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July 23, 2024

Michael W. Smith, PE
Environmental Engineer Senior
Iowa Department of Natural Resources
502 East 9th Street
Des Moines, Iowa 50319

RE: Appanoose County Sanitary Landfill
Closure Permit No. 04-SDP-01-76C

Dear Mr. Smith,

Enclosed is the statistical evaluation that was completed for groundwater data from December 2008 through May 2024 at the Appanoose County Landfill.

The statistical evaluation was prepared by Foth Infrastructure and Engineering.

The report of statistical analysis of groundwater data is being submitted on behalf of the Rathbun Area Solid Waste Commission.

Sincerely,

HALL ENGINEERING COMPANY

Bill Buss

Copy: Dane Blozovich, Director, RASWC

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July 22, 2024

Dane Blozovich
Rathbun Area Solid Waste Commission
2642 Highway J-46
Corydon, IA 50060

RE: Appanoose County Sanitary Landfill - Spring 2024 Statistical Analysis

Dear Dane Blozovich:

1. Organization

This memo addresses the statistical analysis of the groundwater monitoring data collected during the May 2024 sampling event. The statistical methods and results are summarized, with the memo organization given as follows:

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2. Background

The groundwater monitoring locations and status of the Appendix II sampling schedules are summarized in Table 1. The Appendix II analytical results are presented in Attachment 1.

Table 1
Monitoring Locations and Schedule
Dec. 2008 – May 2024 Appendix II Data

Monitoring Location	Monitoring Program	Current Schedule (1) (May 2024)	Appendix II Initiated	Baseline Appendix II Completed (4 Events) (2)	Last Full Appendix II Event Completed
North Unit					
MW-27	Assessment	Appendix II	Dec-08	Sep-09	Sep-23
MW-50R	Assessment	Appendix II	Dec-08	Sep-09	Sep-23
MW-51	Background	Appendix II	Dec-08	Sep-09	Sep-23
PZ-12	Background	Appendix II	Oct-18	-	Sep-23

(1) Assessment and background monitoring locations were sampled for the Appendix I and detected Appendix II constituents in May 2024.
(2) The baseline Appendix II monitoring events (May, Jul. & Sep. 2009) and semiannual monitoring events through Sep. 2017 consisted only of the Appendix II analytes with detections during Dec. 2008 and Sep. 2013.

Semiannual assessment and background monitoring for the Appendix I and detected Appendix II constituents was conducted in May 2024 at the downgradient and background monitoring locations, as indicated in Table 1. At MW-50R, none of the Appendix II constituents not included in the Appendix I list have been detected. At MW-27, the historically detected Appendix II constituents were beta-BHC, delta-BHC, dieldrin, endosulfan sulfate, endrin, endrin aldehyde, and sulfide. As further discussed in Section 3.4, 1,4-phenylenediamine (or p-phenylenediamine) was resampled at MW-27 and MW-50R in May 2024 since the September 2023 results were rejected during data validation.

Under the assessment monitoring program of 567 Iowa Administrative Code (IAC) 113.10(6), Appendix II monitoring results are statistically compared to background levels as given in 567 IAC 113.10(6)e and to the groundwater protection standard (GWPS) as given in 567 IAC 113.10(6)g and h. A well may return to detection monitoring when all Appendix II constituents are "shown to be at or below background values, using the statistical procedures in 567 IAC 113.10(4)g for two consecutive sampling events." Three consecutive sampling events may be utilized to make the determination to return to detection monitoring to limit the frequent fluctuation of wells moving between the detection and assessment monitoring programs. Assessment monitoring continues when Appendix II concentrations are above background values but below the GWPS also using the statistical procedures in 567 IAC 113.10(4)g. Characterization for corrective measures begins when "Appendix II constituents are detected at statistically significant levels above the GWPS."

Based on December 2008 through May 2024 results, this memo presents an evaluation of statistically significant increases (SSIs) above background and statistically significant levels (SSLs) above the GWPS under the requirements of 567 IAC 113.10(4)g and h. A summary of the results is discussed below.

3. Statistical Methodology

The statistical methods utilized for locations in assessment monitoring were consistent with the methods used in previous updates. Detailed descriptions of the statistical methods are provided in Attachment 2. The combined background data set (MW-51 and PZ-12) was utilized to evaluate SSIs over background.

3.1 Review of Single Background Detections

Single volatile organic compound (VOC) detections were identified for acetone in MW-51 and acetone and carbon disulfide in PZ-12 in October 2019 and for acetone in PZ-12 in May 2020, October 2020, and May 2023. Retesting was conducted in January 2020, July 2020, December 2020, and August 2023. The retest results did not confirm the single detections; therefore, SSIs were not declared. The retest results indicated that MW-51 and PZ-12 remained suitable for monitoring background groundwater quality.

A single VOC detection was identified for acetone in PZ-12 in September 2023. None of the remaining Appendix II VOCs, SVOCs, pesticides, and PCBs were detected above the laboratory practical quantitation limit (PQL). Since Appendix II metals were not sampled in September 2023 at PZ-12, no data set adjustments are recommended based on the acetone detection.

A single VOC detection was identified for acetone in PZ-12 in May 2024. Since acetone is considered a "never-detected" constituent and has been repeatedly detected in PZ-12, retesting is not recommended, and the May 2024 results will not be included in the background data set. A new background well is being installed and will replace PZ-12.

Since VOCs are considered "never detected" constituents, acetone and carbon disulfide were not added as prediction limit constituents. Downgradient acetone and carbon disulfide results continue to be evaluated using the double quantification rule (DQR).

The background data set adjustments currently and previously recommended and incorporated based on the review of single background detections include:

- Removal of the October 2020 arsenic concentration in PZ-12 (initiated with the Fall 2020 statistical evaluation).
- Removal of the May 2023 arsenic, barium, beryllium, cadmium, cobalt, copper, lead, nickel, thallium, and zinc concentrations in PZ-12 (initiated with the Spring 2023 statistical evaluation).
- The May 2024 results at PZ-12 will not be added to the background data set (initiated with the Spring 2024 statistical evaluation).

These data set adjustments were maintained in the current statistical evaluation. The removed data are listed as crossed-out concentrations in Attachment 1.

3.2 Total Suspended Solids and the Background Data Set

To reduce total suspended solids (TSS) in the groundwater samples, no-purge sampling using HydraSleeve™ samplers was continued at the downgradient and background monitoring wells in May 2024. A summary of the TSS results for the high-volume and no-purge sampling events is provided in Table 2.

Table 2
Total Suspended Solids Data (mg/L)

Date	Sampling Technique	MW-27 (Downgradient)	MW-50R (Downgradient)	MW-51 (Background)	PZ-12 (Background)
2014-09	High Volume	25	61	17.5	-
2015-04	High Volume	10.0	37.5	14.9	-
2015-09	High Volume	34.3	19	3.25	-
2016-04	High Volume	29.4	17.5	0.625 J	11.1
2016-09	No-Purge	41.6	13.6	2.13	27.5
2017-05	No-Purge	45.3	28	3.5	62
2017-09	No-Purge	37.1	147 (1)	5.85	-
2018-05	No-Purge	21.8	19.6	8.00	72
2018-09/10	No-Purge	60.8	7.88	16.3	10.9
2019-05	No-Purge	58	286	2.25	7.00
2019-10	No-Purge	37	44	2.13	7.50
2020-05	No-Purge	45	14 J	1.38 J	18
2020-10	No-Purge	12.3	56	3.2	15.6
2021-05	No-Purge	59.0	- (2)	2.50	19.0
2021-10	No-Purge	63.3	13.1	1 J	15.5
2022-05	No-Purge	19.5	7	3.75	40
2022-09	No-Purge	29	27	1.13	13.8
2023-05	No-Purge	31	17.3	0.875 J	7.5
2023-09	No-Purge (3)	54.5 (3)	57.3 (3)	1.38 J	39 (3)
2024-05	No-Purge	65.5	241	1.63 J	75

(1) Lower groundwater elevations due to drought conditions (and therefore, limited water in the well casing) likely contributed to the higher TSS result at MW-50R in Sep. 2017.
(2) The laboratory missed sample login and analysis for TSS at MW-50R in May 2021.
(3) Lower groundwater elevations and slower well recharge due to drought conditions (and therefore, limited water in the well casing) likely contributed to TSS concentrations at MW-27, MW-50R, and PZ-12 in Sep. 2023.

No background data set adjustments are recommended for MW-51 based on review of the TSS data from the May 2024 sampling event. The TSS concentration at MW-51 was below the 5 mg/L limit for acceptable sample quality. At PZ-12, TSS was above the limit with a concentration of 75 mg/L. As discussed in Section 3.1, the May 2024 results at PZ-12 will not be included in the background data set due to ongoing acetone detections. A new background well is being installed and will replace PZ-12.

3.3 Background Data Set Review for Prediction Limits

The background data set and PQLs were reviewed starting with the Spring 2023 statistical evaluation. This consisted of reviewing the PQLs for metals constituents used in the prediction limit evaluation to determine whether PQLs have been lowered over time, and whether some of the earlier non-detect data with elevated PQLs should be removed from the background data due to the increased uncertainty it added. Non-detect background data with a PQL of at least two times the maximum detected background concentration are recommended for removal.

The background data set adjustments previously recommended and incorporated based on the review of PQLs include:

- Removal of non-detect silver and thallium background samples with a PQL of 0.004 mg/L.

These background data set adjustments were maintained in the current statistical evaluation. The removed data are listed as crossed-out concentrations in Attachment 1.

3.4 Quality Assurance/Quality Control Summary

Data validation reports detailing any resampling, data qualifiers added because of data validation, and an overall assessment of the data will be submitted in Appendix A of the 2024 Annual Water Quality Report (AWQR).

In September 2023, 1,4-phenylenediamine (or p-phenylenediamine) was sampled at MW-27, MW-50R, MW-51, and PZ-12 as part of the 5-year resampling for the full Appendix II list. Due to low laboratory control sample and laboratory control sample duplicate recoveries, the 1,4-phenylenediamine data in MW-27, MW-50R, MW-51, and PZ-12 were validator-qualified R (i.e., rejected). Resampling was not recommended for the rejected 1,4-phenylenediamine data at MW-51 and PZ-12 since these are background monitoring wells and background monitoring for 1,4-phenylenediamine is not required for compliance with the project requirements. Resampling was conducted for 1,4-phenylenediamine at MW-27 and MW-50R in May 2024. The May 2024 1,4-phenylenediamine data in MW-27 and MW-50R was validator-qualified R (i.e., rejected) again due to low laboratory control sample and laboratory control sample duplicate recoveries. Further resampling is not recommended for the rejected 1,4-phenylenediamine data at MW-27 and MW-50R since 1,4-phenylenediamine was sampled and analyzed in September 2023 at these wells as part of the five-year resampling of the full Appendix II list, resampling was conducted in May 2024, 1,4-phenylenediamine has not been detected at these wells, and the laboratory indicated 1,4-phenylenediamine is a poor performing analyte.

In May 2024, the overall data assessment indicated that method criteria, precision, accuracy, representativeness, comparability, completeness, and suitability for intended use were acceptable.

4. Results of Analysis

4.1 Comparison to Background Levels

4.1.1 Interwell Prediction Limits

Interwell prediction limits were used to formally assess SSIs over background for analytes detected above the reporting limit in the combined background data set. These analytes were antimony, arsenic, barium, cadmium, chromium, cobalt, copper, lead, nickel, selenium, silver, sulfide, thallium, vanadium, and zinc. Prediction limits calculated utilizing sample data collected from December 2008 through May 2024 for the combined background data set are summarized in Table 3.

Table 3
Prediction Limit Summary
Dec. 2008 – May 2024 Interwell Data (1)

Chemical Name	Prediction Limit	Units	Prediction Limit Type	Retesting Plan	Prediction Limit Method
Antimony	0.00331	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Arsenic	0.00874	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Barium	2.18	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Cadmium	0.001724	mg/L	Parametric (Lognormal with Kaplan-Meier Adjustment)	1-of-2	$\exp(\hat{\mu}_{KM} + k \cdot \hat{\sigma}_{KM})$
Chromium	0.0305	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Cobalt	0.0528	mg/L	Parametric (Lognormal with Kaplan-Meier Adjustment)	1-of-2	$\exp(\hat{\mu}_{KM} + k \cdot \hat{\sigma}_{KM})$
Copper	0.136	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Lead	0.0878	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Nickel	0.05383	mg/L	Parametric (Lognormal with Kaplan-Meier Adjustment)	1-of-2	$\exp(\hat{\mu}_{KM} + k \cdot \hat{\sigma}_{KM})$
Selenium	0.0188	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Silver	0.00175	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Sulfide (2)	13.4	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Thallium	0.00242	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Vanadium	0.0686	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Zinc	0.977	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic

(1) Interwell data consists of the Appendix II parameters detected in the combined background data set (MW-51 and PZ-12). Note that background data set adjustments were incorporated in accordance with Section 3.
(2) Sulfide was included only for assessment monitoring locations.

Non-parametric prediction limits were used for antimony, arsenic, barium, chromium, copper, lead, selenium, silver, sulfide, thallium, vanadium, and zinc since either normality assumptions could not be met or there were less than 50% detects in the combined background data set. Parametric prediction limits were used for cadmium, cobalt, and nickel since the assumptions of normality were met with a lognormal transformation and the lognormal limit was accepted as representative of the background distribution.

In the Fall 2023 statistical evaluation, a non-parametric limit was used for cobalt since either normality assumptions could not be met or there were less than 50% detects in the combined background data set. In the current evaluation, a lognormal parametric prediction limit was calculated for cobalt since there were greater than 50% detects in the combined background data set, the assumptions of normality were met with a lognormal transformation, and the lognormal limit was accepted as being representative of the background distribution.

Prediction limit output is included in Attachment 3. No prediction limit exceedances were identified at MW-27 and MW-50R in May 2024.

4.1.2 Double Quantification Rule Evaluation

The DQR was used to evaluate SSIs over background for the Appendix II constituents which have not been detected above the reporting limit in the combined background data set. The DQR output is included in Attachment 4, with a summary of the May 2024 DQR detections listed in Table 4. In lieu of retesting, the SSIs were declared for the single DQR detections listed in Table 4 and evaluated for SSLs in Section 4.2.

Table 4
May 2024 Double Quantification Rule Detections

Well	Constituent(s)
Assessment Monitoring Locations	
MW-27	Benzene; cis-1,2-Dichloroethene

4.1.3 Exiting Assessment Monitoring

Table 5 presents a summary of the assessment monitoring locations and statistical comparisons required for exiting assessment monitoring. As discussed in Section 2, assessment monitoring locations may return to detection monitoring when Appendix II constituents fall below the interwell prediction limit (for constituents which are detected in the background data set) and below the laboratory reporting limit (for constituents which are not detected in the background data set) for three consecutive sampling events.

Table 5
Evaluation to Exit Assessment Monitoring

Monitoring Location	May 2023	Sep. 2023	May 2024
MW-27			
Constituents Detected in Background are Below Prediction Limits	Yes	Yes	Yes
DQR Constituents are Below Reporting Limit	No	No	No
MW-50R			
Constituents Detected in Background are Below Prediction Limits	Yes	Yes	Yes
DQR Constituents are Below Reporting Limit	Yes	No	Yes

As shown in Table 5, all Appendix II constituents were not below the interwell prediction limits and laboratory reporting limits for three consecutive sampling events at MW-27 and MW-50R. As a result, MW-27 and MW-50R will not exit assessment monitoring at this time.

4.2 Comparison to the Groundwater Protection Standard

The SSIs identified in Table 4 were evaluated for SSLs over the GWPS per 567 IAC 113.10(6)f and g. Comparisons to the GWPS were evaluated through statistical confidence intervals in assessment mode, with confidence interval output included in Attachment 5 and summarized in Table 6. As shown in Table 6, SSLs were not identified for benzene and cis-1,2-dichloroethene in MW-27.

Table 6
Assessment Monitoring SSL Summary
Dec. 2008 – May 2024 Appendix II Data

Chemical Name	Wells with SSL	Wells without SSL	Groundwater Protection Standard (1)
Assessment Monitoring Locations			
Benzene (ug/L)		MW-27	5
cis-1,2-Dichloroethene (ug/L)		MW-27	70

(1) Values are the 40 CFR Part 141 Safe Drinking Water Act MCL or the 567 IAC Chapter 137 Statewide Standard for a Protected Groundwater Source.

5. Effective Power and Site-Wide False Positive Rate

Statistical power calculations, effective power curves for the 1-of-2 prediction limit plan, and the current site-wide false positive rate (SWFPR) are discussed in detail in Attachment 6. Both the parametric and non-parametric prediction limits currently have good power ratings. The current cumulative annual SWFPR for the plan is 9.6%. The current annual SWFPR is in compliance with the Unified Guidance target 10% false positive rate.

Statistical power calculations for confidence limits compared to the GWPS under assessment monitoring are included in the confidence interval output of Attachment 5. Confidence limits are calculated to meet statistical power levels of 50% for increases in the true concentration mean of 1.5 times a fixed standard, and 80% for increases in the true concentration mean of 2.0 times a fixed standard, as discussed in the Unified Guidance Chapter 22 (USEPA, 2009).

6. Conclusions

Semiannual assessment and background monitoring for the Appendix I and detected Appendix II constituents was conducted in May 2024 at assessment monitoring wells MW-27 and MW-50R and background wells MW-51 and PZ-12. In addition, 1,4-phenylenediamine (or p-phenylene-diamine) was resampled at MW-27 and MW-50R in May 2024 since the September 2023 results were rejected during data validation.

6.1 Background

The methodology described in Attachment 2 was utilized to conduct the statistical evaluations for assessment monitoring wells MW-27 and MW-50R. The combined MW-51 and PZ-12 data (December 2008 through May 2024) was utilized as the background data set.

A single VOC detection was identified for acetone in PZ-12 in May 2024. Since acetone is considered a “never-detected” constituent and has been repeatedly detected in PZ-12, retesting is not recommended, and the May 2024 results were not included in the background data set. A new background well is being installed and will replace PZ-12.

6.2 Assessment Monitoring

No SSIs were identified in MW-50R. SSIs were identified for benzene and cis-1,2-dichloroethene in MW-27. No SSLs were identified. The Spring 2024 statistical evaluation did not identify all Appendix II constituents below the interwell prediction limit or laboratory reporting limit for three consecutive sampling events at MW-27 and MW-50R. Therefore, MW-27 and MW-50R will not exit assessment monitoring.

As further discussed in Section 3.4, the May 2024 1,4-phenylenediamine data in MW-27 and MW-50R was validator-qualified R (i.e., rejected) again due to low laboratory control sample and laboratory control sample duplicate recoveries. Further resampling is not recommended for the rejected 1,4-phenylenediamine data at MW-27 and MW-50R since 1,4-phenylenediamine was sampled and analyzed in September 2023 at these wells as part of the five-year resampling of the full Appendix II list, resampling was conducted in May 2024, 1,4-phenylenediamine has not been detected at these wells, and the laboratory indicated 1,4-phenylenediamine is a poor performing analyte.

6.3 Sampling Schedules

Semiannual assessment monitoring for the Appendix I and detected Appendix II constituents will be conducted at assessment monitoring wells MW-27 and MW-50R and background well MW-51 in Fall 2024. In accordance with Special Provision X.4.a.3, the next 5-year full Appendix II resampling is scheduled for Fall 2028.

7. References

United States Environmental Protection Agency (USEPA), 1997. *The Lognormal Distribution in Environmental Applications.* EPA/600/R97/006. Office of Solid Waste and Emergency Response, Washington, D.C.

USEPA, 2006. *On the Computation of a 95% Upper Confidence Limit of the Unknown Population Mean Based Upon Data Sets with Below Detection Limit Observations.* EPA/600/R-06/022. Office of Research and Development, Washington, D.C.

USEPA, 2009. *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance.* EPA 530-R-09-007. Office of Resource Conservation and Recovery, Program Implementation and Information Division, Washington, D.C.

Thank you for your attention to this matter, and please contact us if you have any questions or need additional information.

Sincerely,

Foth Infrastructure & Environment, LLC

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cc: Dane Blozovich, RASWC
Bill Buss, Hall Engineering

Attachment 1

Summary of Analytical Results

Attachment 1
Dec. 2008 - May 2024 Appendix II Monitoring Data

Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
1,1,1,2-Tetrachloroethane	ug/L	2008-12	< 1	< 1	< 1	
1,1,1,2-Tetrachloroethane	ug/L	2013-09	< 1	< 1		
1,1,1,2-Tetrachloroethane	ug/L	2018-05	< 1	< 1	< 1	< 1
1,1,1,2-Tetrachloroethane	ug/L	2018-09	< 1	< 1	< 1	< 1
1,1,1,2-Tetrachloroethane	ug/L	2019-05	< 1	< 1	< 1	< 1
1,1,1,2-Tetrachloroethane	ug/L	2019-10	< 1	< 1	< 1	< 1
1,1,1,2-Tetrachloroethane	ug/L	2020-05	< 1	< 1	< 1	< 1
1,1,1,2-Tetrachloroethane	ug/L	2020-10	< 1	< 1	< 5	< 1
1,1,1,2-Tetrachloroethane	ug/L	2021-05	< 1	< 1	< 1	< 1
1,1,1,2-Tetrachloroethane	ug/L	2021-10	< 1	< 1	< 1	< 1
1,1,1,2-Tetrachloroethane	ug/L	2022-05	< 1	< 1	< 1	< 1
1,1,1,2-Tetrachloroethane	ug/L	2022-09	< 1	< 1	< 1	< 1
1,1,1,2-Tetrachloroethane	ug/L	2023-05	< 1	< 1	< 1	< 1
1,1,1,2-Tetrachloroethane	ug/L	2023-09	< 1	< 1	< 1	< 1
1,1,1,2-Tetrachloroethane	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
1,1,1-Trichloroethane	ug/L	2008-12	< 1	< 1	< 1	
1,1,1-Trichloroethane	ug/L	2013-09	< 1	< 1		
1,1,1-Trichloroethane	ug/L	2018-05	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/L	2018-09	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/L	2019-05	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/L	2019-10	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/L	2020-05	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/L	2020-10	< 1	< 1	< 5	< 1
1,1,1-Trichloroethane	ug/L	2021-05	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/L	2021-10	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/L	2022-05	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/L	2022-09	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/L	2023-05	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/L	2023-09	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
1,1,2,2-Tetrachloroethane	ug/L	2008-12	< 1	< 1	< 1	
1,1,2,2-Tetrachloroethane	ug/L	2013-09	< 1	< 1		
1,1,2,2-Tetrachloroethane	ug/L	2018-05	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/L	2018-09	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/L	2019-05	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/L	2019-10	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/L	2020-05	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/L	2020-10	< 1	< 1	< 5	< 1
1,1,2,2-Tetrachloroethane	ug/L	2021-05	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/L	2021-10	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/L	2022-05	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/L	2022-09	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/L	2023-05	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/L	2023-09	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
1,1,2-Trichloroethane	ug/L	2008-12	< 1	< 1	< 1	
1,1,2-Trichloroethane	ug/L	2013-09	< 1	< 1		
1,1,2-Trichloroethane	ug/L	2018-05	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/L	2018-09	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/L	2019-05	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/L	2019-10	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/L	2020-05	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/L	2020-10	< 1	< 1	< 5	< 1
1,1,2-Trichloroethane	ug/L	2021-05	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/L	2021-10	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/L	2022-05	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/L	2022-09	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/L	2023-05	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/L	2023-09	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
1,1-Dichloroethane	ug/L	2008-12	1.2	< 1	< 1	
1,1-Dichloroethane	ug/L	2009-05	< 1	< 1	< 1	
1,1-Dichloroethane	ug/L	2009-07	1.1	< 1	< 1	
1,1-Dichloroethane	ug/L	2009-09	1.2	< 1	< 1	
1,1-Dichloroethane	ug/L	2009-12	< 1	< 1	< 1	

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
1,1-Dichloroethane	ug/L	2010-09	< 1	< 1	< 1	
1,1-Dichloroethane	ug/L	2011-03	1.0	< 1.0	< 1.0	
1,1-Dichloroethane	ug/L	2011-09	< 1.0	< 1.0	< 1.0	
1,1-Dichloroethane	ug/L	2012-03	< 1	< 1	< 1	
1,1-Dichloroethane	ug/L	2012-09	< 1	< 1	< 1	
1,1-Dichloroethane	ug/L	2013-05	< 1	< 1		
1,1-Dichloroethane	ug/L	2013-09	< 1	< 1		
1,1-Dichloroethane	ug/L	2014-04	< 1.00	< 1.00		
1,1-Dichloroethane	ug/L	2014-09	0.384 J	< 1		
1,1-Dichloroethane	ug/L	2015-04	0.263 J			
1,1-Dichloroethane	ug/L	2015-09	0.475 J			
1,1-Dichloroethane	ug/L	2016-04	0.363 J			
1,1-Dichloroethane	ug/L	2016-09	0.359 J			
1,1-Dichloroethane	ug/L	2017-05	0.316 J			
1,1-Dichloroethane	ug/L	2017-09	0.503 J			
1,1-Dichloroethane	ug/L	2018-05	0.476 J	< 1	< 1	< 1
1,1-Dichloroethane	ug/L	2018-09	< 1	< 1	< 1	< 1
1,1-Dichloroethane	ug/L	2019-05	< 1	< 1	< 1	< 1
1,1-Dichloroethane	ug/L	2019-10	0.371 J	< 1	< 1	< 1
1,1-Dichloroethane	ug/L	2020-05	0.303 J	< 1	< 1	< 1
1,1-Dichloroethane	ug/L	2020-10	0.399 J	< 1	< 5	< 1
1,1-Dichloroethane	ug/L	2021-05	0.242 J	< 1	< 1	< 1
1,1-Dichloroethane	ug/L	2021-10	< 1	< 1	< 1	< 1
1,1-Dichloroethane	ug/L	2022-05	< 1	< 1	< 1	< 1
1,1-Dichloroethane	ug/L	2022-09	< 1	< 1	< 1	< 1
1,1-Dichloroethane	ug/L	2023-05	0.256 J	< 1	< 1	< 1
1,1-Dichloroethane	ug/L	2023-09	< 1	< 1	< 1	< 1
1,1-Dichloroethane	ug/L	2024-05	0.241 J	< 1	< 1	~~< 1~~
1,1-Dichloroethene	ug/L	2008-12	< 1	< 1	< 1	
1,1-Dichloroethene	ug/L	2013-09	< 1	< 1		
1,1-Dichloroethene	ug/L	2018-05	< 2	< 2	< 2	< 2
1,1-Dichloroethene	ug/L	2018-09	< 2	< 2	< 2	< 2
1,1-Dichloroethene	ug/L	2019-05	< 2	< 2	< 2	< 2
1,1-Dichloroethene	ug/L	2019-10	< 2	< 2	< 2	< 2
1,1-Dichloroethene	ug/L	2020-05	< 2	< 2	< 2	< 2
1,1-Dichloroethene	ug/L	2020-10	< 2	< 2	< 10	< 2
1,1-Dichloroethene	ug/L	2021-05	< 2	< 2	< 2	< 2
1,1-Dichloroethene	ug/L	2021-10	< 2	< 2	< 2	< 2
1,1-Dichloroethene	ug/L	2022-05	< 2	< 2	< 2	< 2
1,1-Dichloroethene	ug/L	2022-09	< 2	< 2	< 2	< 2
1,1-Dichloroethene	ug/L	2023-05	< 2	< 2	< 2	< 2
1,1-Dichloroethene	ug/L	2023-09	< 2	< 2	< 2	< 2
1,1-Dichloroethene	ug/L	2024-05	< 2	< 2	< 2	~~< 2~~
1,1-Dichloropropene	ug/L	2008-12	< 1	< 1	< 1	
1,1-Dichloropropene	ug/L	2013-09	< 1	< 1		
1,1-Dichloropropene	ug/L	2018-09	< 1	< 1	< 1	< 1
1,1-Dichloropropene	ug/L	2023-09	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/L	2008-12	< 1	< 1	< 1	
1,2,3-Trichloropropane	ug/L	2013-09	< 1	< 1		
1,2,3-Trichloropropane	ug/L	2018-05	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/L	2018-09	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/L	2019-05	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/L	2019-10	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/L	2020-05	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/L	2020-10	< 1	< 1	< 5	< 1
1,2,3-Trichloropropane	ug/L	2021-05	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/L	2021-10	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/L	2022-05	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/L	2022-09	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/L	2023-05	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/L	2023-09	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
1,2,4,5-Tetrachlorobenzene	ug/L	2008-12	< 8	< 8	< 8	
1,2,4,5-Tetrachlorobenzene	ug/L	2013-09	< 8	< 8		
1,2,4,5-Tetrachlorobenzene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
1,2,4,5-Tetrachlorobenzene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
1,2,4-Trichlorobenzene	ug/L	2008-12	< 1	< 1	< 1	
1,2,4-Trichlorobenzene	ug/L	2013-09	< 1	< 1		
1,2,4-Trichlorobenzene	ug/L	2018-09	< 5	< 5	< 5	< 5
1,2,4-Trichlorobenzene	ug/L	2023-09	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/L	2008-12	< 1	< 1	< 1	
1,2-Dibromo-3-chloropropane	ug/L	2013-09	< 1	< 1		
1,2-Dibromo-3-chloropropane	ug/L	2018-05	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/L	2018-09	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/L	2019-05	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/L	2019-10	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/L	2020-05	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/L	2020-10	< 5	< 5	< 25	< 5
1,2-Dibromo-3-chloropropane	ug/L	2021-05	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/L	2021-10	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/L	2022-05	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/L	2022-09	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/L	2023-05	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/L	2023-09	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/L	2024-05	< 5	< 5	< 5	~~< 5~~
1,2-Dibromoethane	ug/L	2008-12	< 1	< 1	< 1	
1,2-Dibromoethane	ug/L	2013-09	< 1	< 1		
1,2-Dibromoethane	ug/L	2018-05	< 1	< 1	< 1	< 1
1,2-Dibromoethane	ug/L	2018-09	< 1	< 1	< 1	< 1
1,2-Dibromoethane	ug/L	2019-05	< 1	< 1	< 1	< 1
1,2-Dibromoethane	ug/L	2019-10	< 1	< 1	< 1	< 1
1,2-Dibromoethane	ug/L	2020-05	< 1	< 1	< 1	< 1
1,2-Dibromoethane	ug/L	2020-10	< 1	< 1	< 5	< 1
1,2-Dibromoethane	ug/L	2021-05	< 1	< 1	< 1	< 1
1,2-Dibromoethane	ug/L	2021-10	< 1	< 1	< 1	< 1
1,2-Dibromoethane	ug/L	2022-05	< 1	< 1	< 1	< 1
1,2-Dibromoethane	ug/L	2022-09	< 1	< 1	< 1	< 1
1,2-Dibromoethane	ug/L	2023-05	< 1	< 1	< 1	< 1
1,2-Dibromoethane	ug/L	2023-09	< 1	< 1	< 1	< 1
1,2-Dibromoethane	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
1,2-Dichlorobenzene	ug/L	2008-12	< 1	< 1	< 1	
1,2-Dichlorobenzene	ug/L	2013-09	< 1	< 1		
1,2-Dichlorobenzene	ug/L	2018-05	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/L	2018-09	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/L	2019-05	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/L	2019-10	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/L	2020-05	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/L	2020-10	< 1	< 1	< 5	< 1
1,2-Dichlorobenzene	ug/L	2021-05	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/L	2021-10	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/L	2022-05	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/L	2022-09	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/L	2023-05	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/L	2023-09	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
1,2-Dichloroethane	ug/L	2008-12	< 1	< 1	< 1	
1,2-Dichloroethane	ug/L	2013-09	< 1	< 1		
1,2-Dichloroethane	ug/L	2018-05	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/L	2018-09	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/L	2019-05	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/L	2019-10	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/L	2020-05	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/L	2020-10	< 1	< 1	< 5	< 1
1,2-Dichloroethane	ug/L	2021-05	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/L	2021-10	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/L	2022-05	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/L	2022-09	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/L	2023-05	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/L	2023-09	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
1,2-Dichloropropane	ug/L	2008-12	< 1	< 1	< 1	
1,2-Dichloropropane	ug/L	2013-09	< 1	< 1		
1,2-Dichloropropane	ug/L	2018-05	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/L	2018-09	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/L	2019-05	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/L	2019-10	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/L	2020-05	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/L	2020-10	< 1	< 1	< 5	< 1
1,2-Dichloropropane	ug/L	2021-05	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/L	2021-10	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/L	2022-05	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/L	2022-09	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/L	2023-05	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/L	2023-09	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
1,3,5-Trinitrobenzene	ug/L	2008-12	< 8	< 8	< 8	
1,3,5-Trinitrobenzene	ug/L	2013-09	< 8	< 8		
1,3,5-Trinitrobenzene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
1,3,5-Trinitrobenzene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
1,3-Dichlorobenzene	ug/L	2008-12	< 1	< 1	< 1	
1,3-Dichlorobenzene	ug/L	2013-09	< 1	< 1		
1,3-Dichlorobenzene	ug/L	2018-09	< 1	< 1	< 1	< 1
1,3-Dichlorobenzene	ug/L	2023-09	< 1	< 1	< 1	< 1
1,3-Dichloropropane	ug/L	2008-12	< 1	< 1	< 1	
1,3-Dichloropropane	ug/L	2013-09	< 1	< 1		
1,3-Dichloropropane	ug/L	2018-09	< 1	< 1	< 1	< 1
1,3-Dichloropropane	ug/L	2023-09	< 1	< 1	< 1	< 1
1,3-Dinitrobenzene	ug/L	2013-09	< 8	< 8		
1,3-Dinitrobenzene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
1,3-Dinitrobenzene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
1,4-Dichlorobenzene	ug/L	2008-12	< 1	< 1	< 1	
1,4-Dichlorobenzene	ug/L	2013-09	< 1	< 1		
1,4-Dichlorobenzene	ug/L	2018-05	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/L	2018-09	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/L	2019-05	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/L	2019-10	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/L	2020-05	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/L	2020-10	< 1	< 1	< 5	< 1
1,4-Dichlorobenzene	ug/L	2021-05	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/L	2021-10	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/L	2022-05	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/L	2022-09	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/L	2023-05	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/L	2023-09	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
1,4-Naphthoquinone	ug/L	2008-12	< 8	< 8	< 8	
1,4-Naphthoquinone	ug/L	2013-09	< 8	< 8		
1,4-Naphthoquinone	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
1,4-Naphthoquinone	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
1-Naphthylamine	ug/L	2008-12	< 8	< 8	< 8	
1-Naphthylamine	ug/L	2013-09	< 8	< 8		
1-Naphthylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
1-Naphthylamine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2,2-Dichloropropane	ug/L	2008-12	< 1	< 1	< 1	
2,2-Dichloropropane	ug/L	2013-09	< 1	< 1		
2,2-Dichloropropane	ug/L	2018-09	< 4	< 4	< 4	< 4
2,2-Dichloropropane	ug/L	2023-09	< 4	< 4	< 4	< 4
2,2'-oxybis(1-Chloropropane)	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2,2'-oxybis(1-Chloropropane)	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2,3,4,6-Tetrachlorophenol	ug/L	2008-12	< 8	< 8	< 8	
2,3,4,6-Tetrachlorophenol	ug/L	2013-09	< 8	< 8		
2,3,4,6-Tetrachlorophenol	ug/L	2018-09	< 10.5	< 10.1	0.623 J	< 11
2,3,4,6-Tetrachlorophenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2,4,5-T	ug/L	2008-12	< 0.5	< 0.5	< 0.5	
2,4,5-T	ug/L	2013-12	< 0.5	< 0.5		

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
2,4,5-T	ug/L	2018-09	< 1.09	< 1.05	< 1.07	< 1.18
2,4,5-T	ug/L	2023-09	< 1.08	< 1.15	< 1.07	
2,4,5-TP (Silvex)	ug/L	2008-12	< 0.5	< 0.5	< 0.5	
2,4,5-TP (Silvex)	ug/L	2013-12	< 0.5	< 0.5		
2,4,5-TP (Silvex)	ug/L	2018-09	< 1.09	< 1.05	< 1.07	< 1.18
2,4,5-TP (Silvex)	ug/L	2023-09	< 1.08	< 1.15	< 1.07	
2,4,5-Trichlorophenol	ug/L	2008-12	< 8	< 8	< 8	
2,4,5-Trichlorophenol	ug/L	2013-09	< 8	< 8		
2,4,5-Trichlorophenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2,4,5-Trichlorophenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2,4,6-Trichlorophenol	ug/L	2008-12	< 8	< 8	< 8	
2,4,6-Trichlorophenol	ug/L	2013-09	< 8	< 8		
2,4,6-Trichlorophenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2,4,6-Trichlorophenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2,4-D	ug/L	2008-12	< 2	< 2	< 2	
2,4-D	ug/L	2013-12	< 2	< 2		
2,4-D	ug/L	2018-09	0.834 J	< 1.05	< 1.07	< 1.18
2,4-D	ug/L	2023-09	< 1.08	< 1.15	< 1.07	
2,4-Dichlorophenol	ug/L	2008-12	< 8	< 8	< 8	
2,4-Dichlorophenol	ug/L	2013-09	< 8	< 8		
2,4-Dichlorophenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2,4-Dichlorophenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2,4-Dimethylphenol	ug/L	2008-12	< 8	< 8	< 8	
2,4-Dimethylphenol	ug/L	2013-09	< 8	< 8		
2,4-Dimethylphenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2,4-Dimethylphenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2,4-Dinitrophenol	ug/L	2008-12	< 8	< 8	< 8	
2,4-Dinitrophenol	ug/L	2013-09	< 8	< 8		
2,4-Dinitrophenol	ug/L	2018-09	< 21.1	< 20.2	< 20.8	< 22
2,4-Dinitrophenol	ug/L	2023-09	< 19.2	< 20	< 20	< 21.7
2,4-Dinitrotoluene	ug/L	2008-12	< 8	< 8	< 8	
2,4-Dinitrotoluene	ug/L	2013-09	< 8	< 8		
2,4-Dinitrotoluene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2,4-Dinitrotoluene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2,6-Dichlorophenol	ug/L	2008-12	< 8	< 8	< 8	
2,6-Dichlorophenol	ug/L	2013-09	< 8	< 8		
2,6-Dichlorophenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2,6-Dichlorophenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2,6-Dinitrotoluene	ug/L	2008-12	< 8	< 8	< 8	
2,6-Dinitrotoluene	ug/L	2013-09	< 8	< 8		
2,6-Dinitrotoluene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2,6-Dinitrotoluene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2-Acetylaminofluorene	ug/L	2008-12	< 8	< 8	< 8	
2-Acetylaminofluorene	ug/L	2013-09	< 8	< 8		
2-Acetylaminofluorene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2-Acetylaminofluorene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2-Butanone	ug/L	2008-12	< 5	< 5	< 5	
2-Butanone	ug/L	2013-09	< 5	< 5		
2-Butanone	ug/L	2018-05	< 10	< 10	< 10	< 10
2-Butanone	ug/L	2018-09	< 10	< 10	< 10	< 10
2-Butanone	ug/L	2019-05	< 10	< 10	< 10	< 10
2-Butanone	ug/L	2019-10	< 10	< 10	< 10	< 10
2-Butanone	ug/L	2020-05	< 10	< 10	< 10	< 10
2-Butanone	ug/L	2020-10	< 10	< 10	< 50	< 10
2-Butanone	ug/L	2021-05	< 10	< 10	< 10	< 10
2-Butanone	ug/L	2021-10	< 10	< 10	< 10	< 10
2-Butanone	ug/L	2022-05	< 10	< 10	< 10	< 10
2-Butanone	ug/L	2022-09	< 10	< 10	< 10	< 10
2-Butanone	ug/L	2023-05	< 10	< 10	< 10	< 10
2-Butanone	ug/L	2023-09	< 10	< 10	< 10	< 10
2-Butanone	ug/L	2024-05	< 10	< 10	< 10	~~< 10~~
2-Chloronaphthalene	ug/L	2008-12	< 8	< 8	< 8	
2-Chloronaphthalene	ug/L	2013-09	< 8	< 8		
2-Chloronaphthalene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2-Chloronaphthalene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
2-Chlorophenol	ug/L	2008-12	< 8	< 8	< 8	
2-Chlorophenol	ug/L	2013-09	< 8	< 8		
2-Chlorophenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2-Chlorophenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2-Hexanone	ug/L	2008-12	< 5	< 5	< 5	
2-Hexanone	ug/L	2013-09	< 5	< 5		
2-Hexanone	ug/L	2018-05	< 10	< 10	< 10	< 10
2-Hexanone	ug/L	2018-09	< 10	< 10	< 10	< 10
2-Hexanone	ug/L	2019-05	< 10	< 10	< 10	< 10
2-Hexanone	ug/L	2019-10	< 10	< 10	< 10	< 10
2-Hexanone	ug/L	2020-05	< 10	< 10	< 10	< 10
2-Hexanone	ug/L	2020-10	< 10	< 10	< 50	< 10
2-Hexanone	ug/L	2021-05	< 10	< 10	< 10	< 10
2-Hexanone	ug/L	2021-10	< 10	< 10	< 10	< 10
2-Hexanone	ug/L	2022-05	< 10	< 10	< 10	< 10
2-Hexanone	ug/L	2022-09	< 10	< 10	< 10	< 10
2-Hexanone	ug/L	2023-05	< 10	< 10	< 10	< 10
2-Hexanone	ug/L	2023-09	< 10	< 10	< 10	< 10
2-Hexanone	ug/L	2024-05	< 10	< 10	< 10	~~< 10~~
2-Methylnaphthalene	ug/L	2008-12	< 8	< 8	< 8	
2-Methylnaphthalene	ug/L	2013-09	< 8	< 8		
2-Methylnaphthalene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2-Methylnaphthalene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2-Methylphenol	ug/L	2008-12	< 8	< 8	< 8	
2-Methylphenol	ug/L	2013-09	< 8	< 8		
2-Methylphenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2-Methylphenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2-Naphthylamine	ug/L	2008-12	< 8	< 8	< 8	
2-Naphthylamine	ug/L	2013-09	< 8	< 8		
2-Naphthylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2-Naphthylamine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2-Nitroaniline	ug/L	2008-12	< 8	< 8	< 8	
2-Nitroaniline	ug/L	2013-09	< 8	< 8		
2-Nitroaniline	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2-Nitroaniline	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2-Nitrophenol	ug/L	2008-12	< 8	< 8	< 8	
2-Nitrophenol	ug/L	2013-09	< 8	< 8		
2-Nitrophenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2-Nitrophenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
3,3-Dichlorobenzidine	ug/L	2008-12	< 8	< 8	< 8	
3,3-Dichlorobenzidine	ug/L	2013-09	< 8	< 8		
3,3-Dichlorobenzidine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
3,3-Dichlorobenzidine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
3,3-Dimethylbenzidine	ug/L	2008-12	< 8	< 8	< 8	
3,3-Dimethylbenzidine	ug/L	2013-09	< 8	< 8		
3,3-Dimethylbenzidine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
3,3-Dimethylbenzidine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
3-Methylcholanthrene	ug/L	2008-12	< 8	< 8	< 8	
3-Methylcholanthrene	ug/L	2013-09	< 8	< 8		
3-Methylcholanthrene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
3-Methylcholanthrene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
3-Nitroaniline	ug/L	2008-12	< 8	< 8	< 8	
3-Nitroaniline	ug/L	2013-09	< 8	< 8		
3-Nitroaniline	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
3-Nitroaniline	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
4,4'-DDD	ug/L	2008-12	< 0.05	< 0.05		
4,4'-DDD	ug/L	2013-09	< 0.05	< 0.05		
4,4'-DDD	ug/L	2018-09	< 0.0337	0.00795 J	< 0.0337	< 0.036
4,4'-DDD	ug/L	2019-02	< 0.0352		< 0.0352	
4,4'-DDD	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
4,4'-DDE	ug/L	2008-12	< 0.05	< 0.05		
4,4'-DDE	ug/L	2013-09	< 0.05	< 0.05		
4,4'-DDE	ug/L	2018-09	< 0.0337	< 0.034	0.00313 J	< 0.036
4,4'-DDE	ug/L	2019-02	0.0041 J		< 0.0352	
4,4'-DDE	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
4,4'-DDT	ug/L	2008-12	< 0.05	< 0.05		
4,4'-DDT	ug/L	2013-09	< 0.05	< 0.05		
4,4'-DDT	ug/L	2018-09	0.0288 J	< 0.034	< 0.0337	< 0.036
4,4'-DDT	ug/L	2019-02	< 0.0352		< 0.0352	
4,4'-DDT	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
4,6-Dinitro-2-methylphenol	ug/L	2008-12	< 8	< 8	< 8	
4,6-Dinitro-2-methylphenol	ug/L	2013-09	< 8	< 8		
4,6-Dinitro-2-methylphenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
4,6-Dinitro-2-methylphenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
4-Aminobiphenyl	ug/L	2008-12	< 8	< 8	< 8	
4-Aminobiphenyl	ug/L	2013-09	< 8	< 8		
4-Aminobiphenyl	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
4-Aminobiphenyl	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
4-Bromophenyl Phenyl Ether	ug/L	2008-12	< 8	< 8	< 8	
4-Bromophenyl Phenyl Ether	ug/L	2013-09	< 8	< 8		
4-Bromophenyl Phenyl Ether	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
4-Bromophenyl Phenyl Ether	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
4-Chloro-3-methylphenol	ug/L	2008-12	< 8	< 8	< 8	
4-Chloro-3-methylphenol	ug/L	2013-09	< 8	< 8		
4-Chloro-3-methylphenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
4-Chloro-3-methylphenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
4-Chloroaniline	ug/L	2008-12	< 8	< 8	< 8	
4-Chloroaniline	ug/L	2013-09	< 8	< 8		
4-Chloroaniline	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
4-Chloroaniline	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
4-Chlorophenyl Phenyl Ether	ug/L	2008-12	< 8	< 8	< 8	
4-Chlorophenyl Phenyl Ether	ug/L	2013-09	< 8	< 8		
4-Chlorophenyl Phenyl Ether	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
4-Chlorophenyl Phenyl Ether	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
4-Methyl-2-pentanone	ug/L	2008-12	< 5	< 5	< 5	
4-Methyl-2-pentanone	ug/L	2013-09	< 5	< 5		
4-Methyl-2-pentanone	ug/L	2018-05	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	ug/L	2018-09	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	ug/L	2019-05	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	ug/L	2019-10	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	ug/L	2020-05	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	ug/L	2020-10	< 10	< 10	< 50	< 10
4-Methyl-2-pentanone	ug/L	2021-05	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	ug/L	2021-10	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	ug/L	2022-05	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	ug/L	2022-09	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	ug/L	2023-05	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	ug/L	2023-09	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	ug/L	2024-05	< 10	< 10	< 10	~~< 10~~
4-Nitroaniline	ug/L	2008-12	< 8	< 8	< 8	
4-Nitroaniline	ug/L	2013-09	< 8	< 8		
4-Nitroaniline	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
4-Nitroaniline	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
4-Nitrophenol	ug/L	2008-12	< 8	< 8	< 8	
4-Nitrophenol	ug/L	2013-09	< 8	< 8		
4-Nitrophenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
4-Nitrophenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
5-Nitro-o-toluidine	ug/L	2008-12	< 8	< 8	< 8	
5-Nitro-o-toluidine	ug/L	2013-09	< 8	< 8		
5-Nitro-o-toluidine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
5-Nitro-o-toluidine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
7,12-Dimethylbenz(a)anthracene	ug/L	2008-12	< 8	< 8	< 8	
7,12-Dimethylbenz(a)anthracene	ug/L	2013-09	< 8	< 8		
7,12-Dimethylbenz(a)anthracene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
7,12-Dimethylbenz(a)anthracene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Acenaphthene	ug/L	2008-12	< 8	< 8	< 8	
Acenaphthene	ug/L	2013-09	< 8	< 8		
Acenaphthene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Acenaphthene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Acenaphthylene	ug/L	2008-12	< 8	< 8	< 8	

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Acenaphthylene	ug/L	2013-09	< 8	< 8		
Acenaphthylene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Acenaphthylene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Acetone	ug/L	2008-12	< 10	< 10	< 10	
Acetone	ug/L	2013-09	< 10	< 10		
Acetone	ug/L	2018-05	10.4	9.94 J	11.1	36
Acetone	ug/L	2018-08	< 10		< 10	< 10
Acetone	ug/L	2018-09	< 10	< 10	4.59 J	< 10
Acetone	ug/L	2019-05	< 10	20.2	4.32 J	9.9 J
Acetone	ug/L	2019-10	< 10	8.87 J	12.2	14.4
Acetone	ug/L	2020-01			< 10	< 10
Acetone	ug/L	2020-05	< 10	< 10	3.27 J	25.7
Acetone	ug/L	2020-07				6.19 J
Acetone	ug/L	2020-10	< 10	111	< 50	13.7
Acetone	ug/L	2020-12				< 10
Acetone	ug/L	2021-05	6.27 J	18.2	< 10	5.89 J
Acetone	ug/L	2021-10	< 10	12.7	< 10	4.49 J
Acetone	ug/L	2022-05	< 10	17.8	< 10	5.04 J
Acetone	ug/L	2022-09	< 10	33.6	< 10	< 10
Acetone	ug/L	2023-05	42.3	3.63 J	< 10	13.8
Acetone	ug/L	2023-08				< 10
Acetone	ug/L	2023-09	20.3	24.7	< 10	20.8
Acetone	ug/L	2024-05	< 10	7.07 J	< 10	~~26.3~~
Acetonitrile	ug/L	2008-12	< 10	< 10	< 10	
Acetonitrile	ug/L	2013-09	< 10	< 10		
Acetonitrile	mg/L	2018-09	< 10	< 10	< 10	< 10
Acetonitrile	ug/L	2023-09	< 10000	< 10000	< 10000	
Acetophenone	ug/L	2008-12	< 8	< 8	< 8	
Acetophenone	ug/L	2013-09	< 8	< 8		
Acetophenone	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Acetophenone	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Acrolein	ug/L	2008-12	< 10	< 10	< 10	
Acrolein	ug/L	2013-09	< 10	< 10		
Acrolein	ug/L	2018-09	< 10	< 10	< 10	< 10
Acrolein	ug/L	2023-09	< 10	< 10	< 10	< 10
Acrylonitrile	ug/L	2008-12	< 5	< 5	< 5	
Acrylonitrile	ug/L	2013-09	< 5	< 5		
Acrylonitrile	ug/L	2018-05	< 5	< 5	< 5	< 5
Acrylonitrile	ug/L	2018-09	< 5	< 5	< 5	< 5
Acrylonitrile	ug/L	2019-05	< 5	< 5	< 5	< 5
Acrylonitrile	ug/L	2019-10	< 5	< 5	< 5	< 5
Acrylonitrile	ug/L	2020-05	< 5	< 5	< 5	< 5
Acrylonitrile	ug/L	2020-10	< 5	< 5	< 25	< 5
Acrylonitrile	ug/L	2021-05	< 5	< 5	< 5	< 5
Acrylonitrile	ug/L	2021-10	< 5	< 5	< 5	< 5
Acrylonitrile	ug/L	2022-05	< 5	< 5	< 5	< 5
Acrylonitrile	ug/L	2022-09	< 5	< 5	< 5	< 5
Acrylonitrile	ug/L	2023-05	< 5	< 5	< 5	< 5
Acrylonitrile	ug/L	2023-09	< 5	< 5	< 5	< 5
Acrylonitrile	ug/L	2024-05	< 5	< 5	< 5	~~< 5~~
Aldrin	ug/L	2008-12	< 0.05	< 0.05		
Aldrin	ug/L	2013-09	< 0.05	< 0.05		
Aldrin	ug/L	2018-09	0.0161 J	< 0.034	< 0.0337	< 0.036
Aldrin	ug/L	2019-02	< 0.0352		< 0.0352	
Aldrin	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
Allyl Chloride	ug/L	2008-12	< 0	< 0	< 0	
Allyl Chloride	ug/L	2013-09	< 1	< 1		
Allyl Chloride	ug/L	2018-09	< 2	< 2	< 2	< 2
Allyl Chloride	ug/L	2023-09	< 2	< 2	< 2	< 2
alpha-BHC	ug/L	2008-12	< 0.05	< 0.05		
alpha-BHC	ug/L	2013-09	< 0.05	< 0.05		
alpha-BHC	ug/L	2018-09	0.00757 J	< 0.034	< 0.0337	< 0.036
alpha-BHC	ug/L	2019-02	0.00595 J		< 0.0352	
alpha-BHC	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
Anthracene	ug/L	2008-12	< 8	< 8	< 8	

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Anthracene	ug/L	2013-09	< 8	< 8		
Anthracene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Anthracene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Antimony	mg/L	2008-12	< 0.001	< 0.001	< 0.001	
Antimony	mg/L	2013-09	< 0.01	< 0.01		
Antimony	mg/L	2018-05	< 0.001	0.0031	0.00216	0.00128
Antimony	mg/L	2018-09	< 0.001	< 0.001	0.000795 J	0.00295
Antimony	mg/L	2019-05	< 0.001	0.00112	< 0.001	< 0.001
Antimony	mg/L	2019-10	< 0.001	< 0.001	< 0.001	0.000626 J
Antimony	mg/L	2020-05	< 0.001	< 0.001	< 0.001	< 0.001
Antimony	mg/L	2020-10	< 0.001	< 0.001	< 0.001	0.00131
Antimony	mg/L	2021-05	< 0.002	< 0.002	< 0.002	< 0.002
Antimony	mg/L	2021-10	< 0.002	< 0.002	< 0.002	< 0.002
Antimony	mg/L	2022-05	< 0.002	< 0.002	< 0.002	< 0.002
Antimony	mg/L	2022-09	< 0.002	< 0.002	< 0.002	< 0.002
Antimony	mg/L	2023-05	< 0.002	< 0.002	< 0.002	< 0.002
Antimony	mg/L	2023-09	< 0.002	< 0.002	0.00331	
Antimony	mg/L	2024-05	< 0.002	0.00112 J	< 0.002	~~< 0.002~~
Arsenic	mg/L	2008-12	< 0.004	< 0.002	< 0.004	
Arsenic	mg/L	2013-09	< 0.01	< 0.01		
Arsenic	mg/L	2018-05	0.00249	0.00234	< 0.002	0.00874
Arsenic	mg/L	2018-09	0.00116 J	0.0018 J	< 0.002	0.00564
Arsenic	mg/L	2019-05	0.00526	0.00366	< 0.002	0.00593
Arsenic	mg/L	2019-10	0.0101	0.00584	< 0.002	0.00516
Arsenic	mg/L	2020-05	0.0147	0.00257	< 0.002	0.00666
Arsenic	mg/L	2020-10	0.0044	0.00249	< 0.002	~~0.0101~~
Arsenic	mg/L	2021-05	0.0122	0.00163 J	< 0.002	0.00616
Arsenic	mg/L	2021-10	0.012	0.00251	< 0.002	0.0051
Arsenic	mg/L	2022-05	0.00589	0.000828 J	< 0.002	0.00272
Arsenic	mg/L	2022-09	0.00294	0.00173 J	< 0.002	0.00271
Arsenic	mg/L	2023-05	0.00681	0.00177 J	0.00061 J	~~0.00262~~
Arsenic	mg/L	2023-09	0.00726	0.00227	< 0.002	
Arsenic	mg/L	2024-05	0.00184 J	0.00195 J	< 0.002	~~0.00202~~
Barium	mg/L	2008-12	0.0267	0.224	0.0748	
Barium	mg/L	2009-05	0.141	0.149	0.0757	
Barium	mg/L	2009-07	0.136	0.161	0.0738	
Barium	mg/L	2009-09	0.0591	0.0897	< 0.01	
Barium	mg/L	2009-12	0.0517	0.241	0.116	
Barium	mg/L	2010-09	0.0728	0.205	0.14	
Barium	mg/L	2011-03	0.0558	0.141	0.0233	
Barium	mg/L	2011-09	0.0509	0.114	0.0236	
Barium	mg/L	2012-03	0.0368	0.13		
Barium	mg/L	2012-09	0.0879	0.154		
Barium	mg/L	2012-10			0.0149	
Barium	mg/L	2013-05	0.0496	0.14		0.321
Barium	mg/L	2013-07				2.18
Barium	mg/L	2013-09			0.162	0.0504
Barium	mg/L	2013-09	0.0577	0.126		
Barium	mg/L	2013-12				0.188
Barium	mg/L	2014-04	0.0272	0.117		0.142
Barium	mg/L	2014-09	0.0548	0.129		0.0341
Barium	mg/L	2015-04	0.0596	0.138	0.0131	0.0260
Barium	mg/L	2015-09	0.0367	0.135	0.00867	0.0195
Barium	mg/L	2016-04	0.0685	0.0793	0.00862	0.0186
Barium	mg/L	2016-09	0.07	0.0859	0.00697	0.0416
Barium	mg/L	2017-05	0.0628	0.115	0.00855	0.0246
Barium	mg/L	2017-09	0.0535	0.0602	0.0087	
Barium	mg/L	2018-05	0.0954	0.0484	0.0144	0.116
Barium	mg/L	2018-09	0.0608	0.0469	0.0107	0.0665
Barium	mg/L	2019-05	0.0807	0.0685	0.00821	0.0236
Barium	mg/L	2019-10	0.0714	0.0475	0.00863	0.0447
Barium	mg/L	2020-05	0.0938	0.0738	0.00927	0.0328
Barium	mg/L	2020-10	0.0671	0.077	0.00684	0.101
Barium	mg/L	2021-05	0.0844	0.0568	0.00794	0.0353
Barium	mg/L	2021-10	0.0919	0.0884	0.00788	0.0316

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Barium	mg/L	2022-05	0.0843	0.0386	0.043	0.0233
Barium	mg/L	2022-09	0.0795	0.0332	0.0127	0.0245
Barium	mg/L	2023-05	0.0819	0.0509	0.00663	~~0.0153~~
Barium	mg/L	2023-09	0.085	0.0735	0.00743	
Barium	mg/L	2024-05	0.0903	0.0635	0.00555	~~0.0176~~
Benzene	ug/L	2008-12	< 1	< 1	< 1	
Benzene	ug/L	2013-09	< 1	< 1		
Benzene	ug/L	2018-05	0.889	< 0.5	< 0.5	< 0.5
Benzene	ug/L	2018-09	0.22 J	< 0.5	< 0.5	< 0.5
Benzene	ug/L	2019-05	0.608	< 0.5	< 0.5	< 0.5
Benzene	ug/L	2019-10	0.708	< 0.5	< 0.5	< 0.5
Benzene	ug/L	2020-05	0.744	< 0.5	< 0.5	< 0.5
Benzene	ug/L	2020-10	0.427 J	< 0.5	< 2.5	< 0.5
Benzene	ug/L	2021-05	0.815	< 0.5	< 0.5	< 0.5
Benzene	ug/L	2021-10	0.558	< 0.5	< 0.5	< 0.5
Benzene	ug/L	2022-05	0.858	< 0.5	< 0.5	< 0.5
Benzene	ug/L	2022-09	0.221 J	< 0.5	< 0.5	< 0.5
Benzene	ug/L	2023-05	0.971	< 0.5	< 0.5	< 0.5
Benzene	ug/L	2023-09	0.977	< 0.5	< 0.5	< 0.5
Benzene	ug/L	2024-05	0.856	< 0.5	< 0.5	~~< 0.5~~
Benzo(a)anthracene	ug/L	2008-12	< 8	< 8	< 8	
Benzo(a)anthracene	ug/L	2013-09	< 8	< 8		
Benzo(a)anthracene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Benzo(a)anthracene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Benzo(a)pyrene	ug/L	2008-12	< 8	< 8	< 8	
Benzo(a)pyrene	ug/L	2013-09	< 8	< 8		
Benzo(a)pyrene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Benzo(a)pyrene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Benzo(b)fluoranthene	ug/L	2008-12	< 8	< 8	< 8	
Benzo(b)fluoranthene	ug/L	2013-09	< 8	< 8		
Benzo(b)fluoranthene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Benzo(b)fluoranthene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Benzo(ghi)perylene	ug/L	2008-12	< 8	< 8	< 8	
Benzo(ghi)perylene	ug/L	2013-09	< 8	< 8		
Benzo(ghi)perylene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Benzo(ghi)perylene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Benzo(k)fluoranthene	ug/L	2008-12	< 8	< 8	< 8	
Benzo(k)fluoranthene	ug/L	2013-09	< 8	< 8		
Benzo(k)fluoranthene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Benzo(k)fluoranthene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Benzyl Alcohol	ug/L	2008-12	< 8	< 8	< 8	
Benzyl Alcohol	ug/L	2013-09	< 8	< 8		
Benzyl Alcohol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Benzyl Alcohol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Beryllium	mg/L	2008-12	< 0.004	< 0.004	< 0.004	
Beryllium	mg/L	2013-09	< 0.001	< 0.001		
Beryllium	mg/L	2018-05	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium	mg/L	2018-09	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium	mg/L	2019-05	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium	mg/L	2019-10	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium	mg/L	2020-05	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium	mg/L	2020-10	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium	mg/L	2021-05	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium	mg/L	2021-10	< 0.001	0.000666 J	< 0.001	< 0.001
Beryllium	mg/L	2022-05	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium	mg/L	2022-09	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium	mg/L	2023-05	< 0.001	< 0.001	0.000422 J	~~0.000429 J~~
Beryllium	mg/L	2023-09	< 0.001	< 0.001	< 0.001	
Beryllium	mg/L	2024-05	< 0.001	< 0.001	< 0.001	~~< 0.001~~
beta-BHC	ug/L	2008-12	< 0.05	< 0.05		
beta-BHC	ug/L	2013-09	< 0.05	< 0.05		
beta-BHC	ug/L	2018-09	0.0339	< 0.034	< 0.0337	< 0.036
beta-BHC	ug/L	2019-02	0.0279 J		< 0.0352	
beta-BHC	ug/L	2019-05	< 0.0333		< 0.0333	< 0.033
beta-BHC	ug/L	2019-10	< 0.0327			

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
beta-BHC	ug/L	2020-05	0.0214 J			
beta-BHC	ug/L	2020-10	0.0219 J			
beta-BHC	ug/L	2021-05	< 0.064			
beta-BHC	ug/L	2021-10	< 0.0344			
beta-BHC	ug/L	2022-05	< 0.0762			
beta-BHC	ug/L	2022-09	< 0.0744			
beta-BHC	ug/L	2023-05	< 0.0711			
beta-BHC	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
beta-BHC	ug/L	2024-05	< 0.0604			
bis(2-Chloroethoxy)methane	ug/L	2008-12	< 8	< 8	< 8	
bis(2-Chloroethoxy)methane	ug/L	2013-09	< 8	< 8		
bis(2-Chloroethoxy)methane	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
bis(2-Chloroethoxy)methane	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
bis(2-Chloroethyl)ether	ug/L	2008-12	< 8	< 8	< 8	
bis(2-Chloroethyl)ether	ug/L	2013-09	< 8	< 8		
bis(2-Chloroethyl)ether	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
bis(2-Chloroethyl)ether	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
bis(2-Ethylhexyl)phthalate	ug/L	2013-09	11	< 8		
bis(2-Ethylhexyl)phthalate	ug/L	2013-12	< 10			
bis(2-Ethylhexyl)phthalate	ug/L	2014-04	< 10.3 J			
bis(2-Ethylhexyl)phthalate	ug/L	2014-09	< 10			
bis(2-Ethylhexyl)phthalate	ug/L	2015-04	< 10.2 J			
bis(2-Ethylhexyl)phthalate	ug/L	2015-09	< 10.3 J			
bis(2-Ethylhexyl)phthalate	ug/L	2016-04	< 10.4 J			
bis(2-Ethylhexyl)phthalate	ug/L	2016-09	< 10.9			
bis(2-Ethylhexyl)phthalate	ug/L	2017-05	< 10.2			
bis(2-Ethylhexyl)phthalate	ug/L	2017-09	< 10.3			
bis(2-Ethylhexyl)phthalate	ug/L	2018-05	< 10.3			
bis(2-Ethylhexyl)phthalate	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
bis(2-Ethylhexyl)phthalate	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Bromochloromethane	ug/L	2008-12	< 1	< 1	< 1	
Bromochloromethane	ug/L	2013-09	< 1	< 1		
Bromochloromethane	ug/L	2018-05	< 5	< 5	< 5	< 5
Bromochloromethane	ug/L	2018-09	< 5	< 5	< 5	< 5
Bromochloromethane	ug/L	2019-05	< 5	< 5	< 5	< 5
Bromochloromethane	ug/L	2019-10	< 5	< 5	< 5	< 5
Bromochloromethane	ug/L	2020-05	< 5	< 5	< 5	< 5
Bromochloromethane	ug/L	2020-10	< 5	< 5	< 25	< 5
Bromochloromethane	ug/L	2021-05	< 5	< 5	< 5	< 5
Bromochloromethane	ug/L	2021-10	< 5	< 5	< 5	< 5
Bromochloromethane	ug/L	2022-05	< 5	< 5	< 5	< 5
Bromochloromethane	ug/L	2022-09	< 5	< 5	< 5	< 5
Bromochloromethane	ug/L	2023-05	< 5	< 5	< 5	< 5
Bromochloromethane	ug/L	2023-09	< 5	< 5	< 5	< 5
Bromochloromethane	ug/L	2024-05	< 5	< 5	< 5	~~< 5~~
Bromodichloromethane	ug/L	2008-12	< 1	< 1	< 1	
Bromodichloromethane	ug/L	2013-09	< 1	< 1		
Bromodichloromethane	ug/L	2018-05	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/L	2018-09	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/L	2019-05	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/L	2019-10	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/L	2020-05	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/L	2020-10	< 1	< 1	< 5	< 1
Bromodichloromethane	ug/L	2021-05	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/L	2021-10	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/L	2022-05	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/L	2022-09	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/L	2023-05	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/L	2023-09	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
Bromoform	ug/L	2008-12	< 1	< 1	< 1	
Bromoform	ug/L	2013-09	< 1	< 1		
Bromoform	ug/L	2018-05	< 5	< 5	< 5	< 5
Bromoform	ug/L	2018-09	< 5	< 5	< 5	< 5
Bromoform	ug/L	2019-05	< 5	< 5	< 5	< 5

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Bromoform	ug/L	2019-10	< 5	< 5	< 5	< 5
Bromoform	ug/L	2020-05	< 5	< 5	< 5	< 5
Bromoform	ug/L	2020-10	< 5	< 5	< 25	< 5
Bromoform	ug/L	2021-05	< 5	< 5	< 5	< 5
Bromoform	ug/L	2021-10	< 5	< 5	< 5	< 5
Bromoform	ug/L	2022-05	< 5	< 5	< 5	< 5
Bromoform	ug/L	2022-09	< 5	< 5	< 5	< 5
Bromoform	ug/L	2023-05	< 5	< 5	< 5	< 5
Bromoform	ug/L	2023-09	< 5	< 5	< 5	< 5
Bromoform	ug/L	2024-05	< 5	< 5	< 5	~~< 5~~
Bromomethane	ug/L	2008-12	< 1	< 1	< 1	
Bromomethane	ug/L	2013-09	< 1	< 1		
Bromomethane	ug/L	2018-05	< 4	< 4	< 4	< 4
Bromomethane	ug/L	2018-09	< 4	< 4	< 4	< 4
Bromomethane	ug/L	2019-05	< 4	< 4	< 4	< 4
Bromomethane	ug/L	2019-10	3.1 J	< 4	< 4	< 4
Bromomethane	ug/L	2020-05	< 4	< 4	< 4	< 4
Bromomethane	ug/L	2020-10	< 4	< 4	< 20	< 4
Bromomethane	ug/L	2021-05	< 4	< 4	< 4	< 4
Bromomethane	ug/L	2021-10	< 4	< 4	< 4	< 4
Bromomethane	ug/L	2022-05	< 4	< 4	< 4	< 4
Bromomethane	ug/L	2022-09	< 4	< 4	< 4	< 4
Bromomethane	ug/L	2023-05	< 4	< 4	< 4	< 4
Bromomethane	ug/L	2023-09	< 4	< 4	< 4	< 4
Bromomethane	ug/L	2024-05	< 4	< 4	< 4	~~< 4~~
Butylbenzylphthalate	ug/L	2008-12	< 8	< 8	< 8	
Butylbenzylphthalate	ug/L	2013-09	< 8	< 8		
Butylbenzylphthalate	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Butylbenzylphthalate	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Cadmium	mg/L	2008-12	< 0.001	0.0014	< 0.001	
Cadmium	mg/L	2009-05	< 0.005	< 0.005	< 0.005	
Cadmium	mg/L	2009-07	< 0.005	< 0.005	< 0.005	
Cadmium	mg/L	2009-09	< 0.005	< 0.005	< 0.005	
Cadmium	mg/L	2009-12	< 0.005	< 0.005	< 0.005	
Cadmium	mg/L	2010-09	< 0.005	< 0.005	< 0.005	
Cadmium	mg/L	2011-03	< 0.0050	< 0.0050	< 0.0050	
Cadmium	mg/L	2011-09	< 0.0050	< 0.0050	< 0.0050	
Cadmium	mg/L	2012-03	< 0.005	< 0.005		
Cadmium	mg/L	2012-09	< 0.005	< 0.005		
Cadmium	mg/L	2012-10			< 0.005	
Cadmium	mg/L	2013-05	< 0.005	< 0.005		< 0.005
Cadmium	mg/L	2013-07				0.0142
Cadmium	mg/L	2013-09			< 0.005	< 0.005
Cadmium	mg/L	2013-09	< 0.005	< 0.005		
Cadmium	mg/L	2013-12				< 0.0050
Cadmium	mg/L	2014-04	0.000247 J	0.000117 J		0.00105
Cadmium	mg/L	2014-09	< 0.0005	< 0.0005		0.000565
Cadmium	mg/L	2015-04	< 0.000500	< 0.000500	< 0.000500	0.000274 J
Cadmium	mg/L	2015-09	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Cadmium	mg/L	2016-04	0.000056 J	< 0.0005	< 0.0005	0.000206 J
Cadmium	mg/L	2016-09	0.000149 J	< 0.0005	0.000046 J	0.000379 J
Cadmium	mg/L	2017-05	< 0.0005	< 0.0005	0.000109 J	0.000277 J
Cadmium	mg/L	2017-09	0.000167 J	0.000074 J	0.000116 J	
Cadmium	mg/L	2018-05	< 0.0005	0.000113 J	0.000137 J	0.000653
Cadmium	mg/L	2018-09	0.000238 J	0.000228 J	0.000098 J	0.000585
Cadmium	mg/L	2019-05	0.000304 J	< 0.0005	< 0.0005	0.000389 J
Cadmium	mg/L	2019-10	0.000144	< 0.0001	0.000084 J	0.000982
Cadmium	mg/L	2020-05	0.000113	< 0.0001	0.000137	0.000328
Cadmium	mg/L	2020-10	0.00005 J	0.000059 J	< 0.0001	0.00113
Cadmium	mg/L	2021-05	0.000613	0.000177	0.000263	0.000564
Cadmium	mg/L	2021-10	0.000189	0.000807	0.000115	0.000844
Cadmium	mg/L	2022-05	0.000256	0.000101	0.000152	0.000296
Cadmium	mg/L	2022-09	0.000173	0.000103	0.000084 J	0.000461
Cadmium	mg/L	2023-05	0.000154 J	< 0.0002	0.000239	~~0.000395~~
Cadmium	mg/L	2023-09	0.000319	< 0.0002	< 0.0002	

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Cadmium	mg/L	2024-05	0.000326	0.000328	< 0.0008	~~0.000176 J~~
Carbon Disulfide	ug/L	2008-12	< 1	< 1	< 1	
Carbon Disulfide	ug/L	2013-09	< 1	< 1		
Carbon Disulfide	ug/L	2018-05	< 1	< 1	< 1	< 1
Carbon Disulfide	ug/L	2018-09	< 1	< 1	< 1	< 1
Carbon Disulfide	ug/L	2019-05	< 1	< 1	< 1	< 1
Carbon Disulfide	ug/L	2019-10	< 1	< 1	< 1	1.08
Carbon Disulfide	ug/L	2020-01				< 1
Carbon Disulfide	ug/L	2020-05	< 1	< 1	< 1	< 1
Carbon Disulfide	ug/L	2020-10	< 1	< 1	< 5	< 1
Carbon Disulfide	ug/L	2021-05	< 1	< 1	< 1	< 1
Carbon Disulfide	ug/L	2021-10	< 1	< 1	< 1	< 1
Carbon Disulfide	ug/L	2022-05	< 1	< 1	< 1	< 1
Carbon Disulfide	ug/L	2022-09	< 1	< 1	< 1	< 1
Carbon Disulfide	ug/L	2023-05	< 1	< 1	< 1	< 1
Carbon Disulfide	ug/L	2023-09	< 1	< 1	< 1	< 1
Carbon Disulfide	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
Carbon Tetrachloride	ug/L	2008-12	< 1	< 1	< 1	
Carbon Tetrachloride	ug/L	2013-09	< 1	< 1		
Carbon Tetrachloride	ug/L	2018-05	< 2	< 2	< 2	< 2
Carbon Tetrachloride	ug/L	2018-09	< 2	< 2	< 2	< 2
Carbon Tetrachloride	ug/L	2019-05	< 2	< 2	< 2	< 2
Carbon Tetrachloride	ug/L	2019-10	< 2	< 2	< 2	< 2
Carbon Tetrachloride	ug/L	2020-05	< 2	< 2	< 2	< 2
Carbon Tetrachloride	ug/L	2020-10	< 2	< 2	< 10	< 2
Carbon Tetrachloride	ug/L	2021-05	< 2	< 2	< 2	< 2
Carbon Tetrachloride	ug/L	2021-10	< 2	< 2	< 2	< 2
Carbon Tetrachloride	ug/L	2022-05	< 2	< 2	< 2	< 2
Carbon Tetrachloride	ug/L	2022-09	< 2	< 2	< 2	< 2
Carbon Tetrachloride	ug/L	2023-05	< 2	< 2	< 2	< 2
Carbon Tetrachloride	ug/L	2023-09	< 2	< 2	< 2	< 2
Carbon Tetrachloride	ug/L	2024-05	< 2	< 2	< 2	~~< 2~~
Chlorobenzene	ug/L	2008-12	< 1	< 1	< 1	
Chlorobenzene	ug/L	2013-09	< 1	< 1		
Chlorobenzene	ug/L	2018-05	< 1	< 1	< 1	< 1
Chlorobenzene	ug/L	2018-09	< 1	< 1	< 1	< 1
Chlorobenzene	ug/L	2019-05	< 1	< 1	< 1	< 1
Chlorobenzene	ug/L	2019-10	< 1	< 1	< 1	< 1
Chlorobenzene	ug/L	2020-05	< 1	< 1	< 1	< 1
Chlorobenzene	ug/L	2020-10	< 1	< 1	< 5	< 1
Chlorobenzene	ug/L	2021-05	< 1	< 1	< 1	< 1
Chlorobenzene	ug/L	2021-10	< 1	< 1	< 1	< 1
Chlorobenzene	ug/L	2022-05	< 1	< 1	< 1	< 1
Chlorobenzene	ug/L	2022-09	< 1	< 1	< 1	< 1
Chlorobenzene	ug/L	2023-05	< 1	< 1	< 1	< 1
Chlorobenzene	ug/L	2023-09	< 1	< 1	< 1	< 1
Chlorobenzene	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
Chlorobenzilate	ug/L	2008-12	< 8	< 8	< 8	
Chlorobenzilate	ug/L	2013-09	< 8	< 8		
Chlorobenzilate	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Chlorobenzilate	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Chlorodibromomethane	ug/L	2008-12	< 1	< 1	< 1	
Chlorodibromomethane	ug/L	2013-09	< 1	< 1		
Chlorodibromomethane	ug/L	2018-05	< 5	< 5	< 5	< 5
Chlorodibromomethane	ug/L	2018-09	< 5	< 5	< 5	< 5
Chlorodibromomethane	ug/L	2019-05	< 5	< 5	< 5	< 5
Chlorodibromomethane	ug/L	2019-10	< 5	< 5	< 5	< 5
Chlorodibromomethane	ug/L	2020-05	< 5	< 5	< 5	< 5
Chlorodibromomethane	ug/L	2020-10	< 5	< 5	< 25	< 5
Chlorodibromomethane	ug/L	2021-05	< 5	< 5	< 5	< 5
Chlorodibromomethane	ug/L	2021-10	< 5	< 5	< 5	< 5
Chlorodibromomethane	ug/L	2022-05	< 5	< 5	< 5	< 5
Chlorodibromomethane	ug/L	2022-09	< 5	< 5	< 5	< 5
Chlorodibromomethane	ug/L	2023-05	< 5	< 5	< 5	< 5
Chlorodibromomethane	ug/L	2023-09	< 5	< 5	< 5	< 5

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Chlorodibromomethane	ug/L	2024-05	< 5	< 5	< 5	~~< 5~~
Chloroethane	ug/L	2008-12	1.4	< 1	< 1	
Chloroethane	ug/L	2009-05	1.8	1.4	< 1	
Chloroethane	ug/L	2009-07	< 1	< 1	< 1	
Chloroethane	ug/L	2009-09	< 1	2	< 1	
Chloroethane	ug/L	2009-12	1.8	3.9	< 1	
Chloroethane	ug/L	2010-09	< 1	< 1	< 1	
Chloroethane	ug/L	2011-03	< 1.0	6.5	< 1.0	
Chloroethane	ug/L	2011-09	< 1.0	4.8	< 1.0	
Chloroethane	ug/L	2012-03	< 1	6.1	< 1	
Chloroethane	ug/L	2012-09	1.4	2.8	< 1	
Chloroethane	ug/L	2013-05	< 1	3.4		
Chloroethane	ug/L	2013-09	< 1	1.9		
Chloroethane	ug/L	2014-04	< 4.00	2.23 J		
Chloroethane	ug/L	2014-09	0.499 J	2.76 J		
Chloroethane	ug/L	2015-04	0.485 J	2.56 J		
Chloroethane	ug/L	2015-09	0.647 J	2.08 J		
Chloroethane	ug/L	2016-04	0.214 J	1.72 J		
Chloroethane	ug/L	2016-09	< 4	< 4		
Chloroethane	ug/L	2017-05	0.513 J	0.627 J		
Chloroethane	ug/L	2017-09	0.436 J	0.258 J		
Chloroethane	ug/L	2018-05	< 4	< 4	< 4	< 4
Chloroethane	ug/L	2018-09	< 4	< 4	< 4	< 4
Chloroethane	ug/L	2019-05	< 4	< 4	< 4	< 4
Chloroethane	ug/L	2019-10	< 4	< 4	< 4	< 4
Chloroethane	ug/L	2020-05	< 4	< 4	< 4	< 4
Chloroethane	ug/L	2020-10	< 4	0.898 J	< 20	< 4
Chloroethane	ug/L	2021-05	< 4	< 4	< 4	< 4
Chloroethane	ug/L	2021-10	< 4	< 4	< 4	< 4
Chloroethane	ug/L	2022-05	< 4	< 4	< 4	< 4
Chloroethane	ug/L	2022-09	< 4	< 4	< 4	< 4
Chloroethane	ug/L	2023-05	< 4	< 4	< 4	< 4
Chloroethane	ug/L	2023-09	< 4	< 4	< 4	< 4
Chloroethane	ug/L	2024-05	< 4	< 4	< 4	~~< 4~~
Chloroform	ug/L	2008-12	< 1	< 1	< 1	
Chloroform	ug/L	2013-09	< 1	< 1		
Chloroform	ug/L	2018-05	< 3	< 3	< 3	< 3
Chloroform	ug/L	2018-09	< 3	< 3	< 3	< 3
Chloroform	ug/L	2019-05	< 3	< 3	< 3	< 3
Chloroform	ug/L	2019-10	< 3	< 3	< 3	< 3
Chloroform	ug/L	2020-05	< 3	< 3	< 3	< 3
Chloroform	ug/L	2020-10	< 3	< 3	< 15	< 3
Chloroform	ug/L	2021-05	< 3	< 3	< 3	< 3
Chloroform	ug/L	2021-10	< 3	< 3	< 3	< 3
Chloroform	ug/L	2022-05	< 3	< 3	< 3	< 3
Chloroform	ug/L	2022-09	< 3	< 3	< 3	< 3
Chloroform	ug/L	2023-05	< 3	< 3	< 3	< 3
Chloroform	ug/L	2023-09	< 3	< 3	< 3	< 3
Chloroform	ug/L	2024-05	< 3	< 3	< 3	~~< 3~~
Chloromethane	ug/L	2008-12	< 1	< 1	< 1	
Chloromethane	ug/L	2013-09	< 1	< 1		
Chloromethane	ug/L	2018-05	< 3	< 3	< 3	< 3
Chloromethane	ug/L	2018-09	< 3	< 3	< 3	< 3
Chloromethane	ug/L	2019-05	< 3	< 3	< 3	< 3
Chloromethane	ug/L	2019-10	< 3	< 3	< 3	< 3
Chloromethane	ug/L	2020-05	< 3	< 3	< 3	< 3
Chloromethane	ug/L	2020-10	< 3	< 3	< 15	< 3
Chloromethane	ug/L	2021-05	< 3	< 3	< 3	< 3
Chloromethane	ug/L	2021-10	< 3	< 3	< 3	< 3
Chloromethane	ug/L	2022-05	< 3	< 3	< 3	< 3
Chloromethane	ug/L	2022-09	< 3	< 3	< 3	< 3
Chloromethane	ug/L	2023-05	< 3	< 3	< 3	< 3
Chloromethane	ug/L	2023-09	< 3	< 3	< 3	< 3
Chloromethane	ug/L	2024-05	< 3	< 3	< 3	~~< 3~~
Chloroprene	ug/L	2008-12	< 0	< 0	< 0	

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Chloroprene	ug/L	2013-09	< 1	< 1		
Chloroprene	ug/L	2018-09	< 1	< 1	< 1	< 1
Chloroprene	ug/L	2023-09	< 1	< 1	< 1	< 1
Chromium	mg/L	2008-12	< 0.01	0.0197	< 0.01	
Chromium	mg/L	2009-05	< 0.005	< 0.005	< 0.005	
Chromium	mg/L	2009-07	< 0.005	< 0.005	< 0.005	
Chromium	mg/L	2009-09	< 0.005	< 0.005	< 0.005	
Chromium	mg/L	2009-12	< 0.005	0.054	0.0108	
Chromium	mg/L	2010-09	0.0092	0.0326	0.0095	
Chromium	mg/L	2011-03	0.0055	0.0120	< 0.0050	
Chromium	mg/L	2011-09	< 0.0050	< 0.0050	< 0.0050	
Chromium	mg/L	2012-03	< 0.005	< 0.005		
Chromium	mg/L	2012-09	0.0089	< 0.005		
Chromium	mg/L	2012-10			< 0.005	
Chromium	mg/L	2013-05	< 0.005	< 0.005		0.0156
Chromium	mg/L	2013-07				0.0305
Chromium	mg/L	2013-09			0.0078	< 0.005
Chromium	mg/L	2013-09	0.006	< 0.005		
Chromium	mg/L	2013-12				< 0.0050
Chromium	mg/L	2014-04	< 0.0200	< 0.0200		< 0.0200
Chromium	mg/L	2014-09	< 0.005	< 0.005		< 0.005
Chromium	mg/L	2015-04	< 0.00500	< 0.00500	< 0.00500	< 0.00500
Chromium	mg/L	2015-09	< 0.005	< 0.005	< 0.005	< 0.005
Chromium	mg/L	2016-04	< 0.005	< 0.005	< 0.005	< 0.005
Chromium	mg/L	2016-09	0.000717 J	< 0.005	< 0.005	0.000836 J
Chromium	mg/L	2017-05	< 0.005	< 0.005	< 0.005	0.00205 J
Chromium	mg/L	2017-09	< 0.005	0.000806 J	0.00191 J	
Chromium	mg/L	2018-05	0.00127 J	0.00387 J	< 0.005	0.00132 J
Chromium	mg/L	2018-09	0.00089 J	< 0.005	< 0.005	0.00117 J
Chromium	mg/L	2019-05	< 0.005	< 0.005	< 0.005	< 0.005
Chromium	mg/L	2019-10	< 0.005	< 0.005	< 0.005	< 0.005
Chromium	mg/L	2020-05	< 0.005	< 0.005	< 0.005	< 0.005
Chromium	mg/L	2020-10	0.00115 J	< 0.005	< 0.005	< 0.005
Chromium	mg/L	2021-05	< 0.005	< 0.005	< 0.005	< 0.005
Chromium	mg/L	2021-10	< 0.005	< 0.005	< 0.005	0.0011 J
Chromium	mg/L	2022-05	< 0.005	< 0.005	< 0.005	< 0.005
Chromium	mg/L	2022-09	< 0.005	< 0.005	< 0.005	< 0.005
Chromium	mg/L	2023-05	< 0.005	< 0.005	< 0.005	< 0.005
Chromium	mg/L	2023-09	< 0.005	0.00159 J	< 0.005	
Chromium	mg/L	2024-05	< 0.005	0.00132 J	< 0.005	~~< 0.005~~
Chrysene	ug/L	2008-12	< 8	< 8	< 8	
Chrysene	ug/L	2013-09	< 8	< 8		
Chrysene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Chrysene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
cis-1,2-Dichloroethene	ug/L	2008-12	2.7	< 1	< 1	
cis-1,2-Dichloroethene	ug/L	2009-05	2.2	< 1	< 1	
cis-1,2-Dichloroethene	ug/L	2009-07	3.2	< 1	< 1	
cis-1,2-Dichloroethene	ug/L	2009-09	1.9	< 1	< 1	
cis-1,2-Dichloroethene	ug/L	2009-12	2.2	< 1	< 1	
cis-1,2-Dichloroethene	ug/L	2010-09	2.8	< 1	< 1	
cis-1,2-Dichloroethene	ug/L	2011-03	3.5	< 1.0	< 1.0	
cis-1,2-Dichloroethene	ug/L	2011-09	< 1.0	< 1.0	2.9 (1)	
cis-1,2-Dichloroethene	ug/L	2012-03	< 1	< 1	< 1	
cis-1,2-Dichloroethene	ug/L	2012-09	2.9	< 1	< 1	
cis-1,2-Dichloroethene	ug/L	2013-05	1	< 1		
cis-1,2-Dichloroethene	ug/L	2013-09	2.4	< 1		
cis-1,2-Dichloroethene	ug/L	2014-04	0.499 J	< 1.00		
cis-1,2-Dichloroethene	ug/L	2014-09	1.47	0.175 J		
cis-1,2-Dichloroethene	ug/L	2015-04	1.71			
cis-1,2-Dichloroethene	ug/L	2015-09	3.34			
cis-1,2-Dichloroethene	ug/L	2016-04	2.77			
cis-1,2-Dichloroethene	ug/L	2016-09	3.2			
cis-1,2-Dichloroethene	ug/L	2017-05	2.08			

(1) Per IDNR March 14, 2013 correspondence, the single detection of cis-1,2-dichloroethene in MW-51 during September 2011 will not result in further action. This parameter will continue to be assessed with the double quantification rule.

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
cis-1,2-Dichloroethene	ug/L	2017-05	2.08			
cis-1,2-Dichloroethene	ug/L	2017-09	2.99			
cis-1,2-Dichloroethene	ug/L	2018-05	3.65	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/L	2018-09	2.96	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/L	2019-05	1.89	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/L	2019-10	2.43	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/L	2020-05	2.15	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/L	2020-10	3.08	0.241 J	< 5	< 1
cis-1,2-Dichloroethene	ug/L	2021-05	2.23	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/L	2021-10	< 1.72	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/L	2022-05	2.18	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/L	2022-09	2.46	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/L	2023-05	2.44	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/L	2023-09	2	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/L	2024-05	2.24	< 1	< 1	~~< 1~~
cis-1,3-Dichloropropene	ug/L	2008-12	< 1	< 1	< 1	
cis-1,3-Dichloropropene	ug/L	2013-09	< 1	< 1		
cis-1,3-Dichloropropene	ug/L	2018-05	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/L	2018-09	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/L	2019-05	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/L	2019-10	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/L	2020-05	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/L	2020-10	< 5	< 5	< 25	< 5
cis-1,3-Dichloropropene	ug/L	2021-05	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/L	2021-10	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/L	2022-05	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/L	2022-09	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/L	2023-05	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/L	2023-09	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/L	2024-05	< 5	< 5	< 5	~~< 5~~
Cobalt	mg/L	2008-12	< 0.004	0.0203	< 0.004	
Cobalt	mg/L	2009-05	0.0081	0.005	< 0.005	
Cobalt	mg/L	2009-07	0.0101	0.005	< 0.005	
Cobalt	mg/L	2009-09	0.0122	0.0078	< 0.005	
Cobalt	mg/L	2009-12	0.01	0.037	< 0.005	
Cobalt	mg/L	2010-09	0.0183	0.0269	< 0.005	
Cobalt	mg/L	2011-03	0.0172	0.0147	< 0.0050	
Cobalt	mg/L	2011-09	0.0225	0.0111	< 0.0050	
Cobalt	mg/L	2012-03	0.0095	0.0117		
Cobalt	mg/L	2012-09	0.0233	0.0109		
Cobalt	mg/L	2012-10			< 0.005	
Cobalt	mg/L	2013-05	0.0117	0.0089		0.0346
Cobalt	mg/L	2013-07				0.0524
Cobalt	mg/L	2013-09			< 0.005	0.0215
Cobalt	mg/L	2013-09	0.0173	0.0077		
Cobalt	mg/L	2013-12				0.0336
Cobalt	mg/L	2014-04	0.00720	0.00527 J		0.0255
Cobalt	mg/L	2014-09	0.0164	0.00649		0.0213
Cobalt	mg/L	2015-04	0.0112	0.00560	0.000523	0.00661
Cobalt	mg/L	2015-09	0.00948	0.00403	0.000091 J	0.0058
Cobalt	mg/L	2016-04	0.0192	0.00361	< 0.0005	0.00506
Cobalt	mg/L	2016-09	0.0221	0.00272	0.000036 J	0.00459
Cobalt	mg/L	2017-05	0.0159	0.00189	0.00011 J	0.00189
Cobalt	mg/L	2017-09	0.00228	0.00251	0.000318 J	
Cobalt	mg/L	2018-05	0.0346	0.000656	0.00013 J	0.00726
Cobalt	mg/L	2018-09	0.00582	0.00114	0.00015 J	0.00655
Cobalt	mg/L	2019-05	0.018	0.0017	0.000258 J	0.0112
Cobalt	mg/L	2019-10	0.0201	0.00107	0.000274 J	0.0121
Cobalt	mg/L	2020-05	0.0154	0.00102	< 0.0005	0.00992
Cobalt	mg/L	2020-10	0.0193	0.00161	< 0.0005	0.018
Cobalt	mg/L	2021-05	0.0133	0.000596	0.000097 J	0.0125
Cobalt	mg/L	2021-10	0.0137	0.00194	0.000221 J	0.0121
Cobalt	mg/L	2022-05	0.00974	0.000348 J	< 0.0005	0.0107
Cobalt	mg/L	2022-09	0.0129	0.00128	0.00023 J	0.00954
Cobalt	mg/L	2023-05	0.01	0.000503	0.000366 J	~~0.0102~~

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Cobalt	mg/L	2023-09	0.0124	0.00173	< 0.0005	
Cobalt	mg/L	2024-05	0.00821	0.00221	< 0.0005	~~0.0131~~
Copper	mg/L	2008-12	< 0.004	0.02	0.0041	
Copper	mg/L	2009-05	< 0.01	< 0.01	< 0.01	
Copper	mg/L	2009-07	< 0.01	< 0.01	< 0.01	
Copper	mg/L	2009-09	< 0.01	< 0.01	< 0.01	
Copper	mg/L	2009-12	< 0.01	0.0315	< 0.01	
Copper	mg/L	2010-09	< 0.01	0.0191	< 0.01	
Copper	mg/L	2011-03	< 0.0100	< 0.0100	< 0.0100	
Copper	mg/L	2011-09	< 0.0100	< 0.0100	< 0.0100	
Copper	mg/L	2012-03	0.0119	< 0.01		
Copper	mg/L	2012-09	0.0137	< 0.01		
Copper	mg/L	2012-10			< 0.01	
Copper	mg/L	2013-05	< 0.01	< 0.01		0.0768
Copper	mg/L	2013-07				0.136
Copper	mg/L	2013-09			0.0118	< 0.01
Copper	mg/L	2013-09	< 0.01	< 0.01		
Copper	mg/L	2013-12				0.0146
Copper	mg/L	2014-04	< 0.0200	< 0.0200		0.00638 J
Copper	mg/L	2014-09	0.000828 J	< 0.002		0.00964
Copper	mg/L	2015-04	0.00131 J	< 0.00200	0.000734 J	0.00204
Copper	mg/L	2015-09	0.00175 J	0.000497 J	0.00114 J	0.00118 J
Copper	mg/L	2016-04	< 0.005	< 0.005	< 0.005	0.00286 J
Copper	mg/L	2016-09	0.00151 J	< 0.005	< 0.005	0.00673
Copper	mg/L	2017-05	< 0.005	< 0.005	< 0.005	0.00243 J
Copper	mg/L	2017-09	0.00499 J	< 0.005	< 0.005	
Copper	mg/L	2018-05	0.00351 J	< 0.005	0.00379 J	0.00847
Copper	mg/L	2018-09	0.00195 J	< 0.005	0.0021 J	0.00491 J
Copper	mg/L	2019-05	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	2019-10	< 0.005	< 0.005	< 0.005	0.00924
Copper	mg/L	2020-05	< 0.005	< 0.005	< 0.005	0.00715
Copper	mg/L	2020-10	< 0.005	< 0.005	< 0.005	0.0137
Copper	mg/L	2021-05	< 0.005	< 0.005	0.00196 J	0.0125
Copper	mg/L	2021-10	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	2022-05	< 0.005	< 0.005	< 0.005	0.00263 J
Copper	mg/L	2022-09	< 0.005	< 0.005	< 0.005	0.00518
Copper	mg/L	2023-05	< 0.005	< 0.005	< 0.005	~~0.00199 J~~
Copper	mg/L	2023-09	< 0.005	< 0.005	0.00192 J	
Copper	mg/L	2024-05	0.00195 J	0.00359 J	< 0.005	~~0.00227 J~~
Cyanide	mg/L	2008-12	< 0.007	< 0.007	< 0.007	
Cyanide	mg/L	2013-09	< 0.005	< 0.005		
Cyanide	mg/L	2018-09	< 0.01	< 0.01	< 0.01	< 0.01
Cyanide	mg/L	2023-09	< 0.01	< 0.01	< 0.01	
delta-BHC	ug/L	2008-12	< 0.05	< 0.05		
delta-BHC	ug/L	2013-09	< 0.05	< 0.05		
delta-BHC	ug/L	2018-09	0.0515	0.00579 J	< 0.0337	< 0.036
delta-BHC	ug/L	2019-02	0.00998 J		< 0.0352	
delta-BHC	ug/L	2019-05	0.00315 J		0.00255 J	0.00304 J
delta-BHC	ug/L	2019-10	0.00363 J			
delta-BHC	ug/L	2020-05	< 0.0323			
delta-BHC	ug/L	2020-10	0.00874 J			
delta-BHC	ug/L	2021-05	< 0.064			
delta-BHC	ug/L	2021-10	< 0.0344			
delta-BHC	ug/L	2022-05	< 0.0762			
delta-BHC	ug/L	2022-09	< 0.0744			
delta-BHC	ug/L	2023-05	< 0.0711			
delta-BHC	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
delta-BHC	ug/L	2024-05	< 0.0604			
Diallate	ug/L	2008-12	< 8	< 8	< 8	
Diallate	ug/L	2013-09	< 8	< 8		
Diallate	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Diallate	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Dibenzo(a,h)anthracene	ug/L	2008-12	< 8	< 8	< 8	
Dibenzo(a,h)anthracene	ug/L	2013-09	< 8	< 8		
Dibenzo(a,h)anthracene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Dibenzo(a,h)anthracene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Dibenzofuran	ug/L	2008-12	< 8	< 8	< 8	
Dibenzofuran	ug/L	2013-09	< 8	< 8		
Dibenzofuran	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Dibenzofuran	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Dibromomethane	ug/L	2008-12	< 1	< 1	< 1	
Dibromomethane	ug/L	2013-09	< 1	< 1		
Dibromomethane	ug/L	2018-05	< 1	< 1	< 1	< 1
Dibromomethane	ug/L	2018-09	< 1	< 1	< 1	< 1
Dibromomethane	ug/L	2019-05	< 1	< 1	< 1	< 1
Dibromomethane	ug/L	2019-10	< 1	< 1	< 1	< 1
Dibromomethane	ug/L	2020-05	< 1	< 1	< 1	< 1
Dibromomethane	ug/L	2020-10	< 1	< 1	< 5	< 1
Dibromomethane	ug/L	2021-05	< 1	< 1	< 1	< 1
Dibromomethane	ug/L	2021-10	< 1	< 1	< 1	< 1
Dibromomethane	ug/L	2022-05	< 1	< 1	< 1	< 1
Dibromomethane	ug/L	2022-09	< 1	< 1	< 1	< 1
Dibromomethane	ug/L	2023-05	< 1	< 1	< 1	< 1
Dibromomethane	ug/L	2023-09	< 1	< 1	< 1	< 1
Dibromomethane	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
Dichlorodifluoromethane	ug/L	2008-12	< 1	< 1	< 1	
Dichlorodifluoromethane	ug/L	2013-09	< 1	< 1		
Dichlorodifluoromethane	ug/L	2018-09	< 3	< 3	< 3	< 3
Dichlorodifluoromethane	ug/L	2023-09	< 3	< 3	< 3	< 3
Dieldrin	ug/L	2008-12	< 0.05	< 0.05		
Dieldrin	ug/L	2013-09	< 0.05	< 0.05		
Dieldrin	ug/L	2018-09	0.042	< 0.034	< 0.0337	< 0.036
Dieldrin	ug/L	2019-02	0.0125 J		< 0.0352	
Dieldrin	ug/L	2019-05	< 0.0333		< 0.0333	< 0.033
Dieldrin	ug/L	2019-10	< 0.0327			
Dieldrin	ug/L	2020-05	0.00417 J			
Dieldrin	ug/L	2020-10	0.0118 J			
Dieldrin	ug/L	2021-05	< 0.064			
Dieldrin	ug/L	2021-10	< 0.0344			
Dieldrin	ug/L	2022-05	< 0.0762			
Dieldrin	ug/L	2022-09	< 0.0744			
Dieldrin	ug/L	2023-05	< 0.0711			
Dieldrin	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
Dieldrin	ug/L	2024-05	< 0.0604			
Diethylphthalate	ug/L	2008-12	< 8	< 8	< 8	
Diethylphthalate	ug/L	2013-09	< 8	< 8		
Diethylphthalate	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Diethylphthalate	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Dimethoate	ug/L	2008-12	< 0.4	< 0.4	< 0.4	
Dimethoate	ug/L	2013-09	0.7	< 0.4		
Dimethoate	ug/L	2013-12	< 0.32			
Dimethoate	ug/L	2014-04	< 10.3			
Dimethoate	ug/L	2014-09	< 10			
Dimethoate	ug/L	2015-04	< 10.2			
Dimethoate	ug/L	2015-09	< 10.3			
Dimethoate	ug/L	2016-04	< 10.4			
Dimethoate	ug/L	2016-09	< 10.9			
Dimethoate	ug/L	2017-05	< 10.2			
Dimethoate	ug/L	2017-09	1.45 J			
Dimethoate	ug/L	2018-05	< 10.3			
Dimethoate	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Dimethoate	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Dimethylphthalate	ug/L	2008-12	< 8	< 8	< 8	
Dimethylphthalate	ug/L	2013-09	< 8	< 8		
Dimethylphthalate	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Dimethylphthalate	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Di-n-butylphthalate	ug/L	2008-12	< 8	< 8	< 8	
Di-n-butylphthalate	ug/L	2013-09	< 8	< 8		
Di-n-butylphthalate	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Di-n-butylphthalate	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Di-n-octylphthalate	ug/L	2008-12	< 8	< 8	< 8	
Di-n-octylphthalate	ug/L	2013-09	< 8	< 8		
Di-n-octylphthalate	ug/L	2018-09	< 21.1	< 20.2	< 20.8	< 22
Di-n-octylphthalate	ug/L	2023-09	< 19.2	< 20	< 20	< 21.7
Dinoseb	ug/L	2008-12	< 0.5	< 0.5	< 0.5	
Dinoseb	ug/L	2013-12	< 0.5	< 0.5		
Dinoseb	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Dinoseb	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Diphenylamine	ug/L	2008-12	< 8	< 8	< 8	
Diphenylamine	ug/L	2013-09	< 8	< 8		
Diphenylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Diphenylamine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Disulfoton	ug/L	2008-12	< 0.4	< 0.4	< 0.4	
Disulfoton	ug/L	2013-09	< 0.4	< 0.4		
Disulfoton	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Disulfoton	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Endosulfan I	ug/L	2008-12	< 0.05	< 0.05		
Endosulfan I	ug/L	2013-09	< 0.05	< 0.05		
Endosulfan I	ug/L	2018-09	0.0237 J	< 0.034	< 0.0337	< 0.036
Endosulfan I	ug/L	2019-02	< 0.0352		< 0.0352	
Endosulfan I	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
Endosulfan II	ug/L	2008-12	< 0.05	< 0.05		
Endosulfan II	ug/L	2013-09	< 0.05	< 0.05		
Endosulfan II	ug/L	2018-09	< 0.0337	< 0.034	< 0.0337	0.00244 J
Endosulfan II	ug/L	2019-02	< 0.0352		< 0.0352	
Endosulfan II	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
Endosulfan Sulfate	ug/L	2008-12	< 0.05	< 0.05		
Endosulfan Sulfate	ug/L	2013-09	< 0.05	< 0.05		
Endosulfan Sulfate	ug/L	2018-09	0.0766	< 0.034	< 0.0337	< 0.036
Endosulfan Sulfate	ug/L	2019-02	0.00328 J		< 0.0352	
Endosulfan Sulfate	ug/L	2019-05	< 0.0333		< 0.0333	< 0.033
Endosulfan Sulfate	ug/L	2019-10	< 0.0327			
Endosulfan Sulfate	ug/L	2020-05	0.00434 J			
Endosulfan Sulfate	ug/L	2020-10	0.00474 J			
Endosulfan Sulfate	ug/L	2021-05	< 0.064			
Endosulfan Sulfate	ug/L	2021-10	< 0.0344			
Endosulfan Sulfate	ug/L	2022-05	< 0.0762			
Endosulfan Sulfate	ug/L	2022-09	< 0.0744			
Endosulfan Sulfate	ug/L	2023-05	< 0.0711			
Endosulfan Sulfate	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
Endosulfan Sulfate	ug/L	2024-05	< 0.0604			
Endrin	ug/L	2008-12	< 0.05	< 0.05		
Endrin	ug/L	2013-09	< 0.05	< 0.05		
Endrin	ug/L	2018-09	0.121	0.00214 J	< 0.0337	< 0.036
Endrin	ug/L	2019-02	0.006 J		< 0.0352	
Endrin	ug/L	2019-05	0.00926 J		< 0.0333	< 0.033
Endrin	ug/L	2019-10	0.0135 J			
Endrin	ug/L	2020-05	< 0.0323			
Endrin	ug/L	2020-10	< 0.0356			
Endrin	ug/L	2021-05	< 0.064			
Endrin	ug/L	2021-10	< 0.0344			
Endrin	ug/L	2022-05	< 0.0762			
Endrin	ug/L	2022-09	< 0.0744			
Endrin	ug/L	2023-05	< 0.0711			
Endrin	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
Endrin	ug/L	2024-05	< 0.0604			
Endrin Aldehyde	ug/L	2008-12	< 0.05	< 0.05		
Endrin Aldehyde	ug/L	2013-09	< 0.05	< 0.05		
Endrin Aldehyde	ug/L	2018-09	0.0344	< 0.034	0.0104 J	< 0.036
Endrin Aldehyde	ug/L	2019-02	< 0.0352		< 0.0352	
Endrin Aldehyde	ug/L	2019-05	0.00819 J		< 0.0333	< 0.033
Endrin Aldehyde	ug/L	2019-10	< 0.0327			
Endrin Aldehyde	ug/L	2020-05	< 0.0323			
Endrin Aldehyde	ug/L	2020-10	< 0.0356			
Endrin Aldehyde	ug/L	2021-05	< 0.064			

Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Endrin Aldehyde	ug/L	2021-10	< 0.0344			
Endrin Aldehyde	ug/L	2022-05	< 0.0762			
Endrin Aldehyde	ug/L	2022-09	< 0.0744			
Endrin Aldehyde	ug/L	2023-05	< 0.0711			
Endrin Aldehyde	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
Endrin Aldehyde	ug/L	2024-05	< 0.0604			
Ethyl Methacrylate	ug/L	2008-12	< 10	< 10	< 10	
Ethyl Methacrylate	ug/L	2013-09	< 10	< 10		
Ethyl Methacrylate	ug/L	2018-09	< 2	< 2	< 2	< 2
Ethyl Methacrylate	ug/L	2023-09	< 2	< 2	< 2	< 2
Ethyl Methanesulfonate	ug/L	2008-12	< 8	< 8	< 8	
Ethyl Methanesulfonate	ug/L	2013-09	< 8	< 8		
Ethyl Methanesulfonate	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Ethyl Methanesulfonate	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Ethylbenzene	ug/L	2008-12	< 1	< 1	< 1	
Ethylbenzene	ug/L	2013-09	< 1	< 1		
Ethylbenzene	ug/L	2018-05	< 1	< 1	< 1	< 1
Ethylbenzene	ug/L	2018-09	< 1	< 1	< 1	< 1
Ethylbenzene	ug/L	2019-05	< 1	< 1	< 1	< 1
Ethylbenzene	ug/L	2019-10	< 1	< 1	< 1	< 1
Ethylbenzene	ug/L	2020-05	< 1	< 1	< 1	< 1
Ethylbenzene	ug/L	2020-10	< 1	< 1	< 5	< 1
Ethylbenzene	ug/L	2021-05	< 1	< 1	< 1	< 1
Ethylbenzene	ug/L	2021-10	< 1	< 1	< 1	< 1
Ethylbenzene	ug/L	2022-05	< 1	< 1	< 1	< 1
Ethylbenzene	ug/L	2022-09	< 1	< 1	< 1	< 1
Ethylbenzene	ug/L	2023-05	< 1	< 1	< 1	< 1
Ethylbenzene	ug/L	2023-09	< 1	< 1	< 1	< 1
Ethylbenzene	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
Famphur	ug/L	2008-12	< 0.4	< 0.4	< 0.4	
Famphur	ug/L	2013-09	< 0.4	< 0.4		
Famphur	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Famphur	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Fluoranthene	ug/L	2008-12	< 8	< 8	< 8	
Fluoranthene	ug/L	2013-09	< 8	< 8		
Fluoranthene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Fluoranthene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Fluorene	ug/L	2008-12	< 8	< 8	< 8	
Fluorene	ug/L	2013-09	< 8	< 8		
Fluorene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Fluorene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Fluorotrichloromethane	ug/L	2008-12	< 1	< 1	< 1	
Fluorotrichloromethane	ug/L	2013-09	< 1	< 1		
Fluorotrichloromethane	ug/L	2018-05	< 4	< 4	< 4	< 4
Fluorotrichloromethane	ug/L	2018-09	< 4	< 4	< 4	< 4
Fluorotrichloromethane	ug/L	2019-05	< 4	< 4	< 4	< 4
Fluorotrichloromethane	ug/L	2019-10	< 4	< 4	< 4	< 4
Fluorotrichloromethane	ug/L	2020-05	< 4	< 4	< 4	< 4
Fluorotrichloromethane	ug/L	2020-10	< 4	< 4	< 20	< 4
Fluorotrichloromethane	ug/L	2021-05	< 4	< 4	< 4	< 4
Fluorotrichloromethane	ug/L	2021-10	< 4	< 4	< 4	< 4
Fluorotrichloromethane	ug/L	2022-05	< 4	< 4	< 4	< 4
Fluorotrichloromethane	ug/L	2022-09	< 4	< 4	< 4	< 4
Fluorotrichloromethane	ug/L	2023-05	< 4	< 4	< 4	< 4
Fluorotrichloromethane	ug/L	2023-09	< 4	< 4	< 4	< 4
Fluorotrichloromethane	ug/L	2024-05	< 4	< 4	< 4	~~< 4~~
Heptachlor	ug/L	2008-12	< 0.05	< 0.05		
Heptachlor	ug/L	2013-09	< 0.05	< 0.05		
Heptachlor	ug/L	2018-09	0.0295 J	0.003 J	< 0.0337	< 0.036
Heptachlor	ug/L	2019-02	< 0.0352		< 0.0352	
Heptachlor	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
Heptachlor Epoxide	ug/L	2008-12	< 0.05	< 0.05		
Heptachlor Epoxide	ug/L	2013-09	< 0.05	< 0.05		
Heptachlor Epoxide	ug/L	2018-09	0.00969 J	< 0.034	< 0.0337	< 0.036
Heptachlor Epoxide	ug/L	2019-02	0.0175 J		< 0.0352	

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Heptachlor Epoxide	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
Hexachlorobenzene	ug/L	2008-12	< 0.05	< 0.05	< 8	
Hexachlorobenzene	ug/L	2013-09	< 0.05	< 0.05		
Hexachlorobenzene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Hexachlorobenzene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Hexachlorobutadiene	ug/L	2008-12	< 8	< 8	< 8	
Hexachlorobutadiene	ug/L	2013-09	< 8	< 8		
Hexachlorobutadiene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Hexachlorobutadiene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Hexachlorocyclopentadiene	ug/L	2008-12	< 8	< 8	< 8	
Hexachlorocyclopentadiene	ug/L	2013-09	< 8	< 8		
Hexachlorocyclopentadiene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Hexachlorocyclopentadiene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Hexachloroethane	ug/L	2008-12	< 8	< 8	< 8	
Hexachloroethane	ug/L	2013-09	< 8	< 8		
Hexachloroethane	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Hexachloroethane	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Hexachloropropene	ug/L	2008-12	< 8	< 8	< 8	
Hexachloropropene	ug/L	2013-09	< 8	< 8		
Hexachloropropene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Hexachloropropene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Indeno(1,2,3-cd)pyrene	ug/L	2008-12	< 8	< 8	< 8	
Indeno(1,2,3-cd)pyrene	ug/L	2013-09	< 8	< 8		
Indeno(1,2,3-cd)pyrene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Indeno(1,2,3-cd)pyrene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Iodomethane	ug/L	2008-12	< 1	< 1	< 1	
Iodomethane	ug/L	2013-09	< 1	< 1		
Iodomethane	ug/L	2018-05	< 10	< 10	< 10	< 10
Iodomethane	ug/L	2018-09	< 10	< 10	< 10	< 10
Iodomethane	ug/L	2019-05	< 10	< 10	< 10	< 10
Iodomethane	ug/L	2019-10	< 10	< 10	< 10	< 10
Iodomethane	ug/L	2020-05	< 10	< 10	< 10	< 10
Iodomethane	ug/L	2020-10	< 10	< 10	< 50	< 10
Iodomethane	ug/L	2021-05	< 10	< 10	< 10	< 10
Iodomethane	ug/L	2021-10	< 10	< 10	< 10	< 10
Iodomethane	ug/L	2022-05	< 10	< 10	< 10	< 10
Iodomethane	ug/L	2022-09	< 10	< 10	< 10	< 10
Iodomethane	ug/L	2023-05	< 10	< 10	< 10	< 10
Iodomethane	ug/L	2023-09	< 10	< 10	< 10	< 10
Iodomethane	ug/L	2024-05	< 10	< 10	< 10	~~< 10~~
Isobutanol	mg/L	2008-12	< 1	< 1		
Isobutanol	mg/L	2013-12	< 1	< 1		
Isobutanol	mg/L	2018-09	< 10	< 10	< 10	< 10
Isobutanol	mg/L	2023-09	< 10	< 10	< 10	
Isodrin	ug/L	2008-12	< 8	< 8	< 8	
Isodrin	ug/L	2013-09	< 8	< 8		
Isodrin	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Isodrin	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Isophorone	ug/L	2008-12	< 8	< 8	< 8	
Isophorone	ug/L	2013-09	< 8	< 8		
Isophorone	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Isophorone	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Isosafrole	ug/L	2008-12	< 8	< 8	< 8	
Isosafrole	ug/L	2013-09	< 8	< 8		
Isosafrole	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Isosafrole	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Kepone	ug/L	2008-12	< 8	< 8	< 8	
Kepone	ug/L	2013-09	< 8	< 8		
Kepone	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Kepone	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Lead	mg/L	2008-12	< 0.004	0.0775	< 0.004	
Lead	mg/L	2009-05	< 0.005	< 0.005	< 0.005	
Lead	mg/L	2009-07	< 0.005	< 0.005	< 0.005	
Lead	mg/L	2009-09	< 0.005	< 0.005	< 0.005	
Lead	mg/L	2009-12	< 0.005	0.0506	< 0.005	

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Lead	mg/L	2010-09	< 0.005	0.0421	< 0.005	
Lead	mg/L	2011-03	< 0.0050	0.0136	< 0.0050	
Lead	mg/L	2011-09	< 0.0050	< 0.0050	< 0.0050	
Lead	mg/L	2012-03	< 0.005	< 0.005		
Lead	mg/L	2012-09	< 0.005	< 0.005		
Lead	mg/L	2012-10			< 0.005	
Lead	mg/L	2013-05	< 0.005	< 0.005		0.0384
Lead	mg/L	2013-07				0.0878
Lead	mg/L	2013-09			0.0057	< 0.005
Lead	mg/L	2013-09	< 0.005	< 0.005		
Lead	mg/L	2013-12				< 0.0050
Lead	mg/L	2014-04	< 0.00400	< 0.00400		0.00273 J
Lead	mg/L	2014-09	0.000192 J	0.000276 J		0.00247
Lead	mg/L	2015-04	0.000256 J	0.000327 J	0.000391 J	0.00130
Lead	mg/L	2015-09	0.00029 J	< 0.0005	0.000118 J	0.000558
Lead	mg/L	2016-04	< 0.0005	< 0.0005	< 0.0005	0.00139
Lead	mg/L	2016-09	0.000964	0.00114	< 0.0005	0.00193
Lead	mg/L	2017-05	< 0.0005	0.000324 J	< 0.0005	0.00188
Lead	mg/L	2017-09	< 0.0005	0.00273	< 0.0005	
Lead	mg/L	2018-05	0.000631	0.000351 J	0.000757	0.00387
Lead	mg/L	2018-09	0.000348 J	< 0.0005	0.000462 J	0.00266
Lead	mg/L	2019-05	0.000617	0.000732	< 0.0005	0.0014
Lead	mg/L	2019-10	< 0.0005	< 0.0005	< 0.0005	0.0032
Lead	mg/L	2020-05	< 0.0005	< 0.0005	< 0.0005	0.00161
Lead	mg/L	2020-10	< 0.0005	< 0.0005	< 0.0005	0.0052
Lead	mg/L	2021-05	0.000224 J	0.000725	0.000389 J	0.0025
Lead	mg/L	2021-10	0.000454 J	0.000837	< 0.0005	0.00327
Lead	mg/L	2022-05	< 0.0005	< 0.0005	< 0.0005	0.00114
Lead	mg/L	2022-09	0.00034 J	0.00245	< 0.0005	0.00203
Lead	mg/L	2023-05	0.000329 J	< 0.0005	0.000579	~~0.000957~~
Lead	mg/L	2023-09	0.000435 J	0.00228	0.000376 J	
Lead	mg/L	2024-05	0.000604	0.00585	< 0.0005	~~0.000734~~
Lindane (BHC, Gamma-)	ug/L	2008-12	< 0.05	< 0.05		
Lindane (BHC, Gamma-)	ug/L	2013-09	< 0.05	< 0.05		
Lindane (BHC, Gamma-)	ug/L	2018-09	0.0117 J	< 0.034	< 0.0337	< 0.036
Lindane (BHC, Gamma-)	ug/L	2019-02	< 0.0352		< 0.0352	
Lindane (BHC, Gamma-)	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
m/p-Cresol	ug/L	2008-12	< 8	< 8	< 8	
m/p-Cresol	ug/L	2013-09	< 8	< 8		
m/p-Cresol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
m/p-Cresol	ug/L	2023-09	< 9.62	< 10	< 10	1.24 J
Mercury	mg/L	2008-12	< 0.0005	< 0.0005	< 0.0005	
Mercury	mg/L	2013-09	< 0.0002	< 0.0002		
Mercury	mg/L	2018-09	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Mercury	mg/L	2023-09	< 0.0002	< 0.0002	< 0.0002	
Methacrylonitrile	ug/L	2008-12	< 0	< 0	< 0	
Methacrylonitrile	ug/L	2013-09	< 1	< 1		
Methacrylonitrile	ug/L	2018-09	< 10	< 10	< 10	< 10
Methacrylonitrile	ug/L	2023-09	< 10	< 10	< 10	< 10
Methapyrilene	ug/L	2008-12	< 8	< 8	< 8	
Methapyrilene	ug/L	2013-09	< 8	< 8		
Methapyrilene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Methapyrilene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Methoxychlor	ug/L	2008-12	< 0.05	< 0.05		
Methoxychlor	ug/L	2013-09	< 0.05	< 0.05		
Methoxychlor	ug/L	2018-09	< 0.0337	< 0.034	0.0179 J	< 0.036
Methoxychlor	ug/L	2019-02	0.00465 J		< 0.0352	
Methoxychlor	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
Methyl Methacrylate	ug/L	2008-12	< 0	< 0	< 0	
Methyl Methacrylate	ug/L	2013-09	< 1	< 1		
Methyl Methacrylate	ug/L	2018-09	< 2	< 2	< 2	< 2
Methyl Methacrylate	ug/L	2023-09	< 2	< 2	< 2	< 2
Methyl Methanesulfonate	ug/L	2008-12	< 8	< 8	< 8	
Methyl Methanesulfonate	ug/L	2013-09	< 8	< 8		
Methyl Methanesulfonate	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Methyl Methanesulfonate	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Methyl Parathion	ug/L	2008-12	< 0.4	< 0.4	< 0.4	
Methyl Parathion	ug/L	2013-09	< 0.4	< 0.4		
Methyl Parathion	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Methyl Parathion	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Methylene Chloride	ug/L	2008-12	< 5	< 5	< 5	
Methylene Chloride	ug/L	2013-09	< 5	< 5		
Methylene Chloride	ug/L	2018-05	< 5	< 5	< 5	< 5
Methylene Chloride	ug/L	2018-09	< 5	< 5	< 5	< 5
Methylene Chloride	ug/L	2019-05	< 5	< 5	< 5	< 5
Methylene Chloride	ug/L	2019-10	< 5	< 5	< 5	< 5
Methylene Chloride	ug/L	2020-05	< 5	< 5	< 5	< 5
Methylene Chloride	ug/L	2020-10	< 5	< 5	< 25	< 5
Methylene Chloride	ug/L	2021-05	< 5	< 5	< 5	< 5
Methylene Chloride	ug/L	2021-10	< 5	< 5	< 5	< 5
Methylene Chloride	ug/L	2022-05	< 5	< 5	< 5	< 5
Methylene Chloride	ug/L	2022-09	< 5	< 5	< 5	< 5
Methylene Chloride	ug/L	2023-05	< 5	< 5	< 5	< 5
Methylene Chloride	ug/L	2023-09	< 5	< 5	< 5	< 5
Methylene Chloride	ug/L	2024-05	< 5	< 5	< 5	~~< 5~~
Naphthalene	ug/L	2008-12	< 8	< 8	< 8	
Naphthalene	ug/L	2013-09	< 8	< 8		
Naphthalene	ug/L	2018-09	< 5	< 5	< 5	< 5
Naphthalene	ug/L	2023-09	< 5	< 5	< 5	< 5
Nickel	mg/L	2008-12	0.021	0.0357	0.007	
Nickel	mg/L	2009-05	0.0564	0.0081	< 0.005	
Nickel	mg/L	2009-07	0.0574	0.0067	< 0.005	
Nickel	mg/L	2009-09	0.0468	0.0079	< 0.005	
Nickel	mg/L	2009-12	0.0383	0.0723	0.0099	
Nickel	mg/L	2010-09	0.0494	0.0449	0.0129	
Nickel	mg/L	2011-03	0.0616	0.0201	< 0.0050	
Nickel	mg/L	2011-09	0.0501	0.0095	< 0.0050	
Nickel	mg/L	2012-03	0.028	0.0126		
Nickel	mg/L	2012-09	0.0535	0.0112		
Nickel	mg/L	2012-10			< 0.005	
Nickel	mg/L	2013-05	0.0255	0.0089		0.0793
Nickel	mg/L	2013-07				0.112
Nickel	mg/L	2013-09			0.0176	0.0521
Nickel	mg/L	2013-09	0.0354	0.0066		
Nickel	mg/L	2013-12				0.0460
Nickel	mg/L	2014-04	0.0177 J	0.00775 J		0.0355 J
Nickel	mg/L	2014-09	0.0301	0.00594		0.0391
Nickel	mg/L	2015-04	0.0258	0.00543	0.00160 J	0.00974
Nickel	mg/L	2015-09	0.0198	0.00401 J	0.00137 J	0.0072
Nickel	mg/L	2016-04	0.0339	0.0031 J	< 0.005	0.00669
Nickel	mg/L	2016-09	0.0356	0.0033 J	< 0.005	0.0161
Nickel	mg/L	2017-05	0.0313	0.00319 J	0.00302 J	0.00975
Nickel	mg/L	2017-09	0.0382	0.00348 J	0.00574	
Nickel	mg/L	2018-05	0.04	0.00236 J	0.00768	0.0133
Nickel	mg/L	2018-09	0.0291 J	< 0.05	< 0.05	0.00857 J
Nickel	mg/L	2019-05	0.0271	0.00283 J	0.00952	0.0172
Nickel	mg/L	2019-10	0.0268	0.0019 J	0.00795	0.0162
Nickel	mg/L	2020-05	0.0266	< 0.005	0.00518	0.0138
Nickel	mg/L	2020-10	0.0259	< 0.005	0.0067	0.0219
Nickel	mg/L	2021-05	0.023	< 0.005	0.00654	0.0154
Nickel	mg/L	2021-10	0.0248	0.00311 J	0.00709	0.0173
Nickel	mg/L	2022-05	0.019	< 0.005	0.00464 J	0.0139
Nickel	mg/L	2022-09	0.0182	0.00259 J	0.00576	0.0119
Nickel	mg/L	2023-05	0.0226	0.00208 J	0.00736	~~0.0179~~
Nickel	mg/L	2023-09	0.0196	0.00448 J	0.00664	
Nickel	mg/L	2024-05	0.0184	< 0.005	0.00246 J	~~0.016~~
Nitrobenzene	ug/L	2008-12	< 8	< 8	< 8	
Nitrobenzene	ug/L	2013-09	< 8	< 8		
Nitrobenzene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Nitrobenzene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
N-Nitrosodiethylamine	ug/L	2008-12	< 8	< 8	< 8	
N-Nitrosodiethylamine	ug/L	2013-09	< 8	< 8		
N-Nitrosodiethylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
N-Nitrosodiethylamine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
N-Nitrosodimethylamine	ug/L	2008-12	< 8	< 8	< 8	
N-Nitrosodimethylamine	ug/L	2013-09	< 8	< 8		
N-Nitrosodimethylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
N-Nitrosodimethylamine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
N-Nitrosodi-n-butylamine	ug/L	2008-12	< 8	< 8	< 8	
N-Nitrosodi-n-butylamine	ug/L	2013-09	< 8	< 8		
N-Nitrosodi-n-butylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
N-Nitrosodi-n-butylamine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
N-Nitrosodi-n-propylamine	ug/L	2008-12	< 8	< 8	< 8	
N-Nitrosodi-n-propylamine	ug/L	2013-09	< 8	< 8		
N-Nitrosodi-n-propylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
N-Nitrosodi-n-propylamine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
N-Nitrosodiphenylamine	ug/L	2008-12	< 8	< 8	< 8	
N-Nitrosodiphenylamine	ug/L	2013-09	< 8	< 8		
N-Nitrosodiphenylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
N-Nitrosodiphenylamine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
N-Nitrosomethylethylamine	ug/L	2013-12	< 8	< 8		
N-Nitrosomethylethylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
N-Nitrosomethylethylamine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
N-Nitrosopiperidine	ug/L	2008-12	< 8	< 8	< 8	
N-Nitrosopiperidine	ug/L	2013-09	< 8	< 8		
N-Nitrosopiperidine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
N-Nitrosopiperidine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
N-Nitrosopyrrolidine	ug/L	2008-12	< 8	< 8	< 8	
N-Nitrosopyrrolidine	ug/L	2013-09	< 8	< 8		
N-Nitrosopyrrolidine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
N-Nitrosopyrrolidine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
o,o,o-Triethylphosphorothioate	ug/L	2008-12	< 0.4	< 0.4	< 0.4	
o,o,o-Triethylphosphorothioate	ug/L	2013-09	< 0.4	< 0.4		
o,o,o-Triethylphosphorothioate	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
o,o,o-Triethylphosphorothioate	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
o-Toluidine	ug/L	2008-12	< 8	< 8	< 8	
o-Toluidine	ug/L	2013-09	< 8	< 8		
o-Toluidine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
o-Toluidine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
p-(Dimethylamino)azobenzene	ug/L	2008-12	< 8	< 8	< 8	
p-(Dimethylamino)azobenzene	ug/L	2013-09	< 8	< 8		
p-(Dimethylamino)azobenzene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
p-(Dimethylamino)azobenzene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Parathion	ug/L	2008-12	< 0.4	< 0.4	< 0.4	
Parathion	ug/L	2013-09	< 0.4	< 0.4		
Parathion	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Parathion	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
PCBs - Aroclor 1016	ug/L	2008-12	< 0.1	< 0.1		
PCBs - Aroclor 1016	ug/L	2013-09	< 1	< 1		
PCBs - Aroclor 1016	ug/L	2018-09	< 40.8	< 0.816	< 41.7	< 0.833
PCBs - Aroclor 1016	ug/L	2023-09	< 0.8	< 0.784	< 0.8	< 0.889
PCBs - Aroclor 1221	ug/L	2008-12	< 0.2	< 0.2		
PCBs - Aroclor 1221	ug/L	2013-09	< 1	< 1		
PCBs - Aroclor 1221	ug/L	2018-09	< 40.8	< 0.816	< 41.7	< 0.833
PCBs - Aroclor 1221	ug/L	2023-09	< 0.8	< 0.784	< 0.8	< 0.889
PCBs - Aroclor 1232	ug/L	2008-12	< 0.2	< 0.2		
PCBs - Aroclor 1232	ug/L	2013-09	< 1	< 1		
PCBs - Aroclor 1232	ug/L	2018-09	< 40.8	< 0.816	< 41.7	< 0.833
PCBs - Aroclor 1232	ug/L	2023-09	< 0.8	< 0.784	< 0.8	< 0.889
PCBs - Aroclor 1242	ug/L	2008-12	< 0.2	< 0.2		
PCBs - Aroclor 1242	ug/L	2013-09	< 1	< 1		
PCBs - Aroclor 1242	ug/L	2018-09	< 40.8	< 0.816	< 41.7	< 0.833
PCBs - Aroclor 1242	ug/L	2023-09	< 0.8	< 0.784	< 0.8	< 0.889
PCBs - Aroclor 1248	ug/L	2008-12	< 0.2	< 0.2		
PCBs - Aroclor 1248	ug/L	2013-09	< 1	< 1		

Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
PCBs - Aroclor 1248	ug/L	2018-09	< 40.8	< 0.816	< 41.7	< 0.833
PCBs - Aroclor 1248	ug/L	2023-09	< 0.8	< 0.784	< 0.8	< 0.889
PCBs - Aroclor 1254	ug/L	2008-12	< 0.1	< 0.1		
PCBs - Aroclor 1254	ug/L	2013-09	< 1	< 1		
PCBs - Aroclor 1254	ug/L	2018-09	< 0.816	< 0.816	< 0.833	< 0.833
PCBs - Aroclor 1254	ug/L	2023-09	< 0.8	< 0.784	< 0.8	< 0.889
PCBs - Aroclor 1260	ug/L	2008-12	< 0.1	< 0.1		
PCBs - Aroclor 1260	ug/L	2013-09	< 1	< 1		
PCBs - Aroclor 1260	ug/L	2018-09	< 0.816	< 0.816	< 0.833	< 0.833
PCBs - Aroclor 1260	ug/L	2023-09	< 0.8	< 0.784	< 0.8	< 0.889
Pentachlorobenzene	ug/L	2008-12	< 8	< 8	< 8	
Pentachlorobenzene	ug/L	2013-09	< 8	< 8		
Pentachlorobenzene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Pentachlorobenzene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Pentachloronitrobenzene	ug/L	2008-12	< 8	< 8	< 8	
Pentachloronitrobenzene	ug/L	2013-09	< 8	< 8		
Pentachloronitrobenzene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Pentachloronitrobenzene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Pentachlorophenol	ug/L	2008-12	< 8	< 8	< 8	
Pentachlorophenol	ug/L	2013-09	< 8	< 8		
Pentachlorophenol	ug/L	2018-09	< 10.5	< 10.1	2.55 J	< 11
Pentachlorophenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Phenacetin	ug/L	2008-12	< 8	< 8	< 8	
Phenacetin	ug/L	2013-09	< 8	< 8		
Phenacetin	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Phenacetin	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Phenanthrene	ug/L	2008-12	< 8	< 8	< 8	
Phenanthrene	ug/L	2013-09	< 8	< 8		
Phenanthrene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Phenanthrene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Phenol	mg/L	2008-12	< 0.008	< 0.008	< 0.008	
Phenol	mg/L	2013-09	< 0.008	< 0.008		
Phenol	mg/L	2014-09	< 0.0184	< 0.0192	< 0.0188	
Phenol	mg/L	2015-09	< 0.0204	< 0.018	< 0.018	
Phenol	mg/L	2016-09	< 0.018	< 0.0192	< 0.0192	
Phenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Phenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Phorate	ug/L	2008-12	< 0.4	< 0.4	< 0.4	
Phorate	ug/L	2013-09	< 0.4	< 0.4		
Phorate	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Phorate	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
p-Phenylenediamine	ug/L	2008-12	< 8	< 8	< 8	
p-Phenylenediamine	ug/L	2013-09	< 8	< 8		
p-Phenylenediamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
p-Phenylenediamine	ug/L	2023-09	< 9.62 R	< 10 R	< 10 R	< 10.9 R
p-Phenylenediamine	ug/L	2024-05	< 9.8 R	< 10 R		
Pronamide	ug/L	2008-12	< 8	< 8	< 8	
Pronamide	ug/L	2013-09	< 8	< 8		
Pronamide	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Pronamide	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Propionitrile	ug/L	2008-12	< 0	< 0	< 0	
Propionitrile	ug/L	2013-09	< 10	< 10		
Propionitrile	ug/L	2018-09	< 10	< 10	< 10	< 10
Propionitrile	ug/L	2023-09	< 10	< 10	< 10	< 10
Pyrene	ug/L	2008-12	< 8	< 8	< 8	
Pyrene	ug/L	2013-09	< 8	< 8		
Pyrene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Pyrene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Safrole	ug/L	2008-12	< 8	< 8	< 8	
Safrole	ug/L	2013-09	< 8	< 8		
Safrole	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Safrole	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Selenium	mg/L	2008-12	< 0.004	< 0.004	0.0051	
Selenium	mg/L	2009-05	< 0.015	< 0.015	< 0.015	
Selenium	mg/L	2009-07	< 0.015	< 0.015	< 0.015	

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Selenium	mg/L	2009-09	< 0.015	< 0.015	< 0.015	
Selenium	mg/L	2009-12	< 0.015	< 0.015	< 0.015	
Selenium	mg/L	2010-09	< 0.015	< 0.015	< 0.015	
Selenium	mg/L	2011-03	< 0.0150	< 0.0150	< 0.0150	
Selenium	mg/L	2011-09	< 0.0150	< 0.0150	< 0.0150	
Selenium	mg/L	2012-03	< 0.015	< 0.015		
Selenium	mg/L	2012-09	< 0.015	< 0.015		
Selenium	mg/L	2012-10			< 0.015	
Selenium	mg/L	2013-05	< 0.015	< 0.015		< 0.015
Selenium	mg/L	2013-07				0.0188
Selenium	mg/L	2013-09			< 0.015	< 0.015
Selenium	mg/L	2013-09	< 0.015	< 0.015		
Selenium	mg/L	2013-12				< 0.0150
Selenium	mg/L	2014-04	< 0.00500 J	< 0.00500 J		< 0.00500
Selenium	mg/L	2014-09	< 0.005	< 0.005		< 0.005
Selenium	mg/L	2015-04	< 0.00500	< 0.00500	< 0.00500	< 0.00500
Selenium	mg/L	2015-09	< 0.005	< 0.005	0.00411 J	< 0.005
Selenium	mg/L	2016-04	< 0.005	< 0.005	0.0018 J	< 0.005
Selenium	mg/L	2016-09	< 0.005	< 0.005	< 0.005	< 0.005
Selenium	mg/L	2017-05	< 0.005	< 0.005	< 0.005	< 0.005
Selenium	mg/L	2017-09	< 0.005	< 0.005	< 0.005	
Selenium	mg/L	2018-05	< 0.005	< 0.005	< 0.005	< 0.005
Selenium	mg/L	2018-09	< 0.005	< 0.005	< 0.005	< 0.005
Selenium	mg/L	2019-05	< 0.005	< 0.005	< 0.005	< 0.005
Selenium	mg/L	2019-10	< 0.005	< 0.005	< 0.005	0.00105 J
Selenium	mg/L	2020-05	< 0.005	< 0.005	< 0.005	< 0.005
Selenium	mg/L	2020-10	< 0.005	< 0.005	< 0.005	0.00146 J
Selenium	mg/L	2021-05	< 0.005	< 0.005	< 0.005	< 0.005
Selenium	mg/L	2021-10	0.00111 J	0.0015 J	< 0.005	0.000965 J
Selenium	mg/L	2022-05	< 0.005	< 0.005	< 0.005	< 0.005
Selenium	mg/L	2022-09	< 0.005	< 0.005	< 0.005	< 0.005
Selenium	mg/L	2023-05	< 0.005	< 0.005	0.00148 J	< 0.005
Selenium	mg/L	2023-09	< 0.005	< 0.005	< 0.005	
Selenium	mg/L	2024-05	< 0.005	< 0.005	< 0.005	~~< 0.005~~
Silver	mg/L	2008-12	< 0.004	< 0.004	~~< 0.004~~	
Silver	mg/L	2013-09	< 0.007	< 0.007		
Silver	mg/L	2018-05	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	2018-09	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	2019-05	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	2019-10	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	2020-05	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	2020-10	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	2021-05	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	2021-10	< 0.001	0.000722 J	< 0.001	< 0.001
Silver	mg/L	2022-05	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	2022-09	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	2023-05	< 0.001	< 0.001	0.00175	< 0.001
Silver	mg/L	2023-09	< 0.001	< 0.001	< 0.001	
Silver	mg/L	2024-05	< 0.001	< 0.001	~~< 0.004~~	~~< 0.001~~
Styrene	ug/L	2008-12	< 1	< 1	< 1	
Styrene	ug/L	2013-09	< 1	< 1		
Styrene	ug/L	2018-05	< 1	< 1	< 1	< 1
Styrene	ug/L	2018-09	< 1	< 1	< 1	< 1
Styrene	ug/L	2019-05	< 1	< 1	< 1	< 1
Styrene	ug/L	2019-10	< 1	< 1	< 1	< 1
Styrene	ug/L	2020-05	< 1	< 1	< 1	< 1
Styrene	ug/L	2020-10	< 1	< 1	< 5	< 1
Styrene	ug/L	2021-05	< 1	< 1	< 1	< 1
Styrene	ug/L	2021-10	< 1	< 1	< 1	< 1
Styrene	ug/L	2022-05	< 1	< 1	< 1	< 1
Styrene	ug/L	2022-09	< 1	< 1	< 1	< 1
Styrene	ug/L	2023-05	< 1	< 1	< 1	< 1
Styrene	ug/L	2023-09	< 1	< 1	< 1	< 1
Styrene	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
Sulfide	mg/L	2008-12	< 0.1	< 0.1	< 0.1	

Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Sulfide	mg/L	2013-09	< 0.05	< 0.05		
Sulfide	mg/L	2018-09	1.2	< 1	13.4	0.768 J
Sulfide	mg/L	2019-10			< 1	5.54
Sulfide	mg/L	2020-05	0.243 J		< 1	1.95
Sulfide	mg/L	2020-10	< 10		< 10	< 10
Sulfide	mg/L	2021-05			< 1	0.67 J
Sulfide	mg/L	2021-10	< 1		< 1	1.03
Sulfide	mg/L	2022-05	< 1		< 1	1.61
Sulfide	mg/L	2022-09	< 1		< 1	0.398 J
Sulfide	mg/L	2023-05	< 1		< 1	< 1
Sulfide	mg/L	2023-09	< 1	< 1	< 1	
Sulfide	mg/L	2024-05	< 3		< 3	~~< 3~~
Technical Chlordane	ug/L	2008-12	< 0.1	< 0.1		
Technical Chlordane	ug/L	2013-09	< 0.1	< 0.1		
Technical Chlordane	ug/L	2018-09	< 2.11	< 2.13	< 2.11	< 2.25
Technical Chlordane	ug/L	2019-02	< 2.2		< 2.2	
Technical Chlordane	ug/L	2023-09	< 2	< 1.96	< 2	< 2.22
Tetrachloroethene	ug/L	2008-12	< 1	< 1	< 1	
Tetrachloroethene	ug/L	2013-09	< 1	< 1		
Tetrachloroethene	ug/L	2018-05	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/L	2018-09	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/L	2019-05	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/L	2019-10	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/L	2020-05	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/L	2020-10	< 1	< 1	< 5	< 1
Tetrachloroethene	ug/L	2021-05	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/L	2021-10	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/L	2022-05	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/L	2022-09	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/L	2023-05	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/L	2023-09	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
Thallium	mg/L	2008-12	< 0.004	< 0.004	~~< 0.004~~	
Thallium	mg/L	2013-09	< 0.02	< 0.02		
Thallium	mg/L	2018-05	< 0.001	< 0.001	< 0.001	< 0.001
Thallium	mg/L	2018-09	< 0.001	< 0.001	< 0.001	< 0.001
Thallium	mg/L	2019-05	< 0.001	< 0.001	< 0.001	< 0.001
Thallium	mg/L	2019-10	< 0.001	< 0.001	< 0.001	< 0.001
Thallium	mg/L	2020-05	< 0.001	< 0.001	< 0.001	< 0.001
Thallium	mg/L	2020-10	< 0.001	< 0.001	< 0.001	< 0.001
Thallium	mg/L	2021-05	< 0.001	< 0.001	< 0.001	< 0.001
Thallium	mg/L	2021-10	< 0.001	< 0.001	< 0.001	< 0.001
Thallium	mg/L	2022-05	< 0.001	< 0.001	< 0.001	< 0.001
Thallium	mg/L	2022-09	< 0.001	< 0.001	< 0.001	< 0.001
Thallium	mg/L	2023-05	0.000323 J	< 0.001	0.00242 J-	~~0.00327~~
Thallium	mg/L	2023-09	< 0.001	< 0.001	< 0.001	
Thallium	mg/L	2024-05	< 0.001	< 0.001	< 0.001	~~< 0.001~~
Thionazin	ug/L	2008-12	< 0.4	< 0.4	< 0.4	
Thionazin	ug/L	2013-09	< 0.4	< 0.4		
Thionazin	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Thionazin	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Tin	mg/L	2008-12	< 0.25	< 0.25	< 0.25	
Tin	mg/L	2013-09	< 0.05	< 0.05		
Tin	mg/L	2018-09	< 0.005	< 0.005	< 0.005	< 0.005
Tin	mg/L	2023-09	< 0.005	< 0.005	< 0.005	
Toluene	ug/L	2008-12	< 1	< 1	< 1	
Toluene	ug/L	2013-09	< 1	< 1		
Toluene	ug/L	2018-05	< 1	< 1	< 1	< 1
Toluene	ug/L	2018-09	< 1	< 1	< 1	< 1
Toluene	ug/L	2019-05	< 1	< 1	< 1	< 1
Toluene	ug/L	2019-10	< 1	< 1	< 1	< 1
Toluene	ug/L	2020-05	< 1	< 1	< 1	< 1
Toluene	ug/L	2020-10	< 1	< 1	< 5	< 1
Toluene	ug/L	2021-05	< 1	< 1	< 1	< 1
Toluene	ug/L	2021-10	< 1	< 1	< 1	< 1

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Toluene	ug/L	2022-05	< 1	< 1	< 1	< 1
Toluene	ug/L	2022-09	< 1	< 1	< 1	< 1
Toluene	ug/L	2023-05	< 1	< 1	< 1	< 1
Toluene	ug/L	2023-09	< 1	< 1	< 1	< 1
Toluene	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
Total Suspended Solids	mg/L	2014-09	25	61	17.5	
Total Suspended Solids	mg/L	2015-04	10.0	37.5	14.9	
Total Suspended Solids	mg/L	2015-09	34.3	19	3.25	
Total Suspended Solids	mg/L	2016-04	29.4	17.5	0.625 J	11.1
Total Suspended Solids	mg/L	2016-09	41.6	13.6	2.13	27.5
Total Suspended Solids	mg/L	2017-05	45.3	28	3.5	62
Total Suspended Solids	mg/L	2017-09	37.1	147	5.85	
Total Suspended Solids	mg/L	2018-05	21.8	19.6	8	72
Total Suspended Solids	mg/L	2018-09	60.8	7.88	16.3	10.9
Total Suspended Solids	mg/L	2019-05	58	286	2.25	7
Total Suspended Solids	mg/L	2019-10	37	44	2.13	7.5
Total Suspended Solids	mg/L	2020-05	45	14 J	1.38 J	18
Total Suspended Solids	mg/L	2020-10	12.3	56	3.25	15.6
Total Suspended Solids	mg/L	2021-05	59		2.5	19
Total Suspended Solids	mg/L	2021-10	63.3	13.1	1 J	15.5
Total Suspended Solids	mg/L	2022-05	19.5	7	3.75	40
Total Suspended Solids	mg/L	2022-09	29	27	1.13 J	13.8
Total Suspended Solids	mg/L	2023-05	31	17.3	0.875 J	7.5
Total Suspended Solids	mg/L	2023-09	54.5	57.3	1.38 J	39
Total Suspended Solids	mg/L	2024-05	65.5	241	1.63 J	~~75~~
Toxaphene	ug/L	2008-12	< 0.1	< 0.1		
Toxaphene	ug/L	2013-09	< 0.2	< 0.2		
Toxaphene	ug/L	2018-09	< 2.11	< 2.13	< 2.11	< 2.25
Toxaphene	ug/L	2019-02	< 2.2		< 2.2	
Toxaphene	ug/L	2023-09	< 2	< 1.96	< 2	< 2.22
trans-1,2-Dichloroethene	ug/L	2008-12	< 1	< 1	< 1	
trans-1,2-Dichloroethene	ug/L	2013-09	< 1	< 1		
trans-1,2-Dichloroethene	ug/L	2018-05	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/L	2018-09	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/L	2019-05	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/L	2019-10	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/L	2020-05	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/L	2020-10	< 1	< 1	< 5	< 1
trans-1,2-Dichloroethene	ug/L	2021-05	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/L	2021-10	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/L	2022-05	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/L	2022-09	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/L	2023-05	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/L	2023-09	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
trans-1,3-Dichloropropene	ug/L	2008-12	< 1	< 1	< 1	
trans-1,3-Dichloropropene	ug/L	2013-09	< 1	< 1		
trans-1,3-Dichloropropene	ug/L	2018-05	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/L	2018-09	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/L	2019-05	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/L	2019-10	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/L	2020-05	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/L	2020-10	< 5	< 5	< 25	< 5
trans-1,3-Dichloropropene	ug/L	2021-05	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/L	2021-10	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/L	2022-05	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/L	2022-09	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/L	2023-05	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/L	2023-09	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/L	2024-05	< 5	< 5	< 5	~~< 5~~
trans-1,4-Dichloro-2-butene	ug/L	2008-12	< 5	< 5	< 5	
trans-1,4-Dichloro-2-butene	ug/L	2013-09	< 5	< 5		
trans-1,4-Dichloro-2-butene	ug/L	2018-05	< 10	< 10	< 10	< 10
trans-1,4-Dichloro-2-butene	ug/L	2018-09	< 10	< 10	< 10	< 10
trans-1,4-Dichloro-2-butene	ug/L	2019-05	< 10	< 10	< 10	< 10

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
trans-1,4-Dichloro-2-butene	ug/L	2019-10	< 10	< 10	< 10	< 10
trans-1,4-Dichloro-2-butene	ug/L	2020-05	< 10	< 10	< 10	< 10
trans-1,4-Dichloro-2-butene	ug/L	2020-10	< 10	< 10	< 50	< 10
trans-1,4-Dichloro-2-butene	ug/L	2021-05	< 10	< 10	< 10	< 10
trans-1,4-Dichloro-2-butene	ug/L	2021-10	< 10	< 10	< 10	< 10
trans-1,4-Dichloro-2-butene	ug/L	2022-05	< 10	< 10	< 10	< 10
trans-1,4-Dichloro-2-butene	ug/L	2022-09	< 10	< 10	< 10	< 10
trans-1,4-Dichloro-2-butene	ug/L	2023-05	< 10	< 10	< 10	< 10
trans-1,4-Dichloro-2-butene	ug/L	2023-09	< 10	< 10	< 10	< 10
trans-1,4-Dichloro-2-butene	ug/L	2024-05	< 10	< 10	< 10	~~< 10~~
Trichloroethene	ug/L	2008-12	1	< 1	< 1	
Trichloroethene	ug/L	2009-05	1.1	< 1	< 1	
Trichloroethene	ug/L	2009-07	1.5	< 1	< 1	
Trichloroethene	ug/L	2009-09	1.3	< 1	< 1	
Trichloroethene	ug/L	2009-12	< 1	< 1	< 1	
Trichloroethene	ug/L	2010-09	1.2	< 1	< 1	
Trichloroethene	ug/L	2011-03	< 1.0	< 1.0	< 1.0	
Trichloroethene	ug/L	2011-09	< 1.0	< 1.0	< 1.0	
Trichloroethene	ug/L	2012-03	< 1	< 1	< 1	
Trichloroethene	ug/L	2012-09	< 1	< 1	< 1	
Trichloroethene	ug/L	2013-05	< 1	< 1		
Trichloroethene	ug/L	2013-09	< 1	< 1		
Trichloroethene	ug/L	2014-04	< 1.00	< 1.00		
Trichloroethene	ug/L	2014-09	0.245 J	< 1		
Trichloroethene	ug/L	2015-04	< 1.00			
Trichloroethene	ug/L	2015-09	0.275 J			
Trichloroethene	ug/L	2016-04	0.304 J			
Trichloroethene	ug/L	2016-09	< 1			
Trichloroethene	ug/L	2017-05	< 1			
Trichloroethene	ug/L	2017-09	< 1			
Trichloroethene	ug/L	2018-05	< 1	< 1	< 1	< 1
Trichloroethene	ug/L	2018-09	< 1	< 1	< 1	< 1
Trichloroethene	ug/L	2019-05	< 1	< 1	< 1	< 1
Trichloroethene	ug/L	2019-10	< 1	< 1	< 1	< 1
Trichloroethene	ug/L	2020-05	< 1	< 1	< 1	< 1
Trichloroethene	ug/L	2020-10	< 1	< 1	< 5	< 1
Trichloroethene	ug/L	2021-05	< 1	< 1	< 1	< 1
Trichloroethene	ug/L	2021-10	< 1	< 1	< 1	< 1
Trichloroethene	ug/L	2022-05	< 1	< 1	< 1	< 1
Trichloroethene	ug/L	2022-09	< 1	< 1	< 1	< 1
Trichloroethene	ug/L	2023-05	< 1	< 1	< 1	< 1
Trichloroethene	ug/L	2023-09	< 1	< 1	< 1	< 1
Trichloroethene	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
Vanadium	mg/L	2008-12	< 0.01	0.0384	< 0.01	
Vanadium	mg/L	2009-05	< 0.01	< 0.01	< 0.01	
Vanadium	mg/L	2009-07	< 0.01	< 0.01	< 0.01	
Vanadium	mg/L	2009-09	< 0.01	< 0.01	< 0.01	
Vanadium	mg/L	2009-12	< 0.01	0.0554	< 0.01	
Vanadium	mg/L	2010-09	0.0298	0.052	0.0134	
Vanadium	mg/L	2011-03	< 0.0100	< 0.0100	< 0.0100	
Vanadium	mg/L	2011-09	< 0.0100	< 0.0100	< 0.0100	
Vanadium	mg/L	2012-03	< 0.01	< 0.03		
Vanadium	mg/L	2012-09	< 0.01	< 0.01		
Vanadium	mg/L	2012-10			< 0.01	
Vanadium	mg/L	2013-05	< 0.01	< 0.03		0.0284
Vanadium	mg/L	2013-07				0.0686
Vanadium	mg/L	2013-09			0.0108	< 0.01
Vanadium	mg/L	2013-09	< 0.01	< 0.01		
Vanadium	mg/L	2013-12				< 0.0100
Vanadium	mg/L	2014-04	< 0.0500	< 0.0500		0.00335 J
Vanadium	mg/L	2014-09	0.000564 J	< 0.005		0.00268 J
Vanadium	mg/L	2015-04	0.00238 J	< 0.00500	0.000980 J	0.000896 J
Vanadium	mg/L	2015-09	0.000653 J	< 0.005	< 0.005	0.000758 J
Vanadium	mg/L	2016-04	0.000569 J	< 0.005	< 0.005	0.000856 J
Vanadium	mg/L	2016-09	0.00109 J	0.000306 J	< 0.005	0.00172 J

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Vanadium	mg/L	2017-05	< 0.005	< 0.005	< 0.005	0.00136 J
Vanadium	mg/L	2017-09	0.00128 J	0.001 J	< 0.005	
Vanadium	mg/L	2018-05	0.00113 J	0.000574 J	< 0.005	0.00175 J
Vanadium	mg/L	2018-09	0.000747 J	< 0.005	< 0.005	0.0019 J
Vanadium	mg/L	2019-05	< 0.005	< 0.005	< 0.005	0.00176 J
Vanadium	mg/L	2019-10	< 0.005	< 0.005	< 0.005	0.00288 J
Vanadium	mg/L	2020-05	< 0.005	< 0.005	< 0.005	< 0.005
Vanadium	mg/L	2020-10	< 0.005	< 0.005	< 0.005	0.00282 J
Vanadium	mg/L	2021-05	< 0.005	< 0.005	< 0.005	0.00129 J
Vanadium	mg/L	2021-10	< 0.005	< 0.005	< 0.005	0.00434 J
Vanadium	mg/L	2022-05	< 0.005	< 0.005	< 0.005	0.00149 J
Vanadium	mg/L	2022-09	< 0.005	< 0.005	< 0.005	< 0.005
Vanadium	mg/L	2023-05	< 0.005	< 0.005	< 0.005	< 0.005
Vanadium	mg/L	2023-09	< 0.005	0.00132 J	< 0.005	
Vanadium	mg/L	2024-05	< 0.005	0.00208 J	< 0.005	~~< 0.005~~
Vinyl Acetate	ug/L	2008-12	< 5	< 5	< 5	
Vinyl Acetate	ug/L	2013-09	< 5	< 5		
Vinyl Acetate	ug/L	2018-05	< 10	< 10	< 10	< 10
Vinyl Acetate	ug/L	2018-09	< 10	< 10	< 10	< 10
Vinyl Acetate	ug/L	2019-05	< 10	< 10	< 10	< 10
Vinyl Acetate	ug/L	2019-10	< 10	< 10	< 10	< 10
Vinyl Acetate	ug/L	2020-05	< 10	< 10	< 10	< 10
Vinyl Acetate	ug/L	2020-10	< 10	< 10	< 50	< 10
Vinyl Acetate	ug/L	2021-05	< 10	< 10	< 10	< 10
Vinyl Acetate	ug/L	2021-10	< 10	< 10	< 10	< 10
Vinyl Acetate	ug/L	2022-05	< 10	< 10	< 10	< 10
Vinyl Acetate	ug/L	2022-09	< 10	< 10	< 10	< 10
Vinyl Acetate	ug/L	2023-05	< 10	< 10	< 10	< 10
Vinyl Acetate	ug/L	2023-09	< 10	< 10	< 10	< 10
Vinyl Acetate	ug/L	2024-05	< 10	< 10	< 10	~~< 10~~
Vinyl Chloride	ug/L	2008-12	< 1	< 1	< 1	
Vinyl Chloride	ug/L	2013-09	< 1	< 1		
Vinyl Chloride	ug/L	2018-05	< 1	< 1	< 1	< 1
Vinyl Chloride	ug/L	2018-09	< 1	< 1	< 1	< 1
Vinyl Chloride	ug/L	2019-05	< 1	< 1	< 1	< 1
Vinyl Chloride	ug/L	2019-10	< 1	< 1	< 1	< 1
Vinyl Chloride	ug/L	2020-05	< 1	< 1	< 1	< 1
Vinyl Chloride	ug/L	2020-10	< 1	< 1	< 5	< 1
Vinyl Chloride	ug/L	2021-05	< 1	< 1	< 1	< 1
Vinyl Chloride	ug/L	2021-10	< 1	< 1	< 1	< 1
Vinyl Chloride	ug/L	2022-05	< 1	< 1	< 1	< 1
Vinyl Chloride	ug/L	2022-09	< 1	< 1	< 1	< 1
Vinyl Chloride	ug/L	2023-05	< 1	< 1	< 1	< 1
Vinyl Chloride	ug/L	2023-09	< 1	< 1	< 1	< 1
Vinyl Chloride	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
Xylenes, Total	ug/L	2008-12	< 2	< 2	< 2	
Xylenes, Total	ug/L	2013-09	< 2	< 2		
Xylenes, Total	ug/L	2018-05	< 3	< 3	< 3	< 3
Xylenes, Total	ug/L	2018-09	< 3	< 3	< 3	< 3
Xylenes, Total	ug/L	2019-05	< 3	< 3	< 3	< 3
Xylenes, Total	ug/L	2019-10	< 3	< 3	< 3	< 3
Xylenes, Total	ug/L	2020-05	< 3	< 3	< 3	< 3
Xylenes, Total	ug/L	2020-10	< 3	< 3	< 15	< 3
Xylenes, Total	ug/L	2021-05	< 3	< 3	< 3	< 3
Xylenes, Total	ug/L	2021-10	< 3	< 3	< 3	< 3
Xylenes, Total	ug/L	2022-05	< 3	< 3	< 3	< 3
Xylenes, Total	ug/L	2022-09	< 3	< 3	< 3	< 3
Xylenes, Total	ug/L	2023-05	< 3	< 3	< 3	< 3
Xylenes, Total	ug/L	2023-09	< 3	< 3	< 3	< 3
Xylenes, Total	ug/L	2024-05	< 3	< 3	< 3	~~< 3~~
Zinc	mg/L	2008-12	0.0101	0.0157	0.0189	
Zinc	mg/L	2009-05	< 0.05	< 0.05	< 0.05	
Zinc	mg/L	2009-07	< 0.05	0.0514	< 0.05	
Zinc	mg/L	2009-09	< 0.05	< 0.05	0.0568	
Zinc	mg/L	2009-12	< 0.05	0.132	< 0.05	

Attachment 1
Dec. 2008 - May 2024 Appendix II Monitoring Data

Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Zinc	mg/L	2010-03	< 0.05			
Zinc	mg/L	2010-09	< 0.05	0.0808	< 0.05	
Zinc	mg/L	2011-03	< 0.0500	< 0.0500	< 0.0500	
Zinc	mg/L	2011-09	< 0.0500	< 0.0500	< 0.0500	
Zinc	mg/L	2012-03	< 0.05	0.117		
Zinc	mg/L	2012-09	< 0.05	< 0.05		
Zinc	mg/L	2012-10			< 0.05	
Zinc	mg/L	2013-05	< 0.05	< 0.05		0.207
Zinc	mg/L	2013-07				0.826
Zinc	mg/L	2013-09			0.326	0.31
Zinc	mg/L	2013-09	< 0.05	< 0.05		
Zinc	mg/L	2013-12				0.251
Zinc	mg/L	2014-04	0.0143 J	< 0.0200		0.248
Zinc	mg/L	2014-09	0.0514	< 0.01		0.402
Zinc	mg/L	2015-04	0.0433	0.00769 J	0.395	0.977
Zinc	mg/L	2015-09	0.0305	0.00816 J	0.091	0.0256
Zinc	mg/L	2016-04	< 0.01	< 0.01	0.011	0.00621 J
Zinc	mg/L	2016-09	0.00648 J	0.00829 J	0.008 J	0.0211
Zinc	mg/L	2017-05	< 0.02	< 0.02	0.0258	0.0202
Zinc	mg/L	2017-09	< 0.02	0.0138 J	0.0215	
Zinc	mg/L	2018-05	0.011 J	< 0.02	0.038	0.0366
Zinc	mg/L	2018-09	< 0.02	< 0.02	0.0232	0.0206
Zinc	mg/L	2019-05	0.0289	0.0143 J	0.0204	0.028
Zinc	mg/L	2019-10	0.0134 J	0.0172 J	0.0308	0.0347
Zinc	mg/L	2020-05	0.0143 J	< 0.02	0.0437	0.0131 J
Zinc	mg/L	2020-10	< 0.02	0.0187 J	0.0256	0.0257
Zinc	mg/L	2021-05	0.0173 J	0.0437	0.0944	0.018 J
Zinc	mg/L	2021-10	0.0253	0.0202	0.0878	0.0395
Zinc	mg/L	2022-05	0.542	0.103	0.822	0.0109 J
Zinc	mg/L	2022-09	0.0143 J	0.0244	0.0391	0.017 J
Zinc	mg/L	2023-05	0.0158 J	0.00847 J	0.07	~~0.0331~~
Zinc	mg/L	2023-09	0.0249	0.0397	0.136	
Zinc	mg/L	2024-05	0.088	0.0542	0.101	~~0.0592~~

Attachment 2

Detailed Discussion of Statistical Methods

Statistical Methodology

1. Comparison to Background

For determining which parameters will need a formal statistical treatment, the Unified Guidance (USEPA, 2009) suggests splitting monitoring parameters into three distinct groups: a) reliable indicators selected for formal testing; b) other analytes which are monitored for general groundwater quality information but not statistically tested; and c) those meeting the "never-detected" criteria. Only those parameters with some historically detected presence in background need to be included in the first group and treated with a formal statistical test. Any parameter that has never been detected in background is eligible for the third group of "never-detected" constituents. Constituents with detections below the reporting limit (J-flagged data) will be considered "never-detected." As a means of evaluating the third group, the Unified Guidance suggests the Double Quantification Rule (DQR). The DQR is stated in the Unified Guidance as:

"A confirmed exceedance is registered if any well-constituent pair in the '100% non-detect' group exhibits quantified measurements [i.e., at or above the reporting limit (RL)] in two consecutive sample and resample events."

The Unified Guidance also recommends establishing background sample sizes as large as feasible. The guidance recognizes that small sample sizes in background can be "particularly" troublesome, especially in controlling statistical test false positive and negative rates. With parametric tests (such as parametric prediction limits), the false positive rate may be controlled, but at the expense of statistical power. With non-parametric tests (such as non-parametric prediction limits or the "quasi-statistical" DQR), the false positive rate may be unacceptably high. The Unified Guidance suggests that generally at least 8 to 10 separate background measurements be available, recognizing that statistical power continues to increase with larger sample sizes.

The statistical analysis methods utilized for comparison to background are the DQR and "1-of-2" interwell prediction limits as recommended in the Unified Guidance (USEPA, 2009).

Double Quantification Rule
The DQR will be used to evaluate SSIs over background for the Appendix I and II constituents that have not been detected above the reporting limit in the background data set. An SSI will be indicated for any well-constituent pair with quantified measurements at or above the reporting limit noted for two consecutive sample and resample events. If applicable, the resample will be collected prior to next semiannual sampling event.

Interwell Prediction Limits
Interwell prediction limits will be used to statistically evaluate SSIs over background for the Appendix I and II constituents which have been detected above the reporting limit in the background data set. A "1-of-2" retesting plan will be utilized on individual sample results. The 1-of-2 retesting plan as defined in the Unified Guidance concludes that an SSI has occurred when two out of two sample results exceed the prediction limit, while no SSI is concluded if 1-

of-2 is below the limit. If applicable, resamples will be collected prior to next semiannual sampling event. The prediction limit for each constituent will be recalculated semiannually.

For interwell constituents with less than or equal to 50% detects in the background data set, a non-parametric prediction limit will be utilized. The non-parametric prediction limit will be taken as the maximum order statistic (maximum value) of the background data.

For interwell constituents with greater than 50% detects in the background data set, normality assumptions will be verified using the Shapiro-Wilk normality test. If the background data is not normally distributed, a non-parametric prediction limit will be utilized (as described in the paragraph above). If the background data is normally distributed, or can be fit to a normal distribution utilizing a normalizing transformation, then a normal-based parametric prediction limit will be applied.

When considering a lognormal prediction limit, a comparison will be made to the maximum order statistic for the background data set. Lognormal prediction limits can be sensitive to smaller departures from lognormality. That is, if data are not truly lognormal, but also not rejected as lognormal, the prediction limit may be inflated as a result of the transformation. In choosing a lognormal limit, in addition to the percent detections and lognormal goodness of fit criteria, an additional convention will be applied. If the lognormal limit exceeds the level of twice the maximum background concentration, it is assumed that the lognormal model does not adequately fit the background distribution and a non-parametric prediction limit will be selected.

For interwell constituents with 50% to 85% detects in the background data set, Kaplan-Meier estimation will be applied to manage statistical bias introduced by non-detects. For interwell constituents with over 85% detects in the background data set, half the reporting limit will be used for non-detect data. These estimation methods follow Unified Guidance recommendations and are given in detail in Unified Guidance Chapter 15 (USEPA, 2009).

The parametric prediction limit will be calculated as:

$$PL = \bar{x} + k \cdot s$$

where $\bar{x}$ is the sample mean of the December 2008 through current event background data, *s* is the sample standard deviation, and *k* is the multiplier obtained from the Unified Guidance Table 19-1 (USEPA, 2009) for 1-of-2 interwell prediction limits on observations. In determining *k*, the number of constituents of concern (COCs) for formal statistical evaluation along with the number of downgradient wells need to be identified. Per the basic subdivision discussion presented in Section 19.2.1 of the Unified Guidance, along with the discussion regarding the use of the appendix tables for parametric retesting plans given on pages 19-13 through 19-15 of the Unified Guidance (USEPA, 2009), the *k*-multiplier is chosen based on the number of constituents, wells, and evaluations performed annually. When an exact well and COC configuration is not given in the appendix tables, the *k*-multiplier is linearly interpolated as described on page 19-14 of the Unified Guidance (USEPA, 2009).

Sanitas® v10.0 software (Sanitas Technologies) will be used to check distributional assumptions, perform Kaplan-Meier in the case of 50% to 85% detects in the background data set, and calculate the *k*-multipliers and subsequent prediction limits.

Intrawell Prediction Limits

Intrawell prediction limits are calculated in a similar manner to that described above for the interwell case. A main difference between the two methods is the intrawell limit is calculated from a collection of background measurements within the compliance well. A minimum of eight compliance well background samples will be used when calculating the limit.

A second difference is for the parametric prediction limit, in which the *k*-multiplier is modified from the interwell case, as given in Appendix D Tables 19-10 through 19-18 of the Unified Guidance (USEPA, 2009).

Updating intrawell background is performed periodically. The Unified Guidance (Section 5.3.2) recommends that 4 to 8 new compliance observations be collected prior to updating the background data set. The guidance also states that "a potential update is predicated on there being no statistically significant increase [SSI] recorded for that well constituent, including since the last update." A two-sample t-test or Wilcoxon rank-sum test between existing intrawell background data and the potential set of newer background data is performed, and a non-significant result implies that the newer compliance data can be re-classified as background measurements.

2. Comparison to Groundwater Protection Standard – Assessment Monitoring

According to 567 IAC 113.10(6)f and g, under the assessment monitoring program Appendix II results which have been determined to be statistically above background are also statistically compared to the GWPS. If "Appendix II constituents are detected at statistically significant levels above the GWPS" a notice is placed in the operating record and characterization is begun.

Under 567 IAC 113.10(6)h, the GWPS is the maximum contaminant level (MCL) promulgated under Section 1412 of the Safe Drinking Water Act in 40 Code of Federal Regulations (CFR) Part 141. If no MCL exists, or if background concentrations are higher than the MCL, the GWPS is defined as background. Also, per 567 IAC 113.10(6)i, an alternative GWPS may be established by the department for constituents for which there is no MCL such as the "health-based concentrations that comply with the statewide standards for groundwater established pursuant to 567-Chapter 137."

When the GWPS is background concentrations, the statistical methods discussed in the above "1. Comparison to Background" are used. When the GWPS is the MCL or an alternative health-based concentration, per the Unified Guidance (USEPA, 2009), "confidence intervals are the recommended general statistical strategy in compliance/assessment or corrective action monitoring." In the case of normally distributed data, a normal-based parametric confidence interval is used. If the data are not normally distributed a non-parametric confidence interval on the median is used. A lower 99% confidence limit falling above the GWPS implies that concentrations are detected at statistically significant levels above the GWPS with an α-level of 0.01, which is the minimum RCRA regulatory limit from §264.97(i)(2) for an individual test false positive error rate.

The Unified Guidance recognizes that statistical power is also of prime concern to USEPA and that there "should be a high probability that the statistical test will positively identify concentrations that have exceeded a fixed regulatory standard." In compliance/assessment monitoring, instead of pre-specifying the false positive rate prior to computing confidence interval limits, the Unified Guidance suggests the desired level of power (1-β) should be set as an initial target.

For compliance/assessment monitoring purposes, the Unified Guidance (Chapter 22) suggests evaluating increases in the true concentration mean of 1.5 and 2.0 times a fixed standard. (This is similar in concept to the critical power targets in detection monitoring, i.e., 55-60% power at 3σ above background and 80-85% power at 4σ over background). As a general guide, the Unified Guidance suggests there should be at least 70-80% statistical power for detecting increases of 2 times a fixed standard. Specifically, the Unified Guidance recommends there be 50% power of detecting increases in the true concentration mean of 1.5 times a fixed standard (risk ratio of 1.5) and 80% power of detecting increases in the true concentration mean of 2.0 times a fixed standard (risk ratio of 2.0).

To meet these levels of statistical power, α is chosen based on either Unified Guidance Equation 22.1:

$$1 - \beta = G_{T,n-1}\left(t_{1-\alpha,n-1} \middle| \Delta - \sqrt{n}(R-1)\right);$$

where R is the desired risk ratio, $t_{(1-\alpha,n-1)}$ is the (1−α) Student's t-quantile with (*n*−1) degrees of freedom and *G* represents the cumulative non-central t-distribution with (*n*−1) degrees of freedom and noncentrality parameter Δ;

or Unified Guidance Equation 22.2:

$$\alpha \sim 1 - F_{T,n-1}\left(\frac{(R-1)\sqrt{n}}{R \cdot \widehat{CV}} - t_{1-\beta,n-1}\right);$$

where R is the desired risk ratio, n is the sample size, CV is the estimated sample coefficient of variation, $t_{(1-\beta,n-1)}$ is the (1−β) Student's t-quantile with (n−1) degrees of freedom, and *F* is the cumulative (central) Student's t-distribution function.

The first equation (Unified Guidance Equation 22.1) assumes a coefficient of variation (CV) =1. This version is used if only poorer estimates of the true CV are available. In practice, a convention has been adopted with the statistical updates to utilize Unified Guidance Equation 22.2 in all cases where a parametric confidence interval is calculated, and use Unified Guidance Equation 22.1 when non-parametric confidence intervals are calculated. Since a non-parametric confidence interval is based on the median, it is not as sensitive to departures from normality, and the assumption of a CV=1 in Unified Guidance Equation 22.1 should provide a conservative estimate.

Since 0.01 is the minimum RCRA regulatory limit for α, it is never set lower than this. Conversely, the Unified Guidance recognizes the "difficulty of simultaneously attaining the recommended level of power while controlling the false positive rate, especially for small sample sizes and highly variable data." The Unified Guidance suggests a maximum false positive rate of α=0.2 is a reasonable upper bound.

Finally, similar to the need for defining a SWFPR under detection monitoring, the Unified Guidance (Chapter 7) recognizes there may be concern about the "use of relatively high individual test-wise false positive rates (α) in order to meet a pre-specified power, especially when considering the cumulative false positive error rate across multiple wells and/or constituents." However, "the Unified Guidance considers computation of cumulative SWFPRs in compliance/assessment testing to be problematic, and reliance on individual test false positive rates preferable." Notwithstanding, if several confidence limit calculations are compared to the GWPS with high α-levels, caution should be taken in the interpretation.

For calculation of confidence intervals, Sanitas® v10.0 software is again used to check distributional assumptions, perform Kaplan-Meier estimation in the case of 50% to 85% detects, and calculate either parametric or nonparametric confidence limits.

3. <u>Comparison to Groundwater Protection Standard – Corrective Action Monitoring</u>

As stated above, if "Appendix II constituents are detected at statistically significant levels above the GWPS" a notice is placed in the operating record and characterization is begun. Owners or operators are required to initiate an assessment of corrective measures, select a remedy, and implement a remedy in accordance with 567 IAC 113.10(7), (8), and (9). For remedy completion in accordance with 567 IAC 113.10(9)e(2), compliance with the GWPS is considered achieved by demonstrating that concentrations of Appendix II constituents have not exceeded the GWPS for a period of three consecutive years or an alternate length of time established by the Department.

Individual analyte/well pairs may return to assessment constituents (at the corrective action monitoring location) once compliance with the GWPS has been achieved for a period of 3 years. Note that monitoring wells will not move out of the corrective action monitoring program until all Appendix II constituents have achieved compliance with the GWPS for a period of three consecutive years.

<u>Confidence Intervals in Corrective Action Mode</u>
In the case of the GWPS being a fixed standard as either the 40 CFR Part 141 Safe Drinking Water Act MCL or the 567 IAC Chapter 137 Statewide Standard for a Protected Groundwater Source, "confidence intervals are the recommended general statistical strategy in compliance/assessment or corrective action monitoring" (USEPA, 2009). However, a primary difference between confidence intervals as used under assessment monitoring and confidence intervals used under corrective action is reversal of the null hypothesis. As detailed in Section 7.2 of the Unified Guidance (USEPA, 2009), the hypothesis testing structure under assessment monitoring is to presume compliance point concentrations do not to exceed the fixed standard unless sampling data indicates otherwise. As a formal statistical hypothesis, this is written as:

$$H_0\text{: } \Theta \leq G \quad \text{vs.} \quad H_A\text{: } \Theta > G$$

In corrective action mode, the hypothesis is reversed. Namely, compliance point concentrations are presumed to exceed the fixed standard and evidence must be presented to demonstrate regulatory compliance. In the case of corrective action, the statistical hypothesis is written as:

$$H_0\text{: } \Theta > G \quad \text{vs.} \quad H_A\text{: } \Theta \leq G$$

For testing under assessment monitoring, a lower confidence limit (LCL) is compared to the compliance standard *G*. If the LCL is larger than the standard *G*, it is concluded that the compliance standard has been violated.

However, under corrective action monitoring, the upper confidence limit (UCL) is compared to the compliance standard *G*. In this case, the UCL should lie below the standard to accept the alternative hypothesis that concentration levels are in compliance.

The UCL α-level under corrective action monitoring is set so that a high degree of confidence is achieved in declaring successful remediation. Per the Unified Guidance (Section 7.4.2) "EPA's overriding concern in corrective action is that remediation efforts not be declared successful without sufficient statistical proof." The Unified Guidance "recommends the use of a reasonably low, fixed test-wide false positive rate (e.g., α = 0.05 or 0.10)." In this case, α = 0.10 corresponds to a 90% UCL.

<u>GWPS as Background</u>
Pursuant to 567 IAC 113.10(6)h, when background concentrations of an analyte exceed the applicable MCL or IAC Statewide Standard for a Protected Groundwater Source, the GWPS is the background concentration. In this case, the GWPS is not a fixed standard but based on a distribution of background sample results.

Section 7.5 of the Unified Guidance (USEPA, 2009) details statistical hypothesis testing under corrective action when the GWPS is background. The Unified Guidance offers two alternative statistical approaches to hypothesis testing in this case. These alternatives are as follows:

A. The first represents a *two-sample* test of two distinct populations, namely the compliance well to background populations. Similar to the statistical tests used under detection and assessment monitoring, with this alternative under corrective action, the Unified Guidance states that "one highly recommended statistical test approach is a prediction limit." The Unified Guidance also states, "whatever the critical value for a selected background test, it becomes the GWPS under compliance/assessment or corrective action monitoring." Further, "the only allowable hypothesis test structure for the two-sample approach follows that of detection and compliance monitoring. Once exceeded and in corrective action, a return to compliance is through evidence that future samples lie below the GWPS using the same hypothesis structure." Therefore, with this approach in corrective action, prediction limits are calculated similarly as in assessment monitoring. Compliance well concentrations below a prediction limit indicate a return to concentrations below the background GWPS.

B. The second involves computation of a fixed statistic from the background data as the GWPS. The Unified Guidance recommendation in this case is to define a fixed GWPS based on a background upper tolerance limit with 95% confidence and 95% coverage. This is designed to be a "reasonable maximum on the likely range of background concentrations." This upper tolerance limit based on background data is then used as a fixed standard in statistical comparisons with 90% or 95% UCLs from compliance wells as discussed previously. Also, with the UCL method, the null hypothesis is reversed from that of assessment monitoring, assuming contamination is above the GWPS. A UCL falling below the background GWPS offers evidence of a return to concentrations below the GWPS. The Unified Guidance refers to this approach as a *single-sample* testing method, since the compliance well population is tested against a defined fixed standard.

The Unified Guidance discusses tradeoffs between the two approaches and does not necessarily prescribe either approach over the other. The Unified Guidance suggests that both approaches may be used, where "the background GWPS would be a range based on the two testing methods rather than a single value."

Normality
For calculation of confidence intervals, Sanitas® v10.0 software is again used to check distributional assumptions, perform Kaplan-Meier estimation in the case of 50% to 85% detects, and calculate either parametric or nonparametric confidence limits. "Corrective Action Mode" is selected for this analysis.

Non-Corrective Action Constituents
As recommended in the Unified Guidance (USEPA, 2009), confidence intervals in corrective action mode will be utilized to evaluate only constituents and monitoring locations with previously identified SSLs over the GWPS. Other compliance constituents (i.e., those without SSLs over the GWPS during prior statistical evaluations) will continue to be evaluated using the "1. Comparison to Background" and "2. Comparison to Groundwater Protection Standard – Assessment Monitoring" methods described above.

Note: the Unified Guidance (USEPA, 2009) states: "it should be recognized that once corrective action or remediation activities are initiated, there will be a considerable time during which the GWPS may still be exceeded. As provided in the RCRA regulations, it is at the conclusion of remediation activities that formal corrective action monitoring evaluation is appropriate. However, in the intervening period of remedial activity, well constituents can still be monitored and the relative efficacy of remediation measures tracked. The same corrective action hypothesis can be assumed for the targeted constituents; techniques such as trend testing may be appropriate interim applications." Given the statement above and the intentions of 567 IAC 113.10(6)g, as soon as an SSL is identified for an assessment monitoring constituent/location, then the next statistical evaluation will utilize corrective action monitoring (confidence intervals in corrective action mode).

Data Concentration Shifts During Corrective Action
Confidence intervals are based on the assumption that the population is stable over time. As a result, confidence intervals may not accurately represent the current well concentrations if increasing or decreasing trends are observed (i.e., during a release or under active remediation). Per the Unified Guidance (USEPA, 2009), lower or upper confidence limits constructed on accumulated data may be overly wide (due to high sample variability caused by combining pre- and post-shift data) and may not be reflective of more recent upward/downward shifts in the contaminant distribution.

Alternative procedures may be applied to data sets with shifting distributions. For example, where trends tests are significant, pre-shift data may be removed from the well/parameter data set for the purposes of constructing the confidence interval. "The reduction in sample size will often be more than offset by the gain in statistical power. More recent measurements may exhibit less variation around the shifted mean value, resulting in a shorter confidence interval" (USEPA, 2009).

Another alternative is to construct confidence bands around the trend line to track progress towards exceeding or meeting a fixed standard. As suggested in the Unified Guidance (Chapter 22), if a trend is present, a 90% confidence band (upper 95% confidence limit) is placed on the linear trend line. If the upper 95% confidence limit on the trend line falls below the GWPS, the well is found to have reduced to levels statistically below the GWPS.

As the discussed in the Unified Guidance, “inferences concerning a linear regression are generally appropriate when two conditions hold: 1) the residuals from the regression are approximately normal or at least reasonably symmetric in distribution; and 2) a plot of residuals versus concentrations indicates a scatter cloud of essentially uniform vertical thickness or width.” These conditions are assessed through normal probability plots of the regression residuals and plots of residuals against the predicted concentrations.

<u>Data Adjustments Due to Exiting Corrective Action</u>

When analyte/well pairs exit corrective action and return to assessment constituents, the hypothesis testing structure is reversed again. In corrective action mode, compliance point concentrations were presumed to exceed the GWPS, and evidence must be presented to demonstrated regulatory compliance (i.e., UCLs below the GWPS for three consecutive years). With the return to assessment constituents, analyte/well pairs have demonstrated regulatory compliance. The hypothesis testing structure reverts to the assessment monitoring structure where compliance point concentrations are presumed to not exceed the GWPS unless sampling data indicates otherwise (i.e., LCL is above the GWPS). With this reversion in hypothesis, the focus shifts to evaluating concentration changes in the analyte/well pair that would indicate an increase over the GWPS and re-trigger corrective action. For constituents with historical SSLs, earlier concentrations that had previously triggered corrective action are no longer providing useful information regarding the current assessment monitoring hypothesis. Retaining the historical data during the timeframe in which the GWPS was exceeded will result in the regression or confidence interval methods being slower to respond to new increases. As a result, the historical data prior to when statistical compliance with the GWPS was first achieved will be removed when analyte/well pairs exit corrective action and return to assessment constituents.

Attachment 3

Sanitas Report Output for Prediction Limit Calculations

Attachment 3
Assessment Monitoring
Interwell Prediction Limit

Constituent Name	Well	Upper Limit	Date	Observation	Exceeds	Background N	Background Wells	Background Mean	Standard Deviation	% Non-detects	Non-detect Adjustment	Transformation	Alpha	Method
Assessment Monitoring Locations														
Antimony (mg/L)	MW-27	0.00331	5/28/2024	0.001ND	No	25	MW-51,PZ-12	n/a	n/a	72	n/a	n/a	0.002799	NP Inter (NDs) 1 of 2
Antimony (mg/L)	MW-50R	0.00331	5/28/2024	0.00112J	No	25	MW-51,PZ-12	n/a	n/a	72	n/a	n/a	0.002799	NP Inter (NDs) 1 of 2
Arsenic (mg/L)	MW-27	0.00874	5/28/2024	0.00184J	No	23	MW-51,PZ-12	n/a	n/a	57	n/a	n/a	0.003366	NP Inter (NDs) 1 of 2
Arsenic (mg/L)	MW-50R	0.00874	5/28/2024	0.00195J	No	23	MW-51,PZ-12	n/a	n/a	57	n/a	n/a	0.003366	NP Inter (NDs) 1 of 2
Barium (mg/L)	MW-27	2.18	5/28/2024	0.0903	No	50	MW-51,PZ-12	n/a	n/a	2	n/a	n/a	0.00075	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-50R	2.18	5/28/2024	0.0635	No	50	MW-51,PZ-12	n/a	n/a	2	n/a	n/a	0.00075	NP Inter (normality) 1 of 2
Cadmium (mg/L)	MW-27	0.001724	5/28/2024	0.000326	No	50	MW-51,PZ-12	-8.331	1.078	42	Kaplan-Meier	ln(x)	0.001754	Param Inter 1 of 2
Cadmium (mg/L)	MW-50R	0.001724	5/28/2024	0.000328	No	50	MW-51,PZ-12	-8.331	1.078	42	Kaplan-Meier	ln(x)	0.001754	Param Inter 1 of 2
Chromium (mg/L)	MW-27	0.0305	5/28/2024	0.0025ND	No	51	MW-51,PZ-12	n/a	n/a	78	n/a	n/a	0.000728	NP Inter (NDs) 1 of 2
Chromium (mg/L)	MW-50R	0.0305	5/28/2024	0.00132J	No	51	MW-51,PZ-12	n/a	n/a	78	n/a	n/a	0.000728	NP Inter (NDs) 1 of 2
Cobalt (mg/L)	MW-27	0.0528	5/28/2024	0.00821	No	50	MW-51,PZ-12	-6.92	2.18	32	Kaplan-Meier	ln(x)	0.001754	Param Inter 1 of 2
Cobalt (mg/L)	MW-50R	0.0528	5/28/2024	0.00221	No	50	MW-51,PZ-12	-6.92	2.18	32	Kaplan-Meier	ln(x)	0.001754	Param Inter 1 of 2
Copper (mg/L)	MW-27	0.136	5/28/2024	0.00195J	No	50	MW-51,PZ-12	n/a	n/a	48	n/a	n/a	0.00075	NP Inter (normality) 1 of 2
Copper (mg/L)	MW-50R	0.136	5/28/2024	0.00359J	No	50	MW-51,PZ-12	n/a	n/a	48	n/a	n/a	0.00075	NP Inter (normality) 1 of 2
Lead (mg/L)	MW-27	0.0878	5/28/2024	0.000604	No	50	MW-51,PZ-12	n/a	n/a	46	n/a	n/a	0.00075	NP Inter (normality) 1 of 2
Lead (mg/L)	MW-50R	0.0878	5/28/2024	0.00585	No	50	MW-51,PZ-12	n/a	n/a	46	n/a	n/a	0.00075	NP Inter (normality) 1 of 2
Nickel (mg/L)	MW-27	0.05383	5/28/2024	0.0184	No	50	MW-51,PZ-12	-4.786	1.021	18	Kaplan-Meier	ln(x)	0.001754	Param Inter 1 of 2
Nickel (mg/L)	MW-50R	0.05383	5/28/2024	0.0025ND	No	50	MW-51,PZ-12	-4.786	1.021	18	Kaplan-Meier	ln(x)	0.001754	Param Inter 1 of 2
Selenium (mg/L)	MW-27	0.0188	5/28/2024	0.0025ND	No	51	MW-51,PZ-12	n/a	n/a	84	n/a	n/a	0.000728	NP Inter (NDs) 1 of 2
Selenium (mg/L)	MW-50R	0.0188	5/28/2024	0.0025ND	No	51	MW-51,PZ-12	n/a	n/a	84	n/a	n/a	0.000728	NP Inter (NDs) 1 of 2
Silver (mg/L)	MW-27	0.00175	5/28/2024	0.0005ND	No	23	MW-51,PZ-12	n/a	n/a	96	n/a	n/a	0.003366	NP Inter (NDs) 1 of 2
Silver (mg/L)	MW-50R	0.00175	5/28/2024	0.0005ND	No	23	MW-51,PZ-12	n/a	n/a	96	n/a	n/a	0.003366	NP Inter (NDs) 1 of 2
Sulfide (mg/L)	MW-27	13.4	5/28/2024	1.5ND	No	21	MW-51,PZ-12	n/a	n/a	62	n/a	n/a	0.003935	NP Inter (NDs) 1 of 2
Thallium (mg/L)	MW-27	0.00242	5/28/2024	0.0005ND	No	23	MW-51,PZ-12	n/a	n/a	96	n/a	n/a	0.003366	NP Inter (NDs) 1 of 2
Thallium (mg/L)	MW-50R	0.00242	5/28/2024	0.0005ND	No	23	MW-51,PZ-12	n/a	n/a	96	n/a	n/a	0.003366	NP Inter (NDs) 1 of 2
Vanadium (mg/L)	MW-27	0.0686	5/28/2024	0.0025ND	No	51	MW-51,PZ-12	n/a	n/a	61	n/a	n/a	0.000728	NP Inter (NDs) 1 of 2
Vanadium (mg/L)	MW-50R	0.0686	5/28/2024	0.00208J	No	51	MW-51,PZ-12	n/a	n/a	61	n/a	n/a	0.000728	NP Inter (NDs) 1 of 2
Zinc (mg/L)	MW-27	0.977	5/28/2024	0.088	No	50	MW-51,PZ-12	n/a	n/a	14	n/a	n/a	0.00075	NP Inter (normality) 1 of 2
Zinc (mg/L)	MW-50R	0.977	5/28/2024	0.0542	No	50	MW-51,PZ-12	n/a	n/a	14	n/a	n/a	0.00075	NP Inter (normality) 1 of 2

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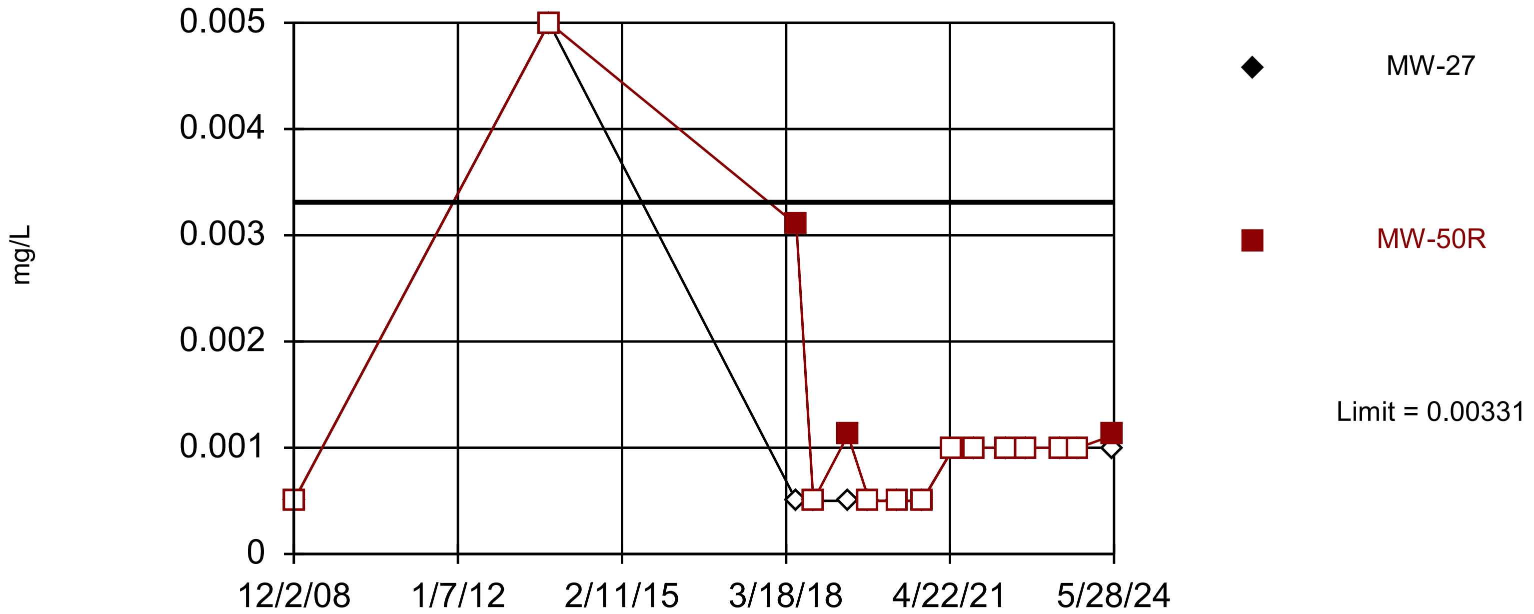
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 25 background values. 72% NDs. Annual per-constituent alpha = 0.01115. Individual comparison alpha = 0.002799 (1 of 2).

Constituent: Antimony Analysis Run 7/17/2024 9:33 AM

RASWC Client: Foth Data: RASWC Spring 2024 Evaluation

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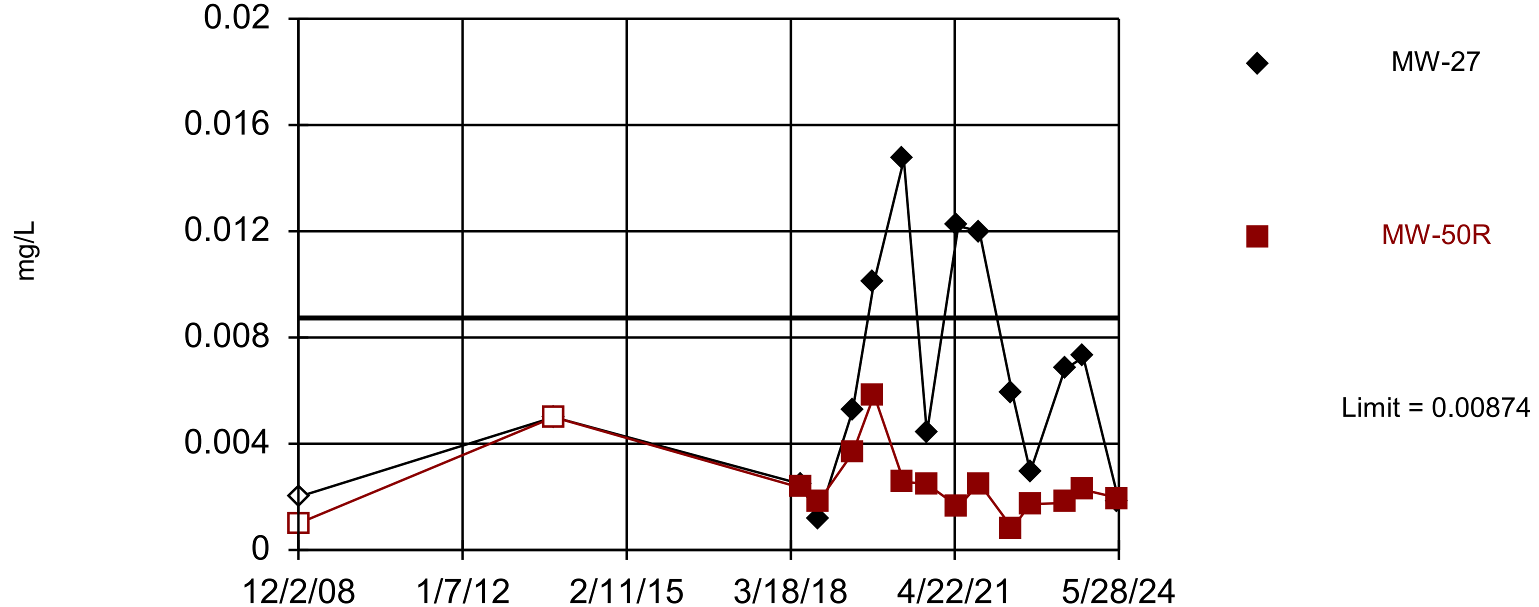
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

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. 56.52% NDs. Annual per-constituent alpha = 0.0134. Individual comparison alpha = 0.003366 (1 of 2).

Constituent: Arsenic   Analysis Run 7/17/2024 9:33 AM

RASWC   Client: Foth   Data: RASWC Spring 2024 Evaluation

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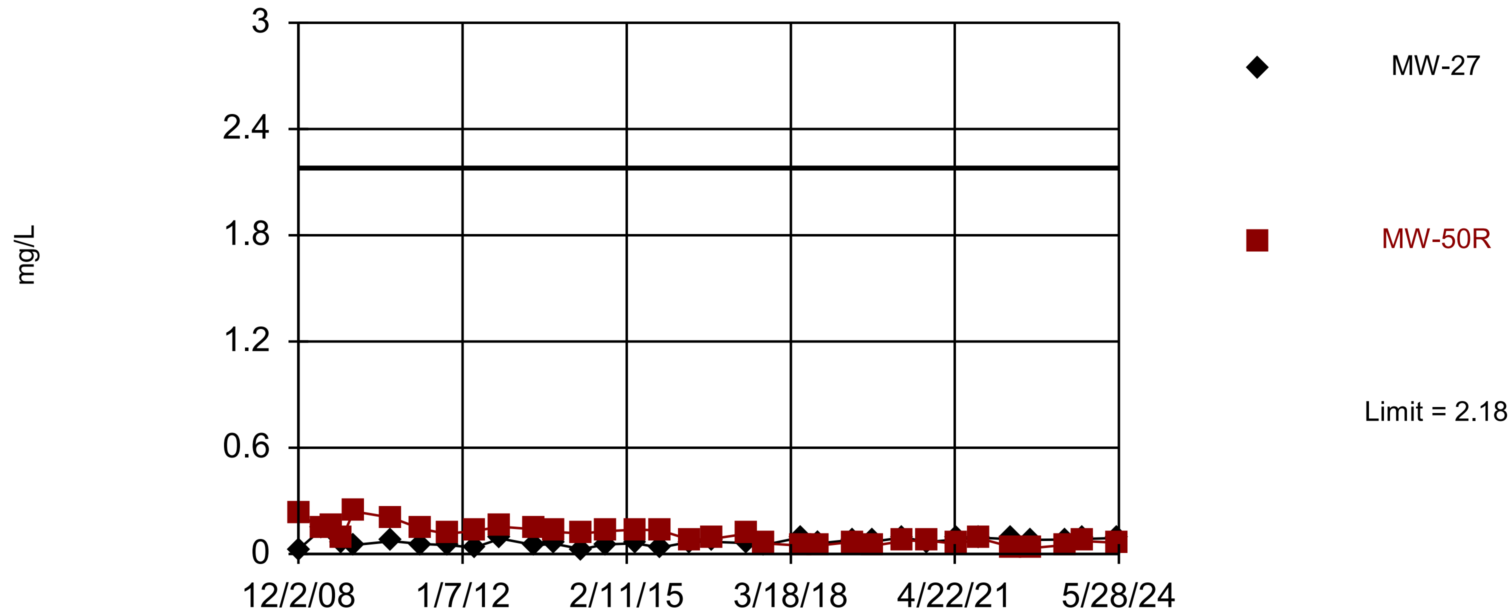
Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 50 background values. 2% NDs. Annual per-constituent alpha = 0.002998. Individual comparison alpha = 0.0007503 (1 of 2).

Constituent: Barium Analysis Run 7/17/2024 9:33 AM

RASWC Client: Foth Data: RASWC Spring 2024 Evaluation

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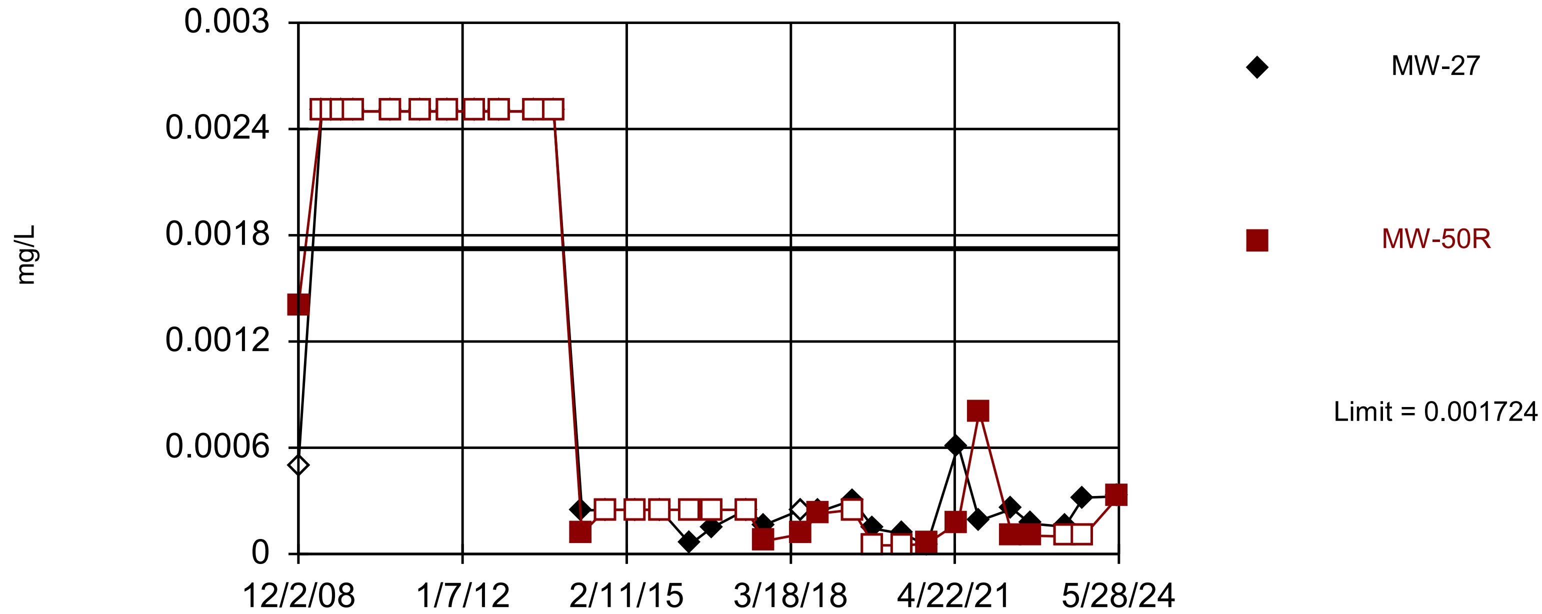
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Parametric



Background Data Summary (based on natural log transformation) (after Kaplan-Meier Adjustment): Mean=-8.331, Std. Dev.=1.078, n=50, 42% NDs. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9461, critical = 0.935. Kappa = 1.825 (c=15, w=2, 1 of 2, event alpha = 0.05132). Report alpha = 0.003506. Individual comparison alpha = 0.001754.

Constituent: Cadmium Analysis Run 7/17/2024 9:33 AM

RASWC Client: Foth Data: RASWC Spring 2024 Evaluation

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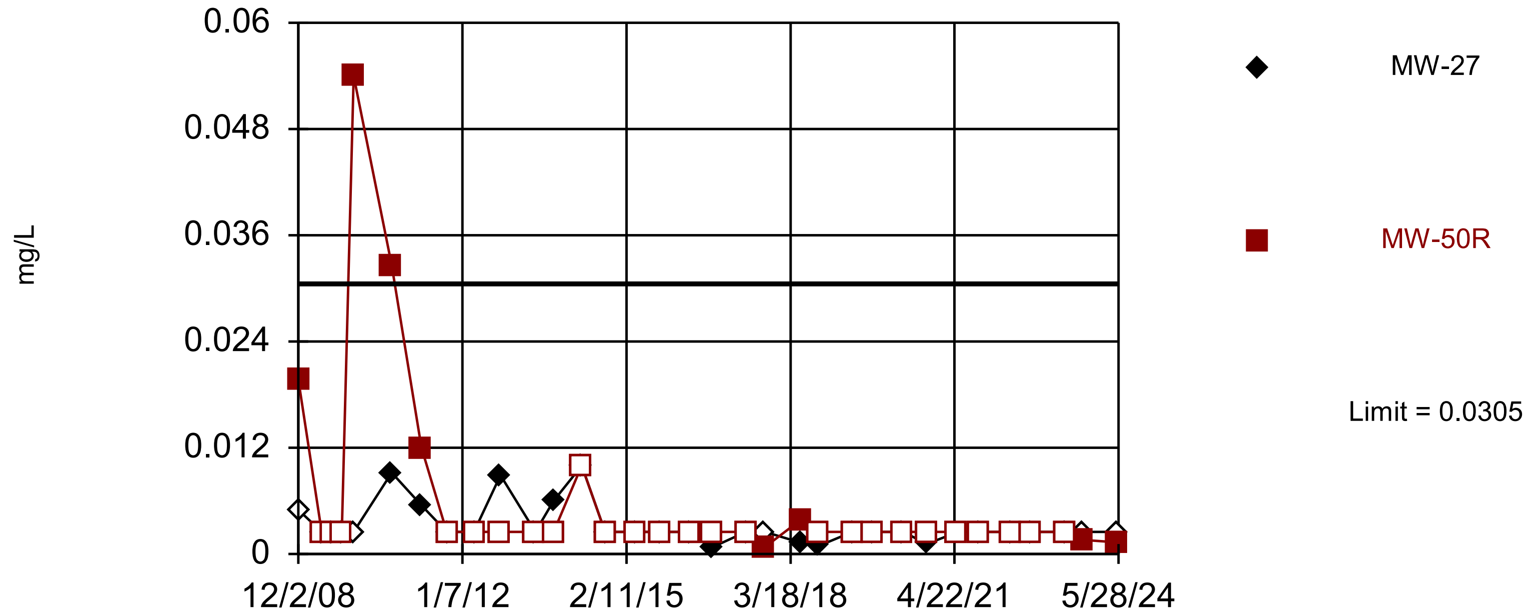
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 51 background values. 78.43% NDs. Annual per-constituent alpha = 0.002909. Individual comparison alpha = 0.000728 (1 of 2).

Constituent: Chromium Analysis Run 7/17/2024 9:33 AM

RASWC Client: Foth Data: RASWC Spring 2024 Evaluation

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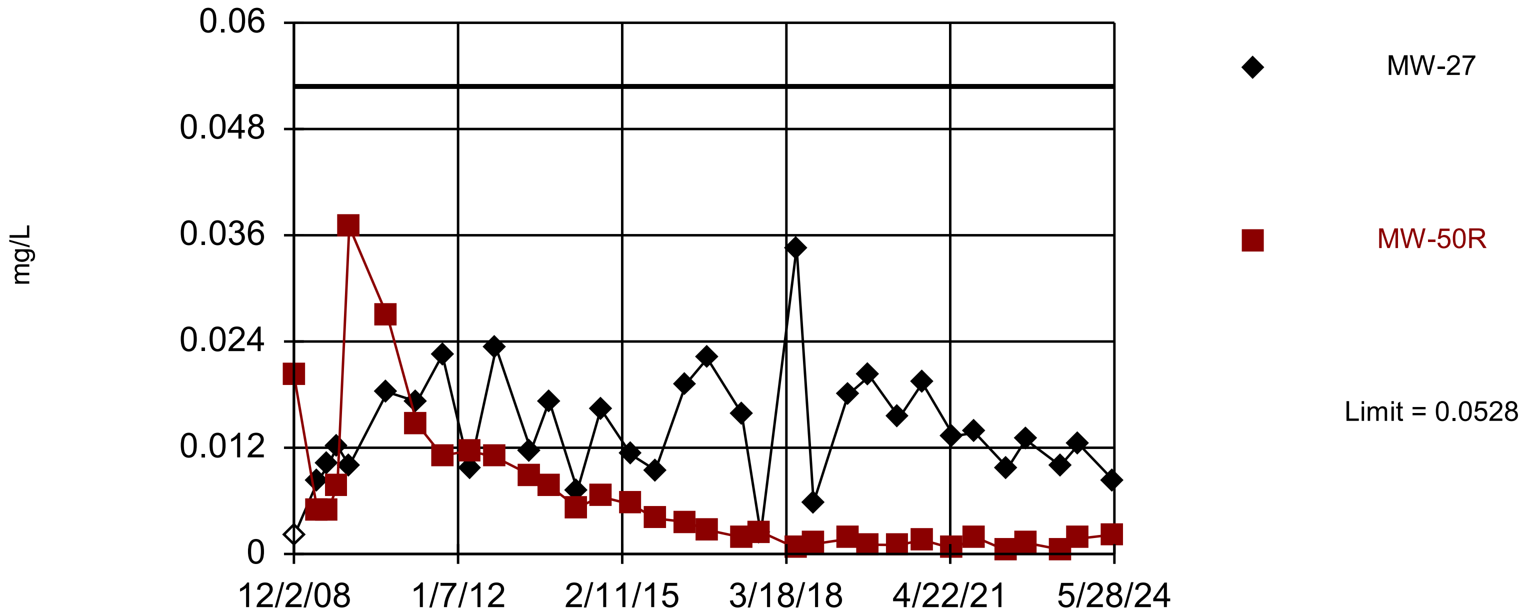
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Parametric



Background Data Summary (based on natural log transformation) (after Kaplan-Meier Adjustment): Mean=-6.92, Std. Dev.=2.18, n=50, 32% NDs. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9477, critical = 0.935. Kappa = 1.825 (c=15, w=2, 1 of 2, event alpha = 0.05132). Report alpha = 0.003506. Individual comparison alpha = 0.001754.

Constituent: Cobalt Analysis Run 7/17/2024 9:33 AM

RASWC Client: Foth Data: RASWC Spring 2024 Evaluation

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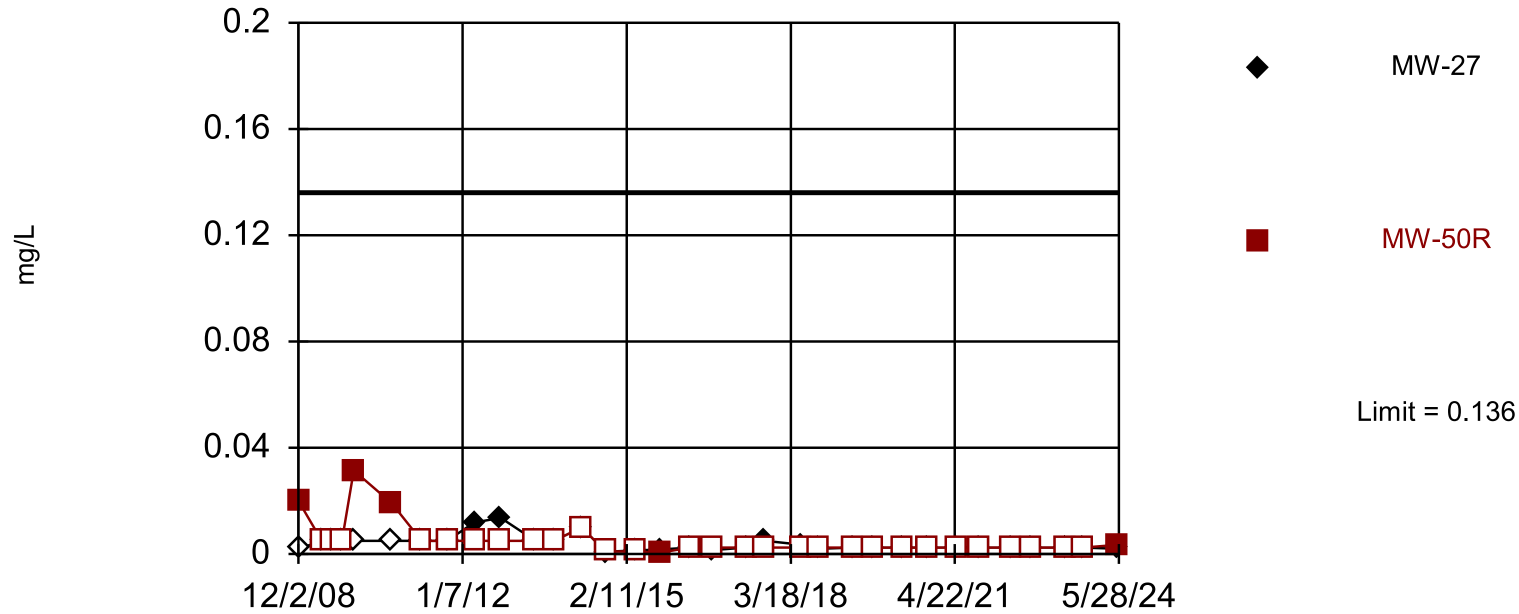
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 50 background values. 48% NDs. Annual per-constituent alpha = 0.002998. Individual comparison alpha = 0.0007503 (1 of 2).

Constituent: Copper   Analysis Run 7/17/2024 9:33 AM

RASWC   Client: Foth   Data: RASWC Spring 2024 Evaluation

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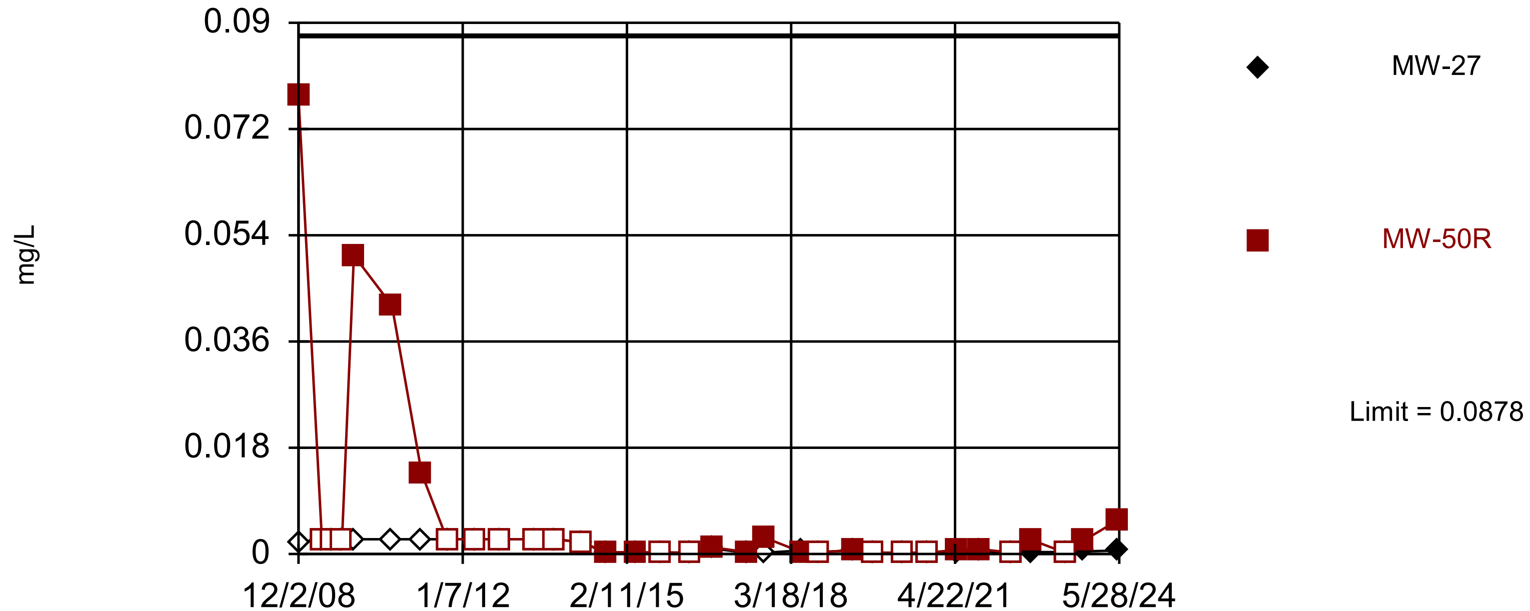
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 50 background values. 46% NDs. Annual per-constituent alpha = 0.002998. Individual comparison alpha = 0.0007503 (1 of 2).

Constituent: Lead Analysis Run 7/17/2024 9:33 AM

RASWC Client: Foth Data: RASWC Spring 2024 Evaluation

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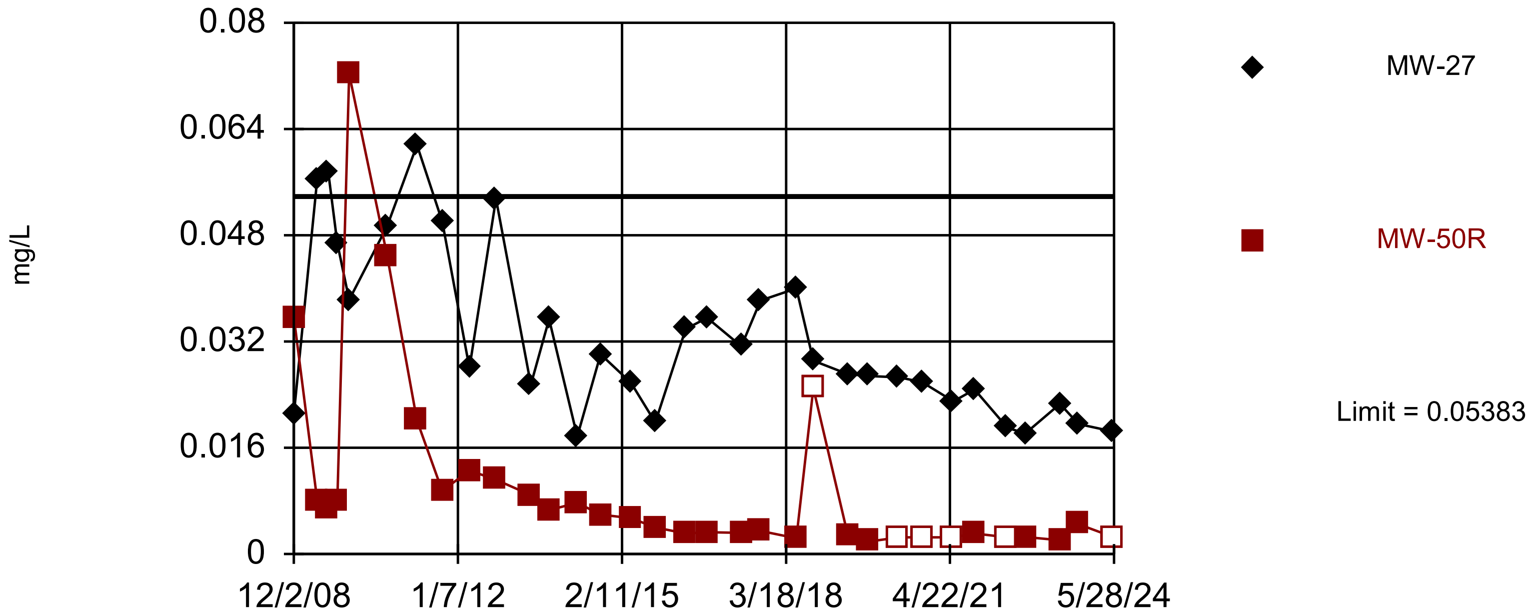
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Parametric



Background Data Summary (based on natural log transformation) (after Kaplan-Meier Adjustment): Mean=-4.786, Std. Dev.=1.021, n=50, 18% NDs. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9675, critical = 0.935. Kappa = 1.825 (c=15, w=2, 1 of 2, event alpha = 0.05132). Report alpha = 0.003506. Individual comparison alpha = 0.001754.

Constituent: Nickel   Analysis Run 7/17/2024 9:33 AM

RASWC   Client: Foth   Data: RASWC Spring 2024 Evaluation

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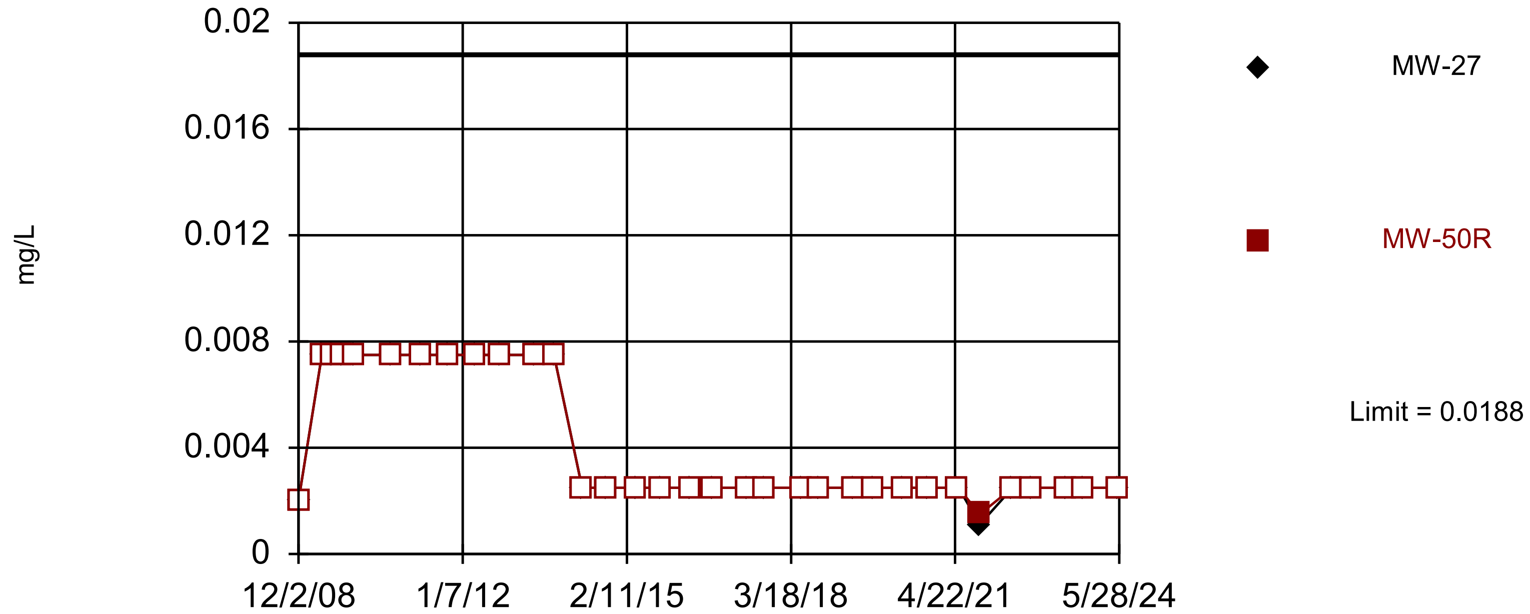
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 51 background values. 84.31% NDs. Annual per-constituent alpha = 0.002909. Individual comparison alpha = 0.000728 (1 of 2).

Constituent: Selenium Analysis Run 7/17/2024 9:33 AM

RASWC Client: Foth Data: RASWC Spring 2024 Evaluation

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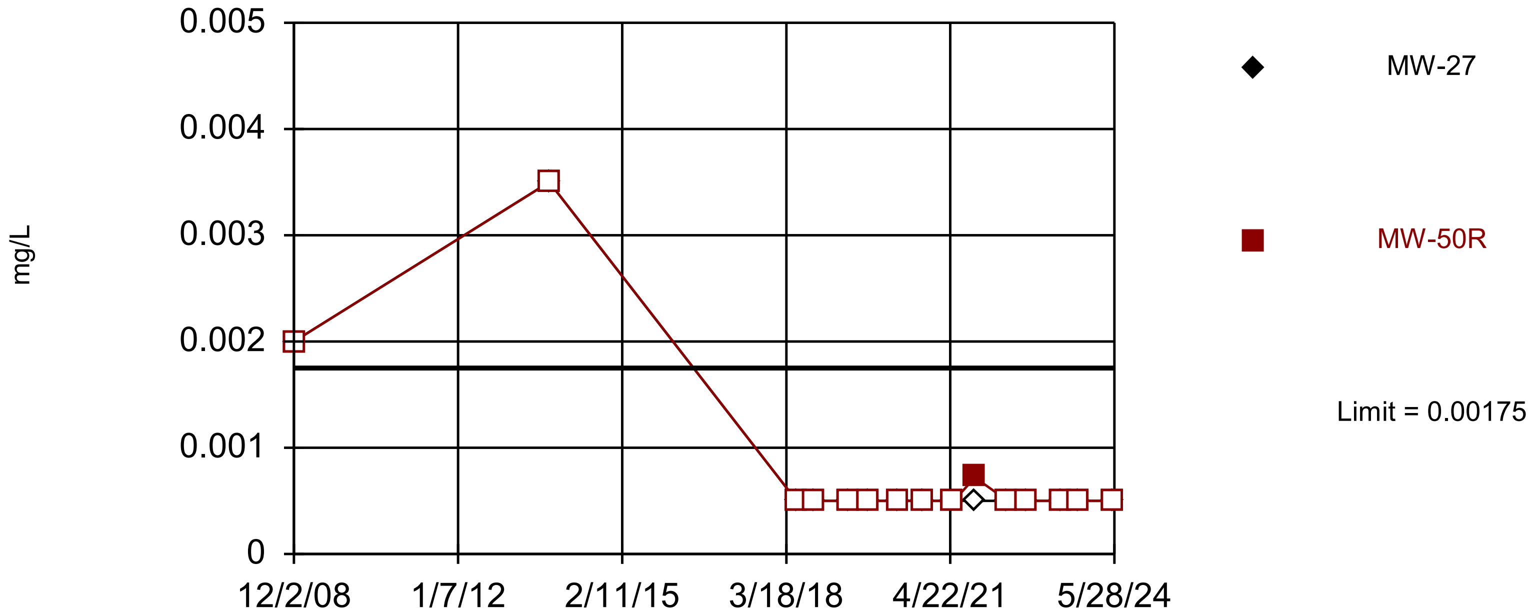
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

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 = 0.0134. Individual comparison alpha = 0.003366 (1 of 2).

Constituent: Silver Analysis Run 7/17/2024 9:41 AM

RASWC Client: Foth Data: RASWC Spring 2024 Evaluation

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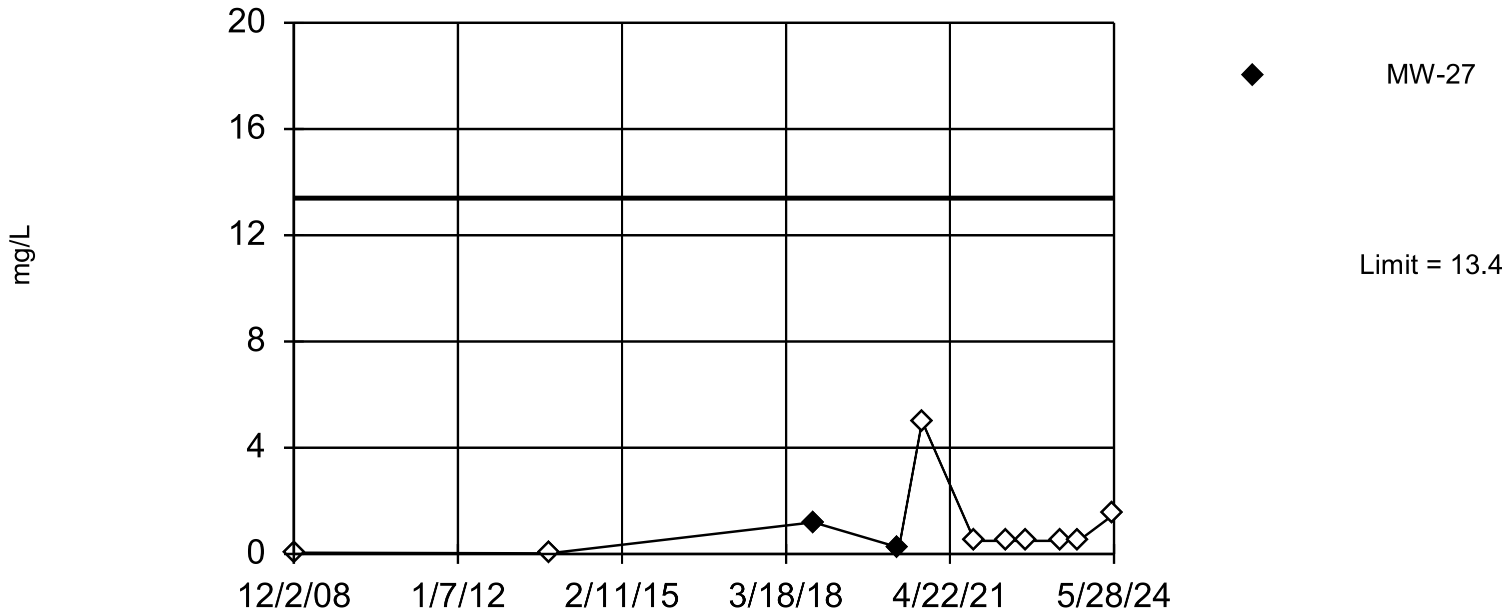
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 21 background values. 61.9% NDs. Annual per-constituent alpha = 0.01565. Individual comparison alpha = 0.003935 (1 of 2).

Constituent: Sulfide Analysis Run 7/17/2024 9:36 AM

RASWC Client: Foth Data: RASWC Spring 2024 Evaluation

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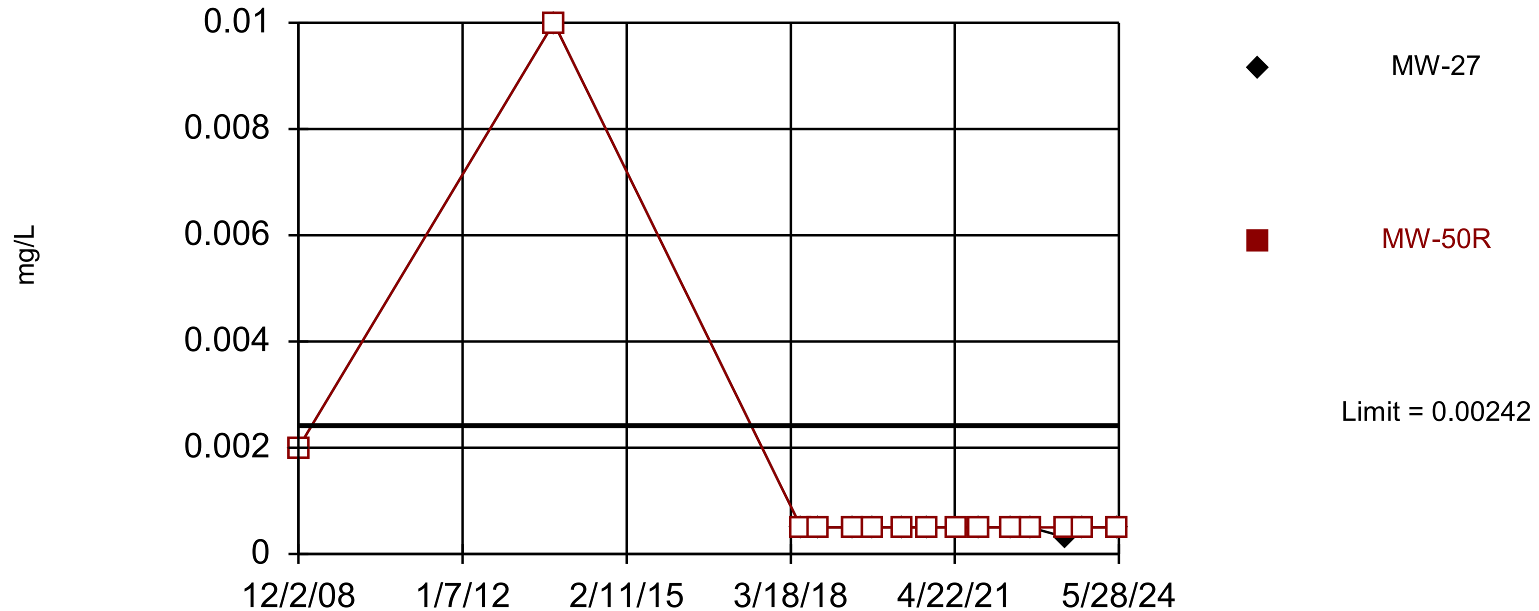
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

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 = 0.0134. Individual comparison alpha = 0.003366 (1 of 2).

Constituent: Thallium Analysis Run 7/17/2024 9:33 AM

RASWC Client: Foth Data: RASWC Spring 2024 Evaluation

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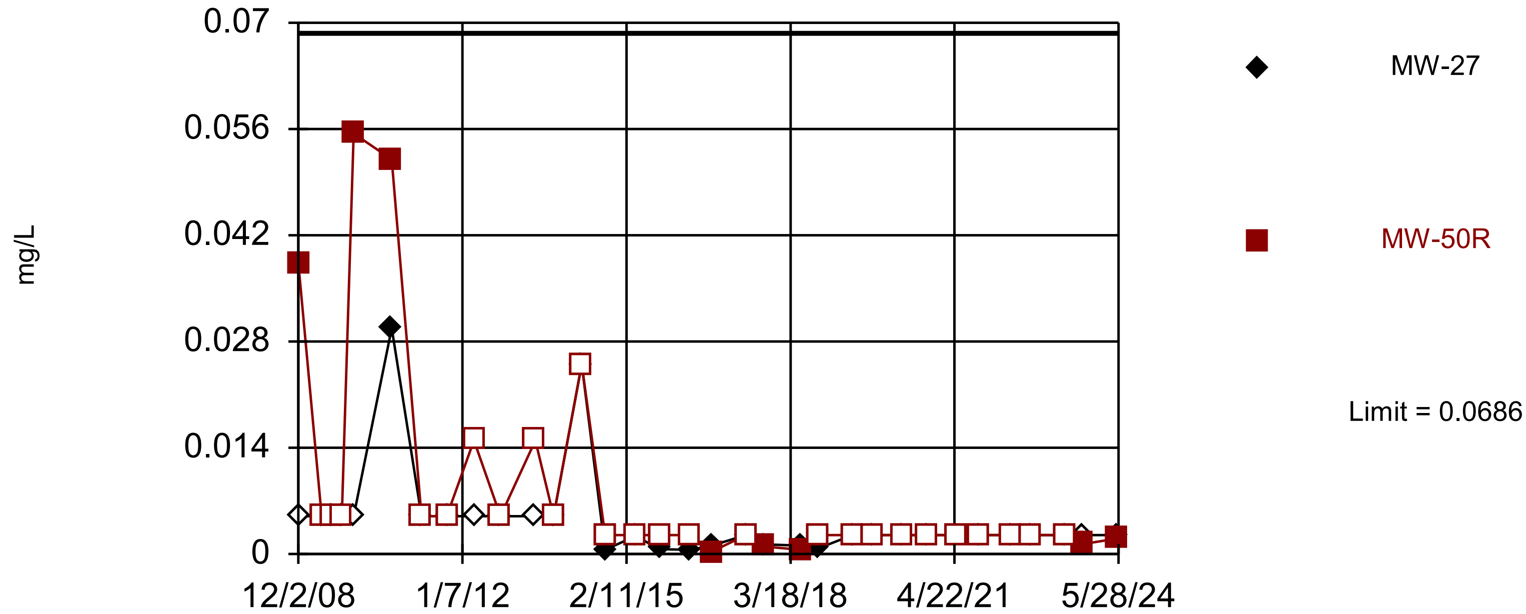
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 51 background values. 60.78% NDs. Annual per-constituent alpha = 0.002909. Individual comparison alpha = 0.000728 (1 of 2).

Constituent: Vanadium   Analysis Run 7/17/2024 9:33 AM

RASWC   Client: Foth   Data: RASWC Spring 2024 Evaluation

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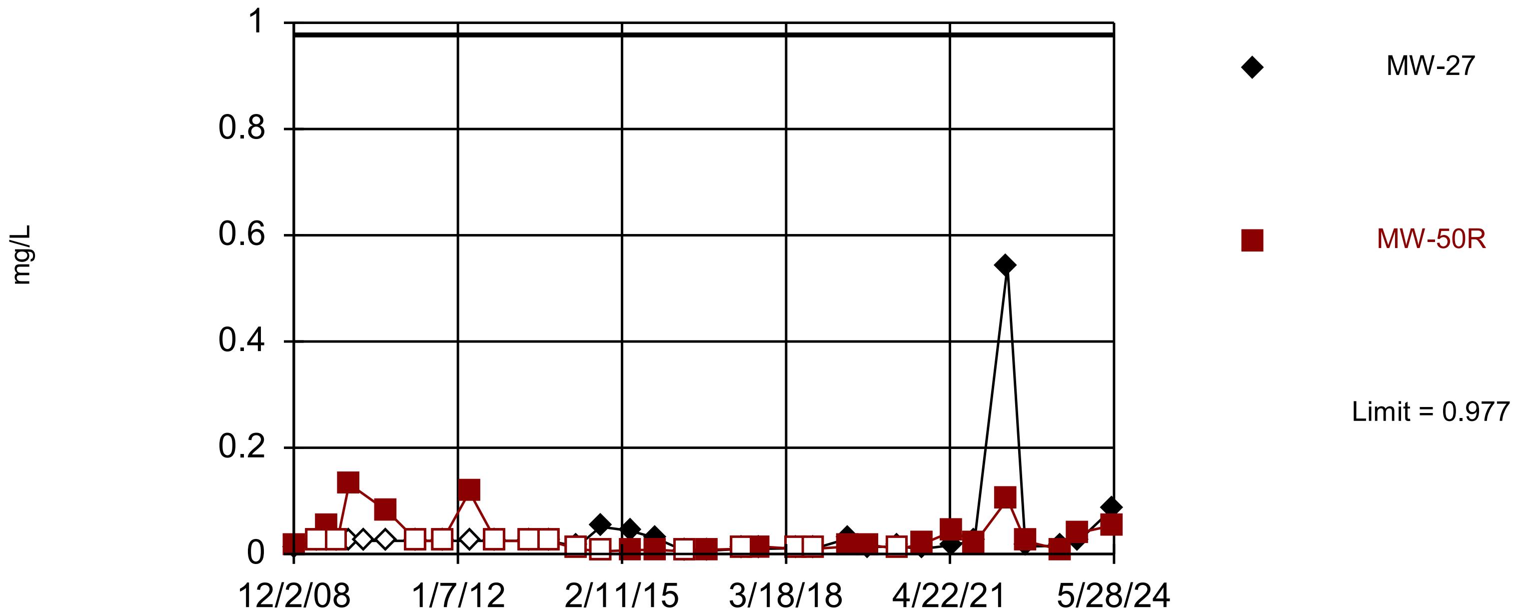
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 50 background values. 14% NDs. Annual per-constituent alpha = 0.002998. Individual comparison alpha = 0.0007503 (1 of 2).

Constituent: Zinc Analysis Run 7/17/2024 9:33 AM

RASWC Client: Foth Data: RASWC Spring 2024 Evaluation

Attachment 4

Sanitas Report Output for Double Quantification Rule Evaluation

Data Screening - Assessment Monitoring

Analysis Run 7/17/2024 10:19 AM

RASWC Client: Foth Data: RASWC Spring 2024 Evaluation

A listing of detects for 203 constituents in MW-27 and MW-50R in May 2024:

Benzene, MW-27, 5/28/2024: 0.856 ug/L
cis-1,2-Dichloroethene, MW-27, 5/28/2024: 2.24 ug/L

Attachment 5

Sanitas Report Output for Confidence Interval Calculations

Assessment Mode

Attachment 5
Assessment Monitoring
Confidence Interval - Assessment Mode (1)

Constituent Name	Well	Upper Limit	Lower Limit	Compliance Limit (2)	Exceeds	N	Mean	Standard Deviation	CV	a to Achieve 50% Power at R=1.5 (3,4)	a to Achieve 80% Power at R=2.0 (3,4)	% Non-detects	Non-detect Adjustment	Transformation	Alpha	Method
Benzene (ug/L)	MW-27	0.83	0.49	5	No	15	0.66	0.25	0.38	<0.01	<0.01	13	None	No	0.01	Param.
cis-1,2-Dichloroethene (ug/L)	MW-27	2.6	1.9	70	No	33	2.3	0.9	0.38	<0.01	<0.01	9	None	No	0.01	Param.

(1) Under assessment mode, an SSL is indicated when the lower confidence limit exceeds the groundwater protection standard (compliance limit).

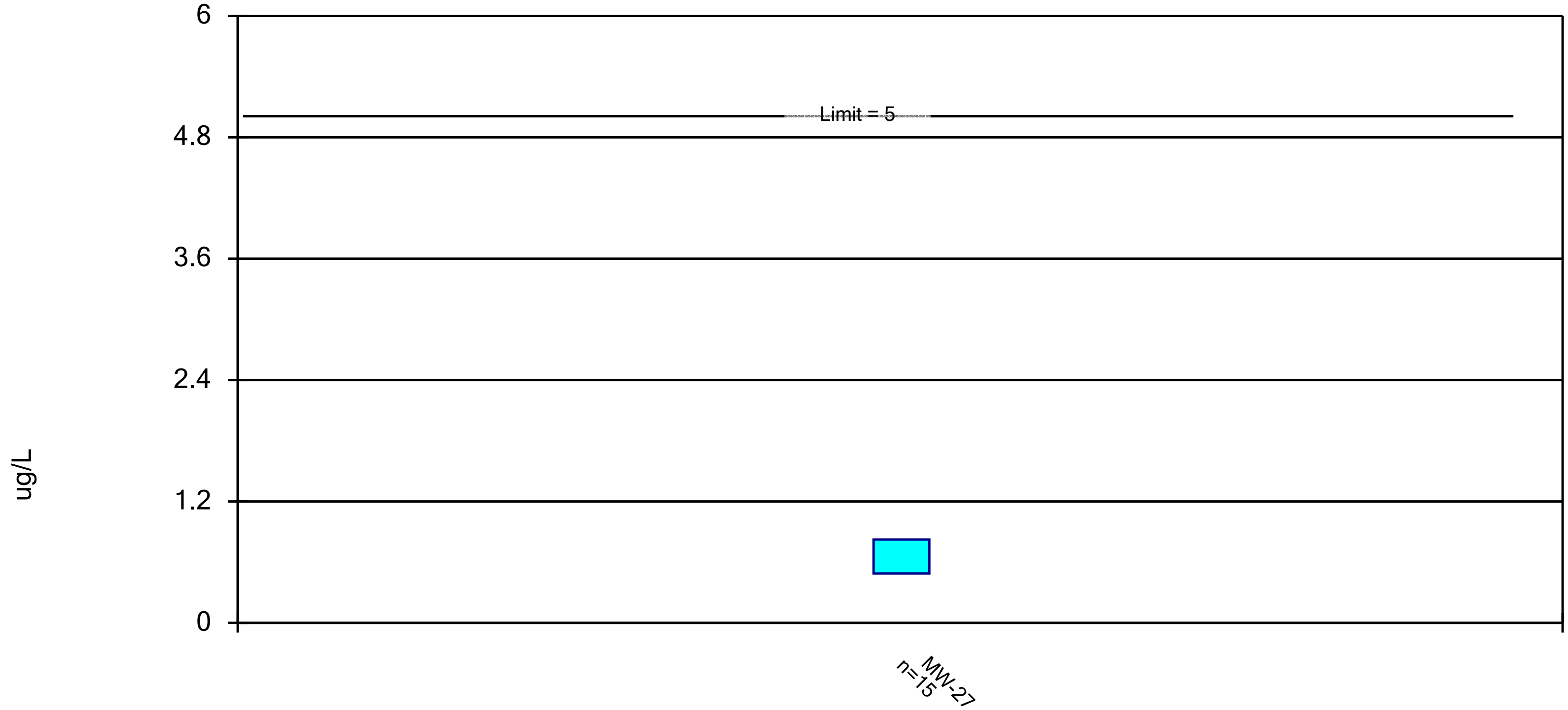
(2) Value is the 40 CFR Part 141 Safe Drinking Water Act MCL or the IAC 567 Chapter 137 Statewide Standard for a Protected Groundwater Source.

(3) For parametric confidence intervals: Except where otherwise indicated, based on Unified Guidance Equation 22.2, i.e., $\alpha \sim 1 - F_{T,n-1}\left(\frac{(R-1)\sqrt{n}}{R \cdot \widehat{CV}} - t_{1-\beta,n-1}\right)$
where R is the desired risk ratio, *n* is the sample size, CV is the estimated sample coefficient of variation, $t_{1-b,n-1}$ is the (1−b) Student's t-quantile with (n−1) degrees of freedom, and F is the cumulative (central) Student's t-distribution function.

(4) For non-parametric confidence intervals: Based on Unified Guidance Equation 22.1, i.e., $1 - \beta = G_{T,n-1}\left(t_{1-\alpha,n-1} \middle| \Delta = \sqrt{n}(R-1)\right)$
where R is the desired risk ratio, $t_{1-a,n-1}$ is the (1−a) Student's t-quantile with (n−1) degrees of freedom and G represents the cumulative non-central t-distribution with (n−1) degrees of freedom and noncentrality parameter D.

Parametric Confidence Interval - Assessment Monitoring

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

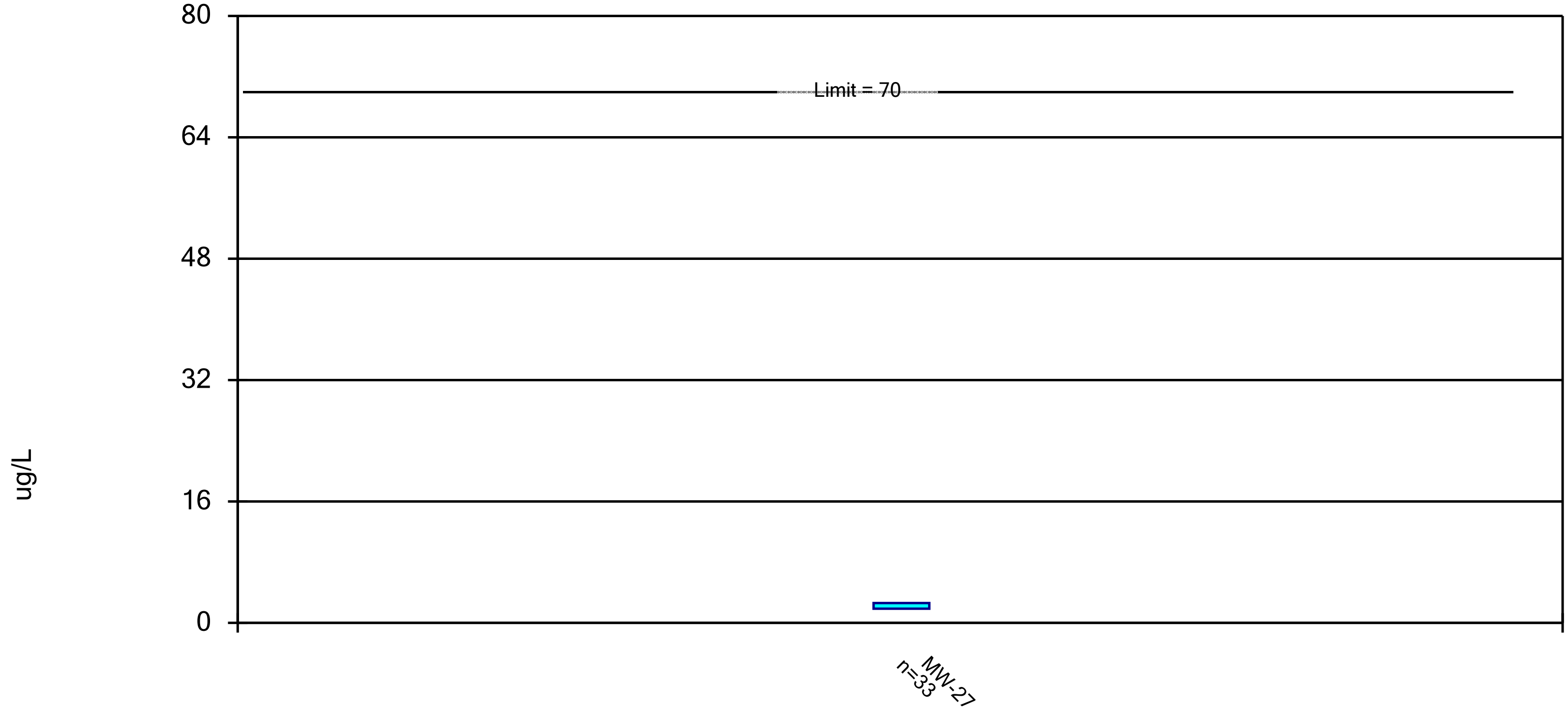


Constituent: Benzene   Analysis Run 7/17/2024 10:27 AM

RASWC   Client: Foth   Data: RASWC Spring 2024 Evaluation

Parametric Confidence Interval - Assessment Monitoring

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: cis-1,2-Dichloroethene   Analysis Run 7/17/2024 10:27 AM

RASWC   Client: Foth   Data: RASWC Spring 2024 Evaluation

Attachment 6

Effective Power and Site-Wide False Positive Rate Discussion

Sanitas Report Output for Power Curve Evaluation

Effective Power and Site-Wide False Positive Rate Discussion

Statistical power refers to the ability of a test to identify real increases in concentration levels given they exist. The Unified Guidance defines the effective power as the "probability of detecting contamination in the monitoring network when one and only one well-constituent pair is contaminated." It further states that any statistical test procedure with effective power at least as high as the appropriate USEPA Reference Power Curve (ERPC) should be considered to have reasonable power.

The Unified Guidance gives the following criteria for comparing the effective power to the ERPC:

If the effective power first exceeds the ERPC at a mean concentration increase no greater than 3 background standard deviations, the power is labeled 'good;' if the effective power first exceeds the ERPC at a mean increase between 3 and 4 standard deviations, the power is considered 'acceptable;' and if the first exceedance of the ERPC does not occur until an increase greater than 4 standard deviations, the power is considered 'low.'

Effective power curves were developed with Sanitas for the 1-of-2 prediction limit plan, with power curves illustrated below. Based on the power curves, both the parametric and non-parametric prediction limits have good power.

The Unified Guidance "strongly encourages use of a comprehensive design strategy to account for both the cumulative site-wide false positive rate (SWFPR) and effective power to identify real exceedances." The Unified Guidance recommends and uses an annual SWFPR target of 10%. The current annual SWFPR based on the 1-of-2 prediction limit plan may be calculated using the basic subdivision principle discussed in Unified Guidance Sections 6.2.2, 19.2.1 and 19.4.

Currently, comparisons were made at 2 wells semiannually with a total of 58 single tests annually. The Sanitas prediction limit report output of Attachment 3 includes annual individual test α-levels for each well/constituent pair. The α-levels reported by Sanitas account for the 1-of-2 plan, as well as two semiannual events conducted at the site.

The cumulative annual SWFPR can be approximated directly from the α-levels reported in the Sanitas output as SWFPR $= 1 - \prod_{i=1}^{58}(1-\alpha_i)^2 = 0.096 \approx$ 9.6%. The current annual SWFPR is in compliance with the Unified Guidance target 10% false positive.

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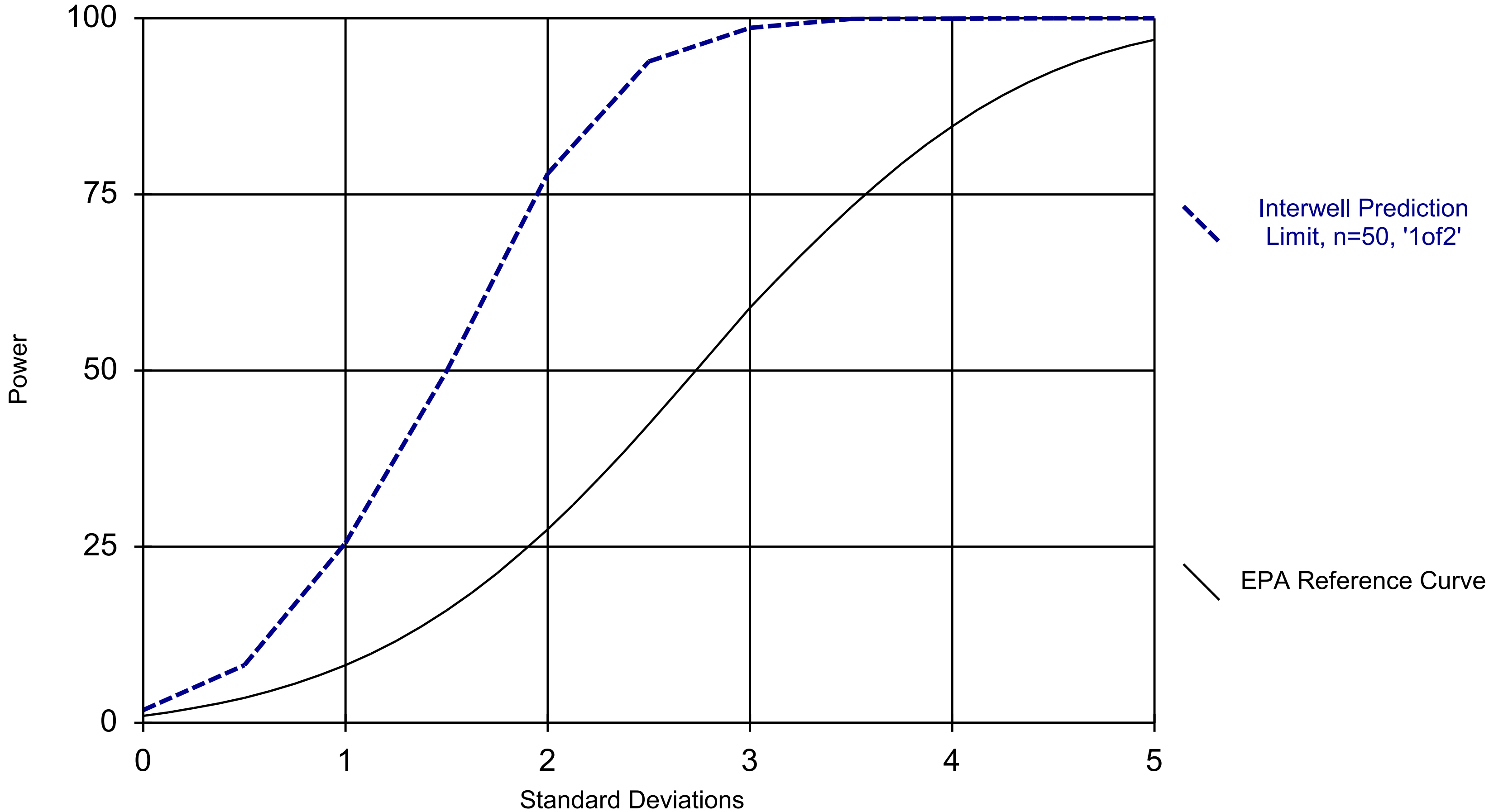
Parametric Power Curves



Kappa = 1.372, based on 6 constituent/well pairs, evaluated semi-annually (this report reflects annual total).

Analysis Run 7/17/2024 11:06 AM

RASWC   Client: Foth   Data: RASWC Spring 2024 Evaluation

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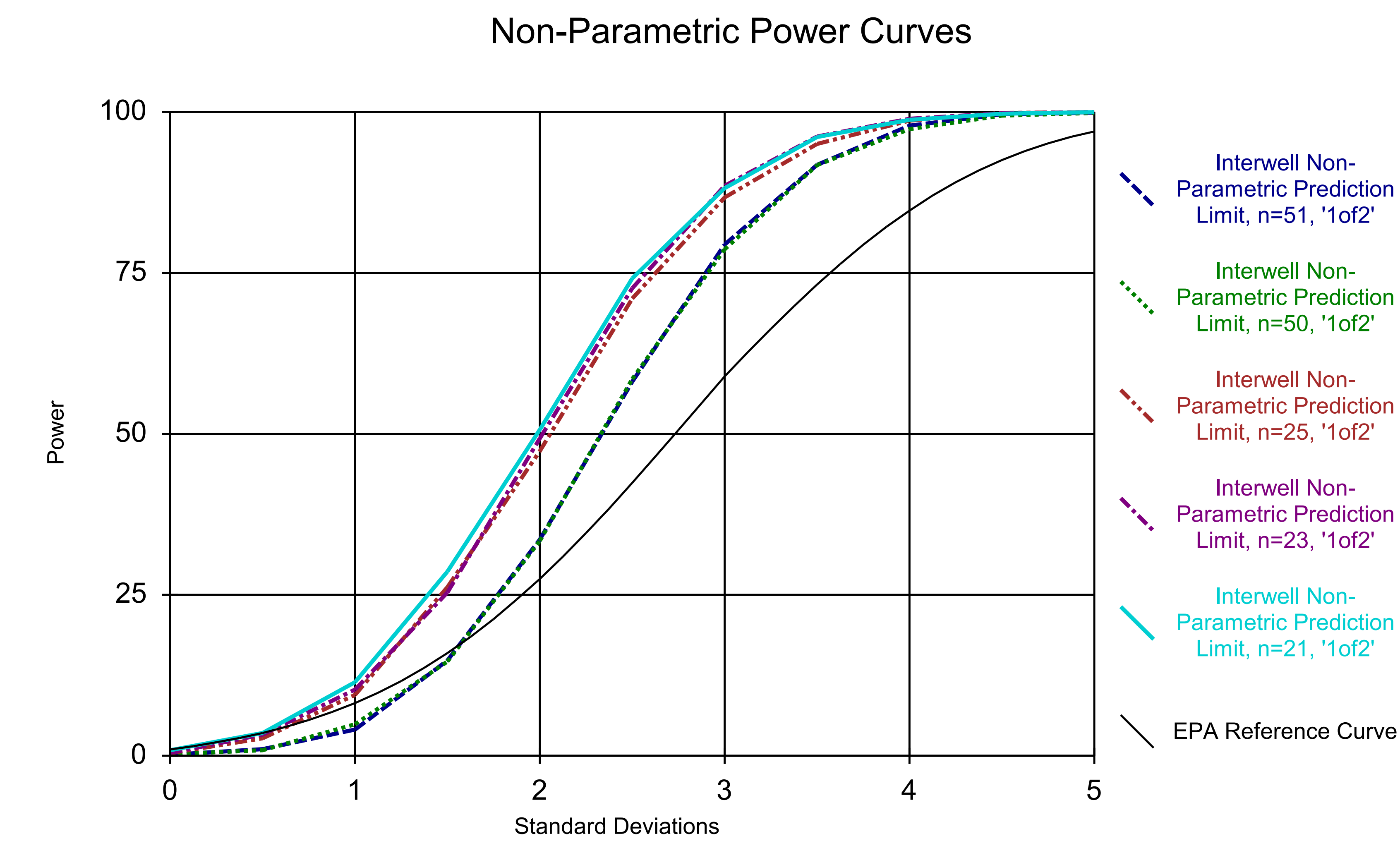

Analysis Run 7/17/2024 11:05 AM

RASWC Client: Foth Data: RASWC Spring 2024 Evaluation