14/2024	0.00838	No	23	MW-53,MW-54	13.04	x^(1/3)	0.0002508	Param Inter 1 of 2
Nickel (mg/L)	**MW-40**	**0.0305**	**n/a**	**10/14/2024**	**0.13**	**Yes**	**23**	**MW-53,MW-54**	**13.04**	**x^(1/3)**	**0.0002508**	**Param Inter 1 of 2**
Nickel (mg/L)	**04-MW-56**	**0.0305**	**n/a**	**10/14/2024**	**0.0478**	**Yes**	**23**	**MW-53,MW-54**	**13.04**	**x^(1/3)**	**0.0002508**	**Param Inter 1 of 2**
Nickel (mg/L)	**MW-58**	**0.0305**	**n/a**	**10/14/2024**	**0.04**	**Yes**	**23**	**MW-53,MW-54**	**13.04**	**x^(1/3)**	**0.0002508**	**Param Inter 1 of 2**
Nickel (mg/L)	**MW-63R**	**0.0305**	**n/a**	**10/14/2024**	**0.0315**	**Yes**	**23**	**MW-53,MW-54**	**13.04**	**x^(1/3)**	**0.0002508**	**Param Inter 1 of 2**
Zinc (mg/L)	**MW-40**	**0.0377**	**n/a**	**10/14/2024**	**0.133**	**Yes**	**23**	**MW-53,MW-54**	**86.96**	**n/a**	**0.002913**	**NP Inter (NDs) 1 of 2**
Zinc (mg/L)	04-MW-56	0.0377	n/a	10/14/2024	0.0238	No	23	MW-53,MW-54	86.96	n/a	0.002913	NP Inter (NDs) 1 of 2
Zinc (mg/L)	MW-58	0.0377	n/a	10/14/2024	0.0369	No	23	MW-53,MW-54	86.96	n/a	0.002913	NP Inter (NDs) 1 of 2
Zinc (mg/L)	**MW-63R**	**0.0377**	**n/a**	**10/14/2024**	**0.1341**	**Yes**	**23**	**MW-53,MW-54**	**86.96**	**n/a**	**0.002913**	**NP Inter (NDs) 1 of 2**

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Exceeds Limit: MW-39R, MW-40, 04-MW-56, MW-65

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 23 background values. 82.61% NDs. Annual per-constituent alpha = 0.07843. Individual comparison alpha = 0.002913 (1 of 2). Comparing 4 points to limit. Assumes 10 future values.

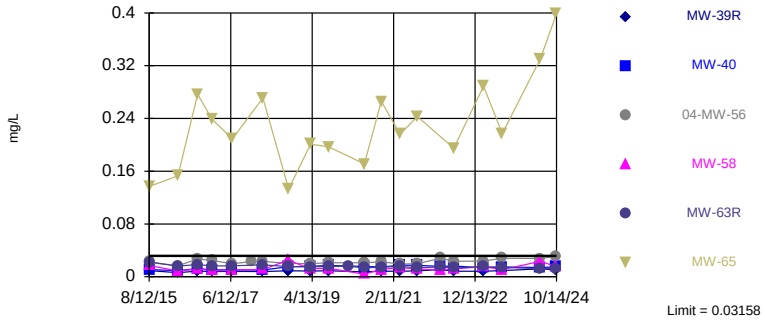
Constituent: Arsenic Analysis Run 2/13/2025 3:10 PM View: 2024AWQR-AMD_Wells_InterPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Exceeds Limit: MW-65

Prediction Limit

Interwell Parametric



Background Data Summary (based on cube transformation): Mean=0.00001081, Std. Dev.=0.000008139, n=23. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8832, critical = 0.881. Kappa = 2.542 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.003506. Individual comparison alpha = 0.0002508. Comparing 6 points to limit. Assumes 8 future values.

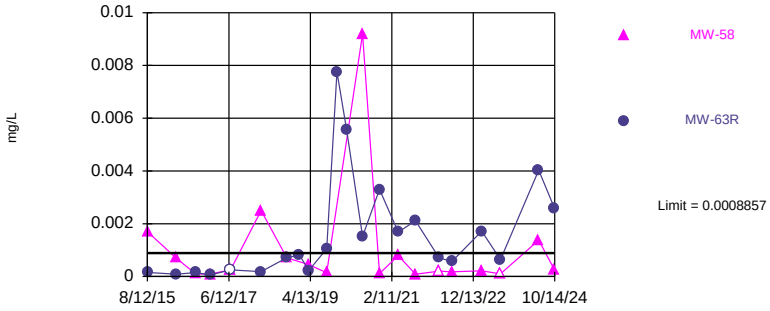
Constituent: Barium Analysis Run 2/13/2025 3:10 PM View: 2024AWQR-AMD_Wells_InterPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Exceeds Limit: MW-63R

Prediction Limit

Interwell Parametric



Background Data Summary (based on square root transformation) (after Kaplan-Meier Adjustment): Mean=0.01253, Std. Dev.=0.006777, n=23, 43.48% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8933, critical = 0.881. Kappa = 2.542 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.003506. Individual comparison alpha = 0.0002508. Comparing 2 points to limit. Assumes 12 future values.

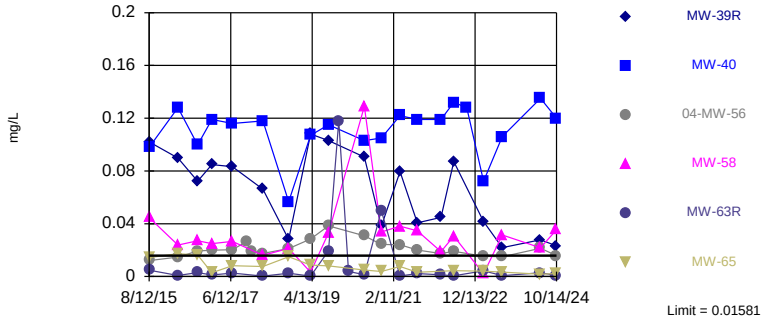
Constituent: Cadmium Analysis Run 2/13/2025 3:10 PM View: 2024AWQR-AMD_Wells_InterPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Exceeds Limit: MW-39R, MW-40, MW-58

Prediction Limit

Interwell Parametric



Background Data Summary (based on cube root transformation): Mean=0.1046, Std. Dev.=0.05757, n=23, 13.04% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8896, critical = 0.881. Kappa = 2.542 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.003506. Individual comparison alpha = 0.0002508. Comparing 6 points to limit. Assumes 8 future values.

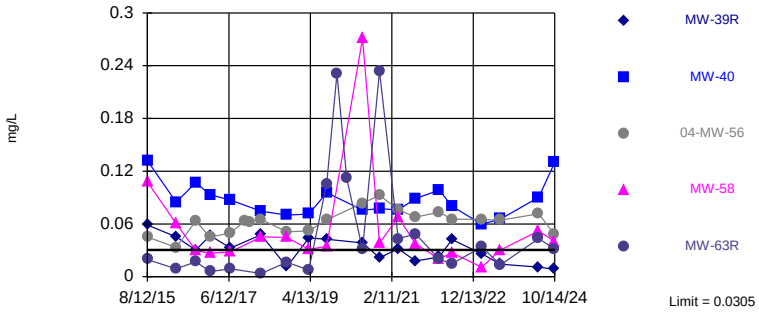
Constituent: Cobalt Analysis Run 2/13/2025 3:10 PM View: 2024AWQR-AMD_Wells_InterPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Exceeds Limit: MW-40, 04-MW-56, MW-58, MW-63R

Prediction Limit

Interwell Parametric



Background Data Summary (based on cube root transformation): Mean=0.1811, Std. Dev.=0.05167, n=23, 13.04% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8811, critical = 0.881. Kappa = 2.542 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.003506. Individual comparison alpha = 0.0002508. Comparing 5 points to limit. Assumes 9 future values.

Constituent: Nickel Analysis Run 2/13/2025 3:10 PM View: 2024AWQR-AMD_Wells_InterPL

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

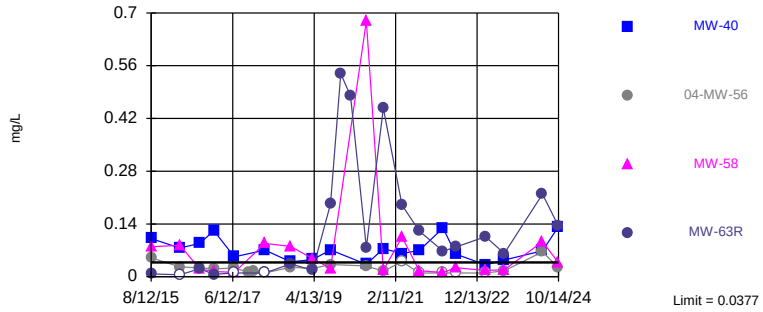
Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Hollow symbols indicate censored values.

Exceeds Limit: MW-40, MW-63R

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 23 background values. 86.96% NDs. Annual per-constituent alpha = 0.07843. Individual comparison alpha = 0.002913 (1 of 2). Comparing 4 points to limit. Assumes 10 future values.

Constituent: Zinc Analysis Run 2/13/2025 3:10 PM View: 2024AWQR-AMD_Wells_InterPL

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Intrawell Prediction Limit Summary Table and Graphs – AMD Wells

AMD Intrawell Prediction Limit

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master Printed 2/13/2025, 4:00 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	Bg Wells	%NDs	Transform	Alpha	Method
Antimony (mg/L)	MW-39R	0.0015	n/a	10/14/2024	0.001ND	No	12	n/a	91.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Antimony (mg/L)	MW-40	0.0015	n/a	10/14/2024	0.001ND	No	12	n/a	91.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Antimony (mg/L)	MW-58	0.002	n/a	10/14/2024	0.001ND	No	12	n/a	91.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Arsenic (mg/L)	MW-39R	0.1791	n/a	10/14/2024	0.003675	No	12	n/a	0	x^(1/3)	0.0002508	Param Intra 1 of 2
Arsenic (mg/L)	MW-40	0.00912	n/a	10/14/2024	0.00637	No	12	n/a	0	No	0.0002508	Param Intra 1 of 2
Arsenic (mg/L)	04-MW-56	0.008195	n/a	10/14/2024	0.00451	No	13	n/a	0	No	0.0002508	Param Intra 1 of 2
Arsenic (mg/L)	MW-58	0.004	n/a	10/14/2024	0.000908J	No	12	n/a	83.33	n/a	0.01077	NP Intra (NDs) 1 of 2
Arsenic (mg/L)	MW-63R	0.01	n/a	10/14/2024	0.001ND	No	13	n/a	76.92	n/a	0.009692	NP Intra (NDs) 1 of 2
Arsenic (mg/L)	MW-65	0.03865	n/a	10/14/2024	0.026	No	12	n/a	0	No	0.0002508	Param Intra 1 of 2
Barium (mg/L)	MW-39R	0.01096	n/a	10/14/2024	0.0106	No	12	n/a	0	No	0.0002508	Param Intra 1 of 2
Barium (mg/L)	MW-40	0.02238	n/a	10/14/2024	0.0151	No	12	n/a	0	No	0.0002508	Param Intra 1 of 2
Barium (mg/L)	**04-MW-56**	**0.0295**	**n/a**	**10/14/2024**	**0.0309**	**Yes**	**13**	**n/a**	**0**	**No**	**0.0002508**	**Param Intra 1 of 2**
Barium (mg/L)	MW-58	0.02799	n/a	10/14/2024	0.015	No	12	n/a	0	No	0.0002508	Param Intra 1 of 2
Barium (mg/L)	MW-63R	0.02289	n/a	10/14/2024	0.0124	No	13	n/a	0	No	0.0002508	Param Intra 1 of 2
Barium (mg/L)	**MW-65**	**0.3614**	**n/a**	**10/14/2024**	**0.399**	**Yes**	**12**	**n/a**	**0**	**No**	**0.0002508**	**Param Intra 1 of 2**
Beryllium (mg/L)	MW-39R	0.0005	n/a	10/14/2024	0.0005ND	No	12	n/a	91.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Beryllium (mg/L)	MW-40	0.0005	n/a	10/14/2024	0.000371J	No	12	n/a	75	n/a	0.01077	NP Intra (NDs) 1 of 2
Beryllium (mg/L)	MW-58	0.0054	n/a	10/14/2024	0.002ND	No	12	n/a	41.67	n/a	0.01077	NP Intra (normality) ...
Beryllium (mg/L)	MW-63R	0.00188	n/a	10/14/2024	0.0005ND	No	13	n/a	69.23	n/a	0.009692	NP Intra (NDs) 1 of 2
Beryllium (mg/L)	MW-65	0.0005	n/a	6/4/2024	0.0005ND	No	10	n/a	80	n/a	0.01476	NP Intra (NDs) 1 of 2
Cadmium (mg/L)	MW-39R	0.000319	n/a	10/14/2024	0.0001ND	No	12	n/a	58.33	n/a	0.01077	NP Intra (NDs) 1 of 2
Cadmium (mg/L)	MW-40	0.003094	n/a	10/14/2024	0.00018J	No	12	n/a	0	No	0.0002508	Param Intra 1 of 2
Cadmium (mg/L)	04-MW-56	0.0005274	n/a	10/14/2024	0.0001ND	No	13	n/a	38.46	No	0.0002508	Param Intra 1 of 2
Cadmium (mg/L)	MW-58	0.01314	n/a	10/14/2024	0.000241	No	12	n/a	8.333	x^(1/3)	0.0002508	Param Intra 1 of 2
Cadmium (mg/L)	MW-63R	0.01037	n/a	10/14/2024	0.002565	No	15	n/a	6.667	sqrt(x)	0.0002508	Param Intra 1 of 2
Cadmium (mg/L)	MW-65	0.000735	n/a	10/14/2024	0.000197J	No	12	n/a	66.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Chromium (mg/L)	MW-39R	0.0025	n/a	10/14/2024	0.0025ND	No	12	n/a	91.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Chromium (mg/L)	MW-58	0.0025	n/a	10/14/2024	0.0025ND	No	12	n/a	91.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Chromium (mg/L)	MW-63R	0.025	n/a	10/14/2024	0.0025ND	No	13	n/a	92.31	n/a	0.009692	NP Intra (NDs) 1 of 2
Chromium (mg/L)	MW-65	0.0025	n/a	6/4/2024	0.0025ND	No	10	n/a	60	n/a	0.01476	NP Intra (NDs) 1 of 2
Cobalt (mg/L)	MW-39R	0.1546	n/a	10/14/2024	0.02315	No	12	n/a	0	No	0.0002508	Param Intra 1 of 2
Cobalt (mg/L)	MW-40	0.164	n/a	10/14/2024	0.12	No	12	n/a	0	No	0.0002508	Param Intra 1 of 2
Cobalt (mg/L)	04-MW-56	0.04254	n/a	10/14/2024	0.0158	No	14	n/a	0	No	0.0002508	Param Intra 1 of 2
Cobalt (mg/L)	MW-58	0.1521	n/a	10/14/2024	0.0355	No	12	n/a	0	sqrt(x)	0.0002508	Param Intra 1 of 2
Cobalt (mg/L)	MW-63R	0.6753	n/a	10/14/2024	0.00081J	No	14	n/a	0	ln(x)	0.0002508	Param Intra 1 of 2
Cobalt (mg/L)	MW-65	0.02472	n/a	10/14/2024	0.00224	No	12	n/a	0	No	0.0002508	Param Intra 1 of 2
Copper (mg/L)	MW-39R	0.0136	n/a	10/14/2024	0.0025ND	No	12	n/a	75	n/a	0.01077	NP Intra (NDs) 1 of 2
Copper (mg/L)	MW-40	0.00326	n/a	10/14/2024	0.0025ND	No	12	n/a	83.33	n/a	0.01077	NP Intra (NDs) 1 of 2
Copper (mg/L)	04-MW-56	0.01	n/a	10/14/2024	0.0025ND	No	13	n/a	84.62	n/a	0.009692	NP Intra (NDs) 1 of 2
Copper (mg/L)	MW-58	0.01	n/a	10/14/2024	0.01ND	No	12	n/a	66.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Copper (mg/L)	MW-63R	0.025	n/a	10/14/2024	0.0025ND	No	13	n/a	76.92	n/a	0.009692	NP Intra (NDs) 1 of 2
Copper (mg/L)	MW-65	0.0025	n/a	10/14/2024	0.0025ND	No	12	n/a	83.33	n/a	0.01077	NP Intra (NDs) 1 of 2
Lead (mg/L)	MW-39R	0.00362	n/a	10/14/2024	0.00025ND	No	12	n/a	66.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Lead (mg/L)	MW-40	0.0021	n/a	10/14/2024	0.000275J	No	12	n/a	66.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Lead (mg/L)	04-MW-56	0.001	n/a	10/14/2024	0.00025ND	No	13	n/a	53.85	n/a	0.009692	NP Intra (NDs) 1 of 2
Lead (mg/L)	MW-58	0.00335	n/a	10/14/2024	0.00025ND	No	12	n/a	41.67	n/a	0.01077	NP Intra (normality) ...
Lead (mg/L)	MW-63R	0.00528	n/a	10/14/2024	0.00025ND	No	14	n/a	57.14	n/a	0.008612	NP Intra (NDs) 1 of 2
Lead (mg/L)	MW-65	0.00211	n/a	10/14/2024	0.00025ND	No	12	n/a	58.33	n/a	0.01077	NP Intra (NDs) 1 of 2
Nickel (mg/L)	MW-39R	0.07721	n/a	10/14/2024	0.00838	No	12	n/a	0	No	0.0002508	Param Intra 1 of 2
Nickel (mg/L)	MW-40	0.1424	n/a	10/14/2024	0.13	No	12	n/a	0	No	0.0002508	Param Intra 1 of 2

AMD Intrawell Prediction Limit

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master Printed 2/13/2025, 4:00 PM

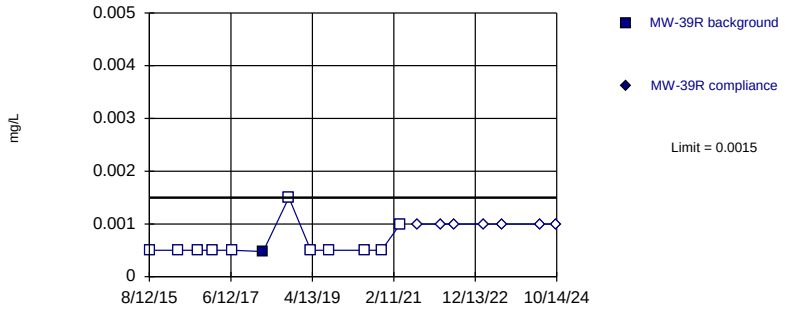
Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	Bg Wells	%NDs	Transform	Alpha	Method
Nickel (mg/L)	04-MW-56	0.1075	n/a	10/14/2024	0.0478	No	14	n/a	0	No	0.0002508	Param Intra 1 of 2
Nickel (mg/L)	MW-58	0.3946	n/a	10/14/2024	0.04	No	12	n/a	0	ln(x)	0.0002508	Param Intra 1 of 2
Nickel (mg/L)	MW-63R	0.4863	n/a	10/14/2024	0.0315	No	14	n/a	0	x^(1/3)	0.0002508	Param Intra 1 of 2
Nickel (mg/L)	MW-65	0.02329	n/a	10/14/2024	0.00361J	No	12	n/a	0	No	0.0002508	Param Intra 1 of 2
Selenium (mg/L)	MW-39R	0.0025	n/a	10/14/2024	0.0025ND	No	12	n/a	91.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Selenium (mg/L)	MW-40	0.0025	n/a	10/14/2024	0.0025ND	No	12	n/a	91.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Selenium (mg/L)	04-MW-56	0.0025	n/a	7/25/2023	0.0025ND	No	11	n/a	100	n/a	0.01276	NP Intra (NDs) 1 of 2
Selenium (mg/L)	MW-58	0.01	n/a	10/14/2024	0.01ND	No	12	n/a	91.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Selenium (mg/L)	MW-63R	0.025	n/a	10/14/2024	0.0025ND	No	13	n/a	84.62	n/a	0.009692	NP Intra (NDs) 1 of 2
Selenium (mg/L)	MW-65	0.0025	n/a	6/4/2024	0.0025ND	No	10	n/a	60	n/a	0.01476	NP Intra (NDs) 1 of 2
Silver (mg/L)	MW-39R	0.0005	n/a	10/14/2024	0.0005ND	No	12	n/a	91.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Silver (mg/L)	MW-58	0.0005	n/a	10/14/2024	0.0005ND	No	12	n/a	91.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Silver (mg/L)	MW-63R	0.005	n/a	10/14/2024	0.0005ND	No	13	n/a	92.31	n/a	0.009692	NP Intra (NDs) 1 of 2
Thallium (mg/L)	MW-39R	0.001	n/a	10/14/2024	0.0005ND	No	12	n/a	66.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Thallium (mg/L)	MW-40	0.0006159	n/a	10/14/2024	0.0005ND	No	12	n/a	41.67	No	0.0002508	Param Intra 1 of 2
Thallium (mg/L)	MW-58	0.001	n/a	10/14/2024	0.0005ND	No	12	n/a	75	n/a	0.01077	NP Intra (NDs) 1 of 2
Vanadium (mg/L)	MW-39R	0.0025	n/a	10/14/2024	0.0025ND	No	12	n/a	91.67	n/a	0.01077	NP Intra (NDs) 1 of 2
Vanadium (mg/L)	MW-40	0.0025	n/a	10/14/2024	0.0025ND	No	12	n/a	83.33	n/a	0.01077	NP Intra (NDs) 1 of 2
Vanadium (mg/L)	MW-63R	0.025	n/a	10/14/2024	0.0025ND	No	13	n/a	92.31	n/a	0.009692	NP Intra (NDs) 1 of 2
Vanadium (mg/L)	MW-65	0.0025	n/a	6/4/2024	0.0025ND	No	10	n/a	50	n/a	0.01476	NP Intra (normality) ...
Zinc (mg/L)	MW-39R	0.0644	n/a	10/14/2024	0.01ND	No	12	n/a	75	n/a	0.01077	NP Intra (NDs) 1 of 2
Zinc (mg/L)	MW-40	0.1489	n/a	10/14/2024	0.133	No	12	n/a	0	No	0.0002508	Param Intra 1 of 2
Zinc (mg/L)	04-MW-56	0.05628	n/a	10/14/2024	0.0238	No	14	n/a	14.29	No	0.0002508	Param Intra 1 of 2
Zinc (mg/L)	MW-58	1.716	n/a	10/14/2024	0.0369	No	12	n/a	0	ln(x)	0.0002508	Param Intra 1 of 2
Zinc (mg/L)	MW-63R	1.309	n/a	10/14/2024	0.1341	No	14	n/a	21.43	x^(1/3)	0.0002508	Param Intra 1 of 2
Zinc (mg/L)	MW-65	0.0327	n/a	10/14/2024	0.01ND	No	12	n/a	83.33	n/a	0.01077	NP Intra (NDs) 1 of 2

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 91.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

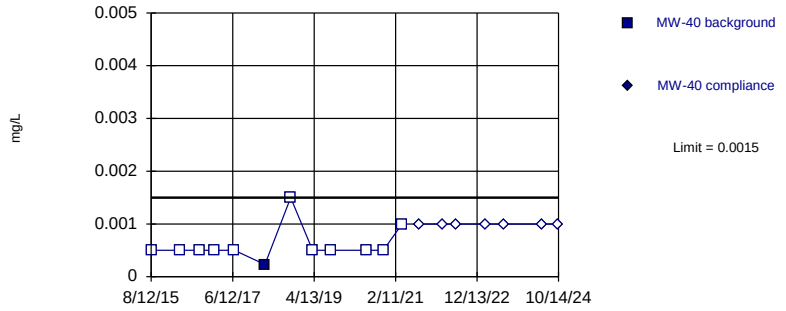
Constituent: Antimony Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 91.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

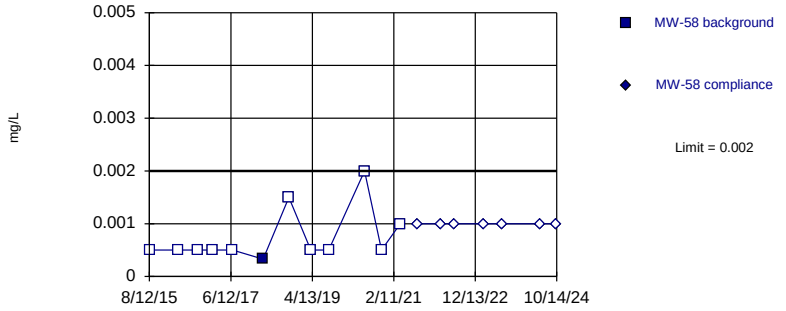
Constituent: Antimony Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 91.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

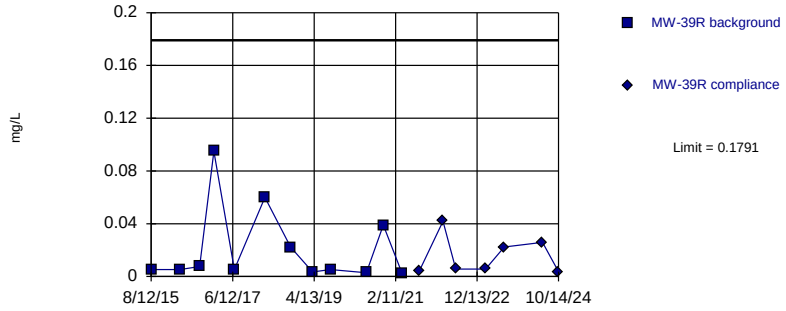
Constituent: Antimony Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on cube root transformation): Mean=0.2322, Std. Dev.=0.108, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8078, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

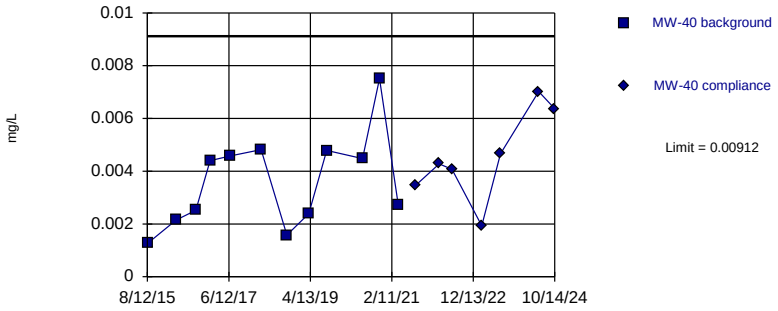
Constituent: Arsenic Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.003601, Std. Dev.=0.001799, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9115, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Arsenic Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL

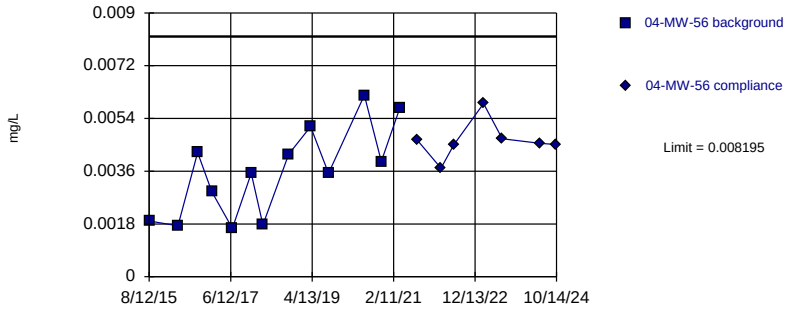
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.003573, Std. Dev.=0.001544, n=13. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9254, critical = 0.814. Kappa = 2.994 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Arsenic Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

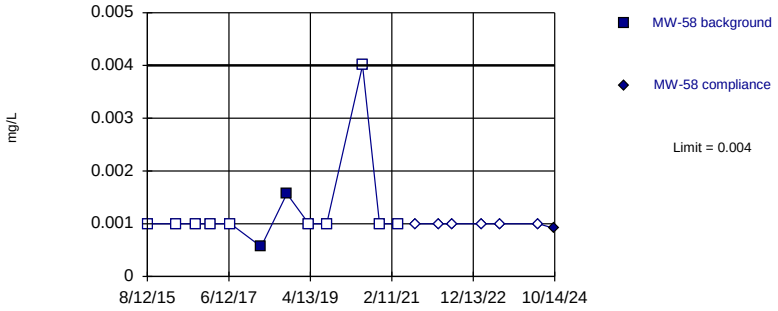
Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 83.33% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

Constituent: Arsenic Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

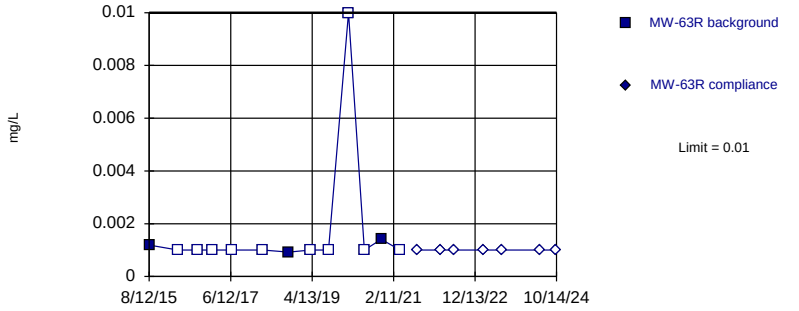
Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 76.92% NDs. Well-constituent pair annual alpha = 0.01929. Individual comparison alpha = 0.009692 (1 of 2).

Constituent: Arsenic Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL

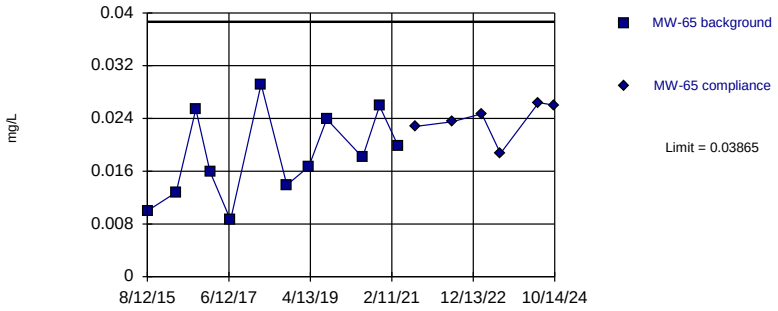
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.01835, Std. Dev.=0.00662, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9608, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Arsenic Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL

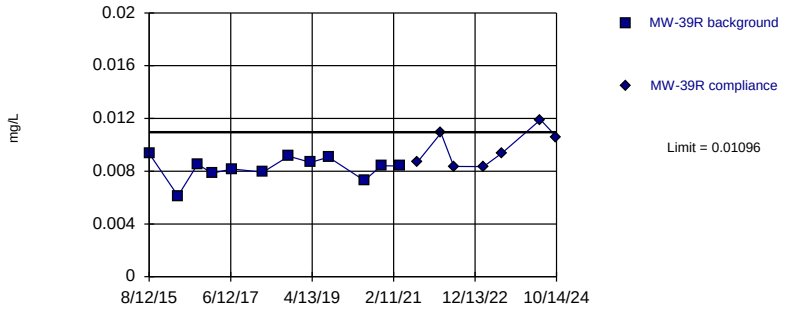
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.008242, Std. Dev.=0.0008849, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9139, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Barium Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL

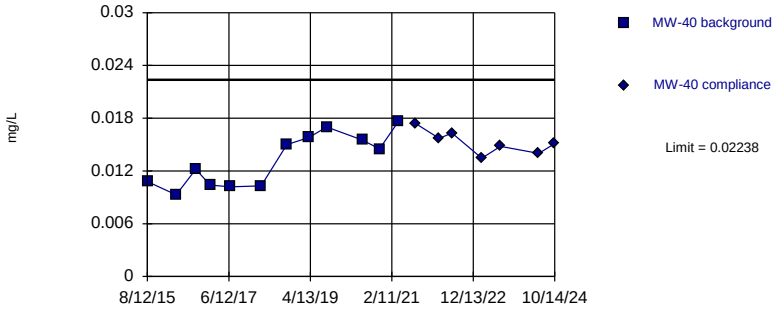
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.01322, Std. Dev.=0.002986, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8947, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Barium Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL

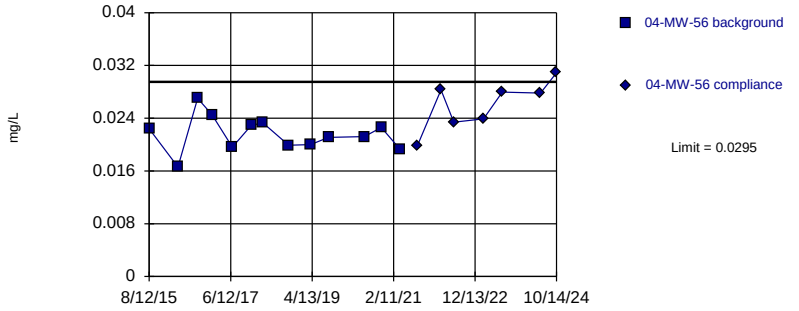
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.02157, Std. Dev.=0.002649, n=13. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9788, critical = 0.814. Kappa = 2.994 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Barium Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL

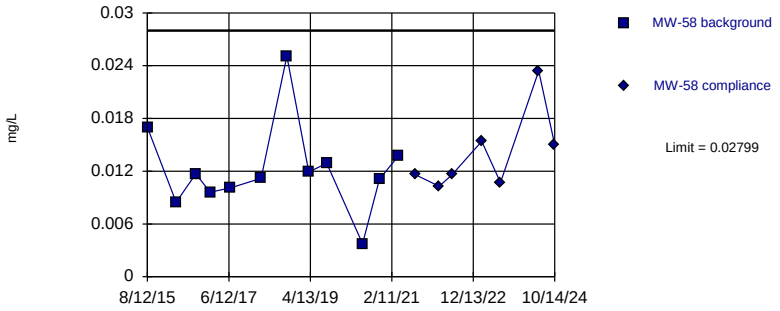
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.01221, Std. Dev.=0.005143, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.881, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Barium Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL

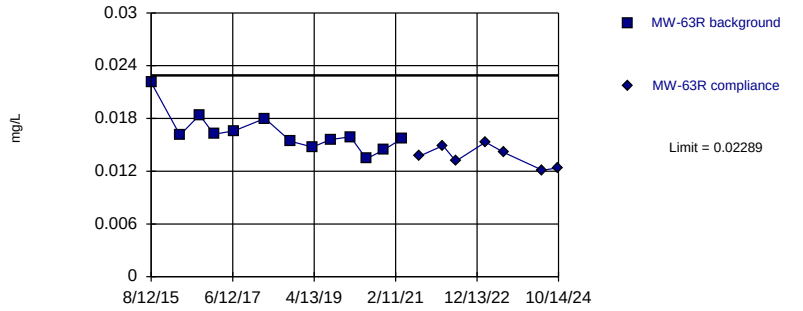
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.01635, Std. Dev.=0.002185, n=13. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8721, critical = 0.814. Kappa = 2.994 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Barium Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL

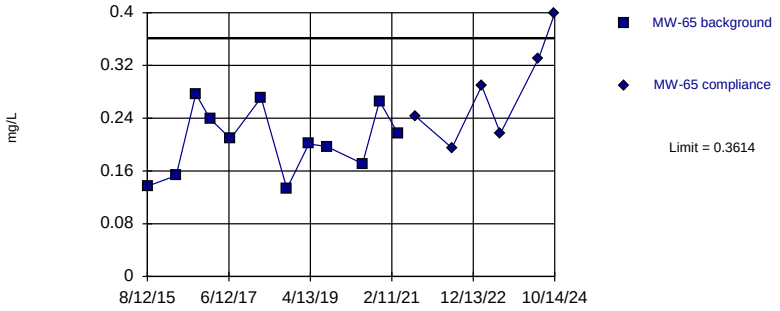
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.2058, Std. Dev.=0.05072, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9355, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Barium Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

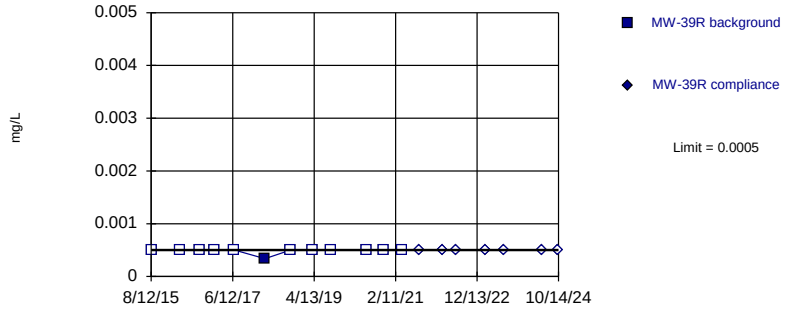
Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 91.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

Constituent: Beryllium Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL

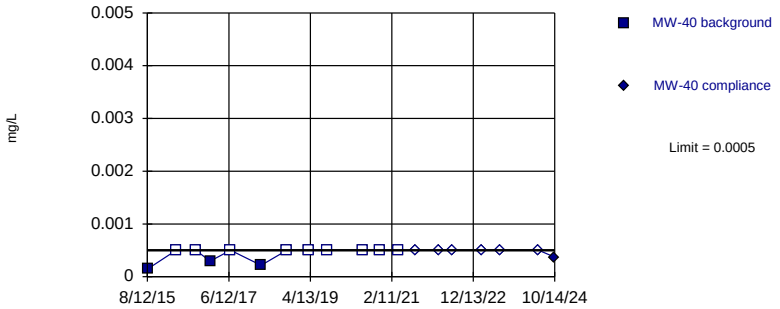
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 75% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

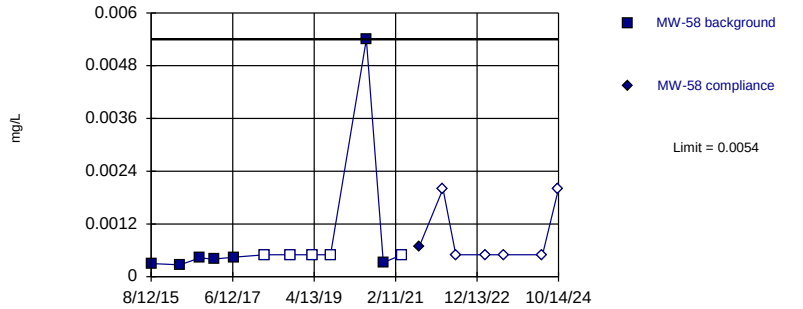
Constituent: Beryllium Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 12 background values. 41.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

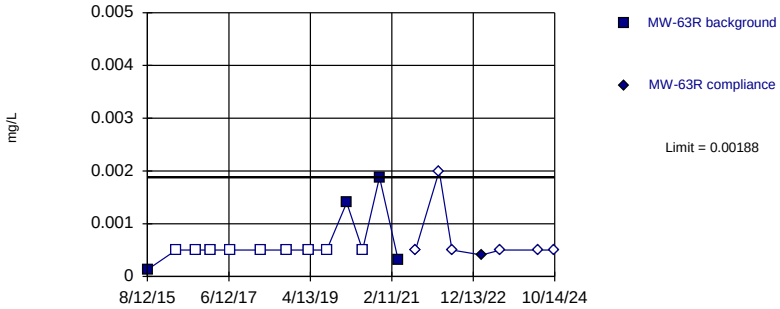
Constituent: Beryllium Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 69.23% NDs. Well-constituent pair annual alpha = 0.01929. Individual comparison alpha = 0.009692 (1 of 2).

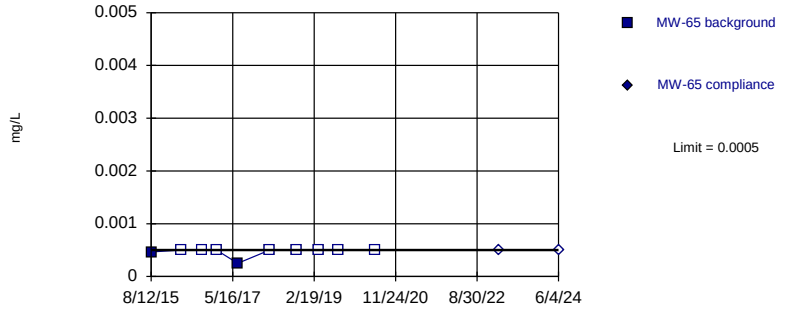
Constituent: Beryllium Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 10 background values. 80% NDs. Well-constituent pair annual alpha = 0.0293. Individual comparison alpha = 0.01476 (1 of 2).

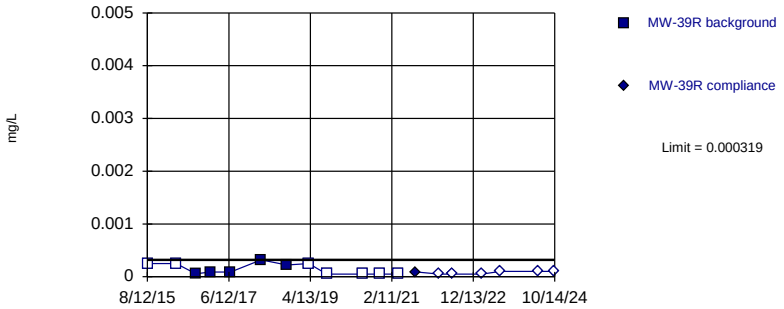
Constituent: Beryllium Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 58.33% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

Constituent: Cadmium Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL

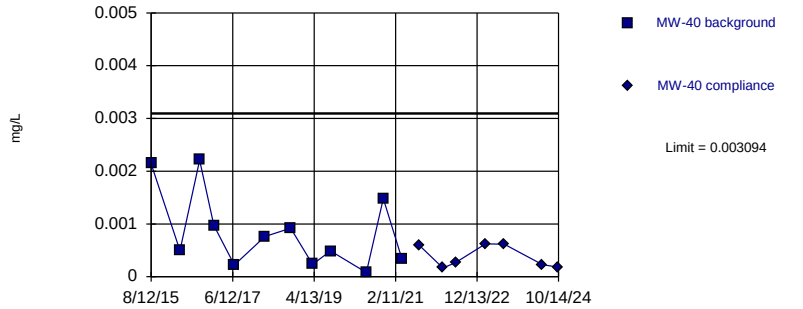
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.0008613, Std. Dev.=0.0007278, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8651, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Cadmium Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL

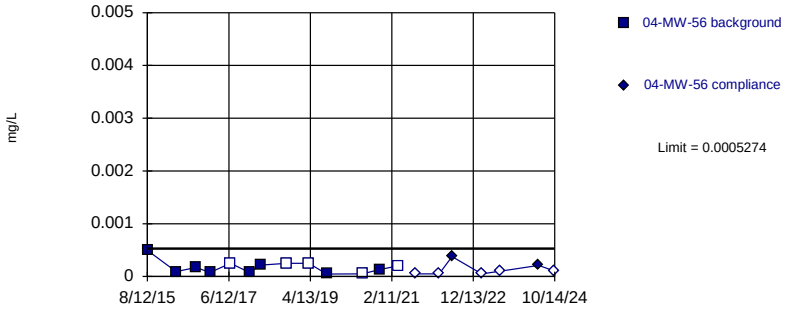
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (after Kaplan-Meier Adjustment): Mean=0.0001493, Std. Dev.=0.0001263, n=13, 38.46% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8604, critical = 0.814. Kappa = 2.994 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Cadmium Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL

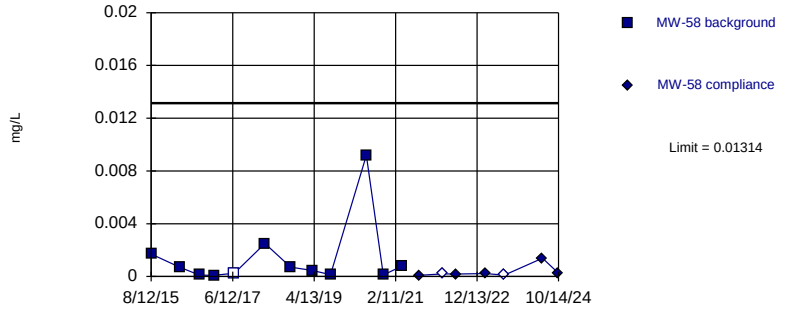
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on cube root transformation): Mean=0.08872, Std. Dev.=0.04801, n=12, 8.333% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8416, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Cadmium Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL

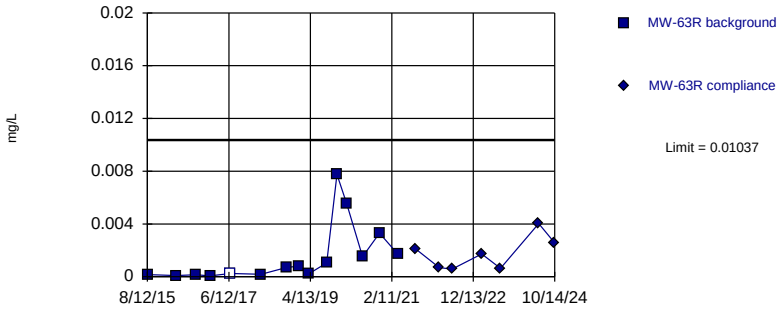
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on square root transformation): Mean=0.03157, Std. Dev.=0.02468, n=15, 6.667% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8489, critical = 0.835. Kappa = 2.846 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

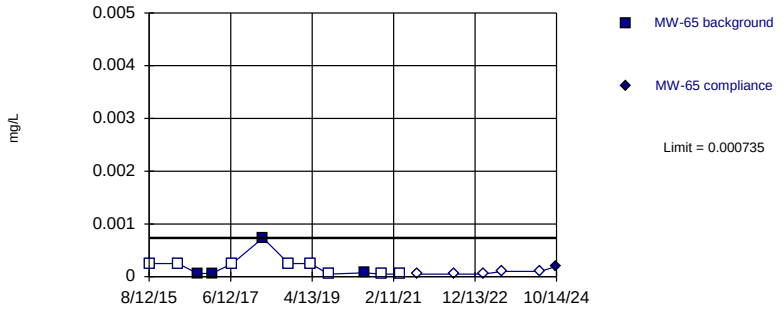
Constituent: Cadmium Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 66.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

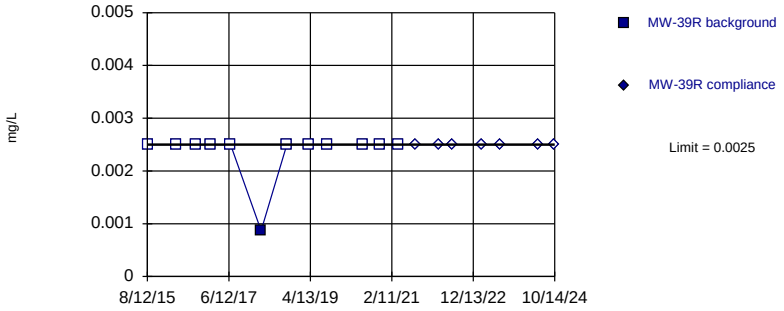
Constituent: Cadmium Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 91.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

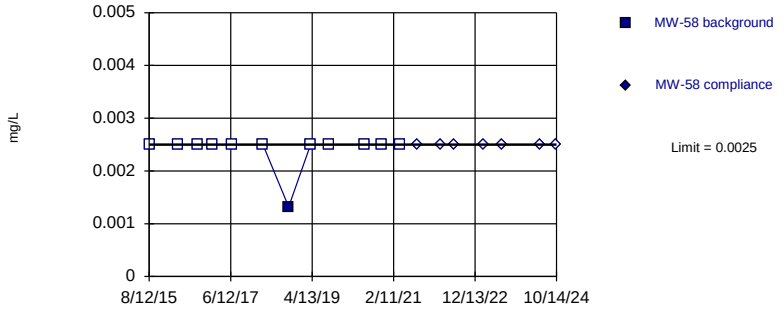
Constituent: Chromium Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 91.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

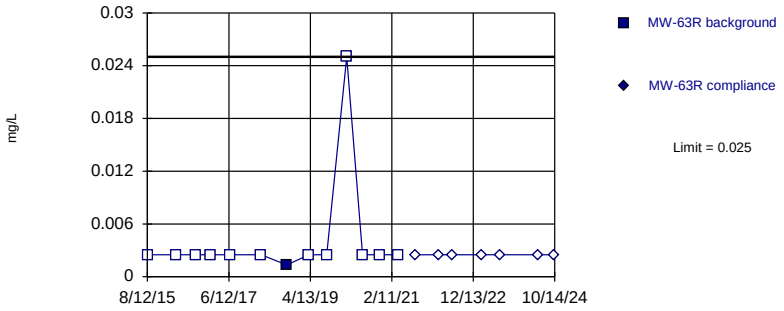
Constituent: Chromium Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 92.31% NDs. Well-constituent pair annual alpha = 0.01929. Individual comparison alpha = 0.009692 (1 of 2).

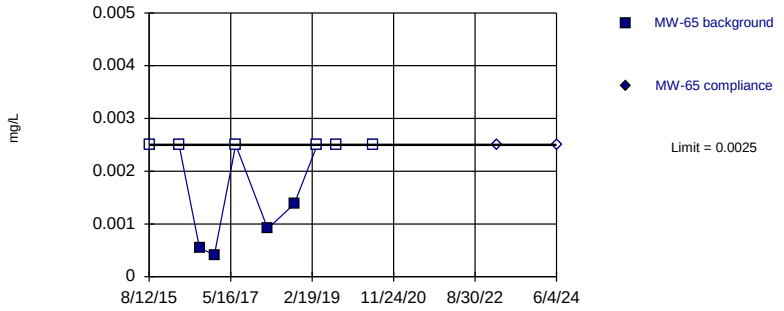
Constituent: Chromium Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 10 background values. 60% NDs. Well-constituent pair annual alpha = 0.0293. Individual comparison alpha = 0.01476 (1 of 2).

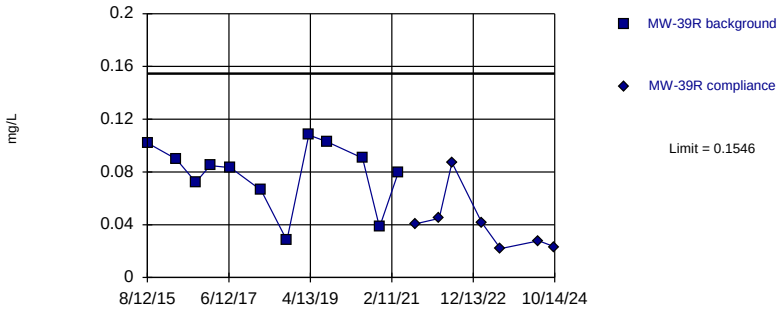
Constituent: Chromium Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.0788, Std. Dev.=0.02471, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8968, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

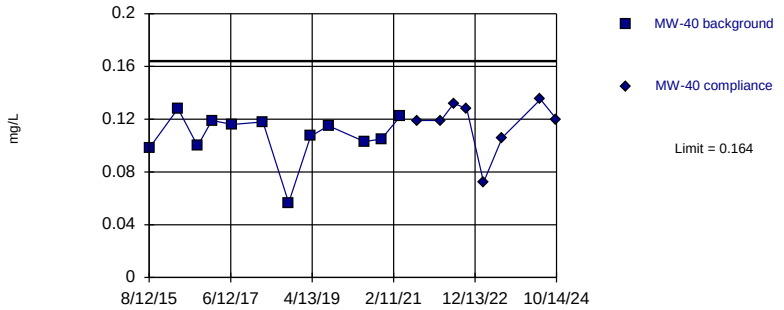
Constituent: Cobalt Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.1073, Std. Dev.=0.01849, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8102, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

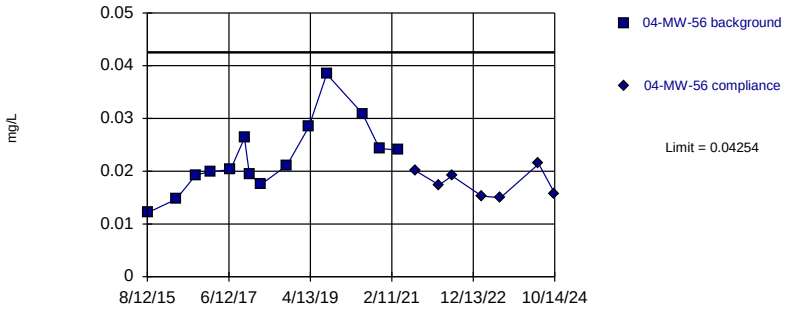
Constituent: Cobalt Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.02261, Std. Dev.=0.006824, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9557, critical = 0.825. Kappa = 2.92 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Cobalt Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL

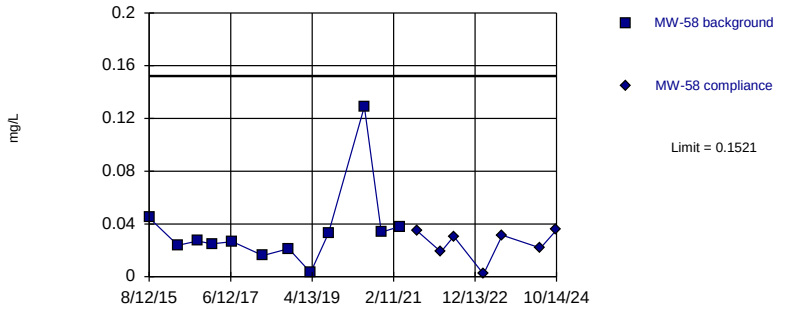
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on square root transformation): Mean=0.1749, Std. Dev.=0.07013, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.836, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Cobalt Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL

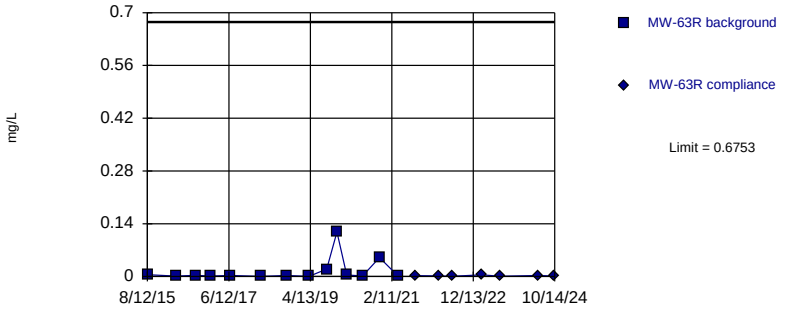
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on natural log transformation): Mean=-5.947, Std. Dev.=1.902, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9406, critical = 0.825. Kappa = 2.92 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Cobalt Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL

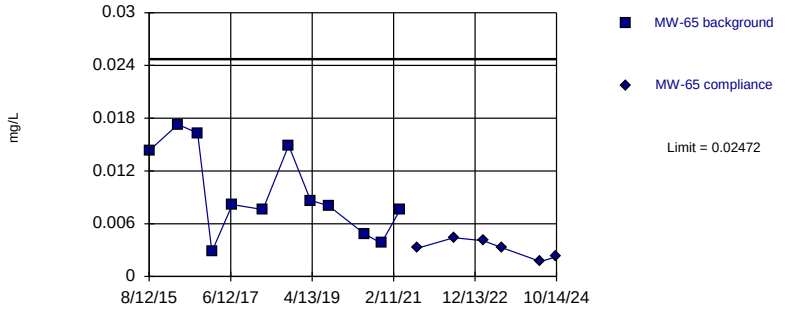
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.009528, Std. Dev.=0.004953, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9029, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Cobalt Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL

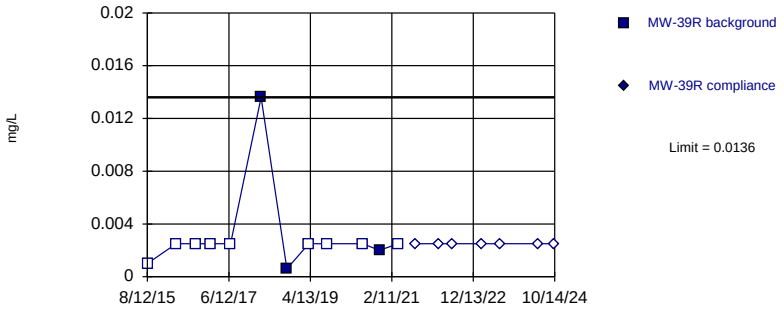
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 75% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

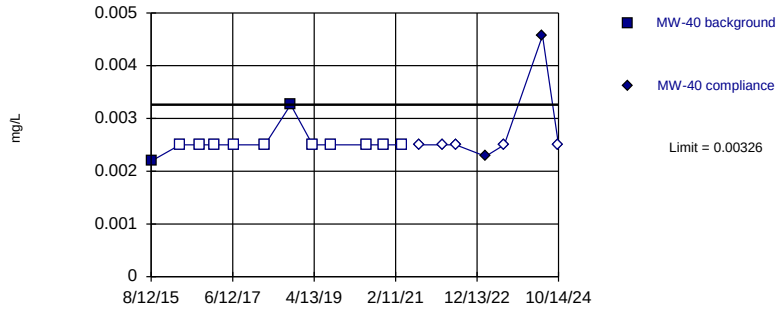
Constituent: Copper Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 83.33% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

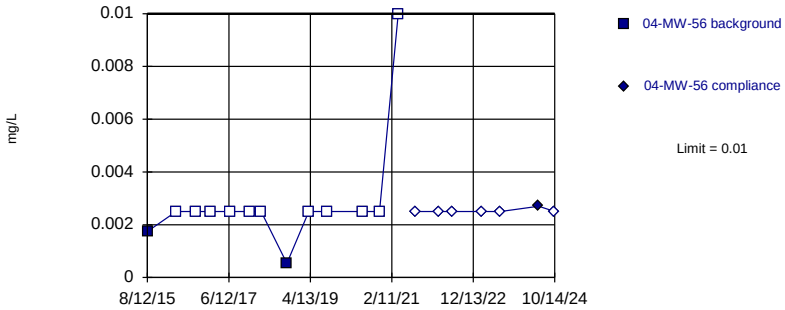
Constituent: Copper Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 84.62% NDs. Well-constituent pair annual alpha = 0.01929. Individual comparison alpha = 0.009692 (1 of 2).

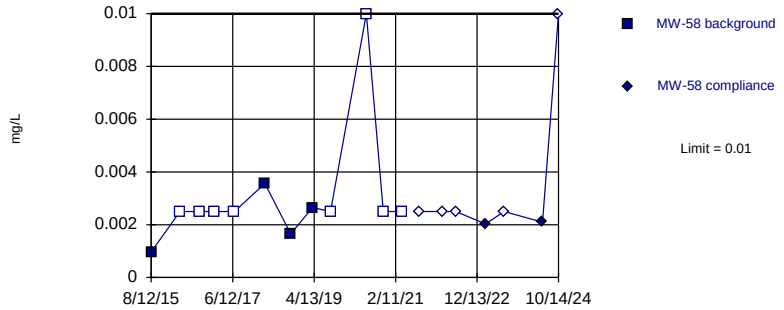
Constituent: Copper Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 66.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

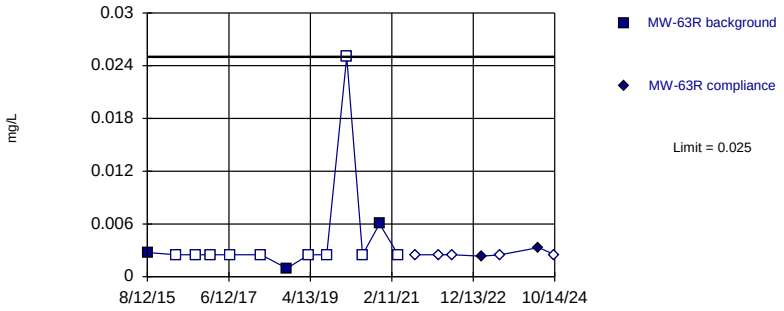
Constituent: Copper Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 76.92% NDs. Well-constituent pair annual alpha = 0.01929. Individual comparison alpha = 0.009692 (1 of 2).

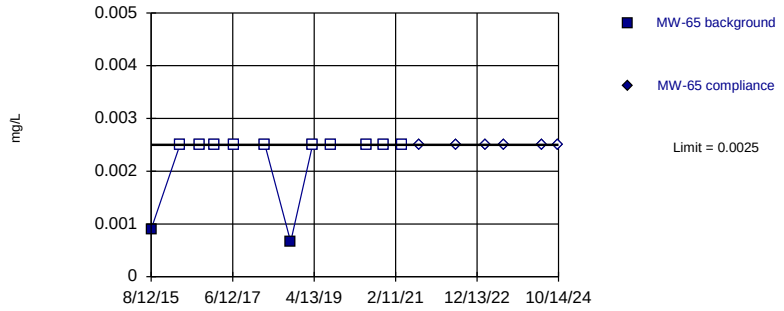
Constituent: Copper Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 83.33% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

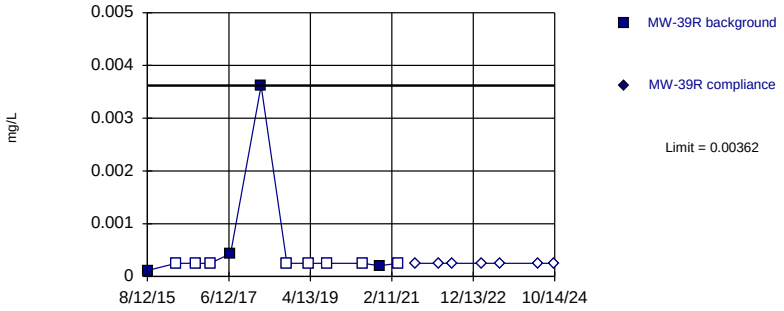
Constituent: Copper Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 66.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

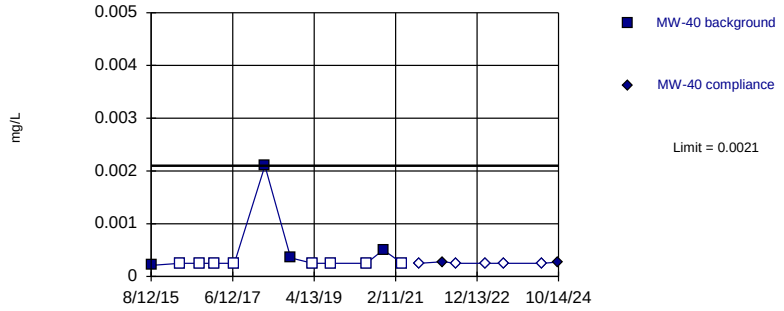
Constituent: Lead Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 66.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

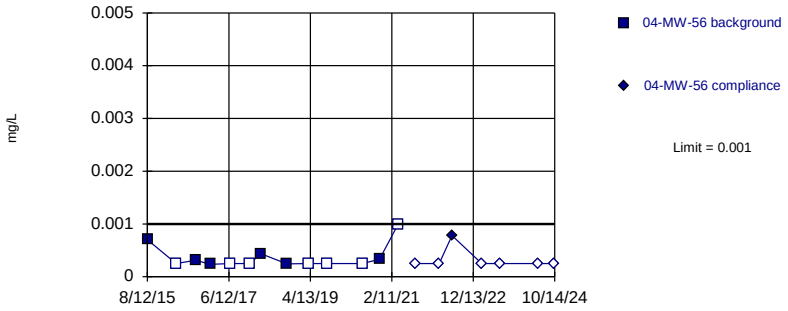
Constituent: Lead Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 53.85% NDs. Well-constituent pair annual alpha = 0.01929. Individual comparison alpha = 0.009692 (1 of 2).

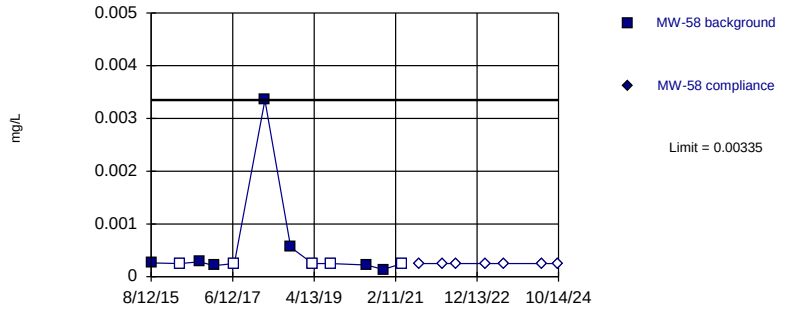
Constituent: Lead Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 12 background values. 41.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

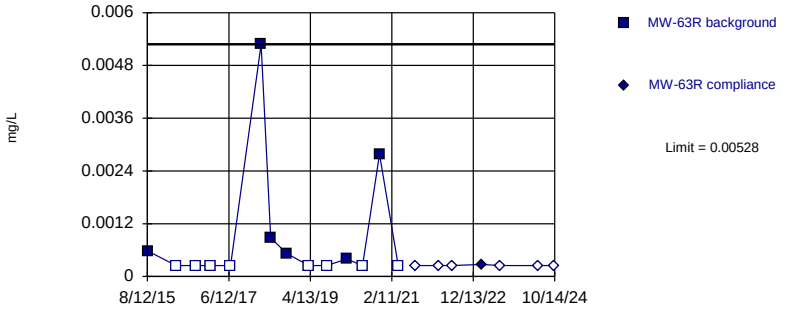
Constituent: Lead Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 14 background values. 57.14% NDs. Well-constituent pair annual alpha = 0.01715. Individual comparison alpha = 0.008612 (1 of 2).

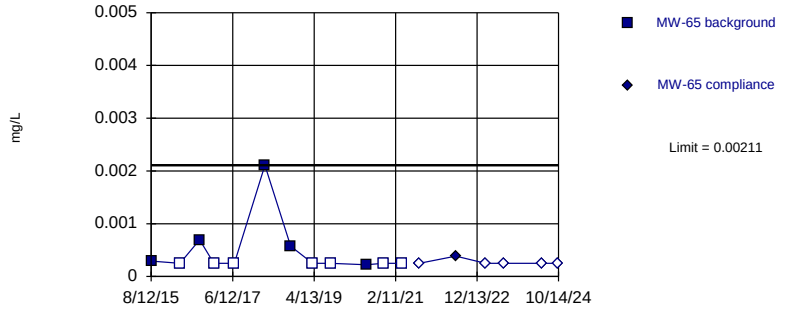
Constituent: Lead Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 58.33% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

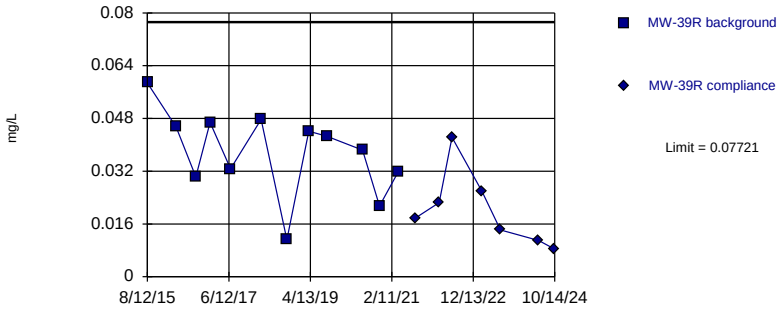
Constituent: Lead Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.0376, Std. Dev.=0.01291, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9619, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Nickel Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL

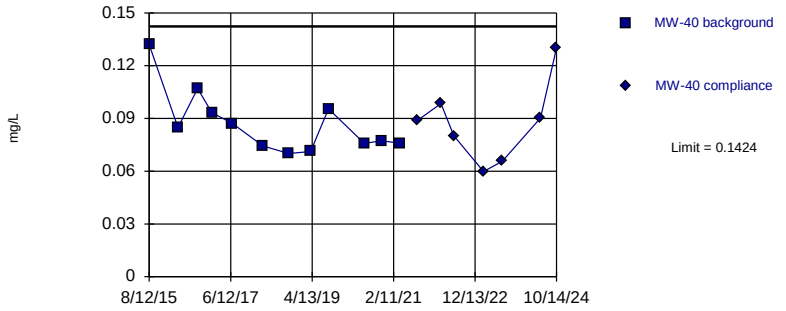
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.08705, Std. Dev.=0.01803, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8391, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Nickel Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL

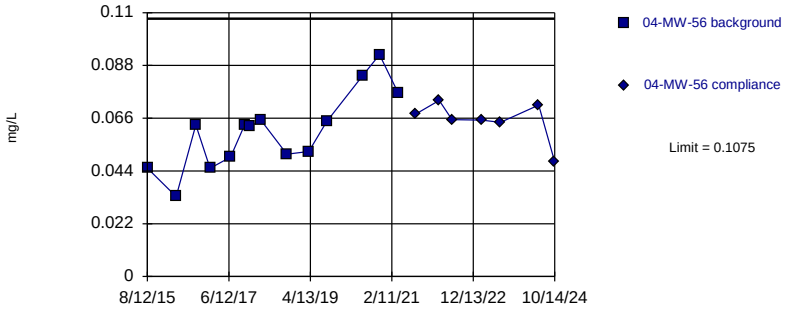
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.06055, Std. Dev.=0.01608, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.962, critical = 0.825. Kappa = 2.92 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Nickel Analysis Run 2/13/2025 3:56 PM View: 2024AWQR-AMD_Wells_IntraPL

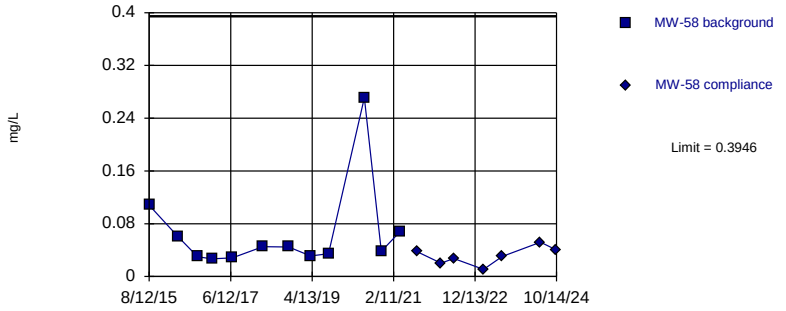
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on natural log transformation): Mean=-3.003, Std. Dev.=0.6758, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8309, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Nickel Analysis Run 2/13/2025 3:57 PM View: 2024AWQR-AMD_Wells_IntraPL

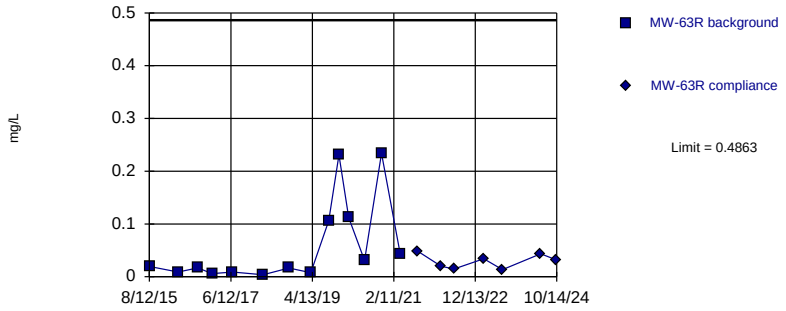
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on cube root transformation): Mean=0.327, Std. Dev.=0.1573, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8596, critical = 0.825. Kappa = 2.92 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Nickel Analysis Run 2/13/2025 3:57 PM View: 2024AWQR-AMD_Wells_IntraPL

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

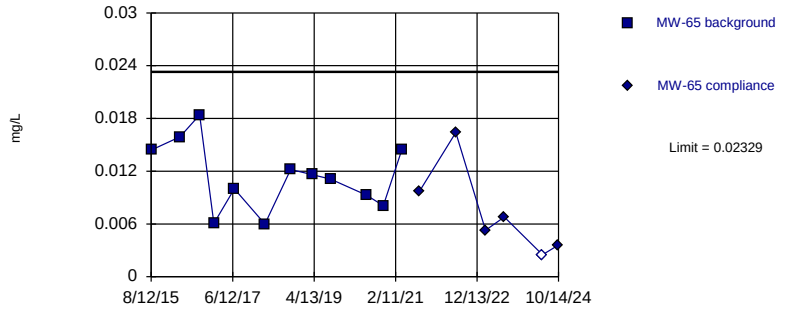
Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.01146, Std. Dev.=0.003858, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9696, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

Constituent: Nickel Analysis Run 2/13/2025 3:57 PM View: 2024AWQR-AMD_Wells_IntraPL

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

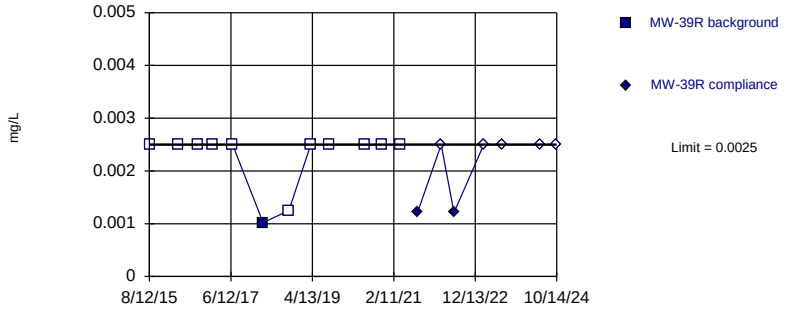
Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 91.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

Constituent: Selenium Analysis Run 2/13/2025 3:57 PM View: 2024AWQR-AMD_Wells_IntraPL

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

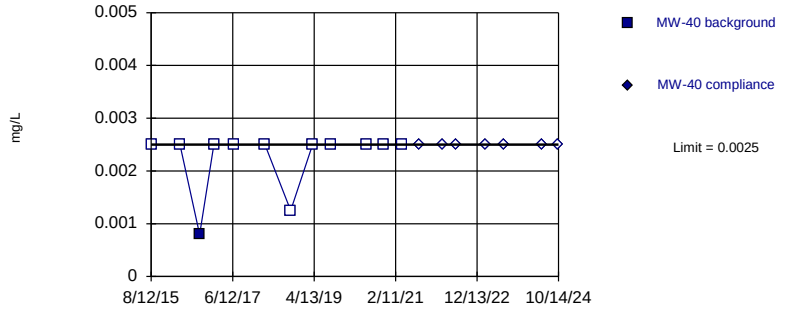
Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 91.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

Constituent: Selenium Analysis Run 2/13/2025 3:57 PM View: 2024AWQR-AMD_Wells_IntraPL

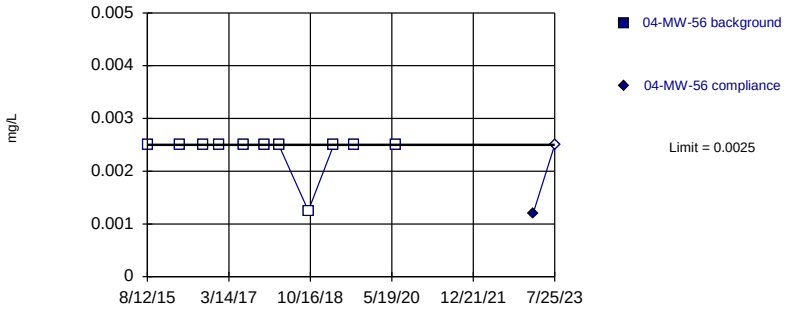
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 11 background values. 100% NDs. Well-constituent pair annual alpha = 0.02537. Individual comparison alpha = 0.01276 (1 of 2).

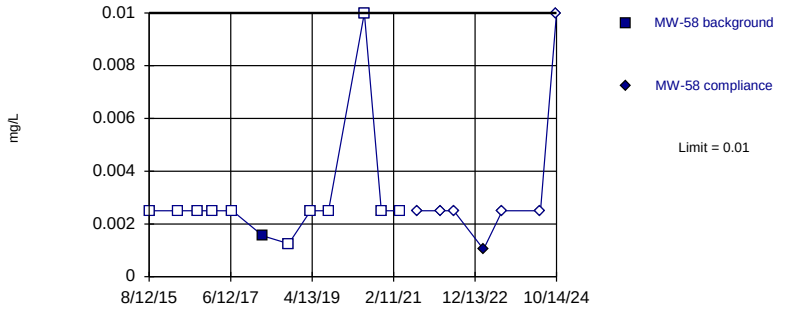
Constituent: Selenium Analysis Run 2/13/2025 3:57 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 91.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

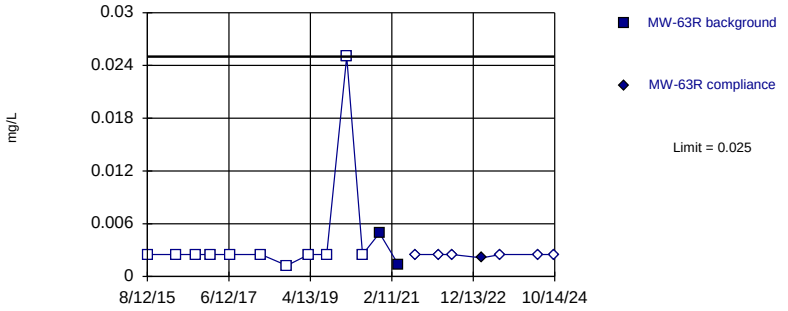
Constituent: Selenium Analysis Run 2/13/2025 3:57 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 84.62% NDs. Well-constituent pair annual alpha = 0.01929. Individual comparison alpha = 0.009692 (1 of 2).

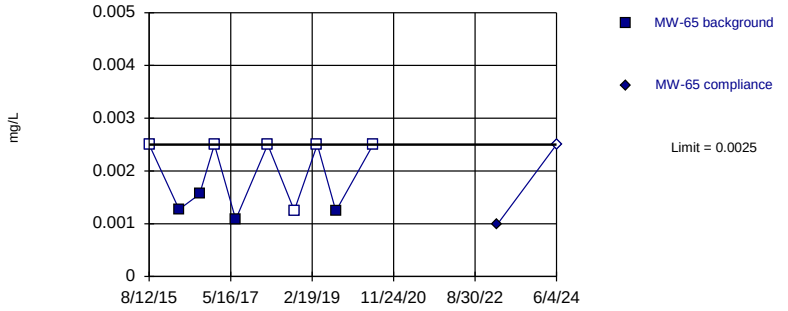
Constituent: Selenium Analysis Run 2/13/2025 3:57 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 10 background values. 60% NDs. Well-constituent pair annual alpha = 0.0293. Individual comparison alpha = 0.01476 (1 of 2).

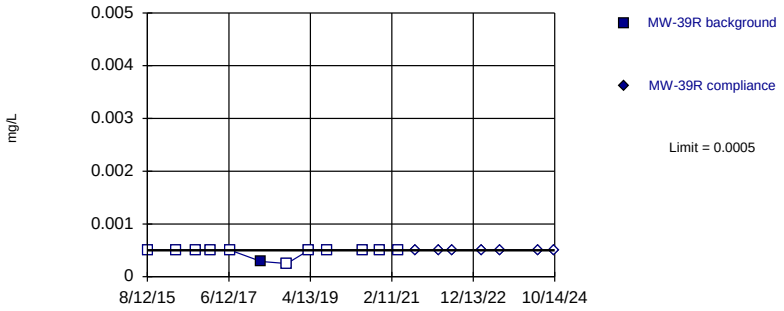
Constituent: Selenium Analysis Run 2/13/2025 3:57 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 91.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

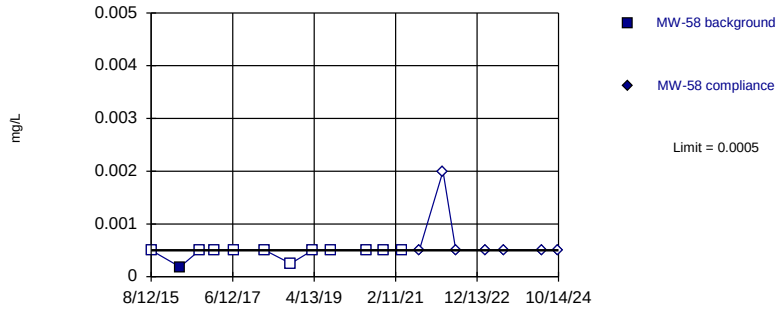
Constituent: Silver Analysis Run 2/13/2025 3:57 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 91.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

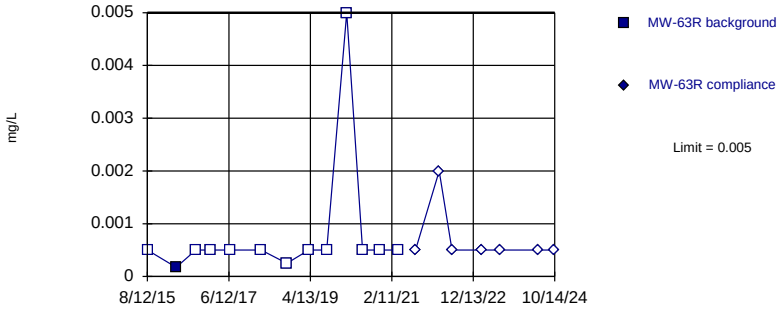
Constituent: Silver Analysis Run 2/13/2025 3:57 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 92.31% NDs. Well-constituent pair annual alpha = 0.01929. Individual comparison alpha = 0.009692 (1 of 2).

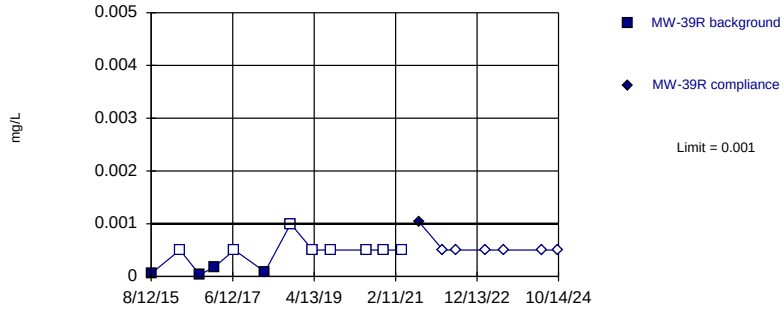
Constituent: Silver Analysis Run 2/13/2025 3:57 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 66.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

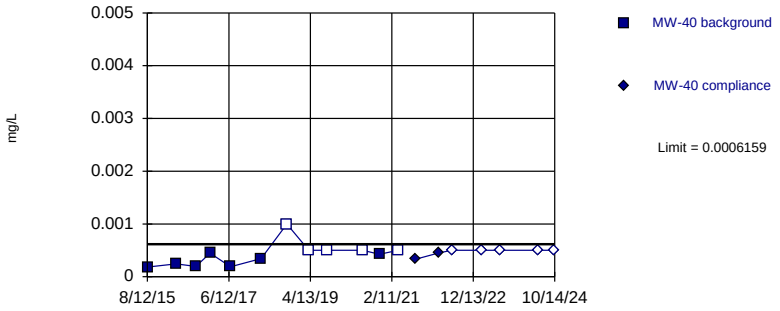
Constituent: Thallium Analysis Run 2/13/2025 3:57 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (after Kaplan-Meier Adjustment): Mean=0.0002893, Std. Dev.=0.0001065, n=12, 41.67% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8212, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

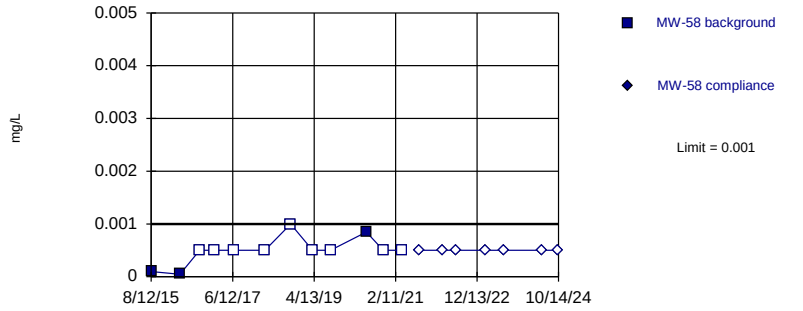
Constituent: Thallium Analysis Run 2/13/2025 3:57 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 75% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

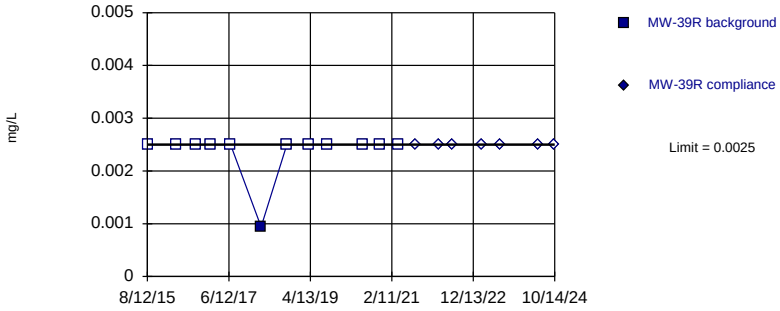
Constituent: Thallium Analysis Run 2/13/2025 3:57 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 91.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

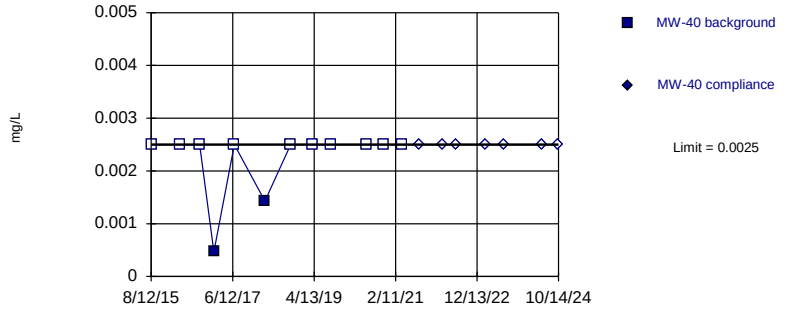
Constituent: Vanadium Analysis Run 2/13/2025 3:57 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 83.33% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

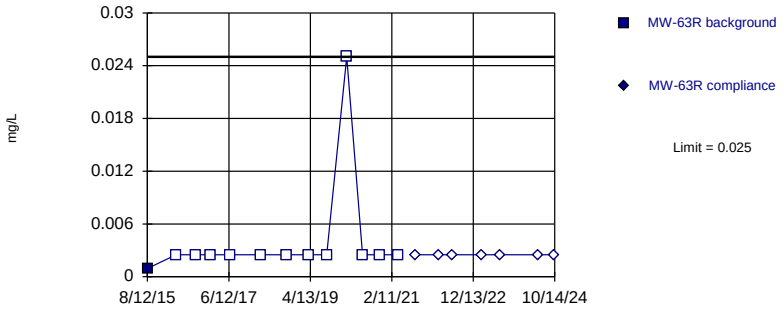
Constituent: Vanadium Analysis Run 2/13/2025 3:57 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 92.31% NDs. Well-constituent pair annual alpha = 0.01929. Individual comparison alpha = 0.009692 (1 of 2).

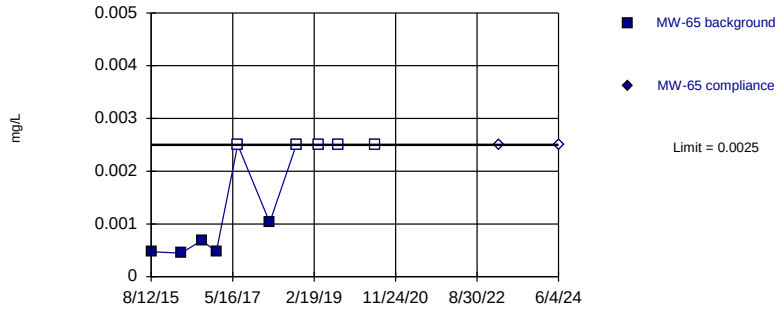
Constituent: Vanadium Analysis Run 2/13/2025 3:57 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 10 background values. 50% NDs. Well-constituent pair annual alpha = 0.0293. Individual comparison alpha = 0.01476 (1 of 2).

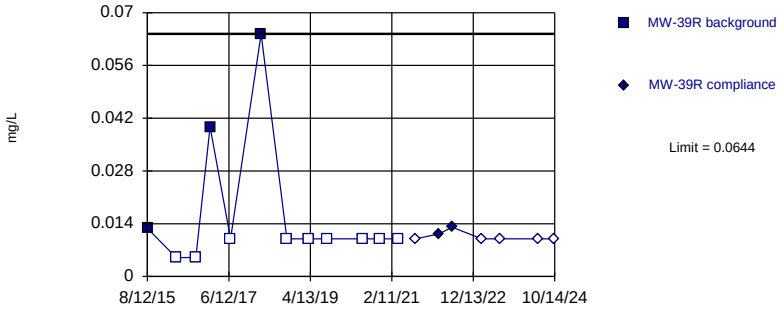
Constituent: Vanadium Analysis Run 2/13/2025 3:57 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 75% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

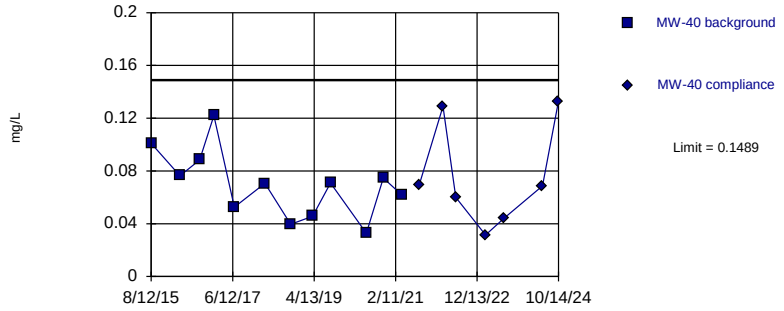
Constituent: Zinc Analysis Run 2/13/2025 3:57 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.06968, Std. Dev.=0.02582, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9673, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

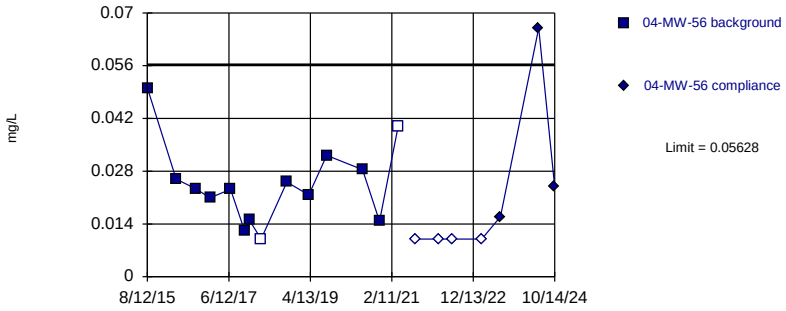
Constituent: Zinc Analysis Run 2/13/2025 3:57 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.02449, Std. Dev.=0.01089, n=14, 14.29% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9285, critical = 0.825. Kappa = 2.92 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

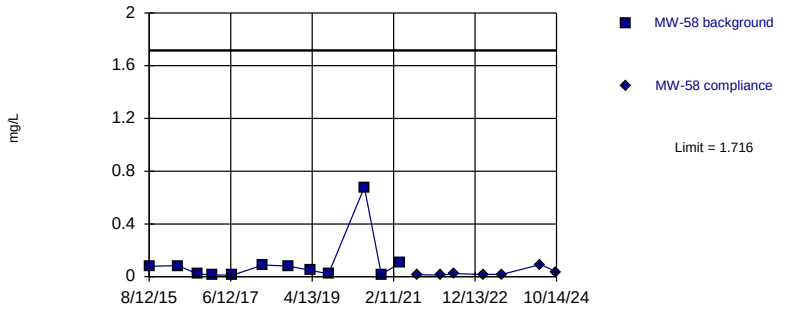
Constituent: Zinc Analysis Run 2/13/2025 3:57 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on natural log transformation): Mean=-3.01, Std. Dev.=1.157, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8998, critical = 0.805. Kappa = 3.068 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

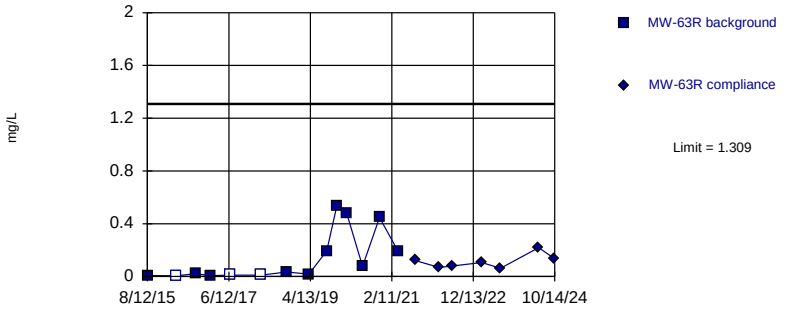
Constituent: Zinc Analysis Run 2/13/2025 3:57 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on cube root transformation) (after Kaplan-Meier Adjustment): Mean=0.4131, Std. Dev.=0.2331, n=14, 21.43% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8389, critical = 0.825. Kappa = 2.92 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.0002508.

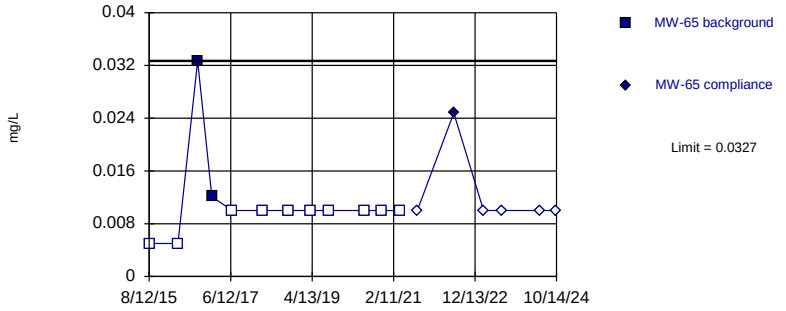
Constituent: Zinc Analysis Run 2/13/2025 3:57 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 83.33% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2).

Constituent: Zinc Analysis Run 2/13/2025 3:57 PM View: 2024AWQR-AMD_Wells_IntraPL
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Interwell Prediction Limit Summary Table and Graphs – AZPOC Monitoring Well

DM and AM Interwell Prediction Limit

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master Printed 2/13/2025, 2:44 PM

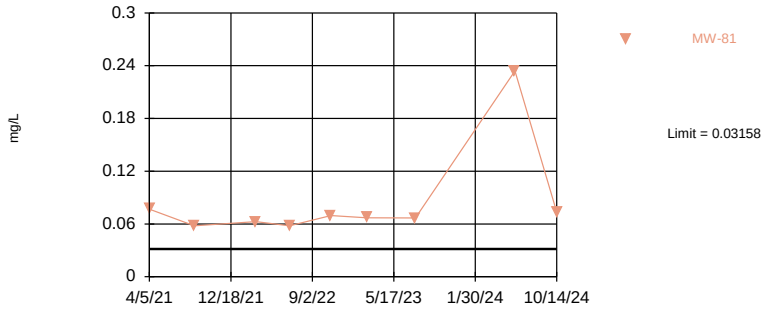
Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	Bg Wells	%NDs	Transform	Alpha	Method
Barium (mg/L)	**MW-81**	**0.03158**	**n/a**	**10/14/2024**	**0.0735**	**Yes**	**23**	**MW-53,MW-54**	**0**	**x^3**	**0.0002508**	**Param Inter 1 of 2**
Cadmium (mg/L)	MW-81	0.0008857	n/a	10/14/2024	0.000218	No	23	MW-53,MW-54	43.48	sqrt(x)	0.0002508	Param Inter 1 of 2
Cobalt (mg/L)	MW-81	0.01581	n/a	10/14/2024	0.00074	No	23	MW-53,MW-54	13.04	x^(1/3)	0.0002508	Param Inter 1 of 2
Nickel (mg/L)	MW-81	0.0305	n/a	10/14/2024	0.00562	No	23	MW-53,MW-54	13.04	x^(1/3)	0.0002508	Param Inter 1 of 2

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Exceeds Limit: MW-81

Prediction Limit

Interwell Parametric



Background Data Summary (based on cube transformation): Mean=0.00001081, Std. Dev.=0.000008139, n=23. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8832, critical = 0.881. Kappa = 2.542 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.003506. Individual comparison alpha = 0.0002508. Assumes 13 future values.

Constituent: Barium Analysis Run 2/13/2025 2:41 PM View: 2024AWQR-DM_and_AM_PL

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

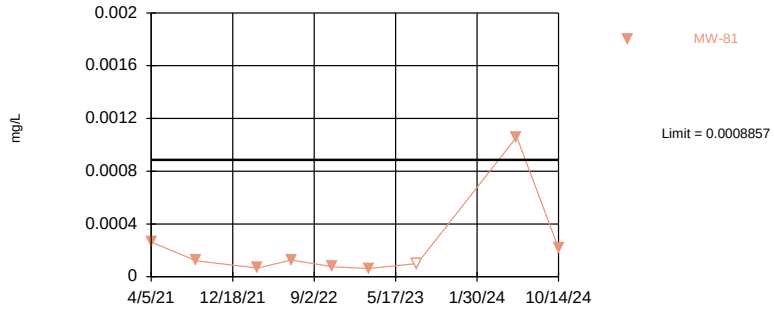
Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (based on square root transformation) (after Kaplan-Meier Adjustment): Mean=0.01253, Std. Dev.=0.006777, n=23, 43.48% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8933, critical = 0.881. Kappa = 2.542 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.003506. Individual comparison alpha = 0.0002508. Assumes 13 future values.

Constituent: Cadmium Analysis Run 2/13/2025 2:41 PM View: 2024AWQR-DM_and_AM_PL

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

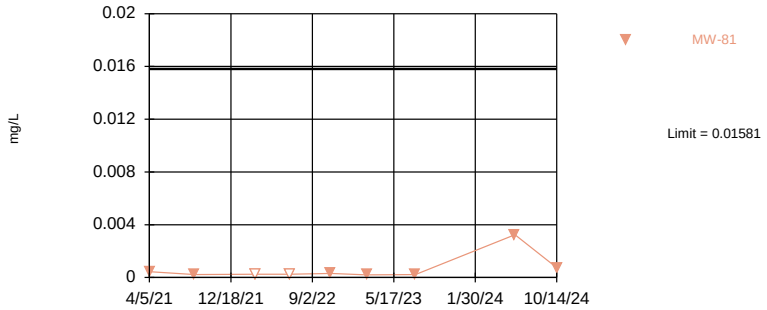
Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (based on cube root transformation): Mean=0.1046, Std. Dev.=0.05757, n=23, 13.04% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8896, critical = 0.881. Kappa = 2.542 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.003506. Individual comparison alpha = 0.0002508. Assumes 13 future values.

Constituent: Cobalt Analysis Run 2/13/2025 2:41 PM View: 2024AWQR-DM_and_AM_PL

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

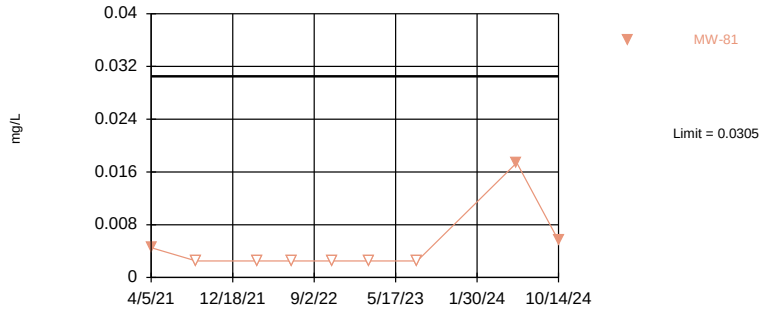
Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (based on cube root transformation): Mean=0.1811, Std. Dev.=0.05167, n=23, 13.04% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8811, critical = 0.881. Kappa = 2.542 (c=15, w=14, 1 of 2, event alpha = 0.05132). Report alpha = 0.003506. Individual comparison alpha = 0.0002508. Assumes 13 future values.

Constituent: Nickel Analysis Run 2/13/2025 2:41 PM View: 2024AWQR-DM_and_AM_PL

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Sanitas Master

Mann-Kendall/Sen's Slope Trend Test Summary Table and Graphs – Assessment and AZPOC Monitoring Wells

AM Trend Test

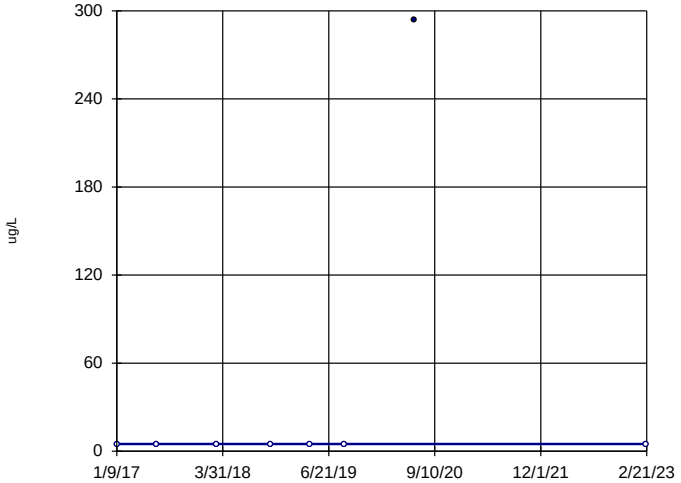
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM Printed 2/13/2025, 5:19 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Alpha	Method
2-Butanone (ug/L)	93-MW-32	0	5	21	No	8	87.5	0.01	NP
Acetone (ug/L)	93-MW-32	0	9	21	No	8	75	0.01	NP
Antimony (mg/L)	93-MW-32	0	11	21	No	8	87.5	0.01	NP
Arsenic (mg/L)	93-MW-32	0.0005733	11	21	No	8	37.5	0.01	NP
Barium (mg/L)	93-MW-32	0.009147	4	21	No	8	0	0.01	NP
Barium (mg/L)	MW-62	-0.001041	-6	-21	No	8	0	0.01	NP
Barium (mg/L)	MW-81	0.005816	17	21	No	8	0	0.01	NP
Cadmium (mg/L)	93-MW-32	0.0001156	10	21	No	8	0	0.01	NP
Cadmium (mg/L)	MW-81	0.00003185	8	21	No	8	12.5	0.01	NP
cis-1,2-Dichloroethene (ug/L)	**MW-81**	**0.4538**	**24**	**21**	**Yes**	**8**	**0**	**0.01**	**NP**
Cobalt (mg/L)	93-MW-32	0.001538	8	21	No	8	0	0.01	NP
Cobalt (mg/L)	MW-62	0.00001057	4	21	No	8	0	0.01	NP
Cobalt (mg/L)	MW-81	0.00008492	9	21	No	8	25	0.01	NP
Copper (mg/L)	93-MW-32	0	5	21	No	8	75	0.01	NP
Copper (mg/L)	MW-62	0	7	21	No	8	87.5	0.01	NP
Lead (mg/L)	93-MW-32	0.00009253	13	21	No	8	37.5	0.01	NP
Lead (mg/L)	MW-81	0	5	21	No	8	87.5	0.01	NP
Nickel (mg/L)	93-MW-32	0.008805	14	21	No	8	0	0.01	NP
Nickel (mg/L)	MW-62	-0.0005963	-10	-21	No	8	0	0.01	NP
Nickel (mg/L)	MW-81	0	11	21	No	8	75	0.01	NP
Selenium (mg/L)	MW-62	0	6	21	No	8	75	0.01	NP
Tetrachloroethene (ug/L)	MW-81	-0.1557	-14	-21	No	8	12.5	0.01	NP
Toluene (ug/L)	93-MW-32	0	3	21	No	8	87.5	0.01	NP
Vanadium (mg/L)	MW-81	0	5	21	No	8	87.5	0.01	NP
Zinc (mg/L)	93-MW-32	0.001863	6	21	No	8	0	0.01	NP
Zinc (mg/L)	MW-81	0	5	21	No	8	87.5	0.01	NP

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

93-MW-32

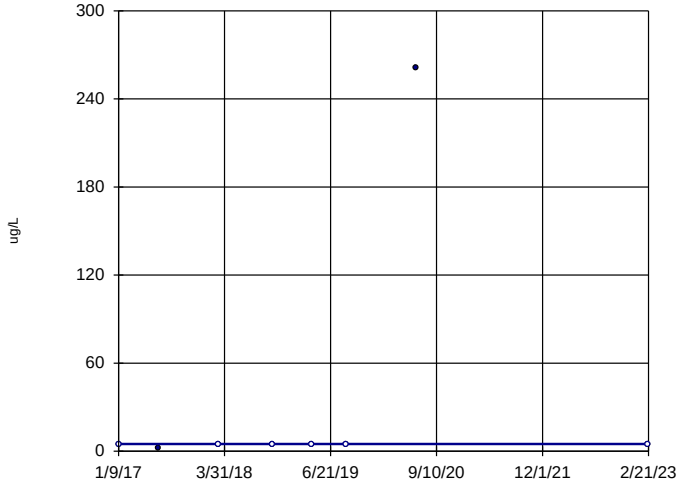


Constituent: 2-Butanone Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

93-MW-32

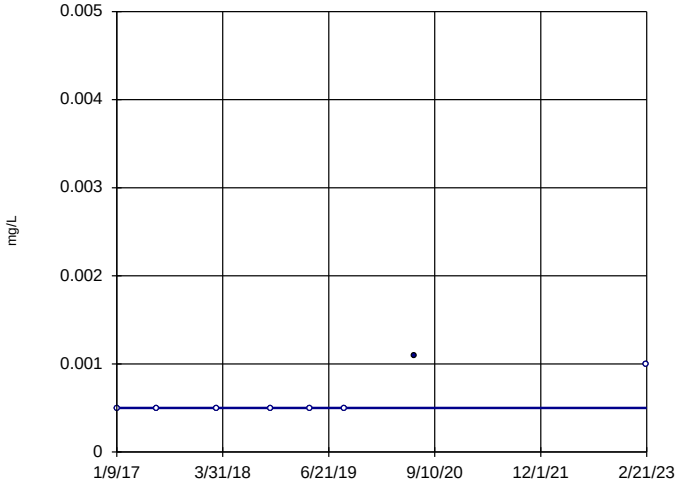


Constituent: Acetone Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

93-MW-32

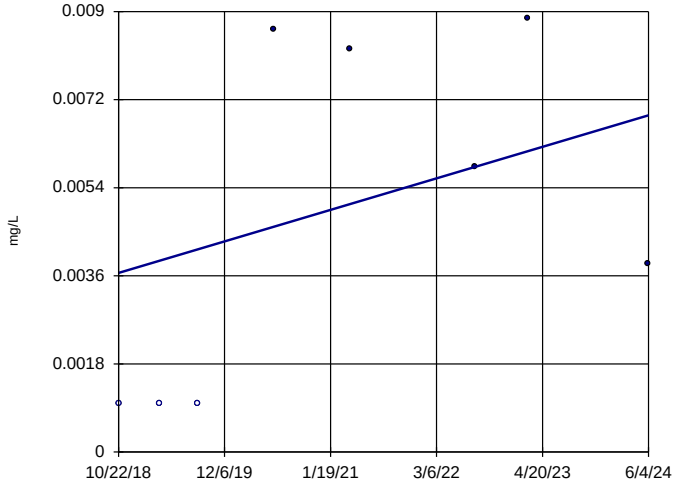


Constituent: Antimony Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

93-MW-32

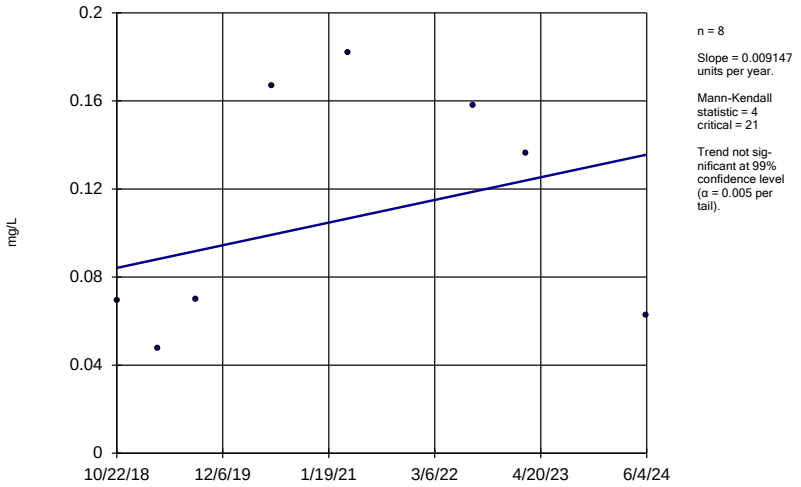


Constituent: Arsenic Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

93-MW-32



n = 8

Slope = 0.009147 units per year.

Mann-Kendall statistic = 4
critical = 21

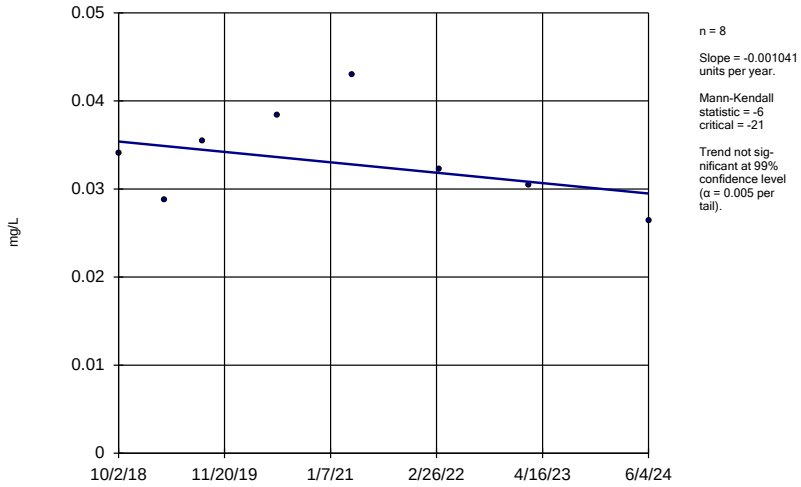
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Barium Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-62



n = 8

Slope = -0.001041 units per year.

Mann-Kendall statistic = -6
critical = -21

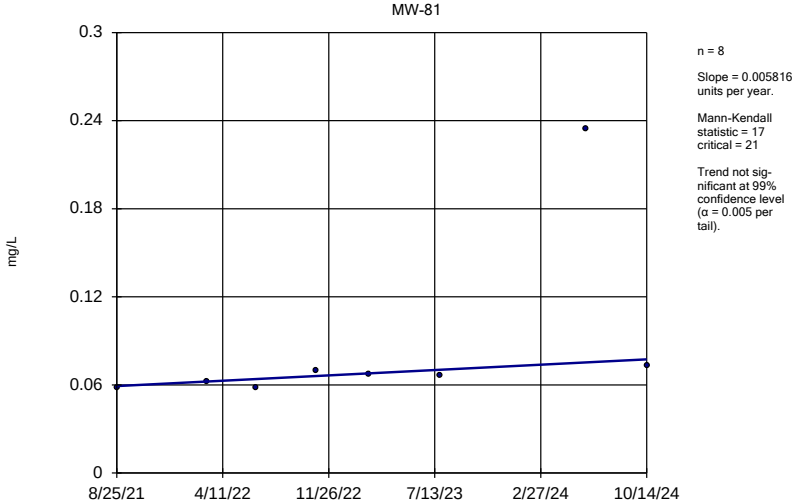
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Barium Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-81



n = 8

Slope = 0.005816 units per year.

Mann-Kendall statistic = 17
critical = 21

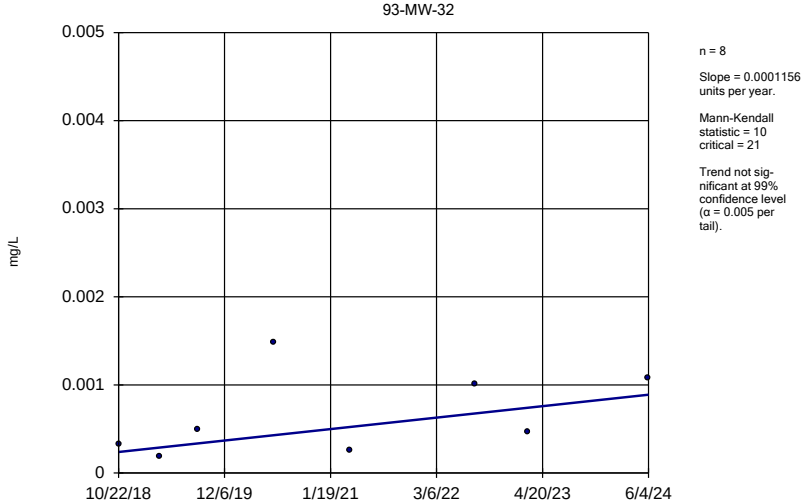
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Barium Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

93-MW-32



n = 8

Slope = 0.0001156 units per year.

Mann-Kendall statistic = 10
critical = 21

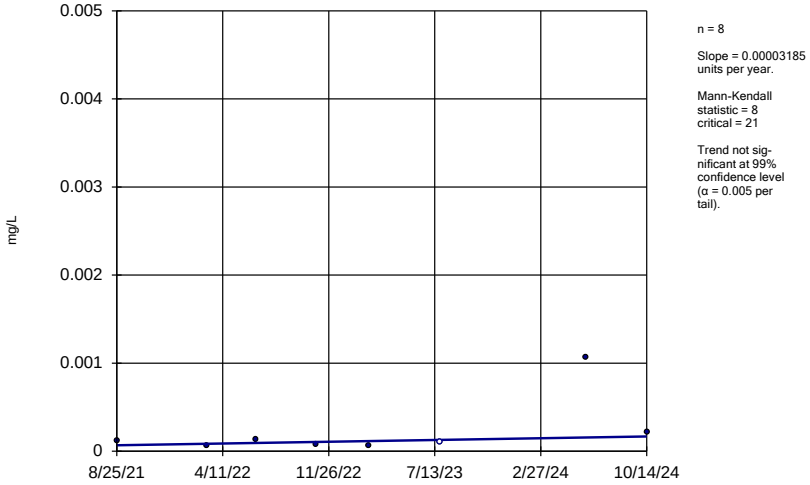
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Cadmium Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-81

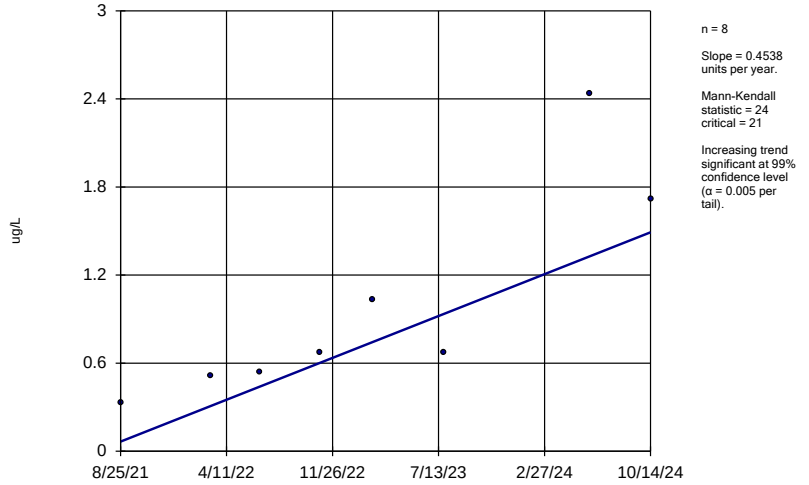


Constituent: Cadmium Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-81

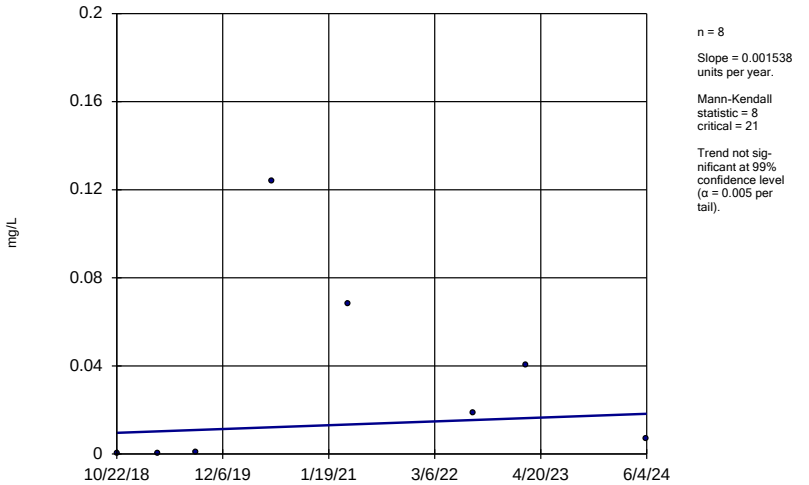


Constituent: cis-1,2-Dichloroethene Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendal
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

93-MW-32

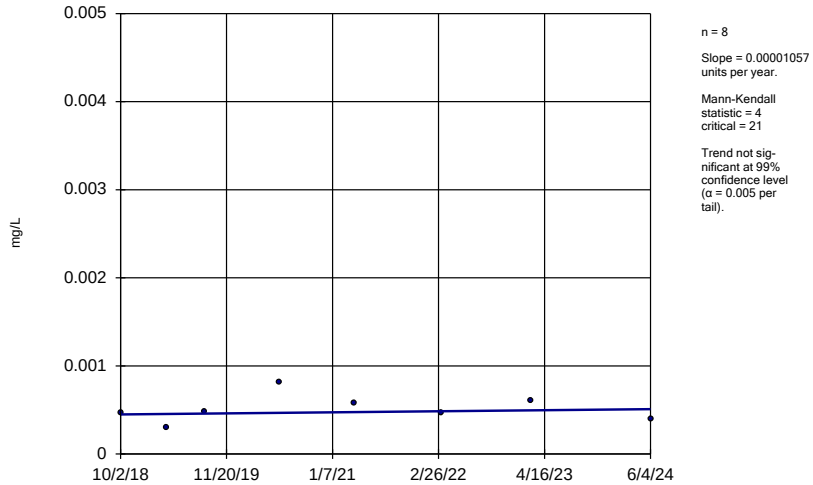


Constituent: Cobalt Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-62

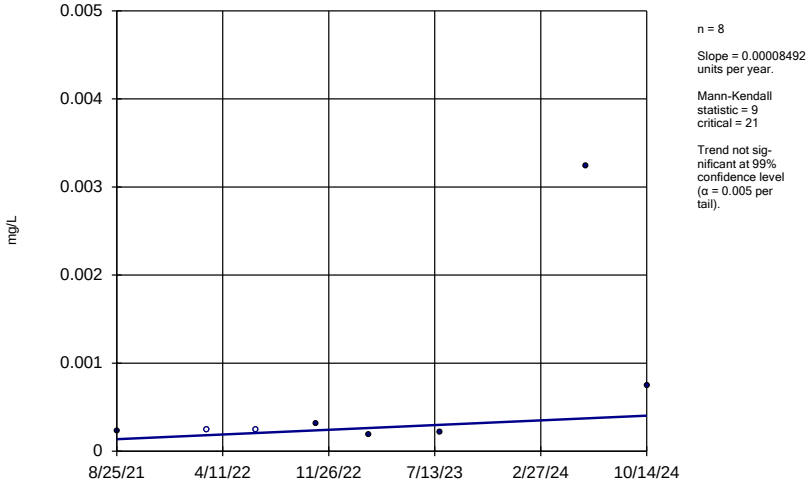


Constituent: Cobalt Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-81



n = 8

Slope = 0.00008492 units per year.

Mann-Kendall statistic = 9
critical = 21

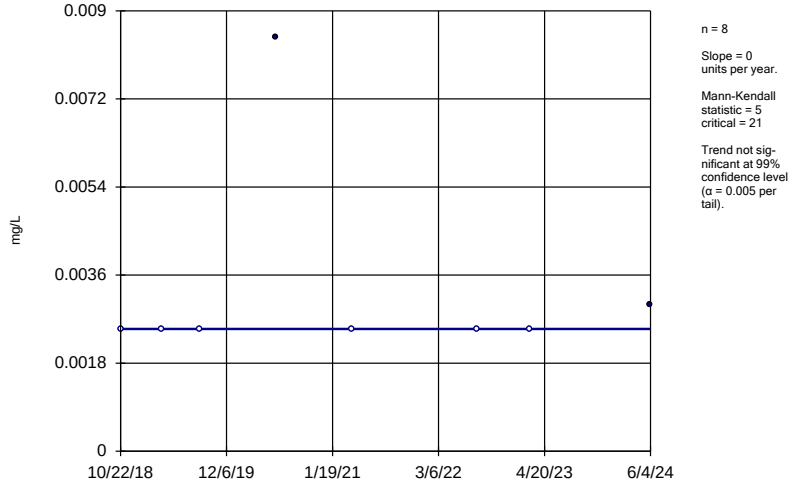
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Cobalt Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

93-MW-32



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 5
critical = 21

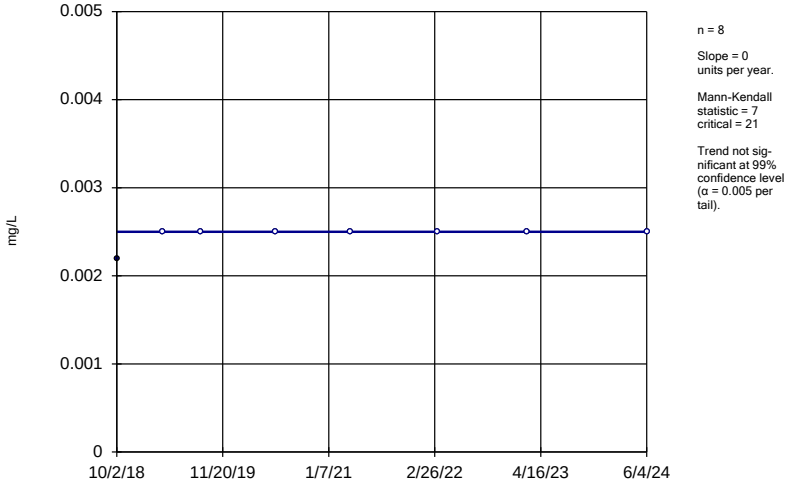
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Copper Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-62



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 7
critical = 21

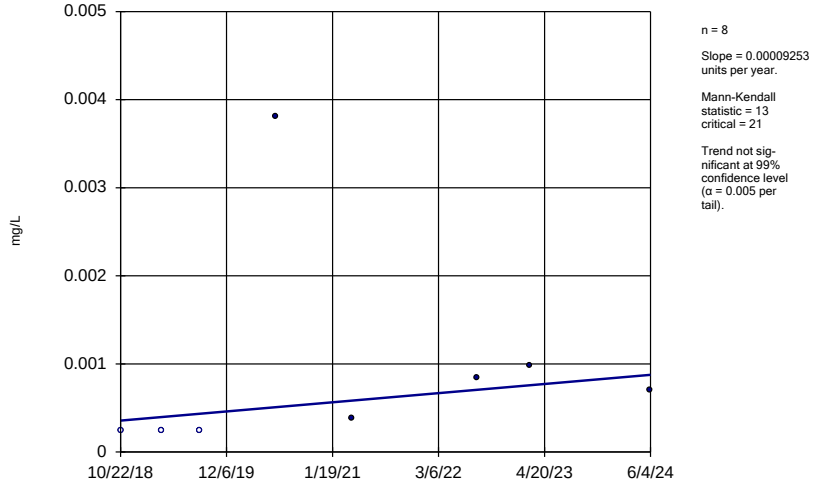
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Copper Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

93-MW-32



n = 8

Slope = 0.00009253 units per year.

Mann-Kendall statistic = 13
critical = 21

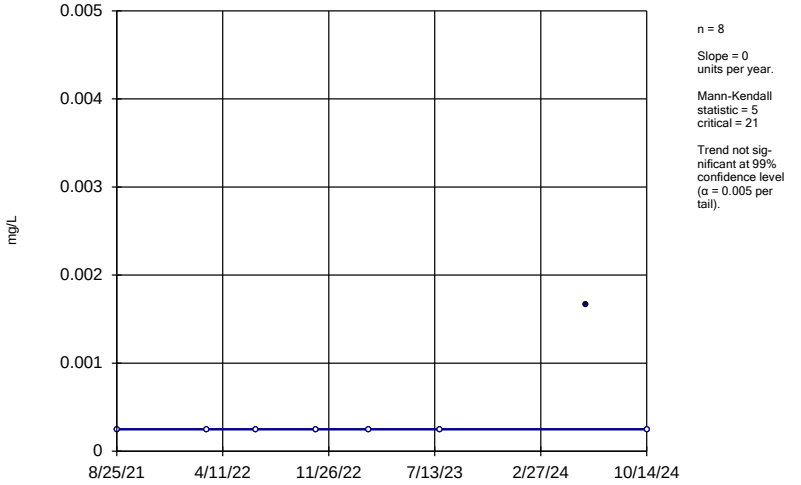
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Lead Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-81

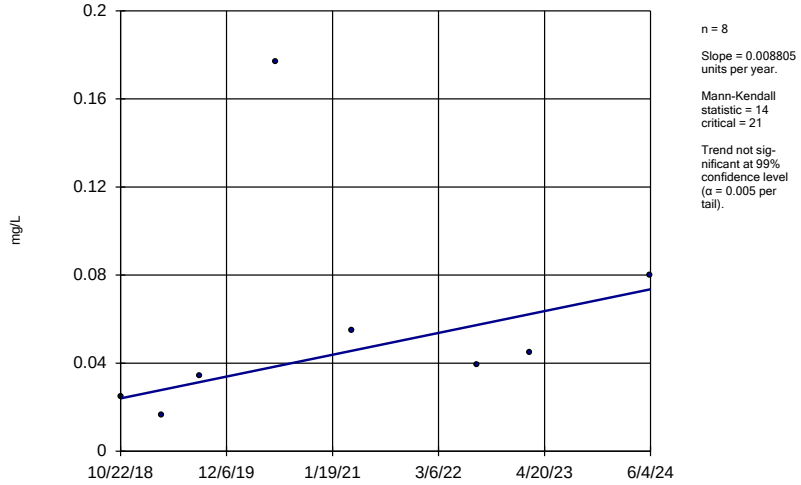


Constituent: Lead Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

93-MW-32

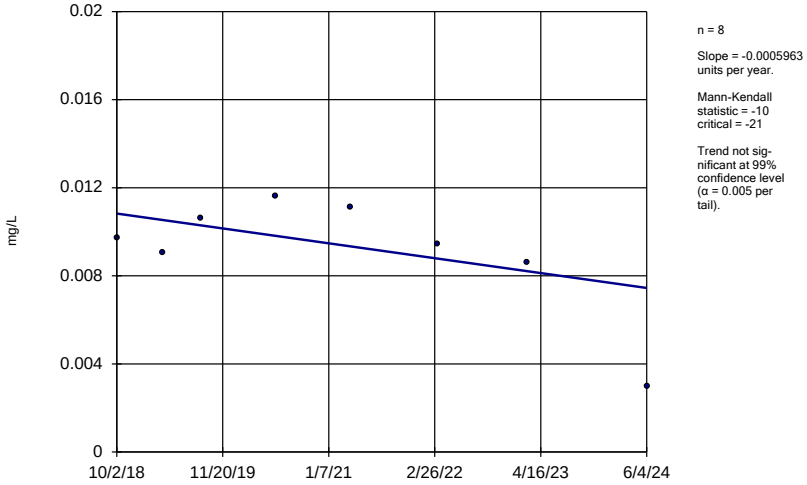


Constituent: Nickel Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-62

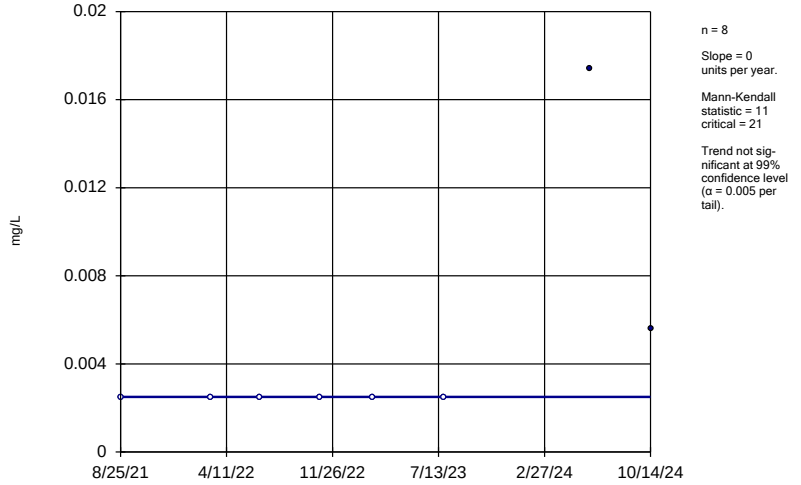


Constituent: Nickel Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-81

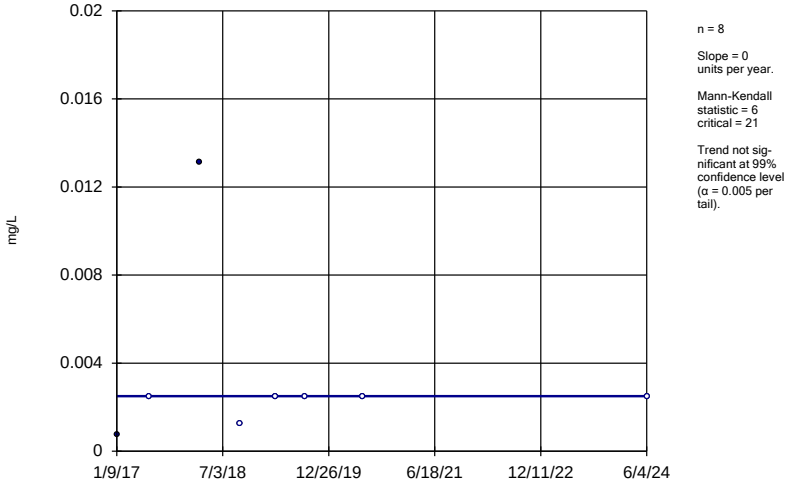


Constituent: Nickel Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-62

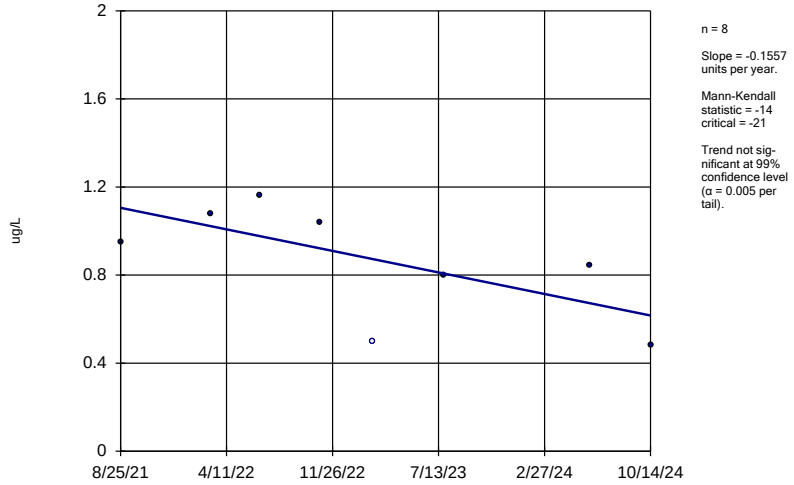


Constituent: Selenium Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-81

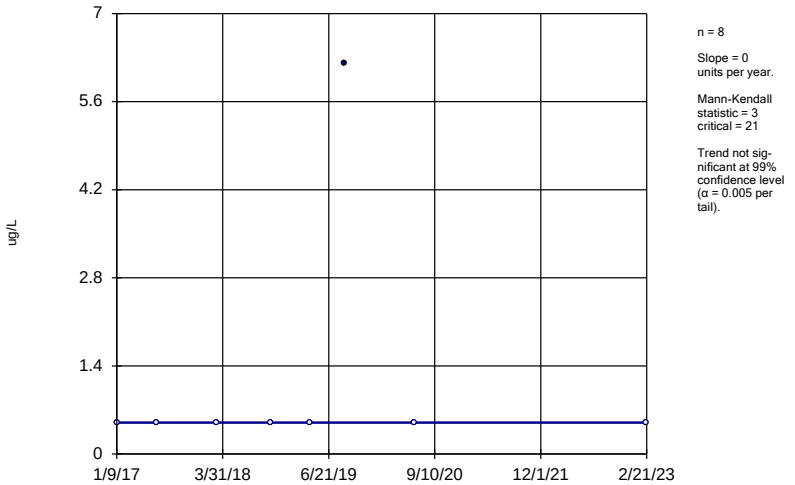


Constituent: Tetrachloroethene Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

93-MW-32

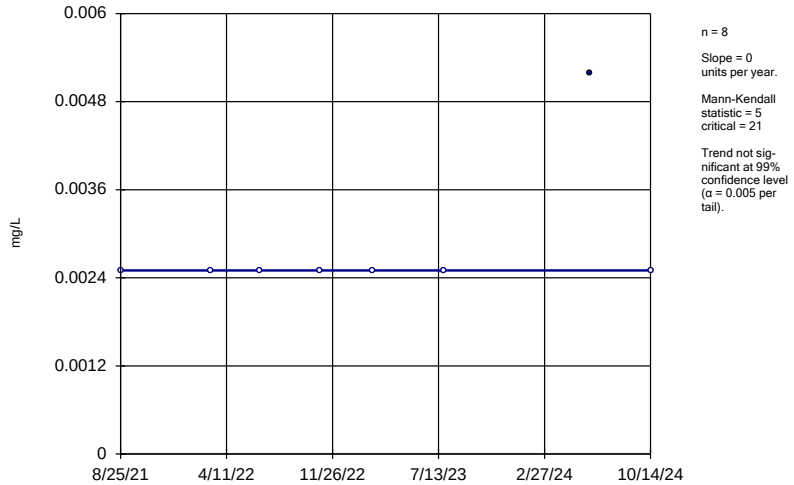


Constituent: Toluene Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-81

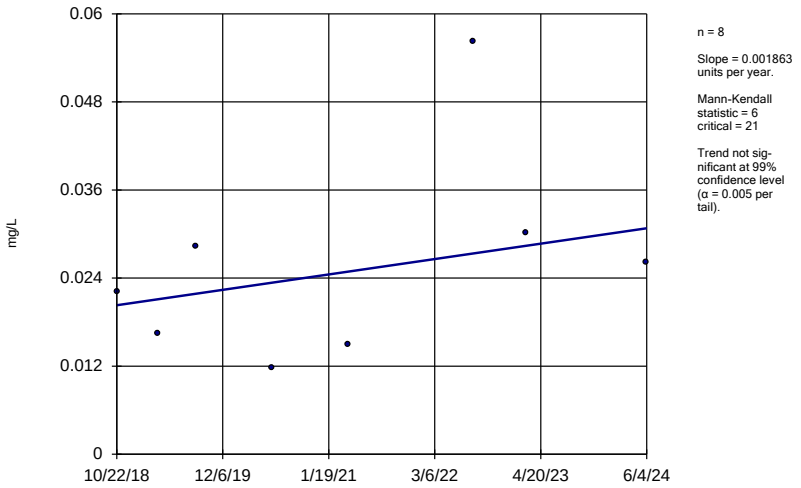


Constituent: Vanadium Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

93-MW-32



Constituent: Zinc Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendall

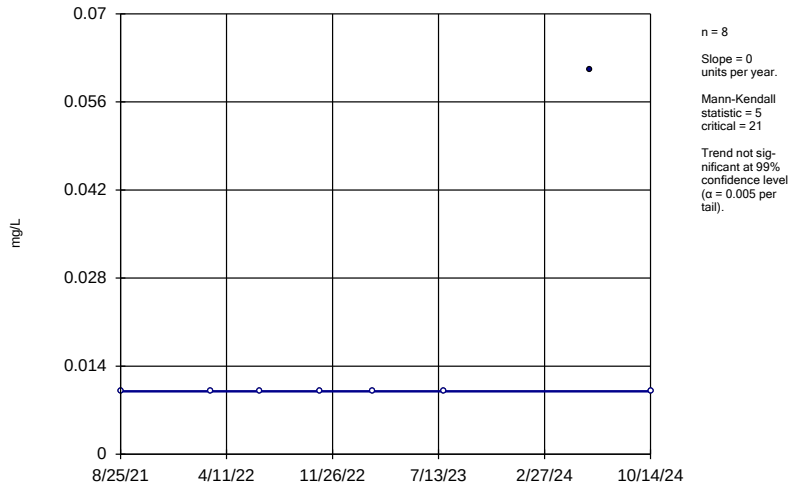
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-81



Constituent: Zinc Analysis Run 2/13/2025 5:16 PM View: 2024AWQR AM-Mann Kendall

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Mann-Kendall/Sen's Slope Trend Test Summary Table and Graphs – AMD Wells Organics and Sulfide

AMD Trend Test

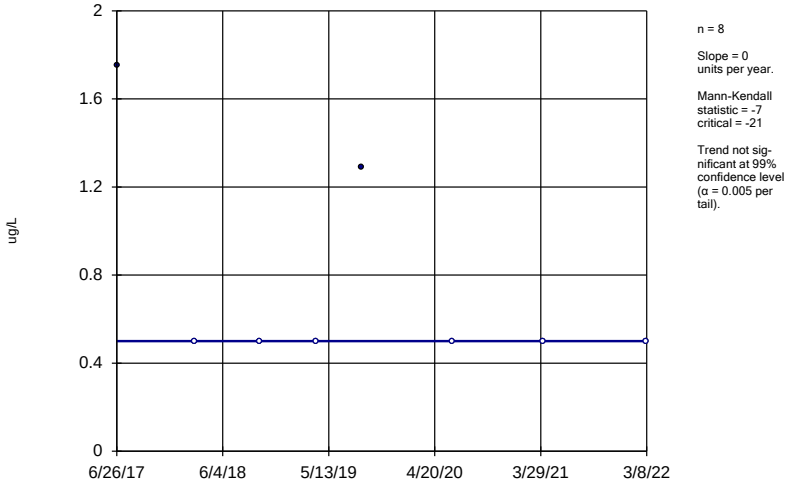
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM Printed 2/14/2025, 10:12 AM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Alpha	Method
1,1-Dichloroethane (ug/L)	MW-59	0	-7	-21	No	8	75	0.01	NP
1,1-Dichloroethane (ug/L)	MW-64	0	-1	-21	No	8	37.5	0.01	NP
1,1-Dichloroethane (ug/L)	MW-65	-0.05328	-6	-21	No	8	12.5	0.01	NP
2-Methylnaphthalene (ug/L)	04-MW-56	-0.004419	-1	-8	No	4	75	0.01	NP
2-Methylnaphthalene (ug/L)	MW-39R	0.008666	1	12	No	5	80	0.01	NP
2-Methylnaphthalene (ug/L)	MW-58	0.026	1	12	No	5	80	0.01	NP
2-Methylnaphthalene (ug/L)	MW-65	0.04641	3	12	No	5	80	0.01	NP
Acetone (ug/L)	MW-40	0	3	21	No	8	75	0.01	NP
Acetone (ug/L)	MW-59	0.8269	9	21	No	8	25	0.01	NP
Benzene (ug/L)	MW-40	0.03342	2	21	No	8	0	0.01	NP
Benzene (ug/L)	MW-59	-0.2066	-6	-21	No	8	12.5	0.01	NP
Benzene (ug/L)	MW-65	0.3052	18	21	No	8	12.5	0.01	NP
Chloroethane (ug/L)	MW-65	0.1855	7	21	No	8	0	0.01	NP
cis-1,2-Dichloroethene (ug/L)	MW-40	0.5641	10	21	No	8	0	0.01	NP
Naphthalene (ug/L)	MW-40	0	3	14	No	6	83.33	0.01	NP
Sulfide (mg/L)	MW-59	0	-3	-21	No	8	87.5	0.01	NP
Vinyl chloride (ug/L)	MW-40	0.09978	16	21	No	8	12.5	0.01	NP

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-59



n = 8

Slope = 0
units per year.

Mann-Kendall
statistic = -7
critical = -21

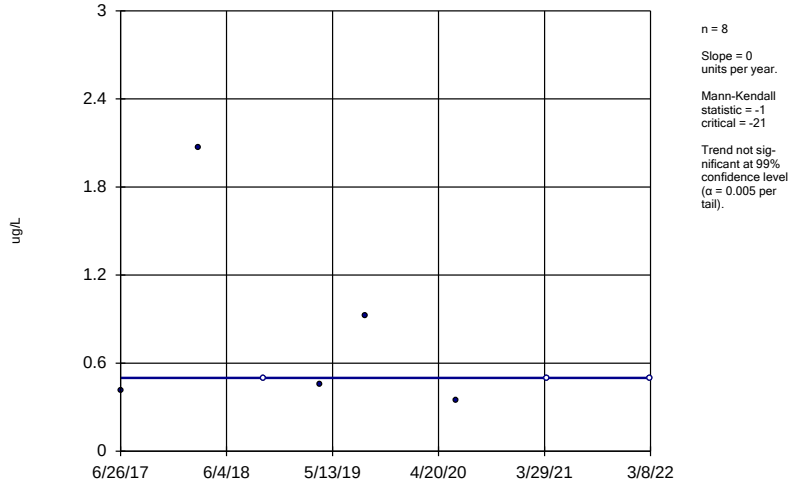
Trend not sig-
nificant at 99%
confidence level
(α = 0.005 per
tail).

Constituent: 1,1-Dichloroethane Analysis Run 2/14/2025 10:08 AM View: 2024AWQR AMD-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-64



n = 8

Slope = 0
units per year.

Mann-Kendall
statistic = -1
critical = -21

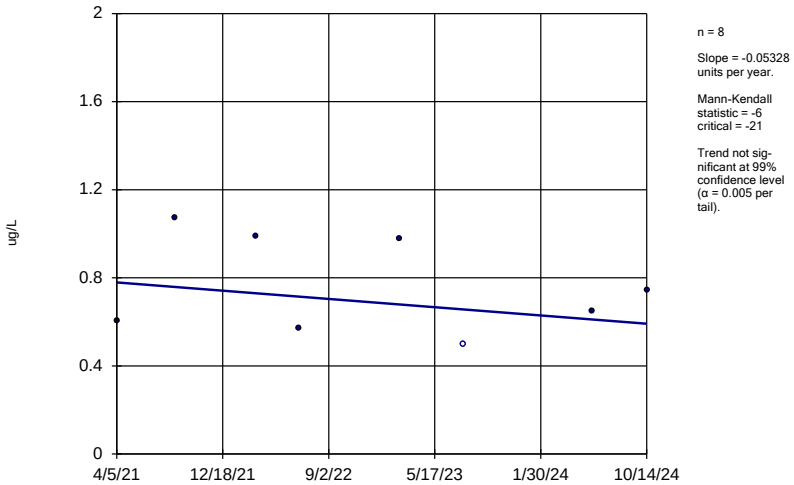
Trend not sig-
nificant at 99%
confidence level
(α = 0.005 per
tail).

Constituent: 1,1-Dichloroethane Analysis Run 2/14/2025 10:08 AM View: 2024AWQR AMD-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-65



n = 8

Slope = -0.05328
units per year.

Mann-Kendall
statistic = -6
critical = -21

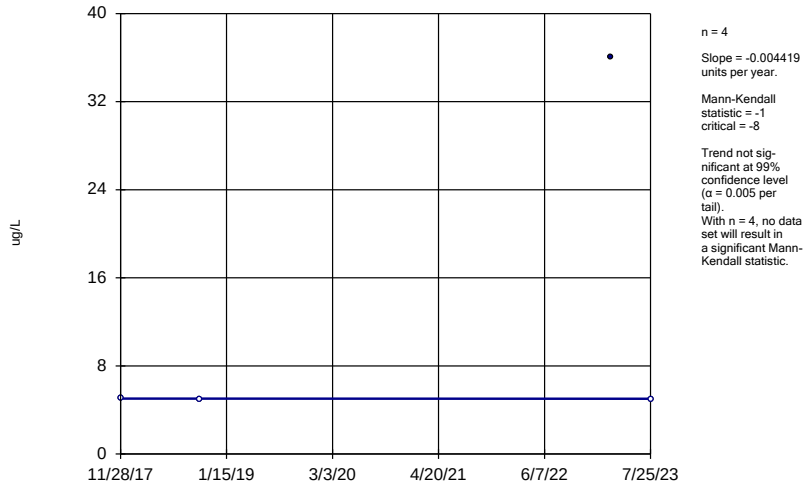
Trend not sig-
nificant at 99%
confidence level
(α = 0.005 per
tail).

Constituent: 1,1-Dichloroethane Analysis Run 2/14/2025 10:08 AM View: 2024AWQR AMD-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

04-MW-56



n = 4

Slope = -0.004419
units per year.

Mann-Kendall
statistic = -1
critical = -8

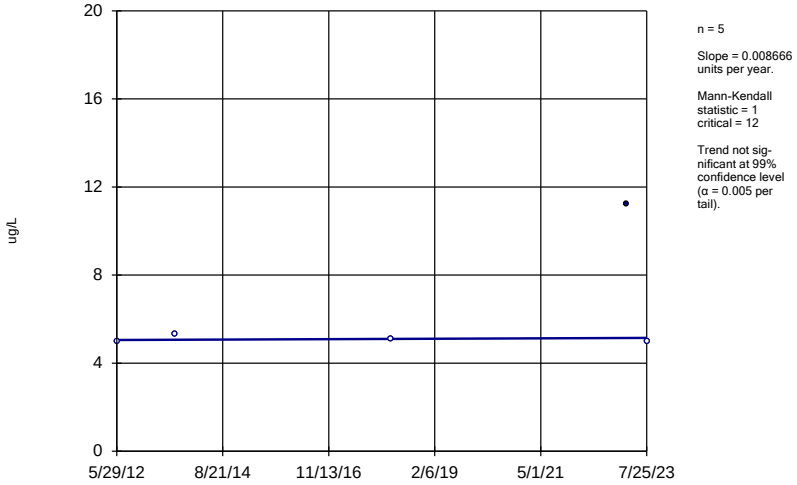
Trend not sig-
nificant at 99%
confidence level
(α = 0.005 per
tail).
With n = 4, no data
set will result in
a significant Mann-
Kendall statistic.

Constituent: 2-Methylnaphthalene Analysis Run 2/14/2025 10:08 AM View: 2024AWQR AMD-Mann Kend
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-39R

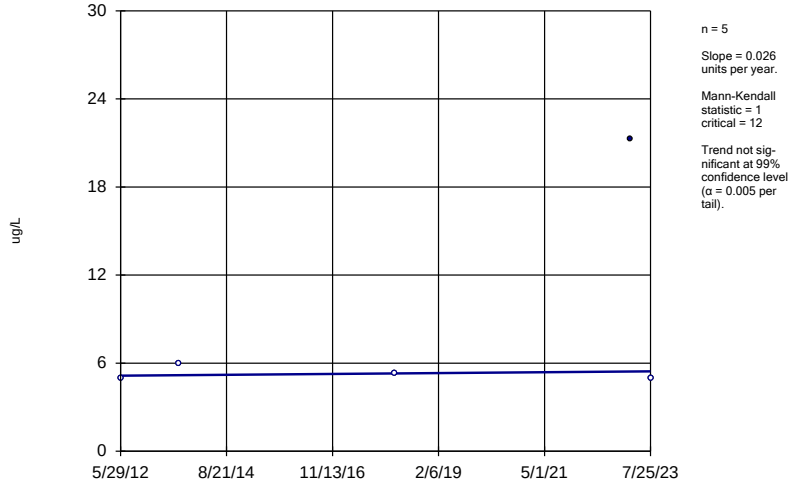


Constituent: 2-Methylnaphthalene Analysis Run 2/14/2025 10:08 AM View: 2024AWQR AMD-Mann Kend
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-58

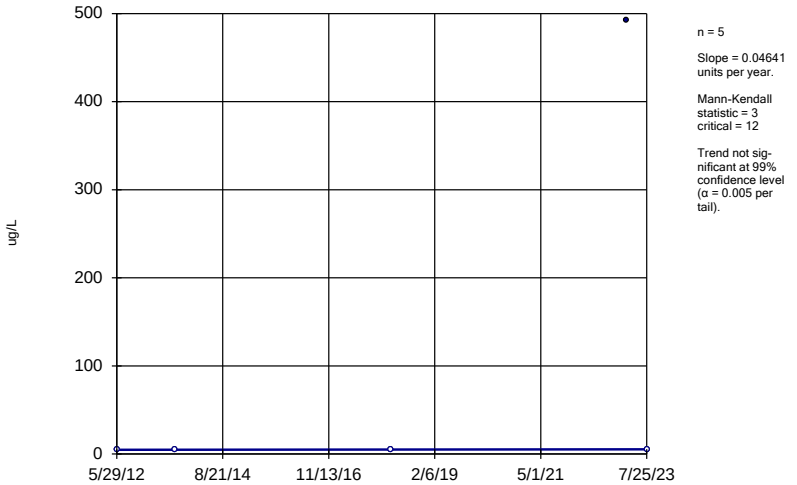


Constituent: 2-Methylnaphthalene Analysis Run 2/14/2025 10:08 AM View: 2024AWQR AMD-Mann Kend
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-65

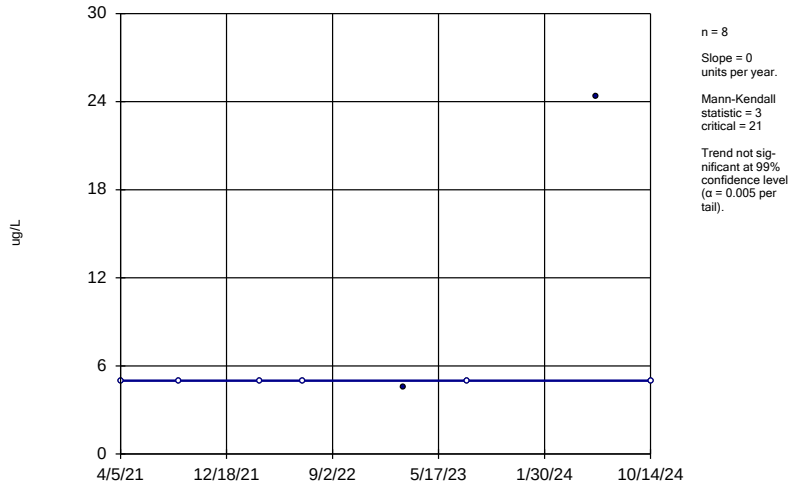


Constituent: 2-Methylnaphthalene Analysis Run 2/14/2025 10:08 AM View: 2024AWQR AMD-Mann Kend
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-40

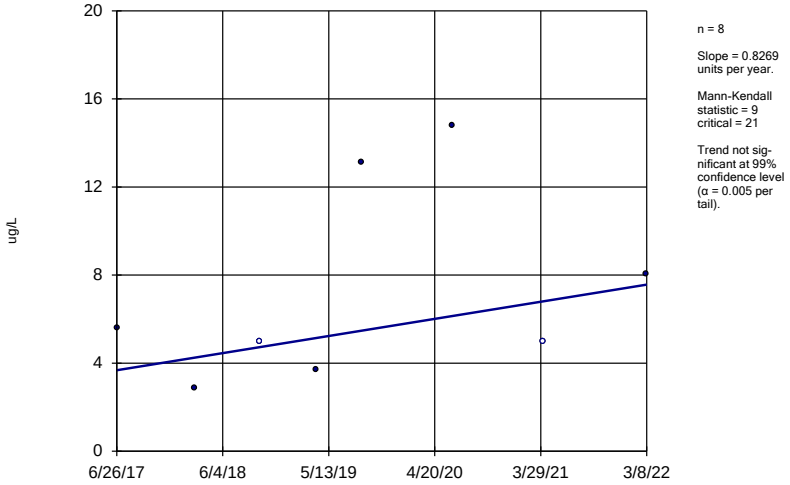


Constituent: Acetone Analysis Run 2/14/2025 10:08 AM View: 2024AWQR AMD-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-59



n = 8

Slope = 0.8269 units per year.

Mann-Kendall statistic = 9
critical = 21

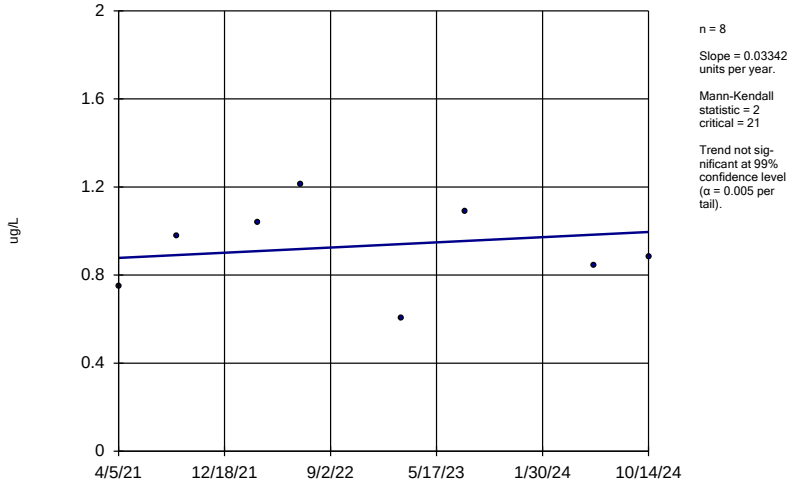
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Acetone Analysis Run 2/14/2025 10:08 AM View: 2024AWQR AMD-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-40



n = 8

Slope = 0.03342 units per year.

Mann-Kendall statistic = 2
critical = 21

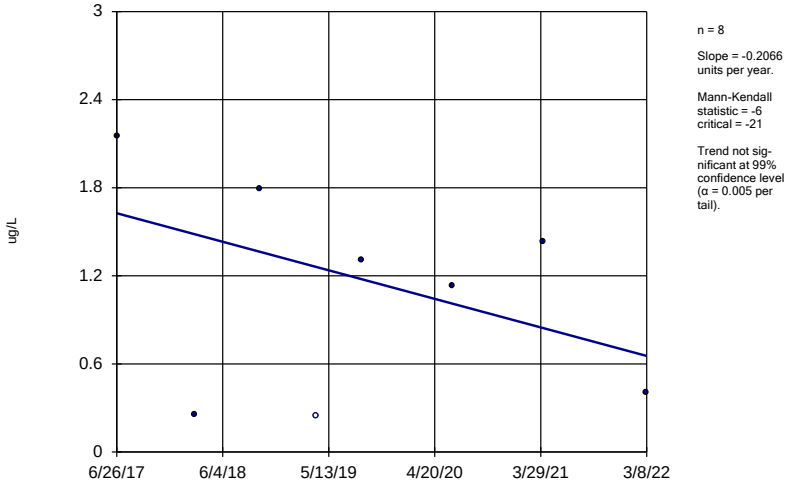
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Benzene Analysis Run 2/14/2025 10:08 AM View: 2024AWQR AMD-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-59



n = 8

Slope = -0.2066 units per year.

Mann-Kendall statistic = -6
critical = -21

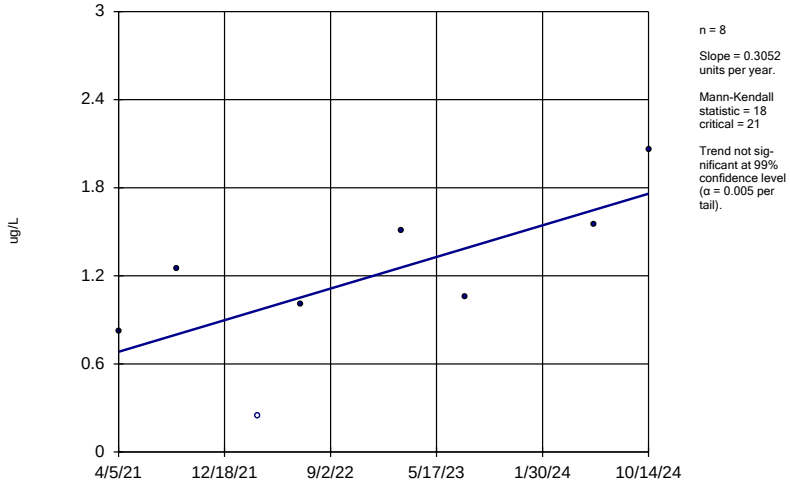
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Benzene Analysis Run 2/14/2025 10:08 AM View: 2024AWQR AMD-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-65



n = 8

Slope = 0.3052 units per year.

Mann-Kendall statistic = 18
critical = 21

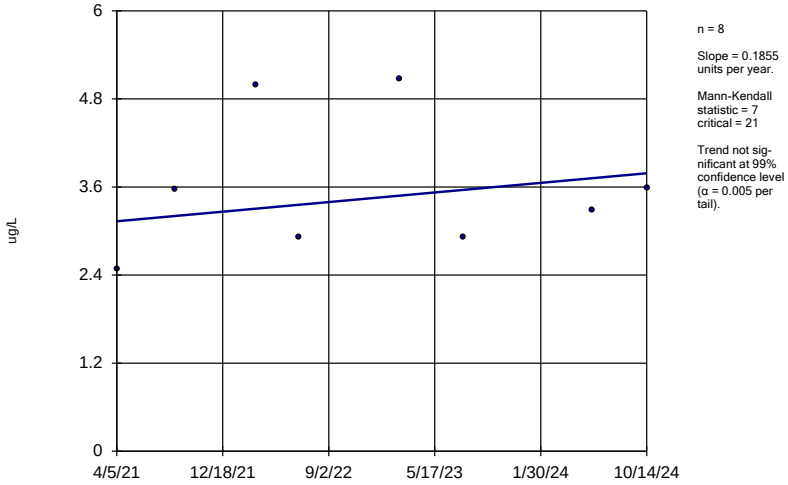
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Benzene Analysis Run 2/14/2025 10:08 AM View: 2024AWQR AMD-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-65

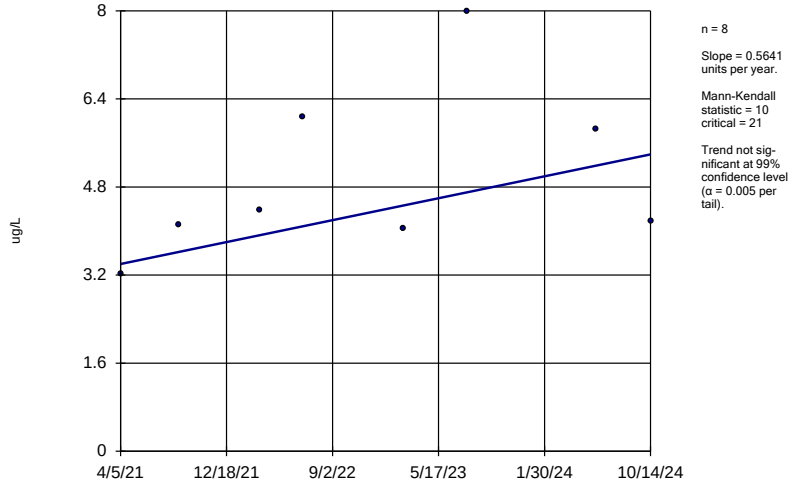


Constituent: Chloroethane Analysis Run 2/14/2025 10:08 AM View: 2024AWQR AMD-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-40

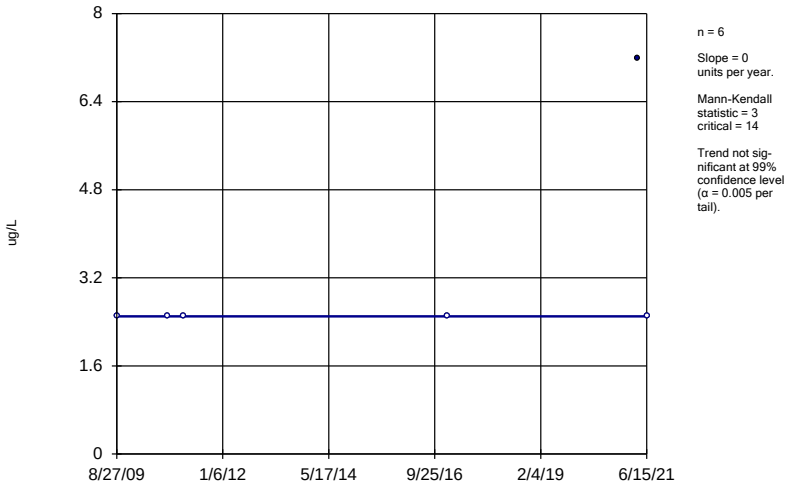


Constituent: cis-1,2-Dichloroethene Analysis Run 2/14/2025 10:08 AM View: 2024AWQR AMD-Mann Ken
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-40

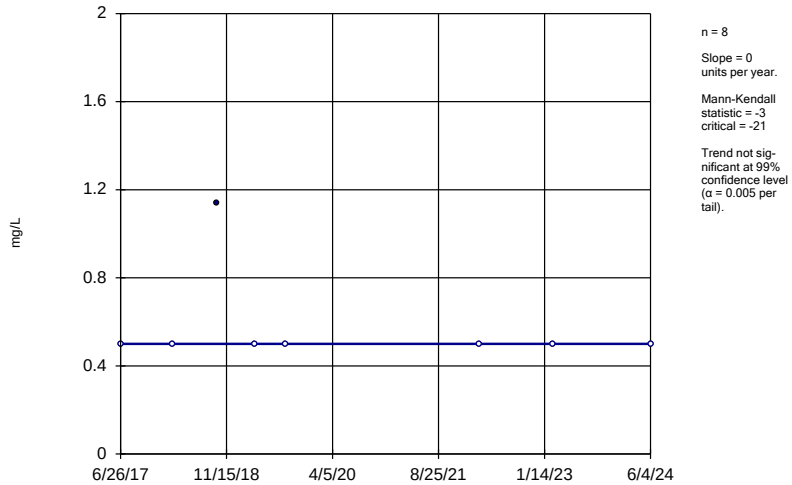


Constituent: Naphthalene Analysis Run 2/14/2025 10:08 AM View: 2024AWQR AMD-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-59

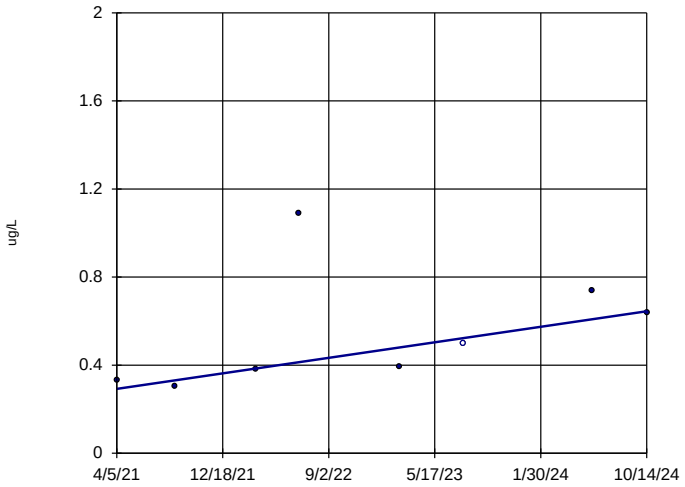


Constituent: Sulfide Analysis Run 2/14/2025 10:08 AM View: 2024AWQR AMD-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-40



n = 8

Slope = 0.09978 units per year.

Mann-Kendall statistic = 16
critical = 21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Vinyl chloride Analysis Run 2/14/2025 10:08 AM View: 2024AWQR AMD-Mann Kendall

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Confidence Interval Summary Table and Graphs – Assessment and AZPOC Monitoring Wells

AM Confidence Interval

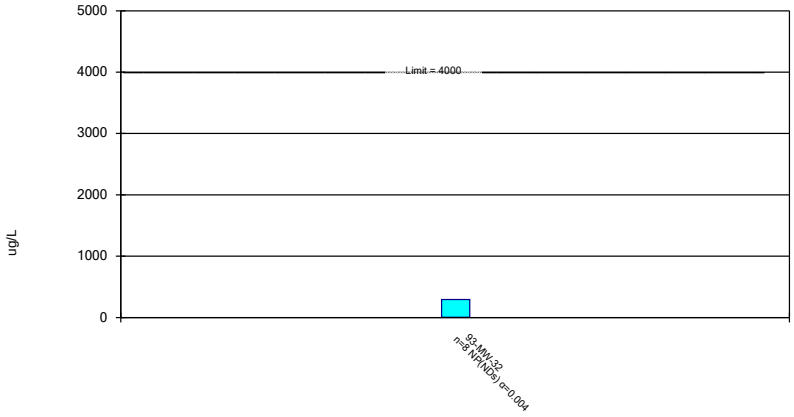
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM Printed 2/17/2025, 2:28 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
2-Butanone (ug/L)	93-MW-32	294	5	4000	No	8	87.5	No	0.004	NP (NDs)
Acetone (ug/L)	93-MW-32	261	1.91	6300	No	8	75	No	0.004	NP (NDs)
Antimony (mg/L)	93-MW-32	0.0011	0.0005	0.006	No	8	87.5	No	0.004	NP (NDs)
Arsenic (mg/L)	93-MW-32	0.00825	0.0021	0.01	No	8	37.5	No	0.01	Param.
Barium (mg/L)	93-MW-32	0.1693	0.0538	2	No	8	0	No	0.01	Param.
Barium (mg/L)	MW-62	0.03927	0.02795	2	No	8	0	No	0.01	Param.
Barium (mg/L)	MW-81	0.234	0.0579	2	No	8	0	No	0.004	NP (normality)
Cadmium (mg/L)	93-MW-32	0.001163	0.0001655	0.005	No	8	0	No	0.01	Param.
Cadmium (mg/L)	MW-81	0.00106	0.000062	0.005	No	8	12.5	No	0.004	NP (normality)
Cobalt (mg/L)	93-MW-32	0.07919	0	0.01691	No	8	0	No	0.01	Param.
Cobalt (mg/L)	MW-62	0.0006764	0.0003475	0.01691	No	8	0	No	0.01	Param.
Cobalt (mg/L)	MW-81	0.00324	0.000193	0.01691	No	8	25	No	0.004	NP (normality)
Copper (mg/L)	93-MW-32	0.00847	0.0025	1.3	No	8	75	No	0.004	NP (NDs)
Copper (mg/L)	MW-62	0.0025	0.002195	1.3	No	8	87.5	No	0.004	NP (NDs)
Lead (mg/L)	93-MW-32	0.00381	0.00025	0.015	No	8	37.5	No	0.004	NP (normality)
Lead (mg/L)	MW-81	0.00166	0.00025	0.015	No	8	87.5	No	0.004	NP (NDs)
Nickel (mg/L)	93-MW-32	0.1136	0.004385	0.1	No	8	0	No	0.01	Param.
Nickel (mg/L)	MW-62	0.01199	0.006286	0.1	No	8	0	No	0.01	Param.
Nickel (mg/L)	MW-81	0.0174	0.0025	0.1	No	8	75	No	0.004	NP (NDs)
Selenium (mg/L)	MW-62	0.0131	0.000753	0.05	No	8	75	No	0.004	NP (NDs)
Tetrachloroethene (ug/L)	MW-81	1.127	0.5865	5	No	8	12.5	No	0.01	Param.
Toluene (ug/L)	93-MW-32	6.22	0.5	1000	No	8	87.5	No	0.004	NP (NDs)
Vanadium (mg/L)	MW-81	0.00519	0.0025	0.035	No	8	87.5	No	0.004	NP (NDs)
Zinc (mg/L)	93-MW-32	0.04057	0.01094	2	No	8	0	No	0.01	Param.
Zinc (mg/L)	MW-81	0.0611	0.01	2	No	8	87.5	No	0.004	NP (NDs)

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

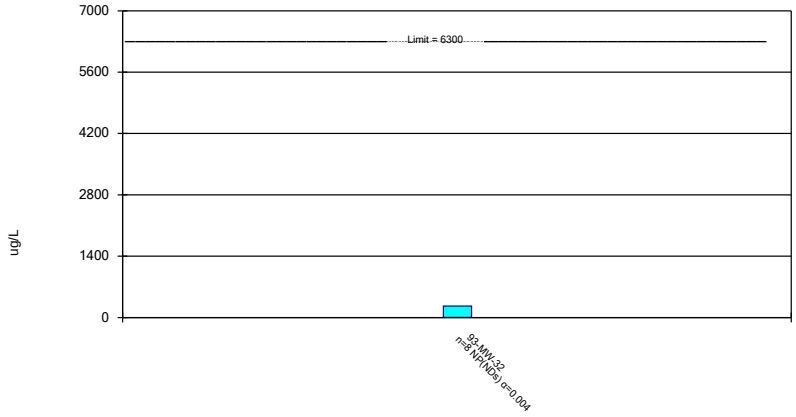


Constituent: 2-Butanone Analysis Run 2/17/2025 2:25 PM View: 2024AWQR AM- Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

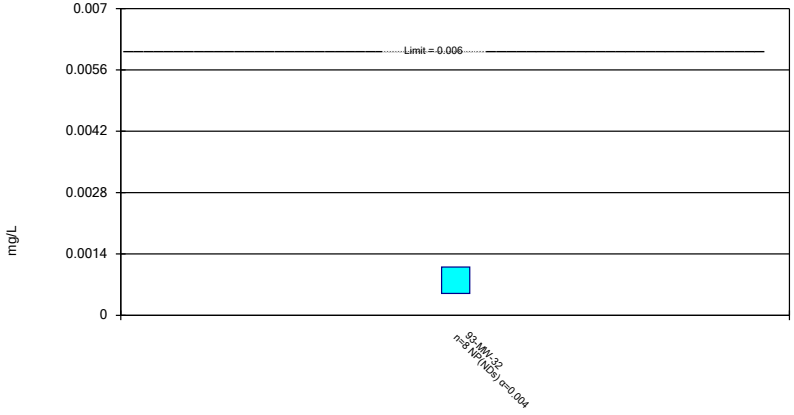


Constituent: Acetone Analysis Run 2/17/2025 2:25 PM View: 2024AWQR AM- Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

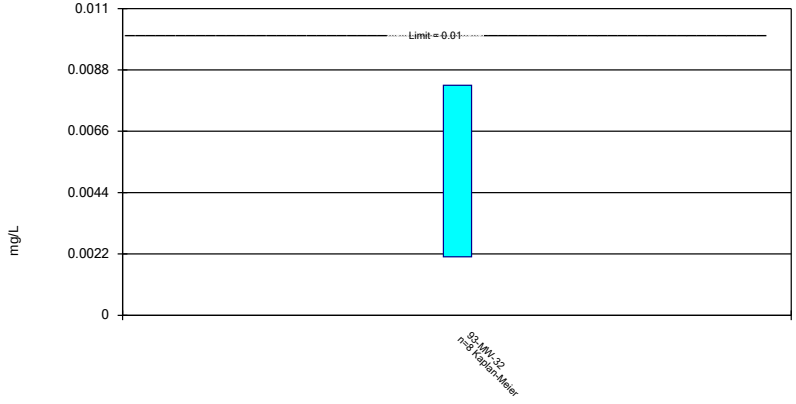


Constituent: Antimony Analysis Run 2/17/2025 2:25 PM View: 2024AWQR AM- Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

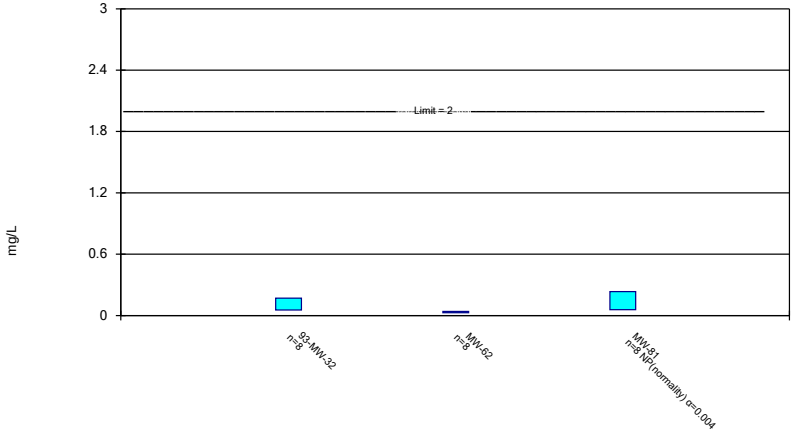


Constituent: Arsenic Analysis Run 2/17/2025 2:25 PM View: 2024AWQR AM- Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.

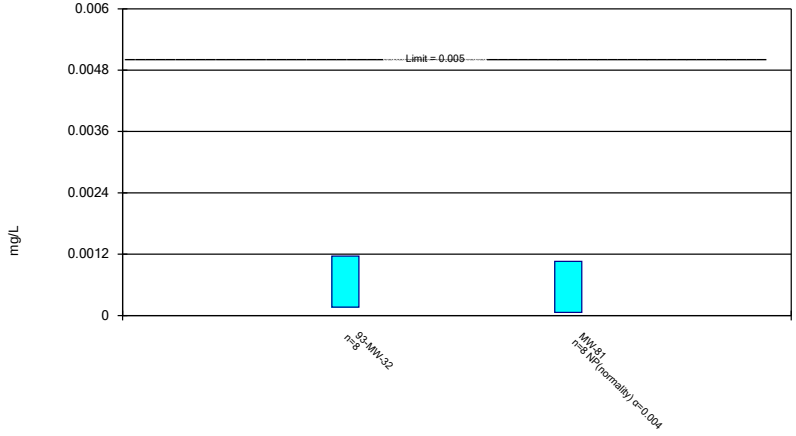


Constituent: Barium Analysis Run 2/17/2025 2:25 PM View: 2024AWQR AM- Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.

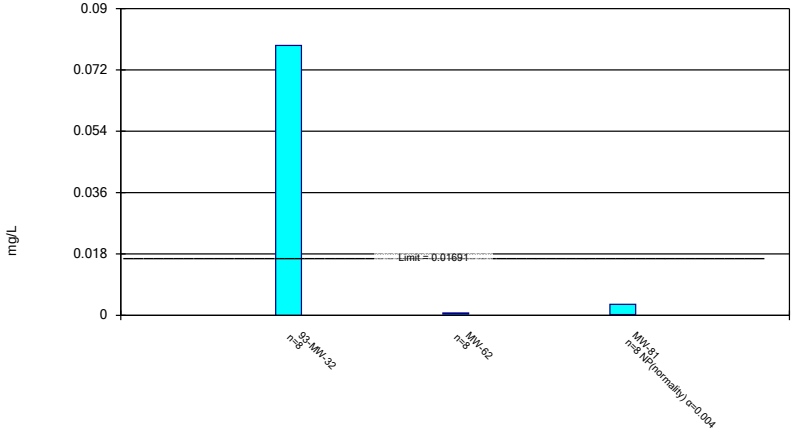


Constituent: Cadmium Analysis Run 2/17/2025 2:25 PM View: 2024AWQR AM- Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.

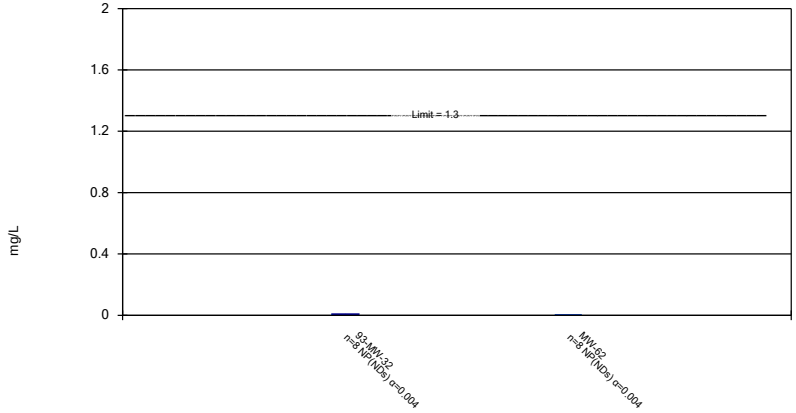


Constituent: Cobalt Analysis Run 2/17/2025 2:25 PM View: 2024AWQR AM- Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

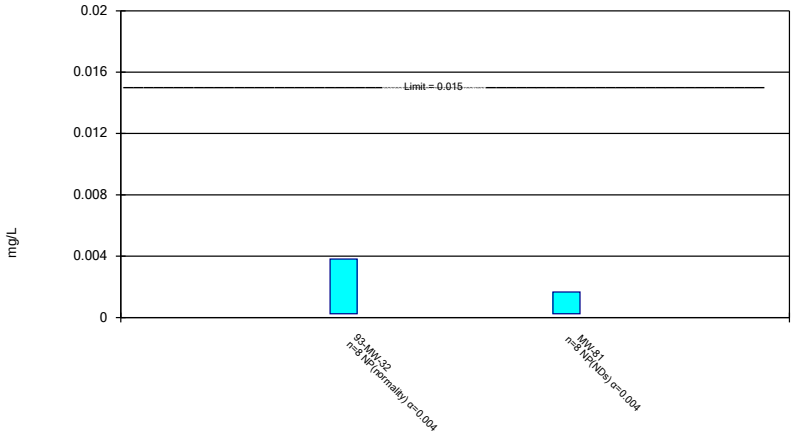


Constituent: Copper Analysis Run 2/17/2025 2:25 PM View: 2024AWQR AM- Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

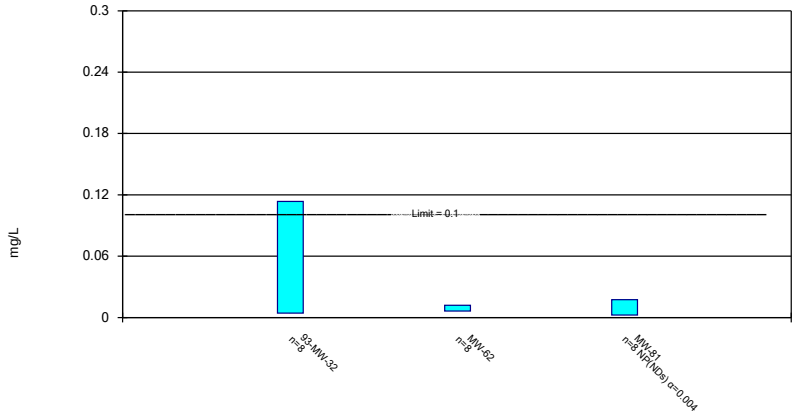


Constituent: Lead Analysis Run 2/17/2025 2:25 PM View: 2024AWQR AM- Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.

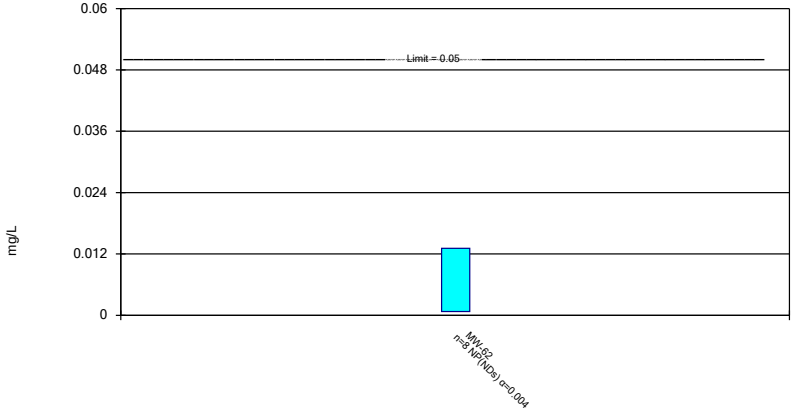


Constituent: Nickel Analysis Run 2/17/2025 2:25 PM View: 2024AWQR AM- Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

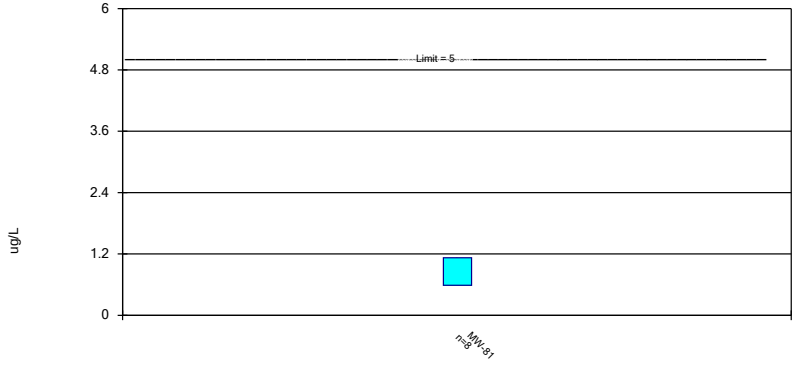


Constituent: Selenium Analysis Run 2/17/2025 2:25 PM View: 2024AWQR AM- Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

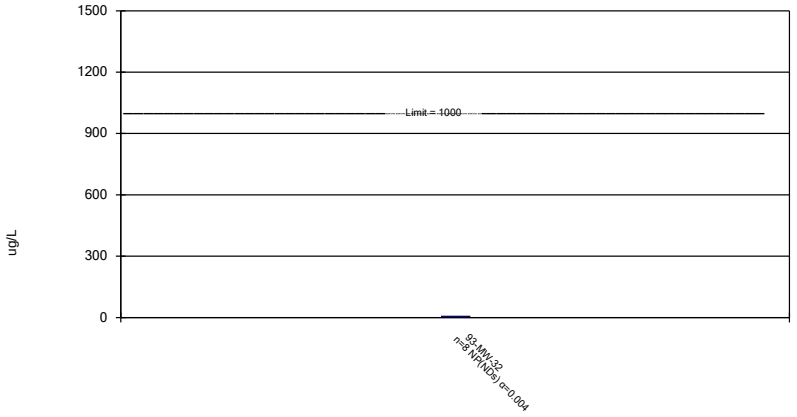


Constituent: Tetrachloroethene Analysis Run 2/17/2025 2:25 PM View: 2024AWQR AM- Confidence Inter
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

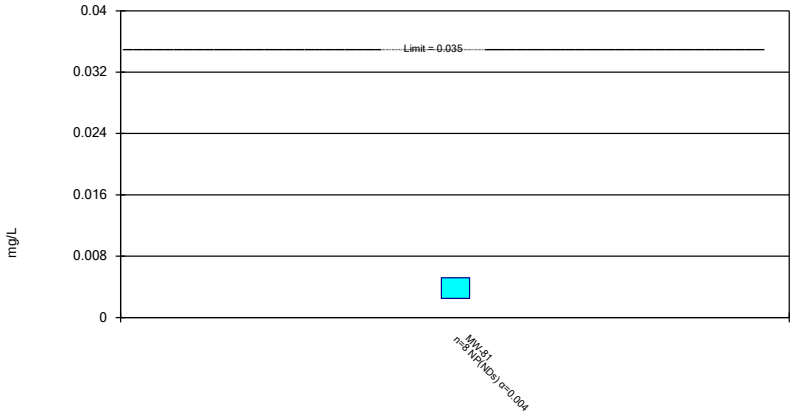


Constituent: Toluene Analysis Run 2/17/2025 2:25 PM View: 2024AWQR AM- Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

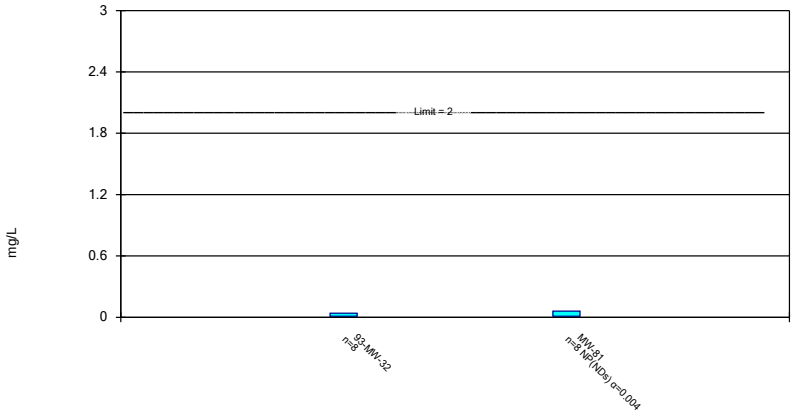


Constituent: Vanadium Analysis Run 2/17/2025 2:25 PM View: 2024AWQR AM- Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Zinc Analysis Run 2/17/2025 2:25 PM View: 2024AWQR AM- Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Confidence Interval Summary Table and Graphs – AMD Wells Organics and Sulfide

AMD Confidence Interval

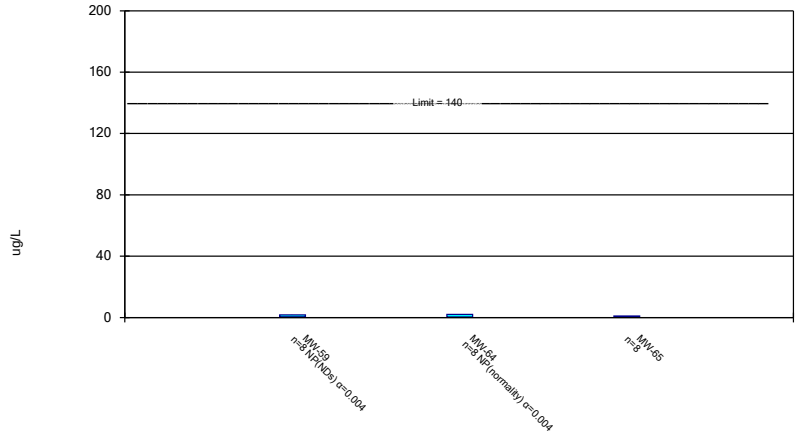
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM Printed 2/14/2025, 10:18 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
1,1-Dichloroethane (ug/L)	MW-59	1.75	0.5	140	No	8	75	No	0.004	NP (NDs)
1,1-Dichloroethane (ug/L)	MW-64	2.07	0.344	140	No	8	37.5	No	0.004	NP (normality)
1,1-Dichloroethane (ug/L)	MW-65	0.9947	0.5311	140	No	8	12.5	No	0.01	Param.
2-Methylnaphthalene (ug/L)	04-MW-56	36	5	28	No	4	75	No	0.0625	NP (NDs)
2-Methylnaphthalene (ug/L)	MW-39R	11.2	5	28	No	5	80	No	0.031	NP (NDs)
2-Methylnaphthalene (ug/L)	MW-58	21.3	5	28	No	5	80	No	0.031	NP (NDs)
2-Methylnaphthalene (ug/L)	MW-65	492	5	28	No	5	80	No	0.031	NP (NDs)
Acetone (ug/L)	MW-40	24.4	4.56	6300	No	8	75	No	0.004	NP (NDs)
Acetone (ug/L)	MW-59	11.77	2.798	6300	No	8	25	No	0.01	Param.
Benzene (ug/L)	MW-40	1.131	0.7184	5	No	8	0	No	0.01	Param.
Benzene (ug/L)	MW-59	1.856	0.3235	5	No	8	12.5	No	0.01	Param.
Benzene (ug/L)	MW-65	1.764	0.6148	5	No	8	12.5	No	0.01	Param.
Chloroethane (ug/L)	MW-65	4.612	2.593	2800	No	8	0	No	0.01	Param.
cis-1,2-Dichloroethene (ug/L)	MW-40	6.62	3.337	70	No	8	0	No	0.01	Param.
Naphthalene (ug/L)	MW-40	7.18	2.5	100	No	6	83.33	No	0.0155	NP (NDs)
Sulfide (mg/L)	MW-59	1.14	0.5	1	No	8	87.5	No	0.004	NP (NDs)
Vinyl chloride (ug/L)	MW-40	0.8296	0.2648	2	No	8	12.5	No	0.01	Param.

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.

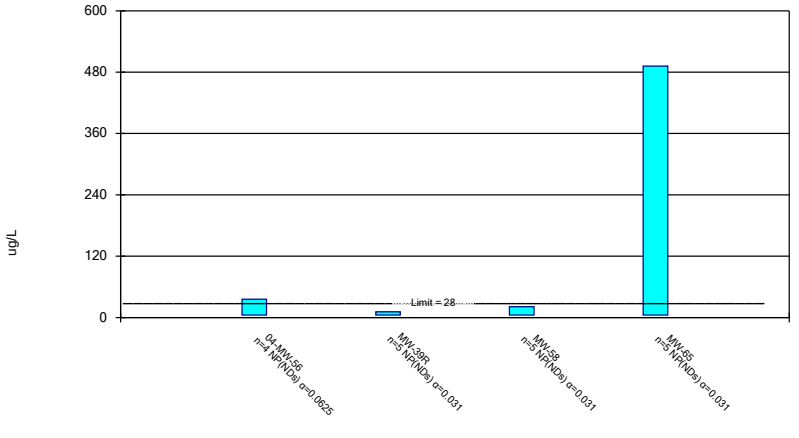


Constituent: 1,1-Dichloroethane Analysis Run 2/14/2025 10:17 AM View: 2024AWQR AMD-Confidence In
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

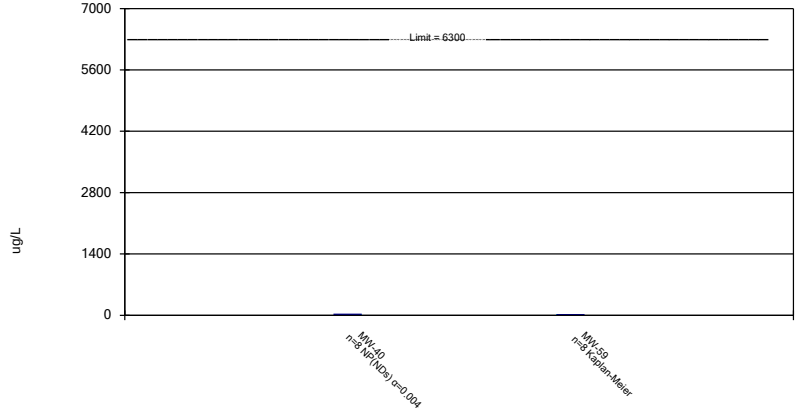


Constituent: 2-Methylnaphthalene Analysis Run 2/14/2025 10:17 AM View: 2024AWQR AMD-Confidence
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.

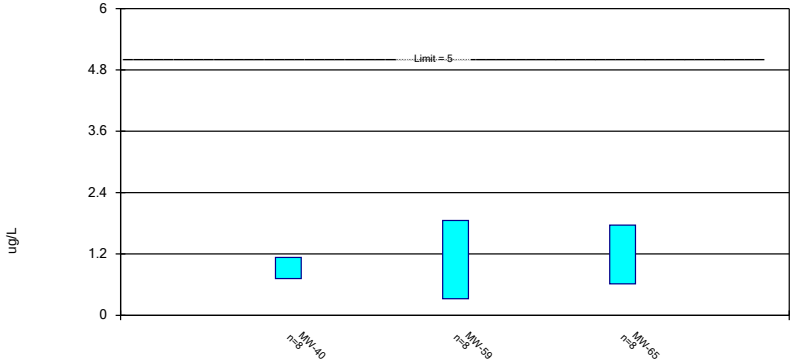


Constituent: Acetone Analysis Run 2/14/2025 10:17 AM View: 2024AWQR AMD-Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

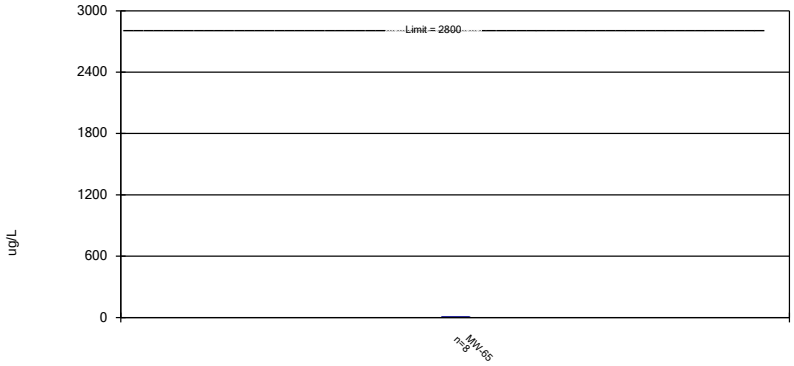


Constituent: Benzene Analysis Run 2/14/2025 10:17 AM View: 2024AWQR AMD-Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

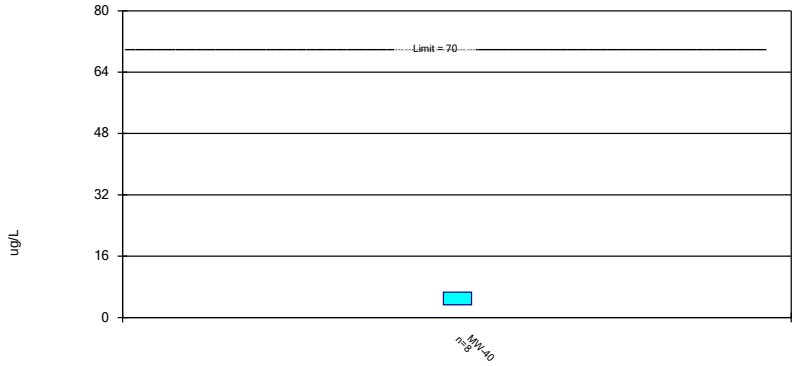


Constituent: Chloroethane Analysis Run 2/14/2025 10:17 AM View: 2024AWQR AMD-Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

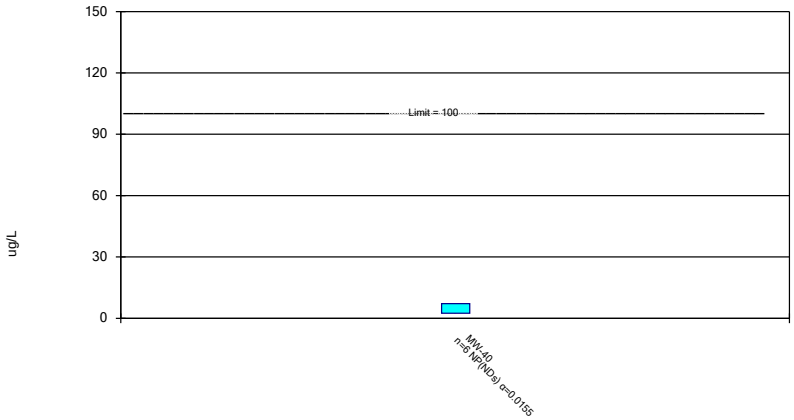


Constituent: cis-1,2-Dichloroethene Analysis Run 2/14/2025 10:17 AM View: 2024AWQR AMD-Confidenc
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

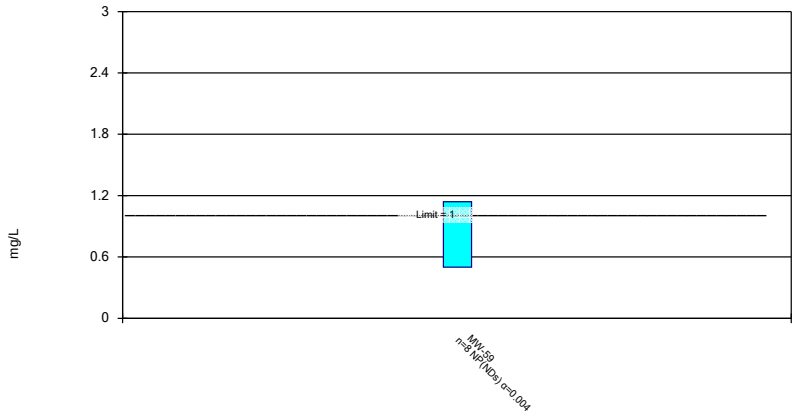


Constituent: Naphthalene Analysis Run 2/14/2025 10:17 AM View: 2024AWQR AMD-Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

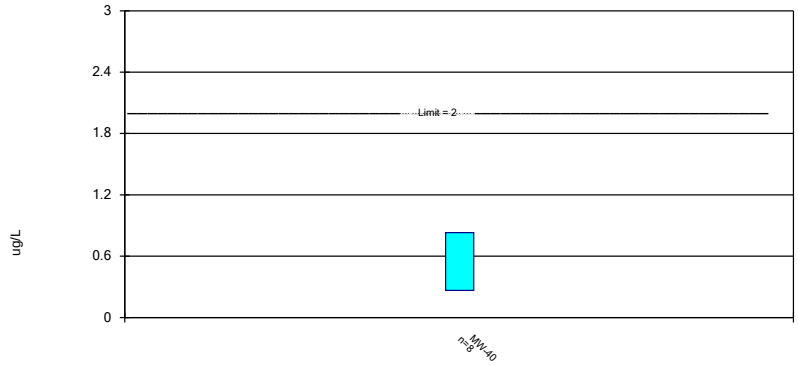


Constituent: Sulfide Analysis Run 2/14/2025 10:17 AM View: 2024AWQR AMD-Confidence Interval
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Vinyl chloride Analysis Run 2/14/2025 10:17 AM View: 2024AWQR AMD-Confidence Interval

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AMD Wells-2024AWQR-AM

Thiel Sen Confidence Band Summary Table and Graphs

AM Trend Test/Theil Sen

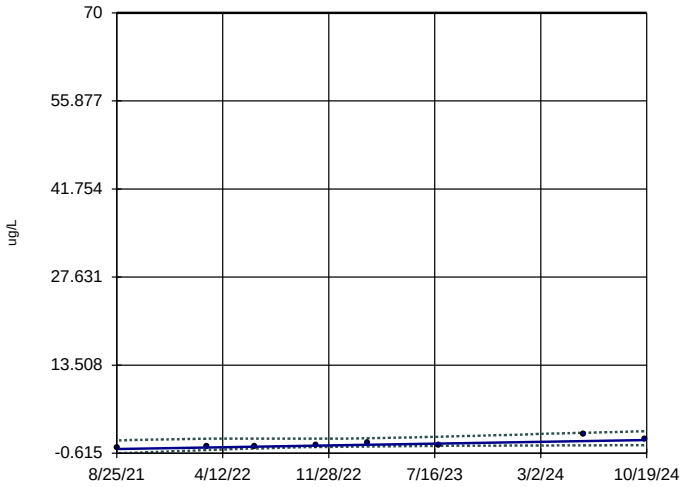
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM Printed 2/13/2025, 5:34 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Alpha	Method
cis-1,2-Dichloroethene (ug/L)	**MW-81**	**0.4538**	**24**	**21**	**Yes**	**8**	**0**	**0.01**	**NP**

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope and 99% Confidence Band

MW-81



n = 8

Slope = 0.4538 units per year.

Mann-Kendall statistic = 24 critical = 21

Increasing trend significant at 99% confidence level (α = 0.005 per tail).

Confidence band is below GWPS ug/L (70).

Constituent: cis-1,2-Dichloroethene Analysis Run 2/13/2025 5:34 PM View: 2024AWQR AM-Theil Sen

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC AM Wells-2024AWQR-AM

Appendix E

2024 Leachate Control System Performance Evaluation Report

2024 LEACHATE CONTROL SYSTEM PERFORMANCE EVALUATION REPORT

FOR

OTTUMWA-WAPELLO COUNTY LANDFILL

WEST MSWLF UNIT

OTTUMWA, IOWA

SUBMITTAL DATE: FEBRUARY 2025

PREPARED FOR:
OTTUMWA-WAPELLO COUNTY SOLID WASTE COMMISSION

PREPARED BY:
SCS ENGINEERS

Table of Contents

Section 1.0 Leachate Control System 1-1

1.1 LOCATION OF CONTROL SYSTEM 1-1

1.2 EFFECTIVENESS OF THE LEACHATE CONTROL SYSTEM 1-1

1.3 APPROVED CHANGES TO SYSTEM 1-2

1.4 PROPOSED CHANGES TO SYSTEM 1-2

Figures

FIGURE 1 LEACHATE CONTROL SYSTEM

Attachments

ATTACHMENT A TABLE 12 – DNR ANNUAL WATER QUALITY REPORT TEMPLATE

ATTACHMENT B HISTORICAL LEACHATE COLUMN THICKNESS TABLES AND GRAPHS

ATTACHMENT C LEACHATE TESTING LABORATORY ANALYTICAL DATA SHEETS

Section 1.0

Leachate Control System

SCS Engineers (SCS), on behalf of the Ottumwa-Wapello County Solid Waste Commission, has prepared this Leachate Control System Performance Evaluation Report (LCSPER) for the West municipal solid waste landfill (MSWLF) unit at the Ottumwa-Wapello County Landfill (Landfill) to comply with the requirements of Iowa Administrative Code (IAC) 567-113.7(5)"b"(14) and additional Iowa Department of Natural Resources (DNR) requirements specified in the West MSWLF's operating permit, most recently revised on May 11, 2023 (Doc #106563). This LCSPER describes the leachate control system, discusses maintenance activities, provides an evaluation of the effectiveness of the system, and, if necessary, provides recommendations for additional control measures. The reporting period for this LCSPER is from November 2023 – December 2024.

1.1 Location of Control System

The Landfill property is depicted in Figure 1, Leachate Control System, and is located along 165th Avenue, approximately 1.5 miles north of State Highway 23 in Wapello County, Iowa. The Landfill property consists of approximately 250 acres and is located within the SE ¼; the E 30 acres of the S ½, S ½, NE ¼; and a portion of the W 10 acres of the S ½, S ½, NE ¼; all in Section 33, T73N, R14W, Wapello County, Iowa, as well as approximately 30 acres in the W ½ of the NE Fractional Quarter of Section 4, T72N, R14W, and Parcel A of the SW ¼ of Section 34, T73N, R14W, all in Wapello County, Iowa.

Leachate underdrains and collection pipes are located above the liners of the south cell, the west cell, the first north cell (built in 2000), the second north cell (built in 2006), the Phases 1A and 1B cell (built in 2009), the Phase 2 cell (built in 2013), and the Phase 3 cell (built in 2019). A toe drain with laterals extending into the waste mass is also present along the east toe of the closed unlined area of the unit. The monitoring system for the West MSWLF unit consists of thirteen leachate piezometers (LPZ-6R2, LPZ-7R2, LPZ-9R, LPZ-10R, LPZ-11, LPZ-12, LPZ-14, LPZ-15, LPZ-16, LPZ-17, LPZ-18, LPZ-19, and LPZ-20). An above-ground direct recirculation line runs from the leachate lagoon to the active area. A leachate extraction well (LEW-1) is located near the location of leachate piezometer LPZ-13R2 in the alternatively-lined north cell. Leachate piezometer LPZ-13R2 is not a functional measurement point and was approved for removal without replacement.

1.2 Effectiveness of the Leachate Control System

Table 12 in Attachment A provides monthly leachate column thicknesses for the West MSWLF unit. Leachate level measurements are collected monthly by Landfill staff. The measurements are reviewed each month by SCS to verify the recorded measurements appear representative. If the measurements do not appear representative, Landfill staff recheck the levels.

Leachate thickness trends are described below and a historical table and graphs are included in Attachment B.

Unlined

LPZ-6R2 – December 2023 – February 2024 had the lowest thickness since 2015 before increasing to within the historical range throughout the end of the reporting period.

LPZ-7R2 – Leachate thickness measurements fluctuated between dry for most measurements and greater than 20 feet for three measurements. The measurements are inconsistent with the historical record.

LPZ-9R – Leachate thicknesses were erratic during this reporting period. Although measurements were within the historical range from November 2023 – March 2024 and July – September 2024, six measurements were above the historical range (discounting October 2022), with a new maximum measured in June 2024.

LPZ-10R – Leachate thicknesses were generally stable within the historical range during this reporting period.

LPZ-11 – Leachate thicknesses were generally slightly increasing during this reporting period, with five measurements above the historical range, with a new maximum measured in April 2024.

LPZ-12 – Leachate thicknesses remained within the historical range during this reporting period, with variation of less than three feet.

LPZ-19 – During this reporting, period, leachate thicknesses continued the erratic measurements that began during the previous reporting period after a stable trend in previous years. Multiple measurements were within about one foot of the historical low, and November 2024 was a new minimum (discounting March 2016). However, seven measurements were above the historical range, with a new maximum measured in March 2024.

Clay Lined

LPZ-18 – Leachate thicknesses were generally stable but had spikes during May and July 2024 that quickly decreased to more typical levels and remained there through the end of the reporting period.

Composite Lined

LPZ-14 – The piezometer was dry during this reporting period.

LPZ-15 – The piezometer was dry during this reporting period.

LPZ-16 – The piezometer was dry during this reporting period.

LPZ-17 – The piezometer was dry during this reporting period.

LPZ-20 – Leachate thicknesses were below the compliance limit from November 2023 through February 2024 and then the piezometer was dry during the remainder of this reporting period.

1.3 Approved Changes to System

The pipe used to transfer leachate to the hydro-mulching machine was replaced during this reporting period.

The leachate recirculation piping was not used during this reporting period. The line should be inspected before the next planned use and is required to be inspected monthly when in use.

1.4 Proposed Changes to System

There are no proposed changes to the leachate control system at this time. SCS recommends continuing to perform the following items to maintain the effectiveness of the leachate control system:

- Continue monthly monitoring of the leachate levels as required in the facility permit.
- Maintain good vegetation over the final cover and intermediate cover over the inactive areas.

- Continue operation and maintenance of the leachate control system in accordance with the approved Leachate Control System Plan.
- Continue recording the volume of leachate transported to the City of Ottumwa publicly-owned treatment works (POTW). 360,000 gallons of leachate were hauled for disposal during this reporting period. Analytical test results for this reporting period are included in Attachment C.
- Clean the leachate collection system at least once every three years or more frequently if the leachate head or the volume of leachate collected indicates more frequent cleaning is necessary.

Path: C:\Users\bmadison\OneDrive - SCS Engineers\Desktop\GIS\Mans\Site Mans\OWSWC\2023 AWOR\OWSWC-2023-AWOR.aprx
User: bmadison
Date Saved: 2/24/2025 2:12 AM

MW-68
MW-72
MW-71
MW-78
MW-76
MW-80
MW-69
MW-67
93-MW-31R
MW-73
MW-79
MW-77
04-MW-57
MW-62
91-MW-6
91-MW-8
91-MW-7
MW-81
MW-74
LPZ-18
LPZ-6R2
MW-75
MW-61R
MW-66
LPZ-19
LPZ-7R2
MW-37
93-MW-32
MW-70
LPZ-9R
LPZ-13R2
04-MW-56
LPZ-14
LPZ-10R
LEW-1
LPZ-13R
MW-64
MW-60
MW-40
MW-39R
LPZ-15
LPZ-11
91-MW-14
MW-59
LPZ-12
91-MW-10
GWP-1
LPZ-16
MW-65
MW-58
MW-63R
LPZ-17
MW-53
91-MW-12
91-MW-13
GWP-2
LPZ-20
PZ-1W
GU-7
MW-52
MW-51
MW-50
MW-54
GWP-3
GU-6
MW-41
MW-42
MW-43

Esri, CGIAR, USGS, Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS, USDA NAIP, Iowa State University GIS Facility

SCS ENGINEERS
environmental consultants and contractors

Leachate Control System

Legend

- Leachate Control System Monitoring Point
- Leachate Monitoring Point
- Monitoring Well
- Groundwater Underdrain
- Approximate Property Boundary
- Approximate Waste Boundary
- Approximate Future Waste Boundary

Ottumwa-Wapello County
Landfill
Ottumwa, IA
Project No: 27223157.25
Drawing Date: February 2025

Figure 1

W S N E

0 230 460 920
Feet

Attachment A

Leachate Management Summary

Table 12
Leachate Management Summary
2024 Leachate Control System Performance Evaluation Report
Ottumwa-Wapello County Landfill
Permit No. 90-SDP-01-75P

	Unlined Cells - Column Thickness (ft)							Lined Cells - Column Thickness (ft)						Volume	Hauled to	Leachate Used in ADC	Precipitation
Month	**LPZ-6R2**	**LPZ-7R2**	**LPZ-9R**	**LPZ-10R**	**LPZ-11**	**LPZ-12**	**LPZ-19**	**LPZ-14**	**LPZ-15**	**LPZ-16**	**LPZ-17**	**LPZ-18**	**LPZ-20**	**Recirculated (gal)**	**Ottumwa POTW (gal)**	**Preparation (gal)**	**(in)**
November 2023	6.8	11.0	6.4	6.1	4.0	3.7	24.6	Dry	Dry	Dry	Dry	1.4	0.5				0.54
December 2023	5.9	Dry	10.6	5.1	3.9	4.0	7.3	Dry	Dry	Dry	Dry	1.0	0.5				2.30
January 2024	6.0	Dry	6.3	5.3	4.2	3.2	7.3	Dry	Dry	Dry	Dry	1.2	0.4				3.45
February 2024	6.0	Dry	8.1	6.5	5.1	6.1	26.6	Dry	Dry	Dry	Dry	1.1	0.7				0.18
March 2024	10.5	Dry	10.0	7.2	3.4	6.0	26.9	Dry	Dry	Dry	Dry	1.3	Dry				2.56
April 2024	NA	21.8	21.7	8.5	5.7	5.3	26.0	Dry	Dry	Dry	Dry	1.5	Dry				5.42
May 2024	12.3	Dry	19.8	8.7	5.2	5.2	10.7	Dry	Dry	Dry	Dry	9.4	Dry				5.20
June 2024	12.2	Dry	22.4	6.1	4.4	5.9	24.9	Dry	Dry	Dry	Dry	1.3	Dry	25,600	360,000	107,200	2.16
July 2024	11.2	Dry	5.3	6.3	4.2	4.3	8.8	Dry	Dry	Dry	Dry	6.3	Dry				7.00
August 2024	10.1	Dry	5.8	7.0	5.0	4.0	14.1	Dry	Dry	Dry	Dry	1.7	Dry				2.00
September 2024	9.9	Dry	5.6	7.3	NA	4.0	21.3	Dry	Dry	Dry	Dry	1.6	Dry				0.71
October 2024	11.2	Dry	17.3	4.6	5.0	4.0	NA	Dry	Dry	Dry	Dry	1.3	Dry				2.89
November 2024	8.6	24.0	19.1	7.2	4.5	3.7	6.8	Dry	Dry	Dry	Dry	NA	Dry				2.37
December 2024	10.6	21.6	17.7	6.6	4.3	3.8	7.7	Dry	Dry	Dry	Dry	1.6	Dry				3.05
													Reporting Period Total Gallons	25,600	360,000	107,200	39.83

Measurements performed by Landfill staff.

NA - Not applicable. Likely anomalous values were not considered in the thickness interpretation.

Comments:

1. Reporting Period: November 2023 - December 2024
2. Recommended Changes to Leachate Control System: No changes recommended.
3. Maintenance Performed on Leachate Control System: The pipe used to transfer leachate to the hydro-mulching machine was replaced during this reporting period.
4. Last Date of Cleaning and Inspection: August 2017
5. Date for Next Cleaning and Inspection: Leachate line cleaning and inspection will be performed if performance declines are observed.
6. Volume of Leachate Used in Alternative Daily Cover (ADC) Preparation: 107,200 gallons of leachate were used for preparation of ADC during this reporting period.
7. Volume of Leachate Recirculated: 25,600 gallons of leachate were recirculated during this reporting period.
8. Volume of Leachate Treated Off-Site: 360,000 gallons of leachate were hauled to the Ottumwa POTW for disposal during this reporting period.
9. Precipitation data from Iowa State University Iowa Environmental Mesonet (https://mesonet.agron.iastate.edu/ASOS/reports/mon_prec.php) for Ottumwa, Iowa.

Attachment B

Historical Leachate Column Thickness Tables and Graphs

ATTACHMENT B
HISTORICAL LEACHATE COLUMN THICKNESSES
OTTUMWA-WAPELLO COUNTY LANDFILL

Date	Unlined Area of West MSWLF Unit							Lined Area of West MSWLF Unit					
	LPZ-6R2	LPZ-7R2	LPZ-9R	LPZ-10R	LPZ-11	LPZ-12	LPZ-19	LPZ-14	LPZ-15	LPZ-16	LPZ-17	LPZ-18	LPZ-20
Apr-07	NI	NI	NI	NM	NM	NI	NI	NM	NM	NM	NI	NI	NI
Oct-07	NI	NI	NI	NM	NM	NI	NI	NM	0.0	NM	NI	NI	NI
Mar-08	NI	NI	NI	NM	NM	NI	NI	NM	NM	NM	NI	NI	NI
Apr-08	NI	NI	NI	NM	NM	NI	NI	NM	NM	NM	NI	NI	NI
Apr-08	NI	NI	NI	NM	NM	NI	NI	NM	NM	NM	NI	NI	NI
May-08	NI	NI	NI	NM	NM	NI	NI	NM	NM	NM	NI	NI	NI
Jun-08	NI	NI	NI	NM	NM	NI	NI	NM	NM	NM	NI	NI	NI
Jul-08	NI	NI	NI	NM	NM	NI	NI	NM	NM	NM	NI	NI	NI
Aug-08	NI	NI	NI	0.2	NM	NI	NI	NM	0.2	NM	NI	NI	NI
Sep-08	NI	NI	NI	2.8	NM	NI	NI	NM	2.8	NM	NI	NI	NI
Sep-08	NI	NI	NI	Dry	NM	NI	NI	NM	0.0	NM	NI	NI	NI
Oct-08	NI	NI	NI	0.2	NM	NI	NI	NM	0.2	NM	NI	NI	NI
Nov-08	NI	NI	NI	Dry	NM	NM	NI	NM	0.0	NM	NI	NI	NI
Dec-08	NI	NI	NI	Dry	NM	NM	NI	NM	0.0	NM	NI	NI	NI
Jan-09	NI	NI	NI	Dry	NM	NM	NI	NM	0.0	NM	NI	NI	NI
Feb-09	NI	NI	NI	Dry	NM	NM	NI	NM	0.0	NM	NI	NI	NI
Mar-09	NI	NI	NI	Dry	NM	NM	NI	NM	0.0	NM	NI	NI	NI
Apr-09	NI	NI	NI	Dry	NM	5.2	NI	NM	0.0	NM	NI	NI	NI
Apr-09	NI	NI	NI	5.2	NM	NM	NI	NM	5.2	NM	NI	NI	NI
May-09	NI	NI	NI	Dry	Dry	5.0	NI	NM	0.0	NM	NI	NI	NI
Jun-09	NI	NI	NI	Dry	Dry	5.0	NI	NM	0.0	NM	NI	NI	NI
Jul-09	NI	NI	NI	Dry	Dry	4.8	NI	NM	0.0	NM	NI	NI	NI
Aug-09	NI	NI	NI	Dry	Dry	4.6	NI	NM	0.0	NM	NI	NI	NI
Sep-09	NI	NI	NI	Dry	Dry	5.3	NI	NM	0.0	NM	NI	NI	NI
Oct-09	NI	NI	NI	Dry	Dry	5.6	NI	NM	0.0	NM	NI	NI	NI
Oct-09	NI	NI	NI	Dry	Dry	NM	NI	NM	0.0	NM	NI	NI	NI
Oct-09	NI	NI	NI	NM	NM	NM	NI	NM	NM	NM	NI	NI	NI
Nov-09	NI	NI	NI	Dry	Dry	5.6	NI	NM	0.0	NM	NI	NI	NI
Dec-09	NI	NI	NI	Dry	Dry	5.1	NI	NM	0.0	NM	NI	NI	NI
Jan-10	NI	NI	NI	Dry	Dry	8.1	NI	4.4	1.2	0.2	NI	NI	NI
Feb-10	NI	NI	NI	Dry	Dry	8.3	NI	4.2	1.3	0.5	NI	NI	NI
Mar-10	NI	NI	NI	Dry	Dry	8.0	NI	4.3	1.2	Dry	NI	NI	NI
Apr-10	NI	NI	NI	Dry	Dry	8.5	NI	4.4	1.5	Dry	NI	NI	NI
Apr-10	NI	NI	NI	Dry	Dry	5.6	NI	NM	NM	Dry	NI	NI	NI
May-10	NI	NI	NI	Dry	Dry	8.2	NI	4.5	1.3	Dry	NI	NI	NI
Jun-10	NI	NI	NI	Dry	Dry	8.5	NI	4.4	1.5	Dry	NI	NI	NI
Jul-10	NI	NI	NI	Dry	Dry	9.3	NI	4.1	1.7	Dry	NI	NI	NI
Aug-10	NI	NI	NI	Dry	Dry	8.9	NI	3.1	0.7	Dry	NI	NI	NI
Sep-10	NI	NI	NI	Dry	Dry	6.6	NI	4.0	1.9	0.3	NI	NI	NI
Oct-10	NI	NI	NI	Dry	Dry	5.3	NI	4.0	0.4	Dry	NI	NI	NI
Oct-10	NI	8.5	10.6	3.3	Dry	NM	NI	NM	NM	NM	NI	NI	NI
Nov-10	6.7	11.2	11.4	1.8	Dry	4.2	NI	3.8	1.3	Dry	NI	NI	NI
Dec-10	6.6	12.2	10.3	2.1	Dry	4.4	NI	5.5	1.1	Dry	NI	NI	NI
Jan-11	6.0	11.4	9.3	2.2	Dry	6.2	NI	3.9	1.0	Dry	NI	NI	NI
Feb-11	6.7	11.3	9.6	1.9	Dry	8.5	NI	4.1	1.1	Dry	NI	NI	NI
Feb-11	Dry	11.3	10.7	2.3	Dry	7.6	NI	NM	NM	NM	NI	NI	NI
Mar-11	5.8	11.1	6.3	1.8	Dry	6.0	NI	3.5	0.9	0.6	NI	NI	NI
Apr-11	6.5	12.6	9.3	3.0	Dry	5.9	NI	4.5	2.3	NM	NI	NI	NI
May-11	5.6	11.9	4.8	1.7	Dry	6.3	NI	3.5	0.9	0.7	NI	NI	NI
Jun-11	5.9	13.9	8.9	2.3	Dry	8.2	NI	3.2	1.2	0.2	NI	NI	NI
Jul-11	6.5	11.6	8.7	1.9	Dry	8.4	NI	4.1	1.2	Dry	NI	NI	NI
Aug-11	6.4	10.6	10.3	2.1	Dry	8.6	NI	3.1	1.3	Dry	NI	NI	NI
Aug-11	6.3	10.3	4.5	2.2	Dry	4.2	NI	NM	NM	NM	NI	NI	NI
Sep-11	6.1	13.2	6.9	2.0	Dry	5.9	NI	3.1	0.6	1.1	NI	NI	NI
Oct-11	6.6	14.2	8.7	3.6	Dry	6.7	NI	3.4	0.7	2.1	NI	NI	NI
Nov-11	6.5	16.6	9.6	2.6	Dry	6.3	NI	3.9	0.9	Dry	NI	NI	NI
Dec-11	5.6	10.9	4.6	3.0	Dry	6.2	NI	Dry	1.9	Dry	NI	NI	NI
Jan-12	5.3	10.3	3.3	1.7	Dry	6.0	NI	3.4	6.2	0.4	NI	NI	NI
Feb-12	5.5	11.0	4.3	1.8	Dry	5.9	NI	3.2	6.1	0.4	NI	NI	NI
Mar-12	5.5	10.7	6.6	2.6	Dry	7.0	NI	4.4	7.2	0.5	NI	NI	NI
Apr-12	5.7	10.7	6.7	2.5	Dry	6.0	NI	2.6	6.4	0.4	NI	NI	NI
May-12	5.6	9.8	3.1	5.0	Dry	5.7	NI	Dry	0.5	0.4	NI	NI	NI
Jun-12	5.7	10.3	3.7	5.0	Dry	5.7	NI	Dry	0.5	0.4	NI	NI	NI
Jul-12	5.6	10.0	3.2	1.0	Dry	5.3	NI	Dry	0.6	Dry	NI	NI	NI
Aug-12	6.2	10.6	6.3	3.6	Dry	6.6	NI	Dry	0.7	Dry	NI	NI	NI
Sep-12	7.1	10.0	3.6	2.4	Dry	6.7	NI	Dry	1.0	0.3	NI	NI	NI
Oct-12	5.8	9.6	3.7	2.1	Dry	5.7	NI	Dry	6.3	0.7	NI	NI	NI
Nov-12	5.7	16.6	10.3	2.3	Dry	6.9	NI	Dry	5.5	0.4	NI	NI	NI
Dec-12	5.6	10.6	3.4	2.3	Dry	6.3	NI	Dry	7.2	0.5	NI	NI	NI

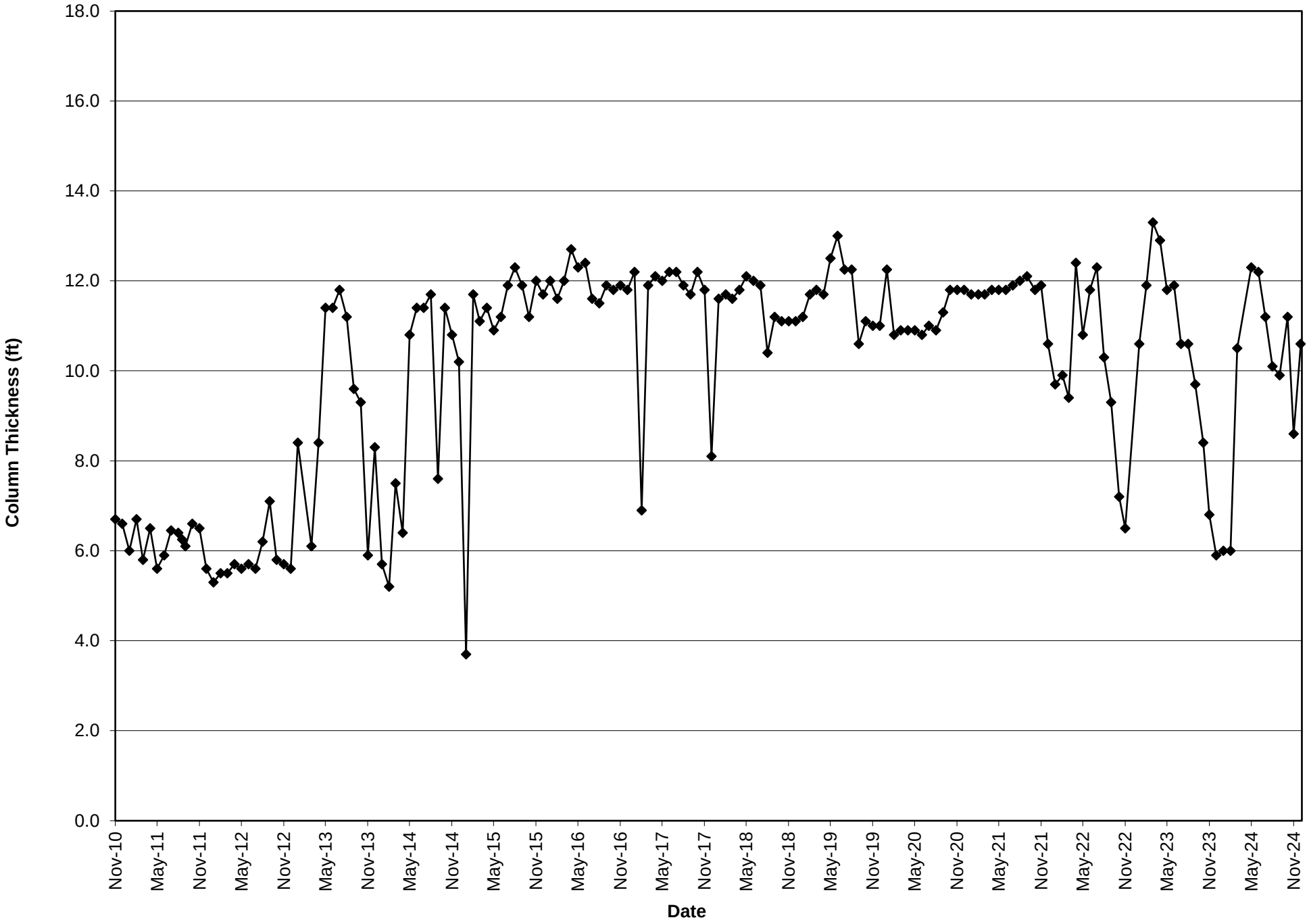
ATTACHMENT B
HISTORICAL LEACHATE COLUMN THICKNESSES
OTTUMWA-WAPELLO COUNTY LANDFILL

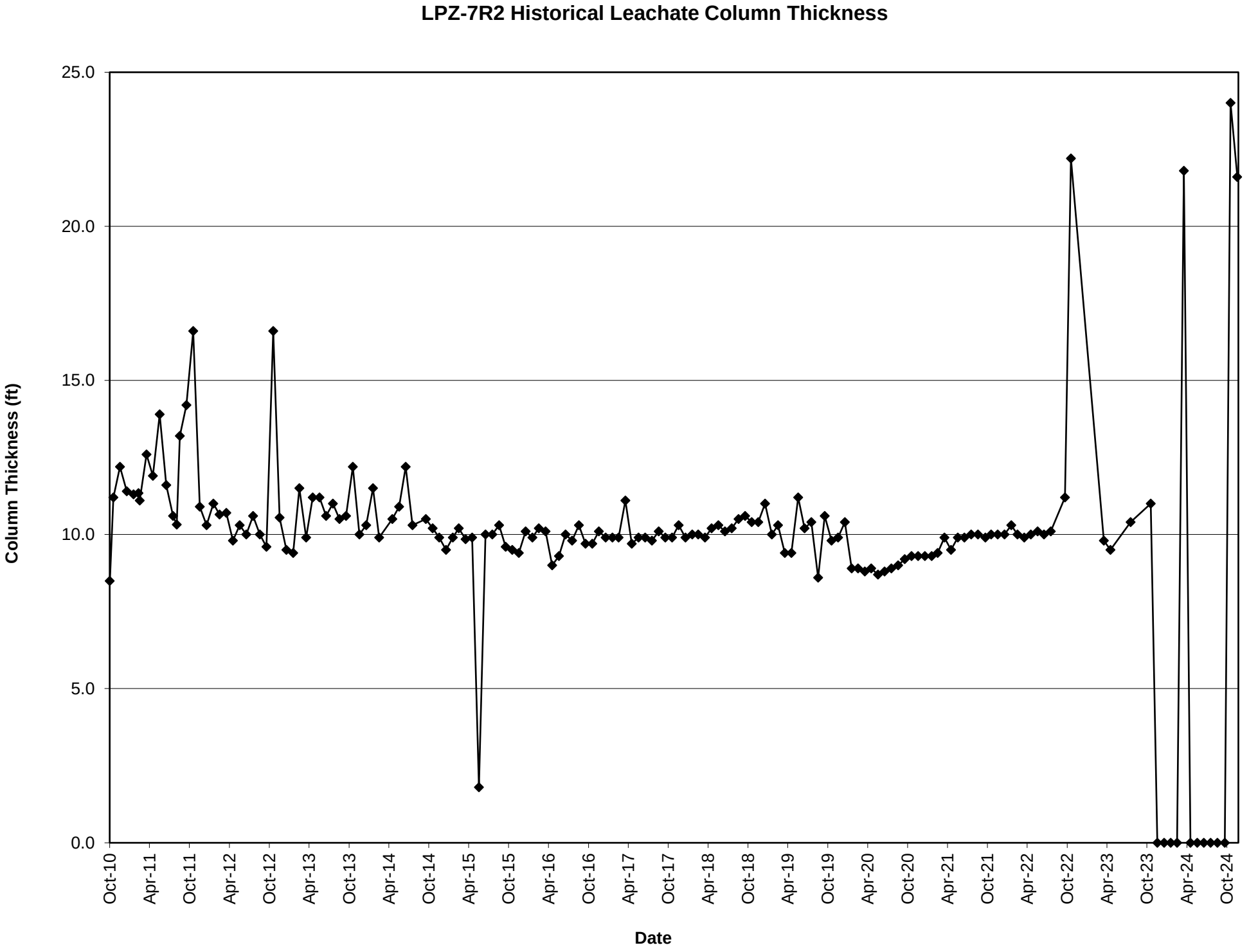
Date	Unlined Area of West MSWLF Unit							Lined Area of West MSWLF Unit					
	LPZ-6R2	LPZ-7R2	LPZ-9R	LPZ-10R	LPZ-11	LPZ-12	LPZ-19	LPZ-14	LPZ-15	LPZ-16	LPZ-17	LPZ-18	LPZ-20
Jan-13	8.4	9.5	3.3	1.7	Dry	6.1	NI	Dry	1.3	0.3	NI	NI	NI
Feb-13	NM	9.4	3.3	2.8	Dry	6.3	NI	Dry	1.3	0.5	NI	NI	NI
Mar-13	6.1	11.5	9.2	2.1	Dry	6.2	NI	Dry	1.4	0.3	NI	NI	NI
Apr-13	8.4	9.9	3.4	NM	Dry	6.0	NI	3.4	0.9	0.2	NI	NI	NI
May-13	11.4	11.2	4.3	2.9	Dry	NM	NI	Dry	NM	0.3	NI	NI	NI
Jun-13	11.4	11.2	4.3	2.9	Dry	NM	NI	Dry	NM	0.3	NI	NI	NI
Jul-13	11.8	10.6	3.4	3.6	Dry	5.4	NI	Dry	1.5	1.1	NI	NI	NI
Aug-13	11.2	11.0	4.0	3.2	Dry	5.4	NI	Dry	NM	0.9	NI	NI	NI
Sep-13	9.6	10.5	4.2	NM	Dry	6.9	NI	Dry	NM	Dry	NI	NI	NI
Oct-13	9.3	10.6	4.6	2.8	3.6	6.3	NI	Dry	Dry	0.3	NI	NI	NI
Nov-13	5.9	12.2	9.2	2.2	Dry	5.6	NI	Dry	Dry	Dry	NI	NI	NI
Dec-13	8.3	10.0	3.9	2.4	Dry	6.3	NI	Dry	Dry	Dry	NI	NI	NI
Jan-14	5.7	10.3	9.6	3.0	Dry	6.1	NI	Dry	Dry	Dry	Dry	NI	NI
Feb-14	5.2	11.5	3.2	2.1	3.7	5.2	NI	Dry	Dry	Dry	Dry	NI	NI
Mar-14	7.5	9.9	4.3	2.6	NM	NM	NI	Dry	Dry	Dry	Dry	NI	NI
Apr-14	6.4	NM	4.4	2.2	Dry	7.1	NI	Dry	1.1	0.1	Dry	NI	NI
May-14	10.8	10.5	NM	2.5	Dry	8.0	NI	5.3	1.1	0.4	0.5	NI	NI
Jun-14	11.4	10.9	5.6	2.4	Dry	6.9	NI	5.2	1.1	Dry	Dry	NI	NI
Jul-14	11.4	12.2	5.8	2.5	Dry	7.1	NI	Dry	1.0	Dry	Dry	NI	NI
Aug-14	11.7	10.3	6.7	4.3	Dry	7.7	NI	Dry	Dry	Dry	Dry	NI	NI
Sep-14	7.6	NM	4.6	3.4	NM	7.7	NI	Dry	1.1	Dry	Dry	NI	NI
Oct-14	11.4	10.5	6.6	4.6	4.4	6.8	NI	5.2	1.0	0.4	0.4	NI	NI
Nov-14	10.8	10.2	5.8	2.4	Dry	6.8	NI	Dry	Dry	Dry	Dry	NI	NI
Dec-14	10.2	9.9	10.5	2.9	4.1	2.1	NI	Dry	Dry	Dry	Dry	NI	NI
Jan-15	3.7	9.5	4.7	2.3	Dry	7.7	NI	Dry	Dry	Dry	Dry	NI	NI
Feb-15	11.7	9.9	5.2	2.7	Dry	7.6	NI	Dry	Dry	Dry	Dry	NI	NI
Mar-15	11.1	10.2	5.1	2.9	Dry	6.2	NI	Dry	Dry	Dry	Dry	NI	NI
Apr-15	11.4	9.9	3.7	2.9	Dry	6.3	7.1	Dry	Dry	Dry	Dry	1.5	NI
May-15	10.9	9.9	5.3	6.8	Dry	6.2	7.6	Dry	Dry	Dry	Dry	1.5	NI
Jun-15	11.2	1.8	4.2	3.0	Dry	6.7	7.8	Dry	Dry	Dry	Dry	NM	NI
Jul-15	11.9	10.0	9.5	6.5	Dry	6.9	8.0	Dry	Dry	Dry	0.5	1.5	NI
Aug-15	12.3	10.0	5.5	3.0	Dry	6.5	8.1	4.8	Dry	Dry	Dry	1.5	NI
Sep-15	11.9	10.3	5.4	6.5	Dry	5.2	8.3	Dry	Dry	Dry	0.5	5.5	NI
Oct-15	11.2	9.6	8.4	2.5	3.8	6.1	9.9	4.0	Dry	Dry	Dry	1.5	NI
Nov-15	12.0	9.5	5.0	2.6	3.9	11.9	8.3	5.2	Dry	0.2	Dry	1.4	NI
Dec-15	11.7	9.4	5.5	5.4	4.3	6.5	8.4	Dry	Dry	Dry	Dry	0.5	NI
Jan-16	12.0	10.1	5.6	1.4	Dry	6.1	8.3	Dry	Dry	Dry	Dry	1.5	NI
Feb-16	11.6	9.9	5.1	3.9	Dry	6.2	8.3	Dry	Dry	Dry	Dry	1.5	NI
Mar-16	12.0	10.2	10.3	3.5	Dry	6.3	3.5	Dry	Dry	Dry	Dry	1.6	NI
Apr-16	12.7	10.1	5.0	3.6	Dry	5.7	8.4	Dry	Dry	Dry	Dry	1.7	NI
May-16	12.3	9.0	Dry	4.0	Dry	5.2	8.3	Dry	Dry	Dry	Dry	1.7	NI
Jun-16	12.4	9.3	11.5	4.3	Dry	5.4	8.5	Dry	Dry	Dry	Dry	2.0	NI
Jul-16	11.6	10.0	10.3	Dry	Dry	Dry	8.3	5.0	Dry	Dry	Dry	1.7	NI
Aug-16	11.5	9.8	9.6	Dry	Dry	Dry	8.5	4.8	Dry	Dry	Dry	1.5	NI
Sep-16	11.9	10.3	11.9	4.5	Dry	Dry	9.0	Dry	Dry	Dry	Dry	1.5	NI
Oct-16	11.8	9.7	5.8	4.8	Dry	2.7	9.8	Dry	Dry	Dry	Dry	1.8	NI
Nov-16	11.9	9.7	5.8	5.0	Dry	3.0	9.8	Dry	Dry	Dry	Dry	1.8	NI
Dec-16	11.8	10.1	10.3	5.3	Dry	2.7	10.6	Dry	Dry	Dry	Dry	1.9	NI
Jan-17	12.2	9.9	10.7	5.4	Dry	5.2	9.8	Dry	Dry	Dry	Dry	1.8	NI
Feb-17	6.9	9.9	6.1	3.8	Dry	5.9	10.1	Dry	Dry	Dry	Dry	1.9	NI
Mar-17	11.9	9.9	5.6	3.8	Dry	5.7	9.9	Dry	Dry	Dry	Dry	1.8	NI
Apr-17	12.1	11.1	7.2	4.8	Dry	5.9	10.0	Dry	Dry	Dry	Dry	1.9	NI
May-17	12.0	9.7	6.1	4.6	Dry	5.7	9.6	Dry	Dry	Dry	Dry	1.7	NI
Jun-17	12.2	9.9	10.7	5.6	Dry	5.9	9.9	Dry	Dry	Dry	Dry	1.8	NI
Jul-17	12.2	9.9	11.1	7.2	Dry	5.3	9.8	Dry	Dry	Dry	Dry	1.7	NI
Aug-17	11.9	9.8	10.7	5.6	Dry	4.6	8.4	Dry	Dry	Dry	Dry	1.7	NI
Sep-17	11.7	10.1	10.4	5.8	Dry	2.9	9.9	Dry	Dry	Dry	Dry	2.0	NI
Oct-17	12.2	9.9	9.7	5.4	Dry	4.0	8.0	Dry	Dry	Dry	Dry	2.0	NI
Nov-17	11.8	9.9	5.9	4.4	Dry	4.7	8.6	Dry	Dry	Dry	Dry	1.9	NI
Dec-17	8.1	10.3	5.4	5.7	Dry	4.4	8.3	Dry	Dry	Dry	Dry	1.7	NI
Jan-18	11.6	9.9	10.9	5.1	Dry	3.1	8.2	Dry	Dry	Dry	Dry	1.8	NI
Feb-18	11.7	10.0	12.3	5.1	Dry	3.2	8.3	Dry	Dry	Dry	Dry	1.8	NI
Mar-18	11.6	10.0	10.3	7.0	Dry	3.2	8.2	Dry	Dry	Dry	Dry	1.7	NI
Apr-18	11.8	9.9	12.4	7.6	Dry	3.2	8.3	Dry	Dry	Dry	Dry	2.0	NI
May-18	12.1	10.2	10.9	7.5	Dry	3.2	8.5	Dry	Dry	Dry	Dry	1.8	NI
Jun-18	12.0	10.3	6.1	8.5	Dry	3.2	8.1	Dry	Dry	Dry	Dry	1.9	NI
Jul-18	11.9	10.1	11.8	7.5	Dry	5.5	8.0	Dry	Dry	Dry	Dry	1.9	NI
Aug-18	10.4	10.2	4.3	7.5	Dry	3.4	8.4	Dry	Dry	Dry	Dry	1.4	NI
Sep-18	11.2	10.5	5.7	7.4	Dry	3.9	8.8	Dry	Dry	Dry	Dry	2.1	NI
Oct-18	11.1	10.6	5.6	7.3	Dry	4.1	9.0	Dry	Dry	Dry	Dry	2.1	NI
Nov-18	11.1	10.4	5.6	6.8	Dry	2.9	8.9	Dry	Dry	Dry	Dry	1.9	NI
Dec-18	11.1	10.4	5.4	6.8	Dry	5.6	8.3	Dry	Dry	Dry	Dry	1.8	NI

ATTACHMENT B
HISTORICAL LEACHATE COLUMN THICKNESSES
OTTUMWA-WAPELLO COUNTY LANDFILL

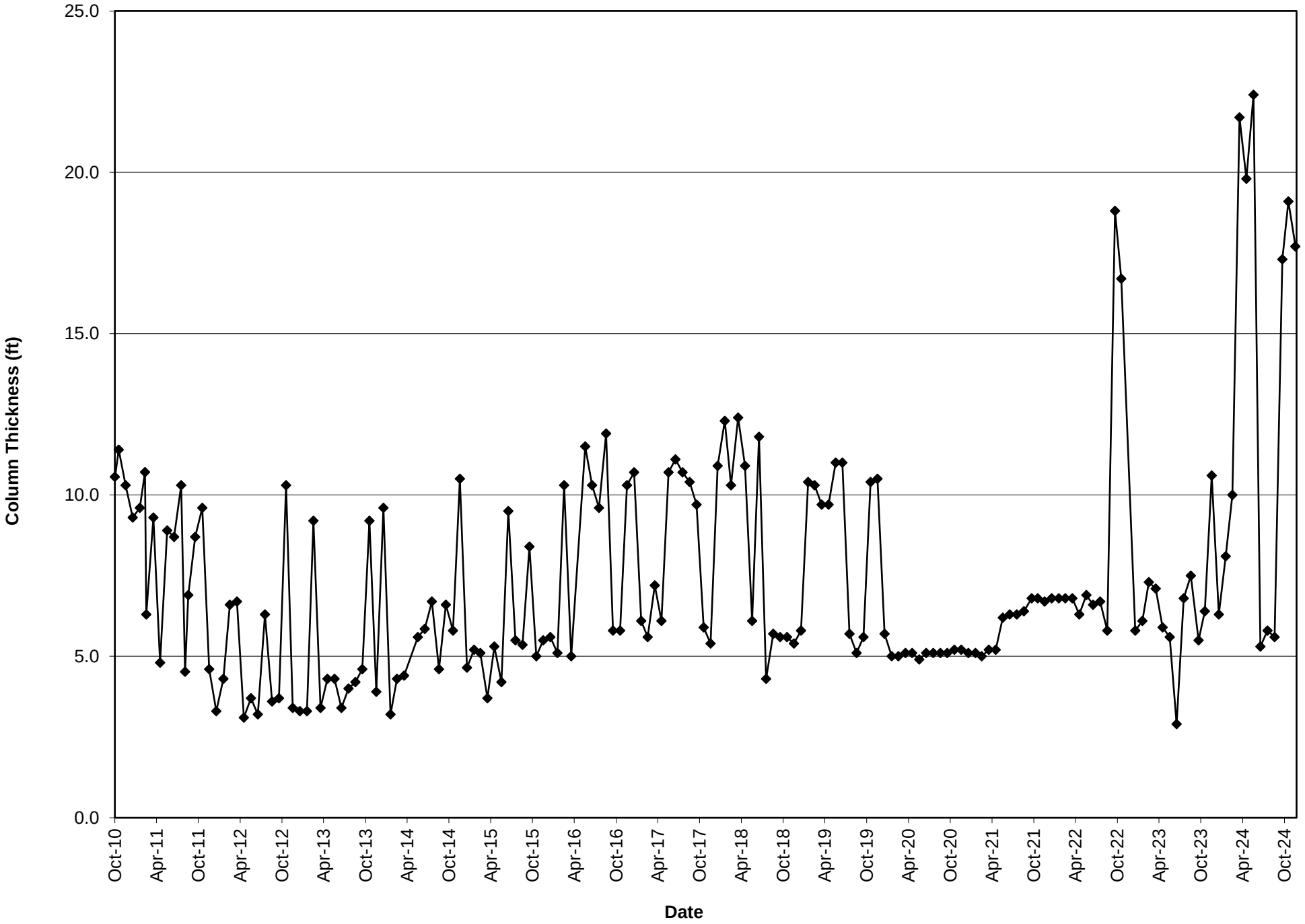
Date	Unlined Area of West MSWLF Unit							Lined Area of West MSWLF Unit					
	LPZ-6R2	LPZ-7R2	LPZ-9R	LPZ-10R	LPZ-11	LPZ-12	LPZ-19	LPZ-14	LPZ-15	LPZ-16	LPZ-17	LPZ-18	LPZ-20
Jan-19	11.2	11.0	5.8	8.0	Dry	Dry	8.3	Dry	Dry	Dry	Dry	1.8	NI
Feb-19	11.7	10.0	10.4	7.1	Dry	8.6	8.3	Dry	Dry	Dry	Dry	1.7	NI
Mar-19	11.8	10.3	10.3	7.2	Dry	8.7	8.3	Dry	Dry	Dry	Dry	1.7	NI
Apr-19	11.7	9.4	9.7	7.2	Dry	8.7	9.3	Dry	Dry	Dry	Dry	1.7	NI
May-19	12.5	9.4	9.7	7.4	Dry	5.3	9.3	Dry	Dry	Dry	Dry	1.8	NI
Jun-19	13.0	11.2	11.0	7.9	Dry	5.2	8.4	Dry	Dry	Dry	Dry	1.8	NI
Jul-19	12.3	10.2	11.0	7.6	Dry	5.4	8.4	Dry	Dry	Dry	Dry	2.0	NI
Aug-19	12.3	10.4	5.7	8.4	Dry	5.7	13.0	Dry	Dry	Dry	Dry	NM	NI
Sep-19	10.6	8.6	5.1	7.1	3.9	4.2	10.9	Dry	Dry	Dry	Dry	1.5	NI
Oct-19	10.7	8.7	5.0	7.5	3.6	5.2	11.0	Dry	Dry	Dry	Dry	1.4	NI
Nov-19	11.0	9.8	10.4	8.0	4.5	Dry	8.4	Dry	Dry	Dry	Dry	1.7	NI
Dec-19	11.0	9.9	10.5	6.9	4.4	Dry	9.4	Dry	Dry	Dry	Dry	1.8	NI
Jan-20	12.3	10.4	5.7	8.4	4.7	Dry	13.0	Dry	Dry	Dry	Dry	NA	NI
Feb-20	10.8	8.9	5.0	7.7	4.2	Dry	11.1	Dry	Dry	Dry	Dry	1.5	NI
Mar-20	10.9	8.9	5.0	7.7	4.2	Dry	11.2	Dry	Dry	Dry	Dry	0.5	NI
Apr-20	10.9	8.8	5.1	8.0	4.9	Dry	11.0	Dry	Dry	Dry	Dry	1.4	NI
May-20	10.9	8.9	5.1	7.5	4.3	4.6	10.9	Dry	Dry	Dry	Dry	1.2	NI
Jun-20	10.8	8.7	4.9	7.4	4.2	4.7	11.0	Dry	Dry	Dry	Dry	1.4	NI
Jul-20	11.0	8.8	5.1	7.4	4.2	4.7	11.2	Dry	Dry	Dry	Dry	1.5	NI
Aug-20	10.9	8.9	5.1	6.6	4.4	4.7	11.6	Dry	Dry	Dry	Dry	1.4	NI
Sep-20	11.3	9.0	5.1	7.4	4.7	4.8	11.4	Dry	Dry	Dry	Dry	1.5	NI
Oct-20	11.8	9.2	5.1	7.6	4.6	5.0	11.0	Dry	Dry	Dry	Dry	1.5	NI
Nov-20	11.8	9.3	5.2	7.7	4.2	5.3	11.1	Dry	Dry	Dry	Dry	1.4	NI
Dec-20	11.8	9.3	5.2	7.7	4.2	5.3	11.2	Dry	Dry	Dry	Dry	1.4	NM
Jan-21	11.7	9.3	5.1	8.0	4.2	Dry	11.3	Dry	Dry	Dry	Dry	1.5	NM
Feb-21	11.7	9.3	5.1	8.0	4.2	Dry	11.3	Dry	Dry	Dry	Dry	1.5	NM
Mar-21	11.7	9.4	5.0	7.9	4.2	Dry	11.2	Dry	Dry	Dry	Dry	1.4	0.8
Apr-21	11.8	9.9	5.2	12.8	4.3	5.9	11.0	Dry	Dry	Dry	Dry	0.4	0.5
May-21	11.8	9.5	5.2	11.9	4.6	5.9	11.1	Dry	Dry	Dry	Dry	NA	0.6
Jun-21	11.8	9.9	6.2	8.0	4.7	Dry	11.1	Dry	Dry	Dry	Dry	0.4	0.6
Jul-21	11.9	9.9	6.3	6.9	4.5	Dry	11.1	Dry	Dry	Dry	Dry	0.5	0.5
Aug-21	12.0	10.0	6.3	7.1	4.2	5.0	11.2	Dry	Dry	Dry	Dry	0.6	0.6
Sep-21	12.1	10.0	6.4	7.0	4.1	4.8	11.2	Dry	Dry	Dry	Dry	0.6	0.6
Oct-21	11.8	9.9	6.8	7.7	4.0	8.2	11.3	Dry	Dry	Dry	Dry	0.1	0.6
Nov-21	11.9	10.0	6.8	6.9	4.4	6.6	11.3	Dry	Dry	Dry	Dry	0.2	0.7
Dec-21	10.6	10.0	6.7	6.4	4.2	5.6	11.4	Dry	Dry	Dry	Dry	Dry	0.5
Jan-22	9.7	10.0	6.8	6.3	4.6	5.7	11.6	Dry	Dry	Dry	Dry	0.1	0.6
Feb-22	9.9	10.3	6.8	6.2	4.7	5.8	11.6	Dry	Dry	Dry	Dry	0.1	0.5
Mar-22	9.4	10.0	6.8	7.3	4.7	5.8	11.7	Dry	Dry	Dry	Dry	0.2	0.7
Apr-22	12.4	9.9	6.8	6.3	4.5	5.7	11.3	Dry	Dry	Dry	Dry	0.1	0.5
May-22	10.8	10.0	6.3	9.7	4.3	5.1	11.6	Dry	Dry	Dry	Dry	0.1	0.5
Jun-22	11.8	10.1	6.9	6.9	4.2	5.3	11.8	Dry	Dry	Dry	Dry	0.3	0.8
Jul-22	12.3	10.0	6.6	7.4	4.0	5.1	11.6	Dry	Dry	Dry	Dry	1.6	0.6
Aug-22	10.3	10.1	6.7	6.5	3.8	4.5	11.7	Dry	Dry	Dry	Dry	1.5	0.7
Sep-22	9.3	Dry	5.8	5.0	2.9	3.8	11.6	Dry	Dry	Dry	Dry	0.4	0.8
Oct-22	7.2	11.2	18.8	5.5	4.8	4.4	9.9	Dry	Dry	Dry	Dry	1.4	1.0
Nov-22	6.5	22.2	16.7	6.7	4.8	4.4	10.8	Dry	Dry	Dry	Dry	3.6	0.6
Dec-22	NM	Dry	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Jan-23	10.6	Dry	5.8	10.8	4.3	8.1	11.5	Dry	Dry	Dry	Dry	1.7	Dry
Feb-23	11.9	Dry	6.1	3.6	4.4	7.4	10.3	Dry	Dry	Dry	Dry	1.4	0.5
Mar-23	13.3	Dry	7.3	3.7	4.4	8.3	12.6	Dry	Dry	Dry	Dry	2.0	0.7
Apr-23	12.9	9.8	7.1	12.9	4.1	8.3	10.1	Dry	Dry	Dry	Dry	1.6	0.6
May-23	11.8	9.5	5.9	4.3	Dry	5.6	7.5	Dry	Dry	Dry	Dry	1.8	0.9
Jun-23	11.9	Dry	5.6	7.3	3.8	5.0	8.1	Dry	Dry	Dry	Dry	1.6	2.0
Jul-23	10.6	Dry	2.9	6.4	3.7	4.9	7.3	Dry	Dry	Dry	Dry	1.5	1.3
Aug-23	10.6	10.4	6.8	12.7	3.9	4.5	11.8	Dry	Dry	Dry	Dry	1.7	1.6
Sep-23	9.7	Dry	7.5	6.4	3.7	3.9	NM	Dry	Dry	Dry	Dry	1.4	2.1
Oct-23	8.4	Dry	5.5	6.5	3.4	3.9	9.4	Dry	Dry	Dry	Dry	1.6	Dry
Nov-23	6.8	11.0	6.4	6.1	4.0	3.7	24.6	Dry	Dry	Dry	Dry	1.4	0.5
Dec-23	5.9	Dry	10.6	5.1	3.9	4.0	7.3	NM	NM	NM	NM	1.0	0.5
Jan-24	6.0	Dry	6.3	5.3	4.2	3.2	7.3	Dry	Dry	Dry	Dry	1.2	0.4
Feb-24	6.0	Dry	8.1	6.5	5.1	6.1	26.6	Dry	Dry	Dry	Dry	1.1	0.7
Mar-24	10.5	Dry	10.0	7.2	3.4	6.0	26.9	Dry	Dry	Dry	Dry	1.3	Dry
Apr-24	NA	21.8	21.7	8.5	5.7	5.3	26.0	Dry	Dry	Dry	Dry	1.5	Dry
May-24	12.3	Dry	19.8	8.7	5.2	5.2	10.7	Dry	Dry	Dry	Dry	9.4	Dry
Jun-24	12.2	Dry	22.4	6.1	4.4	5.9	24.9	Dry	Dry	Dry	Dry	1.3	Dry
Jul-24	11.2	Dry	5.3	6.3	4.2	4.3	8.8	Dry	Dry	Dry	Dry	6.3	Dry
Aug-24	10.1	Dry	5.8	7.0	5.0	4.0	14.1	Dry	Dry	Dry	Dry	1.7	Dry
Sep-24	9.9	Dry	5.6	7.3	NA	4.0	21.3	Dry	Dry	Dry	Dry	1.6	Dry
Oct-24	11.2	Dry	17.3	4.6	5.0	4.0	NA	Dry	Dry	Dry	Dry	1.3	Dry
Nov-23	8.6	24.0	19.1	7.2	4.5	3.7	6.8	Dry	Dry	Dry	Dry	NA	Dry
Dec-24	10.6	21.6	17.7	6.6	4.3	3.8	7.7	Dry	Dry	Dry	Dry	1.6	Dry

Notes:
NI = Not Installed, NM = Not Measured, NA = Not Available
Levels measured by landfill staff.

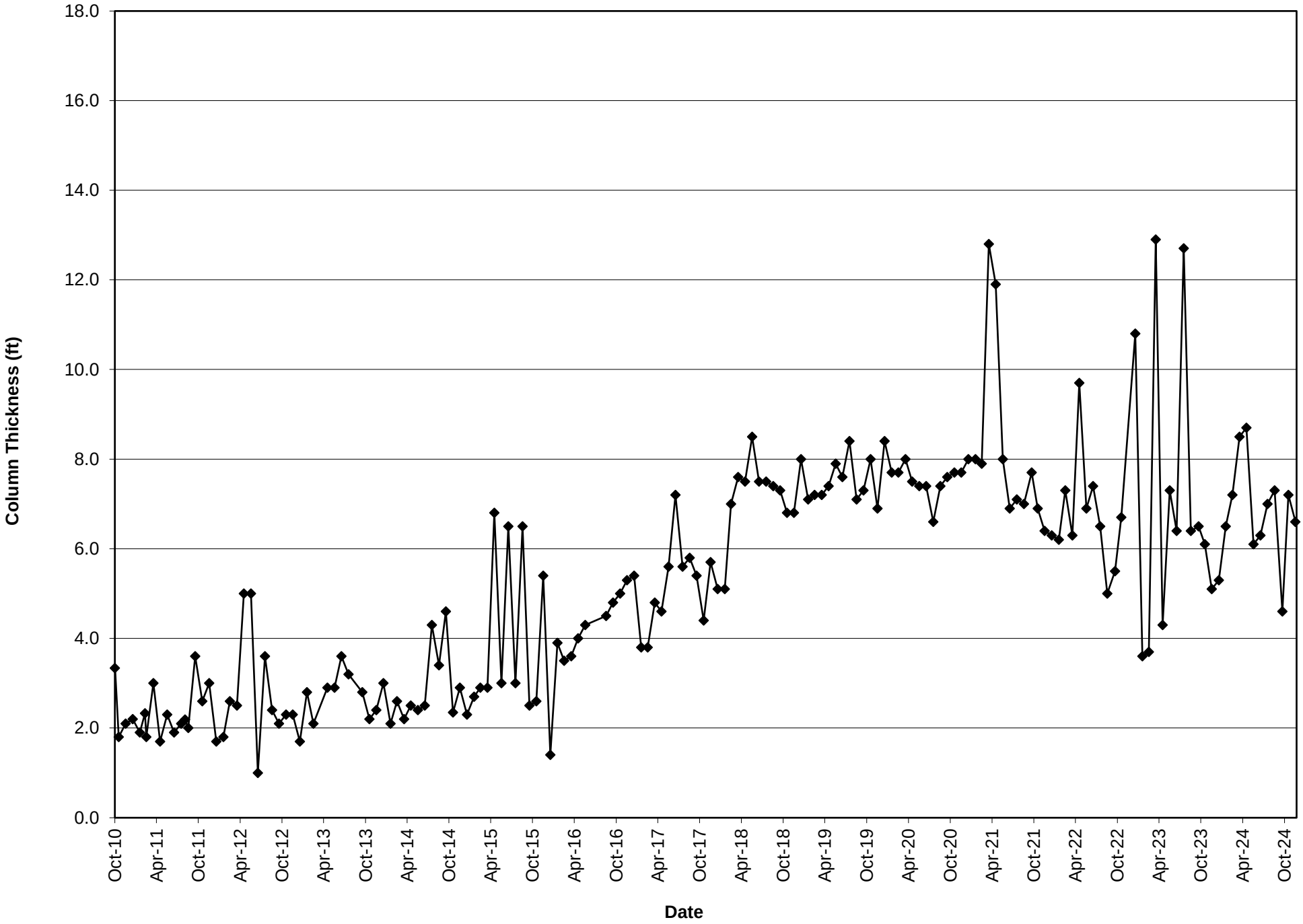

LPZ-6R2 Historical Leachate Column Thickness
Column Thickness (ft)
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Nov-10
May-11
Nov-11
May-12
Nov-12
May-13
Nov-13
May-14
Nov-14
May-15
Nov-15
May-16
Nov-16
May-17
Nov-17
May-18
Nov-18
May-19
Nov-19
May-20
Nov-20
May-21
Nov-21
May-22
Nov-22
May-23
Nov-23
May-24
Nov-24
Date


LPZ-7R2 Historical Leachate Column Thickness
Column Thickness (ft)
25.0
20.0
15.0
10.0
5.0
0.0
Oct-10
Apr-11
Oct-11
Apr-12
Oct-12
Apr-13
Oct-13
Apr-14
Oct-14
Apr-15
Oct-15
Apr-16
Oct-16
Apr-17
Oct-17
Apr-18
Oct-18
Apr-19
Oct-19
Apr-20
Oct-20
Apr-21
Oct-21
Apr-22
Oct-22
Apr-23
Oct-23
Apr-24
Oct-24
Date

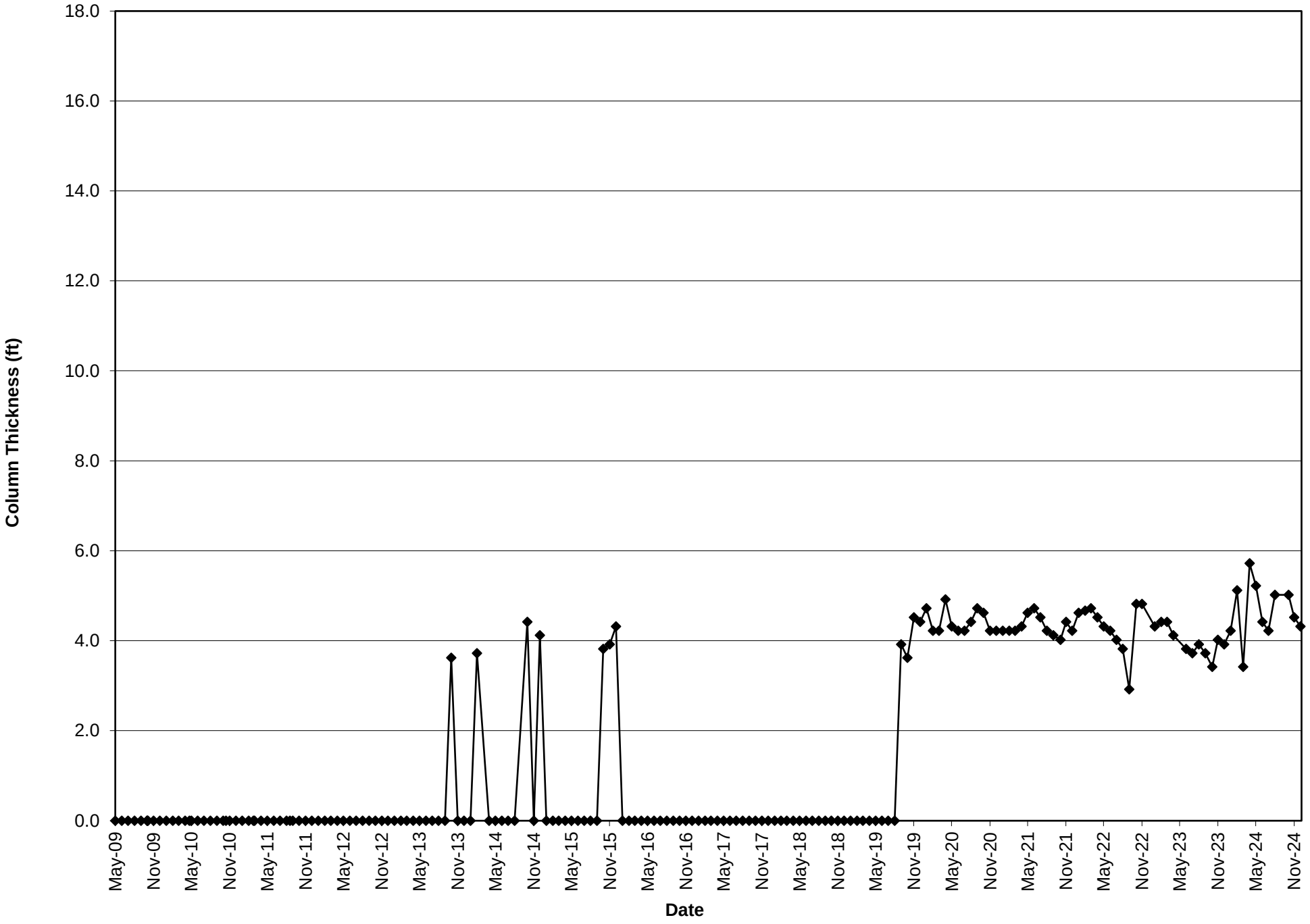
LPZ-9R Historical Leachate Column Thickness



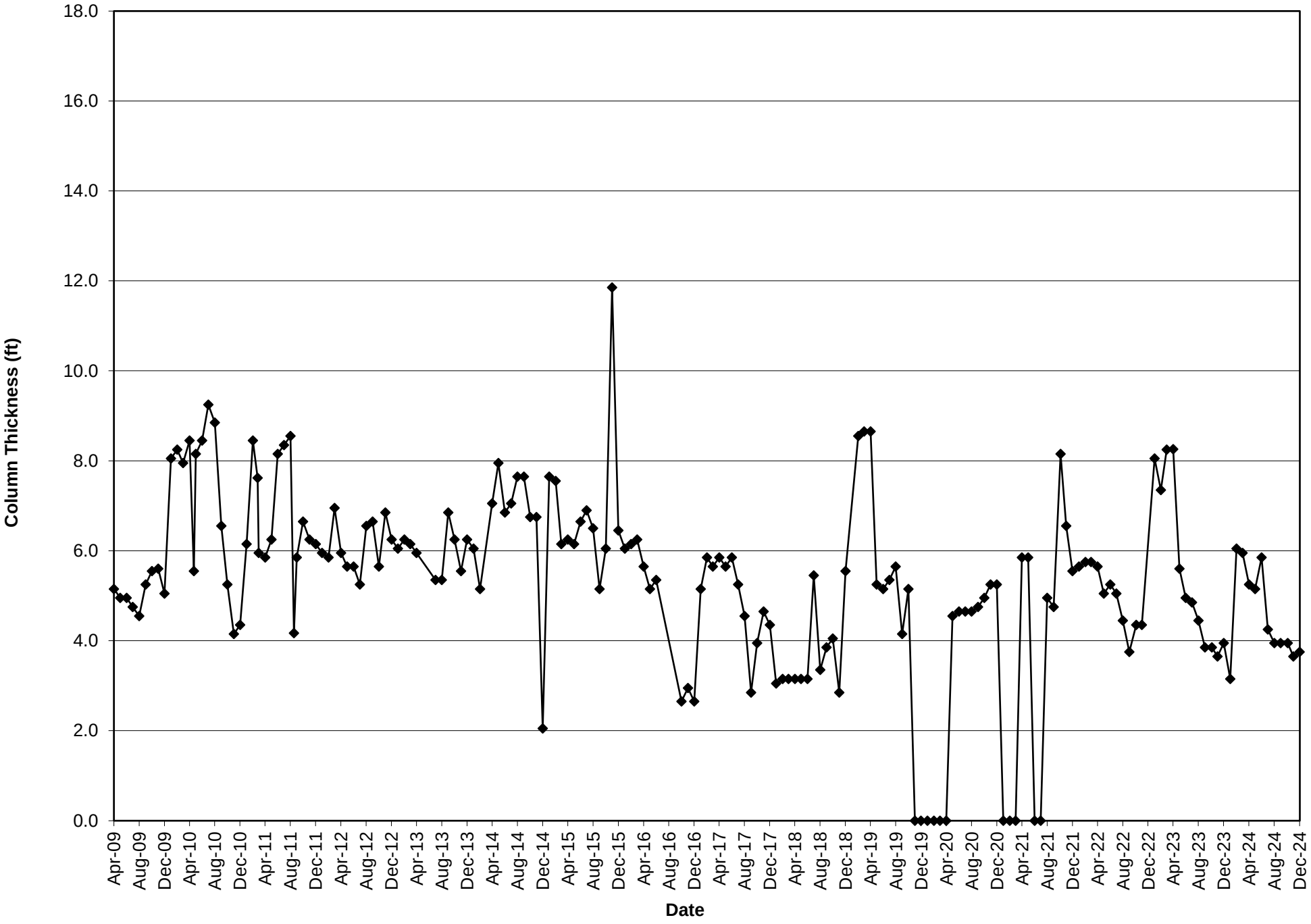
LPZ-10R Historical Leachate Column Thickness



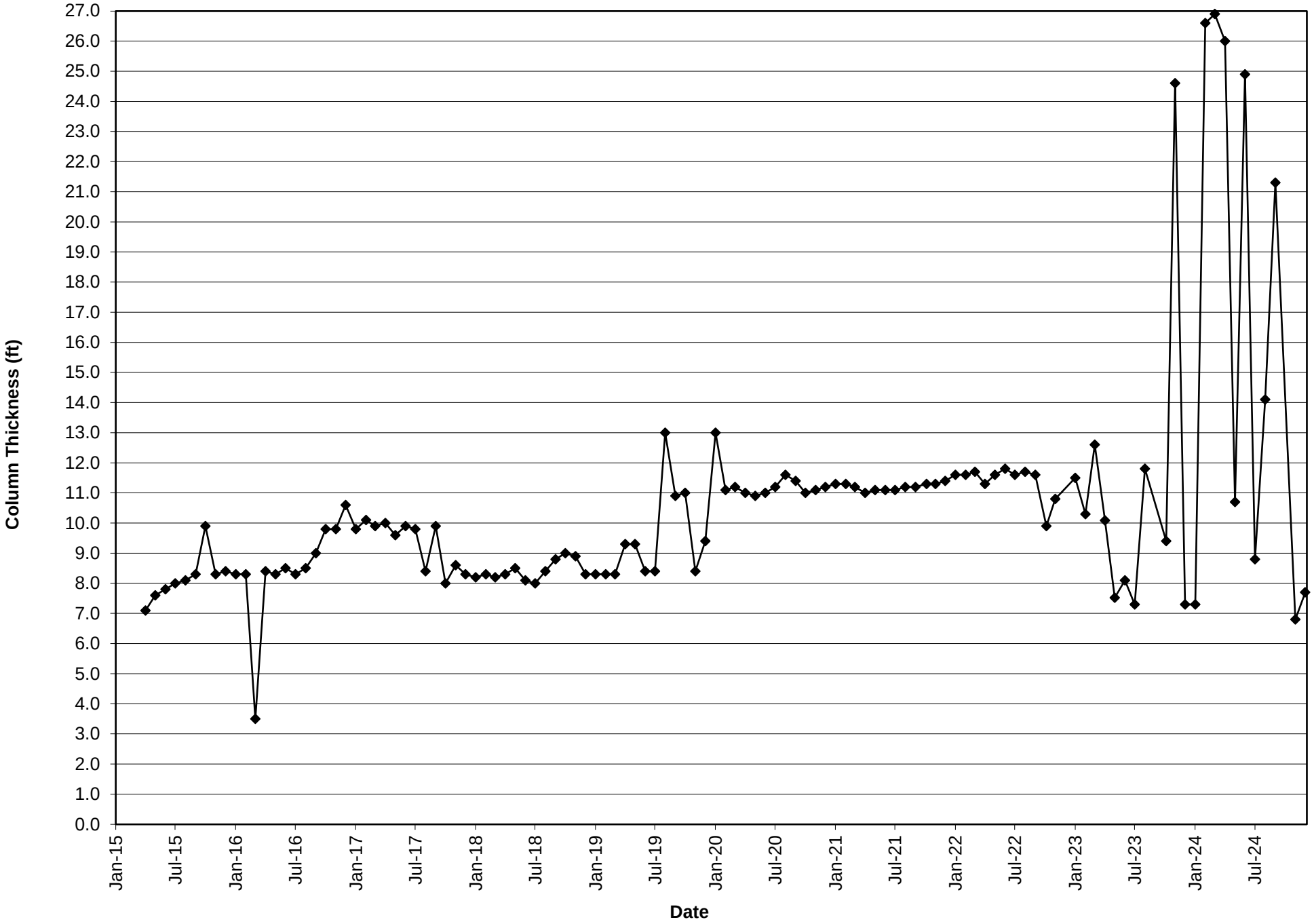
LPZ-11 Historical Leachate Column Thickness



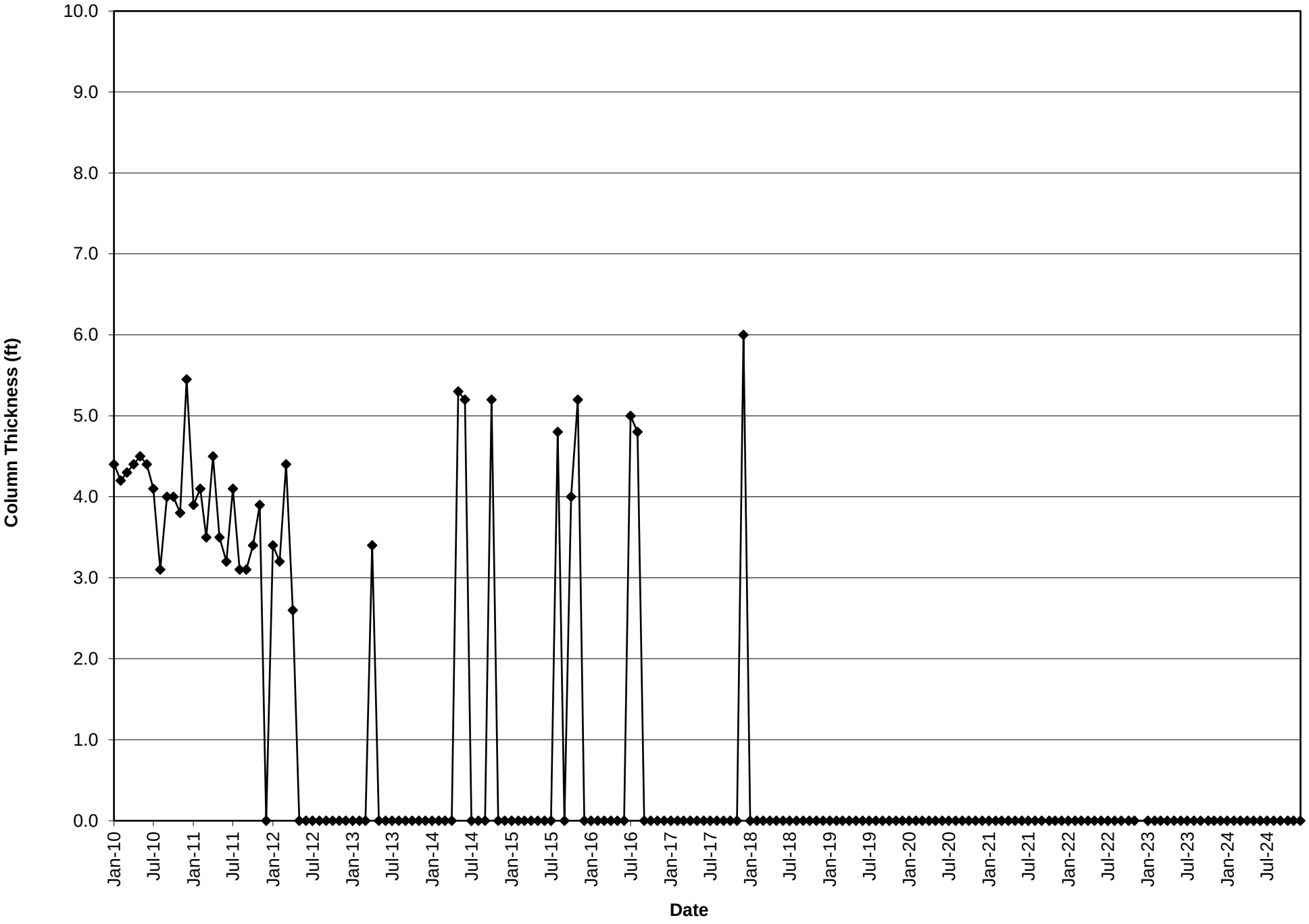
LPZ-12 Historical Leachate Column Thickness

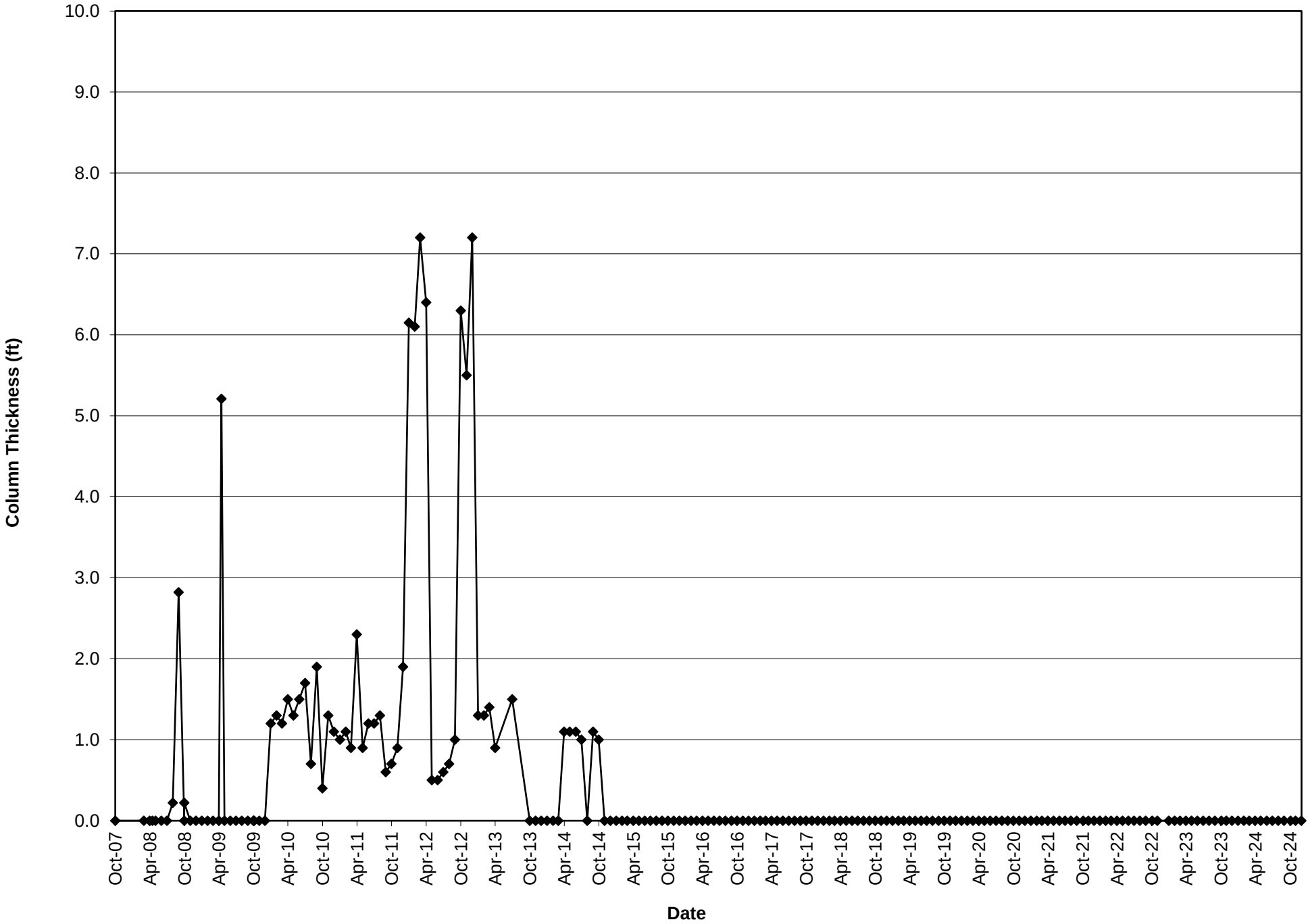


LPZ-19 Historical Leachate Column Thickness

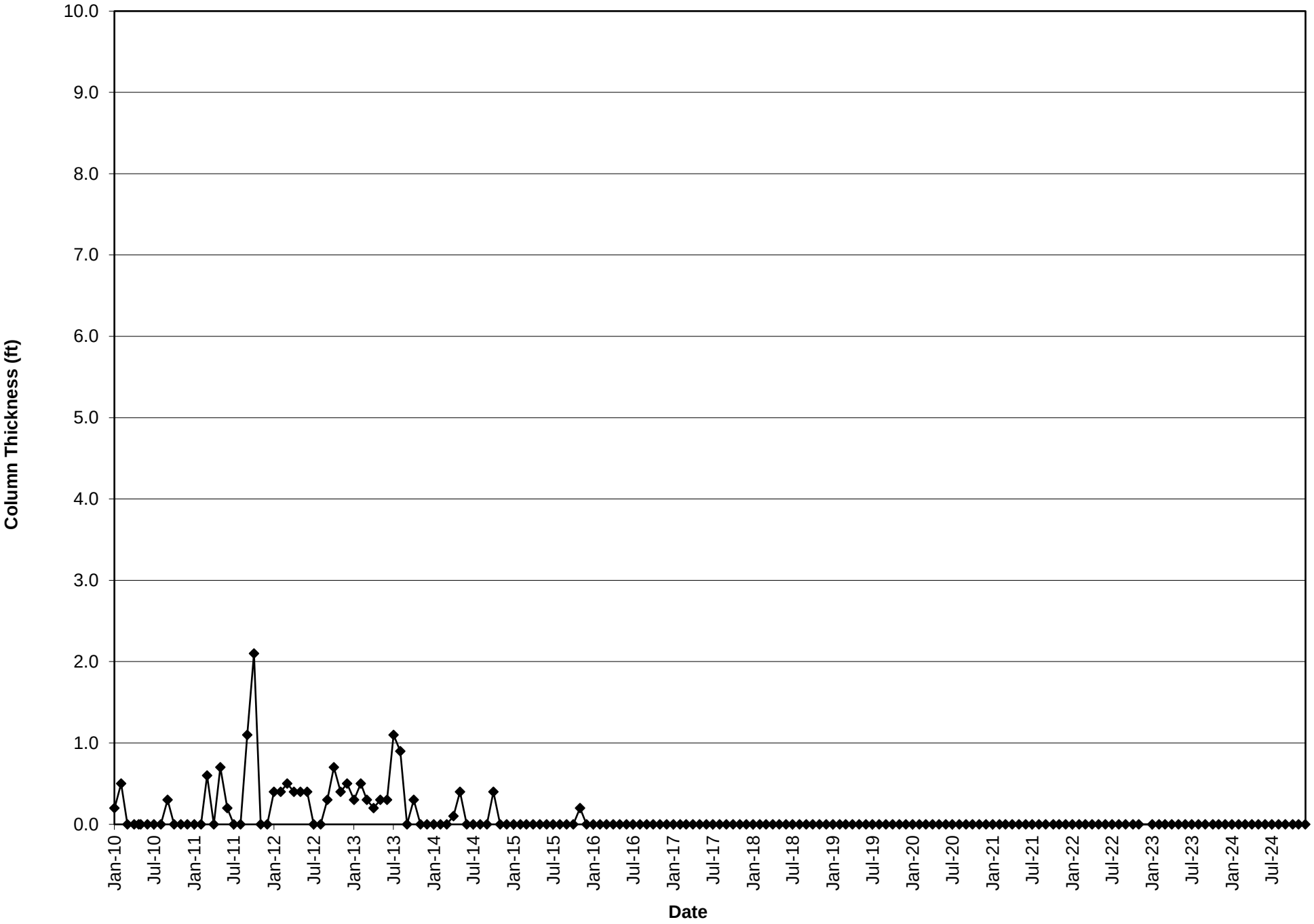


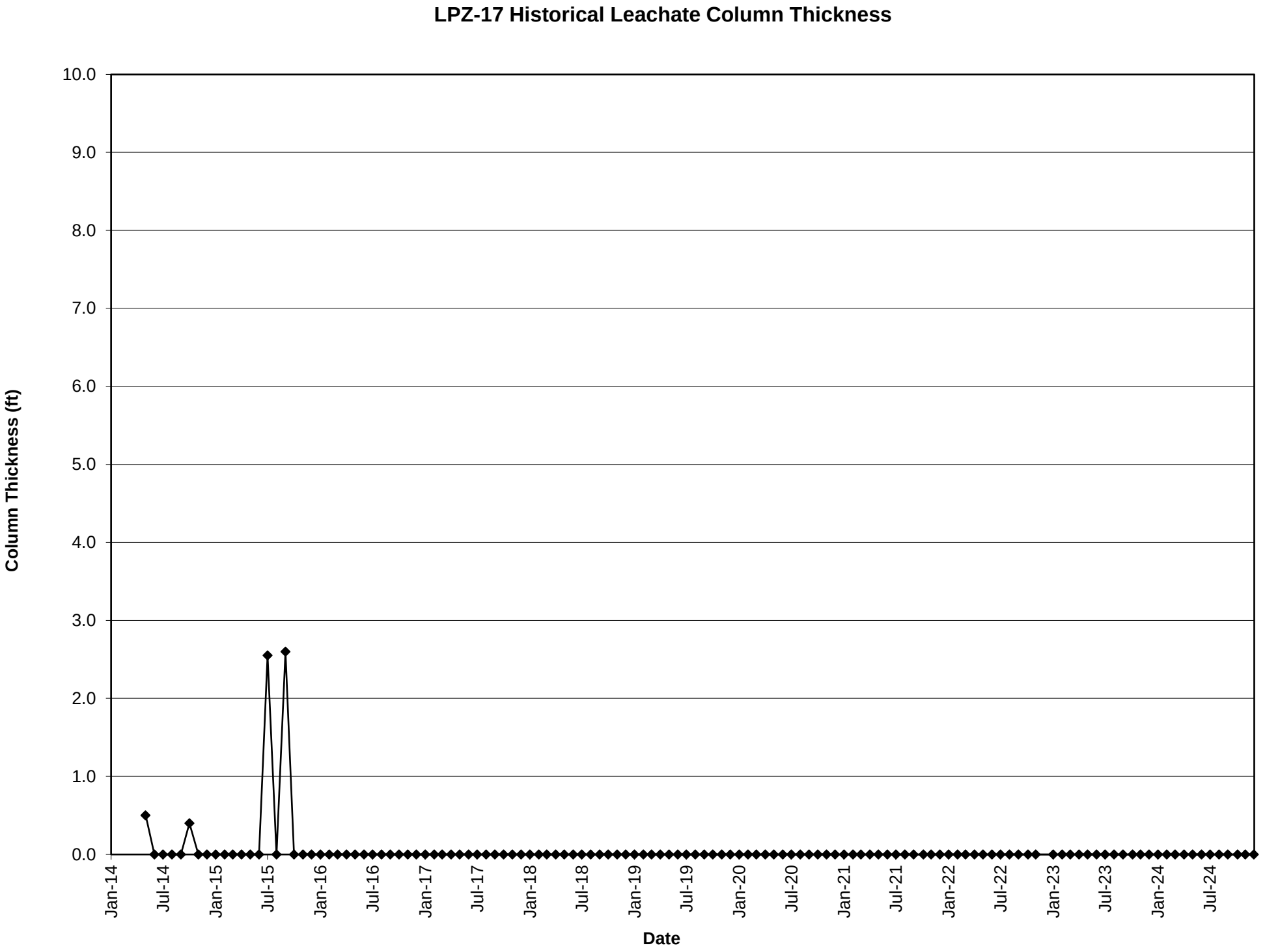
LPZ-14 Historical Leachate Column Thickness



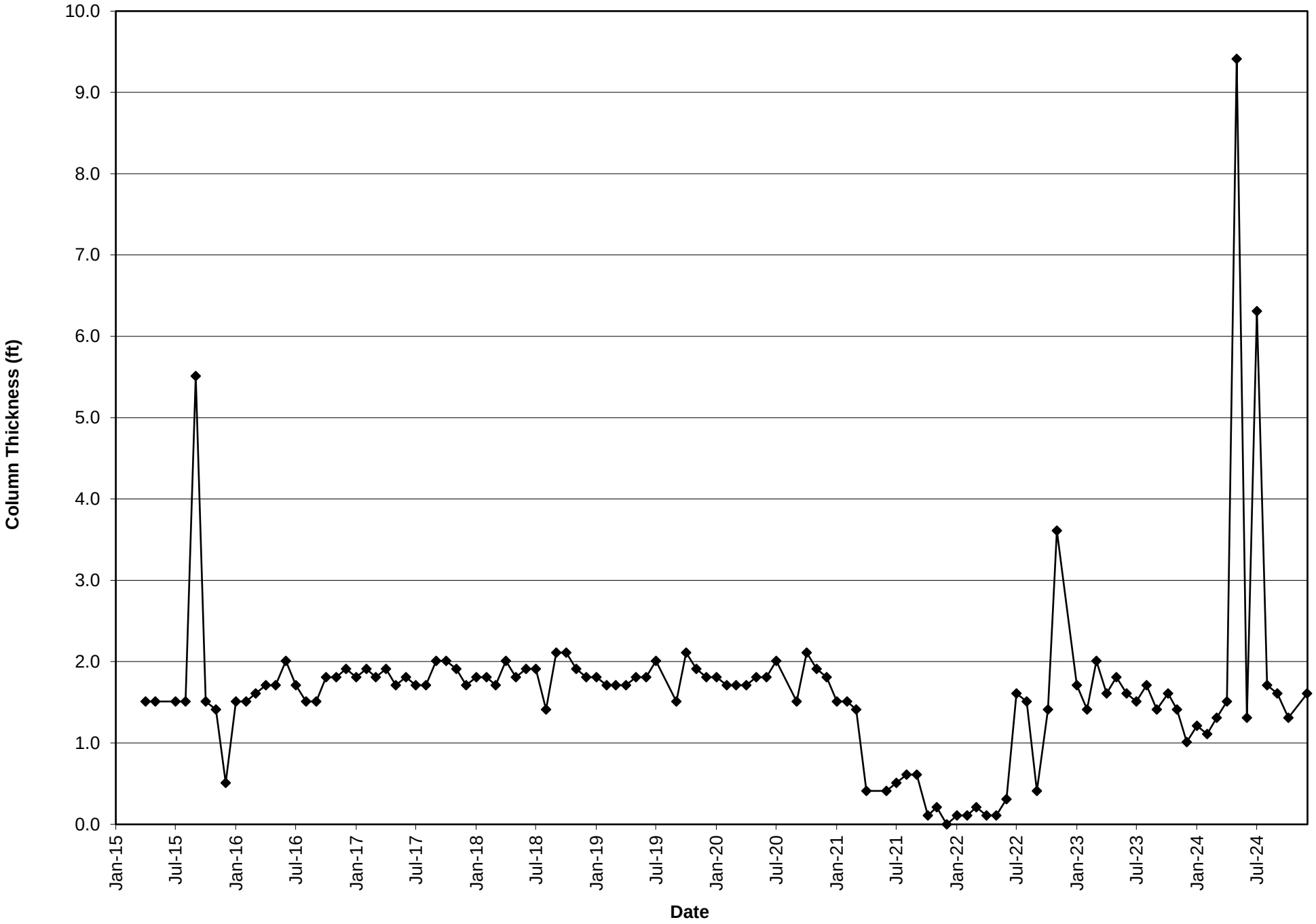

LPZ-15 Historical Leachate Column Thickness
Column Thickness (ft)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Oct-07
Apr-08
Oct-08
Apr-09
Oct-09
Apr-10
Oct-10
Apr-11
Oct-11
Apr-12
Oct-12
Apr-13
Oct-13
Apr-14
Oct-14
Apr-15
Oct-15
Apr-16
Oct-16
Apr-17
Oct-17
Apr-18
Oct-18
Apr-19
Oct-19
Apr-20
Oct-20
Apr-21
Oct-21
Apr-22
Oct-22
Apr-23
Oct-23
Apr-24
Oct-24
Date

LPZ-16 Historical Leachate Column Thickness

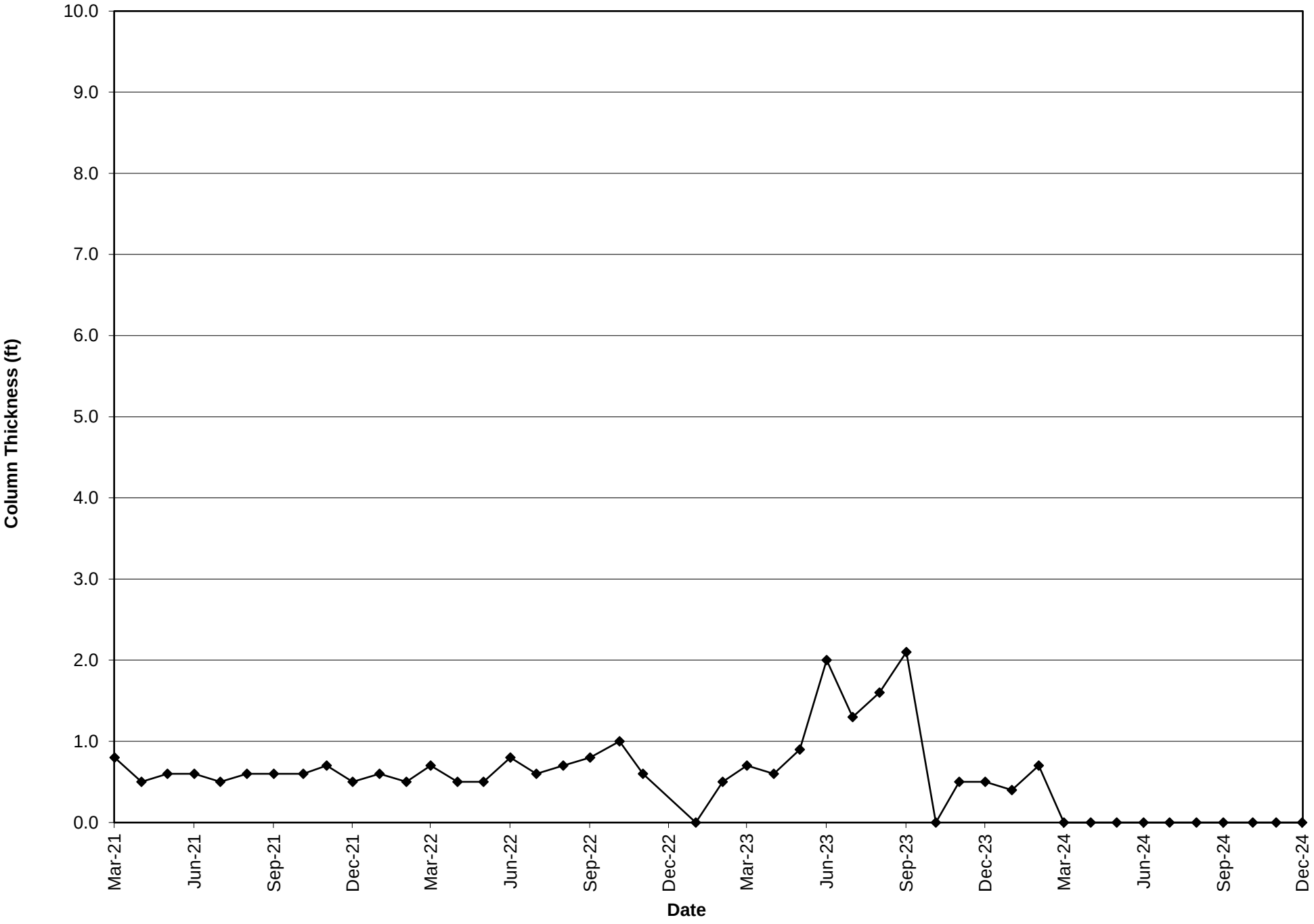



LPZ-17 Historical Leachate Column Thickness
Column Thickness (ft)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Jan-14
Jul-14
Jan-15
Jul-15
Jan-16
Jul-16
Jan-17
Jul-17
Jan-18
Jul-18
Jan-19
Jul-19
Jan-20
Jul-20
Jan-21
Jul-21
Jan-22
Jul-22
Jan-23
Jul-23
Jan-24
Jul-24
Date

LPZ-18 Historical Leachate Column Thickness



LPZ-20 Historical Leachate Column Thickness



Attachment C

Leachate Testing Laboratory Analytical Data Sheets

City of Ottumwa Water Pollution Control Facility, Iowa Laboratory #257
2222 S Emma St, Ottumwa, IA 52501 Phone: (641) 683-0641 Fax: (641) 683-0647
Julaine Olson, Laboratory Supervisor

Analytical Report and Custody

Industry: Ottumwa-Wapello County Sanitary Landfill, Permit #012

Sample Location: Tanker Truck at WPCF

Sample Date	5/2/2024	Sample Type	Grab
Sampler Start Time	0930 hrs	Sampler Finish Time	NA

Sample Collector:	Troy Fadiga	Signature	Troy Fadiga
Lab Sample Received By:	Melissa Pickrell	Signature	MPickrell
Date Received at Lab:	5/2/2024	Time Received at Lab	0930 hrs

Requested Analyses

Parameter	Method	Results		Initials/Date
BOD-5	SM 5210 B-2011	77	mg/L	MP 5/2/24
TSS	USGS I-3765-85	268	mg/L	MP 5/2/24
pH	SM 4500 H+B	7.64		TRF 5/2/2024

Subcontracted Analyses

See attached Eurofins Report for subcontracted analyses for: Cd, Cr, Cu, Ni, Se, Ag, Zn, As, Pb, Hg, Mo, phenols, cyanide, TKN, and Oil and Grease.

Comments: First load of first day of hauling.

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Troy Fadiga
Ottumwa WWTP
2222 S. Emma
Ottumwa, Iowa 52501

Generated 5/13/2024 5:13:24 PM

JOB DESCRIPTION

Analytical Testing

JOB NUMBER

310-280427-1

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls IA 50613

See page two for job notes and contact information.

my EOL

Job Notes

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

This report was automatically generated by Eurofins Cedar Falls LIMS system, after peer review by each individual department. If you notice any issues please contact your project manager or call the lab at 319-277-2401.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
5/13/2024 5:13:24 PM

Authorized for release by
Hannah Dietz, Project Management Assistant I
Hannah.Dietz@et.eurofinsus.com
(319)277-2401

Table of Contents

Cover Page 1
Table of Contents 3
Case Narrative 4
Sample Summary 5
Detection Summary 6
Client Sample Results 7
Definitions 8
QC Sample Results 9
QC Association 12
Chronicle 14
Certification Summary 15
Method Summary 16
Chain of Custody 17
Receipt Checklists 19

Job Narrative
310-280427-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

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

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

Receipt
The sample was received on 5/3/2024 8:30 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.8°C.

Metals
Method 200.7_CWA: The reference method requires samples to be preserved to a pH of <2. The following sample was received with insufficient preservation at a pH of >2: Ottumwa-Wapello Landfill Leachate (310-280427-1). The sample(s) was preserved to the appropriate pH in the laboratory.

Method 200.7_CWA: The following sample(s) was diluted due to the presence of an interferent. Ottumwa-Wapello Landfill Leachate (310-280427-1). Elevated reporting limits (RLs) are provided.

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

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

Sample Summary

Client: Ottumwa WWTP
Project/Site: Analytical Testing

Job ID: 310-280427-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-280427-1	Ottumwa-Wapello Landfill Leachate	Wastewater	05/02/24 09:30	05/03/24 08:30

Detection Summary

Client: Ottumwa WWTP
Project/Site: Analytical Testing

Job ID: 310-280427-1

Client Sample ID: Ottumwa-Wapello Landfill Leachate

Lab Sample ID: 310-280427-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Copper	0.0443		0.0400		mg/L	2		200.7 Rev 4.4	Total/NA
Nickel	0.103		0.100		mg/L	2		200.7 Rev 4.4	Total/NA
HEM (Oil & Grease)	6.7		5.2		mg/L	1		1664A	Total/NA
Nitrogen, Kjeldahl	272		50.0		mg/L	10		351.2	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Ottumwa WWTP
Project/Site: Analytical Testing

Job ID: 310-280427-1

Client Sample ID: Ottumwa-Wapello Landfill Leachate

Lab Sample ID: 310-280427-1

Date Collected: 05/02/24 09:30

Matrix: Wastewater

Date Received: 05/03/24 08:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	<0.0400		0.0400		mg/L		05/06/24 10:00	05/07/24 11:13	2
Chromium	<0.0400		0.0400		mg/L		05/06/24 10:00	05/07/24 11:13	2
Copper	**0.0443**		0.0400		mg/L		05/06/24 10:00	05/07/24 11:13	2
Nickel	**0.103**		0.100		mg/L		05/06/24 10:00	05/07/24 11:13	2
Selenium	<0.200		0.200		mg/L		05/06/24 10:00	05/07/24 11:13	2
Silver	<0.0400		0.0400		mg/L		05/06/24 10:00	05/07/24 11:13	2
Zinc	<0.0800		0.0800		mg/L		05/06/24 10:00	05/07/24 11:13	2
Arsenic	<0.160		0.160		mg/L		05/06/24 10:00	05/07/24 11:13	2
Lead	<0.200		0.200		mg/L		05/06/24 10:00	05/07/24 11:13	2
Molybdenum	<0.100		0.100		mg/L		05/06/24 10:00	05/07/24 11:13	2

Method: EPA 245.2 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		05/10/24 13:24	05/13/24 14:37	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease) (1664A)	**6.7**		5.2		mg/L		05/10/24 12:00	05/10/24 12:00	1
Cyanide, Total (EPA 335.4)	<0.0100		0.0100		mg/L		05/07/24 10:24	05/07/24 16:12	1
Nitrogen, Kjeldahl (EPA 351.2)	**272**		50.0		mg/L		05/07/24 05:30	05/08/24 18:37	10
Phenols, Total (EPA 420.4)	<0.0188		0.0188		mg/L		05/06/24 09:15	05/06/24 17:09	1

Definitions/Glossary

Client: Ottumwa WWTP
Project/Site: Analytical Testing

Job ID: 310-280427-1

Glossary

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

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 310-420663/1-A
Matrix: Water
Analysis Batch: 420902

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 420663

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	<0.0200		0.0200		mg/L		05/06/24 10:00	05/07/24 09:47	1
Chromium	<0.0200		0.0200		mg/L		05/06/24 10:00	05/07/24 09:47	1
Copper	<0.0200		0.0200		mg/L		05/06/24 10:00	05/07/24 09:47	1
Nickel	<0.0500		0.0500		mg/L		05/06/24 10:00	05/07/24 09:47	1
Selenium	<0.100		0.100		mg/L		05/06/24 10:00	05/07/24 09:47	1
Silver	<0.0200		0.0200		mg/L		05/06/24 10:00	05/07/24 09:47	1
Zinc	<0.0400		0.0400		mg/L		05/06/24 10:00	05/07/24 09:47	1
Arsenic	<0.0800		0.0800		mg/L		05/06/24 10:00	05/07/24 09:47	1
Lead	<0.100		0.100		mg/L		05/06/24 10:00	05/07/24 09:47	1
Molybdenum	<0.0500		0.0500		mg/L		05/06/24 10:00	05/07/24 09:47	1

Lab Sample ID: LCS 310-420663/2-A
Matrix: Water
Analysis Batch: 420902

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 420663

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cadmium	1.00	0.9649		mg/L		96	85 - 115
Chromium	1.00	0.9719		mg/L		97	85 - 115
Copper	2.00	1.947		mg/L		97	85 - 115
Nickel	2.00	1.917		mg/L		96	85 - 115
Selenium	4.00	3.940		mg/L		99	85 - 115
Silver	0.100	0.1057		mg/L		106	85 - 115
Zinc	2.00	1.974		mg/L		99	85 - 115
Arsenic	2.00	1.986		mg/L		99	85 - 115
Lead	2.00	1.936		mg/L		97	85 - 115
Molybdenum	2.00	1.958		mg/L		98	85 - 115

Method: 245.2 - Mercury (CVAA)

Lab Sample ID: MB 310-421335/1-A
Matrix: Water
Analysis Batch: 421518

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 421335

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		05/10/24 13:24	05/13/24 13:48	1

Lab Sample ID: LCS 310-421335/2-A
Matrix: Water
Analysis Batch: 421518

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 421335

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	0.00167	0.001707		mg/L		102	85 - 115

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 310-421217/1-A
Matrix: Water
Analysis Batch: 421363

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 421217

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	<5.0		5.0		mg/L		05/10/24 12:00	05/10/24 12:00	1

Lab Sample ID: LCS 310-421217/2-A
Matrix: Water
Analysis Batch: 421363

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 421217

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
HEM (Oil & Grease)	40.0	35.60		mg/L		89	78 - 114

Method: 335.4 - Cyanide, Total

Lab Sample ID: MB 310-420868/1-A
Matrix: Water
Analysis Batch: 420925

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 420868

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	<0.0100		0.0100		mg/L		05/07/24 10:24	05/07/24 15:56	1

Lab Sample ID: LCS 310-420868/2-A
Matrix: Water
Analysis Batch: 420925

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 420868

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	0.200	0.2009		mg/L		100	90 - 110

Method: 351.2 - Nitrogen, Total Kjeldahl

Lab Sample ID: MB 310-420811/1-A
Matrix: Water
Analysis Batch: 421075

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 420811

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrogen, Kjeldahl	<1.00		1.00		mg/L		05/07/24 05:30	05/08/24 17:44	1

Lab Sample ID: LCS 310-420811/2-A
Matrix: Water
Analysis Batch: 421075

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 420811

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrogen, Kjeldahl	4.01	3.762		mg/L		94	90 - 110

Method: 420.4 - Phenolics, Total Recoverable

Lab Sample ID: MB 310-420733/1-A
Matrix: Water
Analysis Batch: 420802

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 420733

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenols, Total	<0.0200		0.0200		mg/L		05/06/24 09:15	05/06/24 16:58	1

Method: 420.4 - Phenolics, Total Recoverable (Continued)

Lab Sample ID: LCS 310-420733/2-A
Matrix: Water
Analysis Batch: 420802

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 420733

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phenols, Total	0.100	0.09289		mg/L		93	90 - 110

Metals

Prep Batch: 420663

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-280427-1	Ottumwa-Wapello Landfill Leachate	Total/NA	Wastewater	200.7	
MB 310-420663/1-A	Method Blank	Total/NA	Water	200.7	
LCS 310-420663/2-A	Lab Control Sample	Total/NA	Water	200.7	

Analysis Batch: 420902

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-280427-1	Ottumwa-Wapello Landfill Leachate	Total/NA	Wastewater	200.7 Rev 4.4	420663
MB 310-420663/1-A	Method Blank	Total/NA	Water	200.7 Rev 4.4	420663
LCS 310-420663/2-A	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	420663

Prep Batch: 421335

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-280427-1	Ottumwa-Wapello Landfill Leachate	Total/NA	Wastewater	245.1	
MB 310-421335/1-A	Method Blank	Total/NA	Water	245.1	
LCS 310-421335/2-A	Lab Control Sample	Total/NA	Water	245.1	

Analysis Batch: 421518

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-280427-1	Ottumwa-Wapello Landfill Leachate	Total/NA	Wastewater	245.2	421335
MB 310-421335/1-A	Method Blank	Total/NA	Water	245.2	421335
LCS 310-421335/2-A	Lab Control Sample	Total/NA	Water	245.2	421335

General Chemistry

Prep Batch: 420733

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-280427-1	Ottumwa-Wapello Landfill Leachate	Total/NA	Wastewater	Distill/Phenol	
MB 310-420733/1-A	Method Blank	Total/NA	Water	Distill/Phenol	
LCS 310-420733/2-A	Lab Control Sample	Total/NA	Water	Distill/Phenol	

Analysis Batch: 420802

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-280427-1	Ottumwa-Wapello Landfill Leachate	Total/NA	Wastewater	420.4	420733
MB 310-420733/1-A	Method Blank	Total/NA	Water	420.4	420733
LCS 310-420733/2-A	Lab Control Sample	Total/NA	Water	420.4	420733

Prep Batch: 420811

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-280427-1	Ottumwa-Wapello Landfill Leachate	Total/NA	Wastewater	351.2	
MB 310-420811/1-A	Method Blank	Total/NA	Water	351.2	
LCS 310-420811/2-A	Lab Control Sample	Total/NA	Water	351.2	

Prep Batch: 420868

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-280427-1	Ottumwa-Wapello Landfill Leachate	Total/NA	Wastewater	Distill/CN	
MB 310-420868/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 310-420868/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	

Analysis Batch: 420925

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-280427-1	Ottumwa-Wapello Landfill Leachate	Total/NA	Wastewater	335.4	420868

General Chemistry (Continued)

Analysis Batch: 420925 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 310-420868/1-A	Method Blank	Total/NA	Water	335.4	420868
LCS 310-420868/2-A	Lab Control Sample	Total/NA	Water	335.4	420868

Analysis Batch: 421075

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-280427-1	Ottumwa-Wapello Landfill Leachate	Total/NA	Wastewater	351.2	420811
MB 310-420811/1-A	Method Blank	Total/NA	Water	351.2	420811
LCS 310-420811/2-A	Lab Control Sample	Total/NA	Water	351.2	420811

Prep Batch: 421217

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-280427-1	Ottumwa-Wapello Landfill Leachate	Total/NA	Wastewater	1664A	
MB 310-421217/1-A	Method Blank	Total/NA	Water	1664A	
LCS 310-421217/2-A	Lab Control Sample	Total/NA	Water	1664A	

Analysis Batch: 421363

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-280427-1	Ottumwa-Wapello Landfill Leachate	Total/NA	Wastewater	1664A	421217
MB 310-421217/1-A	Method Blank	Total/NA	Water	1664A	421217
LCS 310-421217/2-A	Lab Control Sample	Total/NA	Water	1664A	421217

Lab Chronicle

Client: Ottumwa WWTP
Project/Site: Analytical Testing

Job ID: 310-280427-1

Client Sample ID: Ottumwa-Wapello Landfill Leachate

Lab Sample ID: 310-280427-1

Date Collected: 05/02/24 09:30

Matrix: Wastewater

Date Received: 05/03/24 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	200.7			420663	KM3E	EET CF	05/06/24 10:00
Total/NA	Analysis	200.7 Rev 4.4		2	420902	ZRI4	EET CF	05/07/24 11:13
Total/NA	Prep	245.1			421335	A6US	EET CF	05/10/24 13:24
Total/NA	Analysis	245.2		1	421518	A6US	EET CF	05/13/24 14:37
Total/NA	Prep	1664A			421217	D7CP	EET CF	05/10/24 12:00
Total/NA	Analysis	1664A		1	421363	D7CP	EET CF	05/10/24 12:00
Total/NA	Prep	Distill/CN			420868	WZC8	EET CF	05/07/24 10:24
Total/NA	Analysis	335.4		1	420925	ENB7	EET CF	05/07/24 16:12
Total/NA	Prep	351.2			420811	W9YR	EET CF	05/07/24 05:30
Total/NA	Analysis	351.2		10	421075	ENB7	EET CF	05/08/24 18:37
Total/NA	Prep	Distill/Phenol			420733	ENB7	EET CF	05/06/24 09:15
Total/NA	Analysis	420.4		1	420802	ZJX4	EET CF	05/06/24 17:09

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: Ottumwa WWTP
Job ID: 310-280427-1
Project/Site: Analytical Testing

Laboratory: Eurofins Cedar Falls

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

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-25

Method Summary

Client: Ottumwa WWTP
Project/Site: Analytical Testing

Job ID: 310-280427-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	EET CF
245.2	Mercury (CVAA)	EPA	EET CF
1664A	HEM and SGT-HEM	1664A	EET CF
335.4	Cyanide, Total	EPA	EET CF
351.2	Nitrogen, Total Kjeldahl	EPA	EET CF
420.4	Phenolics, Total Recoverable	EPA	EET CF
1664A	HEM and SGT-HEM (Aqueous)	1664A	EET CF
200.7	Preparation, Total Metals	EPA	EET CF
245.1	Preparation, Mercury	EPA	EET CF
351.2	Nitrogen, Total Kjeldahl	EPA	EET CF
Distill/CN	Distillation, Cyanide	None	EET CF
Distill/Phenol	Distillation, Phenolics	None	EET CF

Protocol References:

1664A = EPA-821-98-002

EPA = US Environmental Protection Agency

None = None

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

eurofins | Environment Testing America

310-280427 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: City of Ottumwa

City/State: CITY | STATE | Project:

Receipt Information

Date/Time Received: DATE 5-3-24 | TIME 0830 | Received By: CC

Delivery Type: ☒ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☒ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? ☐ Yes ☐ No *If yes:* Cooler # _____ of _____

Cooler Custody Seals Present? ☐ Yes ☐ No *If yes:* Cooler custody seals intact? ☐ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☐ No *If yes: Sample custody seals intact?* ☐ Yes ☐ No

Trip Blank Present? ☐ Yes ☐ No *If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: Y | Correction Factor (°C): 0.0

• **Temp Blank Temperature** – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 5.8 | Corrected Temp (°C): 5.8

• **Sample Container Temperature**

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls IA 50613
Phone (319) 277-2401 Phone (319) 277-2425

Chain of Custody Record

GOLD CARD

eurofins

Client Information	Sampler: TRF	Lab PM: Hannah Dietz	Carrier Tracking No(s):	COC No:
Client Contact: Troy Fadiga	Phone:	E-Mail: hannah.dietz@et.eurofinsus.com	State of Origin: Iowa	Page: Page 1 of 1
Company: City of Ottumwa (WPC)	PWSID:			Job #:
Address: 2222 South Emma Street	Due Date Requested:			
City: Ottumwa	TAT Requested (days):			
State, Zip: IA, 52501	Compliance Project: Δ Yes Δ No			
Phone: (641) 683-0641	PO #:			
Email: fadigat@ottumwa.us	WO #:			
Project Name: Analytical Testing	Project #:			
Site: Ottumwa WPCF	SSOW#:			

Analysis Requested

Preservation Codes

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	(Put testing requests here) Cd, Cr, Cu, Ni	(Put testing requests here) Se, Ag, Zn, As	Pb, Hg, Mo	Cyanide	TKN	Oil+Grease	Phenols	Total Number of containers	Special Instructions/Note
Preservation Code:					X	X	D	D	D	B	S	S	S	X	
Ottumwa - Wapello Landfill Leachate	5/2/2024	0930	G	W			X	X	X	X	X	X	X	5	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested I II III IV Other (specify)

Special Instructions/QC Requirements

Empty Kit Relinquished by:	Date	Time	Method of Shipment: Sent in 2 big coolers

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by: CC	Date/Time: 5-3-24 0830	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

5/13/2024

Login Sample Receipt Checklist

Client: Ottumwa WWTP

Job Number: 310-280427-1

Login Number: 280427

List Source: Eurofins Cedar Falls

List Number: 1

Creator: Bennett, Samantha

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Appendix F

2024 Landfill Gas Annual Report

Table 13
Gas Monitoring Summary
2024 Gas Monitoring Report
Ottumwa-Wapello County Landfill
West MSWLF Unit Permit No. 90-SDP-01-75P

Monitoring Points				Methane Results (% LEL)								
Name		Type	Description	1/24/2024	1/25/2024*	S (Y/N)	6/3/2024	S (Y/N)	9/5/2024	S (Y/N)	10/15/2024	S (Y/N)
#1	Office	Indoor	Inside office building	0%	NM		0%		0%		0%	
#2	Shop	Indoor	Inside shop building	0%	NM		0%		0%		0%	
#3	Scale	Indoor	Beneath scale	0%	NM		0%		0%		0%	
#4	Maintenance Building	Indoor	Inside maintenance building	0%	NM		0%		0%		0%	
#5	South Shed	Indoor	Inside shed on the south side of the facility property	0%	NM		0%		0%		0%	
#13	93-MW-31R	Monitoring Well	Deep vadose zone off the southwest corner of the West MSWLF unit	>100%	0%*	N	0%	N	0%	N	0%	N
#14	LFGW-W2	Gas Monitoring Probe	Vadose zone of the scale house	0%	NM	N	0%	N	0%	N	0%	N
#15	91-MW-6	Monitoring Well	Vadose zone off the northwest corner of the West MSWLF unit	0%	NM	Y	0%	Y	0%	Y	0%	Y
#16	LFGW-W3	Gas Monitoring Probe	Shallow vadose zone near the northwest property corner	0%	NM	N	0%	N	0%	N	0%	N
#17	Beneath Scalehouse	Subsurface	Subsurface vent for void space under scalehouse	0%	NM		0%		0%		0%	
#18	LFGW-T4	Gas Monitoring Probe	Shallow vadose zone, off landfill property, southwest of the West MSWLF unit	0%	NM	N	0%	N	0%	N	0%	N
#19	LFGW-T1	Gas Monitoring Probe	Shallow vadose zone off the southwest corner of the West MSWLF unit, across from a residence	>100%	3%*	N	0%	N	0%	N	0%	N
#20	LFGW-T2	Gas Monitoring Probe	Shallow vadose zone off the southwest corner of the West MSWLF unit, across from a residence	0%	NM	N	0%	N	0%	N	0%	N
#21	LFGW-T3	Gas Monitoring Probe	Shallow vadose zone off the southwest corner of the West MSWLF unit, across from a residence	>100%	0%*	N	0%	N	0%	N	0%	N
#22	LFGW-W1	Gas Monitoring Probe	Shallow vadose zone off the southwest corner of the West MSWLF unit, across from a residence	0%	NM	N	0%	N	0%	N	0%	N
#23	LFGW-W4	Gas Monitoring Probe	Shallow vadose zone off the southwest corner of the West MSWLF unit, across from a residence	>100%	51%*	N	0%	N	80%	N	0%	
#25	Exhaust	Other	Between knockout and blower in landfill gas extraction trailer	0%	NM		0%		8%		7%	
#26	GUCO-5	Subsurface	Vadose zone beneath Phase IA & IB, east side	0%	NM		0%		0%		0%	
#27	GUCO-6	Subsurface	Vadose zone beneath Phase IA & IB, west side	0%	NM		0%		0%		0%	
#31	LFGW-W5	Gas Monitoring Probe	Shallow vadose zone, west of GUCO-6	0%	NM	N	0%	N	0%	N	0%	N
#36	GUCO-7	Subsurface	Vadose zone beneath Phase 3, east side.	0%	NM		0%		0%		0%	

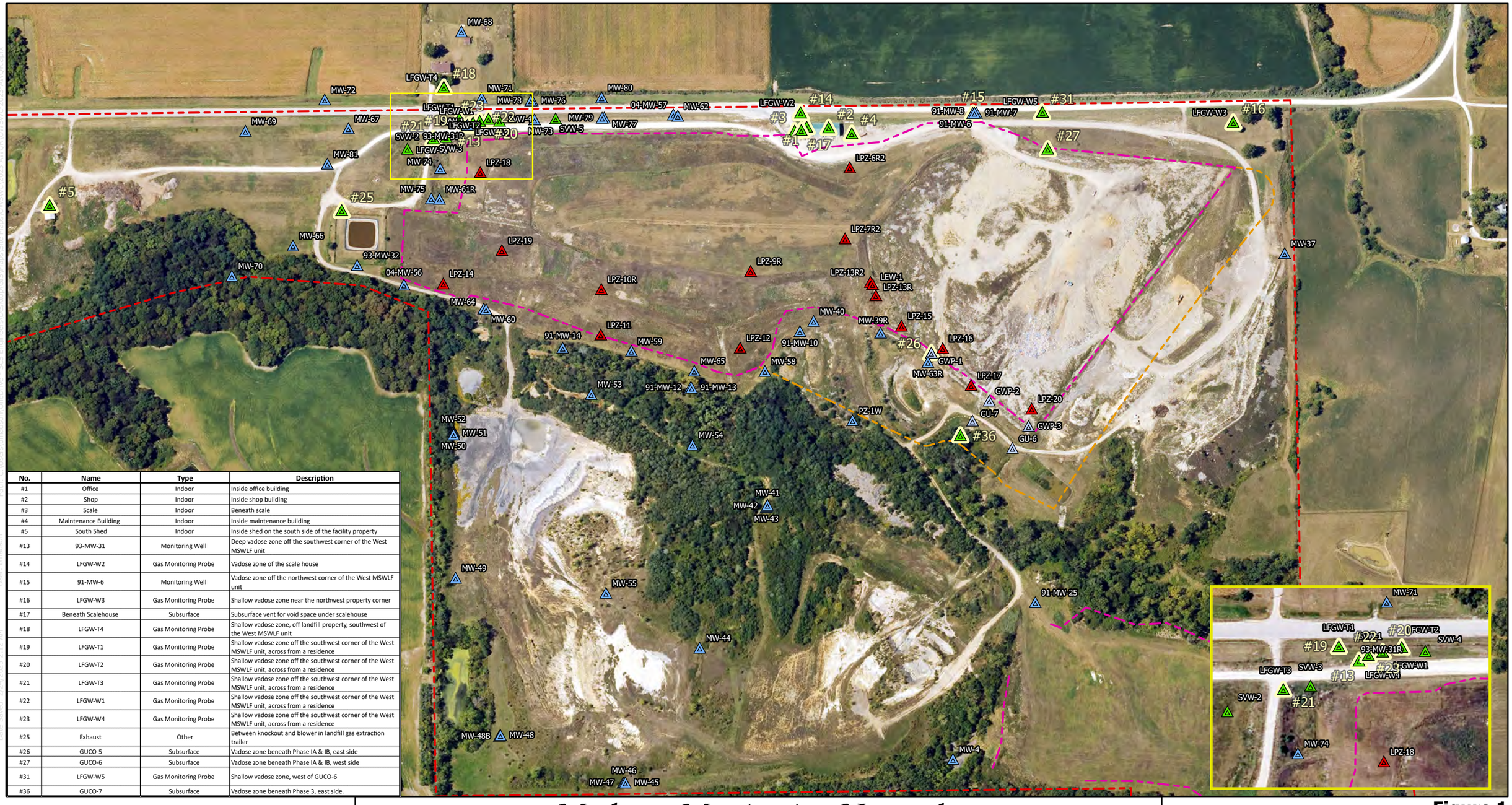
S(Y/N) - Was screen submerged, yes or no or blank is non-applicable.
No actions due to methane exceedances were required during this reported period.

It was determined during the Q1 methane event that the blower-system was not working and caused abnormal exceedances. The blower-system was fixed and the exceedances were remeasured again on January 25th, and the methane concentration levels returned to normal.

Monitoring points GUCO-5 and GUCO-7 are located to the east of the West MSWLF unit. They are interior monitoring points and are each over 1,000 feet from the nearest property boundary (west).

* Indicates the methane point was remeasured.

NM - Indicates not measured.



No.	Name	Type	Description
#1	Office	Indoor	Inside office building
#2	Shop	Indoor	Inside shop building
#3	Scale	Indoor	Beneath scale
#4	Maintenance Building	Indoor	Inside maintenance building
#5	South Shed	Indoor	Inside shed on the south side of the facility property
#13	93-MW-31	Monitoring Well	Deep vadose zone off the southwest corner of the West MSWLF unit
#14	LFGW-W2	Gas Monitoring Probe	Vadose zone of the scale house
#15	91-MW-6	Monitoring Well	Vadose zone off the northwest corner of the West MSWLF unit
#16	LFGW-W3	Gas Monitoring Probe	Shallow vadose zone near the northwest property corner
#17	Beneath Scalehouse	Subsurface	Subsurface vent for void space under scalehouse
#18	LFGW-T4	Gas Monitoring Probe	Shallow vadose zone, off landfill property, southwest of the West MSWLF unit
#19	LFGW-T1	Gas Monitoring Probe	Shallow vadose zone off the southwest corner of the West MSWLF unit, across from a residence
#20	LFGW-T2	Gas Monitoring Probe	Shallow vadose zone off the southwest corner of the West MSWLF unit, across from a residence
#21	LFGW-T3	Gas Monitoring Probe	Shallow vadose zone off the southwest corner of the West MSWLF unit, across from a residence
#22	LFGW-W1	Gas Monitoring Probe	Shallow vadose zone off the southwest corner of the West MSWLF unit, across from a residence
#23	LFGW-W4	Gas Monitoring Probe	Shallow vadose zone off the southwest corner of the West MSWLF unit, across from a residence
#25	Exhaust	Other	Between knockout and blower in landfill gas extraction trailer
#26	GUCO-5	Subsurface	Vadose zone beneath Phase IA & IB, east side
#27	GUCO-6	Subsurface	Vadose zone beneath Phase IA & IB, west side
#31	LFGW-W5	Gas Monitoring Probe	Shallow vadose zone, west of GUCO-6
#36	GUCO-7	Subsurface	Vadose zone beneath Phase 3, east side.

SCS ENGINEERS
environmental consultants and contractors

Methane Monitoring Network

Legend

- Methane Monitoring Point
- Monitoring Well
- Groundwater Underdrain
- Leachate Monitoring Point
- Landfill Gas Well
- Approximate Property Boundary
- Approximate Waste Boundary
- Approximate Future Waste Boundary

Ottumwa-Wapello County Landfill
Ottumwa, IA
Project No: 27223157.25
Drawing Date: February 2025

Figure 1

Overview Map Scale

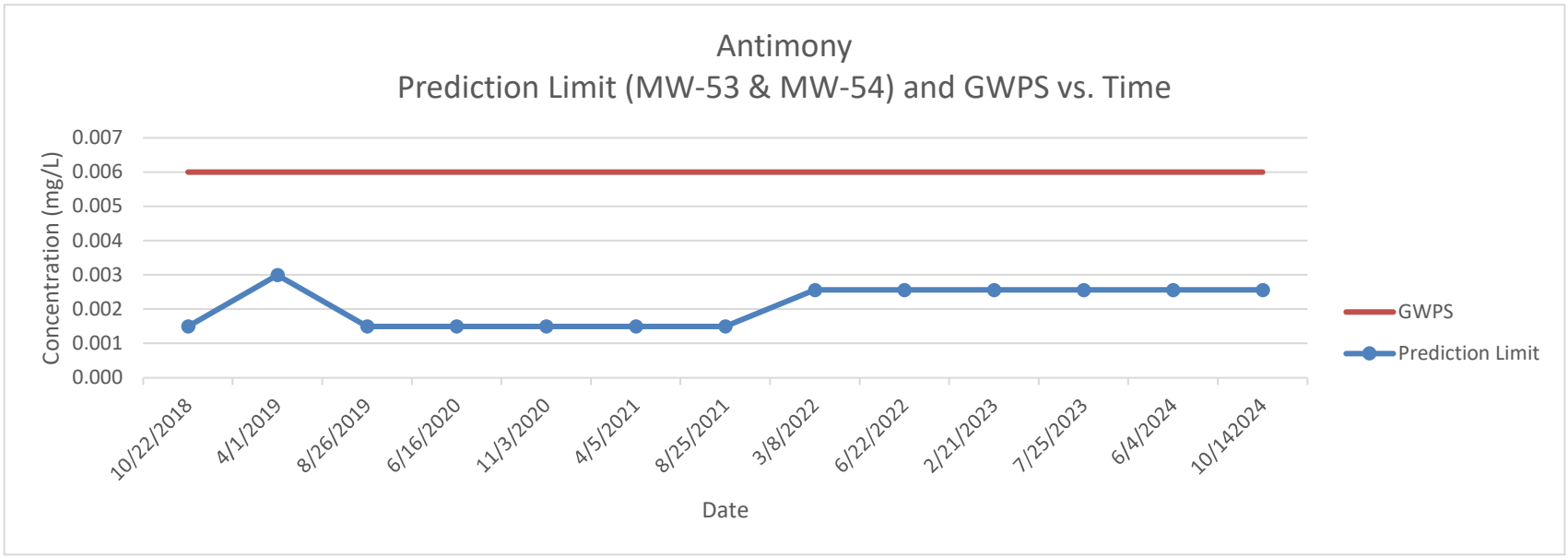
0 80 160 320 Feet

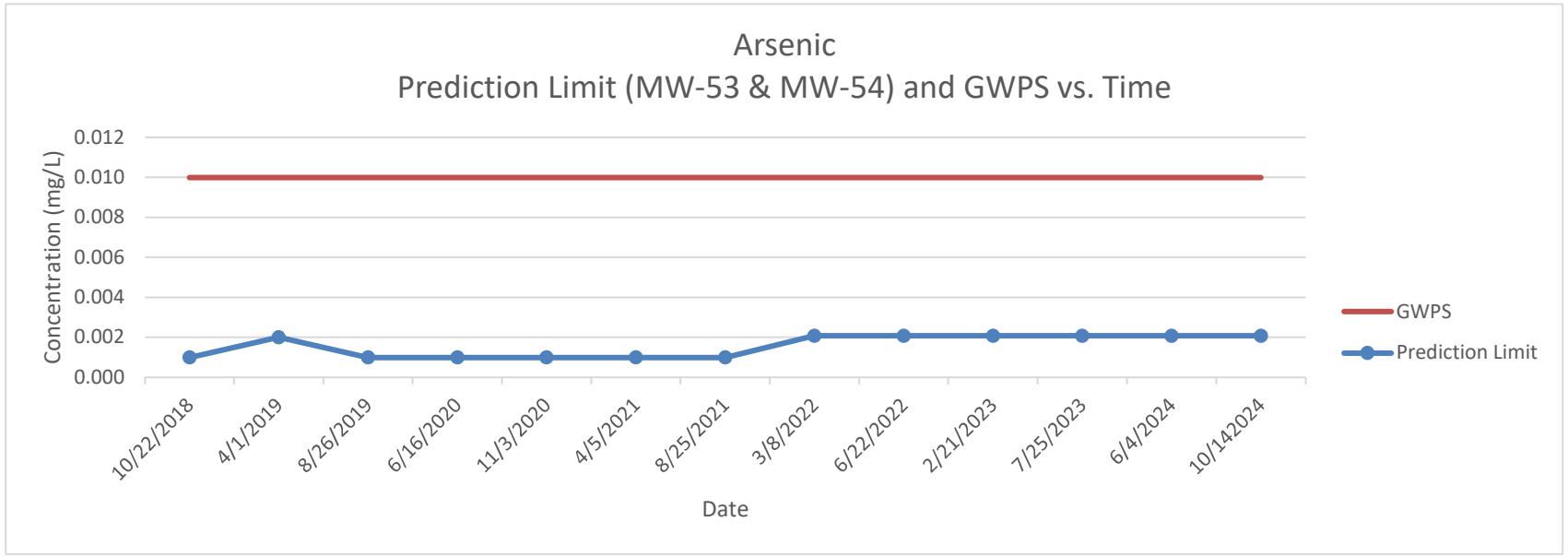
0 287.5 575 1,150 Feet

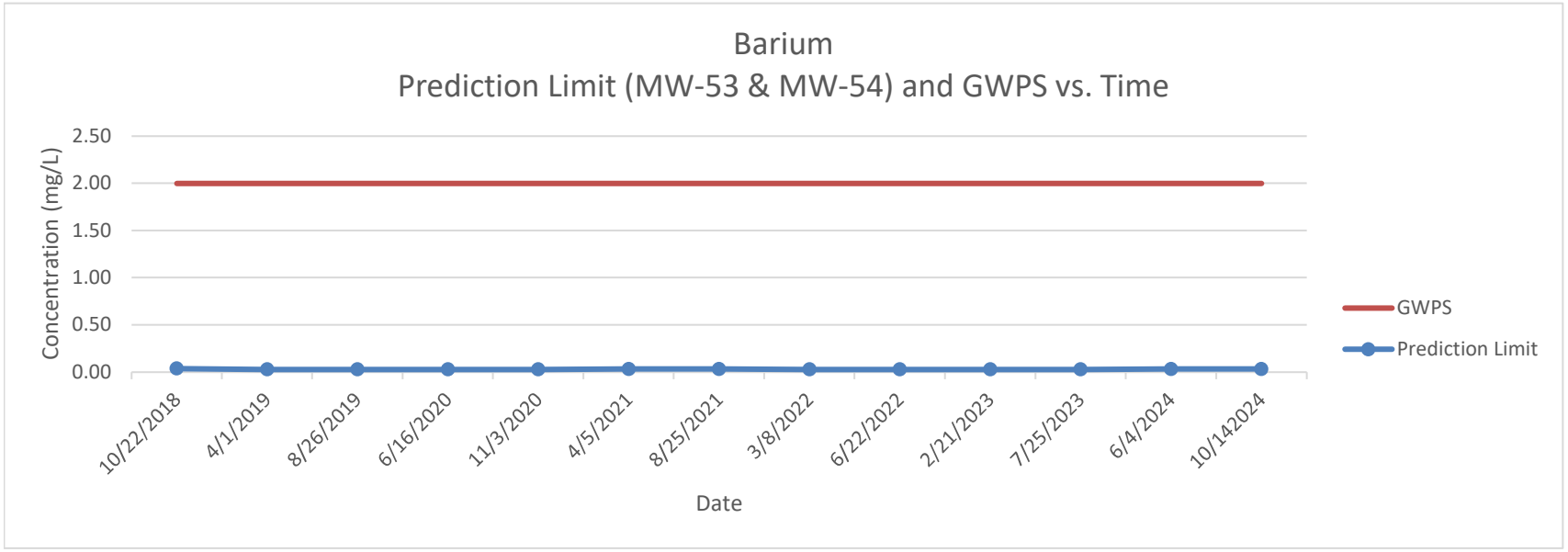
Path: C:\Users\bmadson\OneDrive - SCS Engineers\Desktop\GIS\Maps\Site Maps\OWSWC\2023 AWOR\OWSWC-2023-AWOR.aprx
User: bmadson
Date Saved: 2/24/2025 2:12 AM
Esri, CGIAR, USGS, Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS, USDA NAIP, Iowa State University GIS Facility

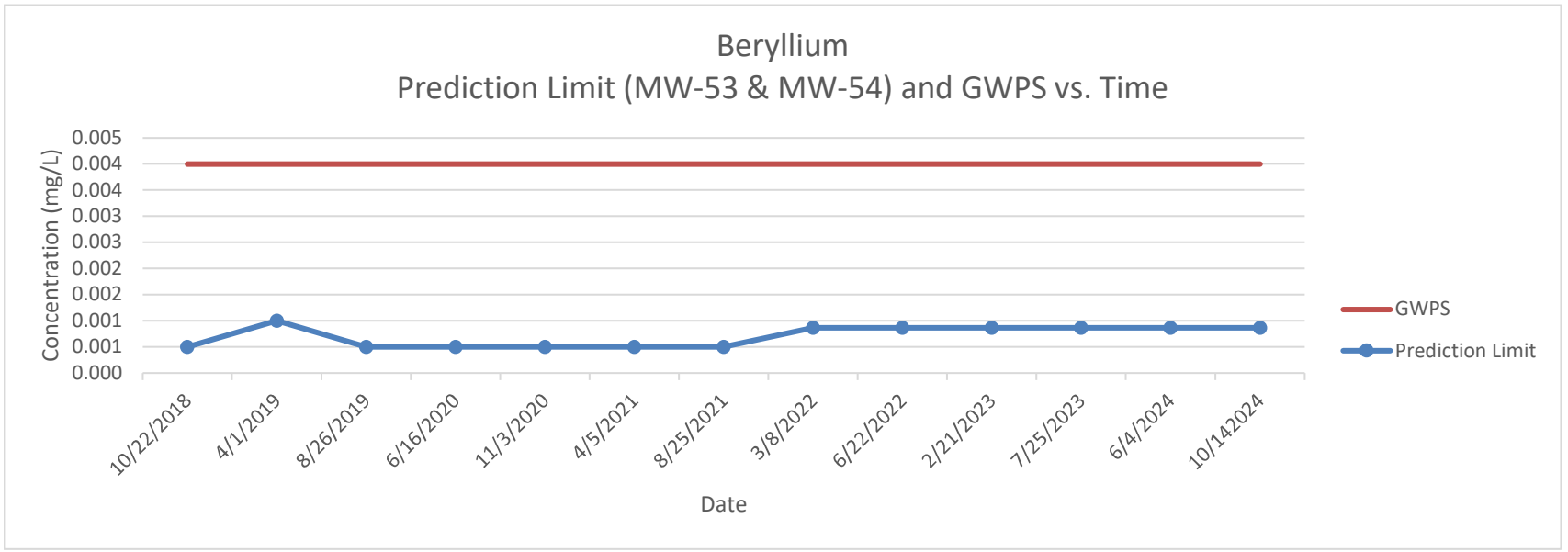
Appendix G

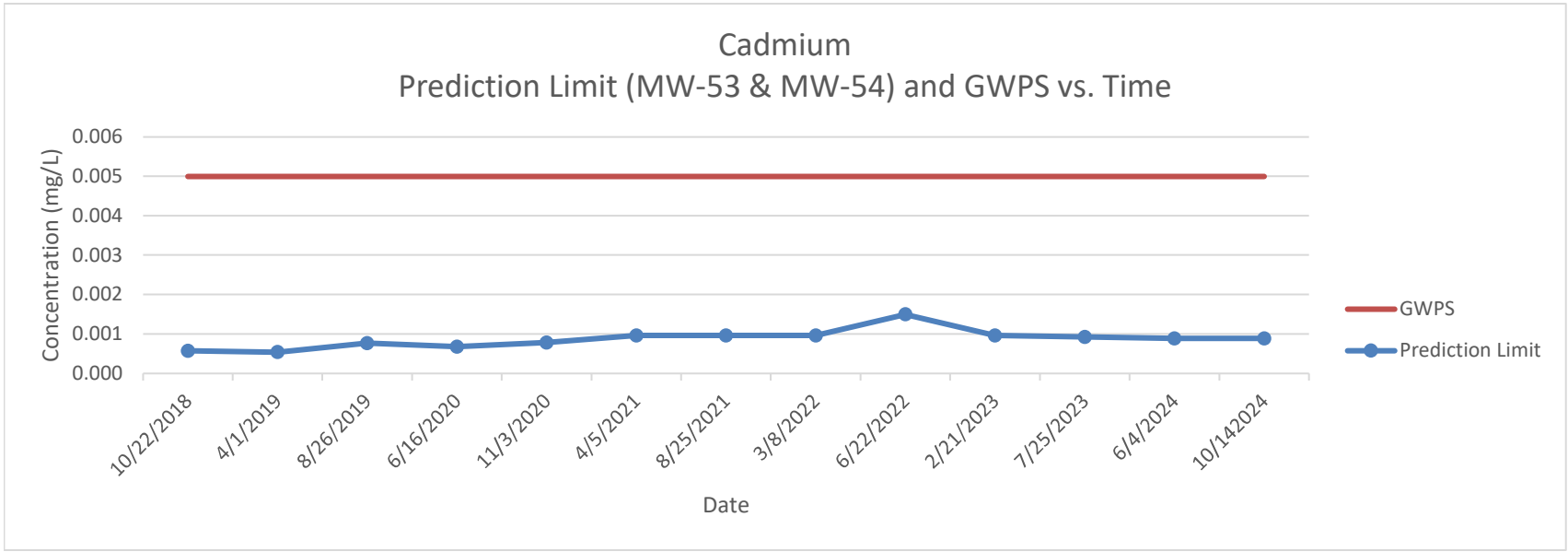
Standards History Graphs

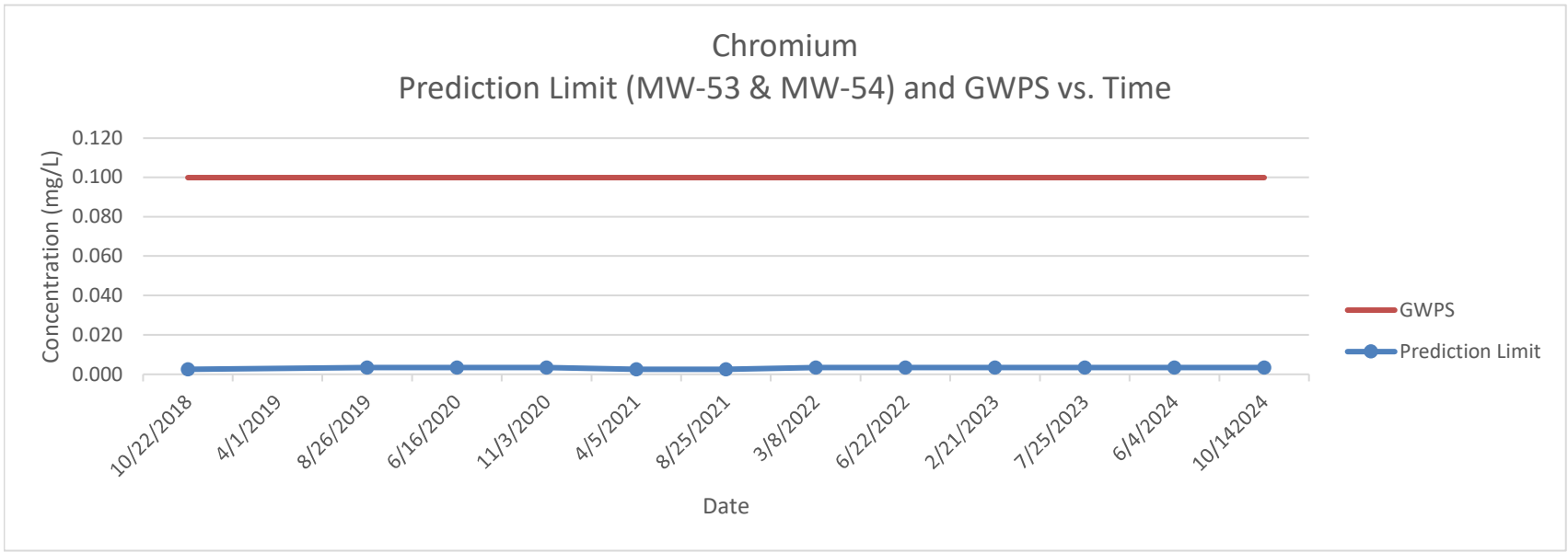

Antimony
Prediction Limit (MW-53 & MW-54) and GWPS vs. Time
Concentration (mg/L)
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0.000
10/22/2018
4/1/2019
8/26/2019
6/16/2020
11/3/2020
4/5/2021
8/25/2021
3/8/2022
6/22/2022
2/21/2023
7/25/2023
6/4/2024
10/142024
Date
GWPS
Prediction Limit

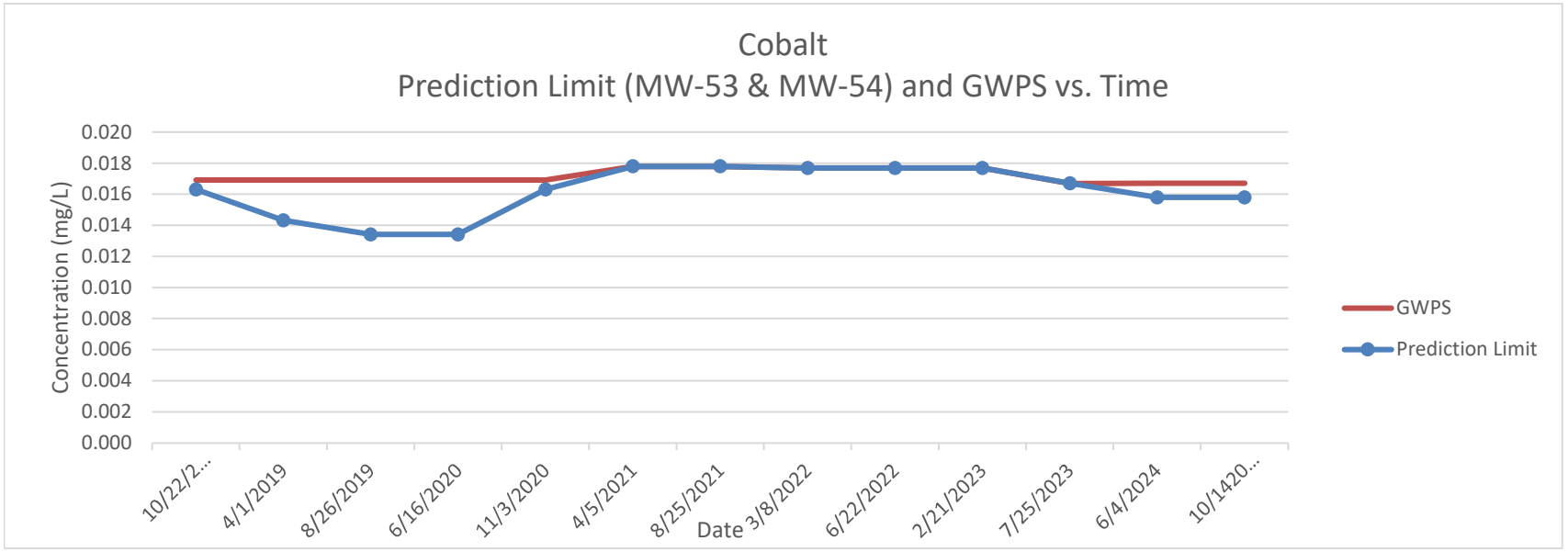

Arsenic
Prediction Limit (MW-53 & MW-54) and GWPS vs. Time
Concentration (mg/L)
0.012
0.010
0.008
0.006
0.004
0.002
0.000
10/22/2018
4/1/2019
8/26/2019
6/16/2020
11/3/2020
4/5/2021
8/25/2021
3/8/2022
6/22/2022
2/21/2023
7/25/2023
6/4/2024
10/142024
Date
GWPS
Prediction Limit

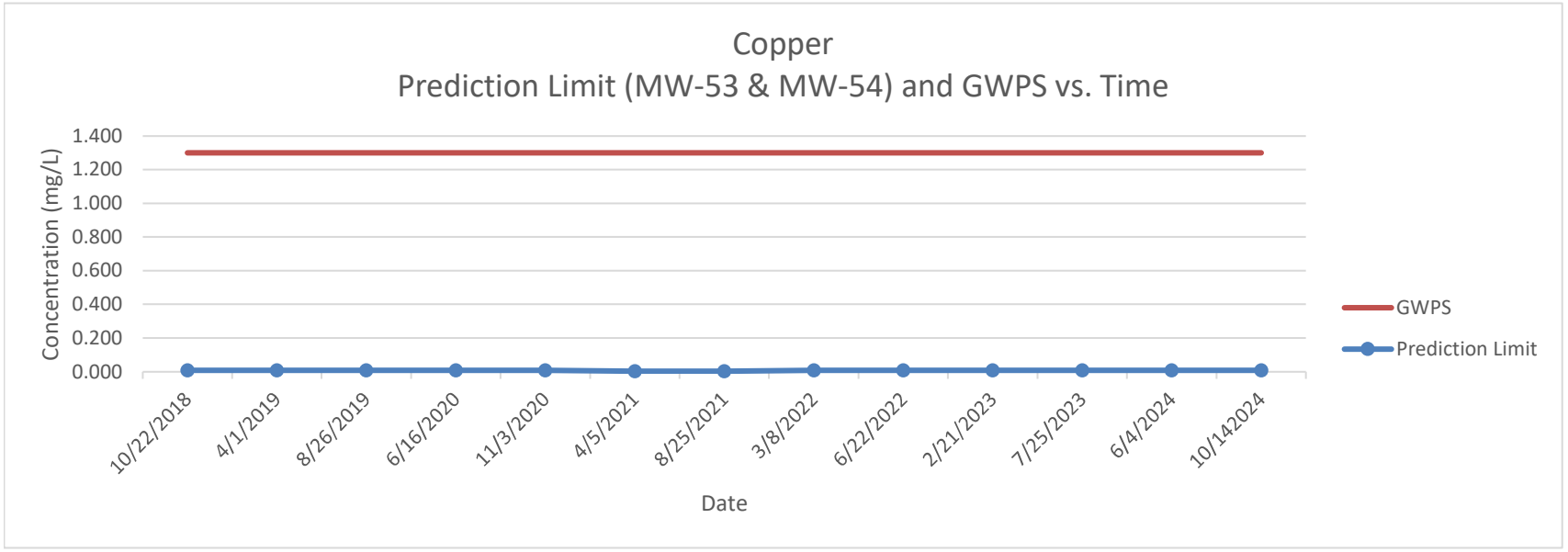

Barium
Prediction Limit (MW-53 & MW-54) and GWPS vs. Time
Concentration (mg/L)
2.50
2.00
1.50
1.00
0.50
0.00
10/22/2018
4/1/2019
8/26/2019
6/16/2020
11/3/2020
4/5/2021
8/25/2021
3/8/2022
6/22/2022
2/21/2023
7/25/2023
6/4/2024
10/142024
Date
GWPS
Prediction Limit

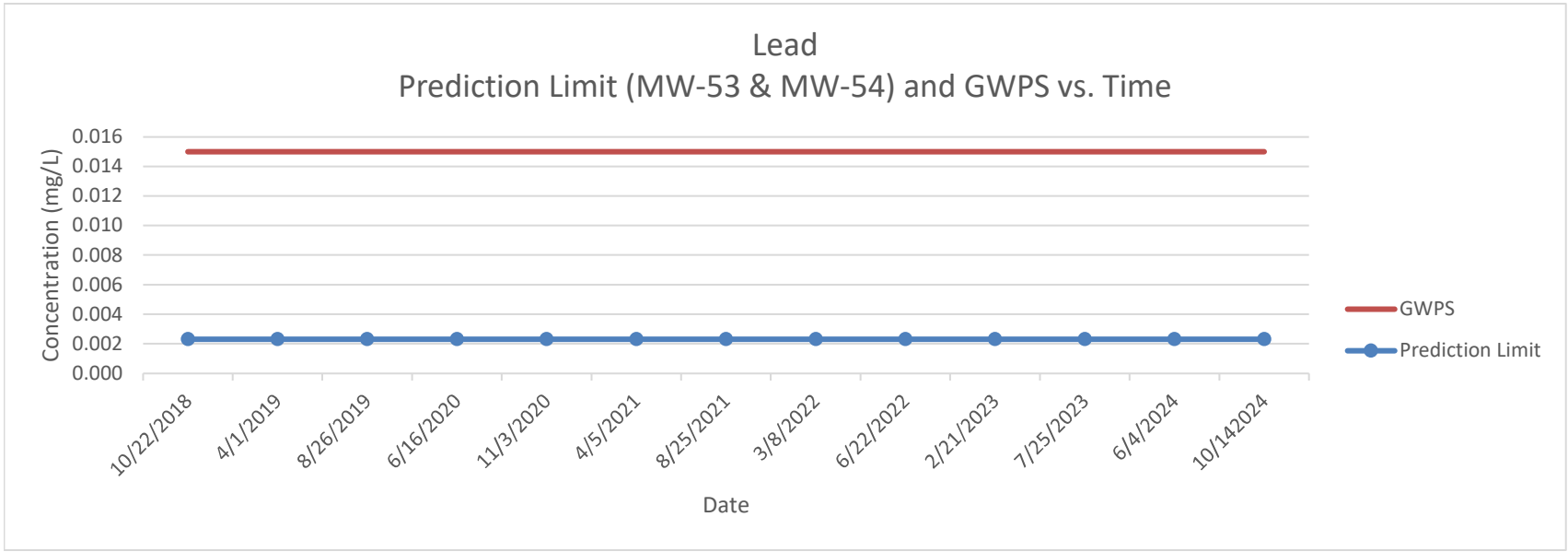

Beryllium
Prediction Limit (MW-53 & MW-54) and GWPS vs. Time
Concentration (mg/L)
0.005
0.004
0.004
0.003
0.003
0.002
0.002
0.001
0.001
0.000
10/22/2018
4/1/2019
8/26/2019
6/16/2020
11/3/2020
4/5/2021
8/25/2021
3/8/2022
6/22/2022
2/21/2023
7/25/2023
6/4/2024
10/142024
Date
GWPS
Prediction Limit

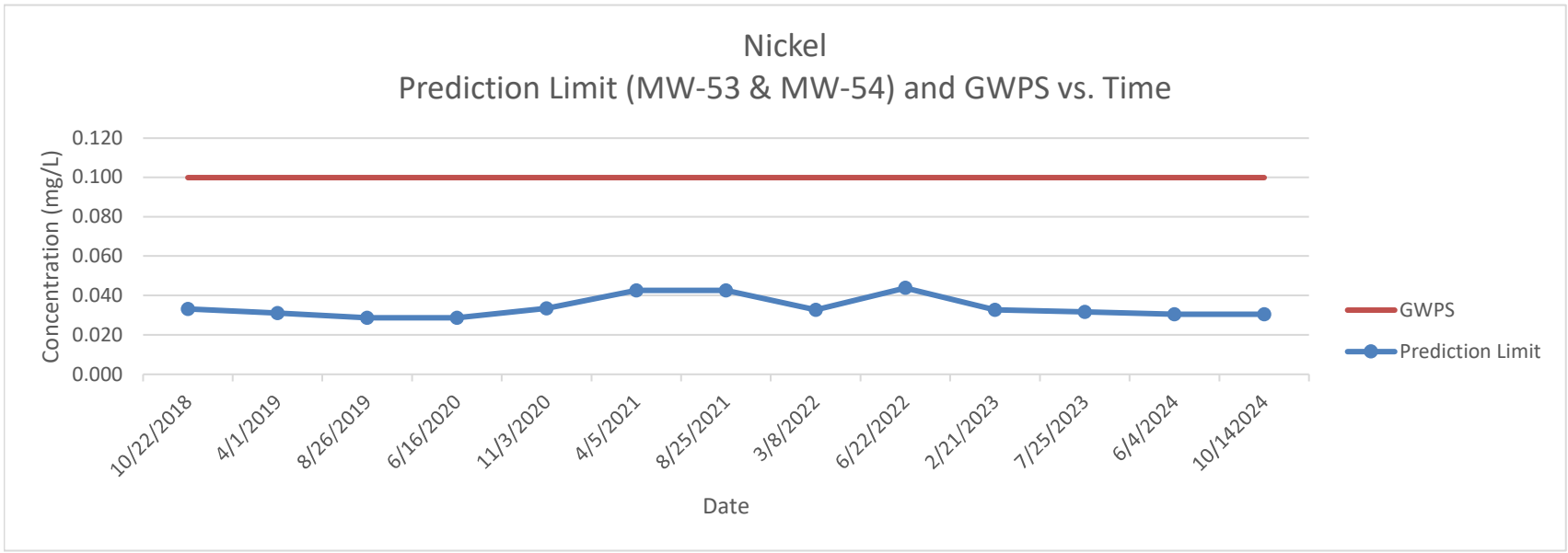

Cadmium
Prediction Limit (MW-53 & MW-54) and GWPS vs. Time
Concentration (mg/L)
0.006
0.005
0.004
0.003
0.002
0.001
0.000
10/22/2018
4/1/2019
8/26/2019
6/16/2020
11/3/2020
4/5/2021
8/25/2021
3/8/2022
6/22/2022
2/21/2023
7/25/2023
6/4/2024
10/14/2024
Date
GWPS
Prediction Limit

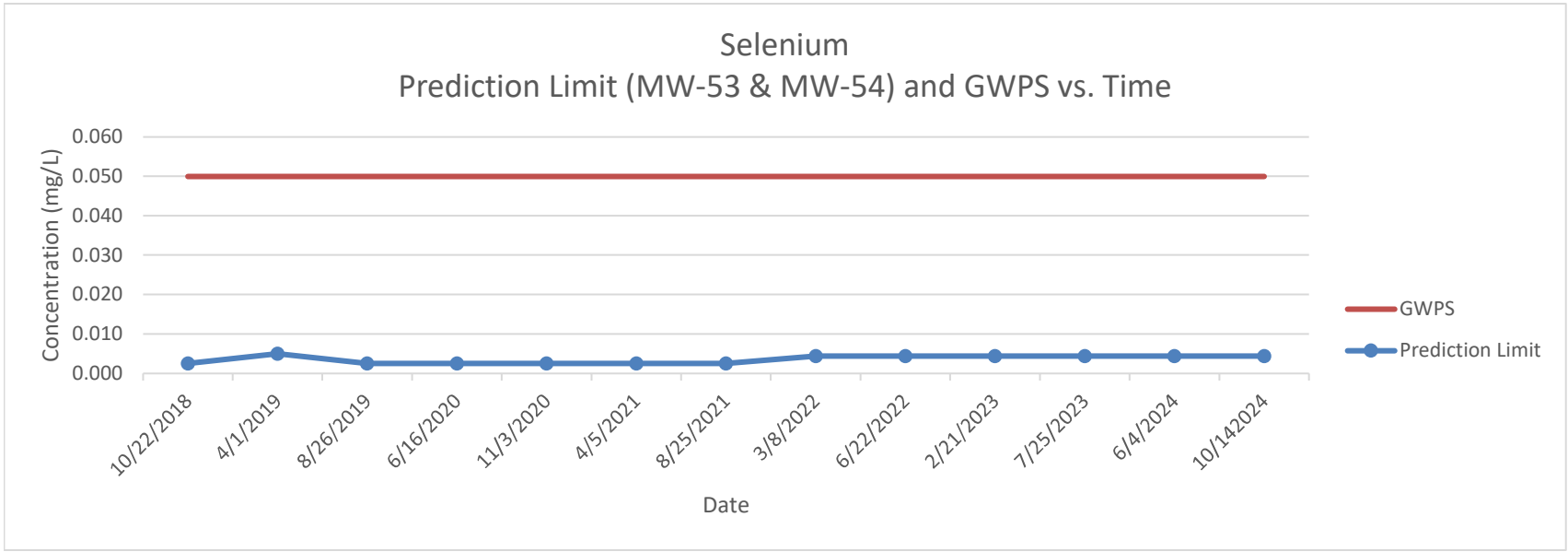

Chromium
Prediction Limit (MW-53 & MW-54) and GWPS vs. Time
Concentration (mg/L)
0.120
0.100
0.080
0.060
0.040
0.020
0.000
10/22/2018
4/1/2019
8/26/2019
6/16/2020
11/3/2020
4/5/2021
8/25/2021
3/8/2022
6/22/2022
2/21/2023
7/25/2023
6/4/2024
10/14/2024
Date
GWPS
Prediction Limit

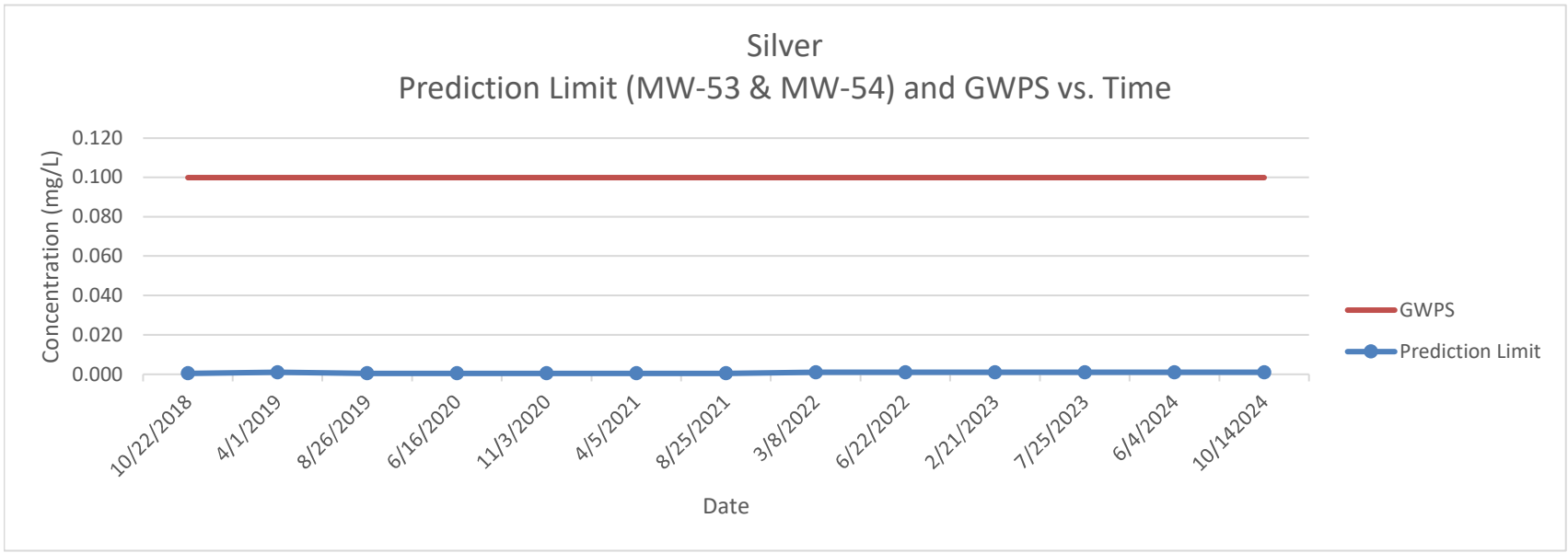

Cobalt
Prediction Limit (MW-53 & MW-54) and GWPS vs. Time
Concentration (mg/L)
0.020
0.018
0.016
0.014
0.012
0.010
0.008
0.006
0.004
0.002
0.000
10/22/2...
4/1/2019
8/26/2019
6/16/2020
11/3/2020
4/5/2021
8/25/2021
3/8/2022
6/22/2022
2/21/2023
7/25/2023
6/4/2024
10/1420...
Date
GWPS
Prediction Limit

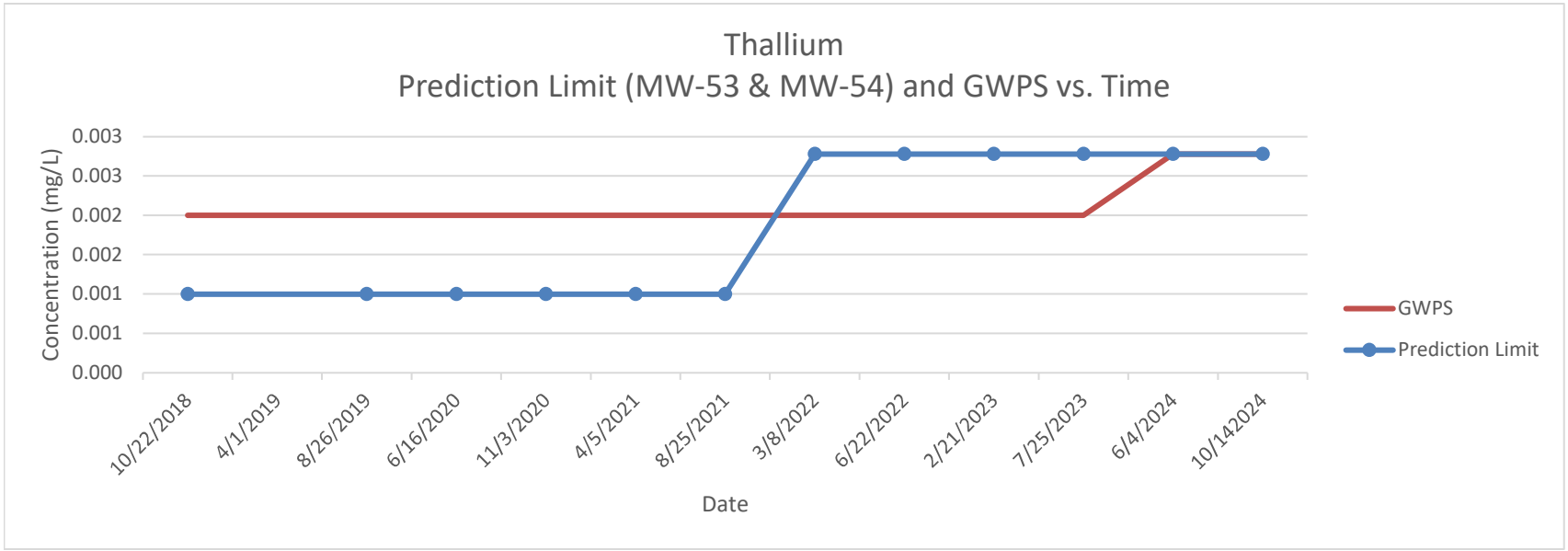

Copper
Prediction Limit (MW-53 & MW-54) and GWPS vs. Time
Concentration (mg/L)
1.400
1.200
1.000
0.800
0.600
0.400
0.200
0.000
10/22/2018
4/1/2019
8/26/2019
6/16/2020
11/3/2020
4/5/2021
8/25/2021
3/8/2022
6/22/2022
2/21/2023
7/25/2023
6/4/2024
10/14/2024
Date
GWPS
Prediction Limit

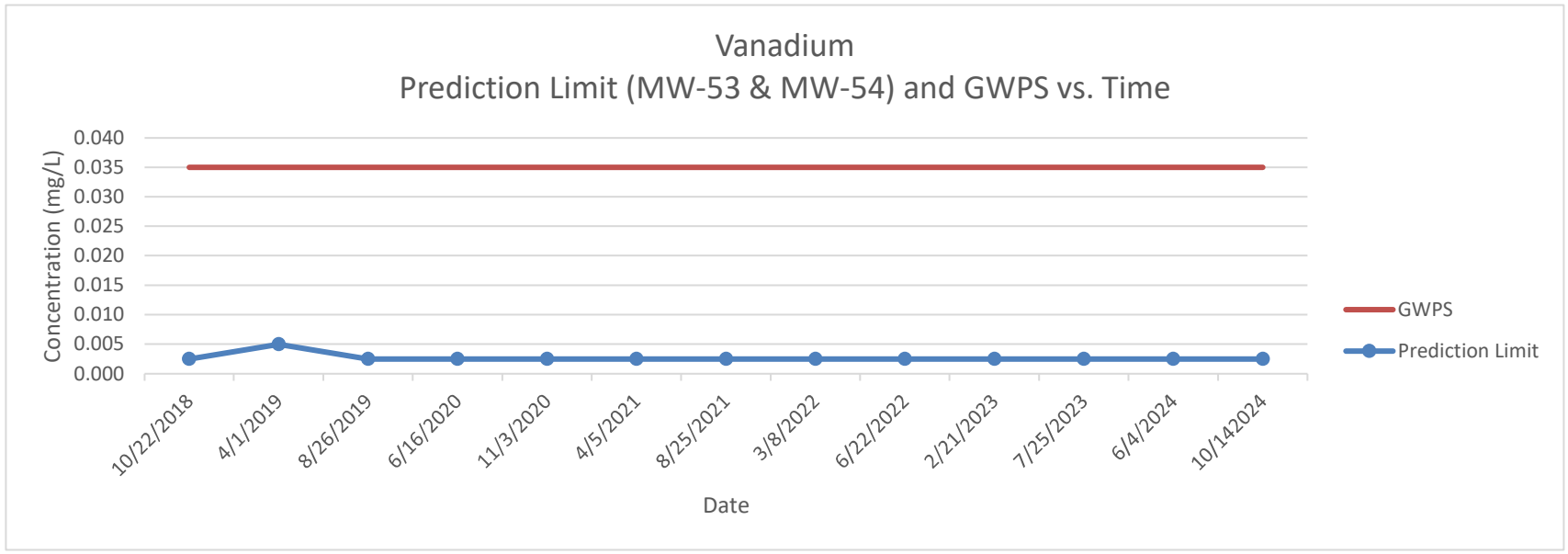

Lead
Prediction Limit (MW-53 & MW-54) and GWPS vs. Time
Concentration (mg/L)
0.016
0.014
0.012
0.010
0.008
0.006
0.004
0.002
0.000
10/22/2018
4/1/2019
8/26/2019
6/16/2020
11/3/2020
4/5/2021
8/25/2021
3/8/2022
6/22/2022
2/21/2023
7/25/2023
6/4/2024
10/14/2024
Date
GWPS
Prediction Limit

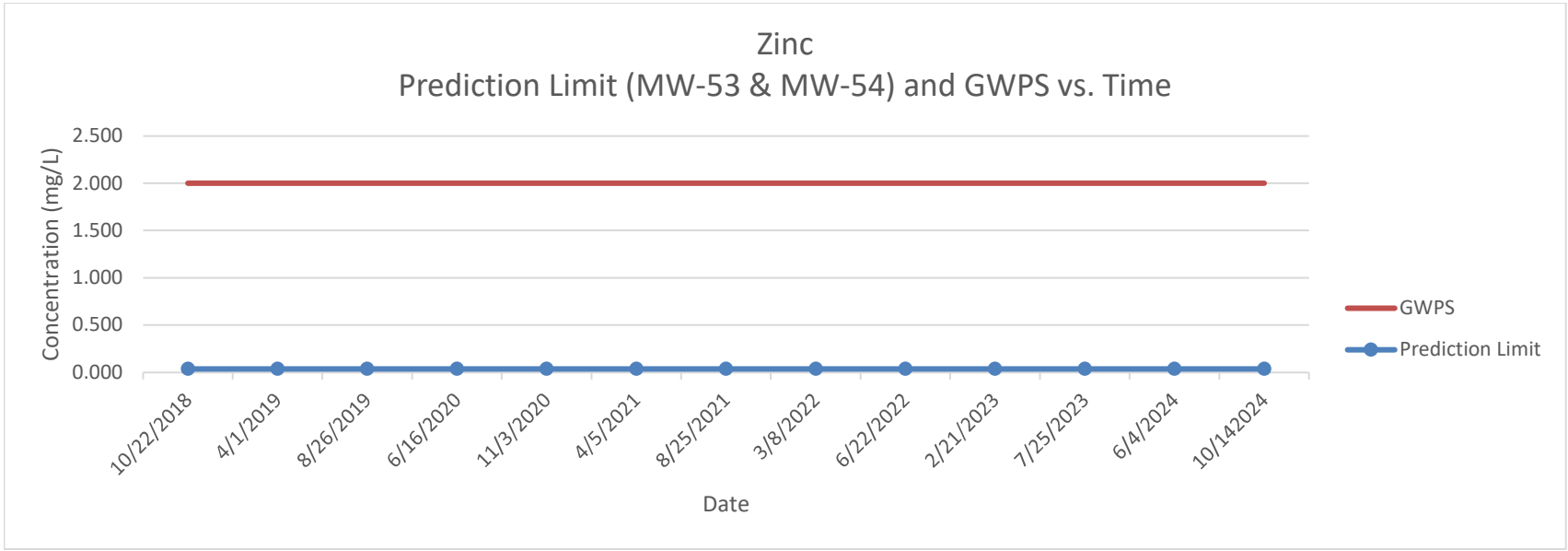

Nickel
Prediction Limit (MW-53 & MW-54) and GWPS vs. Time
Concentration (mg/L)
0.120
0.100
0.080
0.060
0.040
0.020
0.000
10/22/2018
4/1/2019
8/26/2019
6/16/2020
11/3/2020
4/5/2021
8/25/2021
3/8/2022
6/22/2022
2/21/2023
7/25/2023
6/4/2024
10/14/2024
Date
GWPS
Prediction Limit


Selenium
Prediction Limit (MW-53 & MW-54) and GWPS vs. Time
Concentration (mg/L)
0.060
0.050
0.040
0.030
0.020
0.010
0.000
10/22/2018
4/1/2019
8/26/2019
6/16/2020
11/3/2020
4/5/2021
8/25/2021
3/8/2022
6/22/2022
2/21/2023
7/25/2023
6/4/2024
10/14/2024
Date
GWPS
Prediction Limit


Silver
Prediction Limit (MW-53 & MW-54) and GWPS vs. Time
Concentration (mg/L)
0.120
0.100
0.080
0.060
0.040
0.020
0.000
10/22/2018
4/1/2019
8/26/2019
6/16/2020
11/3/2020
4/5/2021
8/25/2021
3/8/2022
6/22/2022
2/21/2023
7/25/2023
6/4/2024
10/14/2024
Date
GWPS
Prediction Limit


Thallium
Prediction Limit (MW-53 & MW-54) and GWPS vs. Time
Concentration (mg/L)
0.003
0.003
0.002
0.002
0.001
0.001
0.000
10/22/2018
4/1/2019
8/26/2019
6/16/2020
11/3/2020
4/5/2021
8/25/2021
3/8/2022
6/22/2022
2/21/2023
7/25/2023
6/4/2024
10/142024
Date
GWPS
Prediction Limit


Vanadium
Prediction Limit (MW-53 & MW-54) and GWPS vs. Time
Concentration (mg/L)
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
10/22/2018
4/1/2019
8/26/2019
6/16/2020
11/3/2020
4/5/2021
8/25/2021
3/8/2022
6/22/2022
2/21/2023
7/25/2023
6/4/2024
10/142024
Date
GWPS
Prediction Limit


Zinc
Prediction Limit (MW-53 & MW-54) and GWPS vs. Time
Concentration (mg/L)
2.500
2.000
1.500
1.000
0.500
0.000
10/22/2018
4/1/2019
8/26/2019
6/16/2020
11/3/2020
4/5/2021
8/25/2021
3/8/2022
6/22/2022
2/21/2023
7/25/2023
6/4/2024
10/142024
Date
GWPS
Prediction Limit

Appendix H

Source Well Mann-Kendall Trending Summary (α=0.01)

Source Trend Test

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM Printed 2/14/2025, 10:58 AM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Alpha	Method
1,1-Dichloroethane (ug/L)	93-MW-31R	-0.1039	-10	-21	No	8	50	0.01	NP
1,1-Dichloroethane (ug/L)	MW-73	-0.3782	-20	-21	No	8	0	0.01	NP
1,1-Dichloroethane (ug/L)	MW-79	0.09133	4	21	No	8	0	0.01	NP
1,2-Dichloropropane (ug/L)	MW-73	-0.1015	-8	-21	No	8	0	0.01	NP
Arsenic (mg/L)	93-MW-31R	0.0003832	4	21	No	8	0	0.01	NP
Arsenic (mg/L)	MW-61R	0.000293	10	21	No	8	0	0.01	NP
Arsenic (mg/L)	MW-73	-0.0002316	0	21	No	8	0	0.01	NP
Barium (mg/L)	93-MW-31R	-0.01072	-8	-21	No	8	0	0.01	NP
Barium (mg/L)	MW-61R	-0.000008356	0	21	No	8	0	0.01	NP
Barium (mg/L)	MW-73	0.005223	9	21	No	8	0	0.01	NP
Barium (mg/L)	MW-79	0.01055	14	21	No	8	0	0.01	NP
Benzene (ug/L)	93-MW-31R	0	-8	-21	No	8	62.5	0.01	NP
Benzene (ug/L)	MW-73	-0.03841	-12	-21	No	8	0	0.01	NP
Benzene (ug/L)	MW-79	-0.01317	-3	-21	No	8	25	0.01	NP
Cadmium (mg/L)	93-MW-31R	-0.00008508	-12	-21	No	8	0	0.01	NP
Cadmium (mg/L)	MW-61R	0.0001007	11	21	No	8	37.5	0.01	NP
Cadmium (mg/L)	MW-73	0.00008565	0	21	No	8	0	0.01	NP
Cadmium (mg/L)	MW-79	-0.003314	-6	-21	No	8	0	0.01	NP
Carbon disulfide (ug/L)	MW-79	0	1	21	No	8	75	0.01	NP
cis-1,2-Dichloroethene (ug/L)	93-MW-31R	-5.997	-9	-21	No	8	25	0.01	NP
cis-1,2-Dichloroethene (ug/L)	MW-61R	1.445	6	21	No	8	0	0.01	NP
cis-1,2-Dichloroethene (ug/L)	MW-73	-4.715	-12	-21	No	8	0	0.01	NP
cis-1,2-Dichloroethene (ug/L)	MW-79	-2.569	-9	-21	No	8	0	0.01	NP
Cobalt (mg/L)	93-MW-31R	-0.003365	-10	-21	No	8	0	0.01	NP
Cobalt (mg/L)	MW-61R	0.0007774	11	21	No	8	0	0.01	NP
Cobalt (mg/L)	MW-73	-0.002621	-14	-21	No	8	0	0.01	NP
Cobalt (mg/L)	MW-79	-0.0000603	0	21	No	8	0	0.01	NP
Copper (mg/L)	MW-61R	0.00146	9	21	No	8	25	0.01	NP
Copper (mg/L)	MW-73	0.0007993	9	21	No	8	25	0.01	NP
Copper (mg/L)	MW-79	-0.00009678	-6	-21	No	8	50	0.01	NP
Lead (mg/L)	93-MW-31R	0.0001824	11	21	No	8	25	0.01	NP
Lead (mg/L)	MW-61R	0.0005921	11	21	No	8	25	0.01	NP
Lead (mg/L)	MW-73	0.0000414	7	21	No	8	37.5	0.01	NP
Lead (mg/L)	MW-79	-0.0002118	-7	-21	No	8	50	0.01	NP
Nickel (mg/L)	93-MW-31R	-0.001514	-8	-21	No	8	12.5	0.01	NP
Nickel (mg/L)	**MW-61R**	**0.006016**	**27**	**21**	**Yes**	**8**	**0**	**0.01**	**NP**
Nickel (mg/L)	MW-73	-0.00037	-4	-21	No	8	0	0.01	NP
Nickel (mg/L)	MW-79	-0.001253	-3	-21	No	8	0	0.01	NP
Tetrachloroethene (ug/L)	**MW-73**	**-0.7423**	**-24**	**-21**	**Yes**	**8**	**0**	**0.01**	**NP**
Thallium (mg/L)	93-MW-31R	0	-13	-21	No	8	75	0.01	NP
trans-1,2-Dichloroethene (ug/L)	MW-73	-0.06491	-18	-21	No	8	0	0.01	NP
trans-1,2-Dichloroethene (ug/L)	MW-79	-0.0007199	-3	-21	No	8	37.5	0.01	NP
Trichloroethene (ug/L)	**MW-73**	**-0.9637**	**-28**	**-21**	**Yes**	**8**	**0**	**0.01**	**NP**
Vanadium (mg/L)	MW-61R	-0.0002197	-5	-21	No	8	50	0.01	NP
Vanadium (mg/L)	MW-79	-0.000258	-7	-21	No	8	50	0.01	NP
Vinyl chloride (ug/L)	93-MW-31R	-0.2872	-10	-21	No	8	50	0.01	NP
Vinyl chloride (ug/L)	MW-73	-0.3656	-10	-21	No	8	0	0.01	NP
Vinyl chloride (ug/L)	MW-79	1.116	18	21	No	8	0	0.01	NP
Zinc (mg/L)	MW-61R	0.004423	10	21	No	8	12.5	0.01	NP
Zinc (mg/L)	MW-73	-0.01116	-4	-21	No	8	0	0.01	NP

Source Trend Test

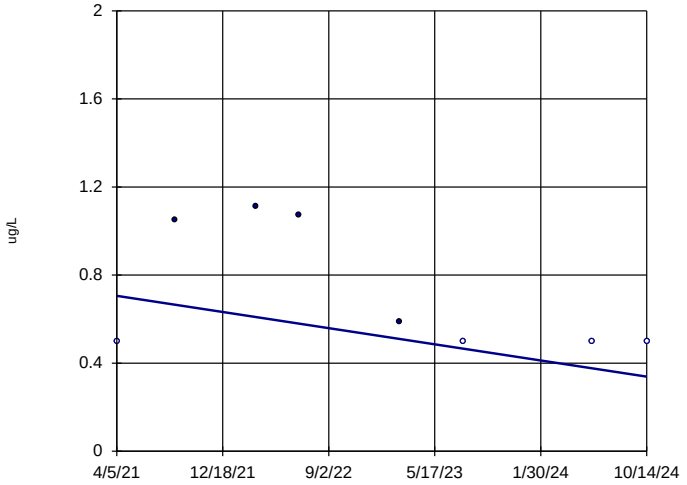
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM Printed 2/14/2025, 10:58 AM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Alpha	Method
Zinc (mg/L)	MW-79	-0.01459	-2	-21	No	8	12.5	0.01	NP

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

93-MW-31R



n = 8

Slope = -0.1039 units per year.

Mann-Kendall statistic = -10
critical = -21

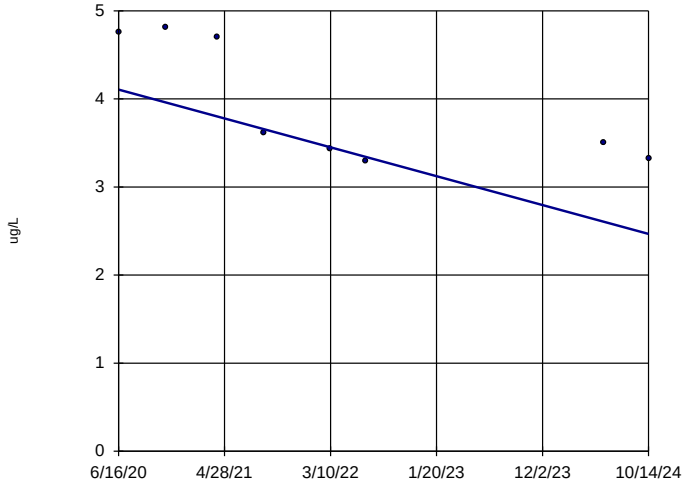
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: 1,1-Dichloroethane Analysis Run 2/14/2025 10:55 AM View: 2024AWQR Source-Mann Kend
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-73



n = 8

Slope = -0.3782 units per year.

Mann-Kendall statistic = -20
critical = -21

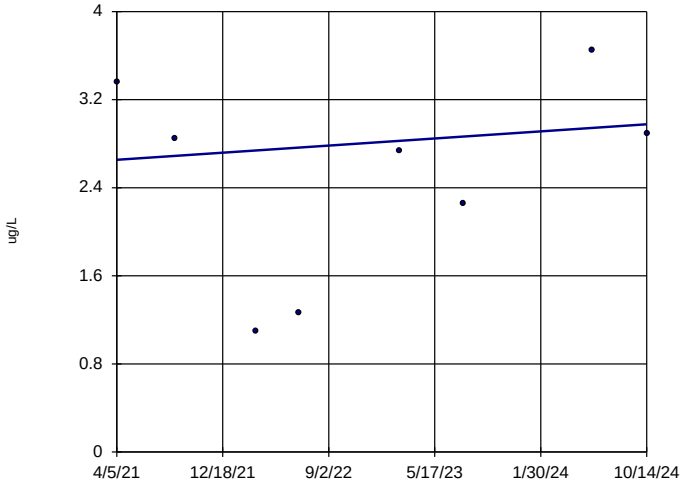
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: 1,1-Dichloroethane Analysis Run 2/14/2025 10:55 AM View: 2024AWQR Source-Mann Kend
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-79



n = 8

Slope = 0.09133 units per year.

Mann-Kendall statistic = 4
critical = 21

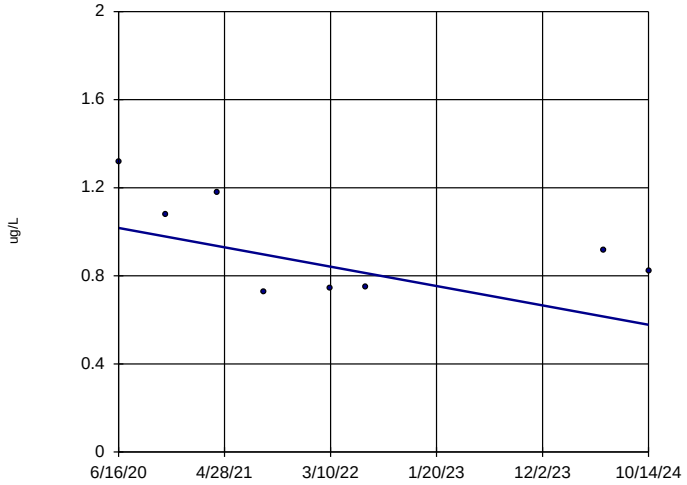
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: 1,1-Dichloroethane Analysis Run 2/14/2025 10:55 AM View: 2024AWQR Source-Mann Kend
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-73



n = 8

Slope = -0.1015 units per year.

Mann-Kendall statistic = -8
critical = -21

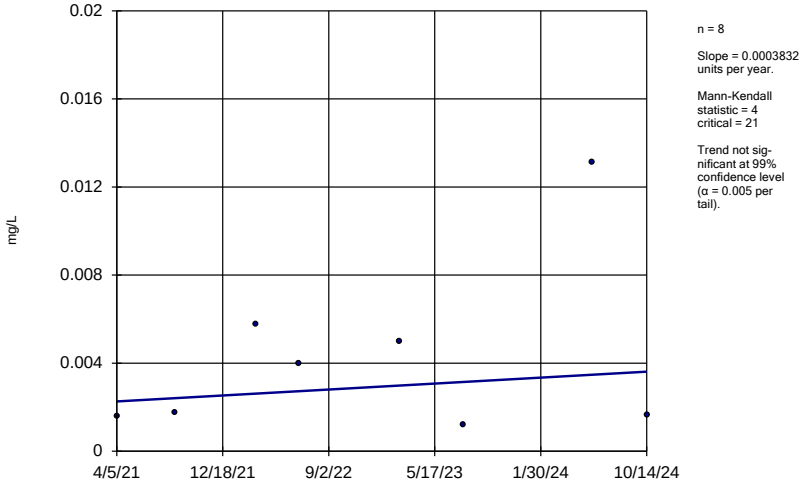
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: 1,2-Dichloropropane Analysis Run 2/14/2025 10:55 AM View: 2024AWQR Source-Mann Ken
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

93-MW-31R

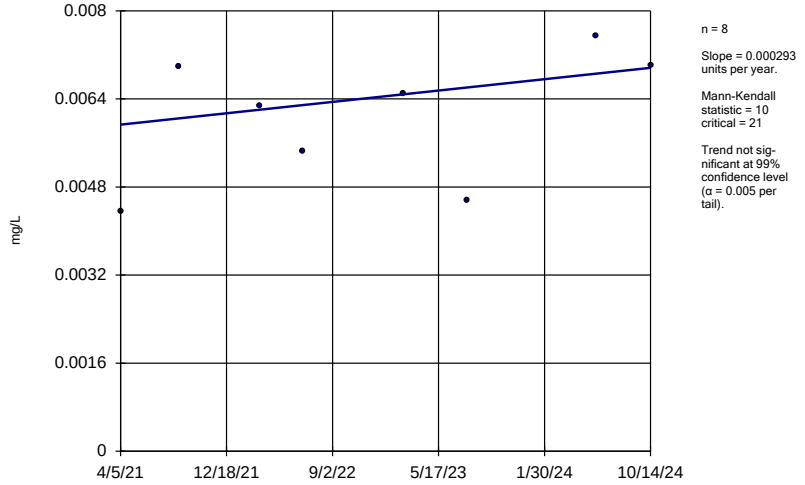


Constituent: Arsenic Analysis Run 2/14/2025 10:55 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-61R

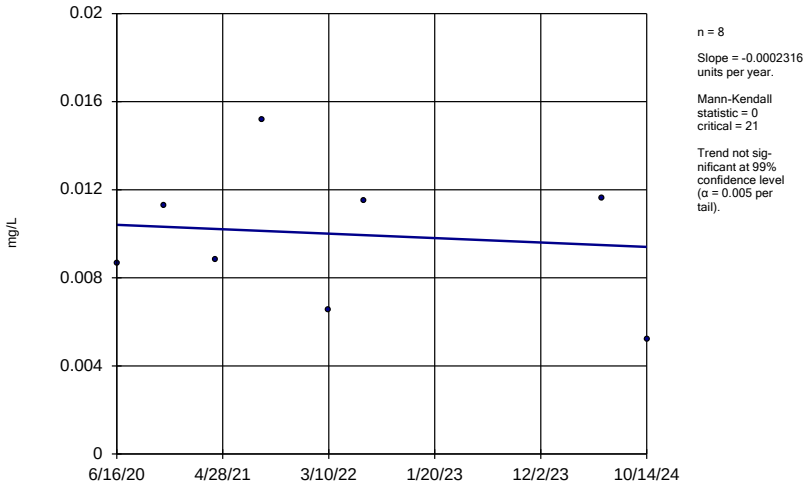


Constituent: Arsenic Analysis Run 2/14/2025 10:55 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-73

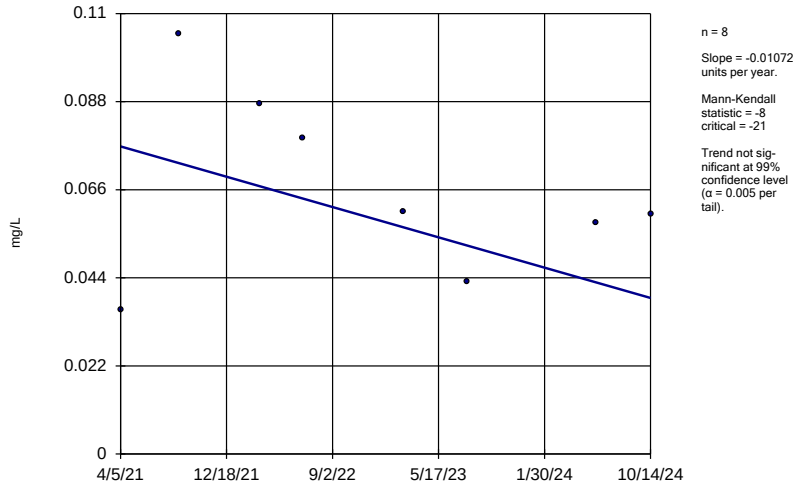


Constituent: Arsenic Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

93-MW-31R

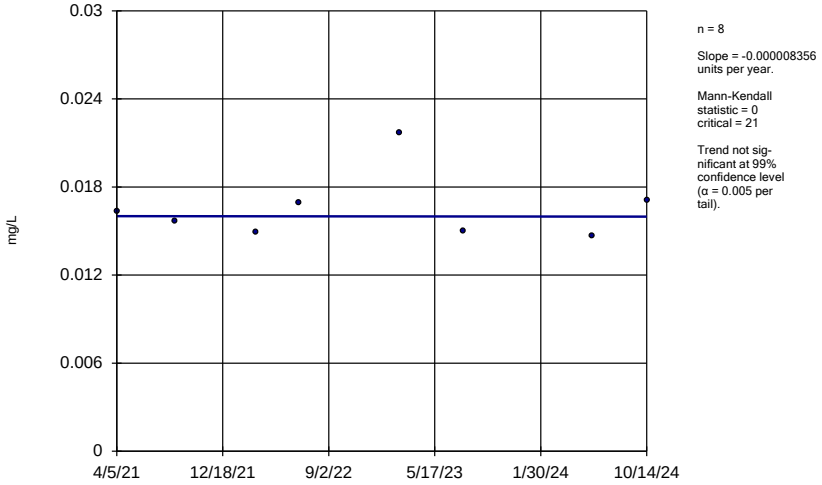


Constituent: Barium Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-61R

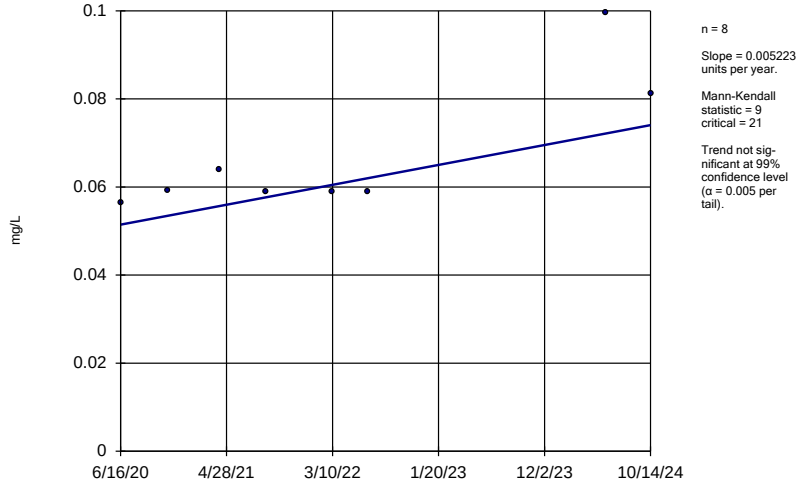


Constituent: Barium Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-73

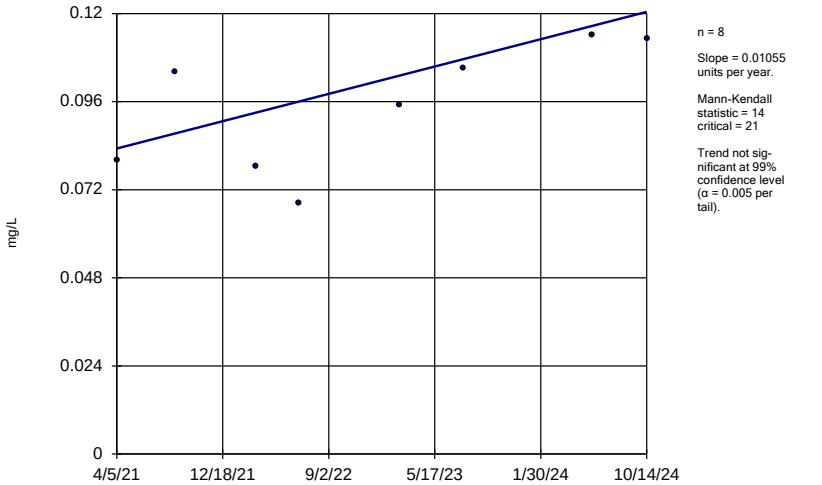


Constituent: Barium Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-79

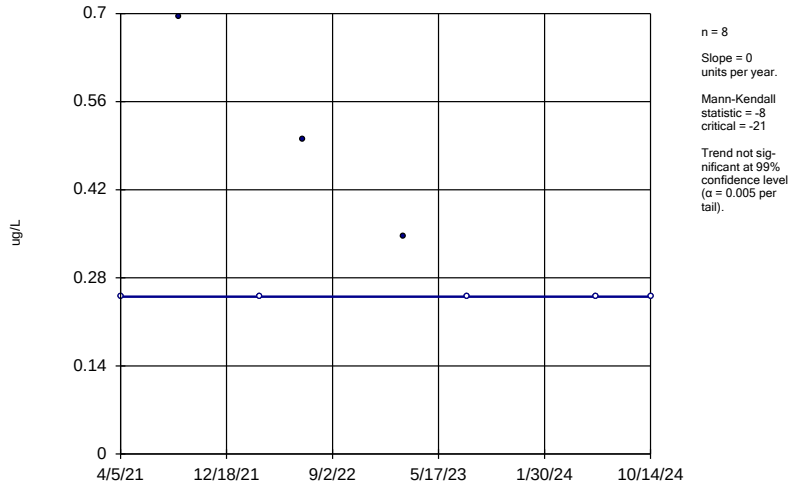


Constituent: Barium Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

93-MW-31R

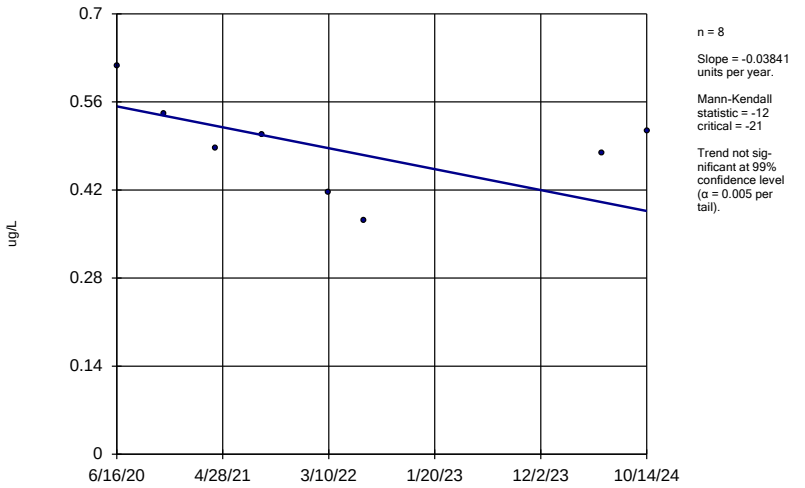


Constituent: Benzene Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-73

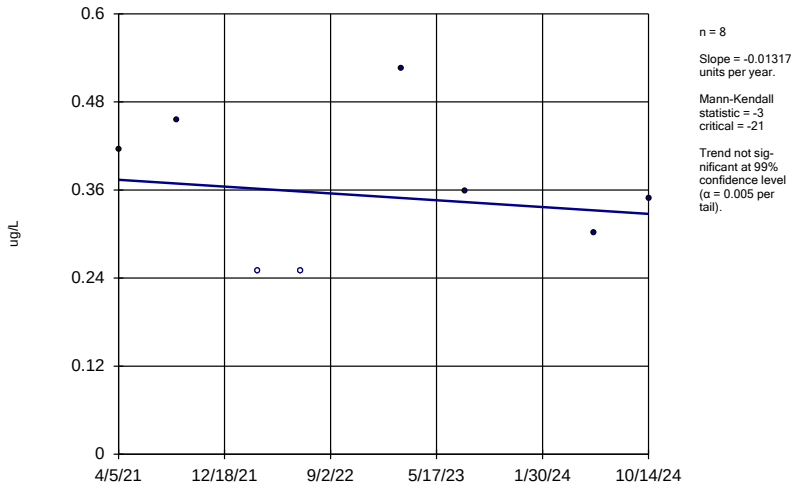


Constituent: Benzene Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-79

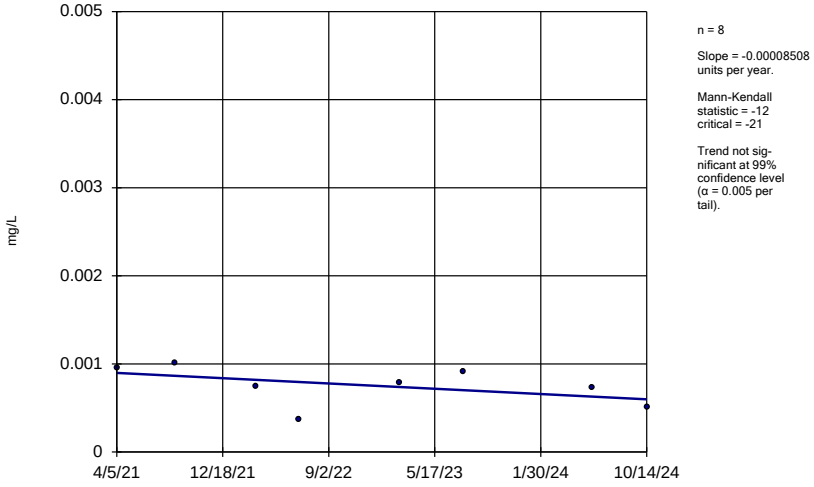


Constituent: Benzene Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

93-MW-31R

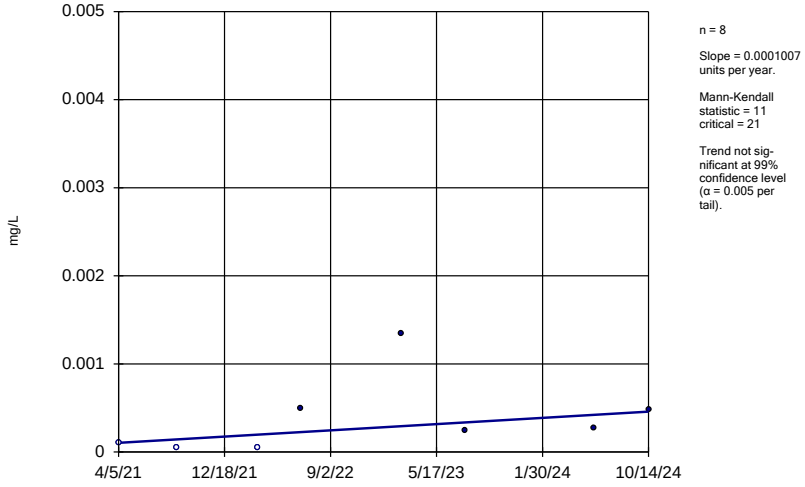


Constituent: Cadmium Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-61R

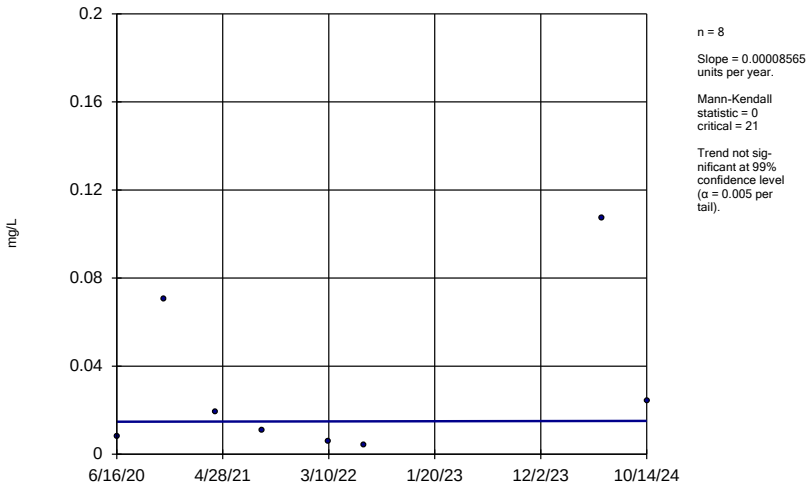


Constituent: Cadmium Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-73

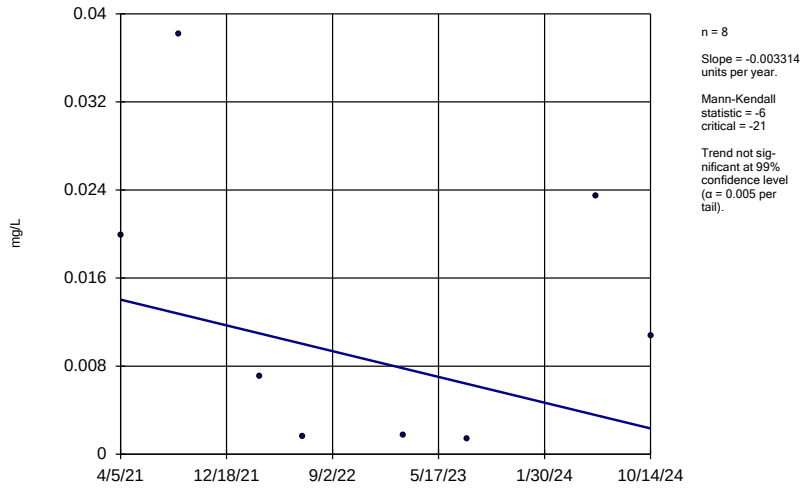


Constituent: Cadmium Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-79

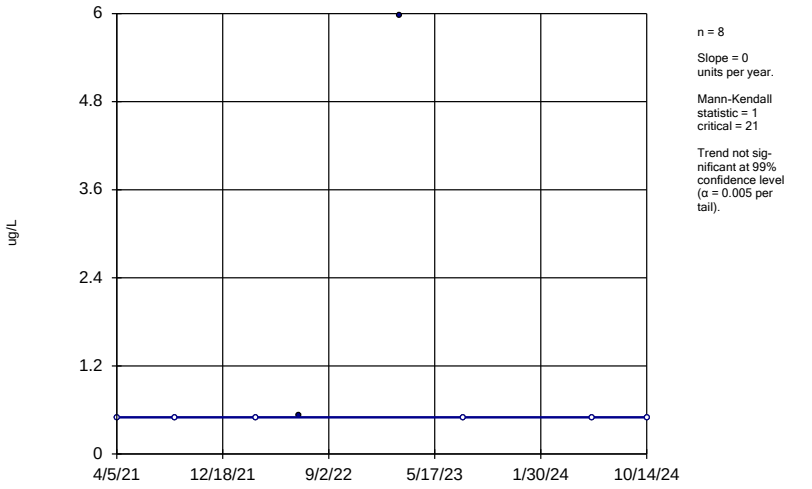


Constituent: Cadmium Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-79

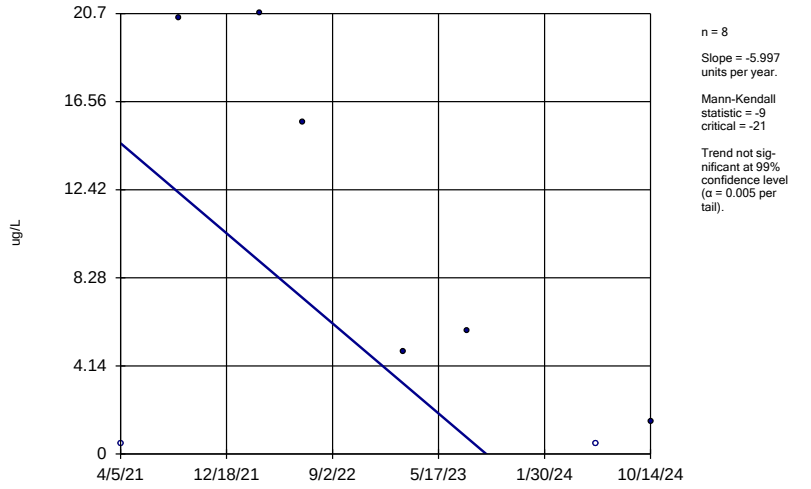


Constituent: Carbon disulfide Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

93-MW-31R

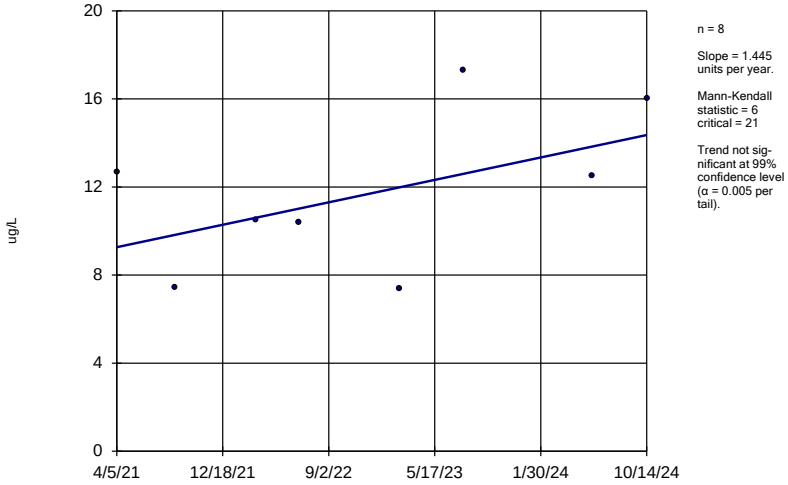


Constituent: cis-1,2-Dichloroethene Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann K
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-61R

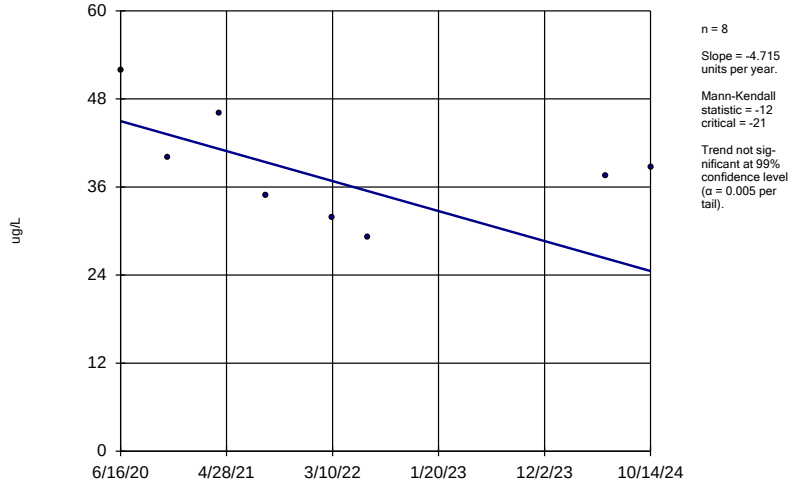


Constituent: cis-1,2-Dichloroethene Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann K
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-73

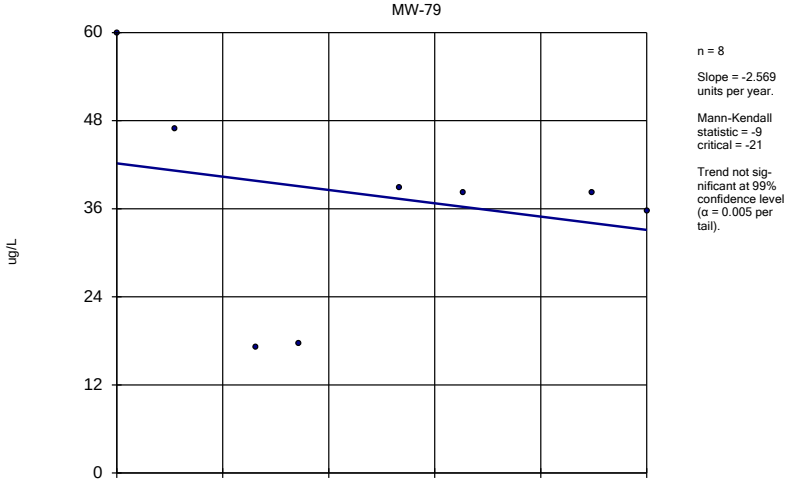


Constituent: cis-1,2-Dichloroethene Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann K
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-79

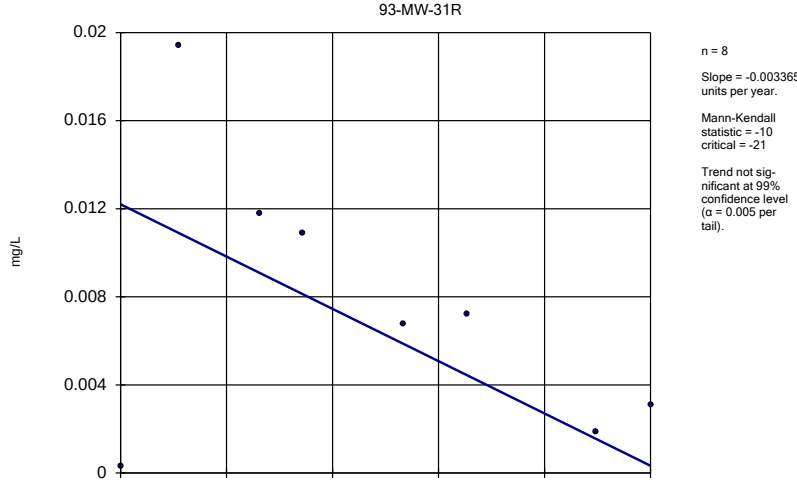


Constituent: cis-1,2-Dichloroethene Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann K
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

93-MW-31R

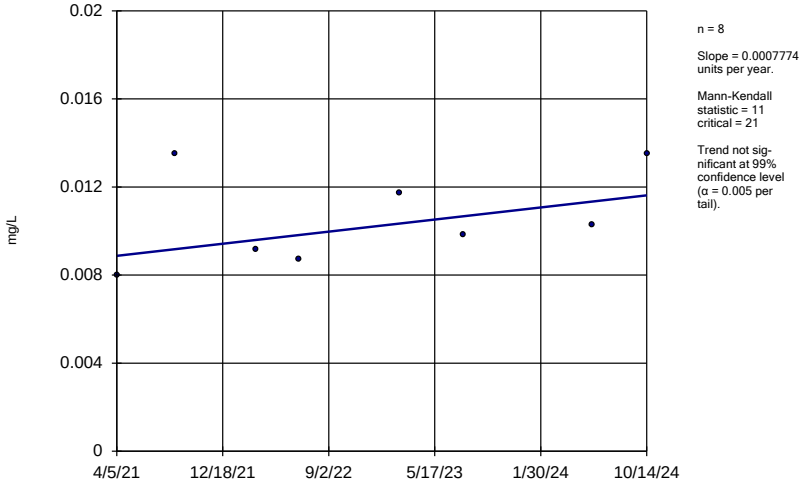


Constituent: Cobalt Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-61R



n = 8

Slope = 0.0007774 units per year.

Mann-Kendall statistic = 11
critical = 21

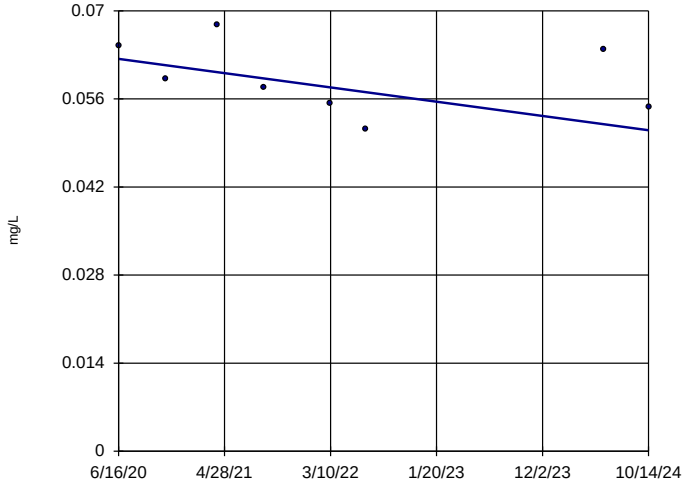
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Cobalt Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-73



n = 8

Slope = -0.002621 units per year.

Mann-Kendall statistic = -14
critical = -21

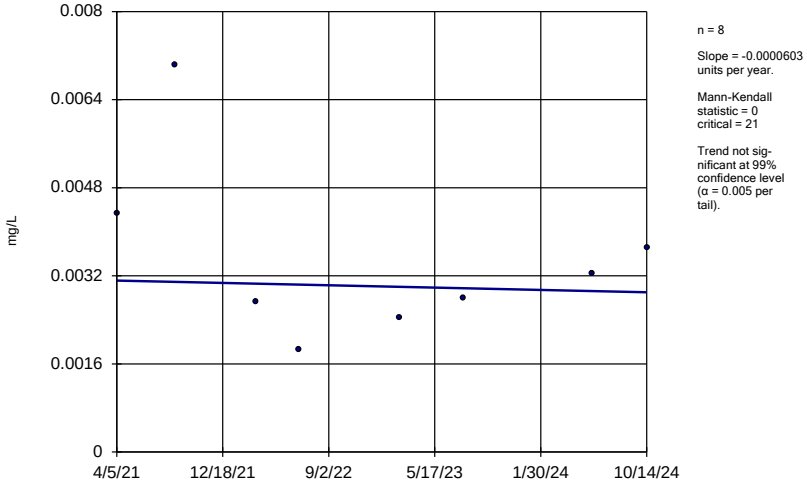
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Cobalt Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-79



n = 8

Slope = -0.0000603 units per year.

Mann-Kendall statistic = 0
critical = 21

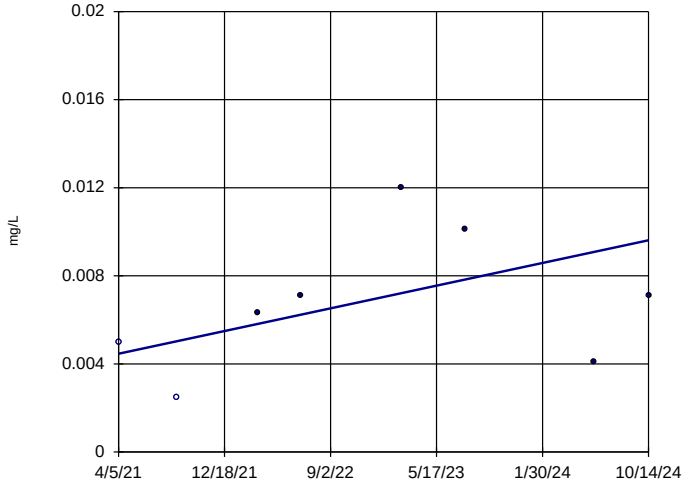
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Cobalt Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-61R



n = 8

Slope = 0.00146 units per year.

Mann-Kendall statistic = 9
critical = 21

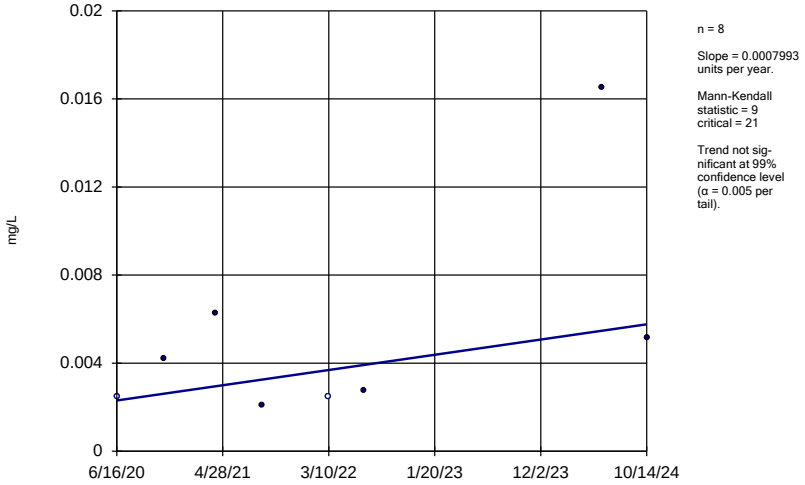
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Copper Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-73

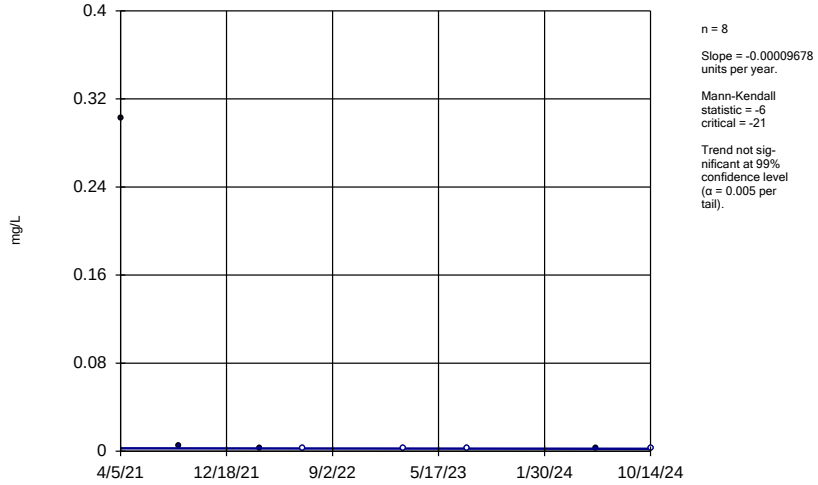


Constituent: Copper Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-79

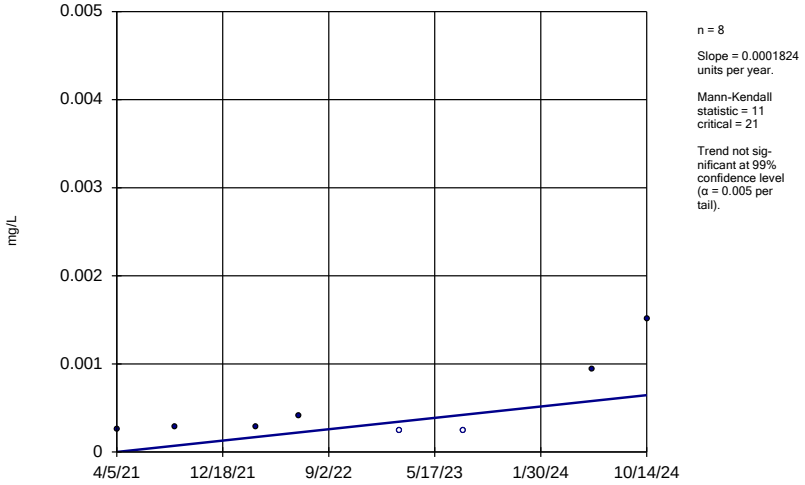


Constituent: Copper Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

93-MW-31R

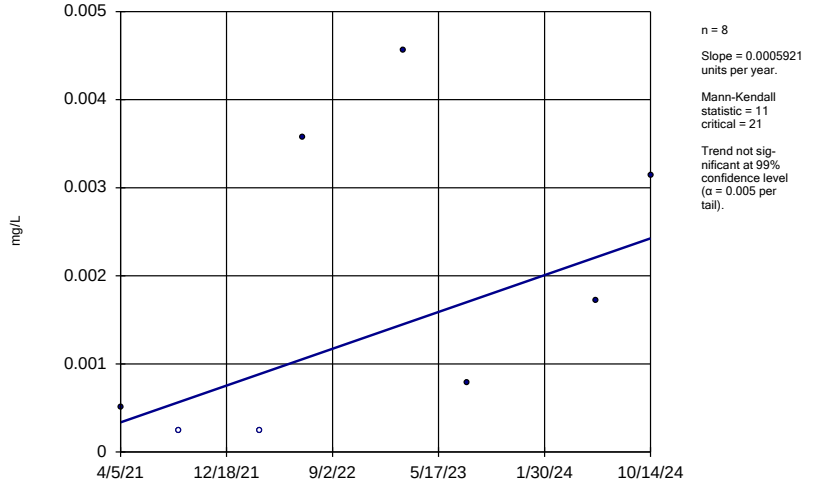


Constituent: Lead Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-61R

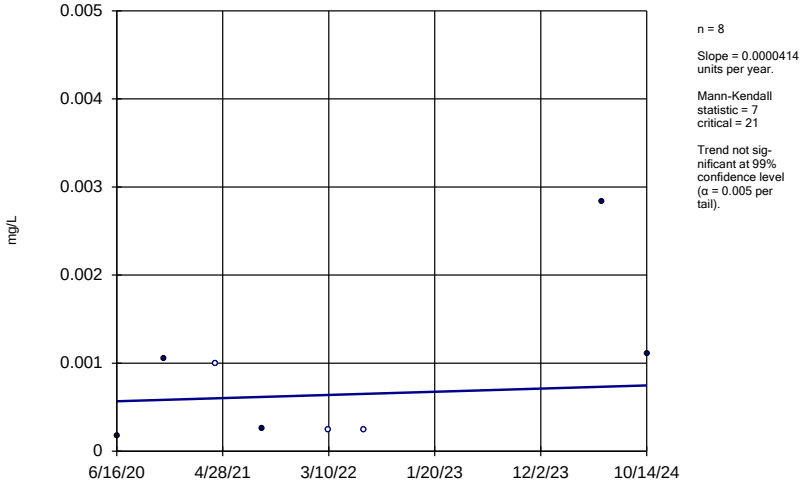


Constituent: Lead Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-73

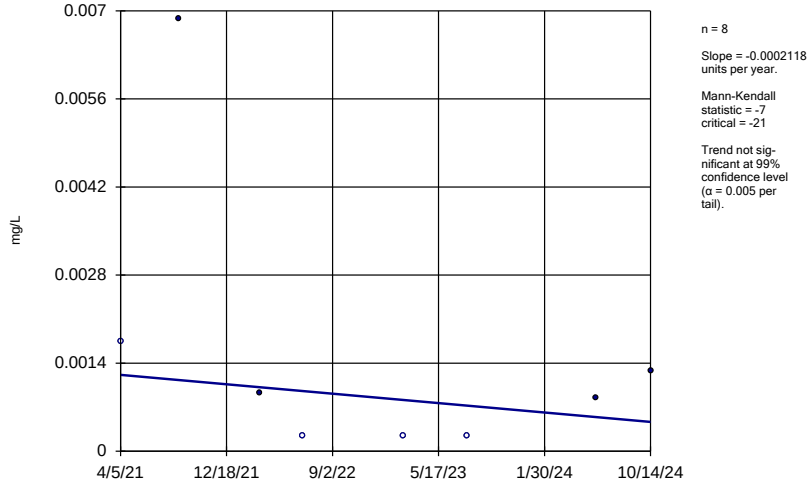


Constituent: Lead Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-79

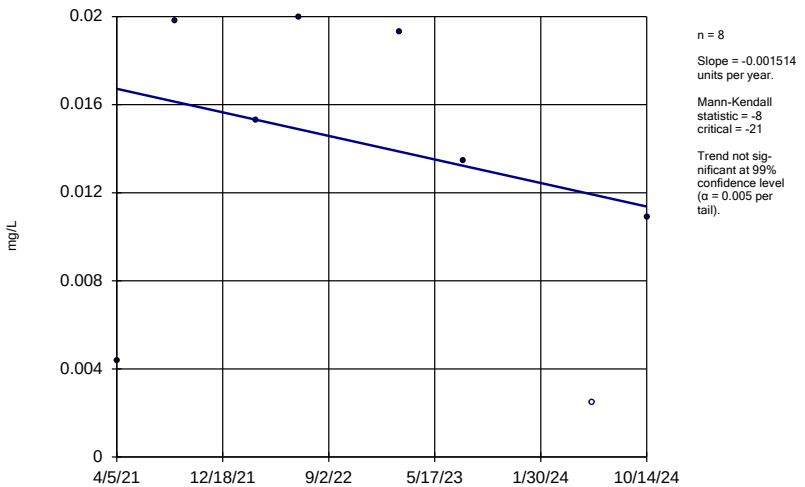


Constituent: Lead Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

93-MW-31R

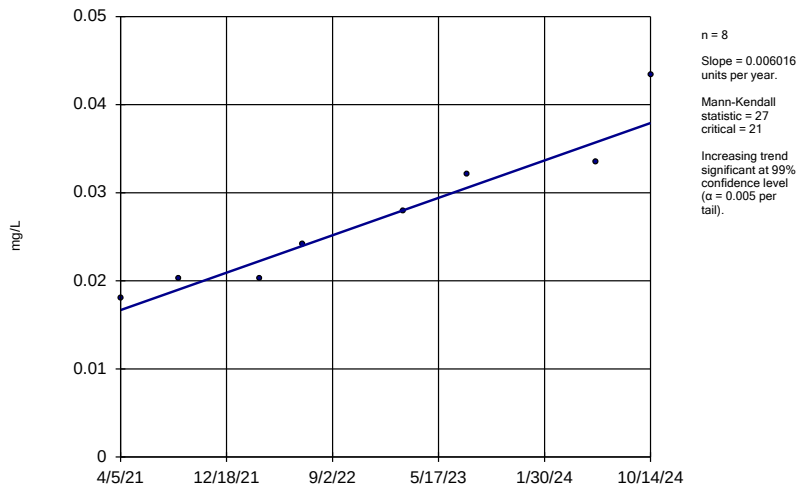


Constituent: Nickel Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-61R

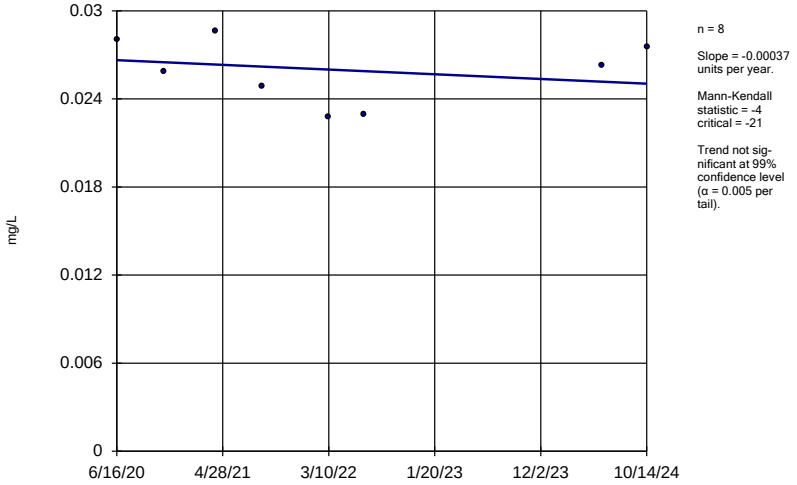


Constituent: Nickel Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-73

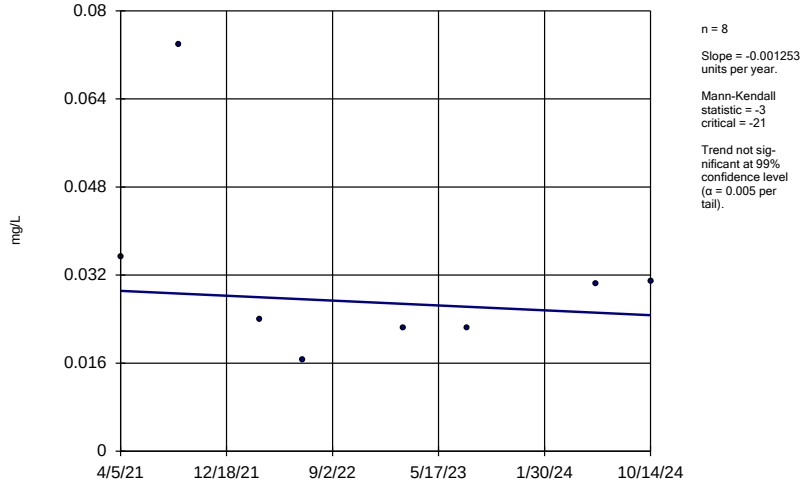


Constituent: Nickel Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-79

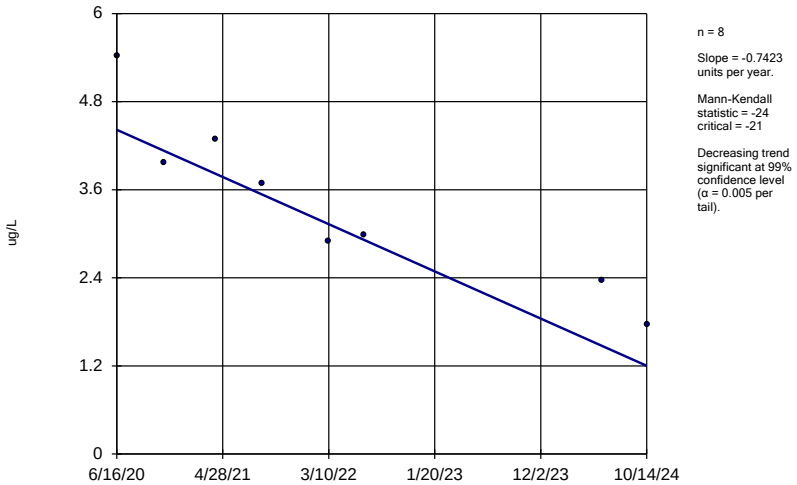


Constituent: Nickel Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-73

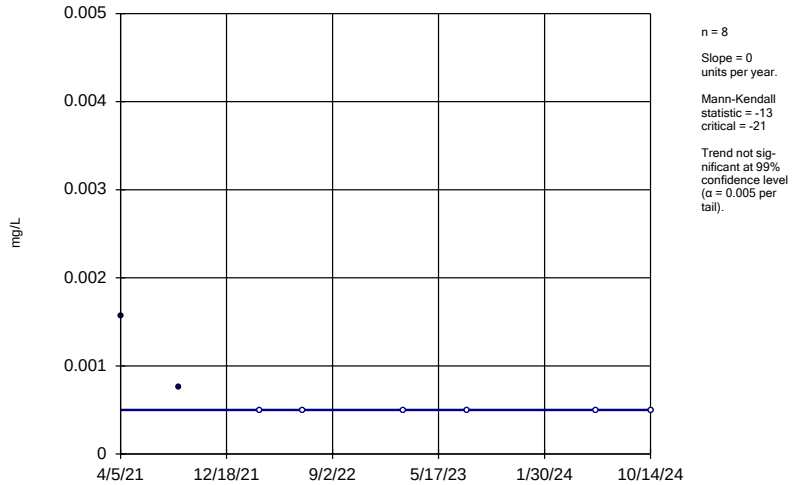


Constituent: Tetrachloroethene Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kenda
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

93-MW-31R

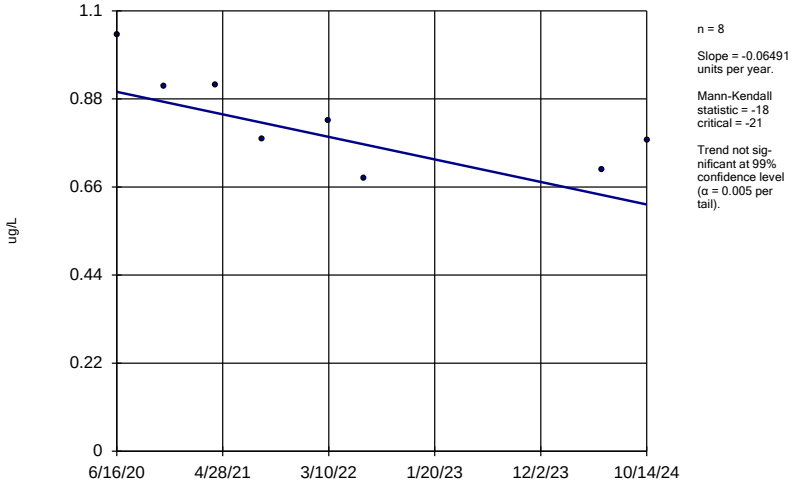


Constituent: Thallium Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-73



Constituent: trans-1,2-Dichloroethene Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann

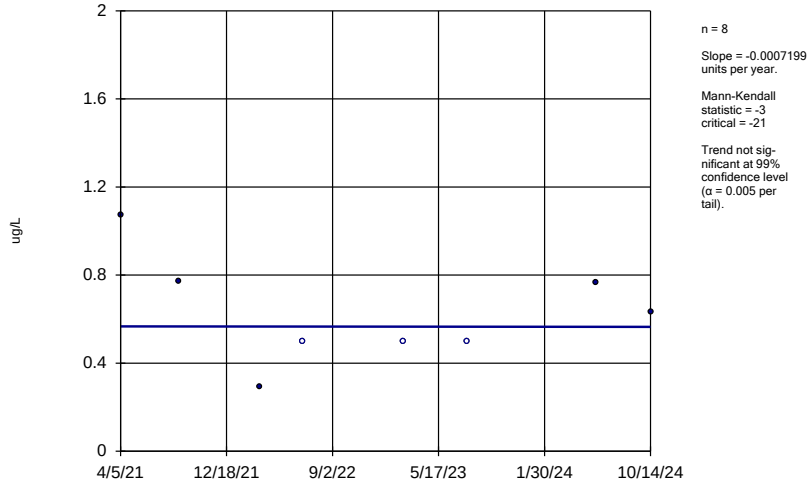
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-79



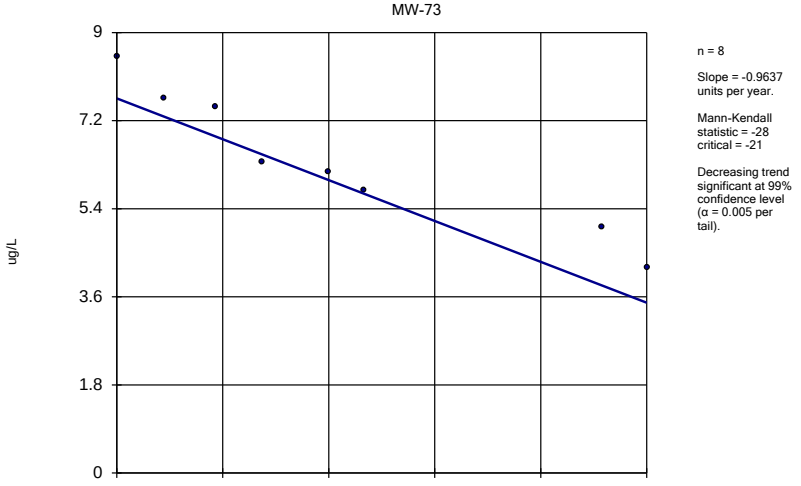
Constituent: trans-1,2-Dichloroethene Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-73



Constituent: Trichloroethene Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall

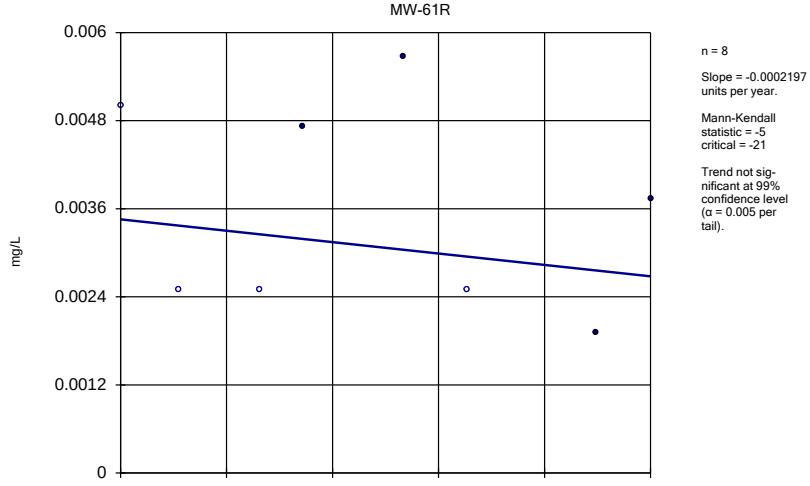
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-61R



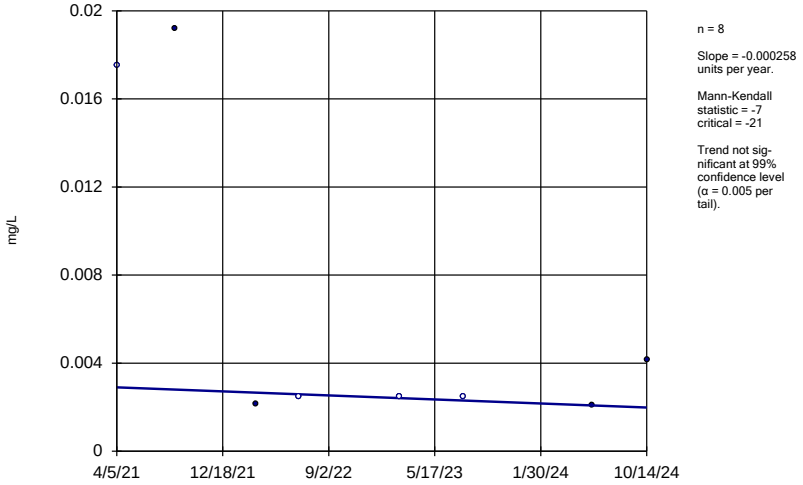
Constituent: Vanadium Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall

Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-79



n = 8

Slope = -0.000258 units per year.

Mann-Kendall statistic = -7
critical = -21

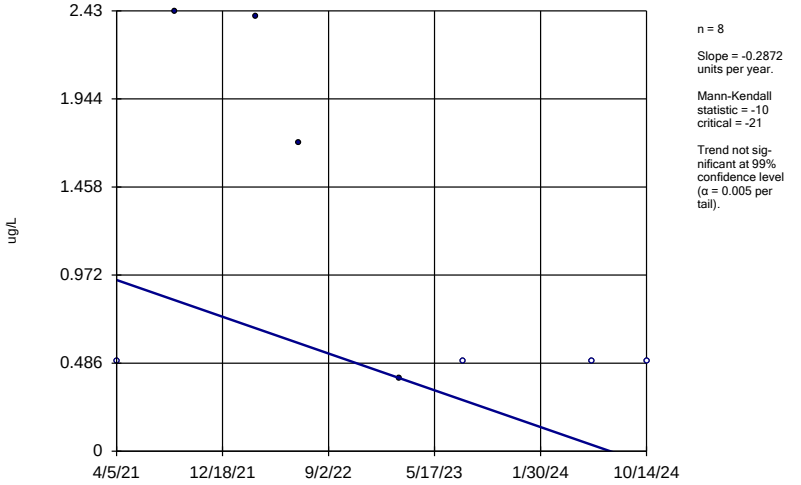
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Vanadium Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

93-MW-31R



n = 8

Slope = -0.2872 units per year.

Mann-Kendall statistic = -10
critical = -21

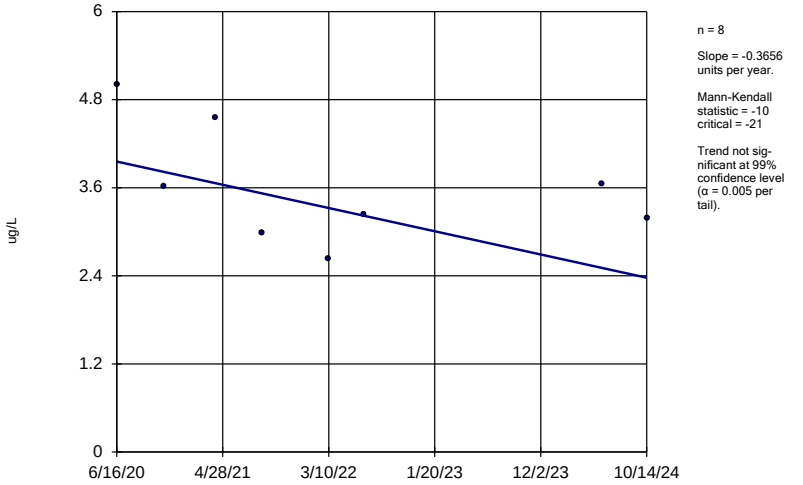
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Vinyl chloride Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-73



n = 8

Slope = -0.3656 units per year.

Mann-Kendall statistic = -10
critical = -21

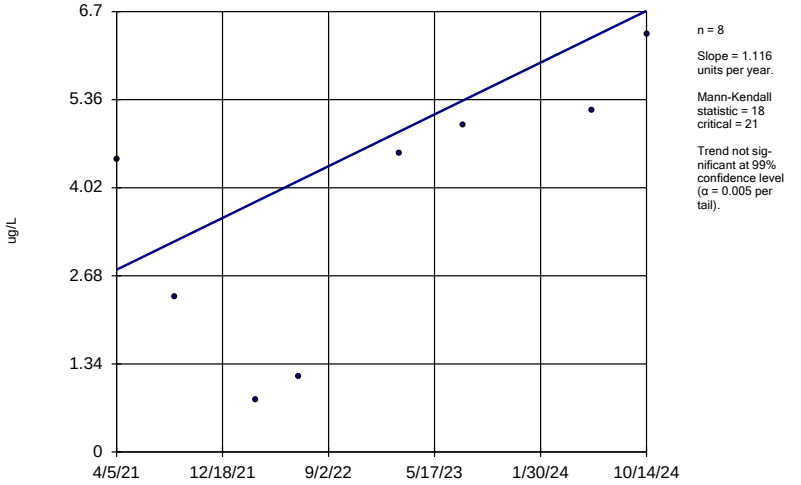
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Vinyl chloride Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-79



n = 8

Slope = 1.116 units per year.

Mann-Kendall statistic = 18
critical = 21

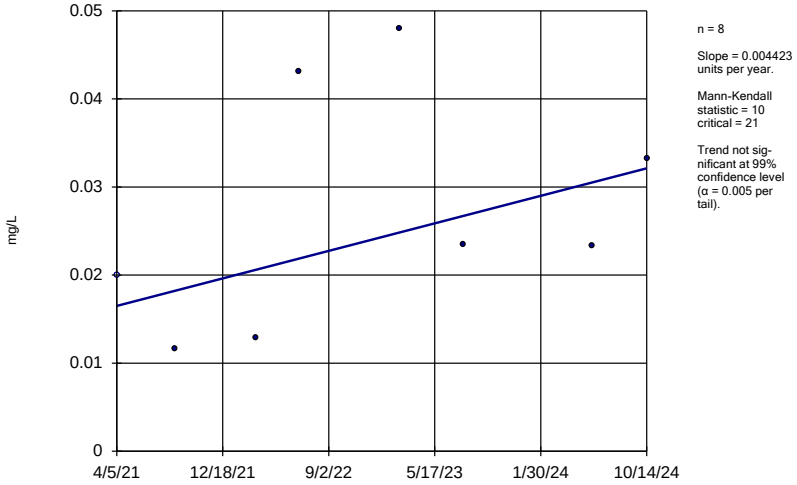
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Vinyl chloride Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-61R



n = 8

Slope = 0.004423 units per year.

Mann-Kendall statistic = 10
critical = 21

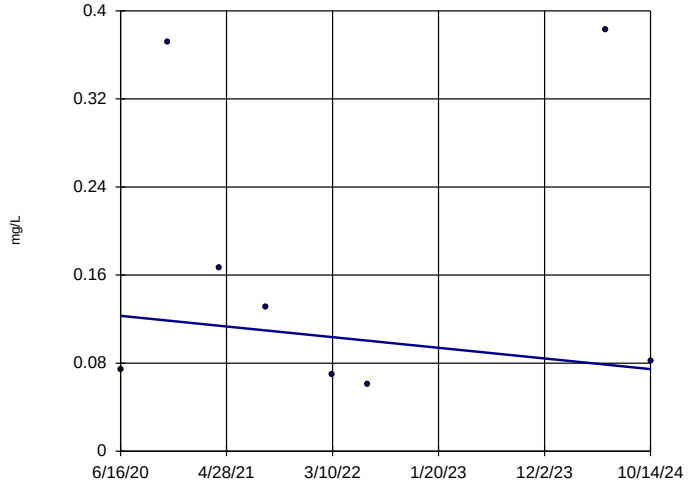
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Zinc Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-73



n = 8

Slope = -0.01116 units per year.

Mann-Kendall statistic = -4
critical = -21

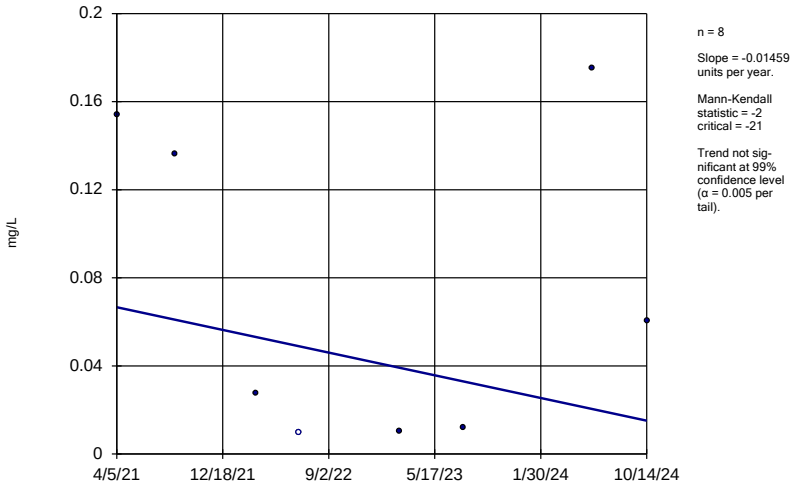
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Zinc Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Sanitas™ v.10.0.24 Software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-79



n = 8

Slope = -0.01459 units per year.

Mann-Kendall statistic = -2
critical = -21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Zinc Analysis Run 2/14/2025 10:56 AM View: 2024AWQR Source-Mann Kendall
Ottumwa-Wapello County LF Client: SCS Engineers Data: OWSWC Source Wells-2024AWQR-AM

Appendix I

Acid Mine Drainage Mann-Kendall Trending Summary (α=0.2)

Monitoring Well	Constituent Name	Calculated Statistic		
		Decreasing Trend	Stable Trend	Increasing Trend
MW-39R	Alkalinity, Total [CaCO3]		6	
	Iron			20
	Manganese		-12	
	pH		1	
	Sulfate		-2	
MW-40	Alkalinity, Total [CaCO3]		0	
	Aluminum		6	
	Iron		12	
	Manganese		4	
	pH		-9	
	Sulfate		12	
04-MW-56	Alkalinity, Total [CaCO3]			14
	Iron	-17		
	Manganese	-19		
	pH		0	
	Sulfate		-12	
MW-58	Alkalinity, Total [CaCO3]		2	
	Aluminum		-9	
	Iron		-6	
	Manganese	-17		
	pH		-2	
	Sulfate		-10	
MW-59	Alkalinity, Total [CaCO3]	-14		
	Iron		-5	
	Manganese		3	
	pH		-7	
	Sulfate			15
MW-63R	Alkalinity, Total [CaCO3]		-2	
	Aluminum		3	
	Iron		-1	
	Manganese		-5	
	pH		-4	
	Sulfate		6	
MW-64	Alkalinity, Total [CaCO3]	-14		
	Iron	-15		
	Manganese	-19		
	pH			13
	Sulfate		4	
MW-65	Alkalinity, Total [CaCO3]			26
	Aluminum		-8	
	Iron		6	
	Manganese		0	
	pH		5	
	Sulfate	-18		