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GREDELL Engineering Resources, Inc.

Sikeston Power Station

2022 Annual Groundwater Monitoring Report for Bottom Ash Pond For Compliance with USEPA 40 CFR 257.90(e)

Prepared for:

BMU Sikeston
Board of Municipal Utilities

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January 31, 2023

Sikeston Power Station
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January 2023

Table of Contents

List of Figures

List of Tables

List of Appendices

1.0 EXECUTIVE SUMMARY

This report has been developed to fulfill the requirements of the United States Environmental Protection Agency (USEPA) 40 CFR 257 Subpart A – Classification of Solid Waste Disposal Facilities and Practices, which requires owners or operators to provide an Annual Groundwater Monitoring Report. Sikeston Board of Municipal Utilities (SBMU) provides this report of groundwater monitoring activities completed during 2022 for the Bottom Ash Pond at the Sikeston Power Station (SPS).

The Bottom Ash Pond at the SPS remained in Detection Monitoring status for the entirety of 2022. The ninth and tenth semiannual Detection Monitoring groundwater sampling events were initiated at the SPS Bottom Ash Pond in November 2021 (second semi-annual event for 2021) and April 2022 (first semiannual event for 2022), respectively. However, receipt of final data reports from the laboratory and data evaluation for the November 2021 event were completed during 2022 and therefore these results are addressed in this report. Although the first semiannual event for 2022 was planned and attempted in April, field equipment malfunctions delayed the sampling event until August. The second semiannual event for 2022 (eleventh semiannual Detection Monitoring groundwater sampling event) was initiated in November 2022, but receipt of final analytical reports and data evaluation were not completed prior to completion of this report.

Detection Monitoring statistical evaluations are completed after each sampling event to assess significant increases relative background data. Initial results suggested that Chloride concentrations in MW-6 had increased relative to background data during the ninth and tenth semiannual Detection Monitoring groundwater sampling events, but the increases were demonstrated to be the result of an alternate source hydraulically upgradient of the SPS. As a result, the BAP remains in Detection Monitoring status as of the date of this report.

Table 1 2022 Bottom Ash Pond Groundwater Sampling Summary

Event Start	Event Name	Event Purpose	Final Data Received from Laboratory	Constituents Sampled	Verified SSIs	Statistical Analysis Results Completed
11/1/2021	2021 - 2nd Semi-annual Event	9th Detection	12/9/2021	Appendix III Constituents	**None**	2/7/2022
12/27/2021		Verification Sampling	1/7/2021	TDS at MW-3, Chloride at MW-6		
8/3/2022	2022 - 1st Semi-annual Event	10th Detection	8/30/2022	Appendix III Constituents	**None**	10/28/2022
9/12/2022		Verification Sampling	9/28/2022	TDS at MW-5, Chloride at MW-6		
11/1/2022	2022 – 2nd Semi-annual Event	11th Detection	11/22/2022	Appendix III Constituents	**Not Completed at This Time**	**Not Completed at This Time**
12/13/2022		Verification Sampling	**In Progress**	TDS & pH at MW-5, Cl, TDS, & Ca at MW-6 pH at MW-3, MW-4, & MW-8		

2.0 INTRODUCTION

The Sikeston Power Station (SPS), owned and operated by the Sikeston Board of Municipal Utilities (SBMU), is an electric power producer and distributor located within the western city limits of Sikeston, in southern Scott County, Missouri. The SBMU-SPS began operation in 1981 and produces approximately 235 megawatts. Coal combustion residuals (approximately 10,000 tons per annum) are currently sold or placed in the facility's bottom ash surface impoundment that is approximately 61 acres in size and is used for ash disposal. The second coal ash impoundment measuring approximately 30 acres in size was primarily used for fly ash disposal but is currently undergoing closure. Ash emplacement in the fly ash pond ceased on April 11, 2021, and closure was initiated on May 11, 2021. The Fly Ash Pond is subject to the alternate compliance schedule specified by the United States Environmental Protection Agency (USEPA) under 40 CFR Part 257.100(e)(5)(ii) due to its initial inactive status and the Response to Partial Vacatur (the Direct Final Rule). Consequently, this report pertains specifically to the Bottom Ash Pond.

Pursuant to USEPA's 40 CFR Part 257 (§257) Federal Criteria for Classification of Solid Waste Disposal Facilities and Practices, Subpart D – Standards for Disposal of Coal Combustion Residuals (CCR) in Landfills and Surface Impoundments (ponds), the establishment of a groundwater monitoring system and routine detection sampling and reporting is required at all coal ash surface impoundments. The purpose of a monitoring well system is to evaluate the quality of groundwater as it passes beneath the waste mass within an impoundment. Groundwater samples are collected and analyzed on a semi-annual basis in accordance with §257.93, or as otherwise detailed in a site-specific Groundwater Monitoring and Sampling Plan (GMSAP). Statistical analyses of the resulting data are conducted in accordance with §257.93(f), and the results are included in this Annual Groundwater Monitoring Report in accordance with §257.90(e). If results suggest a statistically significant increase (SSI) in one or more constituents for detection monitoring listed in Appendix III of §257, a written demonstration is required to determine if the SSI is attributable to an ash pond release or to other causative factors. If a successful demonstration is not made, an assessment monitoring program must be initiated as required under §257.95.

In 2018, an Alternate Source Demonstration (ASD) was prepared to address three suspected SSIs associated with the Bottom Ash Pond. The ASD was successful and recommended eight additional rounds of background groundwater sampling for the constituents listed in Appendix III and IV to Part 257 to encompass annual fluctuations in the aquifer. By October 2020 these eight additional rounds of background sampling were complete, and the resulting data and the detection monitoring results completed prior to October 2020 were used to update the baseline data sets for each well, which now includes 10 sampling events. The next background update is scheduled to follow the eleventh detection sampling event initiated in November 2022.

A collection of statistical tools, including time series plots, box and whiskers plots, histograms, probability plots, outlier analysis, trend analysis, and analysis of variation, was used to explore, understand, and prepare the data sets for statistical analysis. This analysis allowed for censoring of outliers and data set detrending. Prediction limits were then calculated with the revised data sets described above for comparison to detection monitoring results compiled after October 2020. The 2022 statistical analysis was performed in accordance with §257.93(f) using the appropriate statistical analysis method as filed in the SBMU-SPS operating record on October 17, 2017.

This report describes the results of the ninth and tenth semiannual detection groundwater sampling events conducted at the SPS Bottom Ash Pond on November 1, 2021, and August 3, 2022. The first semiannual event for 2022 was scheduled and attempted in April 2022, but field equipment malfunctions delayed completion of the sampling event. Included is a description of the sampling events, groundwater elevations, water table surfaces, summaries of field activities, analytical results, and statistical analysis results. Field sampling and reporting activities were conducted in accordance with the site-specific GMSAP (Gredell Engineering, 2021).

The eleventh semi-annual groundwater sampling field activities were initiated on November 1, 2022, but data analysis was not complete at the time of this report. The results will therefore be included in the 2023 Annual Groundwater Monitoring Report.

3.0 GROUNDWATER MONITORING SYSTEM

The groundwater monitoring system for the Bottom Ash Pond consists of five monitoring wells. The wells are identified as MW-3, MW-4, MW-5, MW-6, and MW-8. Monitoring wells MW-3 and MW-6 are located hydraulically upgradient of the Bottom Ash Pond, whereas MW-4, MW-5 and MW-8 are hydraulically downgradient of the Bottom Ash Pond. MW-3 through MW-6 were installed during characterization of the site in May 2016 (Gredell Engineering, 2017). MW-8 was installed in April 2017 to serve as an additional downgradient monitoring well. Well construction activities were performed under the direction of a Registered Geologist in the State of Missouri. Well design and installation techniques were completed in accordance with 10 CSR 23-4, which is consistent with the standards summarized in 40 CFR 257.91(e). All five wells monitor uppermost groundwater, which is within the alluvial aquifer at the Bottom Ash Pond site. Each well is between 34 and 36 feet deep as measured from ground surface and yields sufficient quantities of water for the purposes of sampling and analysis.

Table 2 presents a construction summary of the wells comprising the Bottom Ash Pond groundwater monitoring system. Figures 1 and 2 depict well locations and groundwater contour maps of the uppermost aquifer for the most recent semi-annual sampling events. These maps and the historical piezometric data summarized in Table 3 confirm that water in the uppermost aquifer continues to move in a west-southwesterly direction, consistent with the conclusions of the Site Characterization Report (Gredell Engineering, 2017). All groundwater wells are equipped with dedicated tubing for use with a peristaltic pump. This system has been used for chemical sampling since inception of groundwater sampling with the Bottom Ash Pond monitoring system. The Bottom Ash Pond monitoring system is described in more detail in the site-specific GMSAP for this facility (Gredell Engineering, 2021).

4.0 FIELD SAMPLING SUMMARY

SPS environmental staff initiated the ninth semi-annual detection groundwater sampling event on November 1, 2021, at the Sikeston Power Station. Following this sampling event, it was noted that Total Dissolved Solids (TDS) analysis for sample MW-3 was completed after the hold time had expired and the Chloride concentration for sample MW-6 exceeded its prediction limit. In accordance with the statistical analysis program, these well constituent pairs were resampled on December 27, 2021. The resample data for the ninth semi-annual detection resulted in an unqualified TDS result for MW-3 that did not exceed the prediction limit and confirmed the SSI of Chloride at MW-6.

SPS environmental staff attempted to initiate the tenth semi-annual detection groundwater sampling event in April 2021, but field equipment malfunctions delayed completion until August 3, 2022. Following the August sampling event, it was noted that Total Dissolved Solids (TDS) analysis for sample MW-5 and the Chloride concentration for sample MW-6 exceeded their respective prediction limits. In accordance with the statistical analysis program, these well constituent pairs were resampled on September 12, 2022. The resample data for the tenth semi-annual detection resulted in rejection of a false positive exceedance of the prediction limit for TDS in MW-5 but confirmed the SSI of Chloride at MW-6.

Potential sources were investigated to assess a cause for the increase in Chloride concentration in groundwater samples from MW-6 during each sampling event. An Alternate Source Demonstration (ASD) was successfully completed for each SSI occurrence. The increase in Chloride in this upgradient well was attributed to an alternate source up gradient of the ash pond. These ASDs are provided in Appendix 8.

Sampling procedures for both sampling events were consistent with the GMSAP. Groundwater samples were collected using low-flow sampling techniques and dedicated sampling equipment. Field tests of indicator parameters were performed using an In-Situ, Inc. SmarTROLL^{TM} MP or Aqua TROLL 400 Multiparameter Probe with flow cell unit and HF Scientific MicroTPI field portable turbidimeter. Each groundwater sample was subsequently analyzed for the constituents listed in §257 Appendix III. All monitoring wells produced sufficient volumes of groundwater for full analysis.

SPS environmental staff inspected each monitoring well upon arrival. Wells were reported to be in satisfactory condition and had locks in place. Staff initially gauged water levels in the monitoring wells using a standard electronic water level meter graduated in increments of 0.01 feet. Static water levels were recorded on forms provided in the GMSAP. Each well was then purged while staff monitored water quality until indicator parameters (pH and specific conductance) stabilized in accordance with the criteria in the GMSAP. Additional parameters (turbidity, temperature, dissolved oxygen, and oxidation/reduction potential) were also monitored for stability prior to groundwater sample collection. Following stabilization of indicator parameters, final field data were recorded, and groundwater samples were then collected.

Field notes documenting the sampling events and copies of the chain-of-custody forms are presented in Appendix 1. Field sampling notes are also summarized in Table 4, including initial and final water level measurements, purge volumes, and pH. Laboratory analytical reports for the sampling events, including the field blanks and sample duplicates, and Quality Assurance/Quality Control (QA/QC) documentation are presented in Appendix 2. A summary of background and detection monitoring analytical data, including field parameters, is presented in Appendix 3.

4.1 Field Quality Assurance/Quality Control

Field QA/QC during the November 1, 2021, sampling event included the collection of one field blank and one field duplicate. The duplicate was collected from MW-8 (Table 6). Rinsate blanks were not collected because dedicated sampling equipment was used. Samples were shipped to PDC Laboratories' (now Pace Analytical Services, LLC) primary facility located in Peoria, Illinois using standard chain-of-custody documentation procedures. Samples collected during this sampling event were received by the primary facility on November 3, 2021, and subsequently analyzed for the six detection monitoring constituents listed in §257 Appendix III and required under §257.94(b) (Table 5). Results for these six detection monitoring constituents and field-measured pH are provided in the final analytical report, which was received from PDC Laboratories on December 9, 2021.

Similarly, field QA/QC during the August 3, 2022, sampling event included collection of one field blank and one field duplicate. The duplicate was again collected from MW-8 (Table 6). Rinsate blanks were not collected because dedicated sampling equipment was used. Samples were shipped to Pace Analytical Services, LLC primary facility located in Peoria, Illinois using standard chain-of-custody documentation procedures. Samples collected during this sampling event were received by the primary facility on August 5, 2022, and subsequently analyzed for the six detection monitoring constituents listed in §257 Appendix III and required under §257.94(b) (Table 5). Results for these six detection monitoring constituents and field-measured pH are provided in the final analytical reports, which were received from PDC Laboratories on August 30, 2022.

5.0 ANALYTICAL SUMMARY

Analytical data summary reports for each monitoring well sampled during the ninth and tenth detection monitoring events are provided in Appendix 2. The data pertain to water quality results from the uppermost aquifer beneath the Bottom Ash Pond, along with sample duplicates and field blank results.

5.1 Laboratory Quality Control

Laboratory analyses of all groundwater samples collected during the ninth and tenth detection monitoring events were completed by Pace Analytical Services, LLC of Peoria, Illinois (formerly PDC Laboratories, Inc.). The results were accompanied by appropriate QA/QC documentation. That documentation is presented in Appendix 2.

5.2 Precision and Accuracy

Precision is a measure of the reproducibility of analytical results, generally expressed as a *Relative Percent Difference (RPD)*. Laboratory quality control procedures to measure precision consist of laboratory control sample (LCS) analysis and analysis of matrix spike/matrix spike duplicates (MS/MSD). These analyses are used to define analytical variability. Accuracy is defined as the degree of agreement between the measured amount of a species and the amount actually known to be present, expressed as a percentage. It is generally determined by calculating the percent recoveries for analyses of surrogate compounds, laboratory control samples, continuing calibration check standards and matrix spike samples. Acceptable percent recoveries are established for SW-846 and USEPA methods. Field and laboratory blank analyses are also used to address measurement bias.

The analyses of the samples collected during the ninth detection monitoring event were performed within appropriate hold times (except as noted above for TDS in MW-3) and both initial and continuing calibrations met acceptance criteria for all analyses. Similarly, method blanks and LCS analyses met acceptance criteria. The case narrative for the November 2021 sampling event indicates that all testing was performed according to the lab’s TNI accreditations. However, TDS analysis for MW-3 was conducted outside the seven-day hold time and the result was qualified in the analytical report, but subsequent resampling at MW-3 on December 27, 2021 resulted in a TDS concentration analyzed within acceptable hold time.

The analyses of the samples collected during the tenth detection monitoring event were also performed within appropriate hold times and both initial and continuing calibrations met acceptance criteria for all analyses. Similarly, method blanks and LCS analyses met acceptance criteria. The case narrative for this sampling event indicates that all testing was performed according to the lab’s TNI accreditations. However, TDS failed to meet the required acceptance criteria for duplicate analysis and the result was qualified in the analytical report.

Additional QA/QC comments for these sampling events include the following:

- *Field Duplicates:* Analyses of duplicate samples are used to define the total variability of the sampling/analytical system as a whole. One field duplicate from MW-8 was collected during each of the sampling events. RPDs were calculated for all detected chemical parameters, and a summary table showing the results of the RPD calculations is included as Table 6. Using a tolerance level of ±20 percent, all calculated RPDs were within acceptable ranges for each parameter.

- *Field Blank:* One field blank was incorporated into the data set for each sampling event. The field blank analytical results for the ninth and tenth events indicate low levels of Boron (11 ug/L and 12 ug/L), respectively.
- *Laboratory Blanks:* Method blanks, artificial, and matrix-less samples are analyzed to monitor the laboratory system for interferences and contamination from glassware, reagents, etc. Method blanks are taken throughout the entire sample preparation process. They are included with each batch of extractions or digestions prepared, or with each 20 samples, whichever is more frequent. Reference to Appendix 2 should be made for comments related to these and other laboratory control samples.

5.3 Representativeness

Representativeness expresses the degree to which sample data accurately and precisely reflect site conditions. Representativeness of the data is determined by comparing actual sampling procedures to those delineated in the field sampling plan, comparing results from field duplicate samples and reviewing the results of field blanks.

Approved sampling procedures are described in the GMSAP. Procedures specified in that plan have been followed. Approved sampling procedures should be reviewed annually. Groundwater monitoring data is evaluated using an intrawell statistical analysis methodology and is conducted separately for each constituent in each monitoring well using prediction limits in accordance with §257.93(f)(3) and the performance standards in §257.93(g). The stated statistical approach, along with supporting documentation and engineering certification, are available in the SBMU-SPS On-Site Operating Record.

5.4 Comparability

Comparability expresses the confidence with which one data set can be compared to another data set measuring the same property. Comparability is ensured by using established and approved sample collection techniques and analytical methods, consistent basis of analysis, consistent reporting units, and analyzing standard reference materials

5.5 Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount expected under controlled laboratory conditions. Completeness is defined as the valid data percentage of the total tests requested. Valid data are defined as those where the sample arrived at the laboratory intact, properly preserved, in sufficient quantity to perform the requested analyses, and accompanied by a completed chain-of-custody form (Appendix 2). Furthermore, the sample must have been analyzed within the specified holding time and in such a manner that analytical QC acceptance criteria are met.

6.0 STATISTICAL ANALYSIS

The statistical analysis approach used to evaluate groundwater within the uppermost aquifer for the Bottom Ash Pond monitoring well network at SBMU-SPS consists of intra-well analysis using prediction limits. The analysis is conducted separately for each constituent in each of the five monitoring wells for each sampling event in accordance with §257.93(f)(3). This statistical method complies with the accepted performance standards listed in §257.93(g).

The background data used to evaluate current groundwater quality in MW-3, MW-4, MW-5, and MW-6 is based on 18 rounds of groundwater sampling spanning November 2016 to October 2020. The background data used to evaluate current groundwater quality MW-8 is based on 18 rounds of groundwater sampling spanning May 2017 to October 2020. In general, all background data were used for each well constituent pair. However, data trend removal and screening of outliers reduced the background sample population for some well constituent pairs (Appendix 3). The background may be updated every two years in accordance with Unified Guidance (USEPA, 2009).

Statistical analysis was performed in accordance with §257.93 using Sanitas© for Ground Water (Version 9.6.35; 2022). Intra-well prediction intervals were compared at the 99 percent confidence level for each constituent with a 1 of 2 retest methodology to improve accuracy and reduce false positives. The groundwater results from the ninth and tenth semiannual detection groundwater sampling events conducted at the SPS Bottom Ash Pond were compared to the prediction limits (Table 8) to determine if SSIs over background were apparent.

If the number of reportable concentrations of a given constituent in a database for a given well is not sufficient to permit parametric analysis, non-parametric prediction interval analysis is conducted. Both parametric and non-parametric prediction limit analysis were performed for the Bottom Ash Pond groundwater monitoring well network data. Following review of baseline data for outliers and trends, prediction intervals are computed based on the reviewed and screened background monitoring data sets (Appendix 3), including values reported as less than detection limits.

Initially, outlier analysis was performed for the background data set using Exploratory Data Analysis (EDA) with Sanitas©, time-series plots, box and whiskers plots, histograms, and probability plots. These analyses resulted in the identification of 12 outliers from the 630 data points. The outliers are identified with shaded cells in Appendix 3 and were screened from the background data prior to conducting additional statistical analysis. Trend analysis was also conducted on the screened background data sets using Sanitas© and modification of data sets was completed where constituent-well pairs were found to be significantly trending upward (or downward in the case of pH). The resulting alternate data sets are summarized in Table 7 and in Appendix 3.

The results of the statistical analysis for the ninth and tenth semiannual detection groundwater sampling events are described below. A complete database summarizing the sample results, dates of sampling, and the purpose of sampling event, as per §257.90(e)(3), is provided in Appendix 3. A statistical power curve, based on the background data, is provided in Appendix 4.

Time series plots of background data for all detection monitoring constituents are presented in Appendix 5. Box and whiskers plots of background data are presented in Appendix 6. Prediction limit charts are provided in Appendix 7.

6.1 Statistical Results

The results of the statistical analysis for the ninth and tenth semiannual detection groundwater sampling events did not suggest the presence of SSIs associated with a release from the the Bottom Ash Pond at the Sikeston Power Station. Consequently, semi-annual detection monitoring should continue as specified in §257.94(b).

7.0 LIMITATIONS

This report has been prepared for the exclusive use of the client and GREDELL Engineering Resources, Inc. for the specific project discussed in accordance with generally accepted environmental practices common to this locale at this time. The report is applicable only to this specific project and identified site conditions as they existed at the time of report preparation. The use of this report by others to develop independent interpretations of data or conclusions not explicitly stated in this report are the sole responsibility of those firms or individuals.

This report is not a guarantee of subsurface conditions. Variations in subsurface conditions may be present that were not identified during this or previous investigations. Interpretations of data and recommendations made in this report are based on observations of data that were available and referred to in this report unless otherwise noted. No other warranties, expressed or implied, are provided.

8.0 REFERENCES

GREDELL Engineering Resources, Inc., 2017, *Sikeston Power Station Site Characterization for Compliance with Missouri State Operating Permit #MO-0095575*, dated May 2017.

GREDELL Engineering Resources, Inc., 2019, *Sikeston Power Station, 2018 Annual Groundwater Monitoring and Corrective Action Report for Bottom Ash Pond for Compliance with USEPA 40 CFR 257.90(e)*, dated January 30, 2019.

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TABLES

Annual Groundwater Monitoring Report
USEPA 40 CFR 257.90(e)
SBMU - Sikeston Power Station
Scott County, Missouri

Table 2
Groundwater Monitoring Network Summary

Monitoring Well ID[1,2]	Northing Location[3,4]	Easting Location[3,4]	Ground Surface Elevation[3,4] (feet)	Top of Riser Elevation[3,4] (feet)	Well Depth[5] (feet)	Base of Well Elevation[6] (feet)	Screen Length[7] (feet)	Top of Screen Elevation (feet)
MW-3	381130.00	1079946.62	306.11	308.55	37.21	271.34	10	281.5
MW-4	380804.62	1077766.95	303.26	305.61	37.55	268.06	10	278.3
MW-5	379858.94	1078477.85	303.57	305.91	37.17	268.74	10	278.9
MW-6	379874.77	1079384.36	305.37	307.72	38.03	269.69	10	279.9
MW-8	380311.20	1077940.08	302.37	304.77	37.41	267.36	10	277.6

NOTES:

1. Refer to Figure 1 for monitoring well locations.
2. Refer to Sikeston Power Station On-Site Operating Record for well construction diagrams.
3. Monitoring well survey data provided by Bowen Engineering & Surveying, Inc.
4. Horizontal Datum: Missouri State Plane Coordinates - NAD 83 (Feet), Vertical Datum: NAVD 88 (Feet).
5. Depth measurements relative to surveyed point on top of well casing.
6. Sump installed at base of screen (0.2 feet length).
7. Actual screen length (9.7 feet) is the machine-slotted section of the 10-foot length of Schedule 40 PVC pipe.

Prepared by: KAE
Checked by: JMC
Approved by: MCC

Annual Groundwater Monitoring Report
USEPA 40 CFR 257.90(e)
SBMU - Sikeston Power Station
Scott County, Missouri

Table 3
Historical Groundwater Level Summary

Well ID	MW-3	MW-4	MW-5	MW-6	MW-8
Date	Groundwater Elevation (feet MSL)				
05/12/16	298.13	296.01	296.68	297.41	NM
06/28/16	297.58	294.75	295.51	296.57	NM
07/15/16	297.37	294.77	295.53	296.44	NM
08/08/16	297.05	294.66	294.87	295.77	NM
09/08/16	296.76	294.40	294.96	295.84	NM
10/05/16	296.40	294.02	294.70	295.57	NM
11/01/16	296.10	293.99	294.49	295.24	NM
11/30/16	296.03	294.26	294.80	295.37	NM
01/24/17	296.35	294.73	295.19	295.77	NM
01/26/17	296.35	294.73	295.19	295.77	NM
02/22/17	296.00	294.40	294.81	295.41	NM
02/24/17	296.00	294.40	294.81	295.41	NM
03/20/17	296.45	295.10	295.46	295.97	NM
04/19/17	296.35	294.73	295.19	295.81	NM
04/27/17	296.72	295.41	295.78	296.20	NM
05/17/17	297.81	295.76	296.31	297.11	NM
05/18/17	NM	NM	NM	NM	295.67
06/08/17	297.81	295.64	296.17	296.96	NM
06/09/17	NM	NM	NM	NM	295.57
07/13/17	296.98	294.60	295.22	296.06	294.70
08/03/17	NM	NM	NM	NM	294.12
08/15/17	NM	NM	NM	NM	294.02
08/30/17	NM	NM	NM	NM	293.72
09/14/17	NM	NM	NM	NM	293.57
09/27/17	NM	NM	NM	NM	293.26
10/31/17	295.22	293.11	293.65	294.41	293.20
06/13/18	297.33	294.93	295.60	296.47	295.02
11/26/18	295.63	293.76	294.27	294.91	293.88
12/26/18	296.04	294.19	294.64	295.36	294.31
01/08/19	296.38	294.62	295.17	295.77	294.73
02/05/19	296.73	294.99	295.46	296.06	295.07
02/22/19	298.35	296.58	297.33	297.94	296.79
03/27/19	298.51	296.05	296.72	297.69	296.15
04/16/19	298.93	296.58	297.31	298.22	296.67
05/14/19	299.25	296.36	297.10	298.21	296.45
05/28/19	298.95	296.01	296.80	297.91	296.16
06/12/19	298.82	296.00	296.71	297.82	296.10
07/17/19	298.38	295.84	296.46	297.44	295.97
07/24/19	298.41	295.97	296.66	297.57	296.13
08/14/19	297.80	295.03	295.70	296.76	295.12
08/28/19	297.55	294.81	295.47	296.51	294.91
09/16/19	297.22	294.51	295.20	296.20	294.63
10/10/19	296.84	294.29	294.89	295.85	294.36
10/22/19	296.80	294.40	295.00	295.88	294.50
11/04/19	297.34	295.24	295.80	296.57	295.32
02/18/20	299.00	296.50	297.28	298.22	296.66
03/30/20	300.09	297.66	298.48	299.40	297.81
07/21/20	298.35	295.16	295.98	297.19	295.32
10/20/20	297.08	294.53	295.29	296.17	294.77
04/16/21	298.03	295.55	296.08	297.06	295.55
11/01/21	295.95	293.74	294.31	295.11	293.86
08/03/22	296.52	293.79	294.40	295.47	293.87

NOTES:
1. Refer to Figure 1 for monitoring well locations.
2. Refer to Sikeston Power Station On-Site Operating Record for well construction diagrams.
3. NM - Not Measured.
4. Maximum and minimum groundwater elevations are shaded.

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Checked by: JMC
Approved by: MCC

Prepared by: GREDELL Engineering Resources, Inc.

Annual Groundwater Monitoring Report
USEPA 40 CFR 257.90(e)
SBMU - Sikeston Power Station
Scott County, Missouri

Table 4
Water Level and Field Parameter Summary
November 1, 2021

Monitoring Well I.D.	Hydraulic Position	Initial Water Level (ft, BTOC[2])	Final Water Level (ft, BTOC[2])	Minimum[3] Purge Vol. (mL[4])	Actual Purge Vol. (mL[4])	pH (S.U.[5])
MW-3	Upgradient	12.60	12.60	300	5,740	6.57
MW-4	Downgradient	11.87	11.87	300	3,620	7.34
MW-5	Downgradient	11.60	11.60	300	4,340	6.90
MW-6	Upgradient	12.61	12.61	300	6,560	6.88
MW-8	Downgradient	10.91	10.91	300	2,860	7.16

Water Level and Field Parameter Summary
August 3, 2022

Monitoring Well I.D.	Hydraulic Position	Initial Water Level (ft, BTOC[2])	Final Water Level (ft, BTOC[2])	Minimum[3] Purge Vol. (mL[4])	Actual Purge Vol. (mL[4])	pH (S.U.[5])
MW-3	Upgradient	12.03	12.03	300	7,700	6.65
MW-4	Downgradient	11.82	11.82	300	8,480	7.32
MW-5	Downgradient	11.51	11.51	300	9,120	6.82
MW-6	Upgradient	12.25	12.25	300	8,100	6.86
MW-8	Downgradient	10.90	10.90	300	5,440	7.08

NOTES:
1. Sequence of sampling is MW-3, MW-6, MW-5, MW-8, MW-4.
2. BTOC: Below Top of Casing
3. Purge calculations based on 1/4" ID tubing and complete evacuation of single tubing volume.
4. mL: milliliter
5. S.U.: Standard Unit.

Prepared by: KAE
Checked by: JMC
Approved by: MCC

Annual Groundwater Monitoring Report
USEPA 40 CFR 257.90(e)
SBMU - Sikeston Power Station
Scott County, Missouri

Table 5
Groundwater Monitoring Constituents

USEPA 40 CFR 257			
Appendix III - Constituents for Detection Monitoring		**Appendix IV - Constituents for Assessment Monitoring**	
Chemical Constituent	**Method**	**Chemical Constituent**	**Method**
pH (S.U.)	Field	Antimony (µg/L)	SW 6020
Boron (µg/L)	SW 6020	Arsenic (µg/L)	SW 6020
Calcium (mg/L)	SW 6020	Barium (µg/L)	SW 6020
Chloride (mg/L)	EPA 300.0	Beryllium (µg/L)	SW 6020
Fluoride (mg/L)	EPA 300.0	Cadmium (µg/L)	SW 6020
Sulfate (mg/L)	EPA 300.0	Chromium (µg/L)	SW 6020
Total Dissolved Solids (mg/L)	SM 2540C	Cobalt (µg/L)	SW 6020
		Fluoride (mg/L)	EPA 300
		Lead (µg/L)	SW 6020
		Lithium (µg/L)	SW 6020
		Mercury (µg/L)	SW 6020
		Molybdenum (µg/L)	SW 6020
		Selenium (µg/L)	SW 6020
		Thallium (µg/L)	SW 6020
		Radium 226 and 228 combined (pCi/L)	EPA 903.1 & 904.0

NOTES:
1. S.U. = Standard Unit.
2. µg/L = micrograms per liter.
3. mg/L = milligrams per liter.
4. pCi/L = picocurie per liter.

Prepared by: KAE
Checked by: JMC
Approved by: MCC

Prepared by: GREDELL Engineering Resources, Inc.

Annual Groundwater Monitoring Report
USEPA 40 CFR 257.90(e)
SBMU - Sikeston Power Station
Scott County, Missouri

Table 6
Relative Percent Difference Summary - November 1, 2021

Chemical Parameter	Units	MW-8	DUP	Relative Percent Difference
pH	S.U.	7.16	7.16	0.00
Boron	µg/L	430	440	2.30
Calcium	mg/L	80	82	2.47
Chloride	mg/L	45	40	11.76
Fluoride	mg/L	0.258	0.256	0.78
Sulfate	mg/L	94	87	7.73
Total Dissolved Solids	mg/L	360	390	8.00

Relative Percent Difference Summary - August 3, 2022

Chemical Parameter	Units	MW-8	DUP	Relative Percent Difference
pH	S.U.	7.08	7.08	0.00
Boron	µg/L	420	410	2.41
Calcium	mg/L	100	100	0.00
Chloride	mg/L	56	55	1.80
Fluoride	mg/L	<0.250	<0.250	N/A
Sulfate	mg/L	140	140	0.00
Total Dissolved Solids	mg/L	490	490	0.00

NOTES:

1. S.U. = Standard Unit.
2. µg/L = micrograms per liter.
3. mg/L = milligrams per liter.
4. Relative Percent Difference tolerance = 20%.
5. N/A = Not applicable - parameter concentration below reporting limit.

Prepared by: KAE
Checked by: JMC
Approved by: MCC

Annual Groundwater Monitoring Report
USEPA 40 CFR 257.90(e)
SBMU - Sikeston Power Station
Scott County, Missouri

Table 7
Alternate Data Sets

Constituent-Well Pair[1]		Alternate Background Data Base (to eliminate trending data)[2]	Background set size (n)
Well ID	**Constituent**		
MW-3	pH	June 2017 through October 2020	12
MW-6	pH	January 2017 through October 2020	17
	Boron	November 2018 through October 2020	8
MW-8	Calcium	November 2018 through October 2020	8
	Chloride	June 2018 through October 2020	8
	Total Dissolved Solids	November 2018 through October 2020	8

NOTES:

1. Trending constituent-well pairs identified based on Mann-Kendall Sen's Slope Trend Analysis of data.
2. Alternate background data sets eliminate significant increasing (or decreasing for pH) trends in data sets.

Prepared by: KAE
Checked by: JMC
Approved by: MCC

Annual Groundwater Monitoring Report
USEPA 40 CFR 257.90(e)
SBMU - Sikeston Power Station
Scott County, Missouri

Table 8
Intra-Well Prediction Limit Summary

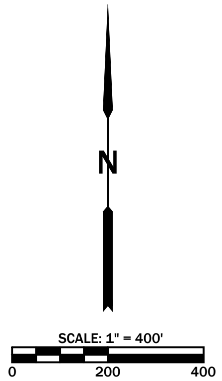
40 CFR 257 Appendix III Constituents for Detection Monitoring	Units	MW-3	MW-4	MW-5	MW-6	MW-8
pH Upper	S.U.	6.772	7.516	7.011	7.00	7.242
pH Lower	S.U.	6.254	7.221	6.68	6.67	7.038
Chloride	mg/L	2.43	19.57	19.46	2.954	78.74
Fluoride	mg/L	0.438	0.259	0.272	0.338	0.26
Sulfate	mg/L	29.71	144.5	267.4	40.3	149.9
Total Dissolved Solids	mg/L	183.4	414.6	545.9	251.5	547.4
Boron	µg/L	52.07	1549	537.2	58.99	577.9
Calcium	mg/L	23.56	97.16	132.9	48.81	120

NOTES:

1. Prediction limits for MW-3 through MW-6 based on data spanning November 2016 to October 2020, except as noted in Table 7.
2. Prediction limits for MW-8 based on data spanning May 2017 to October 2020, except as noted in Table 7.

Prepared by: KAE
Checked by: JMC
Approved by: MCC

FIGURES



LEGEND

PROPERTY LINE	——PL——
GROUNDWATER CONTOUR	————
MONITORING WELL	MW
UP GRADIENT MONITORING LOCATION	UG
DOWN GRADIENT MONITORING LOCATION	DG
GENERAL FLOW DIRECTION	◄——

NOTES:

1. IMAGE PROVIDED BY BING MAPS.
2. MONITORING WELL LOCATIONS, CASING ELEVATIONS & UNDERGROUND CULVERT ELEVATIONS SURVEYED BY BOWEN ENGINEERING & SURVEYING.
3. GROUNDWATER ELEVATIONS MEASURED BY SIKESTON POWER STATION STAFF ON NOVEMBER 1, 2021.
4. MAP DEVELOPMENT BASED ON CONTOURS GENERATED BY SURFER® SOFTWARE.
5. RANGE OF HYDRAULIC GRADIENT AS DETERMINED BY SURFER® SOFTWARE 0.0005 FT./FT. TO 0.001 FT./FT.

WELL ID	GROUNDWATER ELEVATION	CASING ELEVATION	NORTHING	EASTING
MW-3	295.95	308.55	381130.00	1079946.62
MW-4	293.74	305.61	380804.62	1077766.95
MW-5	294.31	305.91	379858.94	1078477.85
MW-6	295.11	307.72	379874.77	1079384.36
MW-8	293.86	304.77	380311.20	1077940.08

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FIGURE 1
SITE MAP AND SAMPLING LOCATIONS
NOVEMBER 1, 2021

SIKESTON POWER STATION
BOTTOM ASH POND
2022 ANNUAL GROUNDWATER
MONITORING & REPORT

SURVEYED	DESIGNED	DRAWN	CHECKED	APPROVED	DATE	SCALE	PROJECT NAME	FILE NAME	SHEET #
NA	KE	CM	KE	MCC	10/2022	AS NOTED	SIKESTON/GWMAP/BAP	GW CONT BAP 11-2021	1 OF 1

GREDELL Engineering Resources, Inc.
ENVIRONMENTAL ENGINEERING LAND - AIR - WATER
1505 East High Street Telephone: (573) 659-9078
Jefferson City, Missouri Facsimile: (573) 659-9079
MO CORP. ENGINEERING LICENSE NO. E-2001001669-D

FILE PATH: O:\CADDFiles\SIKESTON\GROUNDWATER MAP\BAP\GW CONT MAP BAP 11-2021.dwg

N

SCALE: 1" = 400'

0 200 400

LEGEND

PROPERTY LINE	——PL——
GROUNDWATER CONTOUR	————
MONITORING WELL	MW
UP GRADIENT MONITORING LOCATION	UG
DOWN GRADIENT MONITORING LOCATION	DG
GENERAL FLOW DIRECTION	◀———

NOTES:

1. IMAGE PROVIDED BY BING MAPS.
2. MONITORING WELL LOCATIONS, CASING ELEVATIONS & UNDERGROUND CULVERT ELEVATIONS SURVEYED BY BOWEN ENGINEERING & SURVEYING.
3. GROUNDWATER ELEVATIONS MEASURED BY SIKESTON POWER STATION STAFF ON AUGUST 3, 2022.
4. MAP DEVELOPMENT BASED ON CONTOURS GENERATED BY SURFER® SOFTWARE.
5. RANGE OF HYDRAULIC GRADIENT AS DETERMINED BY SURFER® SOFTWARE 0.0005 FT./FT. TO 0.001 FT./FT.

WELL ID	GROUNDWATER ELEVATION	CASING ELEVATION	NORTHING	EASTING
MW-3	296.52	308.55	381130.00	1079946.62
MW-4	293.79	305.61	380804.62	1077766.95
MW-5	294.40	305.91	379858.94	1078477.85
MW-6	295.47	307.72	379874.77	1079384.36
MW-8	293.87	304.77	380311.20	1077940.08

THE GEOLOGIST WHO REVIEWED AND APPROVED THIS REPORT ASSUMES RESPONSIBILITY ONLY FOR GEOLOGIC INTERPRETATIONS OF DATA APPEARING ON THE PAGE AND DISCLAIMS PURSUANT TO SECTION 256.456 RSMO ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS OR OTHER DOCUMENTS OR INSTRUMENTS NOT PREPARED UNDER THE SUPERVISION OF THE GEOLOGIST RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE PROJECT TO WHICH THIS FIGURE REFERS.

FIGURE 2
GROUNDWATER CONTOUR MAP
AUGUST 3, 2022

SIKESTON POWER STATION
BOTTOM ASH POND
2022 ANNUAL GROUNDWATER
MONITORING & REPORT

SURVEYED	DESIGNED	DRAWN	CHECKED	APPROVED	DATE	SCALE	PROJECT NAME	FILE NAME	SHEET #
NA	NA	CM	KE	MCC	10/2022	AS NOTED	SIKESTON/GWMAP/BAP	GW CONT BAP 10-2022	1 OF 1

GREDELL Engineering Resources, Inc.
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1505 East High Street
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MO CORP. ENGINEERING LICENSE NO. E-2001001669-D

FILE PATH: O:\CADDFiles\SIKESTON\GROUNDWATER MAP\BAP\GW CONT MAP BAP 10-2022.dwg

APPENDICES

Appendix 1

Field Sampling Notes

Appendix 1a

Field Sampling Notes – November 1, 2021

(Second 2021 Semi-annual Event)

Field Instrumentation Calibration Log

Facility: SBMU SPS CCR Groundwater Sampling

Calibrated by: Ashish Patel

Field Instruments: In-Situ smarTROLL Field Meter

S/N #: 474247

HF scientific, Inc. Micro TPI Field Portable Turbidimeter

S/N #: 201607366

	Date	Time	pH Standards	pH Measurements	Specific Conductance Standard (µS/cm)	Specific Conductance Measurement (µS/cm)	Oxidation Reduction Potential Standard (mV)		Oxidation Reduction Potential Measurement (mV)	Dissolved Oxygen (%)		Turbidity Standards (NTU)	Turbidity Measurements (NTU)
Beginning of Day Calibration	11/01/2021	0625	4.00	= 4.00	1413	= 1410.5	Temperature (°C)	= 17.98	= 229.6	Temperature (°C)	= 17.94	0.02	= 0.02
			7.00	= 7.00			Standard (mV)	= 229.0		Tap Water Source	= Sikeston City	10.0	= 10.0
			10.00	= 10.00						Barometric Pressure (mm/Hg)	= 1013.6	1000	= 1000.0
										Measurement	= 99.98		
End of Day Check	11/01/2021	1710	4.00	= 4.02	1413	= 1430.9	Temperature (°C)	= 17.85	= 233.6	Temperature (°C)	= 16.33	0.02	= 0.01
			7.00	= 7.02			Standard (mV)	= 229.0		Tap Water Source	= Sikeston City	10.0	= 9.87
			10.00	= 9.95						Barometric Pressure (mm/Hg)	= 1013	1000	= 994.2
										Measurement	= 10037		

Notes: The Multi-Probe Field Meter measures Temperature, Specific Conductance, Dissolved Oxygen, pH, and Oxidation Reduction Potential.

The HF scientific, inc. Micro TPI Field Portable Turbidimeter measures Turbidity.

Dissolved oxygen is calibrated via % saturation method; however, field measurements are recorded as mg/L.

I certify that the aforementioned meters were calibrated within the manufacturers specifications.

Date: 11-01-2021 By: Ashish Patel

Prepared by: GREDELL Engineering Resources, Inc.

January 2017

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 3
Name (Field Staff): A Patel D Dillingham
Date: 11/1/21

Access:
Accessibility: [✓ Good] Fair ____ Poor ____
Well clear of weeds and/or debris?: [✓ Yes] No ____
Well identification clearly visible?: [✓ Yes] No ____
Remarks:

Concrete Pad:
Condition of Concrete Pad: [✓ Good] Inadequate ____
Depressions or standing water around well?: Yes ____ [✓ No]
Remarks:

Protective Outer Casing: Material = 4" x 4" Steel Hinged Casing with Hasp
Condition of Protective Casing: [✓ Good] Damaged ____
Condition of Locking Cap: [✓ Good] Damaged ____
Condition of Lock: [✓ Good] Damaged ____
Condition of Weep Hole: [✓ Good] Damaged ____
Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded
Condition of Riser: [✓ Good] Damaged ____
Condition of Riser Cap: [✓ Good] Damaged ____
Measurement Reference Point: [✓ Yes] No ____
Remarks:

Dedicated Purging/Sampling Device: Type = ¼ " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing
Condition: [✓ Good] Damaged ____ Missing ____
Remarks:

Monitoring Well Locked/Secured Post Sampling?: [✓ Yes] No ____
Remarks:

Field Certification Ashish Patel — Lab Tech — 11/01/2021
Signed — Title — Date

Prepared by: GREDELL Engineering Resources, Inc. January 2017

Field Sampling Log

Monitoring Well ID: MW 3 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 12.60

Date: 11-01-2021

Initial Groundwater Elevation (NAVD88):

Air Pressure in Well? Y / [✓ N]

PURGE INFORMATION

Date: 11-01-2021

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump

Dedicated Tubing? [✓ Y] / N

Time Purging Initiated: 0723

One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 12.60

Total Volume Purged (mL): 5740

Beginning Groundwater Elevation (NAVD88):

Well Purged To Dryness? Y / [✓ N]

Well Total Depth (feet btoc): 36.98

Water Level after Sampling (feet btoc): 12.60
(i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC

Time Sampling Completed: 0811

PURGE STABILIZATION DATA

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
0725		420	13.53	211.15	16.12	7.03	76.5	14.68	12.60	yellow Flake, no odor
0727	270	960	12.78	208.15	14.17	6.69	88.0	11.74	12.60	" "
0729	260	1480	12.44	206.77	13.43	6.57	90.0	10.07	12.60	" "
0731	270	2020	12.25	204.93	12.76	6.52	99.2	7.25	12.60	Clear, no odor
0733	260	2540	12.12	203.24	12.61	6.51	85.6	4.90	12.60	" "
0735	270	3080	12.04	201.14	12.19	6.53	81.0	3.89	12.60	" "
0737	260	3600	12.00	202.02	12.61	6.52	79.0	3.33	12.60	" "
0739	270	4140	12.02	194.56	11.52	6.64	76.2	2.71	12.60	" "
0741	260	4660	11.94	200.00	11.47	6.54	74.6	1.99	12.60	" "
0743	270	5200	11.90	199.92	10.74	6.55	72.8	1.73	12.60	" "
0745	270	5740	11.89	199.66	10.10	6.57	70.3	1.46	12.60	" "

btoc - below top of casing

Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW 3

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing

Dedicated: [✓ Y] / N

Water Level @ Sampling (feet btoc): 12.60

Monitoring Event: Annual ( ) Semi-Annual (✓) Quarterly ( ) Monthly ( ) Other ( )

Final Purge Stablization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
11/1/21 0745	270	11.89	199.66	10.10	6.57	70.3	1.46

Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potentia

2 - HF scientific, Inc. Micro TPI Field Portable Turbidimeter

General Information:

Weather Conditions @ time of sampling: Mostly clear 41°F

Sample Characteristics: Clear, colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 11-1-21 By: Title: Lab Tech

Prepared by: GREDELL Engineering
Resources, Inc.

January 2017

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 6
Name (Field Staff): A Patel D Dillingham
Date: 11-01-2021

Access:

Accessibility: [✓ Good] Fair ___ Poor ___

Well clear of weeds and/or debris?: [✓ Yes] No ___

Well identification clearly visible?: [✓ Yes] No ___

Remarks:

Concrete Pad:

Condition of Concrete Pad: [✓ Good] Inadequate ___

Depressions or standing water around well?: Yes ___ [✓ No]

Remarks:

Protective Outer Casing: Material = 4" x 4" Steel Hinged Casing with Hasp

Condition of Protective Casing: [✓ Good] Damaged ___

Condition of Locking Cap: [✓ Good] Damaged ___

Condition of Lock: [✓ Good] Damaged ___

Condition of Weep Hole: [✓ Good] Damaged ___

Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded

Condition of Riser: [✓ Good] Damaged ___

Condition of Riser Cap: [✓ Good] Damaged ___

Measurement Reference Point: [✓ Yes] No ___

Remarks:

Dedicated Purging/Sampling Device: Type = ¼ " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing

Condition: [✓ Good] Damaged ___ Missing ___

Remarks:

Monitoring Well Locked/Secured Post Sampling?: [✓ Yes] No ___

Remarks:

Field Certification Ashish Patel Lab Tech 11-01-2021
Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc. January 2017

Field Sampling Log

Monitoring Well ID: MW 6 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 12.61 Date: 11-01-2021

Initial Groundwater Elevation (NAVD88): ________ Air Pressure in Well? Y [✓ N]

PURGE INFORMATION

Date: 11-01-2021

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? [✓ Y] / N

Time Purging Initiated: 0834 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 12.61 Total Volume Purged (mL): 6560

Beginning Groundwater Elevation (NAVD88): ________ Well Purged To Dryness? Y / [✓ N]

Well Total Depth (feet btoc): 37.77 Water Level after Sampling (feet btoc): 12.61
(i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 0930

PURGE STABILIZATION DATA

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
0836		320	10.81	504.25	11.99	8.84	6.20	7.20	12.61	Clear, no odor
0838	830	780	11.57	493.38	9.41	6.87	-1.90	8.10	12.61	" "
0840	240	1260	11.92	489.59	8.90	6.89	-7.40	7.72	12.61	" "
0842	230	1720	12.03	485.18	7.92	6.89	-10.8	5.19	12.61	" "
0844	250	2220	12.03	481.50	7.15	6.89	-12.5	5.86	12.61	" "
0846	230	2680	12.03	484.64	6.01	6.89	-14.7	4.07	12.61	" "
0848	240	3160	12.03	485.57	6.22	6.89	-15.8	4.91	12.61	" "
0850	240	3640	12.05	484.35	5.83	6.89	-15.5	5.68	12.61	" "
0852	230	4100	12.04	486.17	5.77	6.89	-17.5	2.67	12.61	" "
0854	250	4600	12.03	485.51	5.77	6.89	-17.8	4.33	12.61	" "
0856	240	5080	12.07	483.21	5.27	6.89	-19.2	3.97	12.61	" "
0858	250	5580	12.08	480.02	5.24	6.89	-19.6	2.30	12.61	" "
0900	250	6080	12.07	479.72	5.19	6.88	-19.6	3.14	12.61	" "
0902	240	6560	12.07	475.88	5.05	6.88	-20.8	2.22	12.61	" "

btoc - below top of casing

Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW 6

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing

Dedicated: [✓ Y] / N

Water Level @ Sampling (feet btoc): 12.61

Monitoring Event: Annual ( ) Semi-Annual (X) Quarterly ( ) Monthly ( ) Other ( )

Final Purge Stablization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
11-01-2021 0902	240	12.07	475.88	5.05	6.88	-20.8	2.22

Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potentia

2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

General Information:

Weather Conditions @ time of sampling: Sunny
43 °F

Sample Characteristics: Clear, Colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 11-01-2021 By: Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 5
Name (Field Staff): A Patel D Dillingham
Date: 11-01-2021

Access:
Accessibility: Good ✓ Fair ___ Poor ___
Well clear of weeds and/or debris?: Yes ✓ No ___
Well identification clearly visible?: Yes ✓ No ___
Remarks:

Concrete Pad:
Condition of Concrete Pad: Good ✓ Inadequate ___
Depressions or standing water around well?: Yes ___ No ✓
Remarks:

Protective Outer Casing: Material = 4" x 4" Steel Hinged Casing with Hasp
Condition of Protective Casing: Good ✓ Damaged ___
Condition of Locking Cap: Good ✓ Damaged ___
Condition of Lock: Good ✓ Damaged ___
Condition of Weep Hole: Good ✓ Damaged ___
Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded
Condition of Riser: Good ✓ Damaged ___
Condition of Riser Cap: Good ✓ Damaged ___
Measurement Reference Point: Yes ✓ No ___
Remarks:

Dedicated Purging/Sampling Device: Type = ¼ " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing
Condition: Good ✓ Damaged ___ Missing ___
Remarks:

Monitoring Well Locked/Secured Post Sampling?: Yes ✓ No ___
Remarks:

Field Certification
Signed:
Title: Lab Tech
Date: 11-01-2021

Field Sampling Log

Monitoring Well ID: MW5 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 11.60 Date: 11-01-2021

Initial Groundwater Elevation (NAVD88): ______ Air Pressure in Well? Y / [✓ N]

PURGE INFORMATION

Date: 11-01-2021

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? [✓ Y] / N

Time Purging Initiated: 1036 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 11.60 Total Volume Purged (mL): 4340

Beginning Groundwater Elevation (NAVD88): ______ Well Purged To Dryness? Y / [✓ N]

Well Total Depth (feet btoc): 37.16 Water Level after Sampling (feet btoc): 11.60
(i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1120

PURGE STABILIZATION DATA

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
1038		340	11.85	810.01	14.48	6.82	-3.7	10.89	11.60	Yellow tint, no odor
1040	230	800	12.50	790.13	11.99	6.89	-15.9	2.48	11.60	Clear, no odor
1042	240	1280	12.58	794.08	10.29	6.89	-17.1	3.26	11.60	" "
1044	250	1780	12.68	797.18	7.92	6.89	-19.0	2.26	11.60	" "
1046	260	2300	12.85	794.70	7.59	6.89	-21.0	1.61	11.60	" "
1048	250	2800	12.69	794.26	8.16	6.90	-22.0	0.67	11.60	" "
1050	250	3300	12.67	796.21	7.70	6.90	-23.2	1.29	11.60	" "
1052	250	3800	12.77	791.88	7.72	6.90	-24.9	1.20	11.60	" "
1054	270	4340	12.79	790.82	7.62	6.90	-25.5	0.50	11.60	" "

btoc - below top of casing

Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW 5

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing

Dedicated: [✓ Y] / N

Water Level @ Sampling (feet btoc): 11.60

Monitoring Event: Annual ( ) Semi-Annual (✓) Quarterly ( ) Monthly ( ) Other ( )

Final Purge Stablization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
11-01-2021 1054	270	12.79	790.82	7.62	6.90	-25.5	0.50

Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potentia

2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

General Information:

Weather Conditions @ time of sampling: Sunny
50 °F

Sample Characteristics: Clear, colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 11-01-2021 By: Ashish Patel Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 8
Name (Field Staff): A Patel D Dillingham
Date: 11-01-2021

Access:
Accessibility: [✓ Good] Fair ____ Poor ____
Well clear of weeds and/or debris?: [✓ Yes] No ____
Well identification clearly visible?: [✓ Yes] No ____
Remarks:

Concrete Pad:
Condition of Concrete Pad: [✓ Good] Inadequate ____
Depressions or standing water around well?: Yes ____ [✓ No]
Remarks:

Protective Outer Casing: Material = 4" x 4" Steel Hinged Casing with Hasp
Condition of Protective Casing: [✓ Good] Damaged ____
Condition of Locking Cap: [✓ Good] Damaged ____
Condition of Lock: [✓ Good] Damaged ____
Condition of Weep Hole: [✓ Good] Damaged ____
Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded
Condition of Riser: [✓ Good] Damaged ____
Condition of Riser Cap: [✓ Good] Damaged ____
Measurement Reference Point: [✓ Yes] No ____
Remarks:

Dedicated Purging/Sampling Device: Type = ¼ " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing
Condition: [✓ Good] Damaged ____ Missing ____
Remarks:

Monitoring Well Locked/Secured Post Sampling?: [✓ Yes] No ____
Remarks:

Field Certification ____________ Lab Tech 11-01-2021
Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc. January 2017

Field Sampling Log

Monitoring Well ID: MW8 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 10.91

Date: 11.01.2021

Initial Groundwater Elevation (NAVD88): ______

Air Pressure in Well? Y [✓ N]

PURGE INFORMATION

Date: 11-01-2021

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump

Dedicated Tubing? [✓ Y] / N

Time Purging Initiated: 1134

One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 10.91

Total Volume Purged (mL): ______

Beginning Groundwater Elevation (NAVD88): ______

Well Purged To Dryness? Y / [✓ N]

Well Total Depth (feet btoc): 37.06

Water Level after Sampling (feet btoc): 10.91
(i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC

Time Sampling Completed: 1217

PURGE STABILIZATION DATA

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
1136		380	14.64	655.09	0.86	7.11	-37.5	1.36	10.91	Clear, no odor
1138	250	880	14.08	655.26	0.60	7.14	-39.4	0.79	10.91	" "
1140	240	1360	14.02	657.43	0.53	7.15	-41.1	1.12	10.91	" "
1142	280	1860	14.07	662.60	0.47	7.16	-42.1	1.05	10.91	" "
1144	260	2380	14.08	669.93	0.41	7.16	-44.0	0.96	10.91	" "
1146	240	2860	14.15	676.84	0.42	7.16	-45.1	0.71	10.91	" "

btoc - below top of casing

Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW8

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing

Dedicated: [✓ Y] / N

Water Level @ Sampling (feet btoc): 10.91

Monitoring Event: Annual ( ) Semi-Annual (✓) Quarterly ( ) Monthly ( ) Other ( )

Final Purge Stablization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
11-01-2021 1146	240	14.15	676.89	0.42	7.18	-45.1	0.71

Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potenti

2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

General Information:

Weather Conditions @ time of sampling: Sunny 54°F

Sample Characteristics: Clear, no odor, colorless

Sample Collection Order: Per SAP

Comments and Observations:

Collected Field Duplicate

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 11-01-2021 By:

Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 4
Name (Field Staff): A Patel D Dillingham
Date: 11-01-2021

Access:

Accessibility: Good ✓ Fair ____ Poor ____

Well clear of weeds and/or debris?: Yes ✓ No ____

Well identification clearly visible?: Yes ✓ No ____

Remarks:

Concrete Pad:

Condition of Concrete Pad: Good ✓ Inadequate ____

Depressions or standing water around well?: Yes ____ No ✓

Remarks:

Protective Outer Casing: Material = 4" x 4" Steel Hinged Casing with Hasp

Condition of Protective Casing: Good ✓ Damaged ____

Condition of Locking Cap: Good ✓ Damaged ____

Condition of Lock: Good ✓ Damaged ____

Condition of Weep Hole: Good ✓ Damaged ____

Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded

Condition of Riser: Good ✓ Damaged ____

Condition of Riser Cap: Good ✓ Damaged ____

Measurement Reference Point: Yes ✓ No ____

Remarks:

Dedicated Purging/Sampling Device: Type = ¼ " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing

Condition: Good ✓ Damaged ____ Missing ____

Remarks:

Monitoring Well Locked/Secured Post Sampling?: Yes ✓ No ____

Remarks:

Field Certification

Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc. January 2017

Field Sampling Log

Monitoring Well ID: MW 4 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 11.87 Date: 11-01-2021

Initial Groundwater Elevation (NAVD88): ______ Air Pressure in Well? Y / [✓ N]

PURGE INFORMATION

Date: 11-01-2021

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump

Dedicated Tubing? [✓ Y] / N

Time Purging Initiated: 1310

One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 11.87

Total Volume Purged (mL): 3620

Beginning Groundwater Elevation (NAVD88): ______

Well Purged To Dryness? Y / [✓ N]

Well Total Depth (feet btoc): 37.26

Water Level after Sampling (feet btoc): 11.87
(i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC

Time Sampling Completed: 1349

PURGE STABILIZATION DATA

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
1312		380	16.20	592.82	1.03	7.27	-39.6	3.26	11.87	clear, no odor
1314	280	940	15.18	604.55	0.85	7.31	-46.9	4.12	11.87	" "
1316	270	1480	15.03	607.23	0.77	7.32	-50.8	2.96	11.87	" "
1318	260	2000	14.67	613.64	0.64	7.33	-54.7	3.37	11.87	" "
1320	280	2560	14.85	605.00	0.56	7.33	-56.7	2.88	11.87	" "
1322	260	3080	14.87	608.51	0.55	7.33	-57.9	2.25	11.87	" "
1324	270	3620	14.87	609.76	0.54	7.34	-59.8	2.97	11.87	" "

btoc - below top of casing

Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW4

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing

Dedicated: [✓ Y] / N

Water Level @ Sampling (feet btoc): 11.87

Monitoring Event: Annual ( ) Semi-Annual [✓ ( )] Quarterly ( ) Monthly ( ) Other ( )

Final Purge Stablization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
11-01-2021 1324	270	14.87	609.76	0.54	7.34	-59.8	9.97

Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potentia

2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

General Information:

Weather Conditions @ time of sampling: Sunny
55 °F

Sample Characteristics: Clear, Colorless, odorless.

Sample Collection Order: Per SAP

Comments and Observations:

Collected Field Blank

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 11-01-21 By: Title: Lead Tech

Appendix 1b

Field Sampling Notes – December 27, 2021

(Re-sample)

Field Instrumentation Calibration Log

Facility: SBMU SPS CCR Groundwater Sampling

Calibrated by: Ashish Patel

Field Instruments: In-Situ smarTROLL Field Meter

S/N #: 474247

HF scientific, inc. Micro TPI Field Portable Turbidimeter

S/N #: 201607366

	Date	Time	pH Standards	pH Measurements	Specific Conductance Standard (µS/cm)	Specific Conductance Measurement (µS/cm)	Oxidation Reduction Potential Standard (mV)		Oxidation Reduction Potential Measurement (mV)	Dissolved Oxygen (%)		Turbidity Standards (NTU)	Turbidity Measurements (NTU)
Beginning of Day Calibration	12-27-2021	0630	4.00	= 4.00	1413	= 1412.8	Temperature (°C)	= 13.22	= 229.5	Temperature (°C)	= 13.04	0.02	= 0.02
			7.00	= 7.00			Standard (mV)	= 229.0		Tap Water Source	= Silkeston city	10.0	= 10.0
			10.00	= 10.00						Barometric Pressure (mm/Hg)	= 994.55	1000	= 1000.0
										Measurement	= 99.93		
End of Day Check	12-27-2021	1330	4.00	= 4.10	1413	= 1374.8	Temperature (°C)	= 13.22	= 223.6	Temperature (°C)	= 12.78	0.02	= 0.01
			7.00	= 7.10			Standard (mV)	= 229.0		Tap Water Source	= Sikeston City	10.0	= 9.94
			10.00	= 10.05						Barometric Pressure (mm/Hg)	= 994.37	1000	= 9941
										Measurement	= 100.44		

Notes: The Multi-Probe Field Meter measures Temperature, Specific Conductance, Dissolved Oxygen, pH, and Oxidation Reduction Potential.

The HF scientific, inc. Micro TPI Field Portable Turbidimeter measures Turbidity.

Dissolved oxygen is calibrated via % saturation method; however, field measurements are recorded as mg/L.

I certify that the aforementioned meters were calibrated within the manufacturers specifications.

Date: 12-27-21 By: Ashish Patel

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 3
Name (Field Staff): A Patel D Dillingham
Date: 12-27-21

Access:
Accessibility: Good ✓ Fair ____ Poor ____
Well clear of weeds and/or debris?: Yes ✓ No ____
Well identification clearly visible?: Yes ✓ No ____
Remarks:

Concrete Pad:
Condition of Concrete Pad: Good ✓ Inadequate ____
Depressions or standing water around well?: Yes ____ No ✓
Remarks:

Protective Outer Casing: Material = 4" x 4" Steel Hinged Casing with Hasp
Condition of Protective Casing: Good ✓ Damaged ____
Condition of Locking Cap: Good ✓ Damaged ____
Condition of Lock: Good ✓ Damaged ____
Condition of Weep Hole: Good ✓ Damaged ____
Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded
Condition of Riser: Good ✓ Damaged ____
Condition of Riser Cap: Good ✓ Damaged ____
Measurement Reference Point: Yes ✓ No ____
Remarks:

Dedicated Purging/Sampling Device: Type = ¼ " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing
Condition: Good ✓ Damaged ____ Missing ____
Remarks:

Monitoring Well Locked/Secured Post Sampling?: Yes ✓ No ____
Remarks:

Field Certification Ashish Patel Lab Tech 12-27-21
Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc. January 2017

Field Sampling Log

Monitoring Well ID: MW 3 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 12.55 Date: 12-27-21

Initial Groundwater Elevation (NAVD88): ______ Air Pressure in Well? Y / [✓ N]

PURGE INFORMATION

Date: 12-27-21

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump

Dedicated Tubing? [✓ Y] / N

Time Purging Initiated: 0739

One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 12.55

Total Volume Purged (mL): 3920

Beginning Groundwater Elevation (NAVD88): ______

Well Purged To Dryness? Y / [✓ N]

Well Total Depth (feet btoc): 36.99

Water Level after Sampling (feet btoc): 12.55
(i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC

Time Sampling Completed: 0818

PURGE STABILIZATION DATA

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
0741		420	8.87	203.01	2.02	6.82	78.6	15.91	12.55	clear, no odor
0743	300	1020	8.09	204.33	1.92	6.61	86.0	10.29	12.55	" "
0745	310	1640	7.76	203.38	1.83	6.50	85.2	5.72	12.55	" "
0747	280	2200	7.70	200.87	1.64	6.48	79.5	2.22	12.55	" "
0749	300	2800	7.65	198.09	1.61	6.47	70.6	1.59	12.55	" "
0751	280	3360	7.63	195.53	1.62	6.47	66.3	1.94	12.55	" "
0753	280	3920	7.62	194.74	1.67	6.48	623	1.03	12.55	" "

btoc - below top of casing

Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW 3

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing

Dedicated: [✓ Y] / N

Water Level @ Sampling (feet btoc): 12.55

Monitoring Event: Annual ( ) Semi-Annual ( ) Quarterly ( ) Monthly ( ) Other [✓]

Final Purge Stablization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
12-27-21 0753	280	7.62	194.74	1.67	6.48	~~62.3~~ AP	1.03

62.3

Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potentia

2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

General Information:

Weather Conditions @ time of sampling: Cloudy

64°F

Sample Characteristics: Clear, Colorless, Odorless

Sample Collection Order: Per SAP

Comments and Observations:

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 12-27-21 By: Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 6
Name (Field Staff): A Patel D Dillingham
Date: 12-27-21

Access:
Accessibility: Good ✓ Fair ___ Poor ___
Well clear of weeds and/or debris?: Yes ✓ No ___
Well identification clearly visible?: Yes ✓ No ___
Remarks:

Concrete Pad:
Condition of Concrete Pad: Good ✓ Inadequate ___
Depressions or standing water around well?: Yes ___ No ✓
Remarks:

Protective Outer Casing: Material = 4" x 4" Steel Hinged Casing with Hasp
Condition of Protective Casing: Good ✓ Damaged ___
Condition of Locking Cap: Good ✓ Damaged ___
Condition of Lock: Good ✓ Damaged ___
Condition of Weep Hole: Good ✓ Damaged ___
Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded
Condition of Riser: Good ✓ Damaged ___
Condition of Riser Cap: Good ✓ Damaged ___
Measurement Reference Point: Yes ✓ No ___
Remarks:

Dedicated Purging/Sampling Device: Type = ¼ " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing
Condition: Good ✓ Damaged ___ Missing ___
Remarks:

Monitoring Well Locked/Secured Post Sampling?: Yes ✓ No ___
Remarks:

Field Certification

	Lab Tech	12-27-21
Signed	Title	Date

Prepared by: GREDELL Engineering Resources, Inc.

January 2017

Field Sampling Log

Monitoring Well ID: MW 6 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 12.47 Date: 12-27-21

Initial Groundwater Elevation (NAVD88): ______ Air Pressure in Well? Y / [✓ N]

PURGE INFORMATION

Date: 12-27-21

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump

Dedicated Tubing? [✓ Y] / N

Time Purging Initiated: 0840

One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 12.47

Total Volume Purged (mL): 3840

Beginning Groundwater Elevation (NAVD88): ______

Well Purged To Dryness? Y / [✓ N]

Well Total Depth (feet btoc): 37.74

Water Level after Sampling (feet btoc): 12.47
(i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC

Time Sampling Completed: 0924

PURGE STABILIZATION DATA

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
0842		360	7.98	437.90	1.49	6.70	-23.8	21.29	12.47	Cloudy, no odor
0844	250	860	7.80	444.58	1.02	6.86	-42.2	10.90	12.47	Clear, no odor
0846	250	1360	7.76	447.35	0.86	6.88	-46.2	6.17	12.47	" "
0848	240	1840	7.75	445.94	0.81	6.89	-49.8	5.13	12.47	" "
0850	270	2380	7.75	444.75	0.72	6.90	-52.2	4.03	12.47	" "
0852	240	2860	7.74	445.56	0.70	6.91	-54.0	2.98	12.47	" "
0854	260	3380	7.72	444.61	0.67	6.91	-55.2	3.80	12.47	" "
0856	230	3840	7.72	444.67	0.67	6.91	-56.0	3.26	12.47	" "

btoc - below top of casing

Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring   Monitoring Well ID: MW 6

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing   Dedicated: [✓ Y] / N

Water Level @ Sampling (feet btoc): 12.47

Monitoring Event: Annual ( ) Semi-Annual ( ) Quarterly ( ) Monthly ( ) Other (✓)

Final Purge Stablization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
12-27-21 0856	230	7.72	444.67	0.67	6.91	-56.0	3.28

Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potentia

2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

General Information:

Weather Conditions @ time of sampling: Cloudy

64 °F

Sample Characteristics: Clear, colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:

Collect ^ Duplicate and Field Blank

Field

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 12-27-21 By: Ashish Parec Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 2
Name (Field Staff): A Patel D Dillinghum
Date: 12-27-21

Access:
Accessibility: Good ✓ Fair ____ Poor ____
Well clear of weeds and/or debris?: Yes ✓ No ____
Well identification clearly visible?: Yes ✓ No ____
Remarks:

Concrete Pad:
Condition of Concrete Pad: Good ✓ Inadequate ____
Depressions or standing water around well?: Yes ____ No ✓
Remarks:

Protective Outer Casing: Material = 4" x 4" Steel Hinged Casing with Hasp
Condition of Protective Casing: Good ✓ Damaged ____
Condition of Locking Cap: Good ✓ Damaged ____
Condition of Lock: Good ✓ Damaged ____
Condition of Weep Hole: Good ✓ Damaged ____
Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded
Condition of Riser: Good ✓ Damaged ____
Condition of Riser Cap: Good ✓ Damaged ____
Measurement Reference Point: Yes ✓ No ____
Remarks:

Dedicated Purging/Sampling Device: Type = ¼ " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing
Condition: Good ✓ Damaged ____ Missing ____
Remarks:

Monitoring Well Locked/Secured Post Sampling?: Yes ✓ No ____
Remarks:

Field Certification
Signed:
Title: Lab Tech
Date: 12-27-21

Prepared by: GREDELL Engineering Resources, Inc.

January 2017

Field Sampling Log

Monitoring Well ID: MW 2 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 11.54 Date: 12-27-21

Initial Groundwater Elevation (NAVD88): ______ Air Pressure in Well? Y / [✓ N]

PURGE INFORMATION

Date: 12-27-21

Name (Sample Collector): D Dillinghum

Method of Well Purge: Low Flow Perstaltic Pump

Dedicated Tubing? [✓ Y] / N

Time Purging Initiated: 0955

One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 11.54

Total Volume Purged (mL): 2940

Beginning Groundwater Elevation (NAVD88): ______

Well Purged To Dryness? Y / [✓ N]

Well Total Depth (feet btoc): 37.17

Water Level after Sampling (feet btoc): 11.54
(i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC

Time Sampling Completed: 1028

PURGE STABILIZATION DATA

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
0957		380	9.35	147.72	1.35	6.70	-8.1	9.61	11.54	clear, no odor
0959	260	900	8.94	147.61	1.16	6.45	3.5	8.95	11.54	" "
1001	250	1400	8.87	155.07	1.10	6.38	7.7	5.09	11.54	" "
1003	260	1920	8.87	156.30	1.01	6.35	11.4	2.21	11.54	" "
1005	260	2440	8.90	162.69	0.84	6.32	14.7	1.65	11.54	" "
1007	250	2940	8.90	160.99	0.88	6.31	17.7	1.53	11.54	" "

btoc - below top of casing

Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW 2

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing

Dedicated: [✓ Y] / N

Water Level @ Sampling (feet btoc): 11.54

Monitoring Event: Annual ( ) Semi-Annual ( ) Quarterly ( ) Monthly ( ) Other (✓)

Final Purge Stablization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
12-27-21 1007	~~8.90~~ AP 250	8.90	160.99	0.88	6.31	17.7	1.53

Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potentia

2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

General Information:

Weather Conditions @ time of sampling: Sunny but little cloudy
66°F

Sample Characteristics: Clear, Colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:
Collecte Field Blank

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 12-27-21 By: Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 9
Name (Field Staff): A Patel D Dillingham
Date: 12-27-21

Access:

Accessibility: [✓ Good] Fair ___ Poor ___

Well clear of weeds and/or debris?: [✓ Yes] No ___

Well identification clearly visible?: [✓ Yes] No ___

Remarks:

Concrete Pad:

Condition of Concrete Pad: [✓ Good] Inadequate ___

Depressions or standing water around well?: Yes ___ [✓ No]

Remarks:

Protective Outer Casing: Material = 4" x 4" Steel Hinged Casing with Hasp

Condition of Protective Casing: [✓ Good] Damaged ___

Condition of Locking Cap: [✓ Good] Damaged ___

Condition of Lock: [✓ Good] Damaged ___

Condition of Weep Hole: [✓ Good] Damaged ___

Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded

Condition of Riser: [✓ Good] Damaged ___

Condition of Riser Cap: [✓ Good] Damaged ___

Measurement Reference Point: [✓ Yes] No ___

Remarks:

Dedicated Purging/Sampling Device: Type = ¼ " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing

Condition: [✓ Good] Damaged ___ Missing ___

Remarks:

Monitoring Well Locked/Secured Post Sampling?: [✓ Yes] No ___

Remarks:

Field Certification ______ Lab Tech 12-27-21
Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc. January 2017

Field Sampling Log

Monitoring Well ID: MW 9 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 19.22 Date: 12-27-21

Initial Groundwater Elevation (NAVD88): ______ Air Pressure in Well? Y / [✓ N]

PURGE INFORMATION

Date: 12-27-21

Name (Sample Collector): D Dillinghum

Method of Well Purge: Low Flow Perstaltic Pump

Dedicated Tubing? [✓ Y] / N

Time Purging Initiated: 1108

One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 19.22

Total Volume Purged (mL): 2760

Beginning Groundwater Elevation (NAVD88): ______

Well Purged To Dryness? Y / [✓ N]

Well Total Depth (feet btoc): 37.18

Water Level after Sampling (feet btoc): 19.22
(i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC

Time Sampling Completed: 1144

PURGE STABILIZATION DATA

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
1110		340	9.76	881.08	1.23	7.46	-12.1	2.93	19.22	clear, no odor
1112	240	820	8.78	885.86	0.95	7.56	-18.1	1.30	19.22	" "
1114	240	1300	8.66	886.22	0.83	7.58	-20.1	1.10	19.22	" "
1116	240	1780	8.60	891.26	0.77	7.58	-20.4	1.23	19.22	" "
1118	260	2300	8.57	887.16	0.72	7.58	-21.1	0.82	19.22	" "
1120	230	2760	8.57	886.04	0.70	7.58	-21.5	0.87	19.22	" "

btoc - below top of casing

Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW 9

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing

Dedicated: [✓ Y] / N

Water Level @ Sampling (feet btoc): 19.22

Monitoring Event: Annual ( ) Semi-Annual ( ) Quarterly ( ) Monthly ( ) Other (✓)

Final Purge Stablization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
12-27-21 1120	230	8.57	866.04	0.70	7.58	-21.5	0.87

Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potentia

2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

General Information:

Weather Conditions @ time of sampling: Cloudy
68°F

Sample Characteristics: AP ~~Colorless Clearless~~ Clear, colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:
Collect Field Duplicate

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 12-27-21 By: Ashish Patel Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 1R
Name (Field Staff): A Patel D Dillingham
Date: 12-27-21

Access:
Accessibility: Good ✓ Fair ___ Poor ___
Well clear of weeds and/or debris?: Yes ✓ No ___
Well identification clearly visible?: Yes ✓ No ___
Remarks:

Concrete Pad:
Condition of Concrete Pad: Good ✓ Inadequate ___
Depressions or standing water around well?: Yes ___ No ✓
Remarks:

Protective Outer Casing: Material = 4" x 4" Steel Hinged Casing with Hasp
Condition of Protective Casing: Good ✓ Damaged ___
Condition of Locking Cap: Good ✓ Damaged ___
Condition of Lock: Good ✓ Damaged ___
Condition of Weep Hole: Good ✓ Damaged ___
Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded
Condition of Riser: Good ✓ Damaged ___
Condition of Riser Cap: Good ✓ Damaged ___
Measurement Reference Point: Yes ✓ No ___
Remarks:

Dedicated Purging/Sampling Device: Type = ¼ " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing
Condition: Good ✓ Damaged ___ Missing ___
Remarks:

Monitoring Well Locked/Secured Post Sampling?: Yes ✓ No ___
Remarks:

Field Certification Lab Tech 12-27-21
Signed Title Date

Field Sampling Log

Monitoring Well ID: MW 1R Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 18.70 Date: 12-27-21

Initial Groundwater Elevation (NAVD88): ______ Air Pressure in Well? Y / [✓ N]

PURGE INFORMATION

Date: 12-27-21

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump

Dedicated Tubing? [✓ Y] / N

Time Purging Initiated: 1157

One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 18.70

Total Volume Purged (mL): 2780

Beginning Groundwater Elevation (NAVD88): ______

Well Purged To Dryness? Y / [✓ N]

Well Total Depth (feet btoc): 38.08

Water Level after Sampling (feet btoc): 18.70
(i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC

Time Sampling Completed: 1257

PURGE STABILIZATION DATA

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
1159		340	9.43	714.27	1.75	6.86	2.9	1.34	18.70	Clear, no odor
1201	230	800	8.76	757.43	1.40	6.61	14.2	1.74	18.70	" "
1203	240	1280	8.52	755.49	1.22	6.54	16.3	1.67	18.70	" "
1205	240	1760	8.46	754.50	1.18	6.51	20.5	1.39	18.70	" "
1207	270	2300	8.42	758.45	1.24	6.49	20.8	1.48	18.70	" "
1209	240	2780	8.40	757.27	1.28	6.48	21.7	1.32	18.70	" "

btoc - below top of casing

Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring   Monitoring Well ID: MW 1R

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing   Dedicated: [✓ Y] / N

Water Level @ Sampling (feet btoc): 18.70

Monitoring Event: Annual ( ) Semi-Annual ( ) Quarterly ( ) Monthly ( ) Other (✓)

Final Purge Stablization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
11-27-21 1209	240	8.40	757.27	1.28	6.48	21.7	1.32

Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potentia

2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

General Information:

Weather Conditions @ time of sampling: Cloudy

68° F

Sample Characteristics: Clear, colorless, odorless.

Sample Collection Order: Per SAP

Comments and Observations:

Collect Field Duplicate

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 12-27-21 By: Title: Lab Tech

Appendix 1c

Field Sampling Notes – August 3, 2022

(First 2022 Semi-annual Event)

Field Instrumentation Calibration Log

Facility: Sikeston BMU ~~Ameren RIEC Ash Ponds~~ - Groundwater Monitoring

Calibrated by:

Field Instruments: In-Situ SmarTROLL MP or In-Situ AquaTROLL 400

S/N #: 893508

HF scientific, inc. Micro TPI Field Portable Turbidimeter

201607366

	Date	Time	pH Standards (S.U.)	pH Measurements (S.U./mV)	Specific Conductance Standard (µS/cm)	Specific Conductance Measurement (µS/cm)	Oxidation Reduction Potential Standard (mV)	Oxidation Reduction Potential Measurement (mV)	Dissolved Oxygen (%)		Turbidity Standards (NTU)	Turbidity Measurements (NTU)
Beginning of Day Calibration	8/31/2022	0618	4.00 @ 25.00°C Standard is 4.00 @ 25°C	= 4.05 136.0	1413 @25.00°C	= 1413.2	220 mV at 25.00°C	= 228.8	Temperature (°C)	= 21.73	0.02	= 0.02
			7.00 @25.00°C Standard is 7.00 @ 25°C	= 7.06 -40.7	1413 @ 25.00°C		Standard is 229 mV @ 25°C		Tap Water Source	= Sikeston City	10.0	= 10.00
			10.00 @25.00°C Standard is 10.00 @ 25°C	= 10.05 -210.9					Barometric Pressure (mm/Hg)	= 752.58	1000	= 1000.0
									Measurement	= 102.14		
End of Day Check	8/31/2022	1425	4.00 @ 25.00°C Standard is 4.00 @ 25°C	= 4.05 NA	1413 @25.00°C	= 1368.3	220 mV at 25.00°C	= 227.2	Temperature (°C)	= 21.95	0.02	= 0.04
			7.00 @25.00°C Standard is 7.00 @ 25°C	= 7.05 NA	1413 @ 25.0°C		Standard is 229 mV @ 25°C		Tap Water Source	= Sikeston City	10.0	= 10.47
			10.00 @25.00°C Standard is 10.00 @ 25°C	= 9.98 NA					Barometric Pressure (mm/Hg)	= 751.8	1000	= 1004.0
									Measurement	= 99.98		

Notes: The In-Situ SmarTROLL MP Field Meter and In-Situ AquaTROLL 400 measure Temperature, Specific Conductance, Dissolved Oxygen, pH, and Oxidation Reduction Potential.

The HF scientific, inc. Micro TPI Field Portable Turbidimeter measures Turbidity.

Dissolved oxygen is calibrated via % saturation method; however, field measurements are recorded as mg/L.

I certify that the aforementioned meters were calibrated within the manufacturers specifications.

Date: 8/3/2022

By:

Rev: February 14, 2022

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 3
Name (Field Staff): A Padel J Lowes
Date: 8-3-2022.

Access:
Accessibility: Good ✓ Fair ____ Poor ____
Well clear of weeds and/or debris?: Yes ✓ No ____
Well identification clearly visible?: Yes ✓ No ____
Remarks:

Concrete Pad:
Condition of Concrete Pad: Good ✓ Inadequate ____
Depressions or standing water around well?: Yes ____ No ✓
Remarks:

Protective Outer Casing: Material = 4" x 4" Steel Hinged Casing with Hasp
Condition of Protective Casing: Good ✓ Damaged ____
Condition of Locking Cap: Good ✓ Damaged ____
Condition of Lock: Good ✓ Damaged ____
Condition of Weep Hole: Good ✓ Damaged ____
Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded
Condition of Riser: Good ✓ Damaged ____
Condition of Riser Cap: Good ✓ Damaged ____
Measurement Reference Point: Yes ✓ No ____
Remarks:

Dedicated Purging/Sampling Device: Type = ¼ " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing
Condition: Good ✓ Damaged ____ Missing ____
Remarks:

Monitoring Well Locked/Secured Post Sampling?: Yes ✓ No ____
Remarks:

Field Certification
Signed:
Title: Lab Tech
Date: 8-3-2022

January 2017

Prepared by: GREDELL Engineering Resources, Inc.

Field Sampling Log

Monitoring Well ID: MW 3 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 12.03

Date: 8-3-2022

Initial Groundwater Elevation (NAVD88):

Air Pressure in Well? Y [✓ N]

PURGE INFORMATION

Date: 8-3-2022

Name (Sample Collector): T Lowes

Method of Well Purge: Low Flow Perstaltic Pump

Dedicated Tubing? [✓ Y] / N

Time Purging Initiated: 0740

One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 12.03

Total Volume Purged (mL): 7700

Beginning Groundwater Elevation (NAVD88):

Well Purged To Dryness? Y [✓ N]

Well Total Depth (feet btoc): 36.98

Water Level after Sampling (feet btoc): 12.03
(i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC

Time Sampling Completed: 0811

PURGE STABILIZATION DATA

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
0742		550	19.61	171.56	0.76	6.56	81.1	16.72	12.03	Yellow Flake
0744	305	1160	17.87	170.42	0.66	6.55	62.2	18.3	12.08	" "
0746	290	1740	17.41	171.11	0.58	6.55	55.9	17.12	12.08	Clear, no odor
0748	300	2340	17.28	170.58	0.56	6.56	54.5	14.58	12.03	" "
0750	290	2920	17.28	166.44	0.50	6.57	49.9	15.76	12.03	" "
0752	300	3520	17.19	164.77	0.46	6.59	47.3	11.86	12.03	" "
0754	300	4120	17.19	164.87	0.44	6.63	43.9	11.08	12.03	" "
0756	290	4700	17.13	162.66	0.43	6.62	44.1	10.26	12.03	" "
0758	300	5300	17.14	163.47	0.41	6.61	45.7	10.52	12.03	" "
0800	250	5800	17.11	163.31	0.38	6.64	40.7	10.68	12.03	" "
0802	340	6480	17.10	160.20	0.37	6.66	37.9	8.07	12.23	" "
0804	310	7100	17.12	156.38	0.35	6.67	41.5	8.74	12.08	" "
0806	300	7700	17.06	158.09	0.36	6.65	42.0	8.28	12.03	

btoc - below top of casing

Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW3

pling Information:

thod of Sampling: Low Flow - Perstaltic Pump & Tubing

Dedicated: [✓ Y] / N

ater Level @ Sampling (feet btoc): 12.03

Monitoring Event: Annual ( ) Semi-Annual (✓) Quarterly ( ) Monthly ( ) Other ( )

Final Purge Stablization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
8-3-2022 0806	300	17.06	158.09	0.36	6.65	42.0	8.28

Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potentia

2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

General Information:

Weather Conditions @ time of sampling: Sunny 79°F

Sample Characteristics: Clear, Colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 8-3-2022 By:

Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 6
Name (Field Staff): A Patel J Lones
Date: 8-3-2022

Access:
Accessibility: Good ✓ Fair ___ Poor ___
Well clear of weeds and/or debris?: Yes ✓ No ___
Well identification clearly visible?: Yes ✓ No ___
Remarks:

Concrete Pad:
Condition of Concrete Pad: Good ✓ Inadequate ___
Depressions or standing water around well?: Yes ___ No ✓
Remarks:

Protective Outer Casing: Material = 4" x 4" Steel Hinged Casing with Hasp
Condition of Protective Casing: Good ✓ Damaged ___
Condition of Locking Cap: Good ✓ Damaged ___
Condition of Lock: Good ✓ Damaged ___
Condition of Weep Hole: Good ✓ Damaged ___
Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded
Condition of Riser: Good ✓ Damaged ___
Condition of Riser Cap: Good ✓ Damaged ___
Measurement Reference Point: Yes ✓ No ___
Remarks:

Dedicated Purging/Sampling Device: Type = ¼ " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing
Condition: Good ✓ Damaged ___ Missing ___
Remarks:

Monitoring Well Locked/Secured Post Sampling?: Yes ✓ No ___
Remarks:

Field Certification
Signed:
Title: Lab Tech
Date: 8-3-2022

Field Sampling Log

Monitoring Well ID: MW 6 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 12.25 Date: 8-3-22

Initial Groundwater Elevation (NAVD88): ______ Air Pressure in Well? Y [✓ N]

PURGE INFORMATION

Date: 8-2-22

Name (Sample Collector): J Lopez

Method of Well Purge: Low Flow Perstaltic Pump

Dedicated Tubing? [✓ Y] / N

Time Purging Initiated: 0853

One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 12.25

Total Volume Purged (mL): 8100

Beginning Groundwater Elevation (NAVD88): ______

Well Purged To Dryness? Y [✓ N]

Well Total Depth (feet btoc): 37.70

Water Level after Sampling (feet btoc): 12.28
(i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC

Time Sampling Completed: 0926 ~~0926~~ AP

PURGE STABILIZATION DATA

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
0855		540	20.39	347.5	0.73	6.81	-41.1	43.41	12.26	Brown Flcke no odor
0857	310	1160	18.54	382.65	0.73	6.81	-86.4	46.87	12.26	Clear, no odor
0859	300	1760	18.57	374.56	0.78	6.81	-87.1	20.36	12.26	" "
0901	300	2360	17.98	367.56	0.78	6.81	-87.2	20.56	12.26	" "
0903	290	2940	17.90	363.61	0.74	6.81	-88.0	21.40	12.26	" "
0905	290	3520	17.88	365.04	0.76	6.83	-89.3	16.06	12.26	" "
0907	290	4100	17.86	396.60	0.73	6.84	-91.2	16.86	12.28	" "
0909	300	4700	17.85	402.93	0.50	6.86	-92.2	15.34	12.28	" "
0911	290	5280	17.86	393.01	0.48	6.85	-91.4	15.07	12.28	" "
0913	300	5880	17.84	394.50	0.50	6.84	-91.7	13.64	12.28	" "
0915	280	6440	17.86	379.34	0.49	6.84	-91.3	11.58	12.28	" "
0917	250	6940	17.83	375.15	0.45	6.86	-92.4	12.01	12.28	" "
0919	280	7500	17.86	393.30	0.36	6.86	-92.6	11.36	12.28	" "
0921	300	8100	17.84	381.09	0.40	6.86	-93.0	12.36	12.28	" "

btoc - below top of casing

Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW 6

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing

Dedicated: [✓ Y] / N

Water Level @ Sampling (feet btoc): 12.28

Monitoring Event: Annual ( ) Semi-Annual ( ) Quarterly ( ) Monthly ( ) Other ( )

Final Purge Stablization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
8-3-2020 0921	300	17.84	381.04	0.40	6.86	-93.0	12.36

Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potentia

2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

General Information:

Weather Conditions @ time of sampling: Sunny, Hot
82°F

Sample Characteristics: Clear, colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:
Collected Field Blanks

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 8-3-22 By: Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW5
Name (Field Staff): A Patel J Lowes
Date: 8-3-2022

Access:

Accessibility: [✓ Good] Fair ____ Poor ____
Well clear of weeds and/or debris?: [✓ Yes] No ____
Well identification clearly visible?: [✓ Yes] No ____
Remarks:

Concrete Pad:

Condition of Concrete Pad: [✓ Good] Inadequate ____
Depressions or standing water around well?: Yes ____ [✓ No]
Remarks:

Protective Outer Casing: Material = 4" x 4" Steel Hinged Casing with Hasp

Condition of Protective Casing: [✓ Good] Damaged ____
Condition of Locking Cap: [✓ Good] Damaged ____
Condition of Lock: [✓ Good] Damaged ____
Condition of Weep Hole: [✓ Good] Damaged ____
Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded

Condition of Riser: [✓ Good] Damaged ____
Condition of Riser Cap: [✓ Good] Damaged ____
Measurement Reference Point: [✓ Yes] No ____
Remarks:

Dedicated Purging/Sampling Device: Type = ¼ " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing

Condition: [✓ Good] Damaged ___ Missing ___
Remarks:

Monitoring Well Locked/Secured Post Sampling?: [✓ Yes] No ___
Remarks:

Field Certification Lab Tech 8-3-2022
Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc. January 2017

Field Sampling Log

Monitoring Well ID: Mw 5 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 11.51 Date: 8-3-2022

Initial Groundwater Elevation (NAVD88): ______ Air Pressure in Well? Y / [✓ N]

PURGE INFORMATION

Date: 8-3-2022

Name (Sample Collector): Justin Lowes

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? [✓ Y] / N

Time Purging Initiated: 1018 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 11.51 Total Volume Purged (mL): 9120

Beginning Groundwater Elevation (NAVD88): ______ Well Purged To Dryness? Y / [✓ N]

Well Total Depth (feet btoc): 37.1 Water Level after Sampling (feet btoc): 11.51
(i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 10.57

PURGE STABILIZATION DATA

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
1020		560	21.86	739.97	1.19	6.74	-68.5	141.6	11.51	Yellow no Flake, odor
1022	280	1120	18.87	746.38	1.31	6.77	-71.3	62.10	11.51	clear, no odor
1024	290	1700	18.22	756.58	1.22	6.78	-74.9	38.97	11.51	" "
1026	280	2260	17.99	744.13	1.14	6.81	-77.8	23.97	11.51	" "
1028	280	2820	17.90	759.10	1.09	6.81	-79.2	20.43	11.51	" "
1030	280	3380	17.86	723.45	1.04	6.82	-77.4	21.35	11.51	" "
1032	280	3940	17.74	740.72	1.01	6.82	-77.9	21.53	11.51	" "
1034	280	4500	17.80	752.61	0.96	6.82	-81.3	21.17	11.51	" "
1036	300	5100	17.82	736.71	0.93	6.82	-78.1	17.08	11.51	" "
1038	270	5640	17.83	735.42	0.91	6.80	-77.4	13.91	11.51	" "
1040	300	6240	17.82	747.28	0.89	6.81	-82.5	14.91	11.51	" "
1042	280	6800	17.85	744.54	0.84	6.83	-82.6	12.47	11.51	" "
1044	290	7380	17.79	769.45	0.82	6.82	-81.9	12.65	11.51	" "
1046	290	7960	17.81	780.77	0.80	6.80	-84.2	11.00	11.51	" "
1048	290	8540	17.86	730.76	0.78	6.81	-83.3	11.42	11.51	" "
1050	290	9120	17.88	758.32	0.59	6.82	-83.7	11.68	11.51	" "

btoc - below top of casing

Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW5

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing

Dedicated: [✓ Y] / N

Water Level @ Sampling (feet btoc): 11.51

Monitoring Event: Annual ( ) Semi-Annual [✓] Quarterly ( ) Monthly ( ) Other ( )

Final Purge Stablization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
8-3-2022 1050	290	17.88	758.32	0.59	6.82	-83.7	11.66

Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potentia

2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

General Information:

Weather Conditions @ time of sampling: Sunny

88° F

Sample Characteristics: Clear, Colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 8-3-2022 By: Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW8
Name (Field Staff): A Powel J Lowes
Date: 8-3-2022

Access:

Accessibility: Good ✓ Fair ___ Poor ___

Well clear of weeds and/or debris?: Yes ✓ No ___

Well identification clearly visible?: Yes ✓ No ___

Remarks:

Concrete Pad:

Condition of Concrete Pad: Good ✓ Inadequate ___

Depressions or standing water around well?: Yes ___ No ✓

Remarks:

Protective Outer Casing: Material = 4" x 4" Steel Hinged Casing with Hasp

Condition of Protective Casing: Good ✓ Damaged ___

Condition of Locking Cap: Good ✓ Damaged ___

Condition of Lock: Good ✓ Damaged ___

Condition of Weep Hole: Good ✓ Damaged ___

Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded

Condition of Riser: Good ✓ Damaged ___

Condition of Riser Cap: Good ✓ Damaged ___

Measurement Reference Point: Yes ✓ No ___

Remarks:

Dedicated Purging/Sampling Device: Type = ¼ " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing

Condition: Good ✓ Damaged ___ Missing ___

Remarks:

Monitoring Well Locked/Secured Post Sampling?: Yes ✓ No ___

Remarks:

Field Certification Lks Tech 8-3-2022
Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc. January 2017

Field Sampling Log

Monitoring Well ID: MW 8 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 10.90 Date: 8-3-2022

Initial Groundwater Elevation (NAVD88): ______ Air Pressure in Well? Y / [✓ N]

PURGE INFORMATION

Date: 8-3-2022

Name (Sample Collector): J Lowes

Method of Well Purge: Low Flow Perstaltic Pump

Dedicated Tubing? [✓ Y] / N

Time Purging Initiated: 1125

One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 10.90

Total Volume Purged (mL): 5440

Beginning Groundwater Elevation (NAVD88): ______

Well Purged To Dryness? Y / [✓ N]

Well Total Depth (feet btoc): 37.50

Water Level after Sampling (feet btoc): 10.90
(i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC

Time Sampling Completed: 11.55

PURGE STABILIZATION DATA

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
1127		540	23.10	76056	035	7.01	-113.5	6.57	10.90	clear, no odor
1129	280	1100	20.48	767.21	0.29	7.04	-112.8	12.41	10.90	" "
1131	270	1640	19.51	776.89	0.25	7.05	-112.8	12.68	10.90	" "
1133	290	2220	19.36	757.40	0.23	7.07	-112.5	13.11	10.90	" "
1134	270	2760	19.31	749.15	0.21	7.07	-112.1	8.81	10.90	" "
1136	270	3300	19.24	769.22	0.18	7.08	-112.0	10.52	10.90	" "
1138	260	3820	19.24	763.99	0.15	7.08	-111.7	11.63	10.90	" "
1140	290	4400	19.24	771.87	0.19	7.09	-112.0	11.01	10.90	" "
1142	270	4940	19.25	758.20	0.19	7.08	-111.0	11.80	10.90	" "
1144	250	5440	19.27	752.04	0.18	7.08	-110.8	11.32	10.90	" "

btoc - below top of casing

Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW 8

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing

Dedicated: [✓ Y] / N

Water Level @ Sampling (feet btoc): 10.90

Monitoring Event: Annual ( ) Semi-Annual (✓) Quarterly ( ) Monthly ( ) Other ( )

Final Purge Stablization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
8-3-2022 1144	250	19.27	752.04	0.18	7.08	-110.8	1.63

Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potentia

2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

General Information:

Weather Conditions @ time of sampling: Sunny, Hot
92°F

Sample Characteristics: Clear, Colorless, Odorless

Sample Collection Order: Per SAP

Comments and Observations:

Collected Field Duplicate

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 8-3-2022 By: Adarsh Patel Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 4
Name (Field Staff): A Patel D Dillingham
Date: 8-3-2022

Access:

Accessibility: [✓ Good] Fair ____ Poor ____

Well clear of weeds and/or debris?: [✓ Yes] No ____

Well identification clearly visible?: [✓ Yes] No ____

Remarks:

Concrete Pad:

Condition of Concrete Pad: [✓ Good] Inadequate ____

Depressions or standing water around well?: Yes ____ [✓ No]

Remarks:

Protective Outer Casing: Material = 4" x 4" Steel Hinged Casing with Hasp

Condition of Protective Casing: [✓ Good] Damaged ____

Condition of Locking Cap: [✓ Good] Damaged ____

Condition of Lock: [✓ Good] Damaged ____

Condition of Weep Hole: [✓ Good] Damaged ____

Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded

Condition of Riser: [✓ Good] Damaged ____

Condition of Riser Cap: [✓ Good] Damaged ____

Measurement Reference Point: [✓ Yes] No ____

Remarks:

Dedicated Purging/Sampling Device: Type = ¼ " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing

Condition: [✓ Good] Damaged ____ Missing ____

Remarks:

Monitoring Well Locked/Secured Post Sampling?: [✓ Yes] No ____

Remarks:

Field Certification

Signed:
Title: Lab Tech
Date: 8-3-2022

Prepared by: GREDELL Engineering Resources, Inc.

January 2017

Field Sampling Log

Monitoring Well ID: MW 4 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 11.82 Date: 8-3-2022

Initial Groundwater Elevation (NAVD88): ______ Air Pressure in Well? Y [✓ N]

PURGE INFORMATION

Date: 8-3-2022

Name (Sample Collector): J Lowes

Method of Well Purge: Low Flow Perstaltic Pump

Dedicated Tubing? [✓ Y] / N

Time Purging Initiated: 1309

One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 11.82

Total Volume Purged (mL): 8480

Beginning Groundwater Elevation (NAVD88): ______

Well Purged To Dryness? Y [✓ N]

Well Total Depth (feet btoc): 37.13

Water Level after Sampling (feet btoc): 11.83
(i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC

Time Sampling Completed: 1350

PURGE STABILIZATION DATA

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
1311		580	23.53	519.61	0.74	7.28	-134.2	14.31	~~14.31~~ 11.82	white flake, no odor
1313	240	1060	21.90	536.10	0.62	7.31	-134.7	12.49	11.82	Clear, no odor
1315	240	1540	20.34	549.17	0.52	7.33	-134.3	12.85	11.82	" "
1317	250	2040	20.12	521.07	0.47	7.33	-133.3	14.46	11.82	" "
1319	250	2540	19.95	524.09	0.42	7.33	-133.0	11.36	11.82	" "
1321	230	3000	19.88	516.93	0.42	7.33	-138.0	13.58	11.82	" "
1323	240	3480	19.79	545.79	0.41	7.33	-133.0	12.26	11.82	" "
1325	260	4000	19.82	532.46	0.41	7.34	-132.6	13.99	11.82	" "
1327	240	4480	19.54	518.32	0.36	7.32	-131.8	11.67	11.82	" "
1329	260	5000	19.76	521.15	0.36	7.33	-131.8	10.12	11.82	" "
1331	220	5440	19.73	527.87	0.36	7.33	-131.5	9.61	11.82	" "
1333	260	5960	19.67	526.49	0.36	7.33	-131.6	9.20	11.82	" "
1335	270	6500	19.62	547.53	0.33	7.32	-131.2	9.40	11.82	" "
1337	230	6960	19.65	539.46	0.33	7.33	-131.3	7.95	11.82	" "
1339	250	7460	19.72	542.37	0.33	7.33	-131.2	6.46	11.82	" "
1341	230	7920	19.70	557.44	0.32	7.32	-131.1	6.00	11.82	" "
1343	280	8480	19.67	552.43	0.32	7.32	-130.9	6.40	11.82	" "

btoc - below top of casing

Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW 4

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing

Dedicated: [✓ Y] / N

Water Level @ Sampling (feet btoc): 11.82

Monitoring Event: Annual ( ) Semi-Annual (✓) Quarterly ( ) Monthly ( ) Other ( )

Final Purge Stablization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
8-3-2022 1343	280	19.67	552.40	0.32	7.32	-132.9	6.40

Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potentia

2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

General Information:

Weather Conditions @ time of sampling: Sunny, Hot
98 °F

Sample Characteristics: Clear, colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 8-3-22 By: Title: Lab Tech

Appendix 1d

Field Sampling Notes – September 12, 2022

(Re-sample)

Field Instrumentation Calibration Log

Facility: SBMU - Sikeston Power Station Ash Ponds - Groundwater Monitoring

Calibrated by: 9/12/2022

Field Instruments: In-Situ SmarTROLL MP or In-Situ AquaTROLL 400 — HF scientific, Inc. Micro TPI Field Portable Turbidimeter

S/N #: 893508 — 201607366

	Date	Time	pH Standards (S.U.)	pH Measurements (S.U./mV)	Specific Conductance Standard (µS/cm)	Specific Conductance Measurement (µS/cm)	Oxidation Reduction Potential Standard (mV)	Oxidation Reduction Potential Measurement (mV)	Dissolved Oxygen (%)		Turbidity Standards (NTU)	Turbidity Measurements (NTU)
Beginning of Day Calibration	9/12/2022	0730	4.00 @ 25.00°C	= 4.00	1413 @25.00°C 1413 @25.00°C	= 1412.8	220 mV at 25.00°C Standard is 229 mV @ 25 °C	= 229.1	Temperature (ºC)	= 21.84	0.02	= 0.02
			7.00 @25.00°C	= 7.00					Tap Water Source	= Sikeston City	10.0	= 10.0
			10.00 @25.00°C	= 10.00					Barometric Pressure (mm/Hg)	= 754.49	1000	= 1000.0
									Measurement	= 100.04		
End of Day Check	9/12/2022	1300	4.00 @ 25.00°C	= 4.08 NA	1413 @25.00°C	= 1427.3	220 mV at 25.00°C Standard is 229 mV @ 25 °C	= 226.8	Temperature (ºC)	= 26.04	0.02	= 0.11
			7.00 @25.00°C	= 7.08 NA					Tap Water Source	= Sikeston City	10.0	= 10.79
			10.00 @25.00°C	= 10.10 NA					Barometric Pressure (mm/Hg)	= 753.05	1000	= 1007
									Measurement	= 98.03		

Notes: The In-Situ SmarTROLL MP Field Meter and In-Situ AquaTROLL 400 measure Temperature, Specific Conductance, Dissolved Oxygen, pH, and Oxidation Reduction Potential.
The HF scientific, inc. Micro TPI Field Portable Turbidimeter measures Turbidity.
Dissolved oxygen is calibrated via % saturation method; however, field measurements are recorded as mg/L.

I certify that the aforementioned meters were calibrated within the manufacturers specifications.

Date: 9/12/22

By:

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 6
Name (Field Staff): J Lowes A Patel
Date: 9·12·22

Access:

Accessibility: Good ✓ Fair ___ Poor ___

Well clear of weeds and/or debris?: Yes ✓ No ___

Well identification clearly visible?: Yes ✓ No ___

Remarks:

Concrete Pad:

Condition of Concrete Pad: Good ✓ Inadequate ___

Depressions or standing water around well?: Yes ___ No ✓

Remarks:

Protective Outer Casing: Material = 4" x 4" Steel Hinged Casing with Hasp

Condition of Protective Casing: Good ✓ Damaged ___

Condition of Locking Cap: Good ✓ Damaged ___

Condition of Lock: Good ✓ Damaged ___

Condition of Weep Hole: Good ✓ Damaged ___

Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded

Condition of Riser: Good ✓ Damaged ___

Condition of Riser Cap: Good ✓ Damaged ___

Measurement Reference Point: Yes ✓ No ___

Remarks:

Dedicated Purging/Sampling Device: Type = ¼ " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing

Condition: Good ✓ Damaged ___ Missing ___

Remarks:

Monitoring Well Locked/Secured Post Sampling?: Yes ✓ No ___

Remarks:

Field Certification Lab Tech 9-12-22
Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc. January 2017

Field Sampling Log

Monitoring Well ID: MW 6 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 12.80 Date: 9-12-22

Initial Groundwater Elevation (NAVD88): ______ Air Pressure in Well? Y / [✓ N]

PURGE INFORMATION

Date: 9-12-22

Name (Sample Collector): J Lowes

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? [✓ Y] / N

Time Purging Initiated: 0831 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 12.80 Total Volume Purged (mL): 8560

Beginning Groundwater Elevation (NAVD88): ______ Well Purged To Dryness? Y / [✓ N]

Well Total Depth (feet btoc): 37.74 Water Level after Sampling (feet btoc): 12.82
(i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 0900

PURGE STABILIZATION DATA

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
0833		820	17.99	431.12	1.11	6.79	-71.5	30.75	12.82	Yellow Flake [illegible]
0835	410	1640	17.45	431.39	1.10	6.82	-74.1	22.39	12.82	" "
0837	280	2200	17.25	414.14	0.72	6.85	-76.2	18.26	12.82	clear, no odor
0839	350	2900	17.09	443.06	0.77	6.86	-77.3	17.93	12.82	" "
0841	340	3580	17.06	443.15	0.57	6.86	-78.6	14.96	12.82	" "
0843	310	4200	17.01	424.19	0.58	6.87	-79.6	15.51	12.72	" "
0845	320	4840	17.01	436.37	0.65	6.89	-80.5	16.65	12.82	" "
0847	330	5500	17.00	450.42	0.48	6.89	-81.3	13.82	12.82	" "
0849	350	6200	16.96	437.99	0.50	6.90	-82.2	11.76	12.82	" "
0851	290	6780	16.97	422.53	0.52	6.90	-82.1	11.07	12.82	" "
0853	290	7360	17.01	410.57	0.52	6.90	-82.0	10.70	12.82	" "
0855	310	7980	17.01	438.41	0.50	6.90	-82.5	11.32	12.82	" "
0857	290	8560	16.99	443.46	0.50	6.90	-82.3	11.06	12.82	" "

btoc - below top of casing

Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW6

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing

Dedicated: [✓ Y] / N

Water Level @ Sampling (feet btoc): 12.83

Monitoring Event: Annual ( ) Semi-Annual ( ) Quarterly ( ) Monthly ( ) Other (✓) Resample

Final Purge Stablization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
9-12-22 0857	240	16.99	443.46	0.50	6.90	-823	11.06

Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potentia

2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

General Information:

Weather Conditions @ time of sampling: Sunny 56°F

Sample Characteristics: Clear, Colorless, Odorless

Sample Collection Order: Per SAP

Comments and Observations:

Collect Field Blank

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 9-12-22 By: Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 5
Name (Field Staff): J Lowes A Patel
Date: 9-12-22

Access:
Accessibility: Good ✓ Fair ___ Poor ___
Well clear of weeds and/or debris?: Yes ✓ No ___
Well identification clearly visible?: Yes ✓ No ___
Remarks:

Concrete Pad:
Condition of Concrete Pad: Good ✓ Inadequate ___
Depressions or standing water around well?: Yes ___ No ✓
Remarks:

Protective Outer Casing: Material = 4" x 4" Steel Hinged Casing with Hasp
Condition of Protective Casing: Good ✓ Damaged ___
Condition of Locking Cap: Good ✓ Damaged ___
Condition of Lock: Good ✓ Damaged ___
Condition of Weep Hole: Good ✓ Damaged ___
Remarks:

Well Riser: Material = 2" Diameter, Schedule 40 PVC, Flush Threaded
Condition of Riser: Good ✓ Damaged ___
Condition of Riser Cap: Good ✓ Damaged ___
Measurement Reference Point: Yes ✓ No ___
Remarks:

Dedicated Purging/Sampling Device: Type = ¼ " ID Semi-Rigid Polyethylene & 0.170" ID Flexible Silicone Tubing
Condition: Good ✓ Damaged ___ Missing ___
Remarks:

Monitoring Well Locked/Secured Post Sampling?: Yes ✓ No ___
Remarks:

Field Certification
Signed:
Title: Lab Tech
Date: 9.12.22

Prepared by: GREDELL Engineering Resources, Inc.

January 2017

Field Sampling Log

Monitoring Well ID: MW 5 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 11.88 Date: 9-12-22

Initial Groundwater Elevation (NAVD88): ______ Air Pressure in Well? Y [✓ N]

PURGE INFORMATION

Date: 9-12-22

Name (Sample Collector): J Lowes

Method of Well Purge: Low Flow Perstaltic Pump

Dedicated Tubing? [✓ Y] / N

Time Purging Initiated: 0950

One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 11.88

Total Volume Purged (mL): 8940

Beginning Groundwater Elevation (NAVD88): ______

Well Purged To Dryness? Y / [✓ N]

Well Total Depth (feet btoc): 37.13

Water Level after Sampling (feet btoc): 11.88
(i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC

Time Sampling Completed: 1026

PURGE STABILIZATION DATA

Time	Purge Rate (mL/min)	Cumulative Volume (mL)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Water Level (feet btoc)	Notes (e.g., opacity, color, odor)
0950		380	18.67	956.82	0.88	6.79	-63.4	33.80	11.88	Brown Flake
0952	360	1100	17.37	867.72	1.03	6.84	-77.1	21.21	11.88	Brown no flake, odor
0954	270	1640	17.01	859.91	1.00	6.86	-77.7	14.27	11.88	Clear, no odor
0956	230	2100	16.92	875.62	0.66	6.87	-82.1	13.22	11.88	" "
0958	390	2880	16.68	791.82	0.65	6.88	-79.9	11.31	11.88	" "
1000	180	3240	16.88	893.82	0.59	6.89	-80.4	7.86	11.88	" "
1002	290	3820	16.86	884.05	0.59	6.90	-81.4	6.27	11.88	" "
1004	270	4360	16.87	846.99	0.57	6.90	-82.0	5.79	11.88	" "
1006	290	4940	16.84	868.04	0.56	6.90	-80.5	6.85	11.88	" "
1008	280	5500	16.83	886.94	0.53	6.90	-80.5	6.09	11.88	" "
1010	300	6100	16.84	883.94	0.52	6.90	-81.6	3.98	11.88	" "
1012	280	6660	16.83	891.41	0.50	6.90	-81.8	4.05	11.88	" "
1014	290	7240	16.84	860.02	0.48	6.90	-81.4	4.50	11.88	" "
1016	280	7800	16.78	861.68	0.42	6.90	-82.6	3.36	11.88	" "
1018	280	8360	16.92	881.98	0.42	6.90	-83.4	3.23	11.88	" "
1020	290	8940	17.00	882.54	0.41	6.95	-85.4	3.12	11.88	" "

btoc - below top of casing

Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring

Monitoring Well ID: MW5

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing

Dedicated: [✓ Y] / N

Water Level @ Sampling (feet btoc): 11.88

Monitoring Event: Annual ( ) Semi-Annual ( ) Quarterly ( ) Monthly ( ) Other ✓ Resample

Final Purge Stablization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
9-12-22 1020	290	17.00	882.54	0.41	6.95	-85.4	3.12

Instrument Calibration Data:

See instrument calibration log of daily calibration data for the following instruments:

1 - In-Situ SmarTroll Multi-Probe Field Meter (Temperature, Specific Conductance, Dissolved Oxygen, pH, Oxidation Reduction Potentia

2 - HF scientific, inc. Micro TPI Field Portable Turbidimeter

General Information:

Weather Conditions @ time of sampling: Sunny 58°F

Sample Characteristics: Clear, Colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:

Collect Field Duplicate

I certify that sampling procedures were in accordance with applicable EPA and State protocols.

Date: 9-12-22 By: Title: Lab Tech

Appendix 2

Laboratory Analytical Results and Quality Assurance/Quality Control Data

Appendix 2a

Laboratory Analytical Results and Quality Assurance/Quality Control Data – November 1, 2021

(Second 2021 Semi-annual Event)

PDC Laboratories
PROFESSIONAL • DEPENDABLE • COMMITTED

December 09, 2021

Luke St Mary
Sikeston BMU, Sikeston Power Station
1551 W Wakefield
Sikeston, MO 63801

Dear Luke St Mary:

Please find enclosed the analytical results for the sample(s) the laboratory received. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

PDC Laboratories. appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Director of Client Services, Lisa Grant, with any feedback you have about your experience with our laboratory at 309-683-1764 or lgrant@pdclab.com.

Sincerely,

Gail G Schindler
Project Manager
(309) 692-9688 x1716
gschindler@pdclab.com

NELAP ACCREDITED TNI LABORATORY

SAMPLE RECEIPT CHECK LIST

Items not applicable will be marked as in compliance

Work Order EK00904

YES	Samples received within temperature compliance when applicable
YES	COC present upon sample receipt
YES	COC completed & legible
YES	Sampler name & signature present
YES	Unique sample IDs assigned
YES	Sample collection location recorded
YES	Date & time collected recorded on COC
YES	Relinquished by client signature on COC
YES	COC & labels match
YES	Sample labels are legible
YES	Appropriate bottle(s) received
YES	Sufficient sample volume received
YES	Sample containers received undamaged
NO	Zero headspace, <6 mm present in VOA vials
NO	Trip blank(s) received
YES	All non-field analyses received within holding times
NO	Short hold time analysis
YES	Current PDC COC submitted
NO	Case narrative provided

ANALYTICAL RESULTS

Sample: EK00904-01
Name: MW-3
Matrix: Ground Water - Grab

Sampled: 11/01/21 07:45
Received: 11/03/21 09:50
PO #: 25816

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	1.0	mg/L		11/11/21 17:28	1	1.0	11/11/21 17:28	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		11/11/21 17:28	1	0.250	11/11/21 17:28	CRD	EPA 300.0 REV 2.1
Sulfate	14	mg/L		11/11/21 17:46	10	10	11/11/21 17:46	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	130	mg/L	H	11/09/21 15:31	1	17	11/09/21 16:19	ADM	SM 2540C
Total Metals - PIA									
Boron	25	ug/L		11/09/21 10:07	5	10	11/10/21 11:27	JMW	EPA 6020A
Calcium	14000	ug/L		11/09/21 10:07	5	200	11/10/21 11:27	JMW	EPA 6020A

Sample: EK00904-02
Name: MW-4
Matrix: Ground Water - Grab

Sampled: 11/01/21 13:24
Received: 11/03/21 09:50
PO #: 25816

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	16	mg/L		11/10/21 15:56	5	5.0	11/10/21 15:56	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		11/10/21 15:38	1	0.250	11/10/21 15:38	CRD	EPA 300.0 REV 2.1
Sulfate	95	mg/L		11/10/21 16:14	25	25	11/10/21 16:14	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	360	mg/L		11/04/21 08:59	1	26	11/04/21 10:19	JAA	SM 2540C
Total Metals - PIA									
Boron	870	ug/L		11/09/21 10:07	5	10	11/10/21 11:31	JMW	EPA 6020A
Calcium	76000	ug/L		11/09/21 10:07	5	200	11/10/21 11:31	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EK00904-03
Name: MW-5
Matrix: Ground Water - Grab

Sampled: 11/01/21 10:54
Received: 11/03/21 09:50
PO #: 25816

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	13	mg/L		11/10/21 17:27	5	5.0	11/10/21 17:27	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		11/10/21 16:32	1	0.250	11/10/21 16:32	CRD	EPA 300.0 REV 2.1
Sulfate	170	mg/L		11/10/21 17:45	50	50	11/10/21 17:45	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	490	mg/L		11/04/21 08:59	1	26	11/04/21 10:19	JAA	SM 2540C
Total Metals - PIA									
Boron	330	ug/L		11/09/21 10:07	5	10	11/10/21 11:34	JMW	EPA 6020A
Calcium	94000	ug/L		11/09/21 10:07	5	200	11/10/21 11:34	JMW	EPA 6020A

Sample: EK00904-04
Name: MW-6
Matrix: Ground Water - Grab

Sampled: 11/01/21 09:02
Received: 11/03/21 09:50
PO #: 25816

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	4.3	mg/L		11/10/21 18:03	1	1.0	11/10/21 18:03	CRD	EPA 300.0 REV 2.1
Fluoride	0.330	mg/L		11/10/21 18:03	1	0.250	11/10/21 18:03	CRD	EPA 300.0 REV 2.1
Sulfate	27	mg/L		11/10/21 18:21	5	5.0	11/10/21 18:21	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	220	mg/L		11/04/21 08:59	1	26	11/04/21 10:19	JAA	SM 2540C
Total Metals - PIA									
Boron	56	ug/L		11/09/21 10:07	5	10	11/10/21 11:38	JMW	EPA 6020A
Calcium	47000	ug/L		11/09/21 10:07	5	200	11/10/21 11:38	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EK00904-05
Name: MW-8
Matrix: Ground Water - Grab

Sampled: 11/01/21 11:46
Received: 11/03/21 09:50
PO #: 25816

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	45	mg/L		11/10/21 18:57	25	25	11/10/21 18:57	CRD	EPA 300.0 REV 2.1
Fluoride	0.258	mg/L		11/10/21 18:39	1	0.250	11/10/21 18:39	CRD	EPA 300.0 REV 2.1
Sulfate	94	mg/L		11/10/21 18:57	25	25	11/10/21 18:57	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	360	mg/L		11/04/21 08:59	1	26	11/04/21 10:19	JAA	SM 2540C
Total Metals - PIA									
Boron	430	ug/L		11/09/21 10:07	5	10	11/10/21 11:42	JMW	EPA 6020A
Calcium	80000	ug/L		11/09/21 10:07	5	200	11/10/21 11:42	JMW	EPA 6020A

Sample: EK00904-06
Name: FIELD DUPLICATE
Matrix: Ground Water - Field Duplicate

Sampled: 11/01/21 00:00
Received: 11/03/21 09:50
PO #: 25816

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	40	mg/L		11/10/21 19:33	5	5.0	11/10/21 19:33	CRD	EPA 300.0 REV 2.1
Fluoride	0.256	mg/L		11/10/21 19:15	1	0.250	11/10/21 19:15	CRD	EPA 300.0 REV 2.1
Sulfate	87	mg/L		11/10/21 19:51	50	50	11/10/21 19:51	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	390	mg/L		11/05/21 15:48	1	26	11/05/21 17:16	ADM/BMS	SM 2540C
Total Metals - PIA									
Boron	440	ug/L		11/09/21 10:07	5	10	11/10/21 11:45	JMW	EPA 6020A
Calcium	82000	ug/L		11/09/21 10:07	5	200	11/10/21 11:45	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EK00904-07
Name: FIELD BLANK
Matrix: Ground Water - Field Blank

Sampled: 11/01/21 13:24
Received: 11/03/21 09:50
PO #: 25816

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	< 1.0	mg/L		11/11/21 18:05	1	1.0	11/11/21 18:05	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		11/11/21 18:05	1	0.250	11/11/21 18:05	CRD	EPA 300.0 REV 2.1
Sulfate	< 1.0	mg/L		11/11/21 18:05	1	1.0	11/11/21 18:05	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	< 17	mg/L		11/08/21 17:55	1	17	11/08/21 18:11	JAA	SM 2540C
Total Metals - PIA									
Boron	11	ug/L		11/09/21 10:07	5	10	11/10/21 11:49	JMW	EPA 6020A
Calcium	< 200	ug/L		11/09/21 10:07	5	200	11/10/21 11:49	JMW	EPA 6020A

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B147394 - No Prep - SM 2540C									
Blank (B147394-BLK1)				Prepared & Analyzed: 11/04/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B147394-BS1)				Prepared & Analyzed: 11/04/21					
Solids - total dissolved solids (TDS)	1020	mg/L		1000		102	84.9-109		
Duplicate (B147394-DUP1)	**Sample: EJ05640-03**			Prepared & Analyzed: 11/04/21					
Solids - total dissolved solids (TDS)	1200	mg/L			1170			3	5
Duplicate (B147394-DUP2)	**Sample: EK00431-05**			Prepared & Analyzed: 11/04/21					
Solids - total dissolved solids (TDS)	740	mg/L	M		690			7	5
Batch B147627 - No Prep - SM 2540C									
Blank (B147627-BLK1)				Prepared & Analyzed: 11/05/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B147627-BS1)				Prepared & Analyzed: 11/05/21					
Solids - total dissolved solids (TDS)	973	mg/L		1000		97	84.9-109		
Duplicate (B147627-DUP1)	**Sample: EK00574-04**			Prepared & Analyzed: 11/05/21					
Solids - total dissolved solids (TDS)	450	mg/L			470			4	5
Duplicate (B147627-DUP2)	**Sample: EK00904-06**			Prepared & Analyzed: 11/05/21					
Solids - total dissolved solids (TDS)	410	mg/L			390			5	5
Batch B147792 - No Prep - SM 2540C									
Blank (B147792-BLK1)				Prepared & Analyzed: 11/08/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B147792-BS1)				Prepared & Analyzed: 11/08/21					
Solids - total dissolved solids (TDS)	960	mg/L		1000		96	84.9-109		
Batch B147842 - SW 3015 - EPA 6020A									
Blank (B147842-BLK1)				Prepared: 11/09/21 Analyzed: 11/10/21					
Boron	< 10	ug/L							
Calcium	< 200	ug/L							
LCS (B147842-BS1)				Prepared: 11/09/21 Analyzed: 11/10/21					
Boron	484	ug/L		555.6		87	80-120		
Calcium	5320	ug/L		5556		96	80-120		
Batch B147924 - No Prep - SM 2540C									
Blank (B147924-BLK1)				Prepared & Analyzed: 11/09/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B147924-BS1)				Prepared & Analyzed: 11/09/21					
Solids - total dissolved solids (TDS)	980	mg/L		1000		98	84.9-109		
Duplicate (B147924-DUP1)	**Sample: EK00616-01**			Prepared & Analyzed: 11/09/21					
Solids - total dissolved solids (TDS)	1010	mg/L			1060			5	5
Batch B148133 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B148133-CCB1)				Prepared & Analyzed: 11/10/21					

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B148133 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B148133-CCB1)				Prepared & Analyzed: 11/10/21					
Fluoride	0.00	mg/L							
Chloride	0.545	mg/L							
Sulfate	0.00	mg/L							
Calibration Check (B148133-CCV1)				Prepared & Analyzed: 11/10/21					
Sulfate	5.22	mg/L		5.000		104	90-110		
Chloride	5.03	mg/L		5.000		101	90-110		
Fluoride	5.28	mg/L		5.000		106	90-110		
Batch B148294 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B148294-CCB1)				Prepared & Analyzed: 11/11/21					
Sulfate	0.00	mg/L							
Chloride	0.219	mg/L							
Fluoride	0.00	mg/L							
Calibration Check (B148294-CCV1)				Prepared & Analyzed: 11/11/21					
Sulfate	4.97	mg/L		5.000		99	90-110		
Fluoride	5.02	mg/L		5.000		100	90-110		
Chloride	4.85	mg/L		5.000		97	90-110		
Matrix Spike (B148294-MS1)	**Sample: EK01080-02**			Prepared & Analyzed: 11/11/21					
Chloride	1.0E9	mg/L	Q4	1.500	9.6	NR	80-120		
Sulfate	1.00E9	mg/L	Q4	1.500	8.76	NR	80-120		
Matrix Spike Dup (B148294-MSD1)	**Sample: EK01080-02**			Prepared & Analyzed: 11/11/21					
Chloride	1.0E9	mg/L	Q4	1.500	9.6	NR	80-120	0	20
Sulfate	1.00E9	mg/L	Q4	1.500	8.76	NR	80-120	0	20
Batch B150295 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B150295-CCB1)				Prepared & Analyzed: 12/06/21					
Chloride	0.858	mg/L							
Calibration Check (B150295-CCV1)				Prepared & Analyzed: 12/06/21					
Chloride	4.73	mg/L		5.000		95	90-110		
Matrix Spike (B150295-MS1)	**Sample: EL00928-01**			Prepared & Analyzed: 12/06/21					
Chloride	7.4	mg/L	Q4	3.000	5.0	79	80-120		
Matrix Spike (B150295-MS2)	**Sample: EL00928-02**			Prepared & Analyzed: 12/07/21					
Chloride	1.0E9	mg/L	Q4	3.000	180	NR	80-120		
Matrix Spike (B150295-MS3)	**Sample: EL00928-03**			Prepared & Analyzed: 12/07/21					
Chloride	1.0E9	mg/L		3.000	370	NR	80-120		
Matrix Spike Dup (B150295-MSD1)	**Sample: EL00928-01**			Prepared & Analyzed: 12/06/21					
Chloride	7.4	mg/L	Q4	3.000	5.0	79	80-120	0.1	20
Matrix Spike Dup (B150295-MSD2)	**Sample: EL00928-02**			Prepared & Analyzed: 12/07/21					
Chloride	1.0E9	mg/L	Q4	3.000	180	NR	80-120	0	20
Matrix Spike Dup (B150295-MSD3)	**Sample: EL00928-03**			Prepared & Analyzed: 12/07/21					
Chloride	1.0E9	mg/L		3.000	370	NR	80-120	0	20

NOTES

Specifications regarding method revisions and method modifications used for analysis are available upon request. Please contact your project manager.

* Not a TNI accredited analyte

Certifications

CHI - McHenry, IL - 4314-A W. Crystal Lake Road, McHenry, IL 60050
TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17556

PIA - Peoria, IL - 2231 W. Altorfer Drive, Peoria, IL 61615
TNI Accreditation for Drinking Water, Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. 100230
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17553
Drinking Water Certifications/Accreditations: Iowa (240); Kansas (E-10338); Missouri (870)
Wastewater Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)
Solid and Hazardous Material Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

SPMO - Springfield, MO - 1805 W Sunset Street, Springfield, MO 65807
USEPA DMR-QA Program

STL - Hazelwood, MO - 944 Anglum Rd, Hazelwood, MO 63042
TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through KS KDHE Certification No. E-10389
TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. - 200080
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory, Registry No. 171050
Missouri Department of Natural Resources - Certificate of Approval for Microbiological Laboratory Service - No. 1050

Qualifiers

H	Test performed after the expiration of the appropriate regulatory/advisory maximum allowable hold time.
M	Analyte failed to meet the required acceptance criteria for duplicate analysis.
Q4	The matrix spike recovery result is unusable since the analyte concentration in the sample is greater than four times the spike level. The associated blank spike was acceptable.

Gail g Schindler

Certified by: Gail Schindler, Project Manager

PDC LABORATORIES, INC.
WWW.PDCLAB.COM

REGULATORY PROGRAM (CIRCLE):	NPDES
MORBCA	RCRA
CCDD	TACO: RES OR IND/COMM

CHAIN OF CUSTODY RECORD

STATE WHERE SAMPLE COLLECTED IL

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)

① CLIENT: SIKESTON BMU POWER STATION

ADDRESS: 1551 W WAKEFIELD

CITY STAT ZIP: SIKESTON, MO 63801

CONTACT PERSON: MR LUKE ST MARY

PROJECT NUMBER:

PROJECT LOCATION: BOTTOM ASH APP III

PURCHASE ORDER #:

PHONE NUMBER: 573-475-3131

E-MAIL:

DATE SHIPPED:

SAMPLER (PLEASE PRINT): Daniel Dillingham

SAMPLER'S SIGNATURE: Daniel A. Dillingham

MATRIX TYPES:
WW- WASTEWATER
DW- DRINKING WATER
GW- GROUND WATER
WWSL- SLUDGE
NAS- NON AQUEOUS SOLID
LCHT-LEACHATE
OIL-OIL
SO-SOIL
SOL-SOLID

③ ANALYSIS REQUESTED

④ (FOR LAB USE ONLY)
LOGIN # EK00904-07
LOGGED BY: KEG
CLIENT: SIKESTON BMU, SIKESTON POWER STATION
PROJECT: SIKESTON BOTTOM ASH APP III
PROJ. MGR.: GJ SCHINDLER

② SAMPLE DESCRIPTION (UNIQUE DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE GRAB	SAMPLE TYPE COMP	MATRIX TYPE	BOTTLE COUNT	PRES CODE CLIENT PROVIDED	CL, F, SO4, TDS	B, CA	REMARKS
MW-3	11-1-21	0745	X		GW	2	3,6	X	X	
MW-4	11-1-21	1324	X		GW	2	3,6	X	X	
MW-5	11-1-21	1054	X		GW	2	3,6	X	X	
MW-6	11-1-21	0922	X		GW	2	3,6	X	X	
MW-8	11-1-21	1146	X		GW	2	3,6	X	X	
DUPLICATE	11-1-21		X		GW	2	3,6	X	X	
FIELD BLANK	11-1-21	1324	X		DI	2	3,6	X	X	

CHEMICAL PRESERVATION CODES:	1 – HCL	2 – H2SO4	3 – HNO3	4 – NAOH	5 – NA2S2O3	6 – UNPRESERVED	7 – OTHER

⑤ TURNAROUND TIME REQUESTED (PLEASE CIRCLE) NORMAL RUSH
(RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE)

DATE RESULTS NEEDED

RUSH RESULTS VIA (PLEASE CIRCLE) EMAIL PHONE

EMAIL IF DIFFERENT FROM ABOVE:

PHONE # IF DIFFERENT FROM ABOVE:

⑥ *I understand that by initialing this box I give the lab permission to proceed with analysis, even though it may not meet all sample conformance requirements as defined in the receiving facility's Sample Acceptance Policy and the data will be qualified. Qualified data may NOT be acceptable to report to all regulatory authorities.*

PROCEED WITH ANALYSIS AND QUALIFY RESULTS: (INITIALS) ____________

⑦ RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	DATE / TIME
	DATE 11/2/21 TIME 0830		DATE TIME
RELINQUISHED BY: (SIGNATURE)	DATE TIME	RECEIVED BY: (SIGNATURE)	DATE TIME
RELINQUISHED BY: (SIGNATURE)	DATE TIME	RECEIVED BY: (SIGNATURE) Kathy Gray	DATE 11/03/21 TIME 0950

⑧ COMMENTS: (FOR LAB USE ONLY)

SAMPLE TEMPERATURE UPON RECEIPT 1.4 °C

CHILL PROCESS STARTED PRIOR TO RECEIPT [✓ Y] OR N

SAMPLE(S) RECEIVED ON ICE [✓ Y] OR N

SAMPLE ACCEPTANCE NONCONFORMANT REPORT IS NEEDED Y OR [✓ N]

DATE AND TIME TAKEN FROM SAMPLE BOTTLE ____________

Appendix 2b

Laboratory Analytical Results and Quality Assurance/Quality Control Data – December 27, 2021

(Re-sample)

PDC Laboratories
PROFESSIONAL • DEPENDABLE • COMMITTED

January 07, 2022

Luke St Mary
Sikeston BMU, Sikeston Power Station
1551 W Wakefield
Sikeston, MO 63801

Dear Luke St Mary:

Please find enclosed the analytical results for the sample(s) the laboratory received. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

PDC Laboratories. appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Director of Client Services, Lisa Grant, with any feedback you have about your experience with our laboratory at 309-683-1764 or lgrant@pdclab.com.

Sincerely,

Gail g Schindler

Project Manager
(309) 692-9688 x1716
gschindler@pdclab.com

SAMPLE RECEIPT CHECK LIST

Items not applicable will be marked as in compliance

Work Order EL04922

YES	Samples received within temperature compliance when applicable
YES	COC present upon sample receipt
YES	COC completed & legible
YES	Sampler name & signature present
YES	Unique sample IDs assigned
YES	Sample collection location recorded
YES	Date & time collected recorded on COC
YES	Relinquished by client signature on COC
YES	COC & labels match
YES	Sample labels are legible
YES	Appropriate bottle(s) received
YES	Sufficient sample volume received
YES	Sample containers received undamaged
NO	Zero headspace, <6 mm present in VOA vials
NO	Trip blank(s) received
YES	All non-field analyses received within holding times
NO	Short hold time analysis
YES	Current PDC COC submitted
NO	Case narrative provided

ANALYTICAL RESULTS

Sample: EL04922-01
Name: MW-3
Matrix: Ground Water - Grab

Sampled: 12/27/21 07:53
Received: 12/29/21 11:40
PO #: 25816

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	170	mg/L		01/03/22 09:57	1	26	01/03/22 11:18	JAA	SM 2540C

Sample: EL04922-02
Name: MW-6
Matrix: Ground Water - Grab

Sampled: 12/27/21 08:56
Received: 12/29/21 11:40
PO #: 25816

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	3.5	mg/L		01/03/22 17:58	1	1.0	01/03/22 17:58	CRD	EPA 300.0 REV 2.1

Sample: EL04922-03
Name: DUPLICATE
Matrix: Ground Water - Field Duplicate

Sampled: 12/27/21 00:00
Received: 12/29/21 11:40
PO #: 25816

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	3.4	mg/L		01/03/22 18:16	1	1.0	01/03/22 18:16	CRD	EPA 300.0 REV 2.1

Sample: EL04922-04
Name: FIELD BLANK
Matrix: Ground Water - Field Blank

Sampled: 12/27/21 08:56
Received: 12/29/21 11:40
PO #: 25816

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	< 1.0	mg/L		01/03/22 18:34	1	1.0	01/03/22 18:34	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	20	mg/L		01/03/22 09:57	1	17	01/03/22 11:18	JAA	SM 2540C

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B220779 - No Prep - SM 2540C									
Blank (B220779-BLK1)				Prepared & Analyzed: 01/03/22					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B220779-BS1)				Prepared & Analyzed: 01/03/22					
Solids - total dissolved solids (TDS)	960	mg/L		1000		96	84.9-109		
Duplicate (B220779-DUP1)	**Sample: EL04894-02**			Prepared & Analyzed: 01/03/22					
Solids - total dissolved solids (TDS)	480	mg/L	M		520			8	5
Batch B220859 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B220859-CCB1)				Prepared & Analyzed: 01/03/22					
Chloride	0.240	mg/L							
Calibration Check (B220859-CCV1)				Prepared & Analyzed: 01/03/22					
Chloride	4.99	mg/L		5.000		100	90-110		

NOTES

Specifications regarding method revisions and method modifications used for analysis are available upon request. Please contact your project manager.

* Not a TNI accredited analyte

Certifications

CHI - McHenry, IL - 4314-A W. Crystal Lake Road, McHenry, IL 60050
TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17556

PIA - Peoria, IL - 2231 W. Altorfer Drive, Peoria, IL 61615
TNI Accreditation for Drinking Water, Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. 100230
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17553
Drinking Water Certifications/Accreditations: Iowa (240); Kansas (E-10338); Missouri (870)
Wastewater Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)
Solid and Hazardous Material Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

SPMO - Springfield, MO - 1805 W Sunset Street, Springfield, MO 65807
USEPA DMR-QA Program

STL - Hazelwood, MO - 944 Anglum Rd, Hazelwood, MO 63042
TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through KS KDHE Certification No. E-10389
TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. - 200080
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory, Registry No. 171050
Missouri Department of Natural Resources - Certificate of Approval for Microbiological Laboratory Service - No. 1050

Qualifiers

M	Analyte failed to meet the required acceptance criteria for duplicate analysis.

Gail g Schindler

Certified by: Gail Schindler, Project Manager

PDC LABORATORIES, INC.
WWW.PDCLAB.COM

REGULATORY PROGRAM (CIRCLE):	NPDES
MORBCA	RCRA
CCDD	TACO: RES OR IND/COMM

CHAIN OF CUSTODY RECORD

STATE WHERE SAMPLE COLLECTED IL

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)

① CLIENT: SIKESTON POWER STATION

ADDRESS: 1551 W WAKEFIELD

CITY STAT ZIP: SIKESTON, MO 63801

CONTACT PERSON: MR LUKE ST MARY

PROJECT NUMBER:

PROJECT LOCATION:

PURCHASE ORDER #:

PHONE NUMBER: 573-475-3131

E-MAIL:

DATE SHIPPED:

SAMPLER (PLEASE PRINT): Daniel Dillingham

SAMPLER'S SIGNATURE:

MATRIX TYPES:
WW- WASTEWATER
DW- DRINKING WATER
GW- GROUND WATER
WWSL- SLUDGE
NAS- NON AQUEOUS SOLID
LCHT-LEACHATE
OIL-OIL
SO-SOIL
SOL-SOLID

③ ANALYSIS REQUESTED

④ (FOR LAB USE ONLY)

LOGIN # EL04922-04

LOGGED BY: KEG

SIKESTON BMU, SIKESTON POWER STATION

SIKESTON BOTTOM ASH APP III RESAMPLES

GJ SCHINDLER

② SAMPLE DESCRIPTION (UNIQUE DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE GRAB	SAMPLE TYPE COMP	MATRIX TYPE	BOTTLE COUNT	PRES CODE CLIENT PROVIDED	TDS	CL	REMARKS
MW-3	12-27-21	0753	X		GW	1	6	X		
MW-6	12-27-21	0856	X		GW	1	6		X	
DUPLICATE	12-27-21		X		GW	1	6		X	
FIELD BLANK	12-27-21	0856	X		DI	1	6	X	X	

CHEMICAL PRESERVATION CODES: 1 – HCL | 2 – H2SO4 | 3 – HNO3 | 4 – NAOH | 5 – NA2S2O3 | 6 – UNPRESERVED | 7 – OTHER

⑤ TURNAROUND TIME REQUESTED (PLEASE CIRCLE) NORMAL RUSH
(RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE)

RUSH RESULTS VIA (PLEASE CIRCLE) EMAIL PHONE

EMAIL IF DIFFERENT FROM ABOVE:

PHONE # IF DIFFERENT FROM ABOVE:

DATE RESULTS NEEDED

⑥ *I understand that by initialing this box I give the lab permission to proceed with analysis, even though it may not meet all sample conformance requirements as defined in the receiving facility's Sample Acceptance Policy and the data will be qualified. Qualified data may NOT be acceptable to report to all regulatory authorities.*

PROCEED WITH ANALYSIS AND QUALIFY RESULTS: (INITIALS) ____________

⑦ RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	DATE / TIME
	DATE 12-28-21 TIME 0830		DATE TIME
	DATE TIME		DATE TIME
	DATE TIME	Kathy Gray	DATE 12/29/21 TIME 1140

⑧ COMMENTS: (FOR LAB USE ONLY)

SAMPLE TEMPERATURE UPON RECEIPT 1.7 °C

CHILL PROCESS STARTED PRIOR TO RECEIPT [✓ Y] OR N

SAMPLE(S) RECEIVED ON ICE [✓ Y] OR N

SAMPLE ACCEPTANCE NONCONFORMANT REPORT IS NEEDED Y OR [✓ N]

DATE AND TIME TAKEN FROM SAMPLE BOTTLE ____________

Appendix 2c

Laboratory Analytical Results and Quality Assurance/Quality Control Data – August 3, 2022

(First 2022 Semi-annual Event)

Pace Analytical Services, LLC
2231 W. Altorfer Drive
Peoria, IL 61615
(800)752-6651

August 30, 2022

Luke St Mary
Sikeston BMU, Sikeston Power Station
1551 W Wakefield
Sikeston, MO 63801

Dear Luke St Mary:

Please find enclosed the analytical results for the sample(s) the laboratory received. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of Pace Analytical Services, LLC.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

Pace Analytical Services appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Director of Client Services, Lisa Grant, with any feedback you have about your experience with our laboratory at 309-683-1764 or lisa.grant@pacelabs.com.

Sincerely,

Gail g Schindler

Gail Schindler
Project Manager
(309) 692-9688 x1716
gail.schindler@pacelabs.com

SAMPLE RECEIPT CHECK LIST

Items not applicable will be marked as in compliance

Work Order FH01475

YES	Samples received within temperature compliance when applicable
YES	COC present upon sample receipt
YES	COC completed & legible
YES	Sampler name & signature present
YES	Unique sample IDs assigned
YES	Sample collection location recorded
YES	Date & time collected recorded on COC
YES	Relinquished by client signature on COC
YES	COC & labels match
YES	Sample labels are legible
YES	Appropriate bottle(s) received
YES	Sufficient sample volume received
YES	Sample containers received undamaged
NO	Zero headspace, <6 mm present in VOA vials
NO	Trip blank(s) received
YES	All non-field analyses received within holding times
NO	Short hold time analysis
YES	Current PDC COC submitted
NO	Case narrative provided

ANALYTICAL RESULTS

Sample: FH01475-01
Name: MW-3
Matrix: Ground Water - Grab

Sampled: 08/03/22 08:06
Received: 08/05/22 10:30
PO #: 28362

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	< 1.0	mg/L		08/12/22 09:47	1	1.0	08/12/22 09:47	CJP	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		08/12/22 09:47	1	0.250	08/12/22 09:47	CJP	EPA 300.0 REV 2.1
Sulfate	11	mg/L		08/15/22 15:51	5	5.0	08/15/22 15:51	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	130	mg/L	M	08/10/22 10:23	1	26	08/10/22 17:46	ZEJ	SM 2540C
Total Metals - PIA									
Boron	23	ug/L		08/11/22 10:15	5	10	08/17/22 08:18	JMW	EPA 6020A
Calcium	16000	ug/L		08/11/22 10:15	5	200	08/17/22 08:18	JMW	EPA 6020A

Sample: FH01475-02
Name: MW-4
Matrix: Ground Water - Grab

Sampled: 08/03/22 13:43
Received: 08/05/22 10:30
PO #: 28362

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	14	mg/L		08/12/22 10:41	5	5.0	08/12/22 10:41	CJP	EPA 300.0 REV 2.1
Sulfate	93	mg/L		08/15/22 16:45	25	25	08/15/22 16:45	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Fluoride	< 0.250	mg/L		08/22/22 12:26	1	0.250	08/22/22 12:26	TTH	SM 4500F C 1997
Solids - total dissolved solids (TDS)	390	mg/L		08/10/22 10:23	1	26	08/10/22 17:46	ZEJ	SM 2540C
Total Metals - PIA									
Boron	880	ug/L		08/11/22 10:15	5	10	08/17/22 08:21	JMW	EPA 6020A
Calcium	76000	ug/L		08/11/22 10:15	5	200	08/17/22 08:21	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: FH01475-03
Name: MW-5
Matrix: Ground Water - Grab

Sampled: 08/03/22 10:50
Received: 08/05/22 10:30
PO #: 28362

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	12	mg/L		08/12/22 11:35	5	5.0	08/12/22 11:35	CJP	EPA 300.0 REV 2.1
Sulfate	210	mg/L		08/15/22 17:03	50	50	08/15/22 17:03	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Fluoride	< 0.250	mg/L		08/22/22 12:34	1	0.250	08/22/22 12:34	TTH	SM 4500F C 1997
Solids - total dissolved solids (TDS)	560	mg/L		08/10/22 10:23	1	26	08/10/22 17:46	ZEJ	SM 2540C
Total Metals - PIA									
Boron	390	ug/L		08/11/22 10:15	5	10	08/17/22 08:25	JMW	EPA 6020A
Calcium	110000	ug/L		08/11/22 10:15	5	200	08/17/22 08:25	JMW	EPA 6020A

Sample: FH01475-04
Name: MW-6
Matrix: Ground Water - Grab

Sampled: 08/03/22 09:21
Received: 08/05/22 10:30
PO #: 28362

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	4.3	mg/L		08/12/22 12:11	1	1.0	08/12/22 12:11	CJP	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		08/12/22 12:11	1	0.250	08/12/22 12:11	CJP	EPA 300.0 REV 2.1
Sulfate	24	mg/L		08/12/22 13:05	5	5.0	08/12/22 13:05	CJP	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	230	mg/L		08/10/22 10:23	1	26	08/10/22 17:46	ZEJ	SM 2540C
Total Metals - PIA									
Boron	51	ug/L		08/11/22 10:15	5	10	08/17/22 08:51	JMW	EPA 6020A
Calcium	43000	ug/L		08/11/22 10:15	5	200	08/17/22 08:51	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: FH01475-05
Name: MW-8
Matrix: Ground Water - Grab

Sampled: 08/03/22 11:44
Received: 08/05/22 10:30
PO #: 28362

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	56	mg/L		08/12/22 13:42	25	25	08/12/22 13:42	CJP	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		08/12/22 13:24	1	0.250	08/12/22 13:24	CJP	EPA 300.0 REV 2.1
Sulfate	140	mg/L		08/12/22 13:42	25	25	08/12/22 13:42	CJP	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	490	mg/L		08/10/22 10:23	1	26	08/10/22 17:46	ZEJ	SM 2540C
Total Metals - PIA									
Boron	420	ug/L		08/11/22 10:15	5	10	08/17/22 08:54	JMW	EPA 6020A
Calcium	100000	ug/L		08/11/22 10:15	5	200	08/17/22 08:54	JMW	EPA 6020A

Sample: FH01475-06
Name: FIELD DUPLICATE
Matrix: Ground Water - Field Duplicate

Sampled: 08/03/22 00:00
Received: 08/05/22 10:30
PO #: 28362

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	55	mg/L		08/12/22 14:36	25	25	08/12/22 14:36	CJP	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		08/12/22 14:00	1	0.250	08/12/22 14:00	CJP	EPA 300.0 REV 2.1
Sulfate	140	mg/L		08/12/22 14:36	25	25	08/12/22 14:36	CJP	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	490	mg/L		08/10/22 10:23	1	26	08/10/22 17:46	ZEJ	SM 2540C
Total Metals - PIA									
Boron	410	ug/L		08/11/22 10:15	5	10	08/17/22 08:58	JMW	EPA 6020A
Calcium	100000	ug/L		08/11/22 10:15	5	200	08/17/22 08:58	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: FH01475-07
Name: FIELD BLANK
Matrix: Ground Water - Field Blank

Sampled: 08/03/22 09:21
Received: 08/05/22 10:30
PO #: 28362

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	< 1.0	mg/L		08/12/22 14:54	1	1.0	08/12/22 14:54	CJP	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		08/12/22 14:54	1	0.250	08/12/22 14:54	CJP	EPA 300.0 REV 2.1
Sulfate	< 1.0	mg/L		08/12/22 14:54	1	1.0	08/12/22 14:54	CJP	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	< 17	mg/L		08/10/22 10:23	1	17	08/10/22 17:46	ZEJ	SM 2540C
Total Metals - PIA									
Boron	12	ug/L		08/11/22 10:15	5	10	08/17/22 09:02	JMW	EPA 6020A
Calcium	< 200	ug/L		08/11/22 10:15	5	200	08/17/22 09:02	JMW	EPA 6020A

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B240379 - No Prep - SM 2540C									
Blank (B240379-BLK1)				Prepared & Analyzed: 08/10/22					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B240379-BS1)				Prepared & Analyzed: 08/10/22					
Solids - total dissolved solids (TDS)	1010	mg/L		1000		101	84.9-109		
Duplicate (B240379-DUP1)	**Sample: FH01475-01**			Prepared & Analyzed: 08/10/22					
Solids - total dissolved solids (TDS)	110	mg/L	M		130			17	5
Duplicate (B240379-DUP2)	**Sample: FH01475-07**			Prepared & Analyzed: 08/10/22					
Solids - total dissolved solids (TDS)	6.67	mg/L			6.67			0	5
Batch B240514 - SW 3015 - EPA 6020A									
Blank (B240514-BLK1)				Prepared: 08/11/22 Analyzed: 08/16/22					
Boron	< 10	ug/L							
Calcium	< 200	ug/L							
LCS (B240514-BS1)				Prepared: 08/11/22 Analyzed: 08/16/22					
Boron	540	ug/L		555.6		97	80-120		
Calcium	5740	ug/L		5556		103	80-120		
Batch B240840 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B240840-CCB1)				Prepared & Analyzed: 08/12/22					
Fluoride	0.00	mg/L							
Chloride	0.188	mg/L							
Sulfate	0.00	mg/L							
Calibration Check (B240840-CCV1)				Prepared & Analyzed: 08/12/22					
Fluoride	5.18	mg/L		5.000		104	90-110		
Sulfate	5.06	mg/L		5.000		101	90-110		
Chloride	5.00	mg/L		5.000		100	90-110		
Batch B240945 - No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B240945-CCB1)				Prepared & Analyzed: 08/15/22					
Sulfate	0.00	mg/L							
Calibration Check (B240945-CCV1)				Prepared & Analyzed: 08/15/22					
Sulfate	4.97	mg/L		5.000		99	90-110		
Batch B241379 - No Prep - SM 4500F C 1997									
Calibration Blank (B241379-CCB1)				Prepared & Analyzed: 08/22/22					
Fluoride	0.00800	mg/L							
Calibration Blank (B241379-CCB2)				Prepared & Analyzed: 08/22/22					
Fluoride	0.0100	mg/L							
Calibration Check (B241379-CCV1)				Prepared & Analyzed: 08/22/22					
Fluoride	0.652	mg/L		0.7000		93	90-110		
Calibration Check (B241379-CCV2)				Prepared & Analyzed: 08/22/22					
Fluoride	0.694	mg/L		0.7000		99	90-110		

NOTES

Specifications regarding method revisions, method modifications, and calculations used for analysis are available upon request. Please contact your project manager.

* Not a TNI accredited analyte

Certifications

CHI - McHenry, IL - 4314-A W. Crystal Lake Road, McHenry, IL 60050
    TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279
    Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17556

PIA - Peoria, IL - 2231 W. Altorfer Drive, Peoria, IL 61615
    TNI Accreditation for Drinking Water, Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. 100230
    Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17553
    Drinking Water Certifications/Accreditations: Iowa (240); Kansas (E-10338); Missouri (870)
    Wastewater Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)
    Solid and Hazardous Material Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

SPMO - Springfield, MO - 1805 W Sunset Street, Springfield, MO 65807
    USEPA DMR-QA Program

STL - Hazelwood, MO - 944 Anglum Rd, Hazelwood, MO 63042
    TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through KS KDHE Certification No. E-10389
    TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. - 200080
    Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory, Registry No. 171050
    Missouri Department of Natural Resources - Certificate of Approval for Microbiological Laboratory Service - No. 1050

Qualifiers

M	Analyte failed to meet the required acceptance criteria for duplicate analysis.

Gail J Schindler

Certified by: Gail Schindler, Project Manager

PACE ANALYTICAL SERVICES
WWW.PACELABS.COM

REGULATORY PROGRAM (CIRCLE):	NPDES
MORBCA	RCRA
CCDD	TACO: RES OR IND/COMM

CHAIN OF CUSTODY RECORD

STATE WHERE SAMPLE COLLECTED IL

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)

① CLIENT: SIKESTON BMU POWER STATION
ADDRESS: 1551 W WAKEFIELD
CITY STAT ZIP: SIKESTON, MO 63801
CONTACT PERSON: MR LUKE ST MARY

PROJECT NUMBER:
PROJECT LOCATION: BOTTOM ASH APP III
PURCHASE ORDER #:
PHONE NUMBER: 573-475-3131
E-MAIL:
DATE SHIPPED:
SAMPLER (PLEASE PRINT): Justin Lones
SAMPLER'S SIGNATURE:

MATRIX TYPES:
WW- WASTEWATER
DW- DRINKING WATER
GW- GROUND WATER
WWSL- SLUDGE
NAS- NON AQUEOUS SOLID
LCHT-LEACHATE
OIL-OIL
SO-SOIL
SOL-SOLID

③ ANALYSIS REQUESTED

④ (FOR LAB USE ONLY)
LOGIN # F1401475-07
LOGGED BY: DCW
CLIENT: SIKESTON BMU, SIKESTON POWER STATION
PROJECT: SIKESTON BOTTOM ASH APP III
PROJ. MGR.: GJ SCHINDLER

② SAMPLE DESCRIPTION (UNIQUE DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE GRAB	SAMPLE TYPE COMP	MATRIX TYPE	BOTTLE COUNT	PRES CODE CLIENT PROVIDED	CL, F, SO4, TDS	B, CA						REMARKS
MW-3	8/3/22	0806	X		GW	2	3,6	X	X						
MW-4	8/3/22	1343	X		GW	2	3,6	X	X						
MW-5	8/3/22	1050	X		GW	2	3,6	X	X						
MW-6	8/3/22	0921	X		GW	2	3,6	X	X						
MW-8	8/3/22	1144	X		GW	2	3,6	X	X						
DUPLICATE	8/3/22		X		GW	2	3,6	X	X						
FIELD BLANK	8/3/22	0921	X		DI	2	3,6	X	X						

CHEMICAL PRESERVATION CODES:	1 – HCL	2 – H2SO4	3 – HNO3	4 – NAOH	5 – NA2S2O3	6 – UNPRESERVED	7 – OTHER

⑤ TURNAROUND TIME REQUESTED (PLEASE CIRCLE) NORMAL RUSH
(RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE)
RUSH RESULTS VIA (PLEASE CIRCLE) EMAIL PHONE
EMAIL IF DIFFERENT FROM ABOVE:
PHONE # IF DIFFERENT FROM ABOVE:

DATE RESULTS NEEDED

⑥ *I understand that by initialing this box I give the lab permission to proceed with analysis, even though it may not meet all sample conformance requirements as defined in the receiving facility's Sample Acceptance Policy and the data will be qualified. Qualified data may NOT be acceptable to report to all regulatory authorities.*

PROCEED WITH ANALYSIS AND QUALIFY RESULTS: (INITIALS) ____________

⑦ RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	DATE / TIME
	DATE 8/4/22 TIME 0800		DATE TIME
RELINQUISHED BY: (SIGNATURE)	DATE TIME	RECEIVED BY: (SIGNATURE)	DATE TIME
RELINQUISHED BY: (SIGNATURE)	DATE TIME	RECEIVED BY: (SIGNATURE)	DATE 8/5/22 TIME 1030

⑧ COMMENTS: (FOR LAB USE ONLY)
____
____
SAMPLE TEMPERATURE UPON RECEIPT 2.8 °C
CHILL PROCESS STARTED PRIOR TO RECEIPT [✓ Y] OR N
SAMPLE(S) RECEIVED ON ICE [✓ Y] OR N
SAMPLE ACCEPTANCE NONCONFORMANT REPORT IS NEEDED Y OR [✓ N]
DATE AND TIME TAKEN FROM SAMPLE BOTTLE ____________

Appendix 2d

Laboratory Analytical Results and Quality Assurance/Quality Control Data – September 12, 2022

(Re-sample)

Pace Analytical Services, LLC
2231 W. Altorfer Drive
Peoria, IL 61615
(800)752-6651

September 28, 2022

Luke St Mary
Sikeston BMU, Sikeston Power Station
1551 W Wakefield
Sikeston, MO 63801

RE: SIKESTON BOTTOM ASH RESAMPLES

Dear Luke St Mary:

Please find enclosed the analytical results for the **4** sample(s) the laboratory received on **9/14/22 1:40 pm** and logged in under work order **FI02653**. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of Pace Analytical Services, LLC.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

Pace Analytical Services appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Director of Client Services, Lisa Grant, with any feedback you have about your experience with our laboratory at 309-683-1764 or lisa.grant@pacelabs.com.

Gail g Schindler

Gail Schindler
Project Manager
(309) 692-9688 x1716
gail.schindler@pacelabs.com

SAMPLE RECEIPT CHECK LIST

Items not applicable will be marked as in compliance

Work Order FI02653

YES	Samples received within temperature compliance when applicable
YES	COC present upon sample receipt
YES	COC completed & legible
YES	Sampler name & signature present
YES	Unique sample IDs assigned
YES	Sample collection location recorded
YES	Date & time collected recorded on COC
YES	Relinquished by client signature on COC
YES	COC & labels match
YES	Sample labels are legible
YES	Appropriate bottle(s) received
YES	Sufficient sample volume received
YES	Sample containers received undamaged
NO	Zero headspace, <6 mm present in VOA vials
NO	Trip blank(s) received
YES	All non-field analyses received within holding times
NO	Short hold time analysis
YES	Current PDC COC submitted
NO	Case narrative provided

Customer #: 72-102975

ANALYTICAL RESULTS

Sample: FI02653-01
Name: MW-5
Matrix: Ground Water - Grab

Sampled: 09/12/22 10:20
Received: 09/14/22 13:40
PO #: 30965

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	510	mg/L	M	09/15/22 10:35	1	26	09/15/22 11:57	ZEJ	SM 2540C

Sample: FI02653-02
Name: MW-6
Matrix: Ground Water - Grab

Sampled: 09/12/22 08:57
Received: 09/14/22 13:40
PO #: 30965

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	4.7	mg/L		09/16/22 23:12	1	1.0	09/16/22 23:12	CRD	EPA 300.0 REV 2.1

Sample: FI02653-03
Name: DUPLICATE
Matrix: Ground Water - Grab

Sampled: 09/12/22 00:00
Received: 09/14/22 13:40
PO #: 30965

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	11	mg/L		09/17/22 00:42	10	10	09/17/22 00:42	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	520	mg/L		09/15/22 10:35	1	26	09/15/22 11:57	ZEJ	SM 2540C

Sample: FI02653-04
Name: FIELD BLANK
Matrix: Ground Water - Grab

Sampled: 09/12/22 08:57
Received: 09/14/22 13:40
PO #: 30965

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	< 1.0	mg/L		09/17/22 01:00	1	1.0	09/17/22 01:00	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	< 26	mg/L		09/15/22 10:35	1	26	09/15/22 11:57	ZEJ	SM 2540C

NOTES

Specifications regarding method revisions, method modifications, and calculations used for analysis are available upon request. Please contact your project manager.

* Not a TNI accredited analyte

Certifications

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Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory, Registry No. 171050
Missouri Department of Natural Resources - Certificate of Approval for Microbiological Laboratory Service - No. 1050

Qualifiers

M	Analyte failed to meet the required acceptance criteria for duplicate analysis.

Gail g Schindler

Certified by: Gail Schindler, Project Manager

PACE ANALYTICAL SERVICES
WWW.PACECLABS.COM

REGULATORY PROGRAM (CIRCLE):	NPDES
MORBCA	RCRA
CCDD	TACO: RES OR IND/COMM

CHAIN OF CUSTODY RECORD

STATE WHERE SAMPLE COLLECTED IL

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)

① CLIENT **SIKESTON POWER STATION**

ADDRESS **1551 W WAKEFIELD**

CITY STAT ZIP **SIKESTON, MO 63801**

CONTACT PERSON **MR LUKE ST MARY**

PROJECT NUMBER

PROJECT LOCATION

PURCHASE ORDER #

PHONE NUMBER 573-475-3131

E-MAIL

DATE SHIPPED

SAMPLER (PLEASE PRINT) Justin Lowes

SAMPLER'S SIGNATURE J. Lowes

MATRIX TYPES:
WW- WASTEWATER
DW- DRINKING WATER
GW- GROUND WATER
WWSL- SLUDGE
NAS- NON AQUEOUS SOLID
LCHT-LEACHATE
OIL-OIL
SO-SOIL
SOL-SOLID

③ ANALYSIS REQUESTED

④ (FOR LAB USE ONLY)
LOGIN # F102653
LOGGED BY:
SIKESTON BMU, SIKESTON POWER STATION
SIKESTON BOTTOM ASH 2022 RESAMPLES
GJ SCHINDLER

② SAMPLE DESCRIPTION (UNIQUE DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)

SAMPLE DESCRIPTION	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE GRAB	SAMPLE TYPE COMP	MATRIX TYPE	BOTTLE COUNT	PRES CODE CLIENT PROVIDED	TDS	CL						REMARKS
MW-5	9-12-22	1020	X		GW	1	6	X							
MW-6	9-12-22	0857	X		GW	1	6		X						
DUPLICATE	9-12-22		X		GW	1	6	X	X						
FIELD BLANK	9-12-22	0857	X		DI	1	6	X	X						

CHEMICAL PRESERVATION CODES:	I – HCL	2 – H2SO4	3 – HNO3	4 – NAOH	5 – NA2S2O3	6 – UNPRESERVED	7 – OTHER

⑤ TURNAROUND TIME REQUESTED (PLEASE CIRCLE) NORMAL RUSH
(RUSH TAT IS SUBJECT TO PACE LABS APPROVAL AND SURCHARGE)
RUSH RESULTS VIA (PLEASE CIRCLE) EMAIL PHONE
EMAIL IF DIFFERENT FROM ABOVE:
PHONE # IF DIFFERENT FROM ABOVE:

DATE RESULTS NEEDED

⑥ *I understand that by initialing this box I give the lab permission to proceed with analysis, even though it may not meet all sample conformance requirements as defined in the receiving facility's Sample Acceptance Policy and the data will be qualified. Qualified data may NOT be acceptable to report to all regulatory authorities.*

PROCEED WITH ANALYSIS AND QUALIFY RESULTS: (INITIALS) ______________

⑦			
RELINQUISHED BY: (SIGNATURE) Ashish Patel	DATE 9-13-22 TIME 0700	RECEIVED BY: (SIGNATURE)	DATE TIME
RELINQUISHED BY: (SIGNATURE)	DATE TIME	RECEIVED BY: (SIGNATURE)	DATE TIME
RELINQUISHED BY: (SIGNATURE)	DATE TIME	RECEIVED BY: (SIGNATURE)	DATE 9/14/22 TIME 1340

⑧ COMMENTS: (FOR LAB USE ONLY)

SAMPLE TEMPERATURE UPON RECEIPT 2.3 °C
CHILL PROCESS STARTED PRIOR TO RECEIPT [✓ Y] OR N
SAMPLE(S) RECEIVED ON ICE [✓ Y] OR N
SAMPLE ACCEPTANCE NONCONFORMANT REPORT IS NEEDED Y OR [✓ N]
DATE AND TIME TAKEN FROM SAMPLE BOTTLE ______________

Appendix 3

Groundwater Quality Data Base

Sikeston Board of Municipal Utilities
Sikeston Power Station
Bottom Ash Pond Scott County, Missouri
CCR Groundwater Data Base

			Field Parameters					Appendix III Monitoring Constituents (Detection)							Appendix IV Monitoring Constituents (Assessment)														
Well ID	Date	Monitoring Purpose	Spec. Cond. µmhos/cm	Temp. °C	ORP mV	D.O. mg/L	Turbidity NTU	pH S.U.	Chloride mg/L	Fluoride mg/L	Sulfate mg/L	TDS mg/L	Boron ug/L	Calcium mg/L	Antimony ug/L	Arsenic ug/L	Barium ug/L	Beryllium ug/L	Cadmium ug/L	Chromium ug/L	Cobalt ug/L	Lead ug/L	Lithium ug/L	Mercury ug/L	Molybdenum ug/L	Selenium ug/L	Thallium ug/L	Radium 226 and 228 (Combined) pCi/L
									None	4.0	None	None	None	None	6	10	2000	4	5	100	6	15	40	2	100	50	2	5
MW-3 (UG)	11/30/2016	Background	254.0	15.75	-27.1	0.41	37.28	~~7.08~~	2.3	0.438	26	160	18	24	<3.0	1.5	96	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.668
	1/24/2017	Background	226.4	16.52	-8.4	0.39	4.46	~~6.88~~	2.0	0.261	30	130	12	21	<3.0	1.2	120	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.677(ND)
	2/22/2017	Background	226.6	16.47	9.7	0.36	3.56	~~6.93~~	1.9	0.290	26	120	33	22	<3.0	1.0	120	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.460(ND)
	3/20/2017	Background	212.1	17.07	33.7	0.43	6.61	~~6.68~~	1.8	0.286	21	170	22	19	<3.0	<1.0	110	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.277(ND)
	4/27/2017	Background	223.2	15.35	9.2	0.57	2.69	~~6.68~~	2.0	0.257	28	140	54	20	<3.0	<1.0	110	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	9.9	<1.0	<1.0	-0.030(ND)
	5/17/2017	Background	224.9	17.68	26.8	0.45	12.59	~~6.59~~	1.5	<0.250	21	130	19	17	<3.0	<1.0	120	<1.0	<1.0	<4.0	<2.0	<1.0	<10	0.40	<1.0	<1.0	<1.0	0.844(ND)
	6/8/2017	Background	217.9	16.73	18.2	0.49	2.61	6.66	1.7	0.276	22	160	20	19	<3.0	<1.0	110	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	-0.469(ND)
	7/13/2017	Background	243.8	19.02	5.5	0.39	4.79	6.71	2.2	0.256	19	160	18	20	<3.0	<1.0	100	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.715(ND)
	10/31/2017	Background / D1	246.2	16.74	12.4	0.65	7.47	6.64	2.0	0.331	20	140	27	19	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	6/13/2018	Background / D2	194.2	17.19	42.3	0.42	7.57	6.59	1.3	0.291	17	130	23	20	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	11/26/2018	Background / D3	194.9	15.05	49.8	0.47	2.23	6.50	1.5	0.301	18	100	23	17	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	2/5/2019	Background	205.0	14.49	46.9	0.49	1.92	6.46	1.5	0.342	20	160	22	17	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	5/28/2019	Background / D4	218.4	16.42	32.2	0.82	9.69	6.4	1.3	<0.250	20	(NA)	51	17	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	7/23/2019		203.0	16.58	71.0	0.88	4.96	(NA)	(NA)	(NA)	(NA)	140	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	8/28/2019	Background / D5	207.4	16.97	75.6	0.89	4.02	6.4	1.1	<0.250	18	140	35	15	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	11/4/2019	Background	202.3	16.60	63.2	0.70	4.22	6.4	1.4	<0.250	18	130	37	15	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	2/18/2020	Background / D6	207.6	14.17	58.6	1.22	6.34	6.4	1.3	<0.250	21	(NA)	27	16	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	3/30/2020		199.3	14.87	61.2	1.20	6.01	(NA)	(NA)	(NA)	(NA)	180	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	7/21/2020	Background / D7	197.8	16.87	-40.4	8.42	3.43	6.5	1.0	<0.250	15	140	21	18	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	10/20/2020	Background	206.2	16.22	-15.1	8.73	2.88	6.5	1.2	<0.250	15	130	21	17	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	4/16/2021	Detection 8	189.2	14.10	41.3	12.69	4.03	6.5	1.2	<0.250	16	(NA)	25	17	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	4/17/2021		196.8	14.04	34.3	12.04	3.47	(NA)	(NA)	(NA)	(NA)	150	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	11/1/2021	Detection 9	199.7	11.89	70.3	10.10	1.46	6.57	1.0	<0.250	14	(NA)	25	14	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	12/27/2021		194.7	7.62	62.3	1.67	1.03	(NA)	(NA)	(NA)	(NA)	170	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	8/3/2022	Detection 10	158.1	17.06	42.0	0.36	8.28	6.65	< 1.0	<0.250	11	130	23	16	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)

NOTES:

1. All data transcribed from analytical lab data sheets or field notes.
2. Less than (<) symbol denotes concentration not detected at or above reportable limits.
3. (ND) denotes Radium 226 and 228 (combined) concentration not detected above minimum detectable concentration.
4. (NA) denotes analysis not conducted, or not available at time of report.
5. Background monitoring per USEPA 40 CFR 257.93.
6. Detection monitoring per USEPA 40 CFR 257.94.
7. Assessment monitoring per USEPA 40 CFR 257.95.
8. Additional background sampling based on recommendations in Alternate Source Demonstration dated September 26, 2018 (see Gredell Engineering, 2019).
9. Background updated March 2021 to include previous background, additional background (see note 8), and detection monitoring data through October 2020 except as noted in note 10.
10. Censored data for outlier removal or trend elimination indicated as shown below:

4.5 - Value identified by Sanitas for Groundwater as an outlier.

~~120~~ - Value censored from data set to eliminate significant trend.

Appendix 3
Prepared by: KAE
Checked by: MCC

Sikeston Board of Municipal Utilities
Sikeston Power Station
Bottom Ash Pond Scott County, Missouri
CCR Groundwater Data Base

			Field Parameters					Appendix III Monitoring Constituents (Detection)							Appendix IV Monitoring Constituents (Assessment)													
Well	Date	Monitoring Purpose	Spec. Cond.	Temp.	ORP	D.O.	Turbidity	pH	Chloride	Fluoride	Sulfate	TDS	Boron	Calcium	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Radium 226 and 228 (Combined)
ID			µmhos/cm	°C	mV	mg/L	NTU	S.U.	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L
									None	4.0	None	None	None	None	6	10	2000	4	5	100	6	15	40	2	100	50	2	5
MW-4 (DG)	11/30/2016	Background	575.6	17.51	-108.3	0.48	0.61	7.46	18	0.259	140	390	1400	89	<3.0	<1.0	41	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.572(ND)
	1/24/2017	Background	543.7	17.00	-105.2	0.50	0.48	7.45	15	<0.250	120	290	880	79	<3.0	<1.0	46	<2.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.7031(ND)
	2/22/2017	Background	554.0	17.95	-115.3	0.51	1.19	7.49	13	<0.250	97	320	1500	78	<3.0	<1.0	51	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.550(ND)
	3/20/2017	Background	562.8	18.58	-108.8	0.69	1.70	7.37	12	<0.250	94	350	1400	72	<3.0	<1.0	53	<1.0	<1.0	<4.0	<2.0	<1.0	<10	1.3	<1.0	<1.0	<1.0	1.036
	4/27/2017	Background	536.9	17.25	-129.6	0.91	2.38	7.38	14	<0.250	99	300	1300	74	<3.0	<1.0	50	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.210(ND)
	5/17/2017	Background	554.9	17.90	-115.5	0.63	3.02	7.38	14	<0.250	96	320	1200	71	<3.0	<1.0	66	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.774(ND)
	6/8/2017	Background	509.7	18.24	-122.9	0.86	0.84	7.38	12	<0.250	86	340	1100	61	<3.0	<1.0	45	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.464(ND)
	7/13/2017	Background	575.5	19.46	-115.2	0.52	1.43	7.37	13	<0.250	88	300	1200	79	<3.0	<1.0	52	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.086(ND)
	10/31/2017	Background / D1	525.8	18.35	-118.1	0.63	1.07	7.31	17	<0.250	83	290	1400	67	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	6/13/2018	Background / D2	511.5	18.92	-120.7	0.44	18.50	7.32	14	<0.250	86	290	1200	80	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	11/26/2018	Background / D3	468.0	16.07	-101.8	0.53	1.01	7.36	8.8	<0.250	54	260	1100	64	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	2/5/2019	Background	761.0	15.62	-97.5	0.52	2.58	7.3	33	<0.250	140	420	1100	100	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	5/28/2019	Background / D4	581.7	18.65	-108.5	0.37	3.30	7.3	11	<0.250	75	(NA)	980	70	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	7/23/2019		615.2	18.88	-105.2	0.43	0.36	(NA)	(NA)	(NA)	(NA)	340	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	8/28/2019	Background / D5	645.4	19.60	-101.7	0.40	2.31	(NA)	18	<0.250	110	300	1100	83	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	10/23/2019		620.0	18.90	-110.6	0.55	1.93	7.3	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	11/4/2019	Background	657.7	18.52	-104.2	0.50	0.96	7.2	2.1	<0.250	120	400	1200	89	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	2/18/2020	Background / D6	526.9	14.49	-87.6	0.63	1.60	7.4	11	<0.250	66	(NA)	930	67	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	3/30/2020		520.6	16.45	-91.1	0.35	19.51	(NA)	(NA)	(NA)	(NA)	300	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	7/21/2020	Background / D7	550.7	19.75	-145.6	5.06	6.49	(NA)	14	<0.250	86	290	920	76	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	8/3/2020		567.8	18.81	-117.8	4.87	7.19	7.4	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	10/20/2020	Background	596.6	17.94	-92.1	6.36	1.80	7.4	17	<0.250	96	330	1000	80	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	4/16/2021	Detection 8	591.2	15.99	-58.4	4.85	12.85	7.4	19	<0.250	100	340	920	85	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	11/1/2021	Detection 9	609.8	14.87	-59.8	0.54	2.97	7.34	16	<0.250	95	360	870	76	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	8/3/2022	Detection 10	552.4	19.67	-130.9	0.32	6.40	7.32	14	<0.250	93	390	880	76	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)

NOTES:

1. All data transcribed from analytical lab data sheets or field notes.
2. Less than (<) symbol denotes concentration not detected at or above reportable limits.
3. (ND) denotes Radium 226 and 228 (combined) concentration not detected above minimum detectable concentration.
4. (NA) denotes analysis not conducted, or not available at time of report.
5. Background monitoring per USEPA 40 CFR 257.93.
6. Detection monitoring per USEPA 40 CFR 257.94.
7. Assessment monitoring per USEPA 40 CFR 257.95.
8. Additional background sampling based on recommendations in Alternate Source Demonstration dated September 26, 2018 (see Gredell Engineering, 2019).
9. Background updated March 2021 to include previous background, additional background (see note 8), and detection monitoring data through October 2020 except as noted in note 10.
10. Censored data for outlier removal or trend elimination indicated as shown below:

4.5 - Value identified by Sanitas for Groundwater as an outlier.

~~120~~ - Value censored from data set to eliminate significant trend.

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			Field Parameters					Appendix III Monitoring Constituents (Detection)							Appendix IV Monitoring Constituents (Assessment)														
Well	Date	Monitoring Purpose	Spec. Cond.	Temp.	ORP	D.O.	Turbidity	pH	Chloride	Fluoride	Sulfate	TDS	Boron	Calcium	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Radium 226 and 228 (Combined)
ID			μmhos/cm	°C	mV	mg/L	NTU	S.U.	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L
									None	4.0	None	None	None	None	6	10	2000	4	5	100	6	15	40	2	100	50	2	5
MW-5 (DG)	11/30/2016	Background	808.3	16.20	-48.7	0.50	1.24	6.97	16	0.255	230	560	470	96	<3.0	<1.0	84	<1.0	<1.0	<4.0	4.3	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.844
	1/24/2017	Background	745.3	16.24	-37.6	0.58	0.72	6.90	15	<0.250	270	470	480	120	<3.0	<1.0	91	<1.0	<1.0	<4.0	5.2	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.827(ND)
	2/22/2017	Background	717.8	17.75	-50.5	0.36	3.43	6.97	11	<0.250	170	420	470	100	<3.0	<1.0	83	<1.0	<1.0	<4.0	3.6	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.130(ND)
	3/20/2017	Background	737.9	17.78	-36.5	0.72	2.16	6.85	11	<0.250	170	480	320	99	<3.0	<1.0	76	<1.0	<1.0	<4.0	4.4	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.538(ND)
	4/27/2017	Background	777.3	16.07	-58.8	0.69	5.20	6.80	12	<0.250	460	480	490	120	<3.0	<1.0	87	<1.0	<1.0	<4.0	4.8	<1.0	<10	<0.20	3.0	<1.0	<1.0	1.676
	5/17/2017	Background	760.1	17.81	-56.0	0.46	5.35	6.81	11	<0.250	200	440	5700	240	<3.0	1.8	180	<1.0	<1.0	16	5.3	6.3	<10	0.24	<1.0	<1.0	<1.0	1.739
	6/8/2017	Background	678.3	17.72	-58.6	0.69	1.89	6.82	11	<0.250	180	480	360	97	<3.0	<1.0	77	<1.0	<1.0	<4.0	3.9	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.869(ND)
	7/13/2017	Background	799.0	19.19	-82.0	1.08	17.49	6.98	10	<0.250	190	430	320	110	<3.0	<1.0	81	<1.0	<1.0	<4.0	3.8	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.767(ND)
	10/31/2017	Background / D1	591.8	17.45	-77.6	0.85	3.17	6.89	13	<0.250	88	310	280	72	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	6/13/2018	Background / D2	756.4	18.28	-55.6	0.84	1.91	6.77	11	<0.250	240	480	370	130	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	11/26/2018	Background / D3	836.4	14.90	-27.0	0.51	0.38	6.74	17	<0.250	230	520	420	120	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	2/5/2019	Background	845.6	15.22	-23.7	0.41	0.71	6.72	15	0.272	200	480	450	120	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	5/28/2019	Background / D4	861.1	18.31	-59.1	0.60	3.71	6.9	10	<0.250	190	(NA)	280	110	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	7/23/2019		806.9	18.66	-44.9	0.81	1.34	(NA)	(NA)	(NA)	(NA)	480	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	8/28/2019	Background / D5	848.4	18.49	-42.2	0.64	0.82	6.8	16	<0.250	190	480	410	110	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	11/4/2019	Background	729.9	18.03	-55.8	0.77	2.65	6.8	3.2	<0.250	15	440	420	99	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	2/18/2020	Background / D6	871.7	14.05	-45.2	0.81	0.88	6.8	15	<0.250	210	(NA)	400	110	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	3/30/2020		750.4	15.84	-49.7	0.62	2.90	(NA)	(NA)	(NA)	(NA)	450	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	7/21/2020	Background / D7	816.5	18.35	-102.9	4.37	5.36	6.8	14	<0.250	210	470	330	110	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	10/20/2020	Background	886.3	16.27	-70.2	8.15	3.72	6.9	15	<0.250	220	590	360	120	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	4/16/2021	Detection 8	837.4	15.79	-11.1	7.27	2.84	6.9	10	<0.250	240	510	370	120	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	11/1/2021	Detection 9	790.8	12.79	-25.5	7.62	0.50	6.90	13	<0.250	170	490	330	94	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	8/3/2022	Detection 10	758.3	17.88	-83.7	0.59	11.66	6.82	12	<0.250	210	(NA)	390	110	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	9/12/2022		882.5	17.00	-85.4	0.41	3.12	(NA)	(NA)	(NA)	(NA)	510	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)

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ID			µmhos/cm	°C	mV	mg/L	NTU	S.U.	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L
									None	4.0	None	None	None	None	6	10	2000	4	5	100	6	15	40	2	100	50	2	5
MW-6 (UG)	11/30/2016	Background	369.0	16.39	-49.4	0.85	0.84	~~6.92~~	2.8	0.331	36	200	~~36~~	45	<3.0	4.3	190	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.532
	1/24/2017	Background	358.9	16.29	-44.8	0.66	0.26	6.87	2.4	<0.250	43	200	~~27~~	41	<3.0	5.7	220	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.948(ND)
	2/22/2017	Background	352.5	17.20	-42.2	0.81	15.27	6.89	2.1	0.269	32	160	~~59~~	40	<3.0	6.4	210	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.685(ND)
	3/20/2017	Background	360.8	16.90	24.9	0.36	9.70	6.73	2.1	<0.250	31	240	~~37~~	39	<3.0	5	160	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.577(ND)
	4/27/2017	Background	331.5	15.71	-50.9	0.39	8.35	6.72	2.3	<0.250	34	170	~~36~~	38	<3.0	3.2	180	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.243(ND)
	5/17/2017	Background	323.2	17.65	-71.5	0.45	7.13	6.76	1.8	<0.250	30	170	~~35~~	30	<3.0	4.9	190	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.173(ND)
	6/8/2017	Background	326.7	17.50	-53.0	0.33	3.86	6.73	1.7	<0.250	29	180	~~38~~	36	<3.0	4.6	190	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.893(ND)
	7/13/2017	Background	396.8	19.68	-84.0	0.72	2.17	6.98	1.6	<0.250	28	180	~~31~~	40	<3.0	5.8	200	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.575(ND)
	10/31/2017	Background / D1	359.6	17.57	-57.9	0.71	1.48	6.72	1.7	0.303	29	170	~~41~~	38	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	6/13/2018	Background / D2	345.4	17.59	-44.0	0.40	13.24	6.67	2.3	<0.250	32	160	~~43~~	41	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	11/26/2018	Background / D3	375.3	15.04	-37.6	1.07	1.66	6.72	1.5	0.313	29	180	46	36	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	2/5/2019	Background	384.7	14.86	-33.9	0.56	2.68	6.72	1.6	0.338	27	160	44	40	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	5/28/2019	Background / D4	418.2	16.93	-48.2	0.34	7.15	6.7	2.5	<0.250	30	(NA)	52	40	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	7/23/2019		419.3	17.64	-59.8	0.51	2.03	(NA)	(NA)	(NA)	(NA)	180	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	8/28/2019	Background / D5	442.2	17.67	-65.4	0.66	1.15	6.7	1.0	<0.250	24	200	54	44	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	11/4/2019	Background	388.3	17.62	-48.1	0.38	1.68	6.7	1.4	0.319	22	210	47	43	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	2/18/2020	Background / D6	390.3	14.54	-54.5	0.81	5.79	6.7	1.7	<0.250	24	(NA)	40	41	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	3/30/2020		391.0	15.17	-53.6	0.67	3.99	(NA)	(NA)	(NA)	(NA)	230	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	10/20/2020	Background	455.5	16.43	-60.5	6.31	0.57	7.0	2.4	<0.250	24	250	47	49	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	4/16/2021	Detection 8	399.3	14.69	-7.1	6.88	16.55	6.8	2.0	<0.250	24	200	52	44	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	11/1/2021	Detection 9	475.9	12.07	-20.8	5.05	2.22	6.88	4.3	0.330	27	220	56	47	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	12/27/2021		444.7	7.72	-56.0	0.67	3.26	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	8/3/2022	Detection 10	381.1	17.84	-93.0	0.40	12.36	6.86	4.3	<0.250	24	230	51	43	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	9/12/2022		443.5	16.99	-82.3	0.50	11.06	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)

NOTES:

1. All data transcribed from analytical lab data sheets or field notes.
2. Less than (<) symbol denotes concentration not detected at or above reportable limits.
3. (ND) denotes Radium 226 and 228 (combined) concentration not detected above minimum detectable concentration.
4. (NA) denotes analysis not conducted, or not available at time of report.
5. Background monitoring per USEPA 40 CFR 257.93.
6. Detection monitoring per USEPA 40 CFR 257.94.
7. Assessment monitoring per USEPA 40 CFR 257.95.
8. Additional background sampling based on recommendations in Alternate Source Demonstration dated September 26, 2018 (see Gredell Engineering, 2019).
9. Background updated March 2021 to include previous background, additional background (see note 8), and detection monitoring data through October 2020 except as noted in note 10.
10. Censored data for outlier removal or trend elimination indicated as shown below:

4.5 - Value identified by Sanitas for Groundwater as an outlier.

~~120~~ - Value censored from data set to eliminate significant trend.

Appendix 3
Prepared by: KAE
Checked by: MCC

Sikeston Board of Municipal Utilities
Sikeston Power Station
Bottom Ash Pond Scott County, Missouri
CCR Groundwater Data Base

			Field Parameters					Appendix III Monitoring Constituents (Detection)							Appendix IV Monitoring Constituents (Assessment)													
Well ID	Date	Monitoring Purpose	Spec. Cond.	Temp.	ORP	D.O.	Turbidity	pH	Chloride	Fluoride	Sulfate	TDS	Boron	Calcium	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Radium 226 and 228 (Combined)
			µmhos/cm	°C	mV	mg/L	NTU	S.U.	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L
									None	4.0	None	None	None	None	6	10	2000	4	5	100	6	15	40	2	100	50	2	5
MW-8 (DG)	5/18/2017	Background	662.5	17.58	-89.4	0.29	2.39	7.16	~~46~~	<0.250	100	~~340~~	400	~~74~~	<3.0	<1.0	86	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.067
	6/9/2017	Background	678.2	17.90	-108.5	0.31	0.47	7.16	~~43~~	<0.250	110	~~380~~	520	~~92~~	<3.0	<1.0	86	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.839(ND)
	7/13/2017	Background	661.5	18.57	-107.1	0.23	1.20	7.25	~~36~~	<0.250	89	~~320~~	430	~~87~~	<3.0	<1.0	74	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.034(ND)
	8/3/2017	Background	665.7	19.06	-108.4	0.24	0.98	7.15	~~37~~	<0.250	89	~~330~~	490	~~80~~	<3.0	<1.0	74	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.681(ND)
	8/15/2017	Background	594.9	18.56	-88.7	0.38	0.99	7.16	~~36~~	<0.250	83	~~320~~	530	~~75~~	<3.0	<1.0	68	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.906(ND)
	8/30/2017	Background	644.2	18.62	-91.3	0.29	1.18	7.15	~~41~~	<0.250	96	~~290~~	510	~~88~~	<3.0	<1.0	75	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.805(ND)
	9/14/2017	Background	707.9	18.52	-90.1	0.48	0.67	7.13	~~53~~	<0.250 H	110	~~370~~	510	~~86~~	<3.0	<1.0	77	<1.0	<1.0	<4.0	<2.0	<1.0	12	<0.20	<1.0	<1.0	<1.0	0.314(ND)
	9/27/2017	Background	764.0	19.11	-89.6	0.30	0.58	7.05	~~50~~	<0.250	120	~~420~~	480	~~92~~	<3.0	<1.0	80	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.594(ND)
	10/31/2017	Background / D1	698.1	17.99	-96.3	0.38	0.94	7.09	~~45~~	<0.250	110	~~380~~	540	~~86~~	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	6/13/2018	Background / D2	788.8	18.34	-99.1	0.23	4.80	7.11	65	<0.250	(NA)	~~430~~	520	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	7/10/2018		899.4	18.52	-94.2	0.35	2.69	(NA)	(NA)	(NA)	150	(NA)	(NA)	~~120~~	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	11/26/2018	Background / D3	662.1	15.08	-77.6	0.35	2.88	7.17	45	<0.250	100	320	500	94	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	2/5/2019	Background	839.7	14.72	-76.0	0.30	2.66	7.14	71	0.26	140	390	550	110	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	5/28/2019	Background / D4	836.6	18.25	-90.6	0.29	4.89	7.1	53	<0.250	130	(NA)	540	100	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	7/23/2019		819.5	19.34	-90.7	0.30	1.39	(NA)	(NA)	(NA)	(NA)	420	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	8/28/2019	Background / D5	769.1	19.38	-90.0	0.25	1.25	7.1	55	<0.250	110	360	460	93	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	11/4/2019	Background	729.8	18.39	-80.0	0.29	0.86	7.1	2.0	<0.250	4.5	400	480	98	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	2/18/2020	Background / D6	747.9	13.49	-75.7	0.29	0.69	7.2	53	<0.250	110	(NA)	480	93	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	3/30/2020		840.0	15.71	-82.4	0.20	7.48	(NA)	(NA)	(NA)	(NA)	480	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	7/21/2020	Background / D7	673.7	19.33	-130.8	2.91	3.56	7.1	50	<0.250	100	420	470	89	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	10/20/2020	Background	794.1	17.14	-83.8	3.59	0.88	7.2	56	<0.250	130	460	510	110	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8	Note 8
	4/16/2021	Detection 8	758.6	15.85	-44.7	3.47	5.16	7.2	51	<0.250	130	400	460	100	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	11/1/2021	Detection 9	676.9	14.15	-45.1	0.42	0.71	7.16	45	0.258	94	360	430	80	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	8/3/2022	Detection 10	752.0	19.27	-110.8	0.18	11.32	7.08	56	<0.250	140	490	420	100	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)

NOTES:

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2. Less than (<) symbol denotes concentration not detected at or above reportable limits.
3. (ND) denotes Radium 226 and 228 (combined) concentration not detected above minimum detectable concentration.
4. (NA) denotes analysis not conducted, or not available at time of report.
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6. Detection monitoring per USEPA 40 CFR 257.94.
7. Assessment monitoring per USEPA 40 CFR 257.95.
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9. Background updated March 2021 to include previous background, additional background (see note 8), and detection monitoring data through October 2020 except as noted in note 10.
10. Censored data for outlier removal or trend elimination indicated as shown below:

4.5 - Value identified by Sanitas for Groundwater as an outlier.

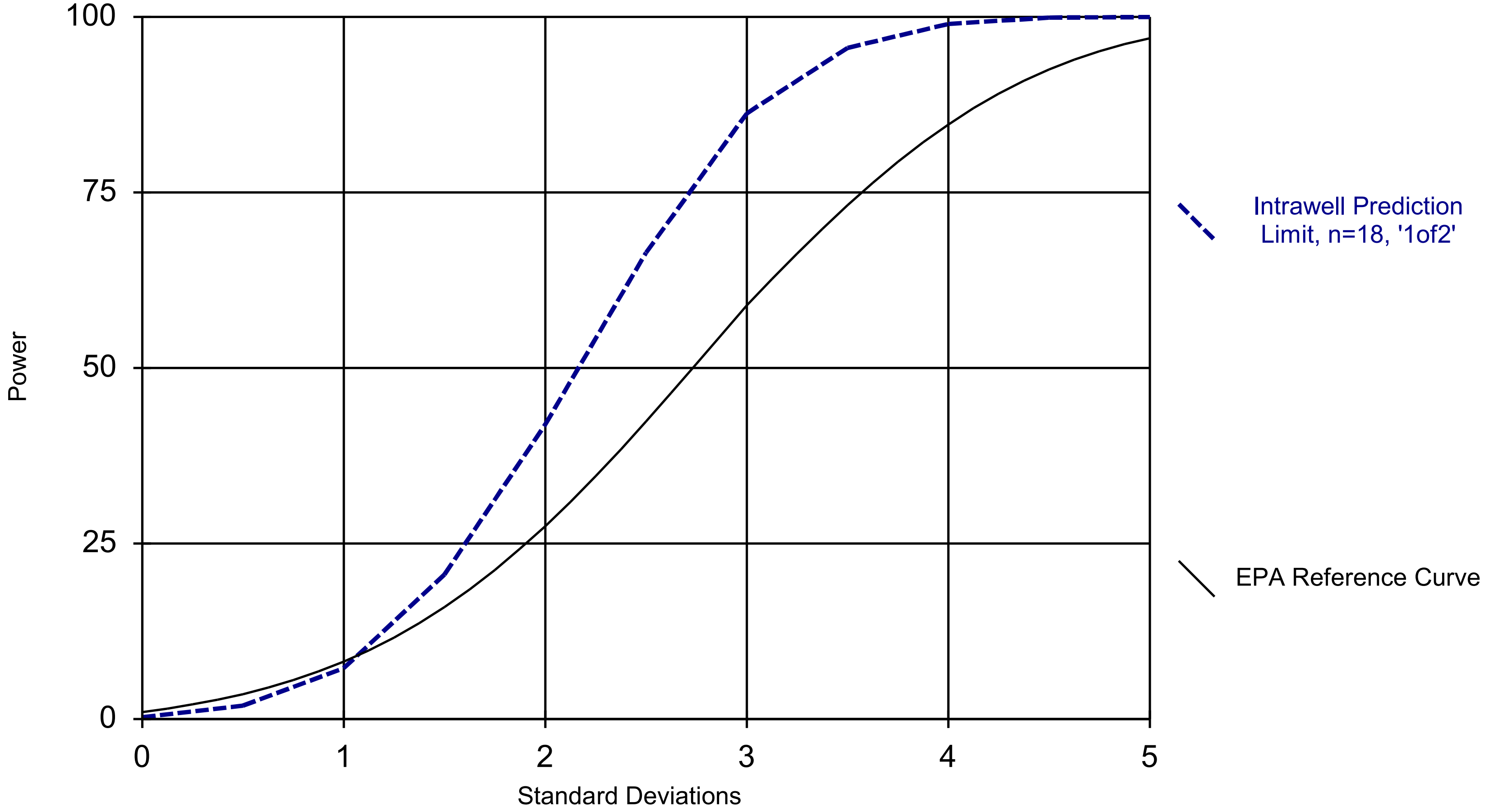
~~120~~ - Value censored from data set to eliminate significant trend.

Appendix 3
Prepared by: KAE
Checked by: MCC

Appendix 4

Statistical Power Curve

Power Curve



Kappa = 2.104, based on 5 compliance wells and 7 constituents, evaluated semi-annually (this report reflects annual total).

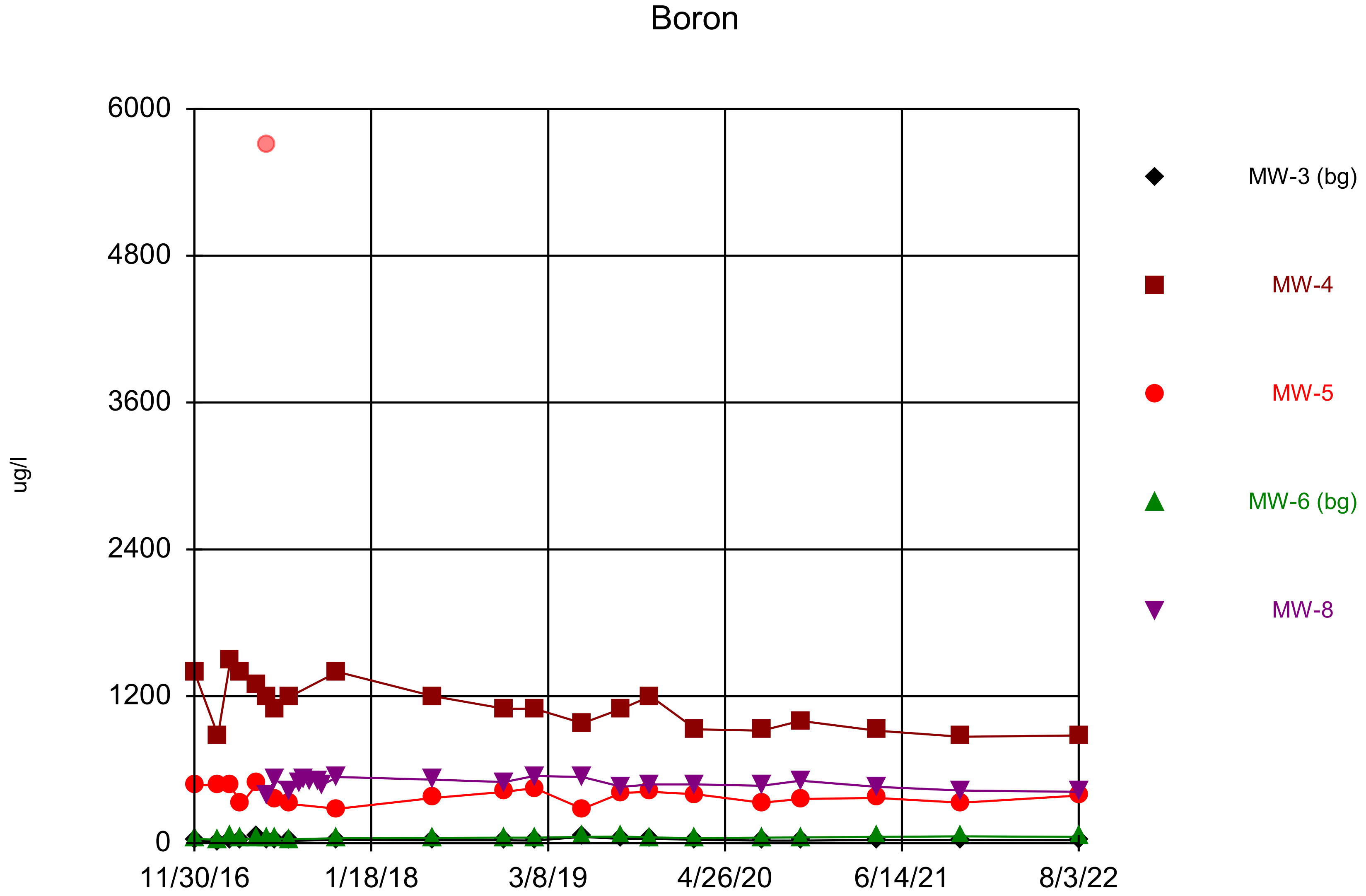
Analysis Run 10/19/2022 11:41 AM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Appendix 5

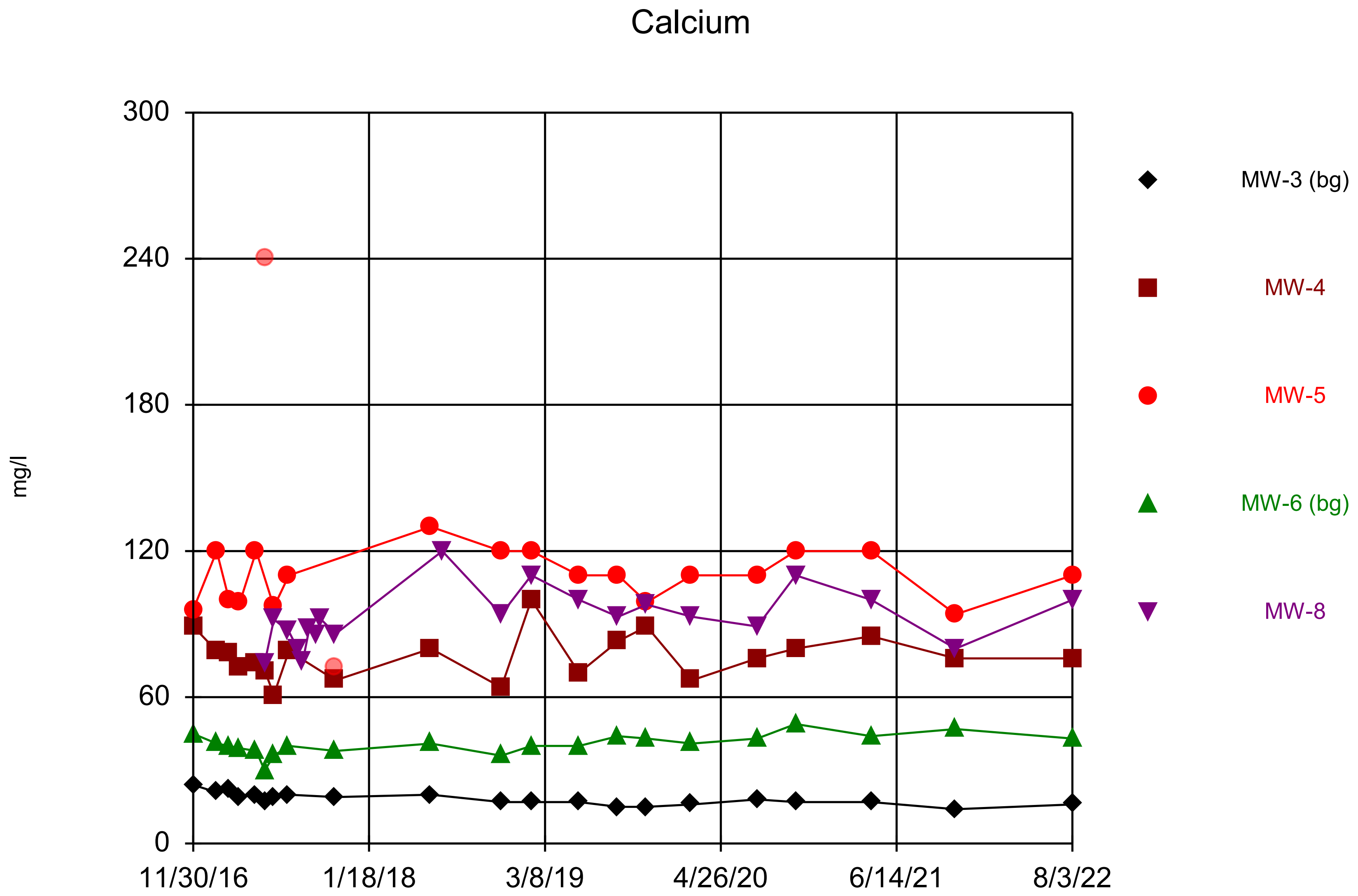
Time Series Plots

Sanitas™ v.9.6.35 Software licensed to GREDELL Engineering. UG



Time Series Analysis Run 10/20/2022 1:43 PM View: n=18 no outliers removed

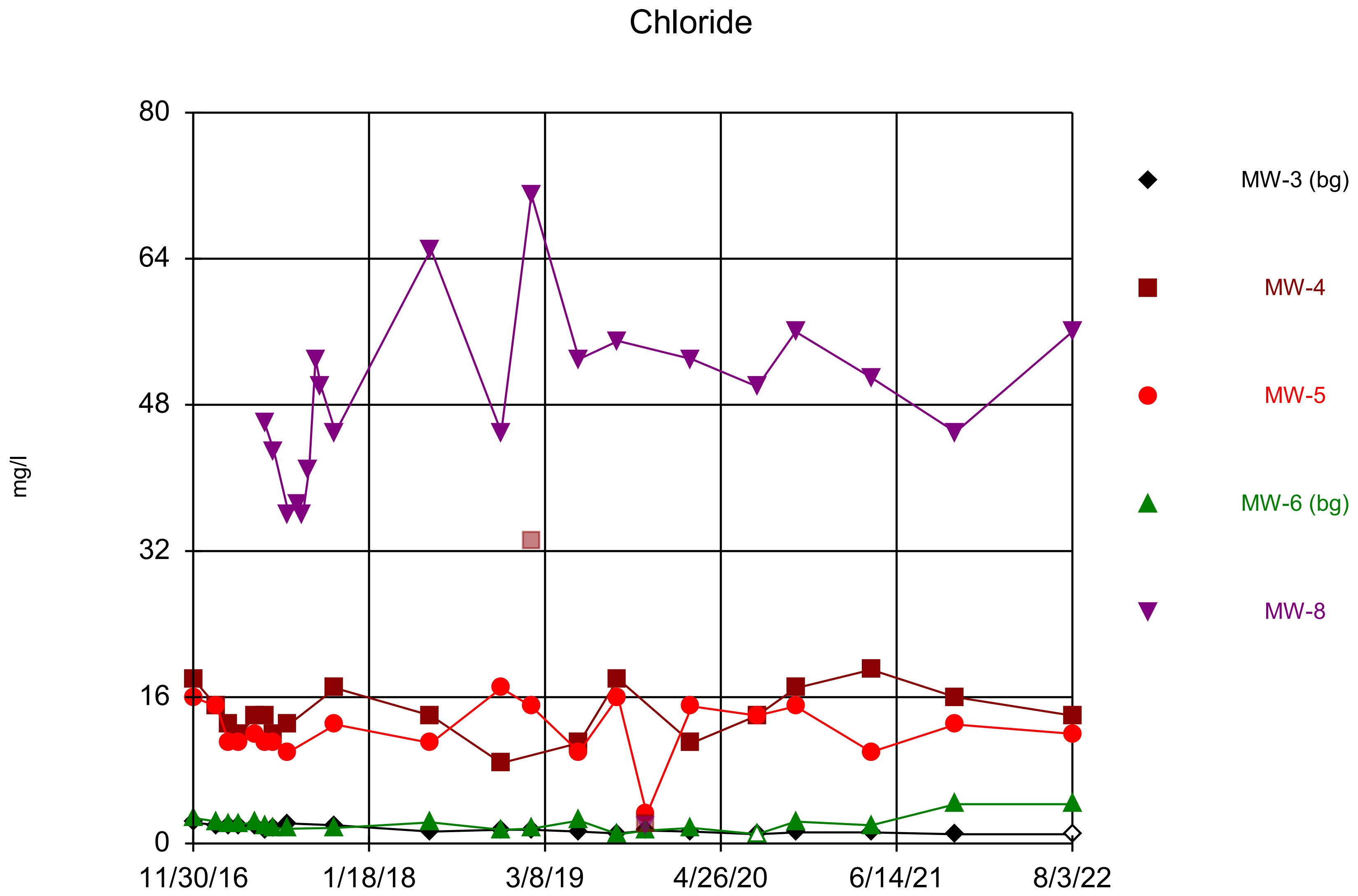
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



Time Series Analysis Run 10/20/2022 1:43 PM View: n=18 no outliers removed

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

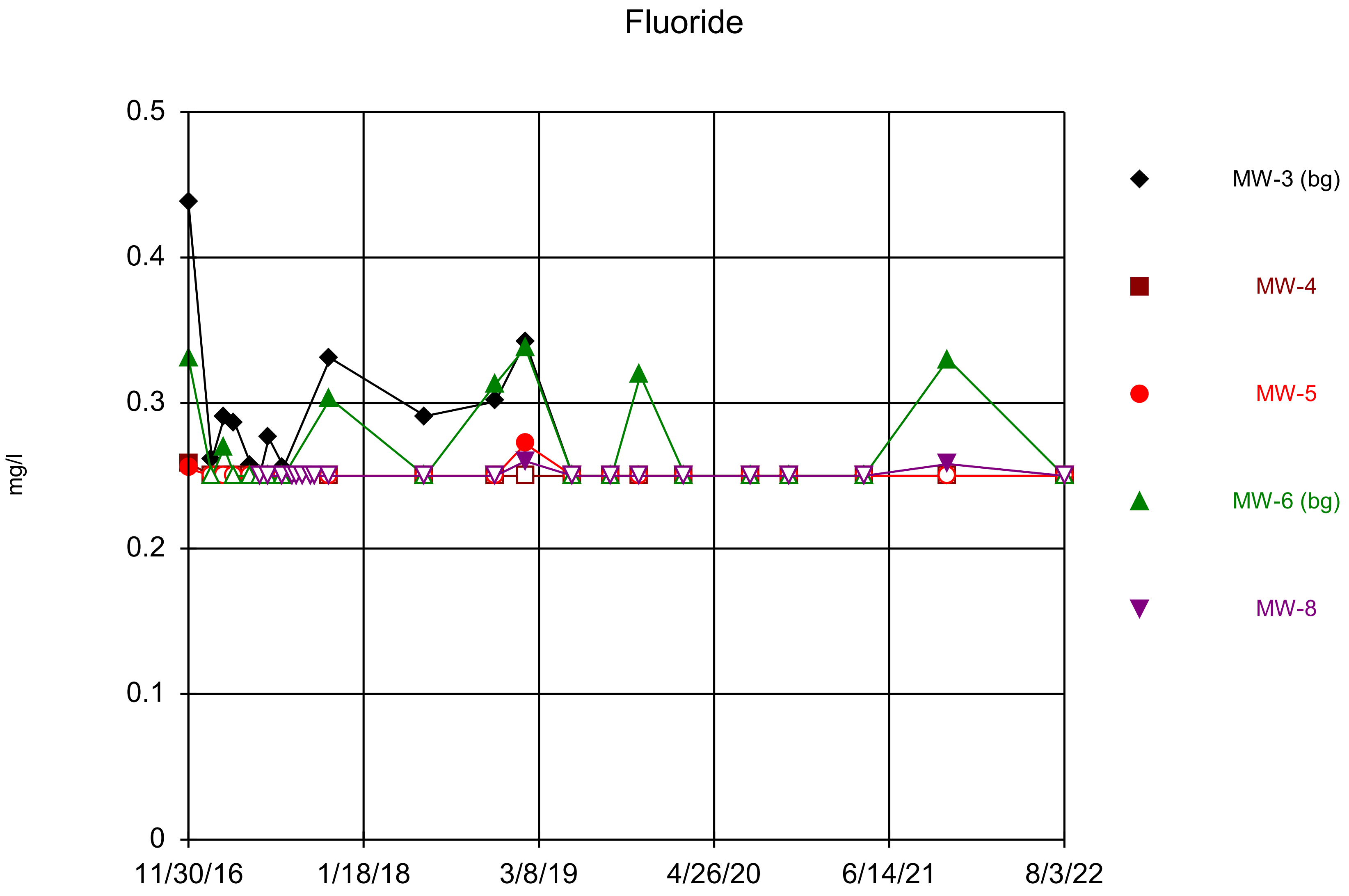
Sanitas™ v.9.6.35 Software licensed to GREDELL Engineering. UG
Hollow symbols indicate censored values.



Time Series Analysis Run 10/20/2022 1:43 PM View: n=18 no outliers removed

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

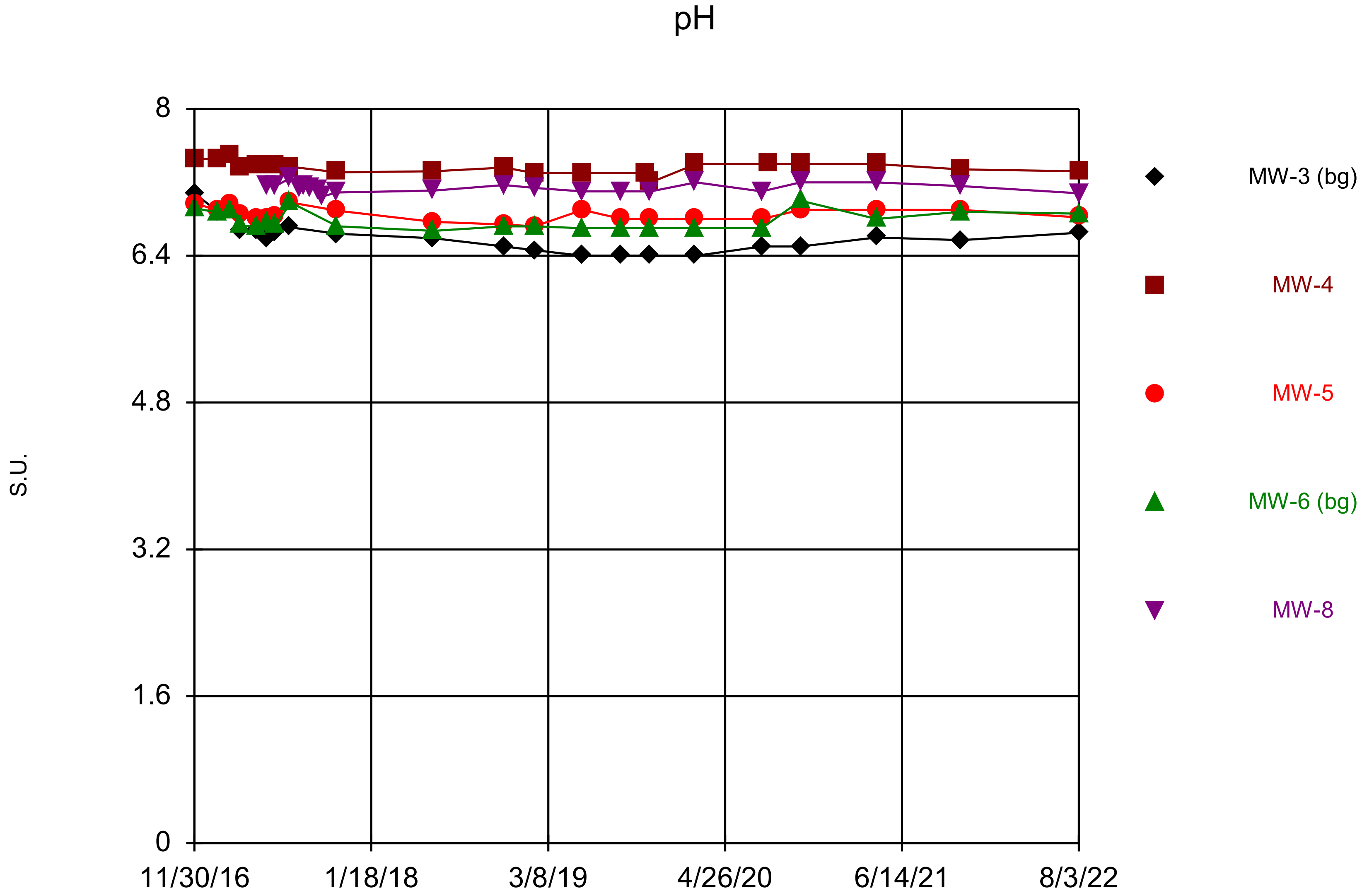
Sanitas™ v.9.6.35 Software licensed to GREDELL Engineering. UG
Hollow symbols indicate censored values.



Time Series Analysis Run 10/20/2022 1:43 PM View: n=18 no outliers removed

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

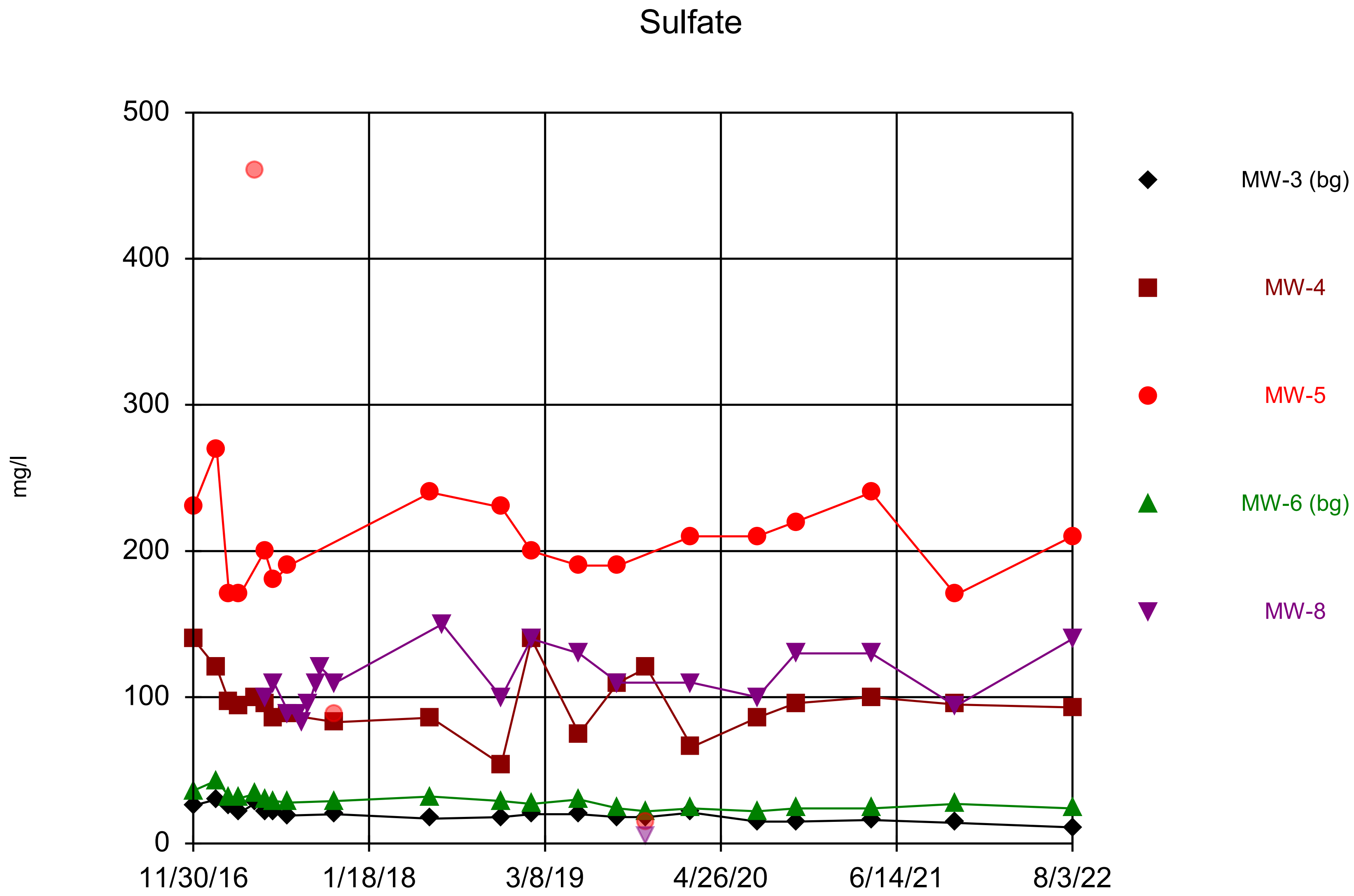
Sanitas™ v.9.6.35 Software licensed to GREDELL Engineering. UG



Time Series Analysis Run 10/20/2022 1:43 PM View: n=18 no outliers removed

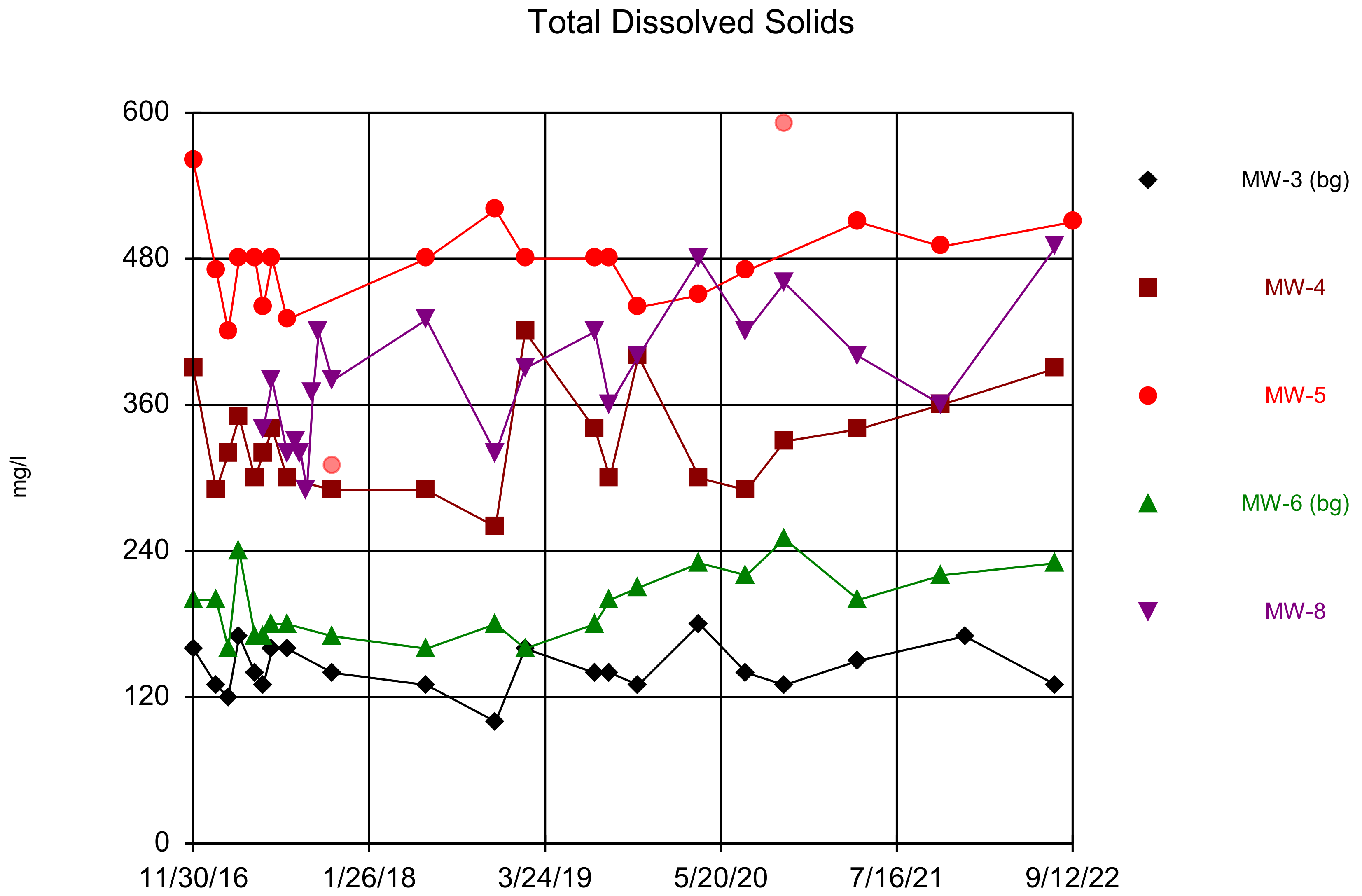
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v.9.6.35 Software licensed to GREDELL Engineering. UG



Time Series Analysis Run 10/20/2022 1:43 PM View: n=18 no outliers removed

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



Time Series Analysis Run 10/20/2022 1:44 PM View: n=18 no outliers removed

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Appendix 6

Box and Whiskers Plots

Box & Whiskers Plot

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Printed 10/20/2022, 1:43 PM

Constituent	Well	N	Mean	Std. Dev.	Std. Err.	Median	Min.	Max.	%NDs
Boron (ug/l)	MW-3 (bg)	21	26.48	10.43	2.277	23	12	54	0
Boron (ug/l)	MW-4	21	1123	195.8	42.73	1100	870	1500	0
Boron (ug/l)	MW-5	20	386	65	14.53	380	280	490	0
Boron (ug/l)	MW-6 (bg)	21	43.71	8.51	1.857	44	27	59	0
Boron (ug/l)	MW-8	21	487.1	42.33	9.236	490	400	550	0
Calcium (mg/l)	MW-3 (bg)	21	18.1	2.488	0.5429	17	14	24	0
Calcium (mg/l)	MW-4	21	76.95	9.195	2.007	76	61	100	0
Calcium (mg/l)	MW-5	19	110.3	10.44	2.395	110	94	130	0
Calcium (mg/l)	MW-6 (bg)	21	40.86	4.139	0.9031	41	30	49	0
Calcium (mg/l)	MW-8	21	92.71	11.57	2.525	92	74	120	0
Chloride (mg/l)	MW-3 (bg)	21	1.533	0.4103	0.08953	1.5	1	2.3	4.762
Chloride (mg/l)	MW-4	19	14.25	2.727	0.6255	14	8.8	19	0
Chloride (mg/l)	MW-5	21	12.44	3.077	0.6715	12	3.2	17	0
Chloride (mg/l)	MW-6 (bg)	21	2.119	0.8641	0.1886	2	1	4.3	4.762
Chloride (mg/l)	MW-8	20	49.35	9.074	2.029	50	36	71	0
Fluoride (mg/l)	MW-3 (bg)	21	0.2776	0.04608	0.01006	0.256	0.25	0.438	47.62
Fluoride (mg/l)	MW-4	21	0.2504	0.001964	0.0004286	0.25	0.25	0.259	95.24
Fluoride (mg/l)	MW-5	21	0.2513	0.00487	0.001063	0.25	0.25	0.272	90.48
Fluoride (mg/l)	MW-6 (bg)	21	0.2716	0.03379	0.007373	0.25	0.25	0.338	66.67
Fluoride (mg/l)	MW-8	21	0.2509	0.002726	0.0005948	0.25	0.25	0.26	90.48
pH (S.U.)	MW-3 (bg)	21	6.61	0.1815	0.0396	6.59	6.4	7.08	0
pH (S.U.)	MW-4	21	7.363	0.06522	0.01423	7.37	7.2	7.49	0
pH (S.U.)	MW-5	21	6.85	0.07453	0.01626	6.82	6.72	6.98	0
pH (S.U.)	MW-6 (bg)	21	6.784	0.1021	0.02228	6.73	6.67	7	0
pH (S.U.)	MW-8	21	7.141	0.04857	0.0106	7.15	7.05	7.25	0
Sulfate (mg/l)	MW-3 (bg)	21	19.81	4.729	1.032	20	11	30	0
Sulfate (mg/l)	MW-4	21	96.38	21.09	4.602	95	54	140	0
Sulfate (mg/l)	MW-5	18	206.7	27.87	6.568	205	170	270	0
Sulfate (mg/l)	MW-6 (bg)	21	28.62	5.113	1.116	29	22	43	0
Sulfate (mg/l)	MW-8	20	112.1	19.17	4.286	110	83	150	0
Total Dissolved Solids (mg/l)	MW-3 (bg)	21	143.3	19.32	4.216	140	100	180	0
Total Dissolved Solids (mg/l)	MW-4	21	329.5	42.95	9.373	320	260	420	0
Total Dissolved Solids (mg/l)	MW-5	19	477.4	33.47	7.679	480	420	560	0
Total Dissolved Solids (mg/l)	MW-6 (bg)	21	195.7	27.85	6.078	200	160	250	0
Total Dissolved Solids (mg/l)	MW-8	21	384.8	54.83	11.96	380	290	490	0

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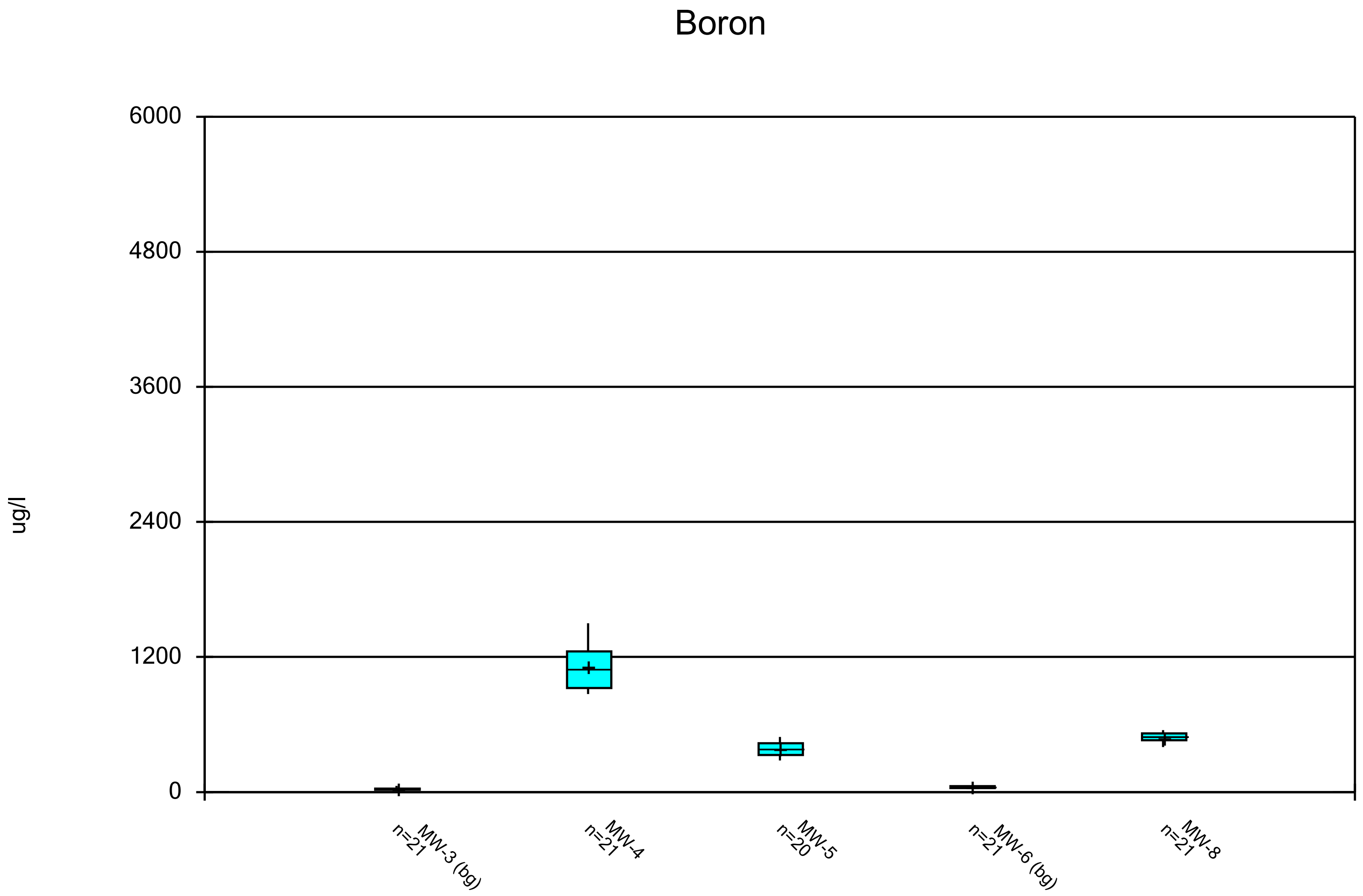

Box & Whiskers Plot Analysis Run 10/20/2022 1:41 PM View: n=18 no outliers removed

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Box & Whiskers Plot

Constituent: Boron (ug/l) Analysis Run 10/20/2022 1:43 PM View: n=18 no outliers removed

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

	MW-3 (bg)	MW-4	MW-5	MW-6 (bg)	MW-8
11/30/2016	18	1400	470	36	
1/24/2017	12	880	480	27	
2/22/2017	33	1500	470	59	
3/20/2017	22	1400	320	37	
4/27/2017	54	1300	490	36	
5/17/2017	19	1200	5700 (o)	35	400
6/8/2017	20	1100	360	38	520
7/13/2017	18	1200	320	31	430
8/3/2017					490
8/15/2017					530
8/30/2017					510
9/14/2017					510
9/27/2017					480
10/31/2017	27	1400	280	41	540
6/13/2018	23	1200	370	43	520
11/26/2018	23	1100	420	46	500
2/5/2019	22	1100	450	44	550
5/28/2019	51	980	280	52	540
8/28/2019	35	1100	410	54	460
11/4/2019	37	1200	420	47	480
2/18/2020	27	930	400	40	480
7/21/2020	21	920	330	46	470
10/20/2020	21	1000	360	47	510
4/16/2021	25	920	370	52	460
11/1/2021	25	870	330	56	430
8/3/2022	23	880	390	51	420
Median	23	1100	380	44	490
LowerQ.	20.5	925	330	36.5	460
UpperQ.	30	1250	435	51.5	520
Min	12	870	280	27	400
Max	54	1500	490	59	550
Mean	26.48	1123	386	43.71	487.1

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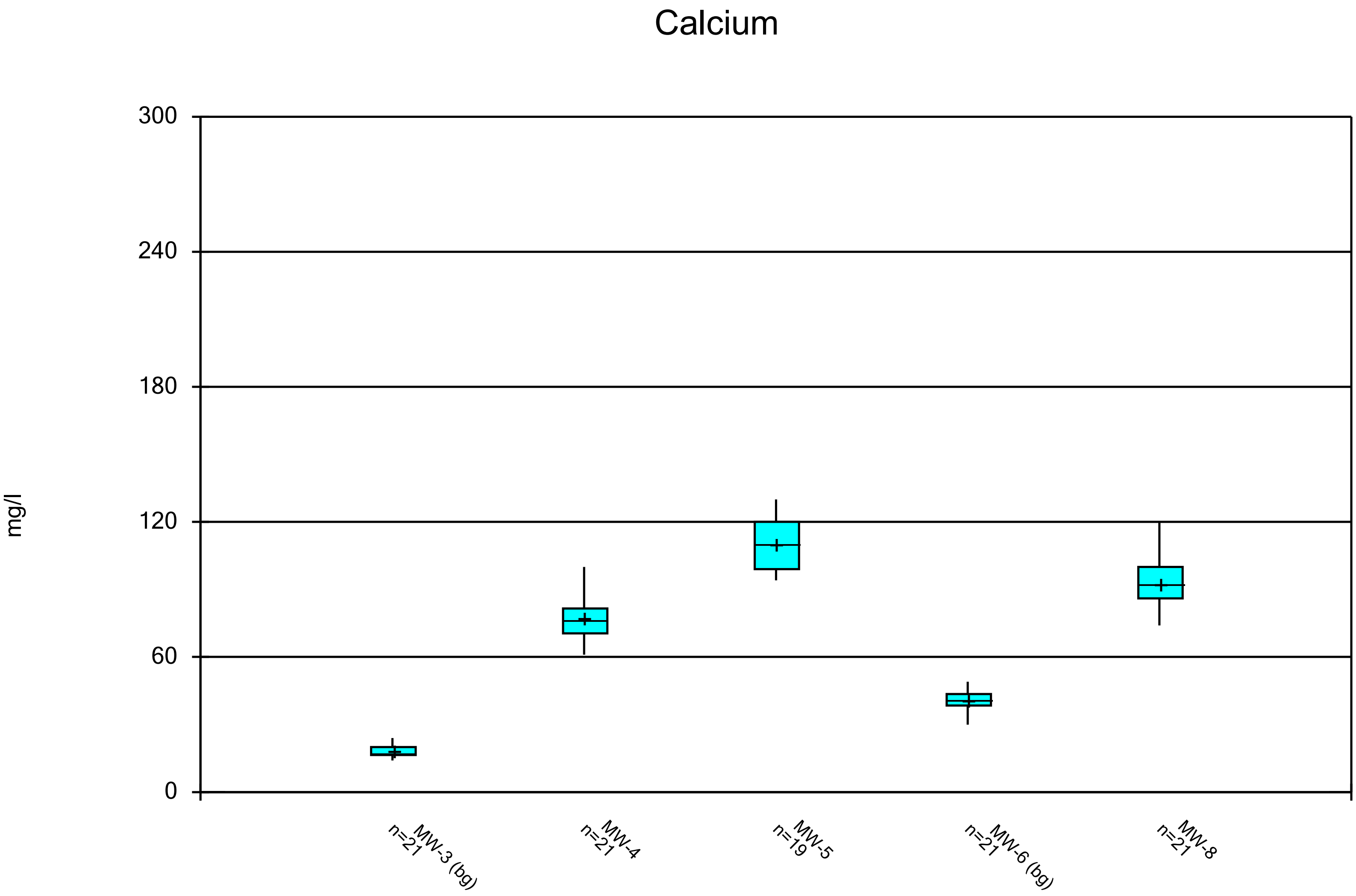


Box & Whiskers Plot Analysis Run 10/20/2022 1:41 PM View: n=18 no outliers removed

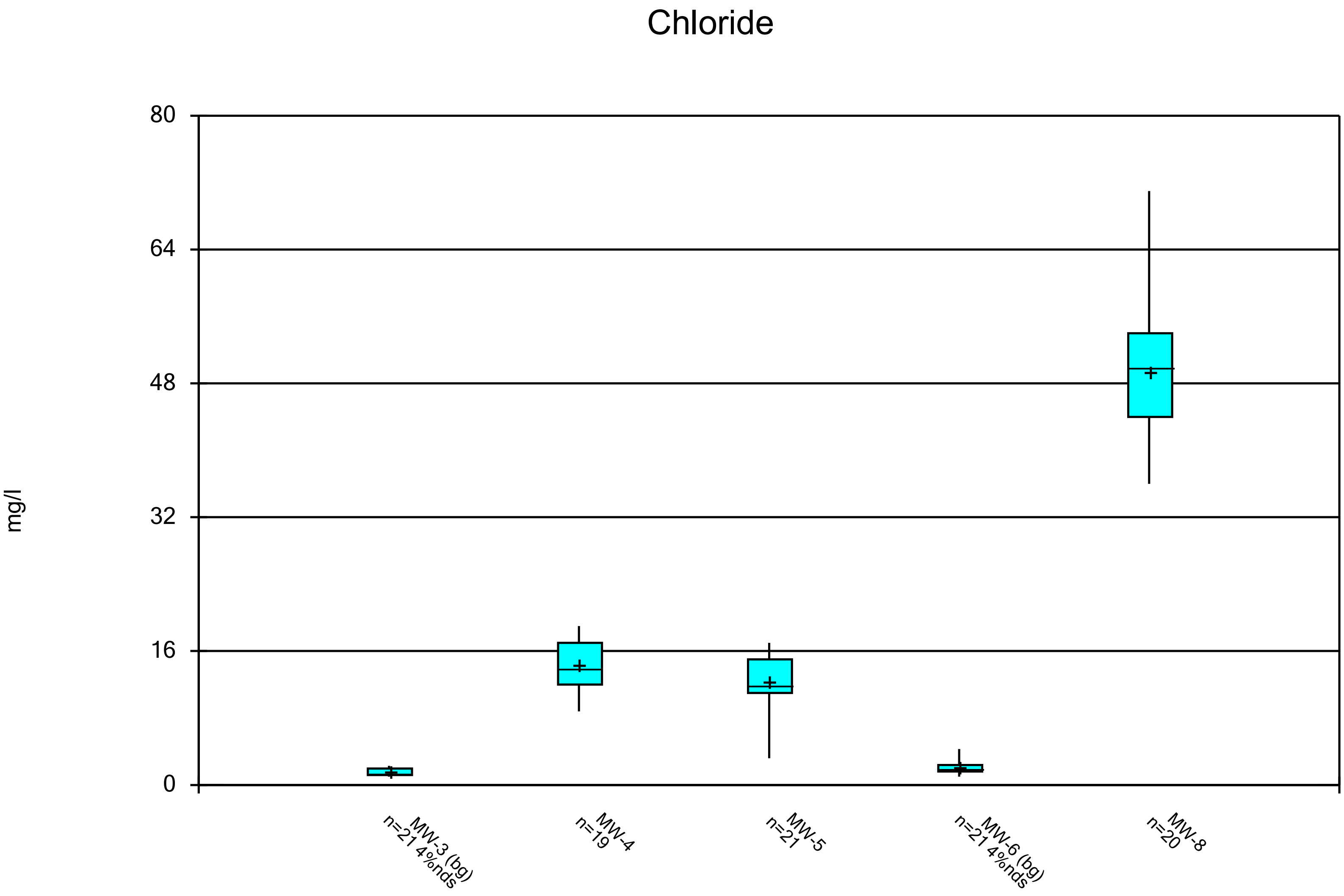
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Box & Whiskers Plot

Constituent: Calcium (mg/l)   Analysis Run 10/20/2022 1:43 PM   View: n=18 no outliers removed

SBMU-Sikeston Power Station   Client: GREDELL Engineering   Data: SBMU-SPS EDD File 09-28-17

	MW-3 (bg)	MW-4	MW-5	MW-6 (bg)	MW-8
11/30/2016	24	89	96	45	
1/24/2017	21	79	120	41	
2/22/2017	22	78	100	40	
3/20/2017	19	72	99	39	
4/27/2017	20	74	120	38	
5/17/2017	17	71	240 (o)	30	74
6/8/2017	19	61	97	36	92
7/13/2017	20	79	110	40	87
8/3/2017					80
8/15/2017					75
8/30/2017					88
9/14/2017					86
9/27/2017					92
10/31/2017	19	67	72 (o)	38	86
6/13/2018	20	80	130	41	
7/10/2018					120
11/26/2018	17	64	120	36	94
2/5/2019	17	100	120	40	110
5/28/2019	17	70	110	40	100
8/28/2019	15	83	110	44	93
11/4/2019	15	89	99	43	98
2/18/2020	16	67	110	41	93
7/21/2020	18	76	110	43	89
10/20/2020	17	80	120	49	110
4/16/2021	17	85	120	44	100
11/1/2021	14	76	94	47	80
8/3/2022	16	76	110	43	100
Median	17	76	110	41	92
LowerQ.	16.5	70.5	99	38.5	86
UpperQ.	20	81.5	120	43.5	100
Min	14	61	94	30	74
Max	24	100	130	49	120
Mean	18.1	76.95	110.3	40.86	92.71



Box & Whiskers Plot Analysis Run 10/20/2022 1:41 PM View: n=18 no outliers removed

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Box & Whiskers Plot

Constituent: Chloride (mg/l)   Analysis Run 10/20/2022 1:43 PM   View: n=18 no outliers removed

SBMU-Sikeston Power Station   Client: GREDELL Engineering   Data: SBMU-SPS EDD File 09-28-17

	MW-3 (bg)	MW-4	MW-5	MW-6 (bg)	MW-8
11/30/2016	2.3	18	16	2.8	
1/24/2017	2	15	15	2.4	
2/22/2017	1.9	13	11	2.1	
3/20/2017	1.8	12	11	2.1	
4/27/2017	2	14	12	2.3	
5/17/2017	1.5	14	11	1.8	46
6/8/2017	1.7	12	11	1.7	43
7/13/2017	2.2	13	10	1.6	36
8/3/2017					37
8/15/2017					36
8/30/2017					41
9/14/2017					53
9/27/2017					50
10/31/2017	2	17	13	1.7	45
6/13/2018	1.3	14	11	2.3	65
11/26/2018	1.5	8.8	17	1.5	45
2/5/2019	1.5	33 (o)	15	1.6	71
5/28/2019	1.3	11	10	2.5	53
8/28/2019	1.1	18	16	1	55
11/4/2019	1.4	2.1 (o)	3.2	1.4	2 (o)
2/18/2020	1.3	11	15	1.7	53
7/21/2020	1	14	14	<1	50
10/20/2020	1.2	17	15	2.4	56
4/16/2021	1.2	19	10	2	51
11/1/2021	1	16	13	4.3	45
8/3/2022	<1	14	12	4.3	56
Median	1.5	14	12	2	50
LowerQ.	1.2	12	11	1.6	44
UpperQ.	1.95	17	15	2.4	54
Min	1	8.8	3.2	1	36
Max	2.3	19	17	4.3	71
Mean	1.533	14.25	12.44	2.119	49.35

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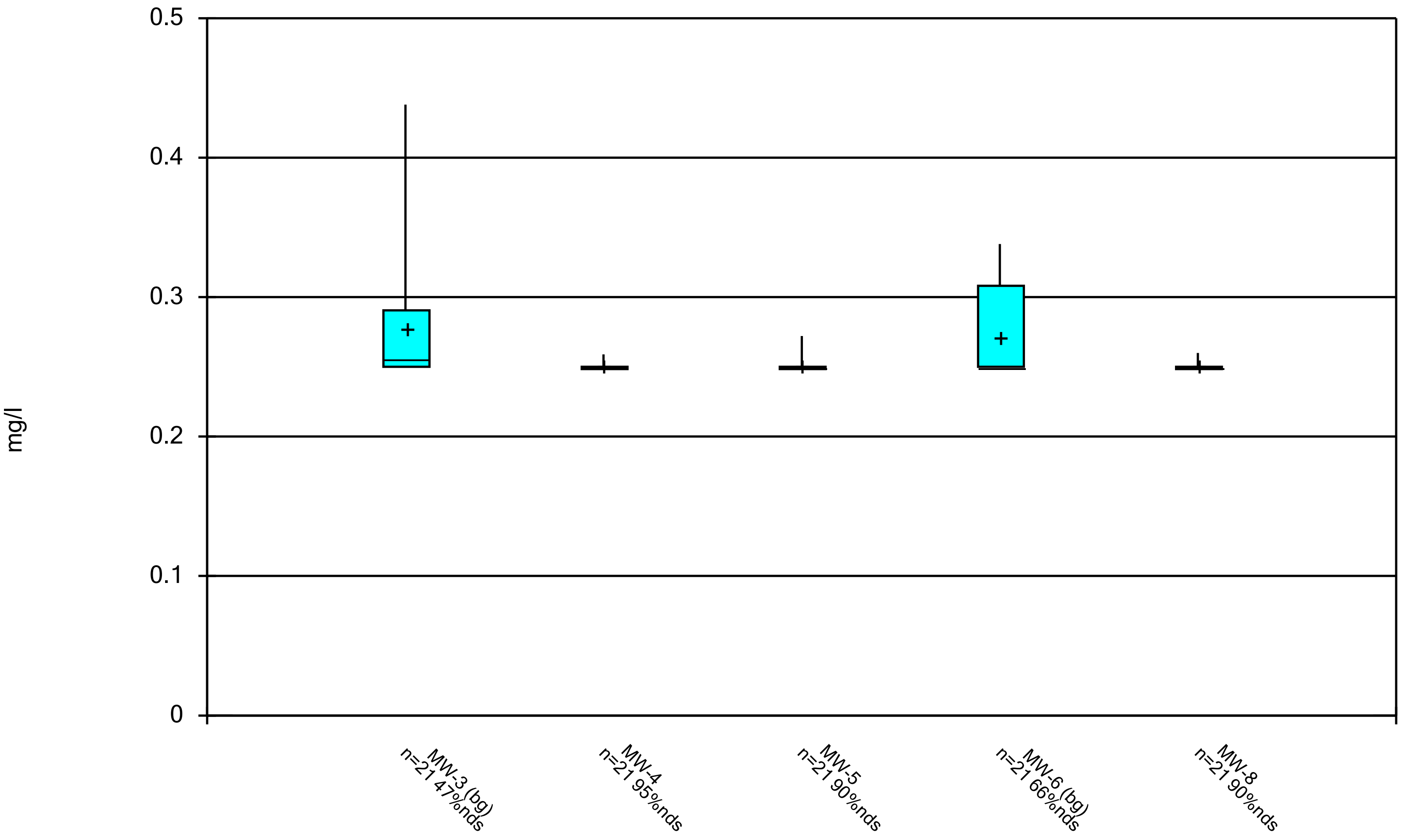
Fluoride



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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Box & Whiskers Plot

Constituent: Fluoride (mg/l)   Analysis Run 10/20/2022 1:43 PM   View: n=18 no outliers removed

SBMU-Sikeston Power Station   Client: GREDELL Engineering   Data: SBMU-SPS EDD File 09-28-17

	MW-3 (bg)	MW-4	MW-5	MW-6 (bg)	MW-8
11/30/2016	0.438	0.259	0.255	0.331	
1/24/2017	0.261	<0.25	<0.25	<0.25	
2/22/2017	0.29	<0.25	<0.25	0.269	
3/20/2017	0.286	<0.25	<0.25	<0.25	
4/27/2017	0.257	<0.25	<0.25	<0.25	
5/17/2017	<0.25	<0.25	<0.25	<0.25	<0.25
6/8/2017	0.276	<0.25	<0.25	<0.25	<0.25
7/13/2017	0.256	<0.25	<0.25	<0.25	<0.25
8/3/2017					<0.25
8/15/2017					<0.25
8/30/2017					<0.25
9/14/2017					<0.25
9/27/2017					<0.25
10/31/2017	0.331	<0.25	<0.25	0.303	<0.25
6/13/2018	0.291	<0.25	<0.25	<0.25	<0.25
11/26/2018	0.301	<0.25	<0.25	0.313	<0.25
2/5/2019	0.342	<0.25	0.272	0.338	0.26
5/28/2019	<0.25	<0.25	<0.25	<0.25	<0.25
8/28/2019	<0.25	<0.25	<0.25	<0.25	<0.25
11/4/2019	<0.25	<0.25	<0.25	0.319	<0.25
2/18/2020	<0.25	<0.25	<0.25	<0.25	<0.25
7/21/2020	<0.25	<0.25	<0.25	<0.25	<0.25
10/20/2020	<0.25	<0.25	<0.25	<0.25	<0.25
4/16/2021	<0.25	<0.25	<0.25	<0.25	<0.25
11/1/2021	<0.25	<0.25	<0.25	0.33	0.258
8/3/2022	<0.25	<0.25	<0.25	<0.25	<0.25
Median	0.256	0.25	0.25	0.25	0.25
LowerQ.	0.25	0.25	0.25	0.25	0.25
UpperQ.	0.2905	0.25	0.25	0.308	0.25
Min	0.25	0.25	0.25	0.25	0.25
Max	0.438	0.259	0.272	0.338	0.26
Mean	0.2776	0.2504	0.2513	0.2716	0.2509

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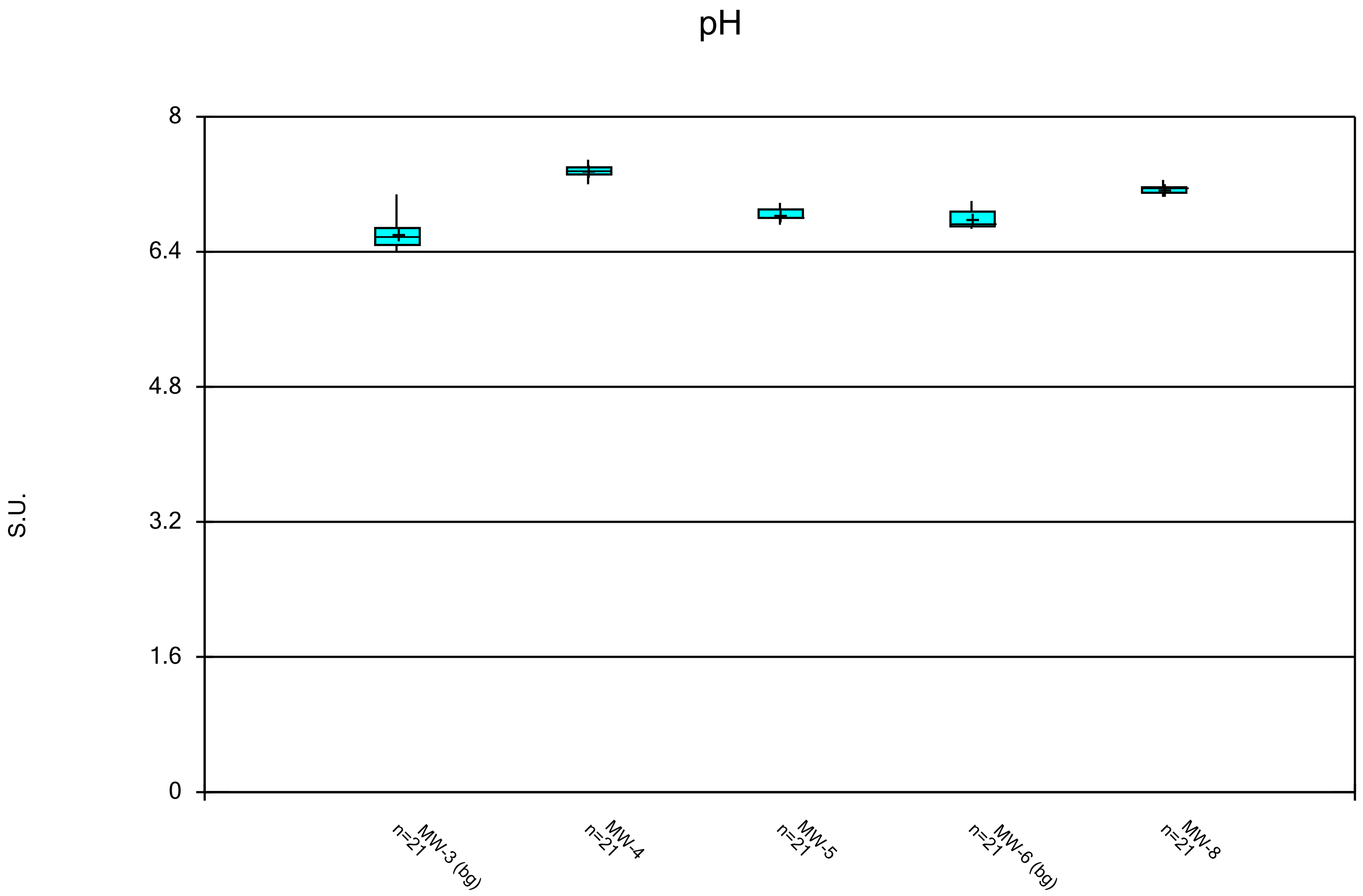

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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Box & Whiskers Plot

Constituent: pH (S.U.)   Analysis Run 10/20/2022 1:43 PM   View: n=18 no outliers removed

SBMU-Sikeston Power Station   Client: GREDELL Engineering   Data: SBMU-SPS EDD File 09-28-17

	MW-3 (bg)	MW-4	MW-5	MW-6 (bg)	MW-8
11/30/2016	7.08	7.46	6.97	6.92	
1/24/2017	6.88	7.45	6.9	6.87	
2/22/2017	6.93	7.49	6.97	6.89	
3/20/2017	6.68	7.37	6.85	6.73	
4/27/2017	6.68	7.38	6.8	6.72	
5/17/2017	6.59	7.38	6.81	6.76	7.16
6/8/2017	6.66	7.38	6.82	6.73	7.16
7/13/2017	6.71	7.37	6.98	6.98	7.25
8/3/2017					7.15
8/15/2017					7.16
8/30/2017					7.15
9/14/2017					7.13
9/27/2017					7.05
10/31/2017	6.64	7.31	6.89	6.72	7.09
6/13/2018	6.59	7.32	6.77	6.67	7.11
11/26/2018	6.5	7.36	6.74	6.72	7.17
2/5/2019	6.46	7.3	6.72	6.72	7.14
5/28/2019	6.4	7.3	6.9	6.7	7.1
8/28/2019	6.4		6.8	6.7	7.1
10/23/2019		7.3 (R)			
11/4/2019	6.4	7.2	6.8	6.7	7.1
2/18/2020	6.4	7.4	6.8	6.7	7.2
7/21/2020	6.5		6.8	6.7	7.1
8/4/2020		7.4			
10/20/2020	6.5	7.4	6.9	7	7.2
4/16/2021	6.6	7.4	6.9	6.8	7.2
11/1/2021	6.57	7.34	6.9	6.88	7.16
8/3/2022	6.65	7.32	6.82	6.86	7.08
Median	6.59	7.37	6.82	6.73	7.15
LowerQ.	6.48	7.315	6.8	6.7	7.1
UpperQ.	6.68	7.4	6.9	6.875	7.165
Min	6.4	7.2	6.72	6.67	7.05
Max	7.08	7.49	6.98	7	7.25
Mean	6.61	7.363	6.85	6.784	7.141

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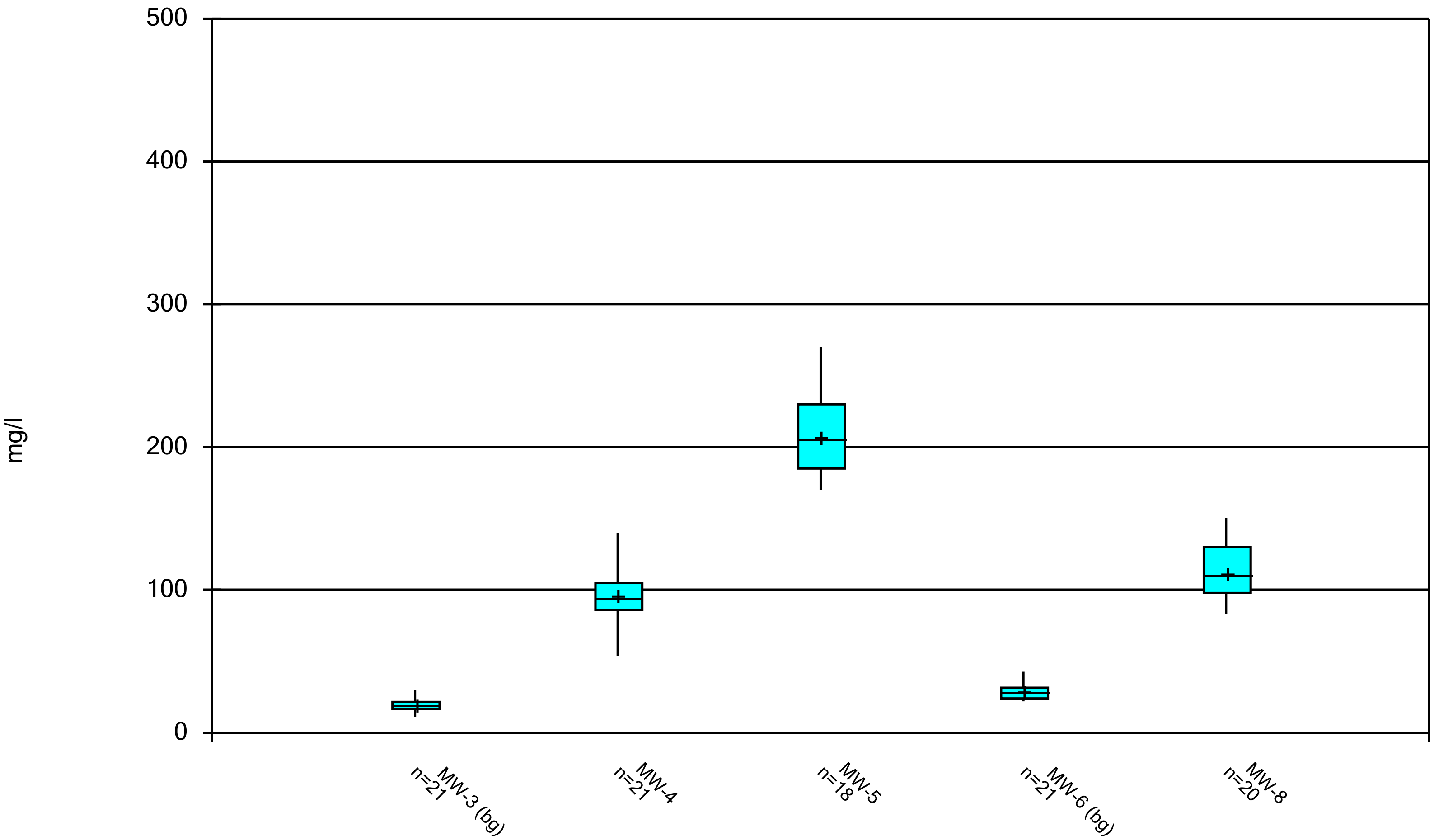
Sulfate



Box & Whiskers Plot Analysis Run 10/20/2022 1:41 PM View: n=18 no outliers removed

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

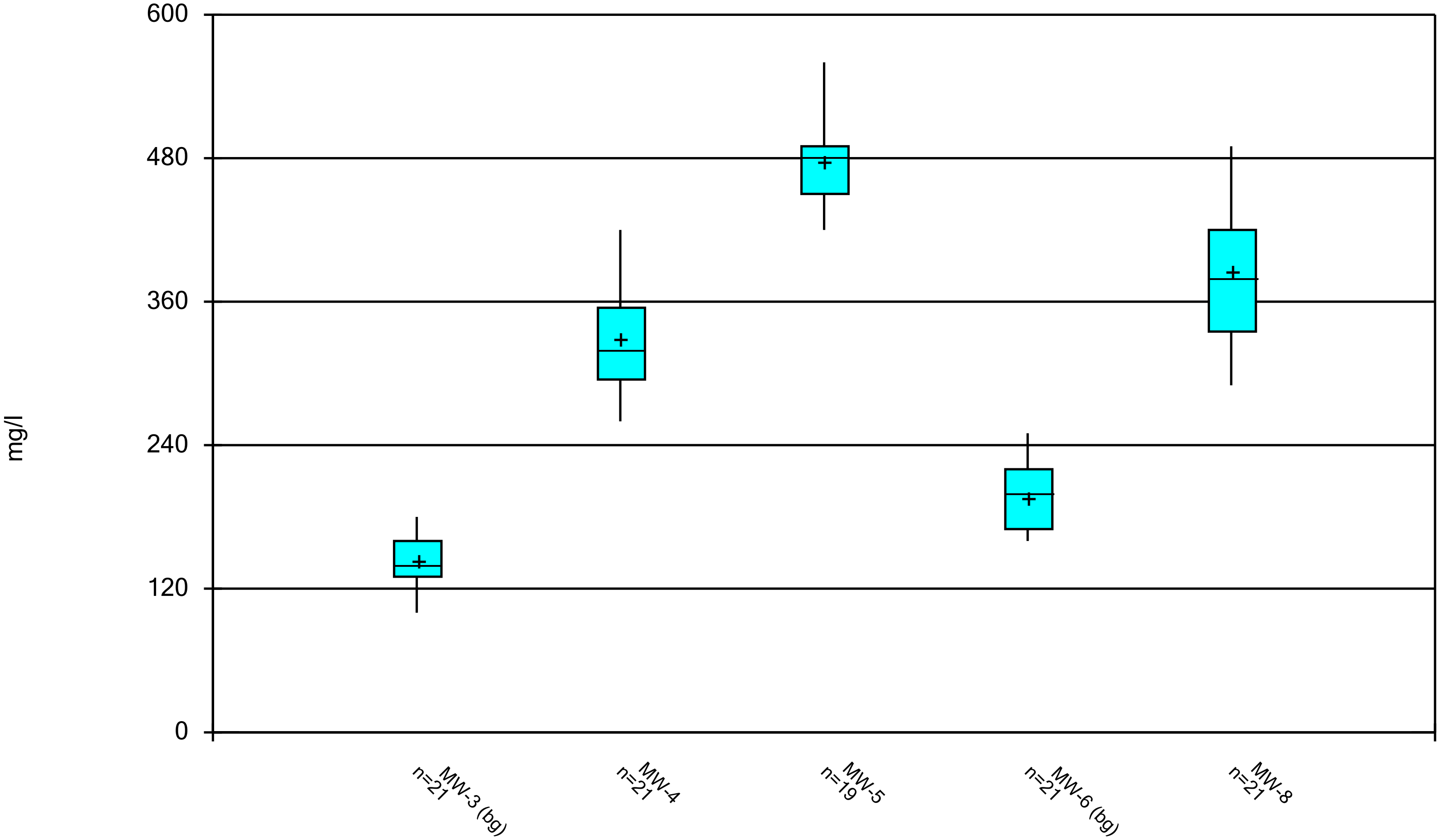
Box & Whiskers Plot

Constituent: Sulfate (mg/l) Analysis Run 10/20/2022 1:43 PM View: n=18 no outliers removed

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

	MW-3 (bg)	MW-4	MW-5	MW-6 (bg)	MW-8
11/30/2016	26	140	230	36	
1/24/2017	30	120	270	43	
2/22/2017	26	97	170	32	
3/20/2017	21	94	170	31	
4/27/2017	28	99	460 (o)	34	
5/17/2017	21	96	200	30	100
6/8/2017	22	86	180	29	110
7/13/2017	19	88	190	28	89
8/3/2017					89
8/15/2017					83
8/30/2017					96
9/14/2017					110
9/27/2017					120
10/31/2017	20	83	88 (o)	29	110
6/13/2018	17	86	240	32	
7/10/2018					150
11/26/2018	18	54	230	29	100
2/5/2019	20	140	200	27	140
5/28/2019	20	75	190	30	130
8/28/2019	18	110	190	24	110
11/4/2019	18	120	15 (o)	22	4.5 (o)
2/18/2020	21	66	210	24	110
7/21/2020	15	86	210	22	100
10/20/2020	15	96	220	24	130
4/16/2021	16	100	240	24	130
11/1/2021	14	95	170	27	94
8/3/2022	11	93	210	24	140
Median	20	95	205	29	110
LowerQ.	16.5	86	185	24	98
UpperQ.	21.5	105	230	31.5	130
Min	11	54	170	22	83
Max	30	140	270	43	150
Mean	19.81	96.38	206.7	28.62	112.1

Total Dissolved Solids



Box & Whiskers Plot Analysis Run 10/20/2022 1:41 PM View: n=18 no outliers removed

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Box & Whiskers Plot

Constituent: Total Dissolved Solids (mg/l) Analysis Run 10/20/2022 1:43 PM View: n=18 no outliers removed

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

	MW-3 (bg)	MW-4	MW-5	MW-6 (bg)	MW-8
11/30/2016	160	390	560	200	
1/24/2017	130	290	470	200	
2/22/2017	120	320	420	160	
3/20/2017	170	350	480	240	
4/27/2017	140	300	480	170	
5/17/2017	130	320	440	170	340
6/8/2017	160	340	480	180	380
7/13/2017	160	300	430	180	320
8/3/2017					330
8/15/2017					320
8/30/2017					290
9/14/2017					370
9/27/2017					420
10/31/2017	140	290	310 (o)	170	380
6/13/2018	130	290	480	160	430
11/26/2018	100	260	520	180	320
2/5/2019	160	420	480	160	390
7/23/2019	140	340	480	180	420
8/28/2019	140	300	480	200	360
11/4/2019	130	400	440	210	400
3/30/2020	180	300	450	230	480
7/21/2020	140	290	470	220	420
10/20/2020	130	330	590 (o)	250	460
4/16/2021	150	340	510	200	400
11/1/2021		360	490	220	360
12/27/2021	170				
8/3/2022	130	390		230	490
9/12/2022			510		
Median	140	320	480	200	380
LowerQ.	130	295	450	170	335
UpperQ.	160	355	490	220	420
Min	100	260	420	160	290
Max	180	420	560	250	490
Mean	143.3	329.5	477.4	195.7	384.8

Appendix 7

Prediction Limit Charts

Prediction Limit

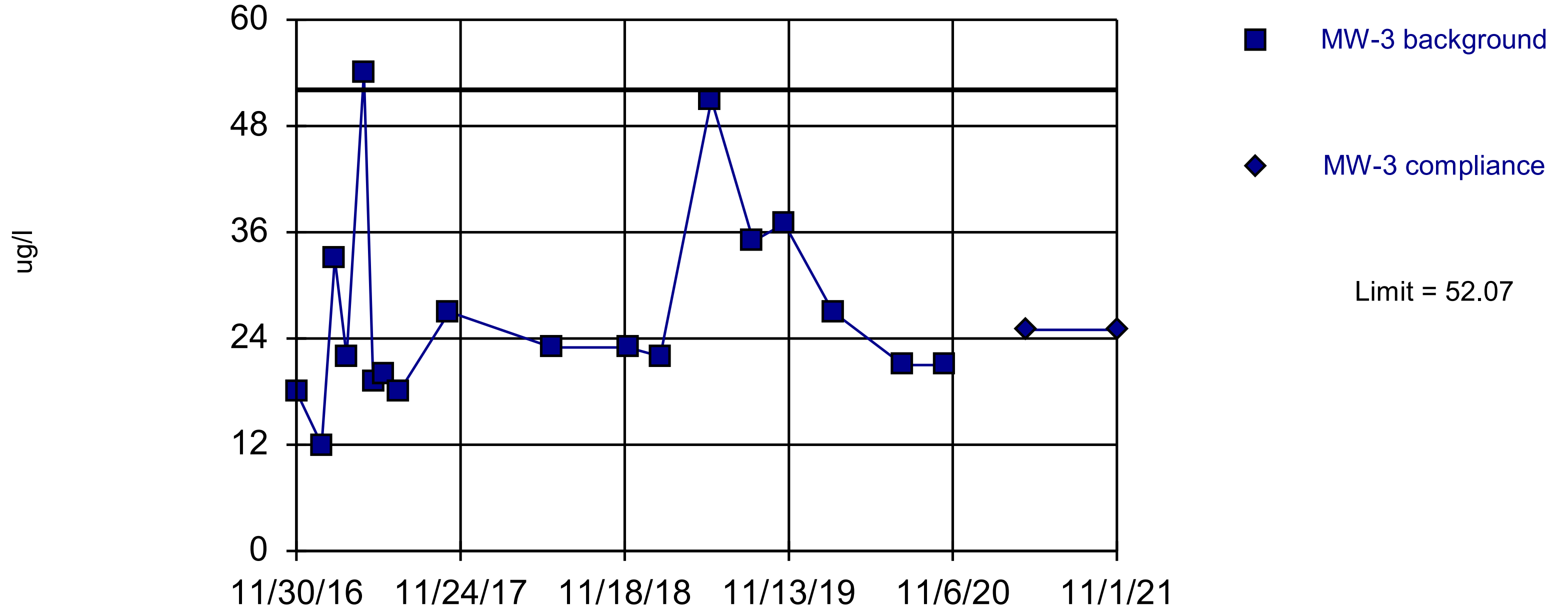
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Printed 10/19/2022, 1:16 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Boron (ug/l)	MW-3	52.07	n/a	11/1/2021	25	No	18	0	sqrt(x)	0.001504	Param Intra 1 of 2
Boron (ug/l)	MW-4	1549	n/a	11/1/2021	870	No	18	0	No	0.001504	Param Intra 1 of 2
Boron (ug/l)	MW-5	537.2	n/a	11/1/2021	330	No	17	0	No	0.001504	Param Intra 1 of 2
Boron (ug/l)	MW-8	577.9	n/a	11/1/2021	430	No	18	0	No	0.001504	Param Intra 1 of 2
Calcium (mg/l)	MW-3	23.56	n/a	11/1/2021	14	No	18	0	No	0.001504	Param Intra 1 of 2
Calcium (mg/l)	MW-4	97.16	n/a	11/1/2021	76	No	18	0	No	0.001504	Param Intra 1 of 2
Calcium (mg/l)	MW-5	132.9	n/a	11/1/2021	94	No	16	0	No	0.001504	Param Intra 1 of 2
Calcium (mg/l)	MW-6	48.81	n/a	11/1/2021	47	No	18	0	No	0.001504	Param Intra 1 of 2
Chloride (mg/l)	MW-3	2.43	n/a	11/1/2021	1	No	18	0	No	0.001504	Param Intra 1 of 2
Chloride (mg/l)	MW-4	19.57	n/a	11/1/2021	16	No	16	0	No	0.001504	Param Intra 1 of 2
Chloride (mg/l)	MW-5	19.46	n/a	11/1/2021	13	No	18	0	No	0.001504	Param Intra 1 of 2
Chloride (mg/l)	**MW-6**	**2.954**	**n/a**	**11/1/2021**	**4.3**	**Yes**	**18**	**5.556**	**No**	**0.001504**	**Param Intra 1 of 2**
Fluoride (mg/l)	MW-3	0.438	n/a	11/1/2021	0.25ND	No	18	38.89	n/a	0.005373	NP Intra (normality) ...
Fluoride (mg/l)	MW-4	0.259	n/a	11/1/2021	0.25ND	No	18	94.44	n/a	0.005373	NP Intra (NDs) 1 of 2
Fluoride (mg/l)	MW-5	0.272	n/a	11/1/2021	0.25ND	No	18	88.89	n/a	0.005373	NP Intra (NDs) 1 of 2
Fluoride (mg/l)	MW-6	0.338	n/a	11/1/2021	0.33	No	18	66.67	n/a	0.005373	NP Intra (NDs) 1 of 2
Fluoride (mg/l)	MW-8	0.26	n/a	11/1/2021	0.258	No	18	94.44	n/a	0.005373	NP Intra (NDs) 1 of 2
pH (S.U.)	MW-4	7.516	7.221	11/1/2021	7.34	No	17	0	No	0.000752	Param Intra 1 of 2
pH (S.U.)	MW-5	7.011	6.68	11/1/2021	6.9	No	18	0	No	0.000752	Param Intra 1 of 2
pH (S.U.)	MW-8	7.242	7.038	11/1/2021	7.16	No	18	0	No	0.000752	Param Intra 1 of 2
Sulfate (mg/l)	MW-3	29.71	n/a	11/1/2021	14	No	18	0	No	0.001504	Param Intra 1 of 2
Sulfate (mg/l)	MW-4	144.5	n/a	11/1/2021	95	No	18	0	No	0.001504	Param Intra 1 of 2
Sulfate (mg/l)	MW-5	267.4	n/a	11/1/2021	170	No	15	0	No	0.001504	Param Intra 1 of 2
Sulfate (mg/l)	MW-6	40.3	n/a	11/1/2021	27	No	18	0	No	0.001504	Param Intra 1 of 2
Sulfate (mg/l)	MW-8	149.9	n/a	11/1/2021	94	No	17	0	No	0.001504	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-3	183.4	n/a	12/27/2021	170	No	18	0	No	0.001504	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-4	414.6	n/a	11/1/2021	360	No	18	0	No	0.001504	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-5	545.9	n/a	11/1/2021	490	No	16	0	No	0.001504	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-6	251.5	n/a	11/1/2021	220	No	18	0	No	0.001504	Param Intra 1 of 2
Boron (ug/l)	MW-6	61.29	n/a	11/1/2021	56	No	7	0	No	0.001504	Param Intra 1 of 2
Calcium (mg/l)	MW-8	120	n/a	11/1/2021	80	No	8	0	No	0.001504	Param Intra 1 of 2
Chloride (mg/l)	MW-8	78.74	n/a	11/1/2021	45	No	8	0	No	0.001504	Param Intra 1 of 2
pH (S.U.)	MW-3	6.772	6.254	8/3/2022	6.65	No	12	0	No	0.000752	Param Intra 1 of 2
pH (S.U.)	MW-6	7	6.67	11/1/2021	6.88	No	17	0	n/a	0.01183	NP Intra (normality) ...
Total Dissolved Solids (mg/l)	MW-8	547.4	n/a	11/1/2021	360	No	8	0	No	0.001504	Param Intra 1 of 2

Within Limit

Boron

Intrawell Parametric

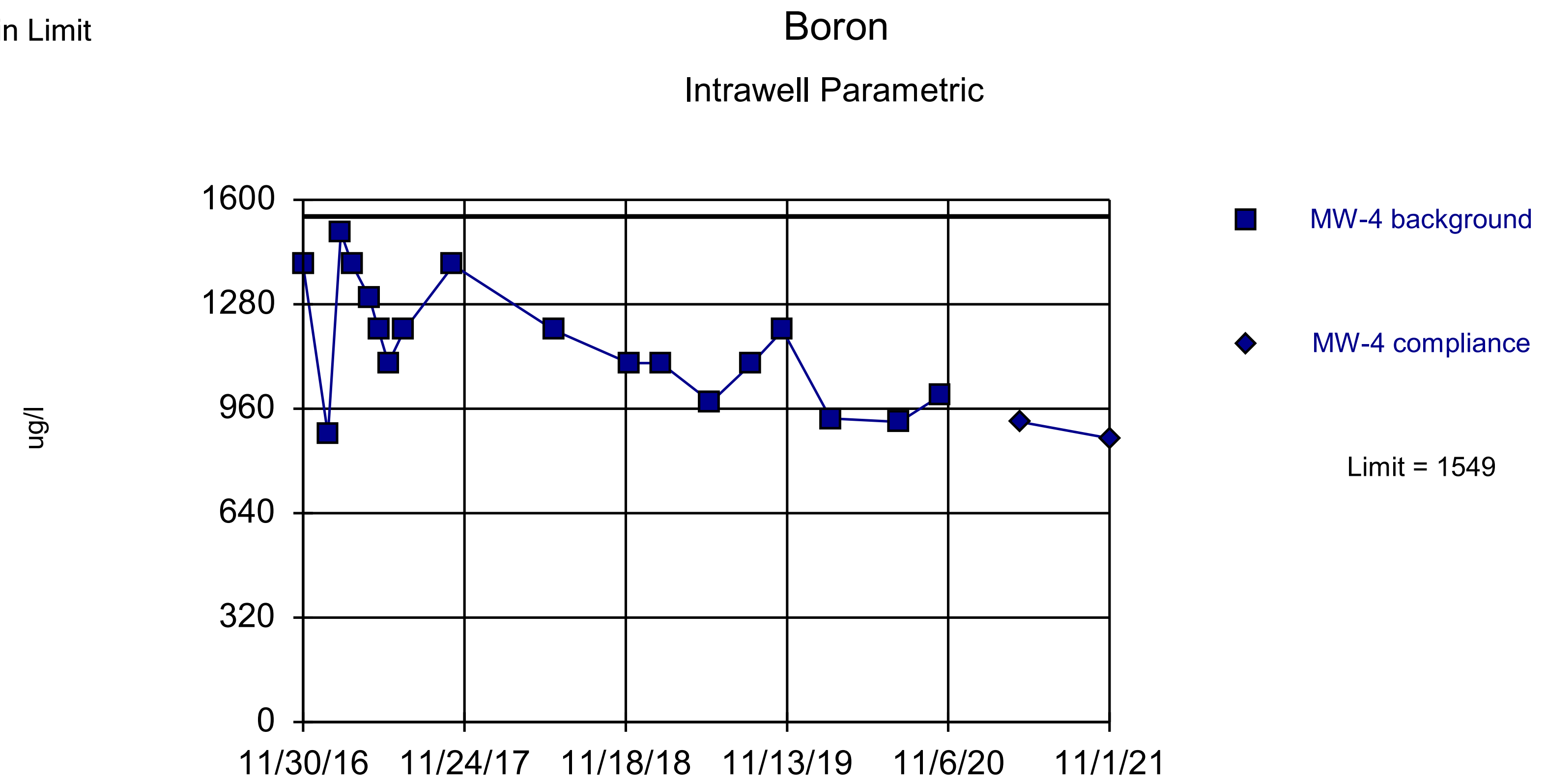


Background Data Summary (based on square root transformation): Mean=5.086, Std. Dev.=1.013, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8996, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Prediction Limit Analysis Run 10/19/2022 1:11 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit



Background Data Summary: Mean=1162, Std. Dev.=184, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.948, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

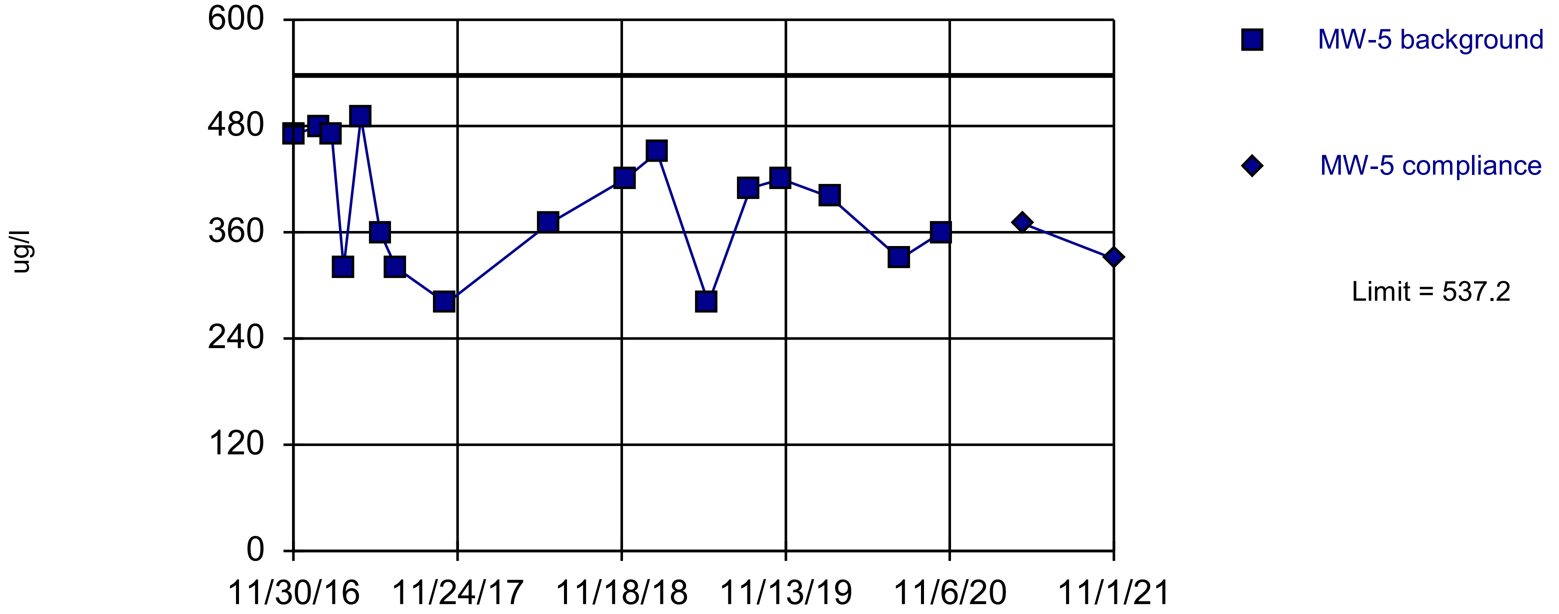
Prediction Limit Analysis Run 10/19/2022 1:11 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Boron

Intrawell Parametric



Background Data Summary: Mean=390, Std. Dev.=69.19, n=17. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9407, critical = 0.851. Kappa = 2.127 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

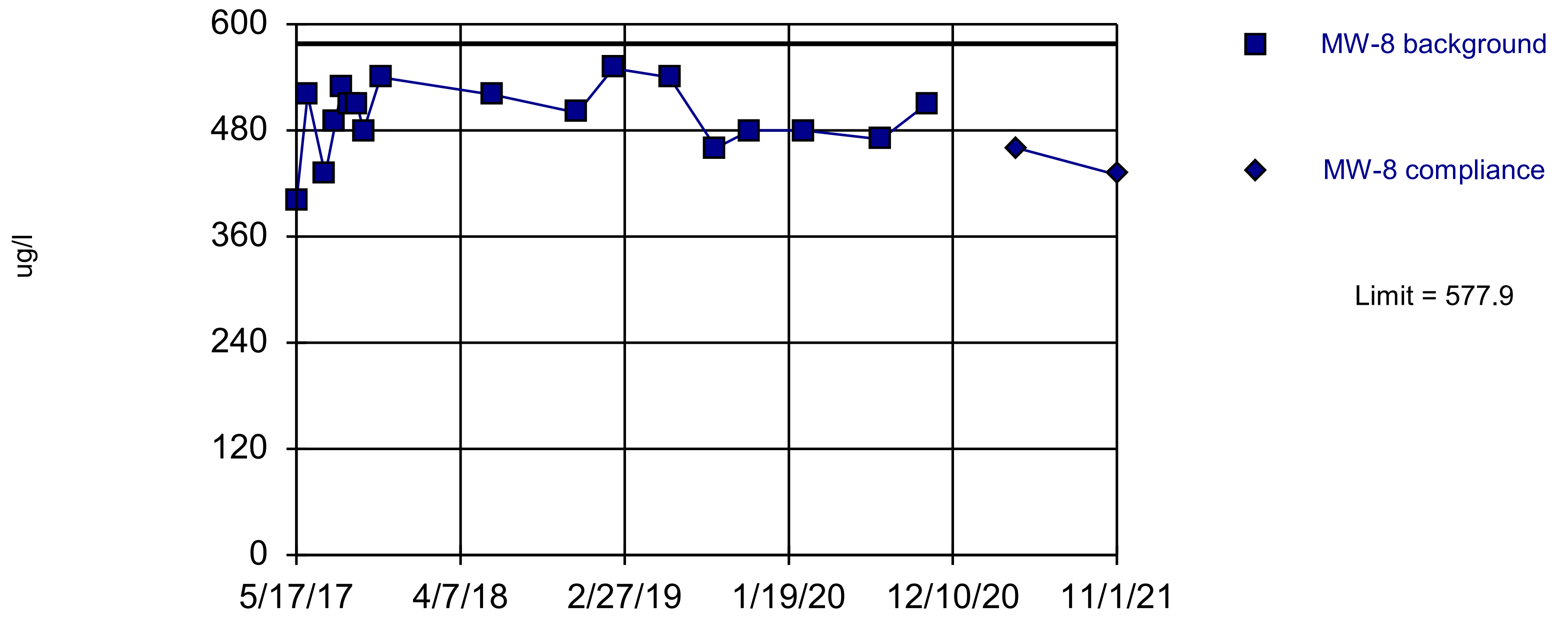
Prediction Limit Analysis Run 10/19/2022 1:11 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Boron

Intrawell Parametric



Background Data Summary: Mean=495.6, Std. Dev.=39.14, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9399, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

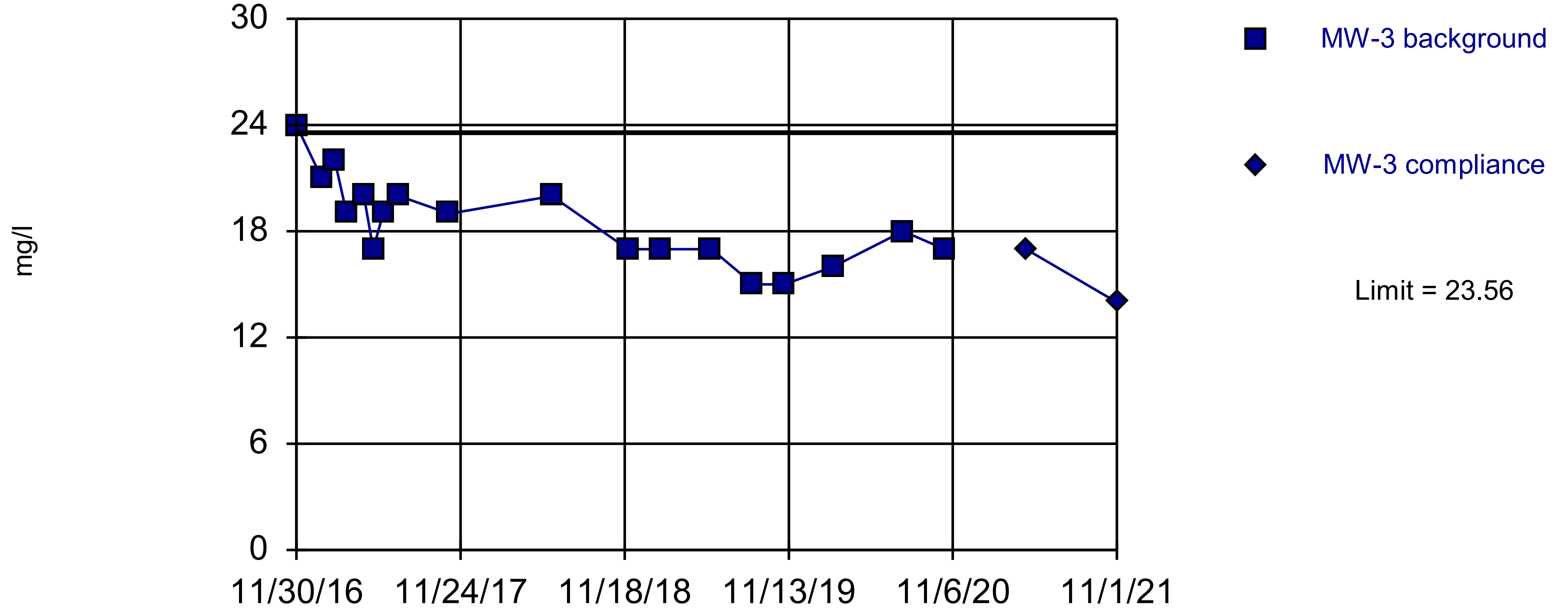
Prediction Limit Analysis Run 10/19/2022 1:11 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Calcium

Intrawell Parametric



Background Data Summary: Mean=18.5, Std. Dev.=2.407, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9507, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

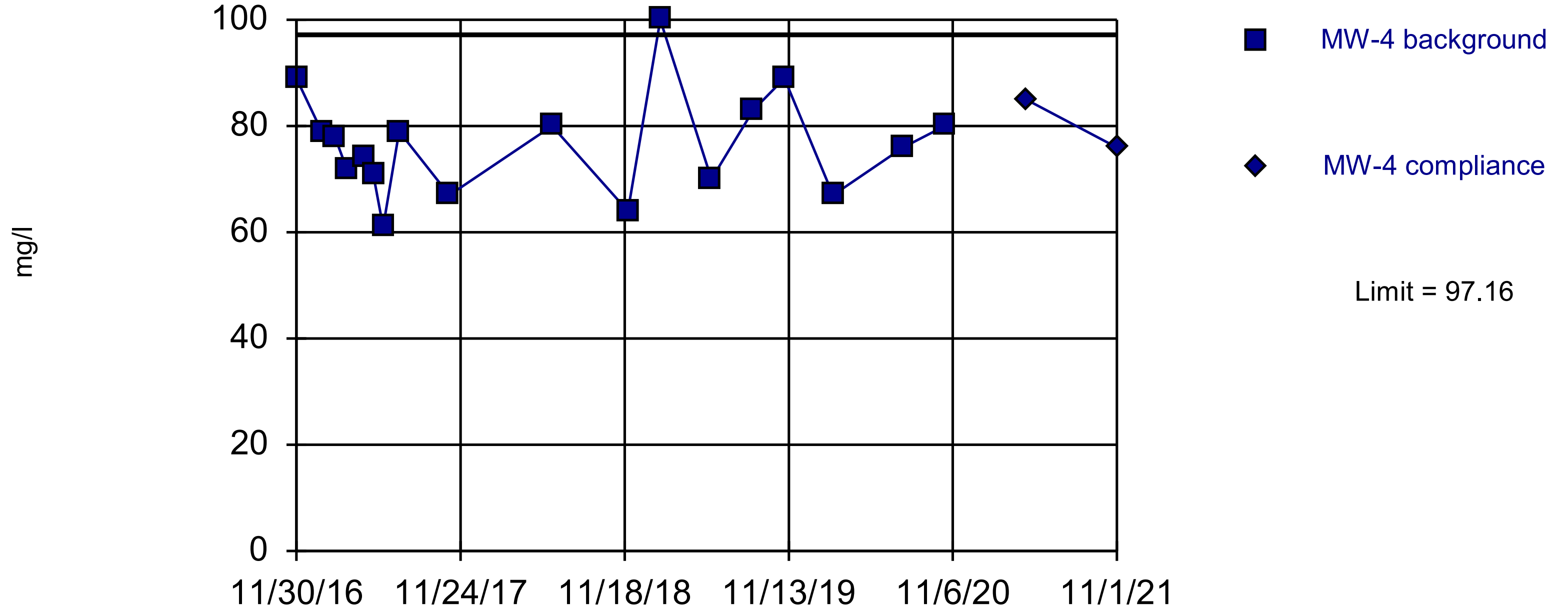
Prediction Limit Analysis Run 10/19/2022 1:11 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Calcium

Intrawell Parametric



Background Data Summary: Mean=76.61, Std. Dev.=9.769, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9656, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

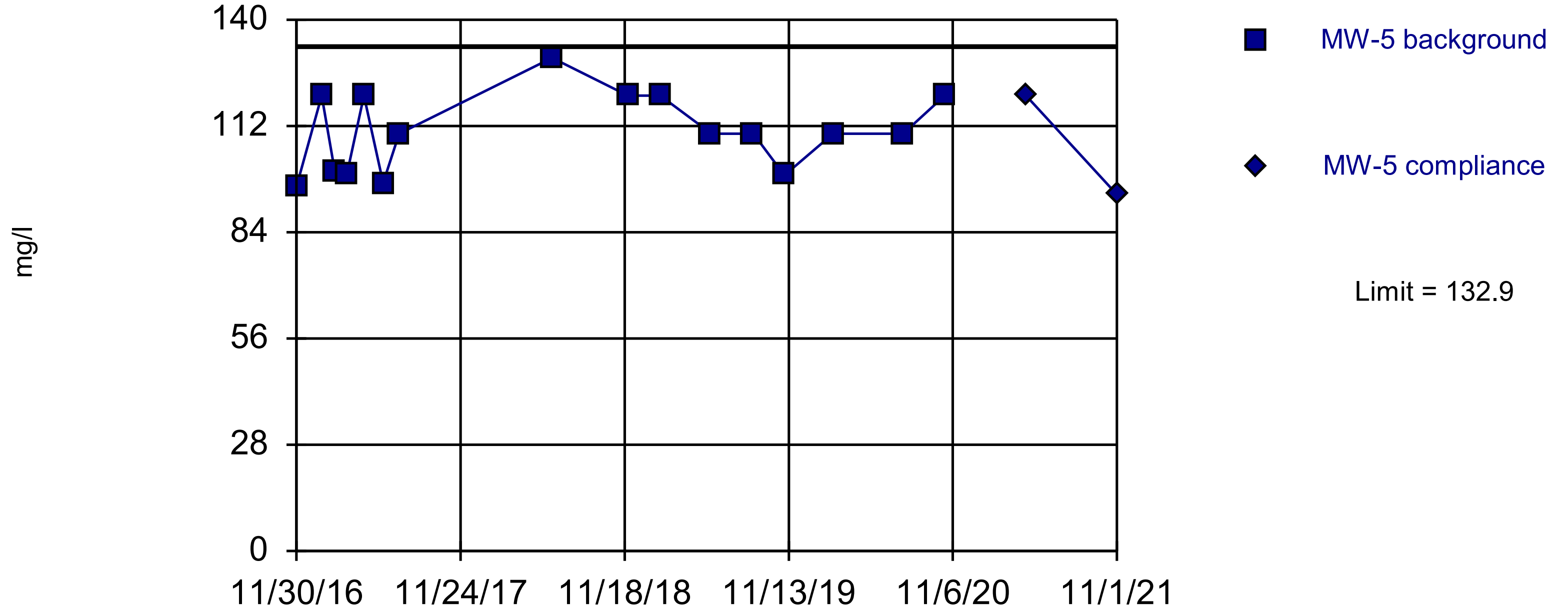
Prediction Limit Analysis Run 10/19/2022 1:11 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Calcium

Intrawell Parametric

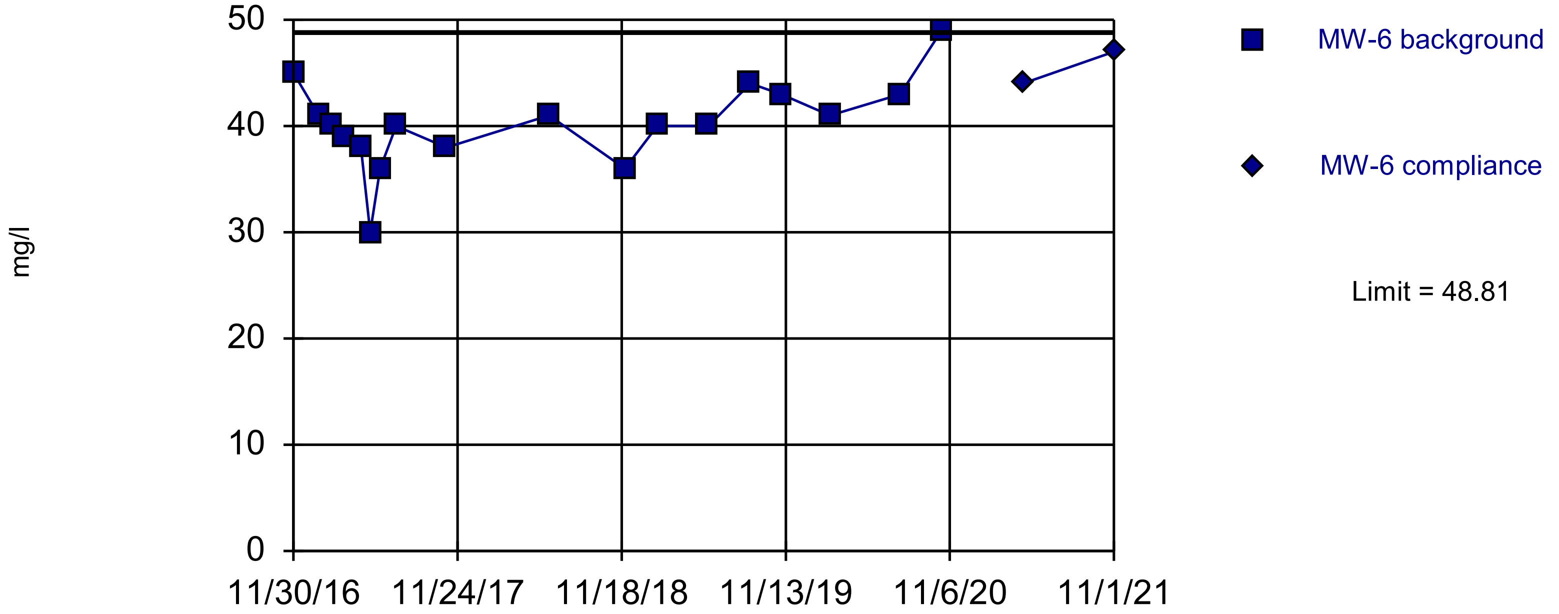


Background Data Summary: Mean=110.7, Std. Dev.=10.33, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9039, critical = 0.844. Kappa = 2.15 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Within Limit

Calcium

Intrawell Parametric

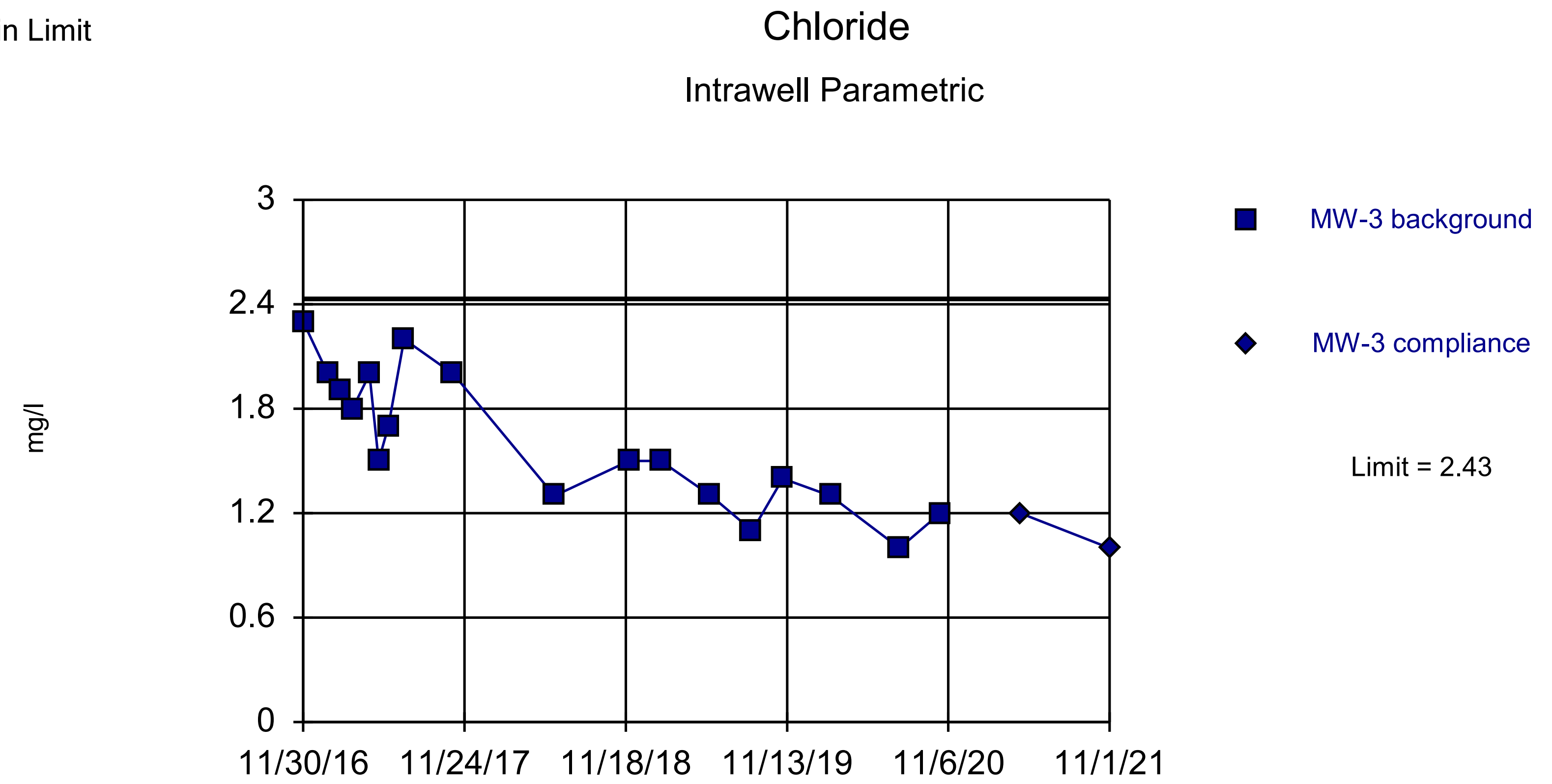


Background Data Summary: Mean=40.22, Std. Dev.=4.081, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9539, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Prediction Limit Analysis Run 10/19/2022 1:11 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit



Background Data Summary: Mean=1.611, Std. Dev.=0.3894, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9507, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

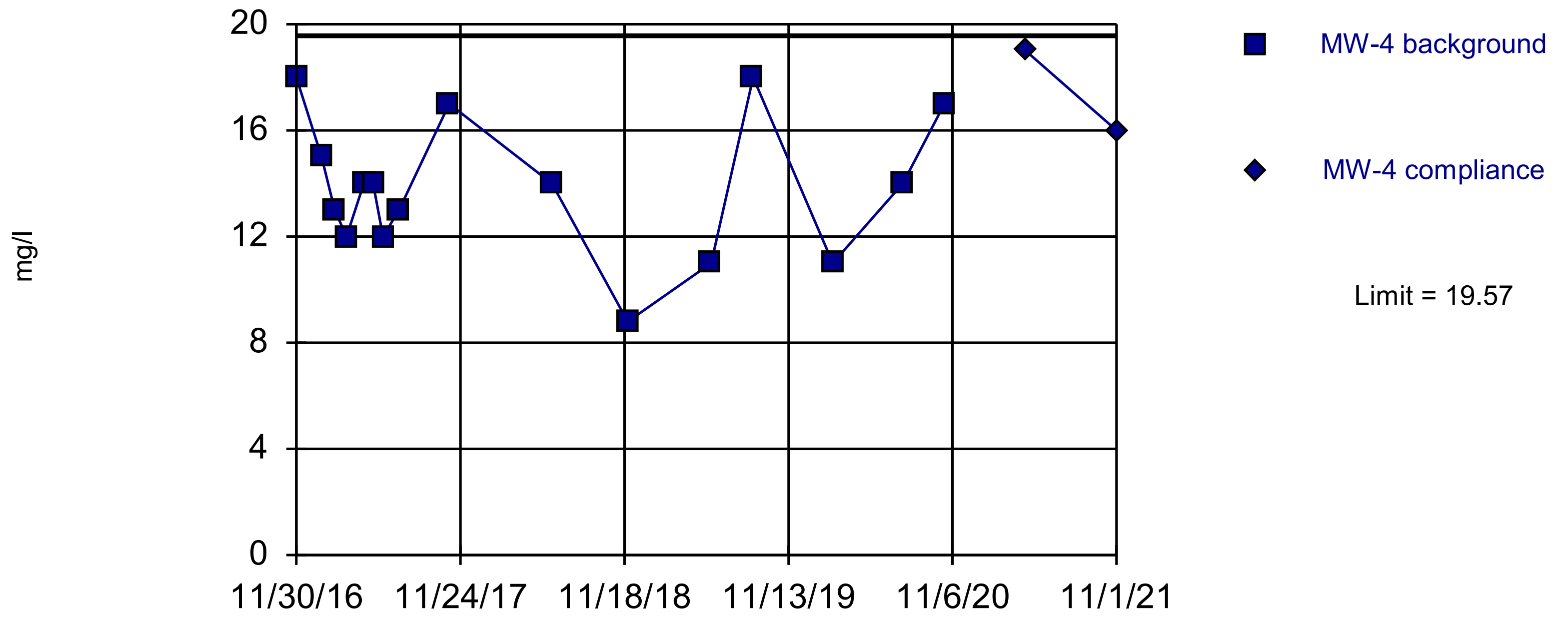
Prediction Limit Analysis Run 10/19/2022 1:11 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Chloride

Intrawell Parametric



Background Data Summary: Mean=13.86, Std. Dev.=2.655, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9515, critical = 0.844. Kappa = 2.15 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

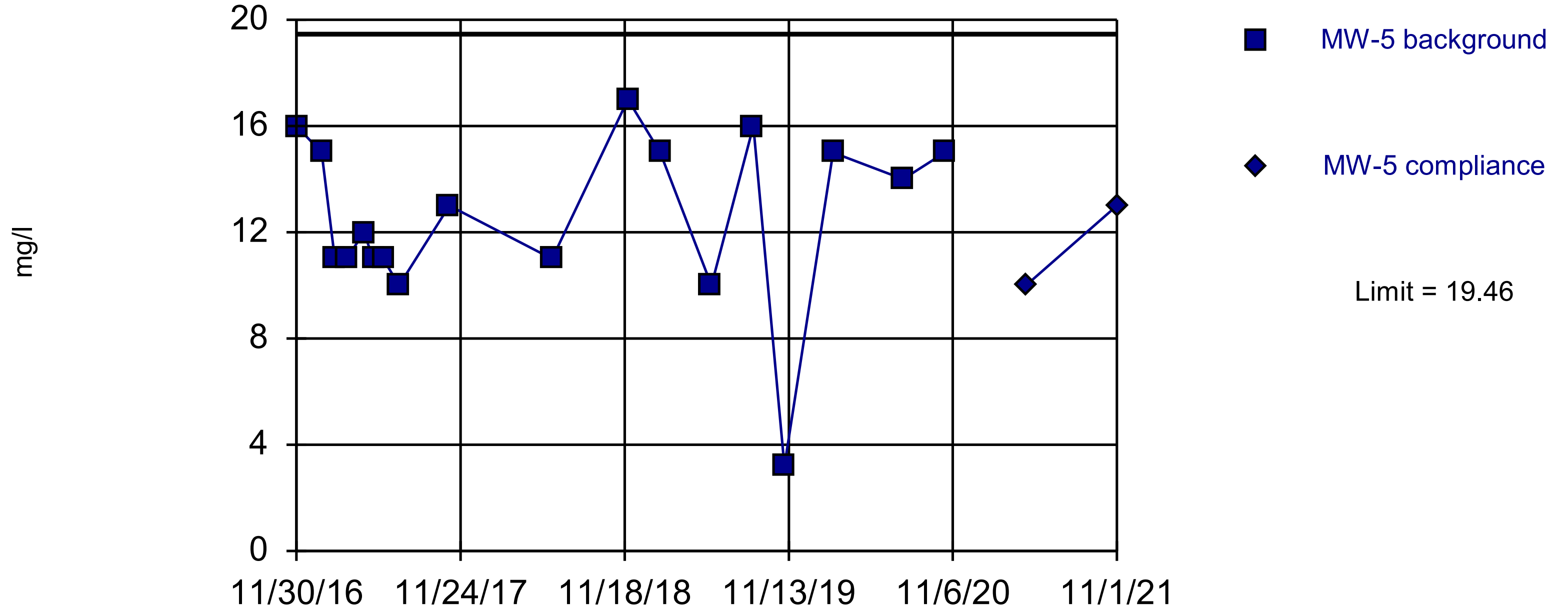
Prediction Limit Analysis Run 10/19/2022 1:11 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Chloride

Intrawell Parametric



Background Data Summary: Mean=12.57, Std. Dev.=3.278, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8761, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Prediction Limit Analysis Run 10/19/2022 1:11 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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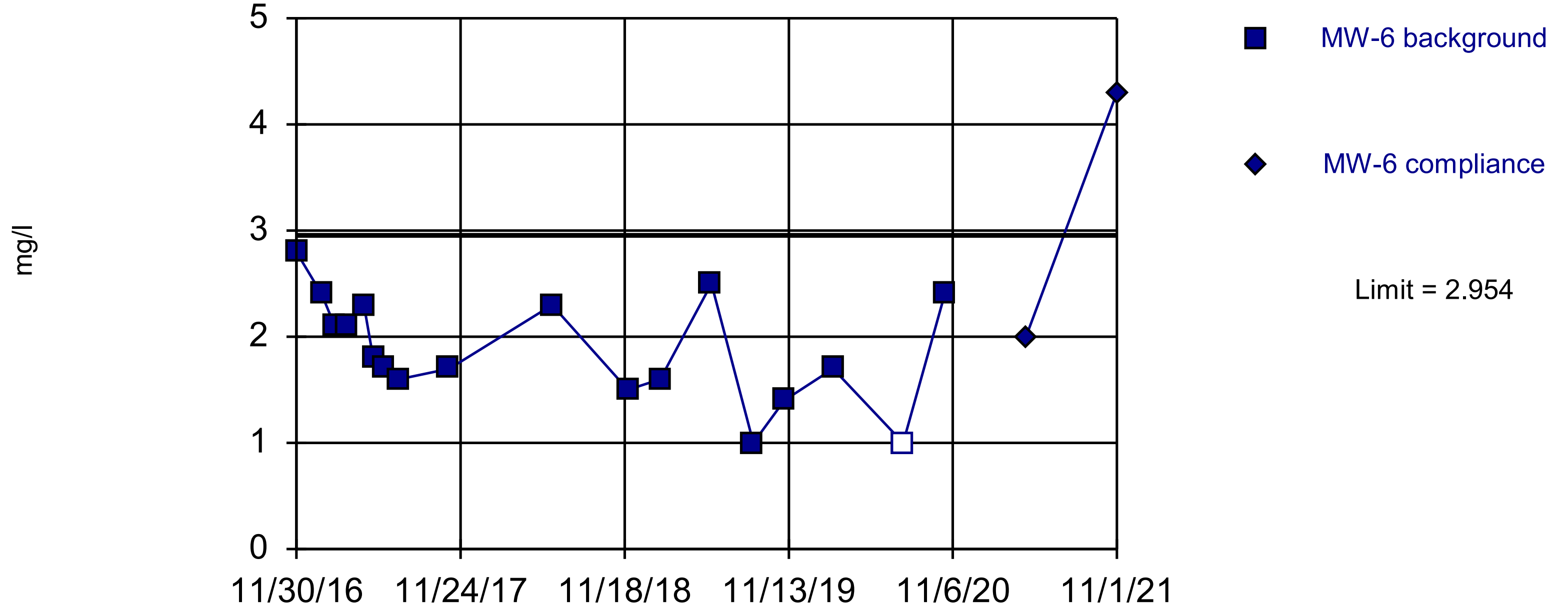
Hollow symbols indicate censored values.

Exceeds Limit

Chloride

Intrawell Parametric



Background Data Summary: Mean=1.883, Std. Dev.=0.509, n=18, 5.556% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9587, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Prediction Limit Analysis Run 10/19/2022 1:11 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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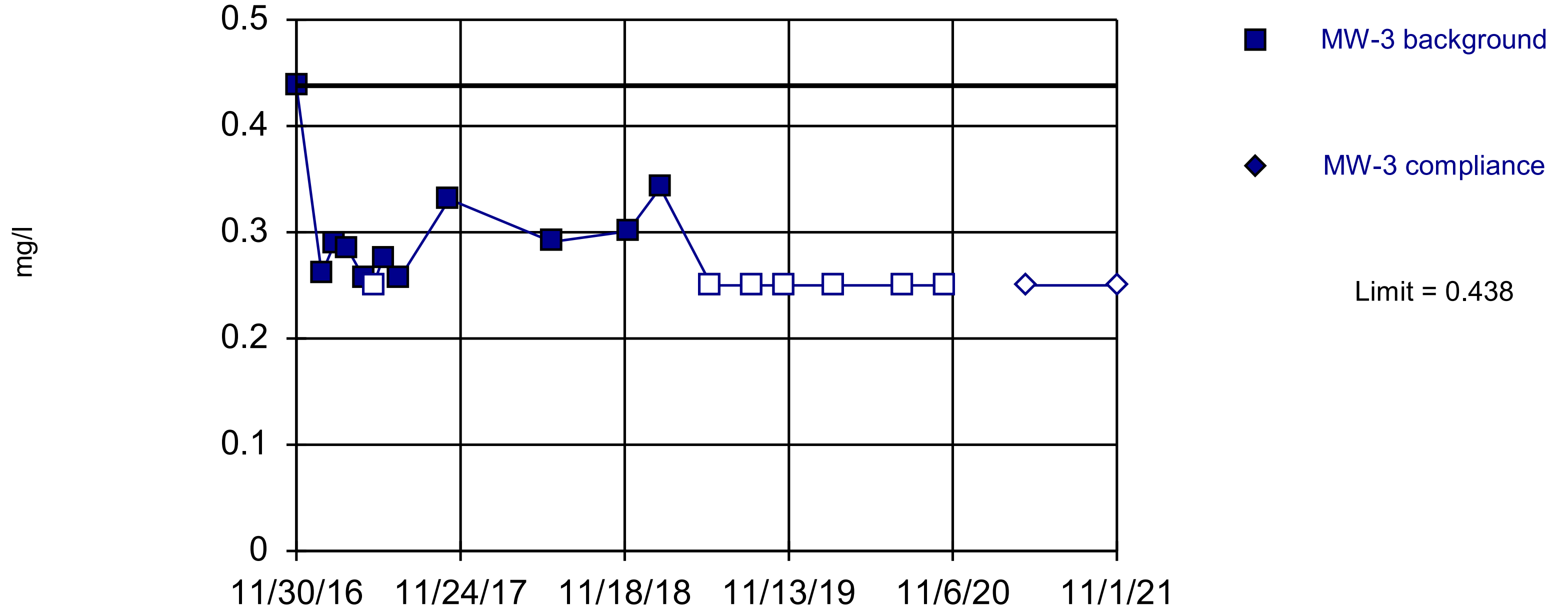
Hollow symbols indicate censored values.

Within Limit

Fluoride

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 18 background values. 38.89% NDs. Well-constituent pair annual alpha = 0.01072. Individual comparison alpha = 0.005373 (1 of 2).

Prediction Limit Analysis Run 10/19/2022 1:11 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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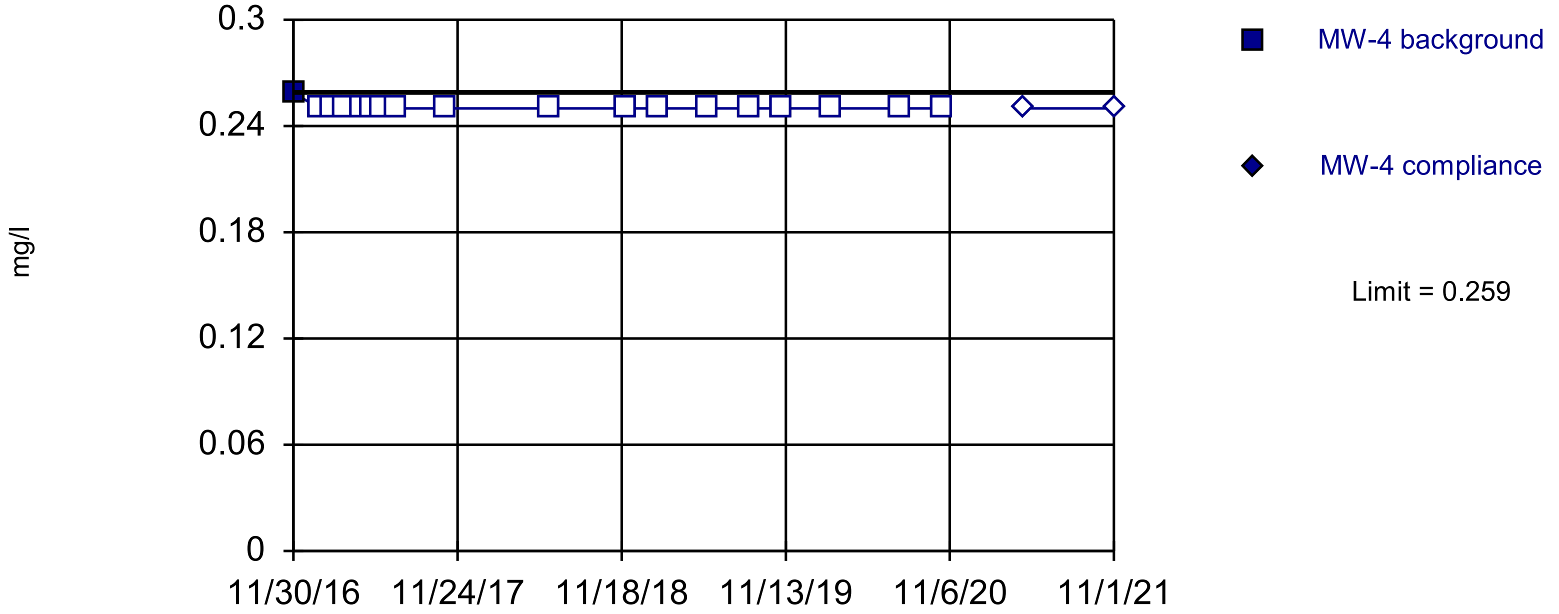
Hollow symbols indicate censored values.

Within Limit

Fluoride

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 18 background values. 94.44% NDs. Well-constituent pair annual alpha = 0.01072. Individual comparison alpha = 0.005373 (1 of 2).

Prediction Limit Analysis Run 10/19/2022 1:11 PM View: Everything Minus Detrended Data

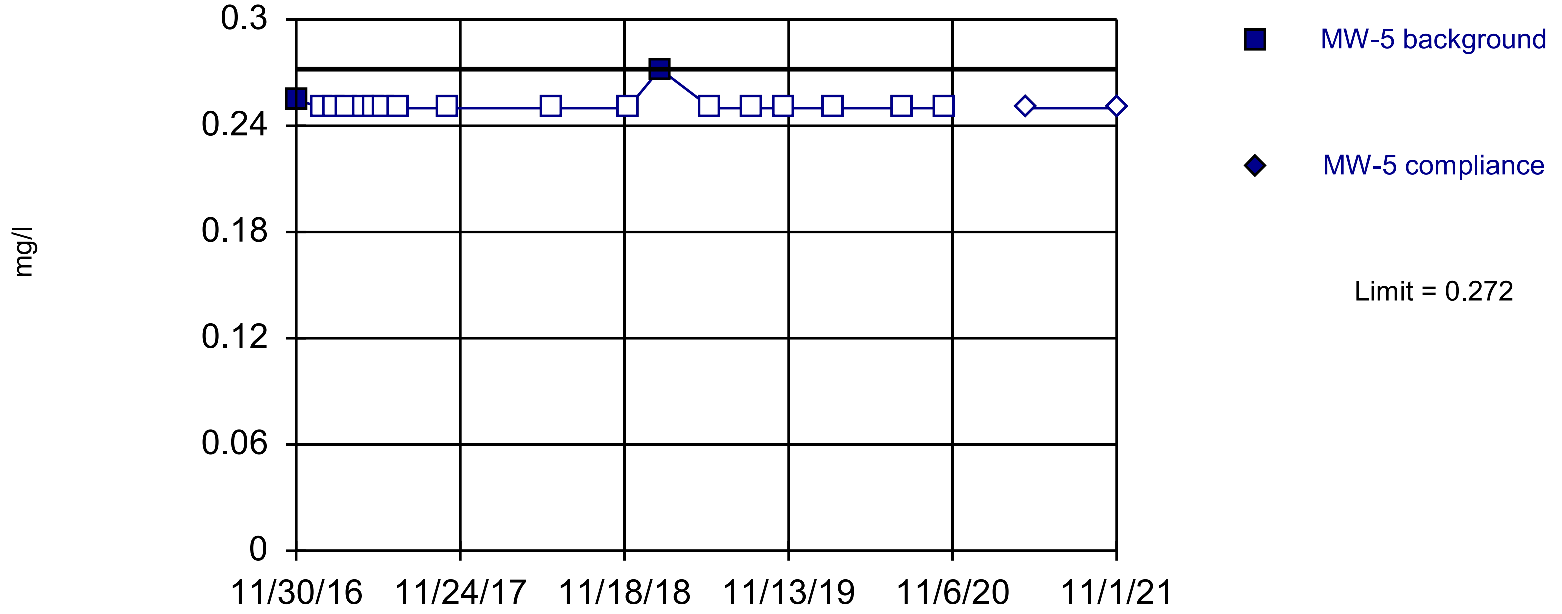
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v.9.6.35 Software licensed to GREDELL Engineering. UG
Hollow symbols indicate censored values.

Within Limit

Fluoride

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 18 background values. 88.89% NDs. Well-constituent pair annual alpha = 0.01072. Individual comparison alpha = 0.005373 (1 of 2).

Prediction Limit   Analysis Run 10/19/2022 1:11 PM   View: Everything Minus Detrended Data

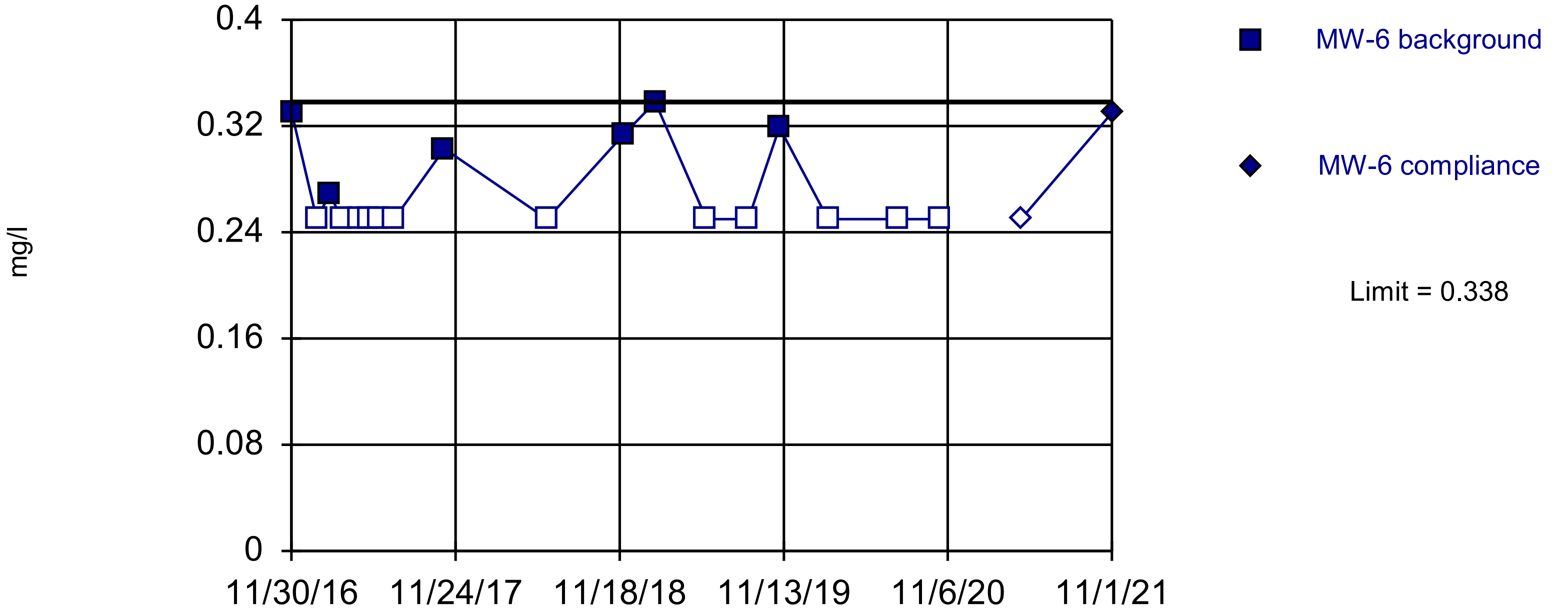
SBMU-Sikeston Power Station   Client: GREDELL Engineering   Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v.9.6.35 Software licensed to GREDELL Engineering. UG
Hollow symbols indicate censored values.

Within Limit

Fluoride

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 18 background values. 66.67% NDs. Well-constituent pair annual alpha = 0.01072. Individual comparison alpha = 0.005373 (1 of 2).

Prediction Limit   Analysis Run 10/19/2022 1:11 PM   View: Everything Minus Detrended Data

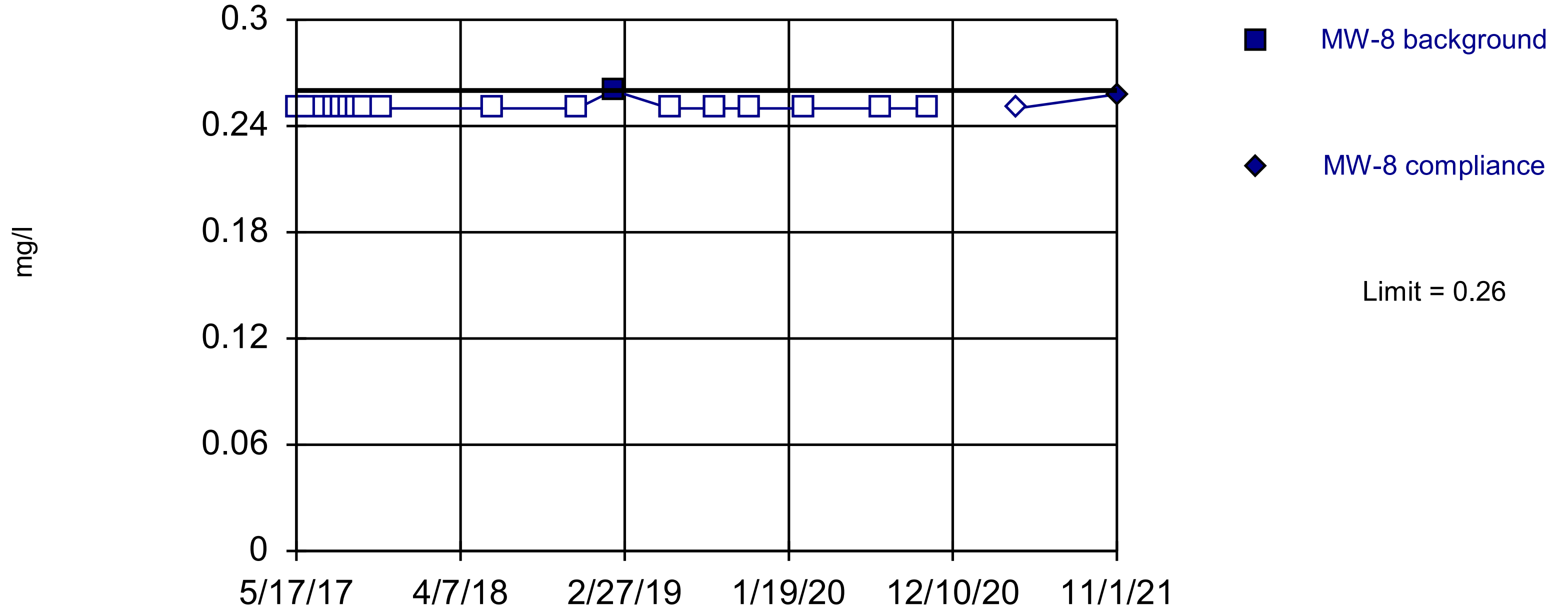
SBMU-Sikeston Power Station   Client: GREDELL Engineering   Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v.9.6.35 Software licensed to GREDELL Engineering. UG
Hollow symbols indicate censored values.

Within Limit

Fluoride

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 18 background values. 94.44% NDs. Well-constituent pair annual alpha = 0.01072. Individual comparison alpha = 0.005373 (1 of 2).

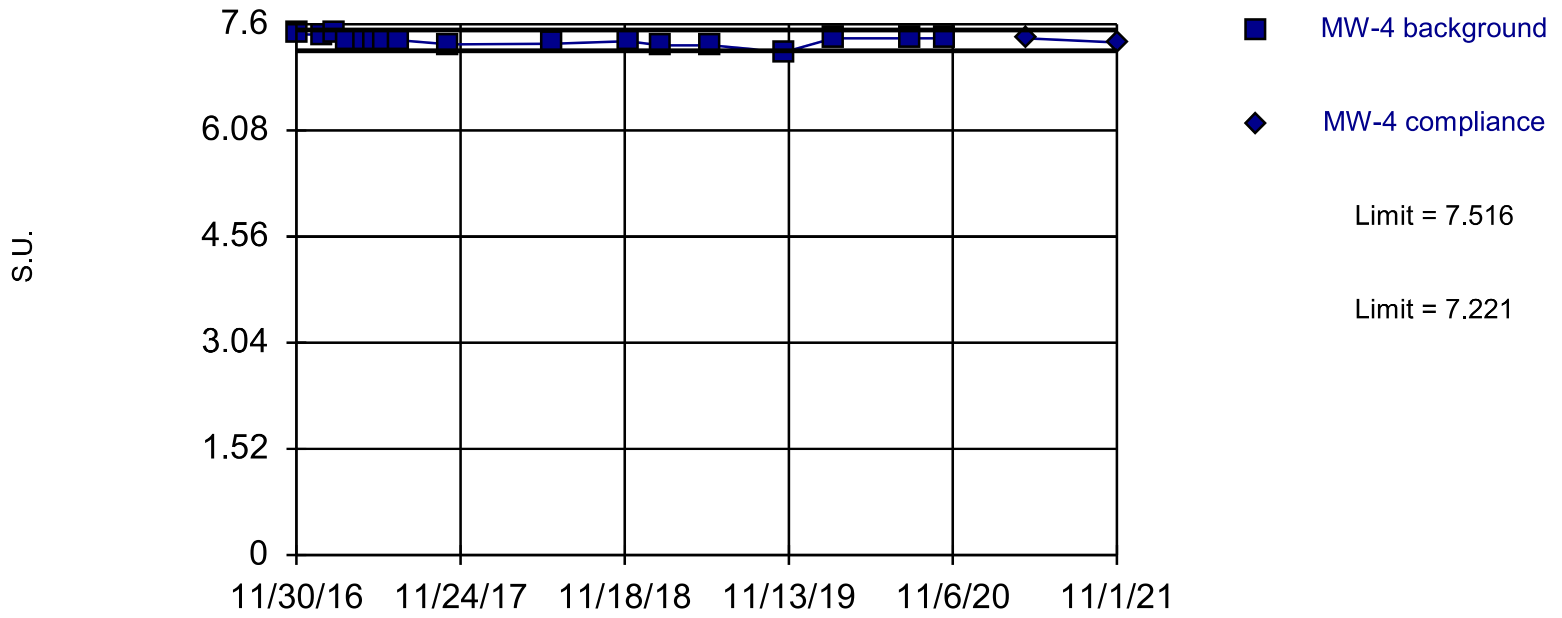
Prediction Limit Analysis Run 10/19/2022 1:11 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limits

pH

Intrawell Parametric



Background Data Summary: Mean=7.369, Std. Dev.=0.06927, n=17. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9505, critical = 0.851. Kappa = 2.127 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

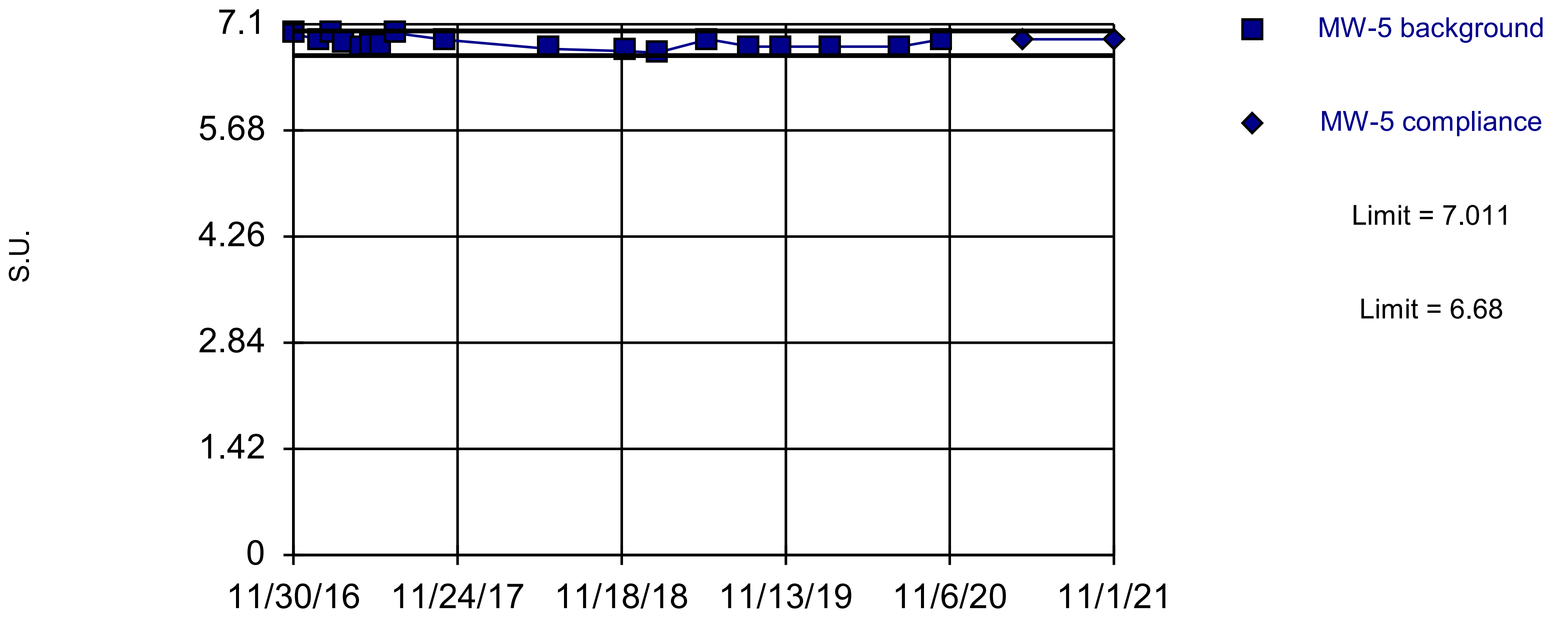
Prediction Limit Analysis Run 10/19/2022 1:11 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limits

pH

Intrawell Parametric



Background Data Summary: Mean=6.846, Std. Dev.=0.07853, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9237, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

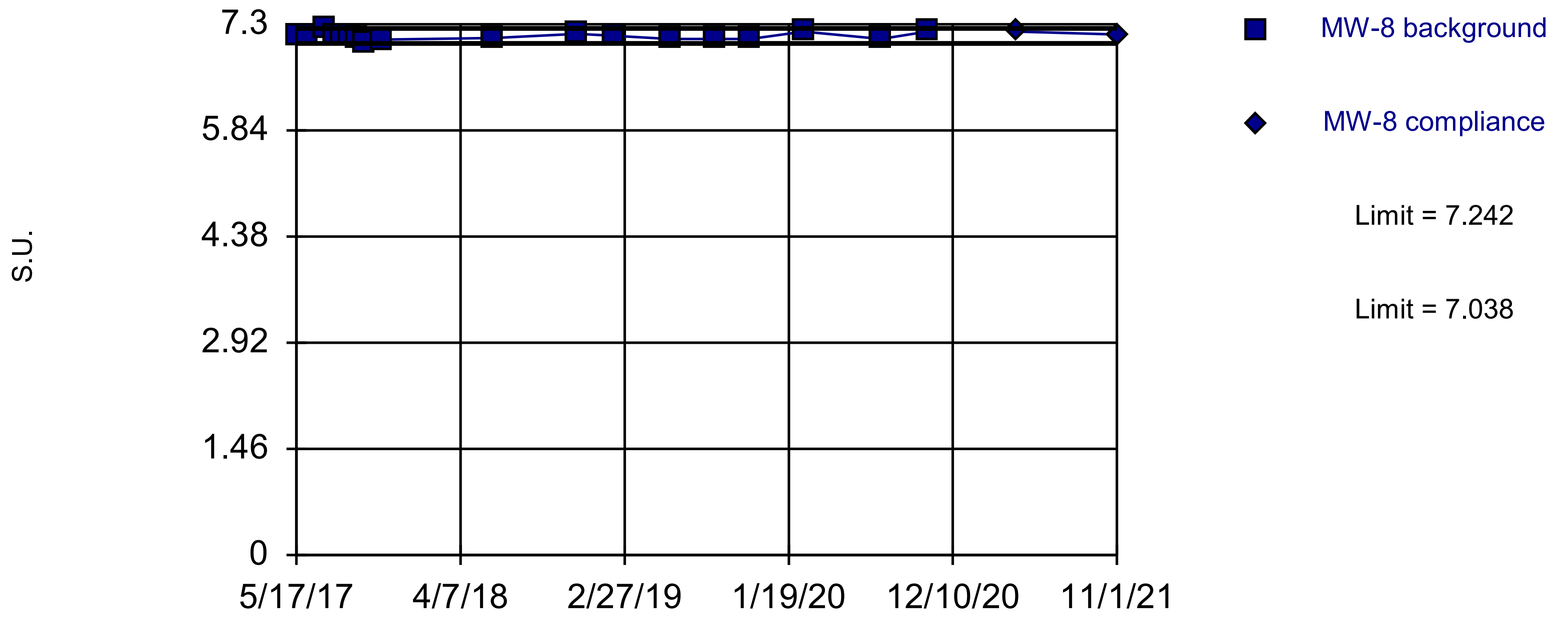
Prediction Limit Analysis Run 10/19/2022 1:11 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limits

pH

Intrawell Parametric



Background Data Summary: Mean=7.14, Std. Dev.=0.04826, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9628, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

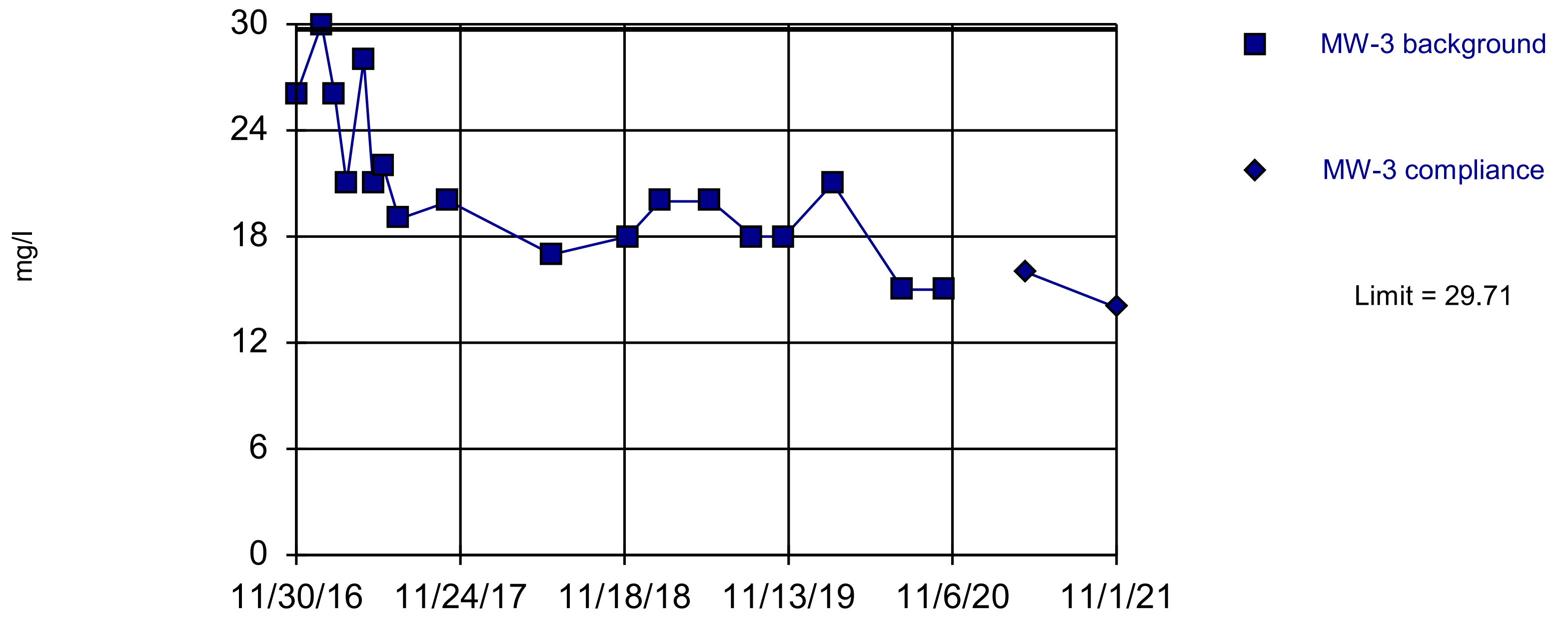
Prediction Limit Analysis Run 10/19/2022 1:11 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Sulfate

Intrawell Parametric



Background Data Summary: Mean=20.83, Std. Dev.=4.218, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9206, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

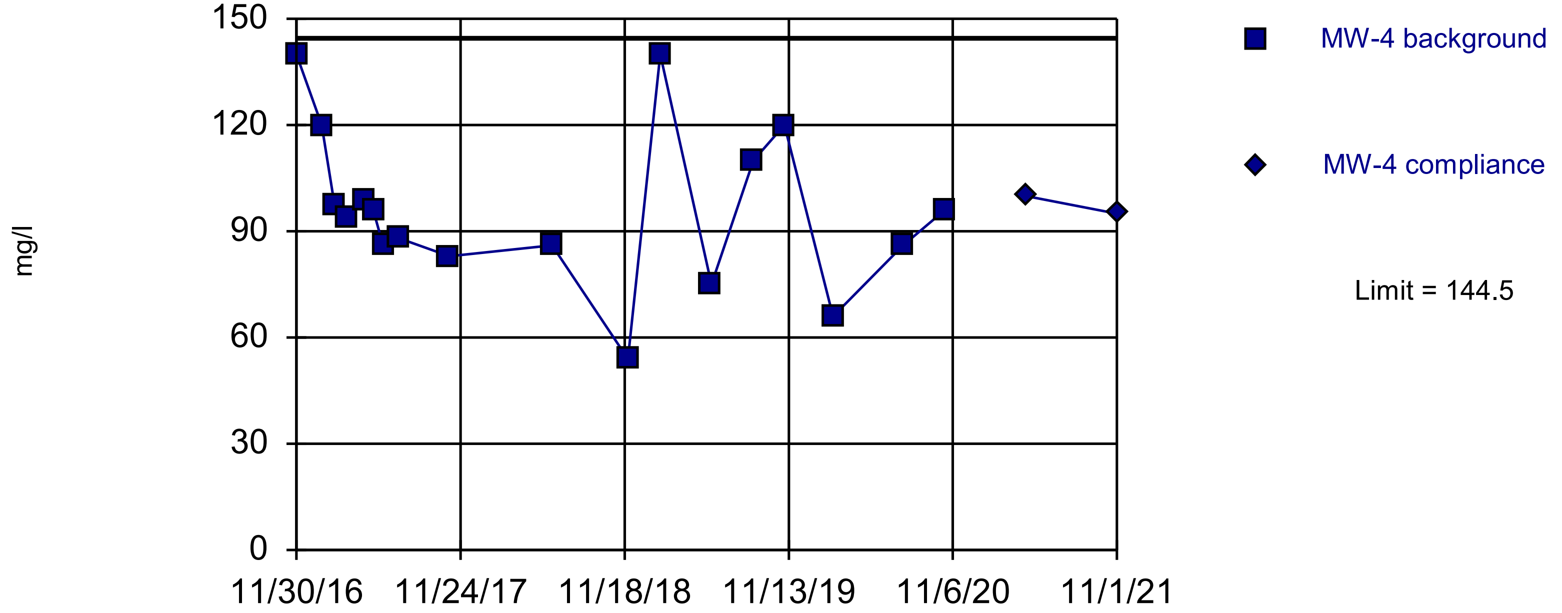
Prediction Limit Analysis Run 10/19/2022 1:11 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Sulfate

Intrawell Parametric



Background Data Summary: Mean=96.44, Std. Dev.=22.84, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9502, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

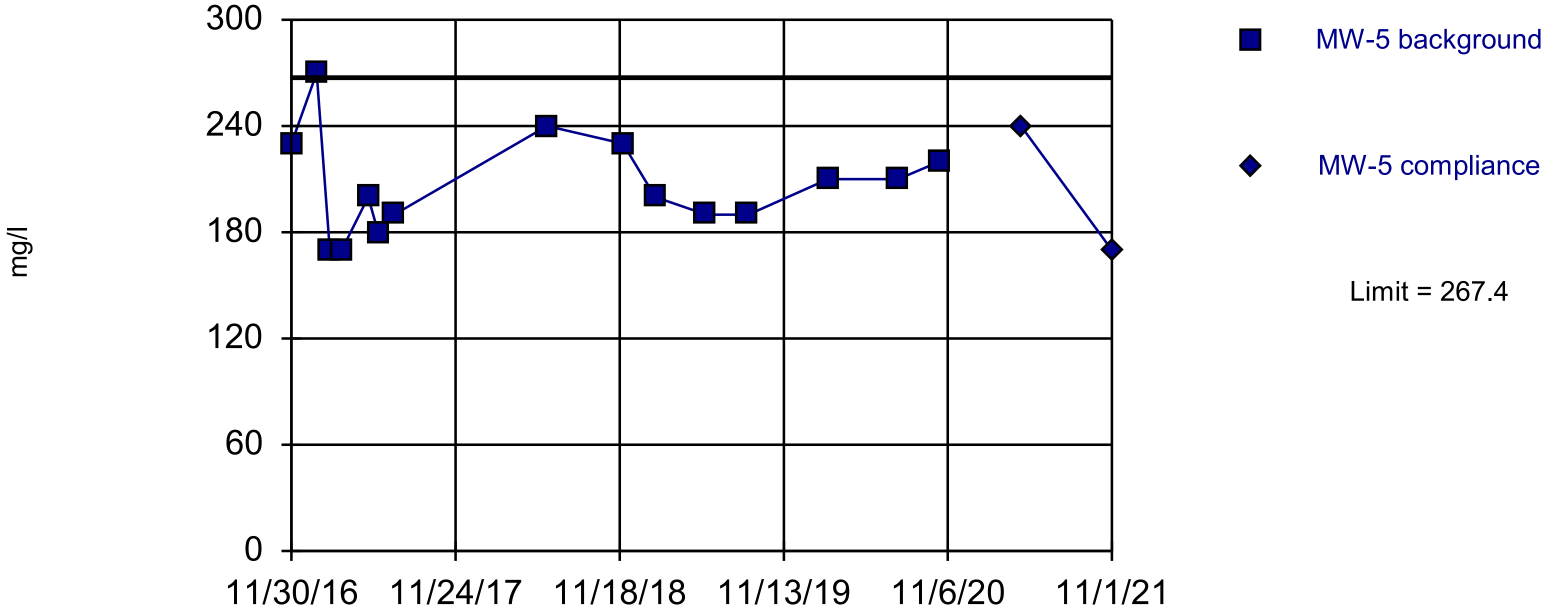
Prediction Limit Analysis Run 10/19/2022 1:11 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Sulfate

Intrawell Parametric



Background Data Summary: Mean=206.7, Std. Dev.=27.69, n=15. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9482, critical = 0.835. Kappa = 2.193 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

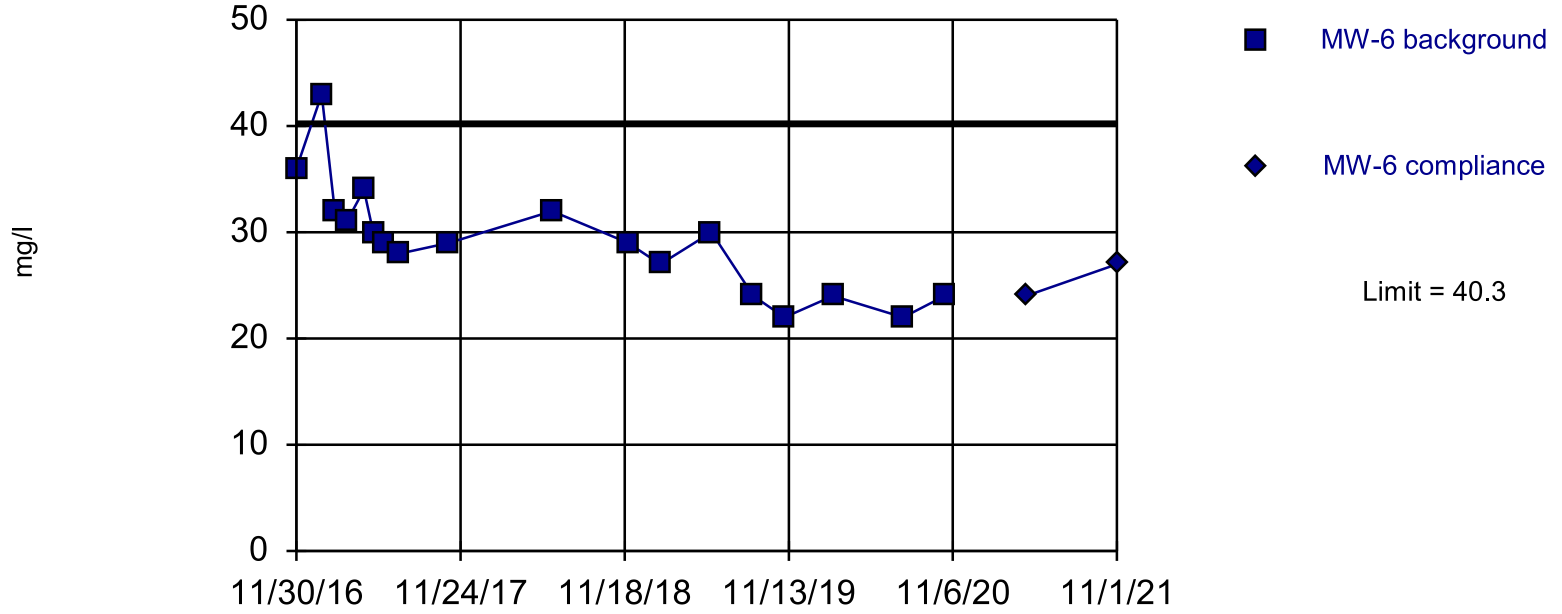
Prediction Limit Analysis Run 10/19/2022 1:11 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Sulfate

Intrawell Parametric

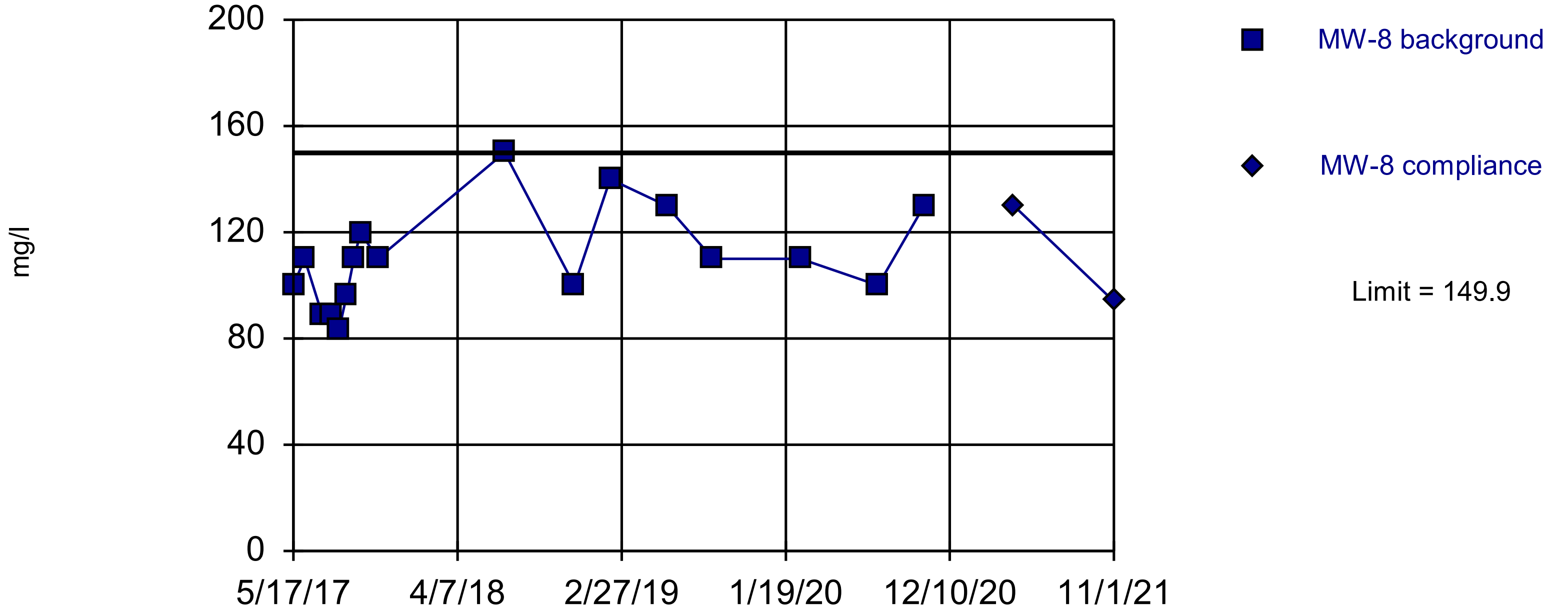


Background Data Summary: Mean=29.22, Std. Dev.=5.264, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9321, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Within Limit

Sulfate

Intrawell Parametric



Background Data Summary: Mean=110.4, Std. Dev.=18.55, n=17. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9427, critical = 0.851. Kappa = 2.127 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

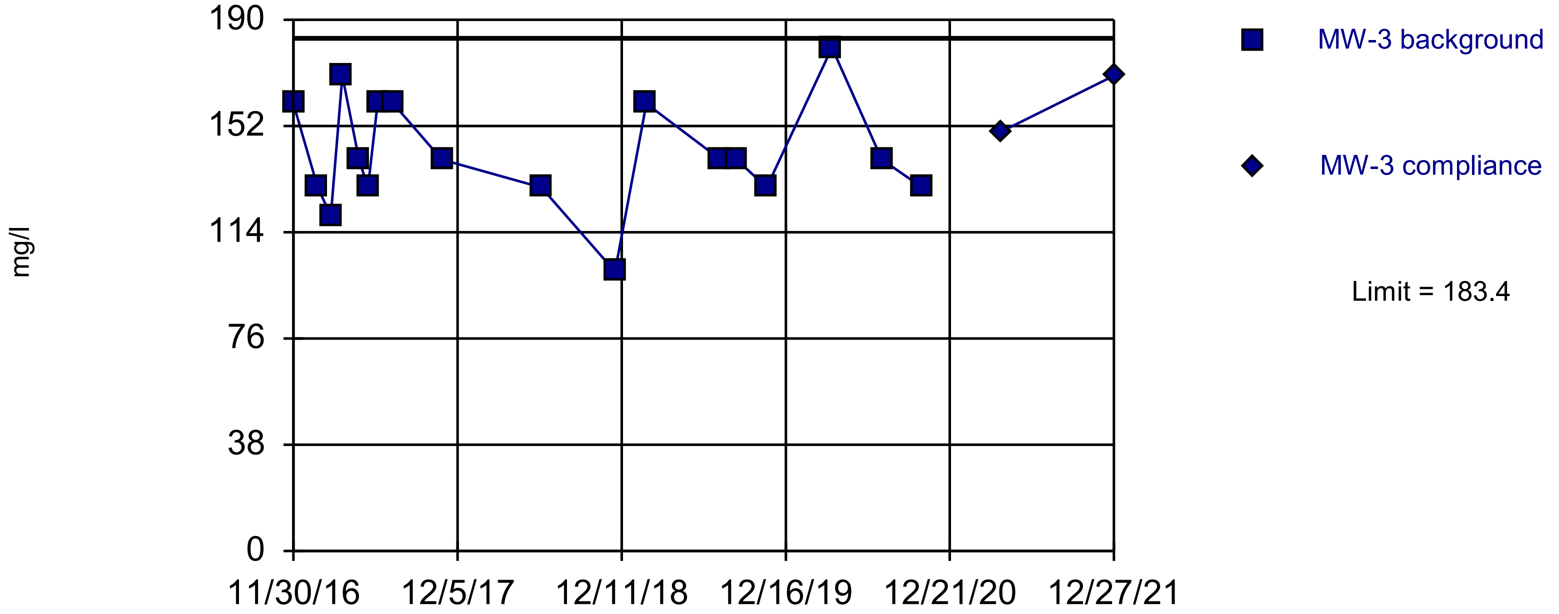
Prediction Limit Analysis Run 10/19/2022 1:11 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Total Dissolved Solids

Intrawell Parametric



Background Data Summary: Mean=142.2, Std. Dev.=19.57, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9412, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

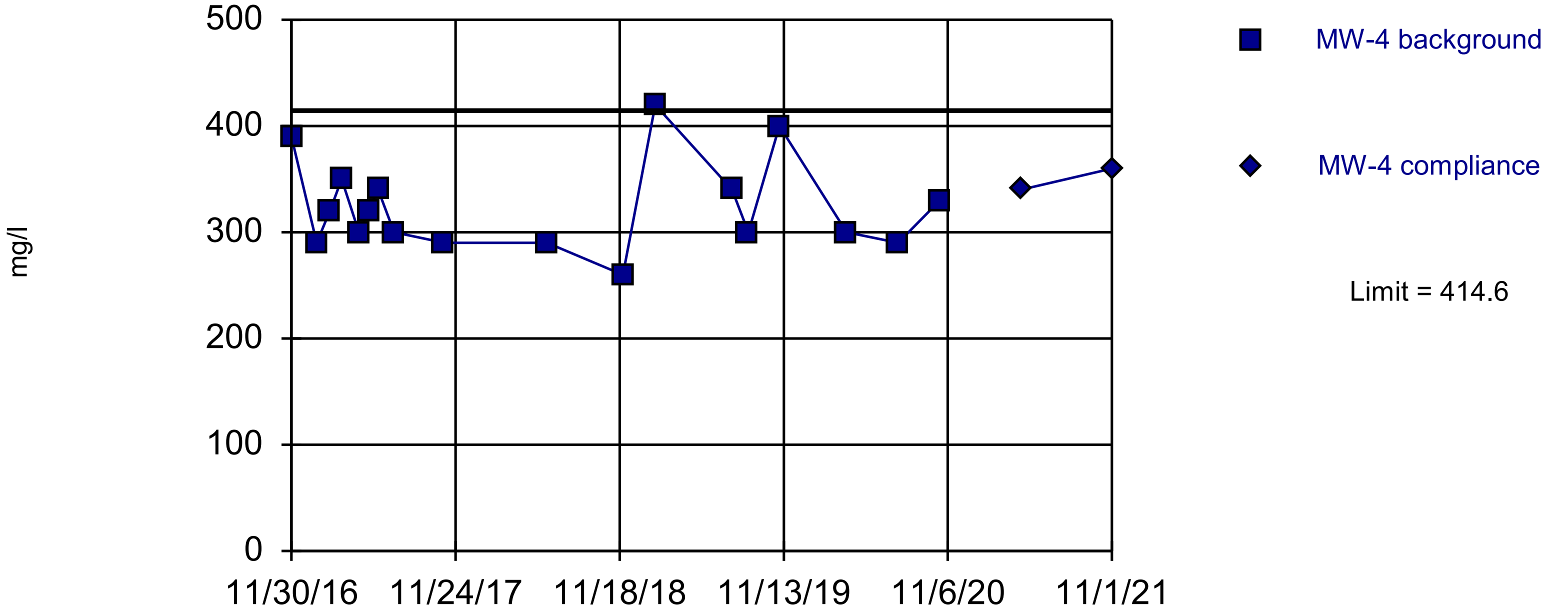
Prediction Limit Analysis Run 10/19/2022 1:11 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Total Dissolved Solids

Intrawell Parametric



Background Data Summary: Mean=323.9, Std. Dev.=43.13, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8945, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

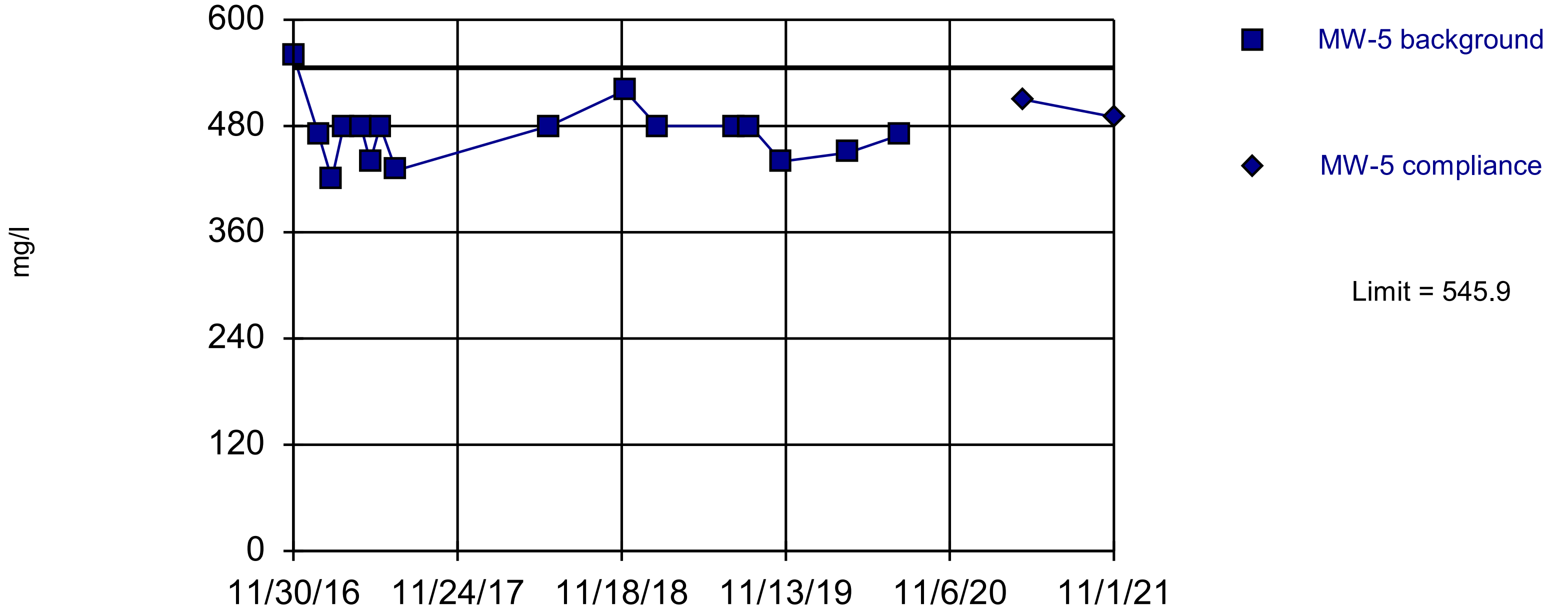
Prediction Limit Analysis Run 10/19/2022 1:11 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Total Dissolved Solids

Intrawell Parametric



Background Data Summary: Mean=472.5, Std. Dev.=34.16, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8811, critical = 0.844. Kappa = 2.15 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

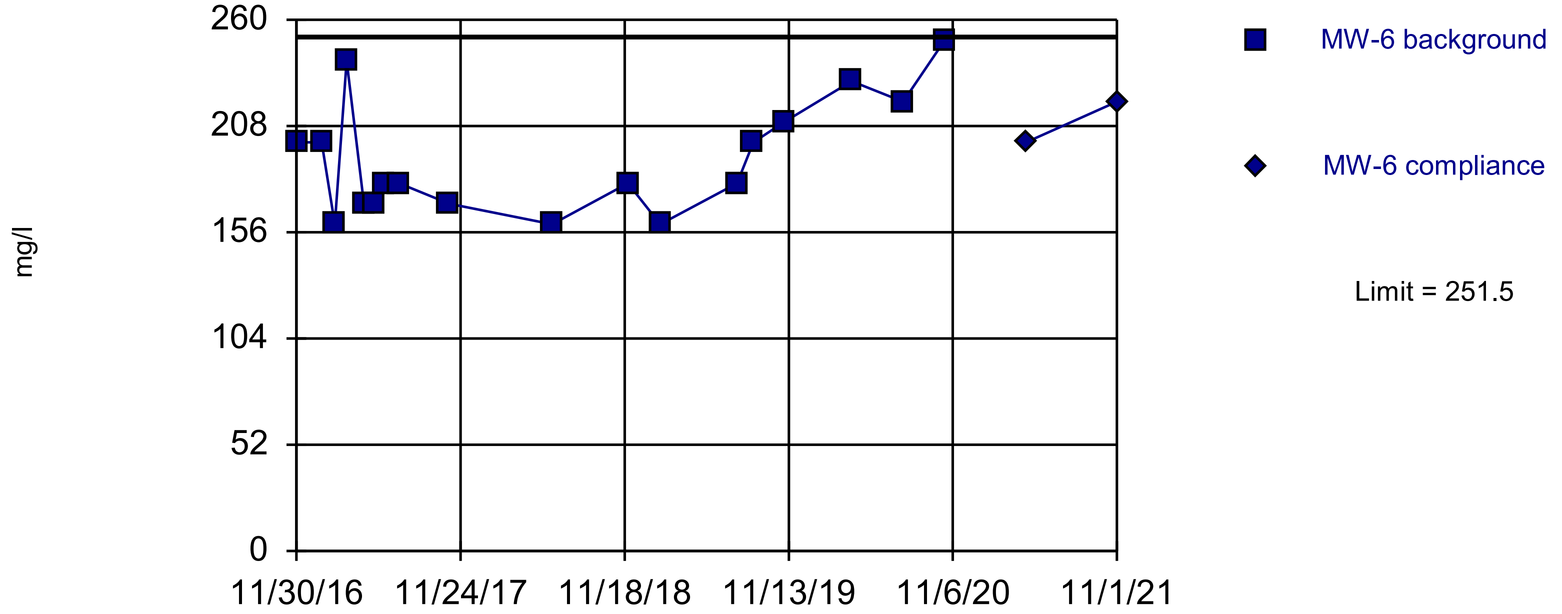
Prediction Limit Analysis Run 10/19/2022 1:11 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Total Dissolved Solids

Intrawell Parametric



Background Data Summary: Mean=192.2, Std. Dev.=28.19, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9055, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Prediction Limit Analysis Run 10/19/2022 1:11 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Prediction Limit

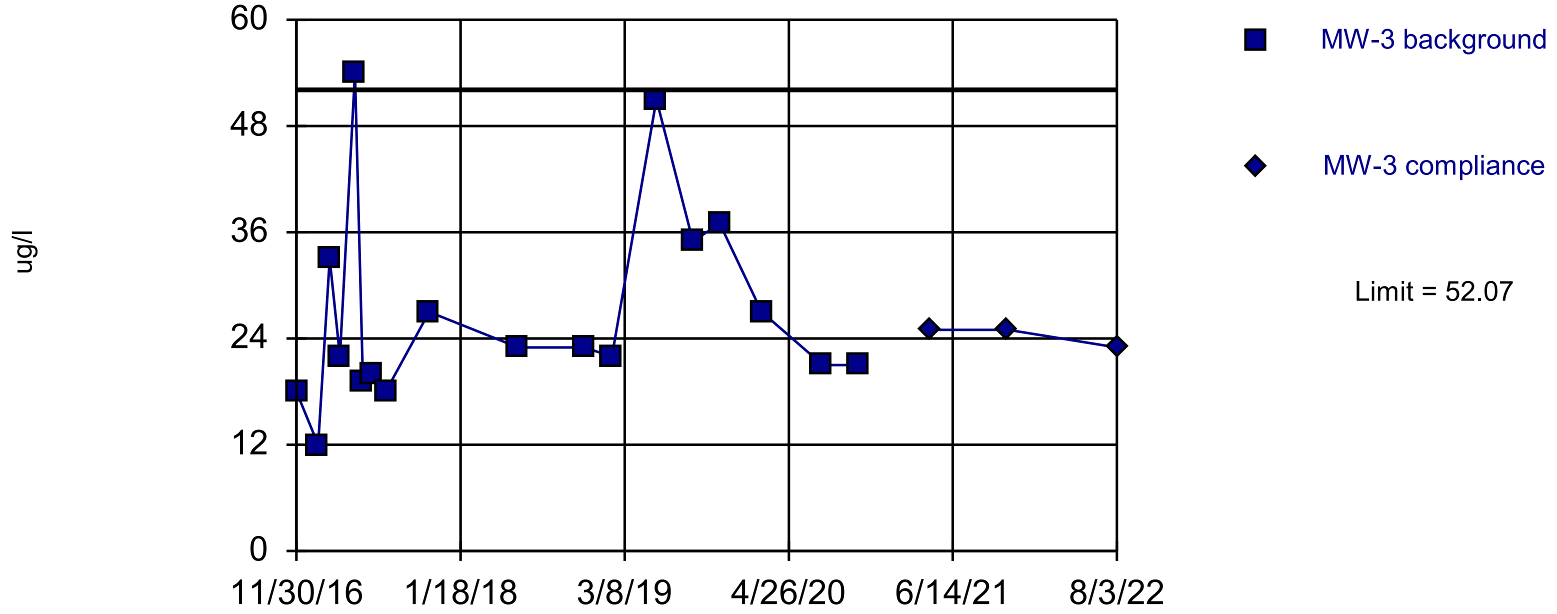
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Printed 10/19/2022, 1:25 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Boron (ug/l)	MW-3	52.07	n/a	8/3/2022	23	No	18	0	sqrt(x)	0.001504	Param Intra 1 of 2
Boron (ug/l)	MW-4	1549	n/a	8/3/2022	880	No	18	0	No	0.001504	Param Intra 1 of 2
Boron (ug/l)	MW-5	537.2	n/a	8/3/2022	390	No	17	0	No	0.001504	Param Intra 1 of 2
Boron (ug/l)	MW-8	577.9	n/a	8/3/2022	420	No	18	0	No	0.001504	Param Intra 1 of 2
Calcium (mg/l)	MW-3	23.56	n/a	8/3/2022	16	No	18	0	No	0.001504	Param Intra 1 of 2
Calcium (mg/l)	MW-4	97.16	n/a	8/3/2022	76	No	18	0	No	0.001504	Param Intra 1 of 2
Calcium (mg/l)	MW-5	132.9	n/a	8/3/2022	110	No	16	0	No	0.001504	Param Intra 1 of 2
Calcium (mg/l)	MW-6	48.81	n/a	8/3/2022	43	No	18	0	No	0.001504	Param Intra 1 of 2
Chloride (mg/l)	MW-3	2.43	n/a	8/3/2022	1ND	No	18	0	No	0.001504	Param Intra 1 of 2
Chloride (mg/l)	MW-4	19.57	n/a	8/3/2022	14	No	16	0	No	0.001504	Param Intra 1 of 2
Chloride (mg/l)	MW-5	19.46	n/a	8/3/2022	12	No	18	0	No	0.001504	Param Intra 1 of 2
Chloride (mg/l)	**MW-6**	**2.954**	**n/a**	**8/3/2022**	**4.3**	**Yes**	**18**	**5.556**	**No**	**0.001504**	**Param Intra 1 of 2**
Fluoride (mg/l)	MW-3	0.438	n/a	8/3/2022	0.25ND	No	18	38.89	n/a	0.005373	NP Intra (normality) ...
Fluoride (mg/l)	MW-4	0.259	n/a	8/3/2022	0.25ND	No	18	94.44	n/a	0.005373	NP Intra (NDs) 1 of 2
Fluoride (mg/l)	MW-5	0.272	n/a	8/3/2022	0.25ND	No	18	88.89	n/a	0.005373	NP Intra (NDs) 1 of 2
Fluoride (mg/l)	MW-6	0.338	n/a	8/3/2022	0.25ND	No	18	66.67	n/a	0.005373	NP Intra (NDs) 1 of 2
Fluoride (mg/l)	MW-8	0.26	n/a	8/3/2022	0.25ND	No	18	94.44	n/a	0.005373	NP Intra (NDs) 1 of 2
pH (S.U.)	MW-4	7.516	7.221	8/3/2022	7.32	No	17	0	No	0.000752	Param Intra 1 of 2
pH (S.U.)	MW-5	7.011	6.68	8/3/2022	6.82	No	18	0	No	0.000752	Param Intra 1 of 2
pH (S.U.)	MW-8	7.242	7.038	8/3/2022	7.08	No	18	0	No	0.000752	Param Intra 1 of 2
Sulfate (mg/l)	MW-3	29.71	n/a	8/3/2022	11	No	18	0	No	0.001504	Param Intra 1 of 2
Sulfate (mg/l)	MW-4	144.5	n/a	8/3/2022	93	No	18	0	No	0.001504	Param Intra 1 of 2
Sulfate (mg/l)	MW-5	267.4	n/a	8/3/2022	210	No	15	0	No	0.001504	Param Intra 1 of 2
Sulfate (mg/l)	MW-6	40.3	n/a	8/3/2022	24	No	18	0	No	0.001504	Param Intra 1 of 2
Sulfate (mg/l)	MW-8	149.9	n/a	8/3/2022	140	No	17	0	No	0.001504	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-3	183.4	n/a	8/3/2022	130	No	18	0	No	0.001504	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-4	414.6	n/a	8/3/2022	390	No	18	0	No	0.001504	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-5	545.9	n/a	9/12/2022	510	No	16	0	No	0.001504	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-6	251.5	n/a	8/3/2022	230	No	18	0	No	0.001504	Param Intra 1 of 2
Boron (ug/l)	MW-6	58.99	n/a	8/3/2022	51	No	8	0	No	0.001504	Param Intra 1 of 2
Calcium (mg/l)	MW-8	120	n/a	8/3/2022	100	No	8	0	No	0.001504	Param Intra 1 of 2
Chloride (mg/l)	MW-8	78.74	n/a	8/3/2022	56	No	8	0	No	0.001504	Param Intra 1 of 2
pH (S.U.)	MW-3	6.772	6.254	8/3/2022	6.65	No	12	0	No	0.000752	Param Intra 1 of 2
pH (S.U.)	MW-6	7	6.67	8/3/2022	6.86	No	17	0	n/a	0.01183	NP Intra (normality) ...
Total Dissolved Solids (mg/l)	MW-8	547.4	n/a	8/3/2022	490	No	8	0	No	0.001504	Param Intra 1 of 2

Within Limit

Boron

Intrawell Parametric



Background Data Summary (based on square root transformation): Mean=5.086, Std. Dev.=1.013, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8996, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

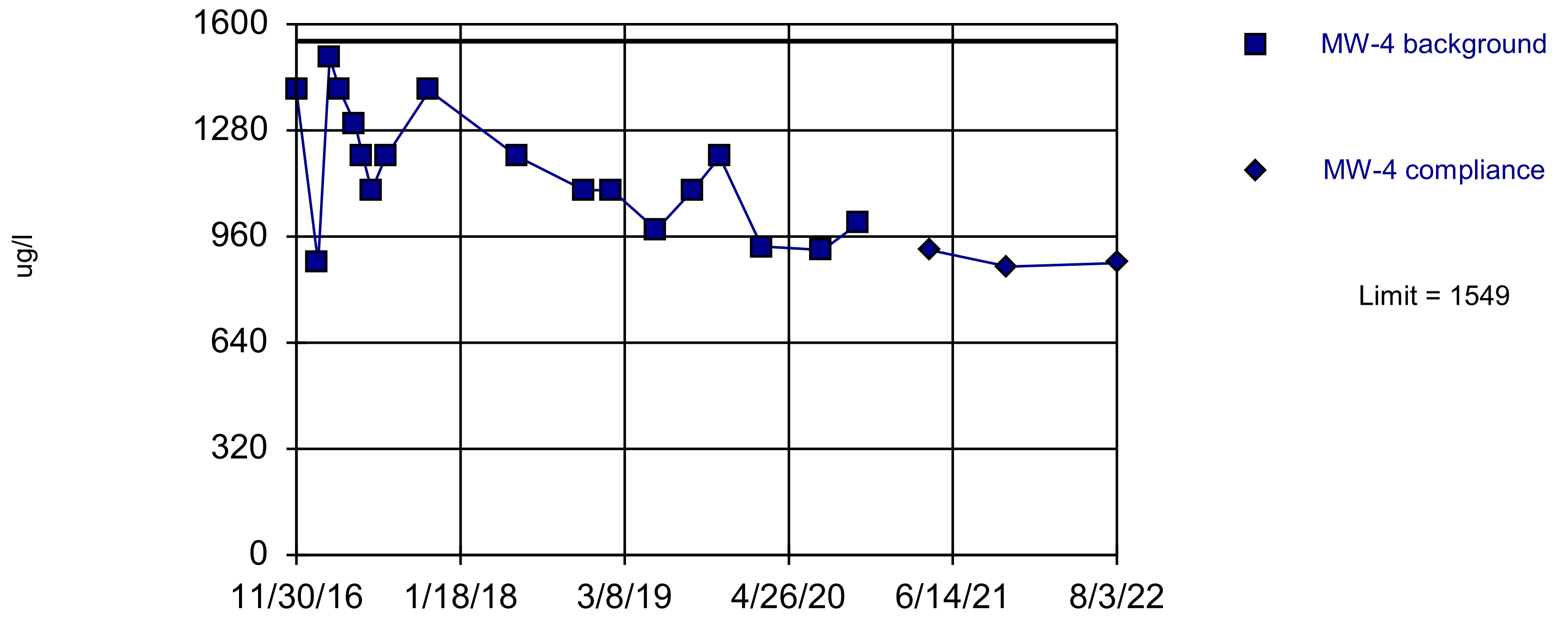
Prediction Limit Analysis Run 10/19/2022 1:18 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Boron

Intrawell Parametric



Background Data Summary: Mean=1162, Std. Dev.=184, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.948, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

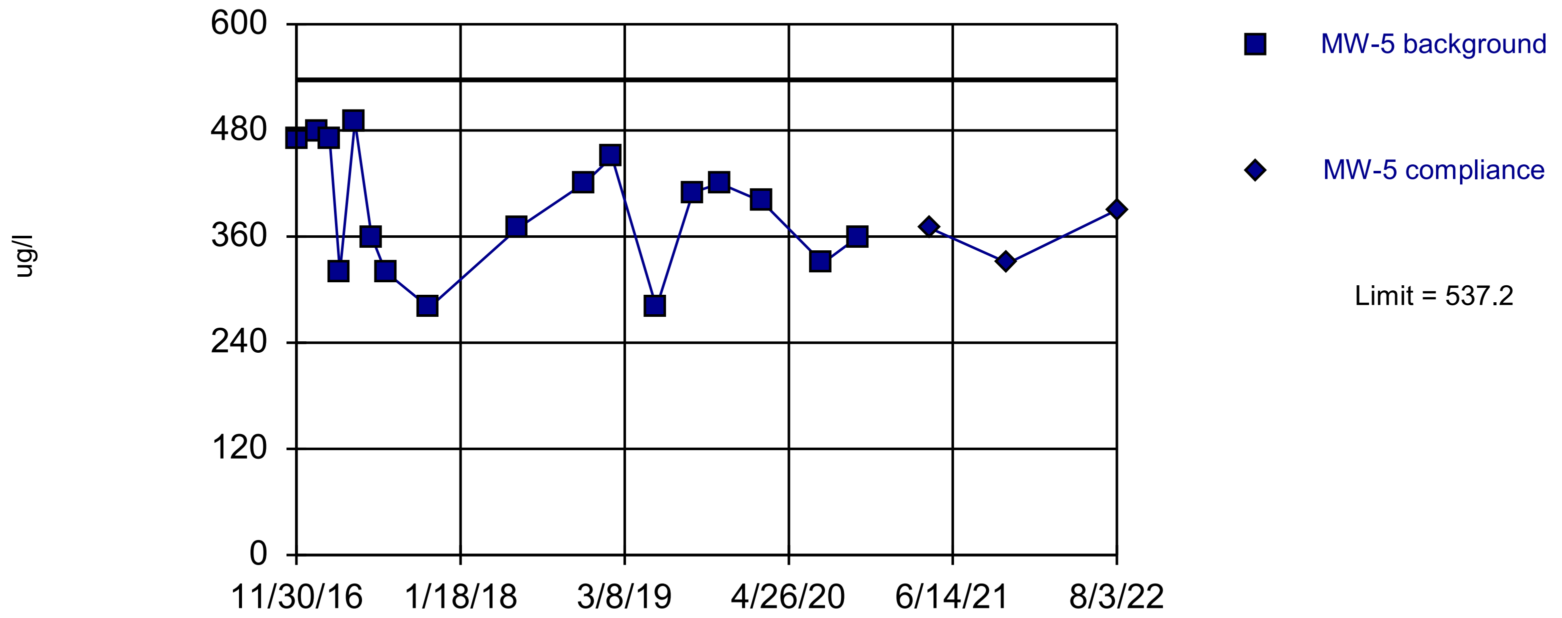
Prediction Limit Analysis Run 10/19/2022 1:18 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Boron

Intrawell Parametric



Background Data Summary: Mean=390, Std. Dev.=69.19, n=17. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9407, critical = 0.851. Kappa = 2.127 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

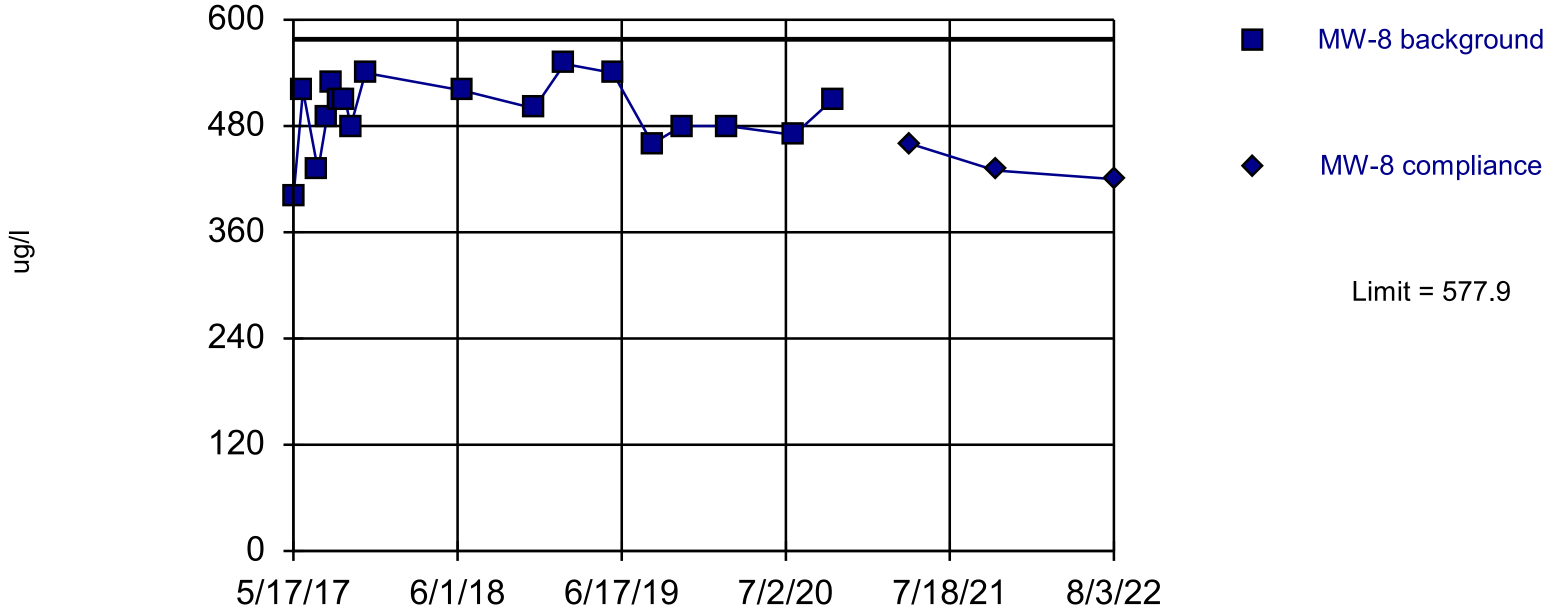
Prediction Limit Analysis Run 10/19/2022 1:18 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Boron

Intrawell Parametric



Background Data Summary: Mean=495.6, Std. Dev.=39.14, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9399, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

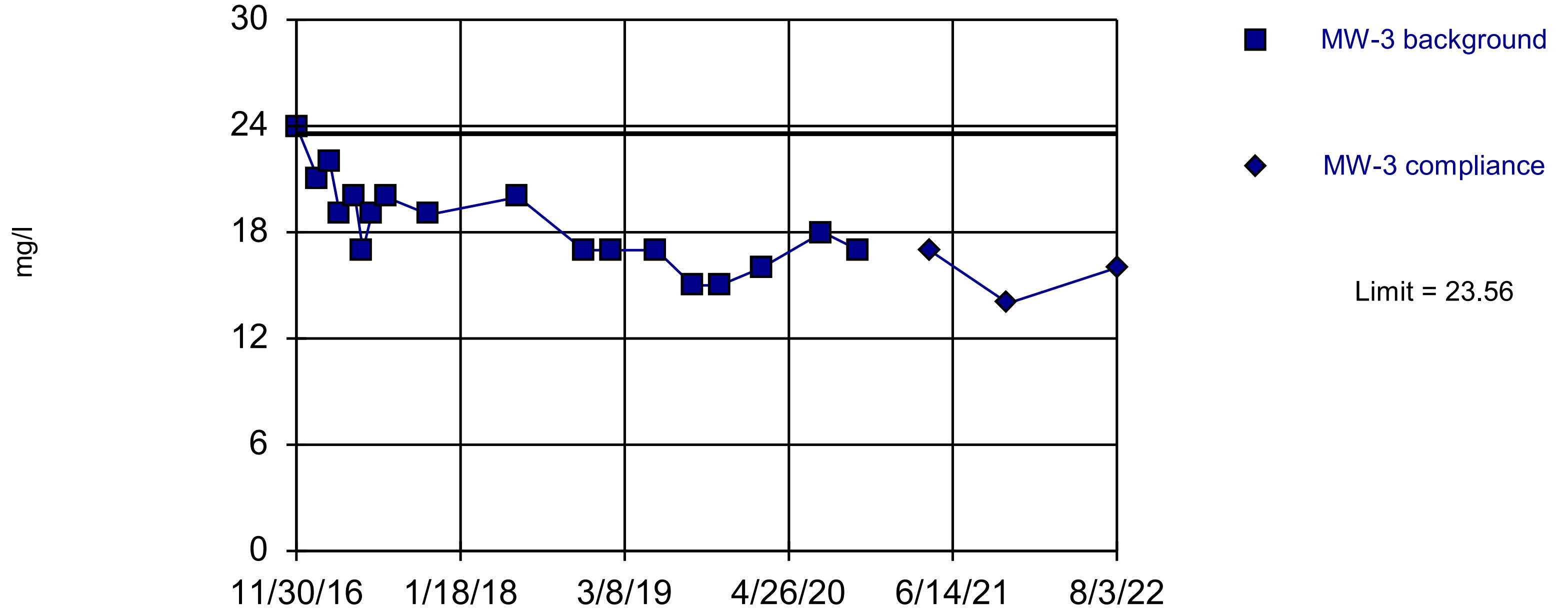
Prediction Limit Analysis Run 10/19/2022 1:18 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Calcium

Intrawell Parametric



Background Data Summary: Mean=18.5, Std. Dev.=2.407, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9507, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

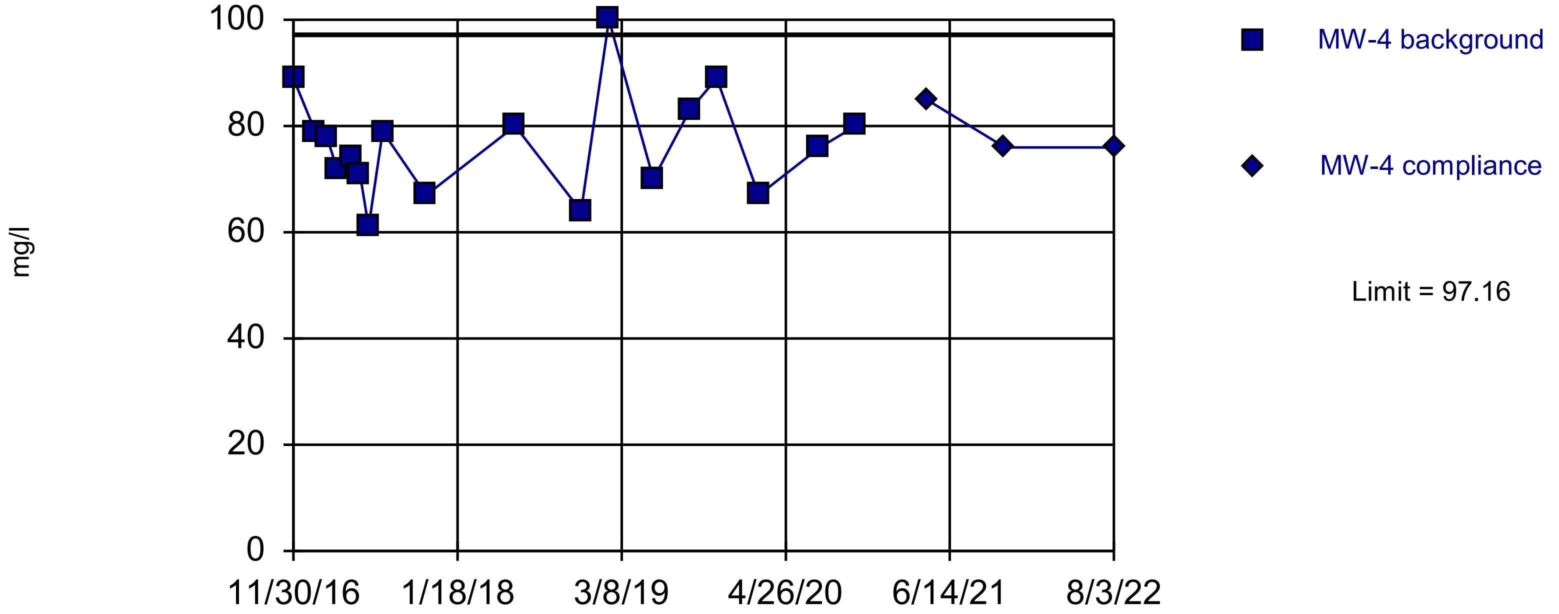
Prediction Limit Analysis Run 10/19/2022 1:18 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Calcium

Intrawell Parametric

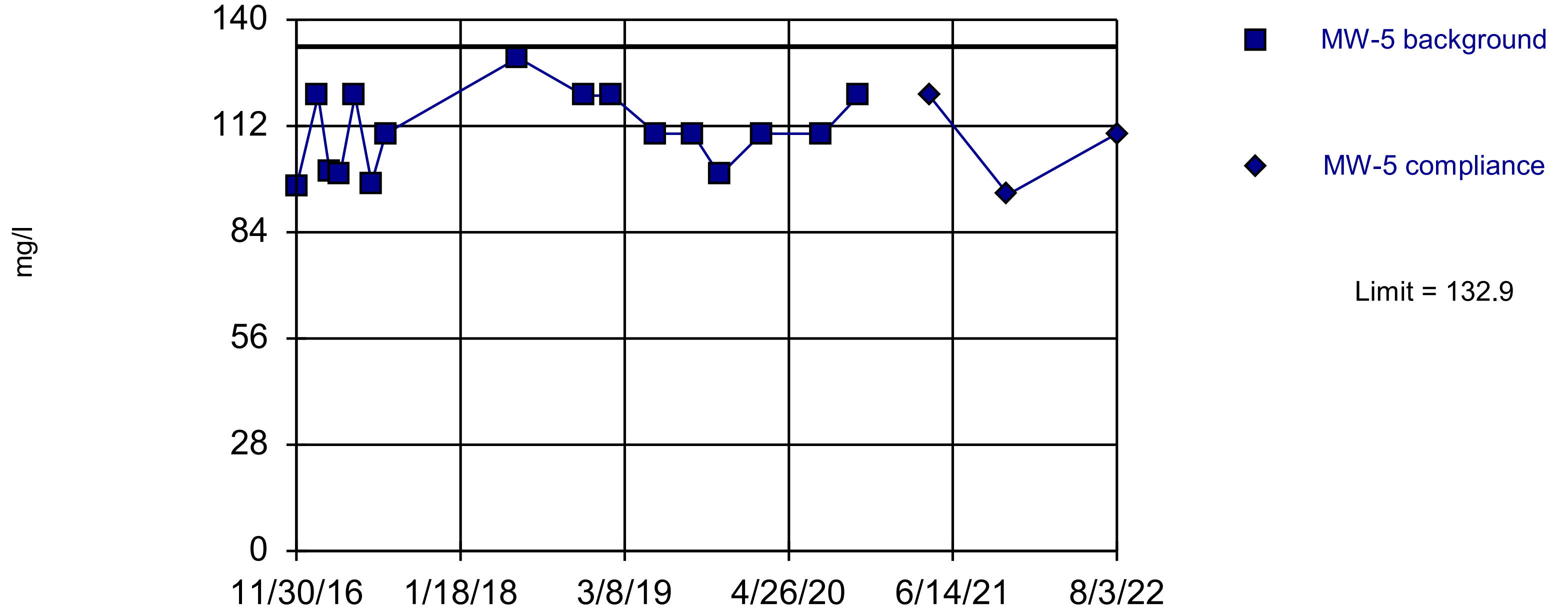


Background Data Summary: Mean=76.61, Std. Dev.=9.769, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9656, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Within Limit

Calcium

Intrawell Parametric



Background Data Summary: Mean=110.7, Std. Dev.=10.33, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9039, critical = 0.844. Kappa = 2.15 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

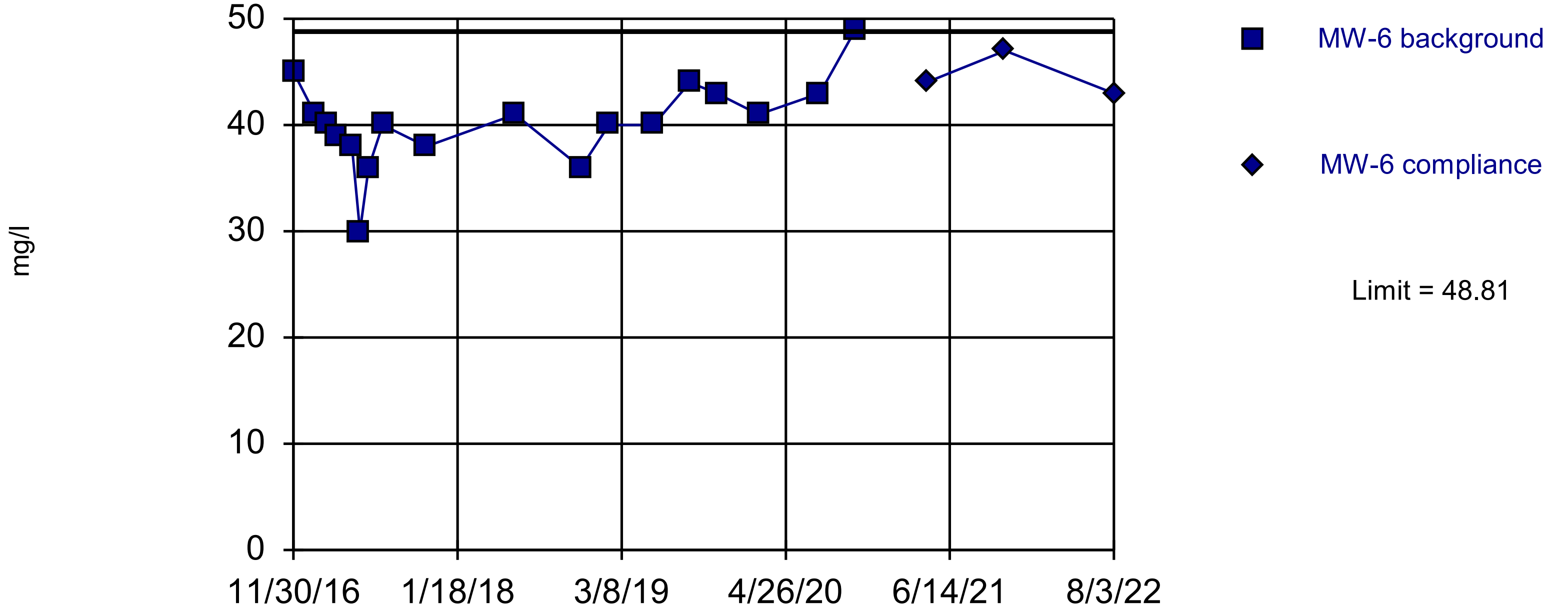
Prediction Limit Analysis Run 10/19/2022 1:18 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Calcium

Intrawell Parametric



Background Data Summary: Mean=40.22, Std. Dev.=4.081, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9539, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Prediction Limit Analysis Run 10/19/2022 1:18 PM View: Everything Minus Detrended Data

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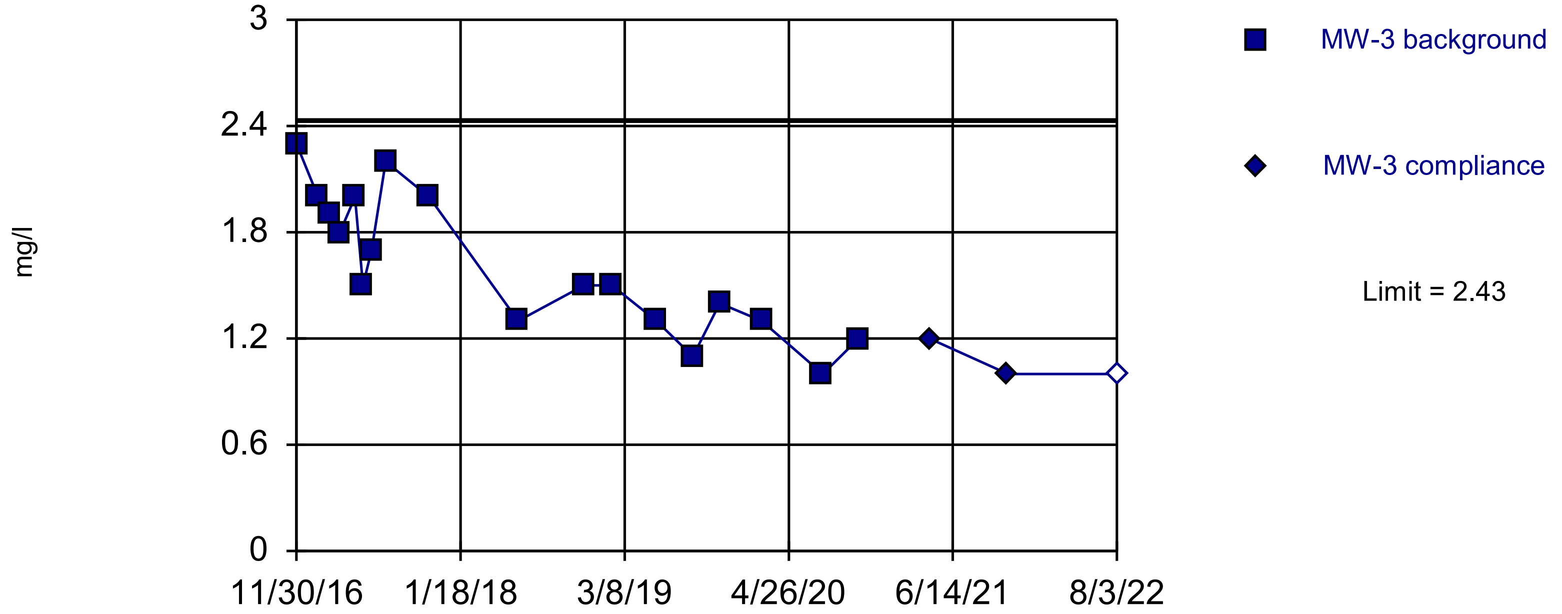
Hollow symbols indicate censored values.

Within Limit

Chloride

Intrawell Parametric



Background Data Summary: Mean=1.611, Std. Dev.=0.3894, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9507, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

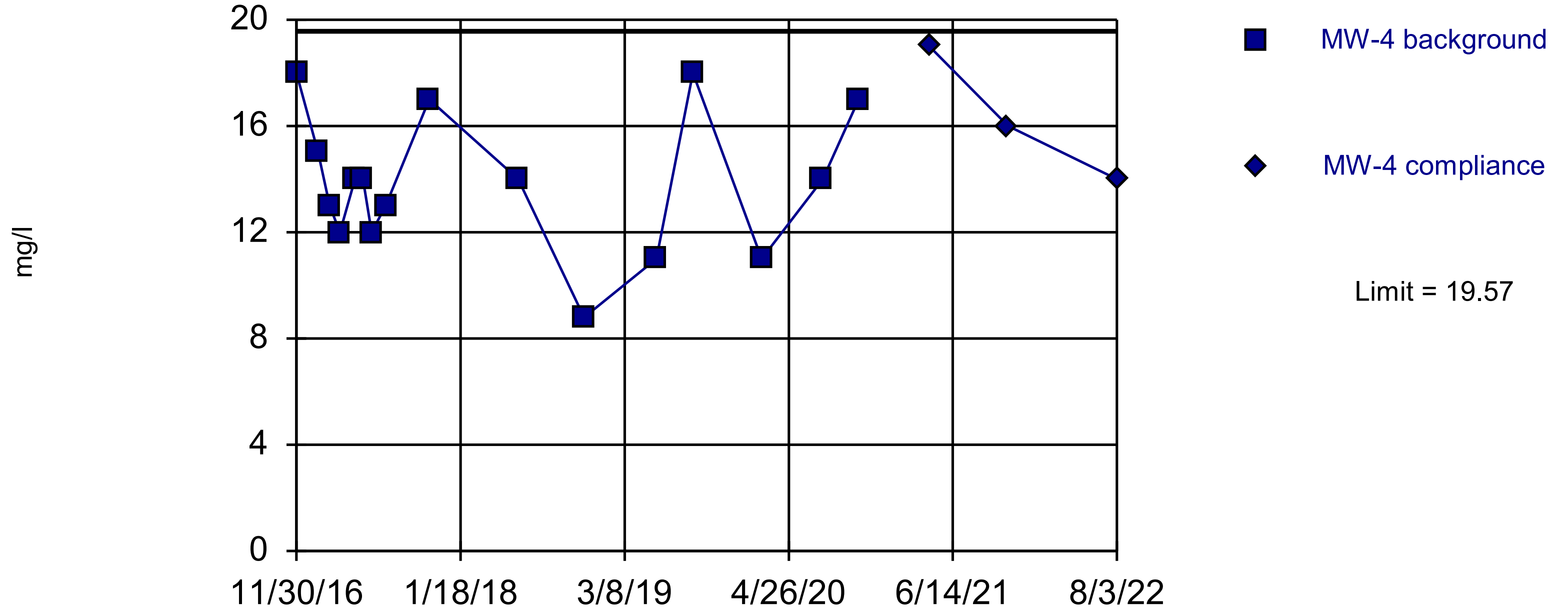
Prediction Limit Analysis Run 10/19/2022 1:18 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Chloride

Intrawell Parametric



Background Data Summary: Mean=13.86, Std. Dev.=2.655, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9515, critical = 0.844. Kappa = 2.15 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

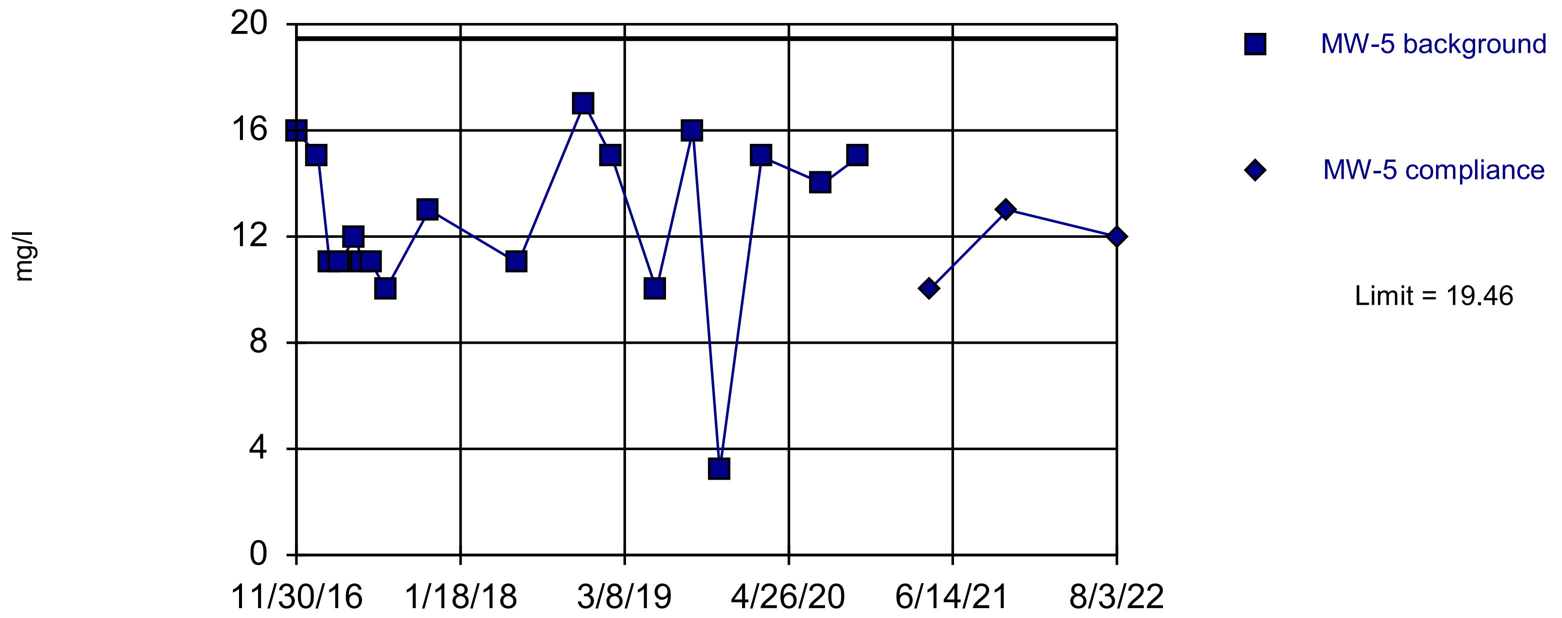
Prediction Limit Analysis Run 10/19/2022 1:18 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Chloride

Intrawell Parametric



Background Data Summary: Mean=12.57, Std. Dev.=3.278, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8761, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Prediction Limit Analysis Run 10/19/2022 1:18 PM View: Everything Minus Detrended Data

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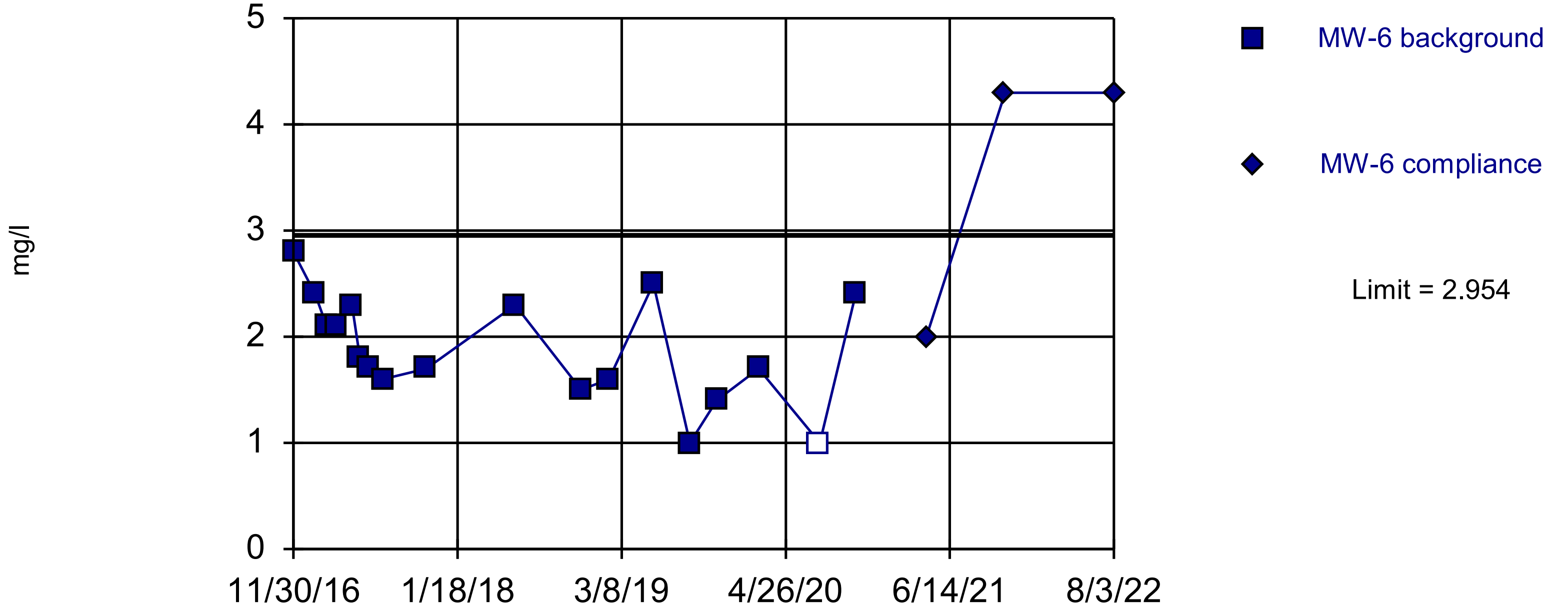
Hollow symbols indicate censored values.

Exceeds Limit

Chloride

Intrawell Parametric



Background Data Summary: Mean=1.883, Std. Dev.=0.509, n=18, 5.556% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9587, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Prediction Limit Analysis Run 10/19/2022 1:18 PM View: Everything Minus Detrended Data

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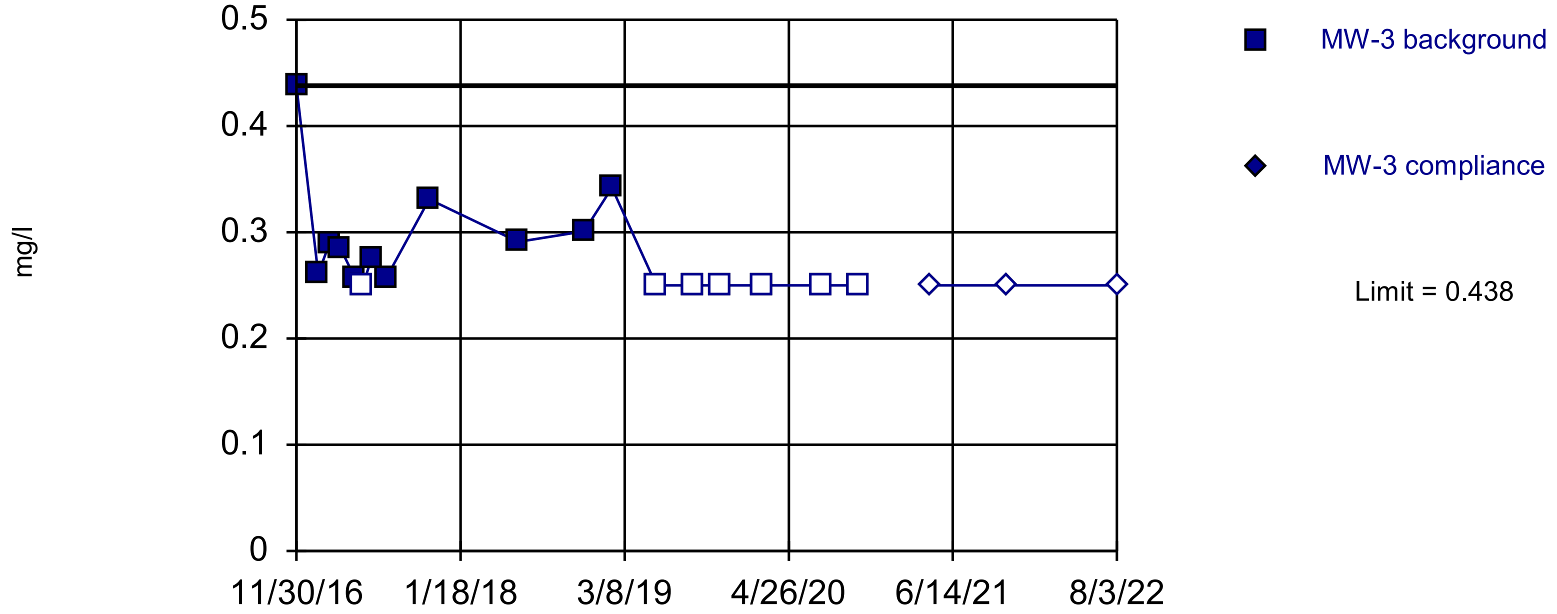
Hollow symbols indicate censored values.

Within Limit

Fluoride

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 18 background values. 38.89% NDs. Well-constituent pair annual alpha = 0.01072. Individual comparison alpha = 0.005373 (1 of 2).

Prediction Limit   Analysis Run 10/19/2022 1:18 PM   View: Everything Minus Detrended Data

SBMU-Sikeston Power Station   Client: GREDELL Engineering   Data: SBMU-SPS EDD File 09-28-17

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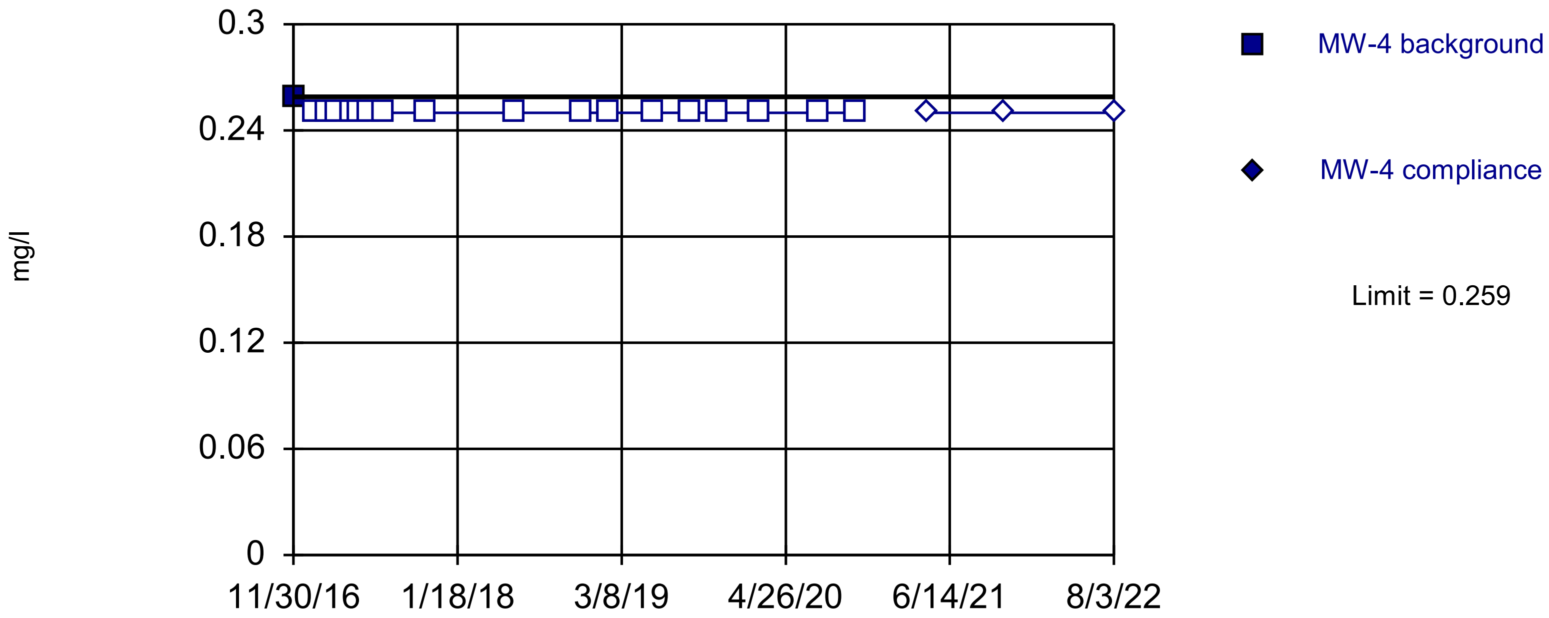
Hollow symbols indicate censored values.

Within Limit

Fluoride

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 18 background values. 94.44% NDs. Well-constituent pair annual alpha = 0.01072. Individual comparison alpha = 0.005373 (1 of 2).

Prediction Limit Analysis Run 10/19/2022 1:18 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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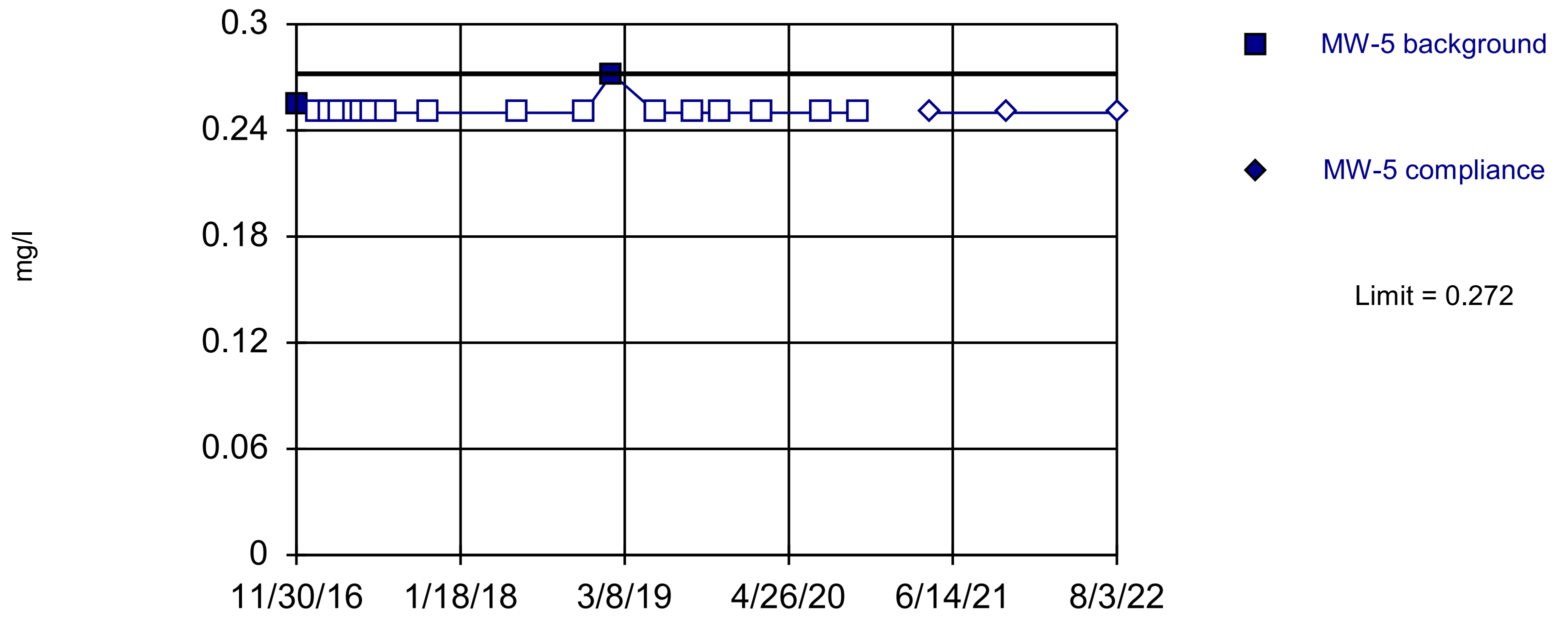
Hollow symbols indicate censored values.

Within Limit

Fluoride

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 18 background values. 88.89% NDs. Well-constituent pair annual alpha = 0.01072. Individual comparison alpha = 0.005373 (1 of 2).

Prediction Limit   Analysis Run 10/19/2022 1:18 PM   View: Everything Minus Detrended Data

SBMU-Sikeston Power Station   Client: GREDELL Engineering   Data: SBMU-SPS EDD File 09-28-17

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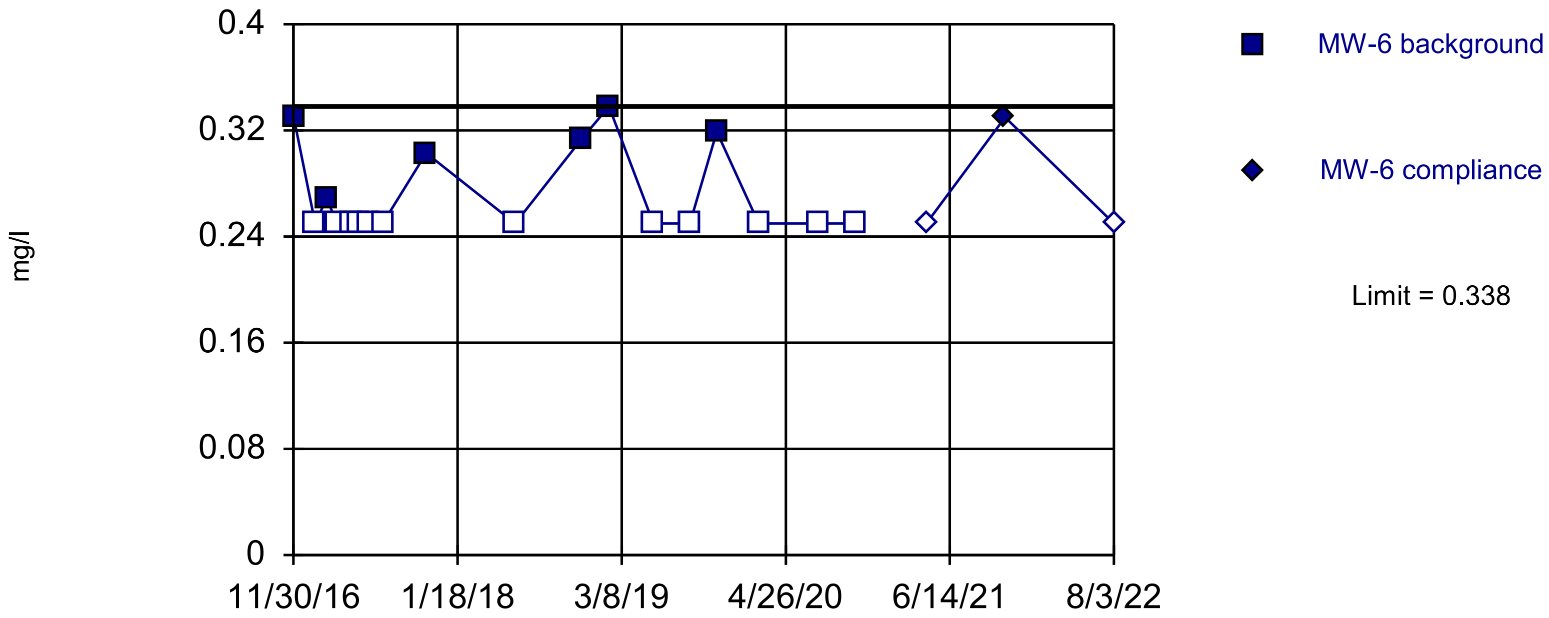
Hollow symbols indicate censored values.

Within Limit

Fluoride

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 18 background values. 66.67% NDs. Well-constituent pair annual alpha = 0.01072. Individual comparison alpha = 0.005373 (1 of 2).

Prediction Limit Analysis Run 10/19/2022 1:18 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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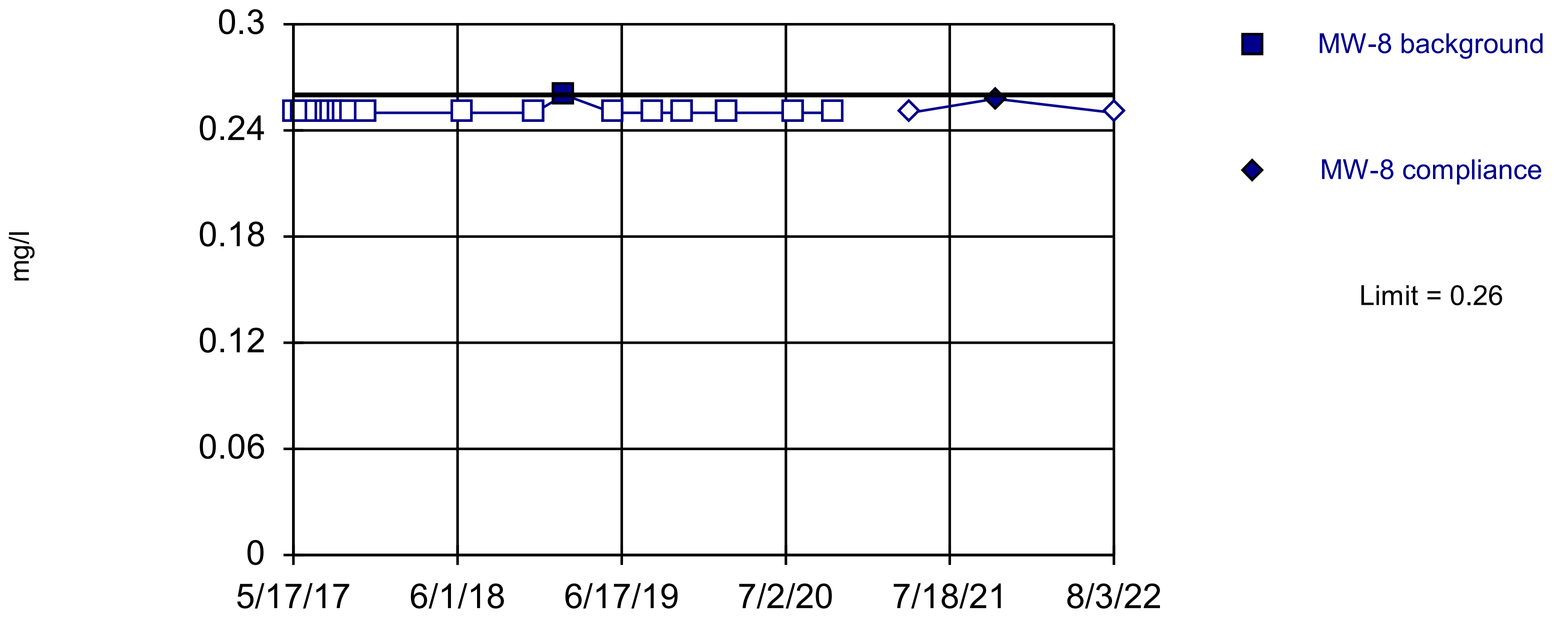
Hollow symbols indicate censored values.

Within Limit

Fluoride

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 18 background values. 94.44% NDs. Well-constituent pair annual alpha = 0.01072. Individual comparison alpha = 0.005373 (1 of 2).

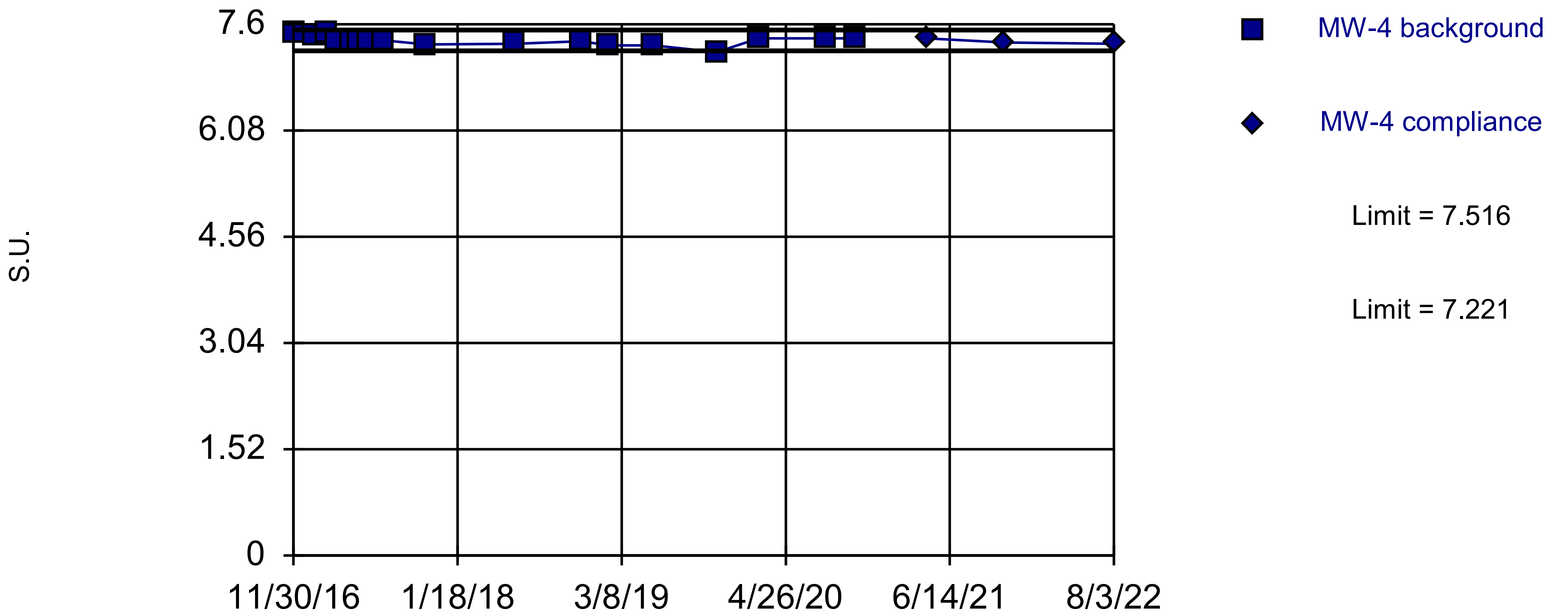
Prediction Limit   Analysis Run 10/19/2022 1:18 PM   View: Everything Minus Detrended Data

SBMU-Sikeston Power Station   Client: GREDELL Engineering   Data: SBMU-SPS EDD File 09-28-17

Within Limits

pH

Intrawell Parametric

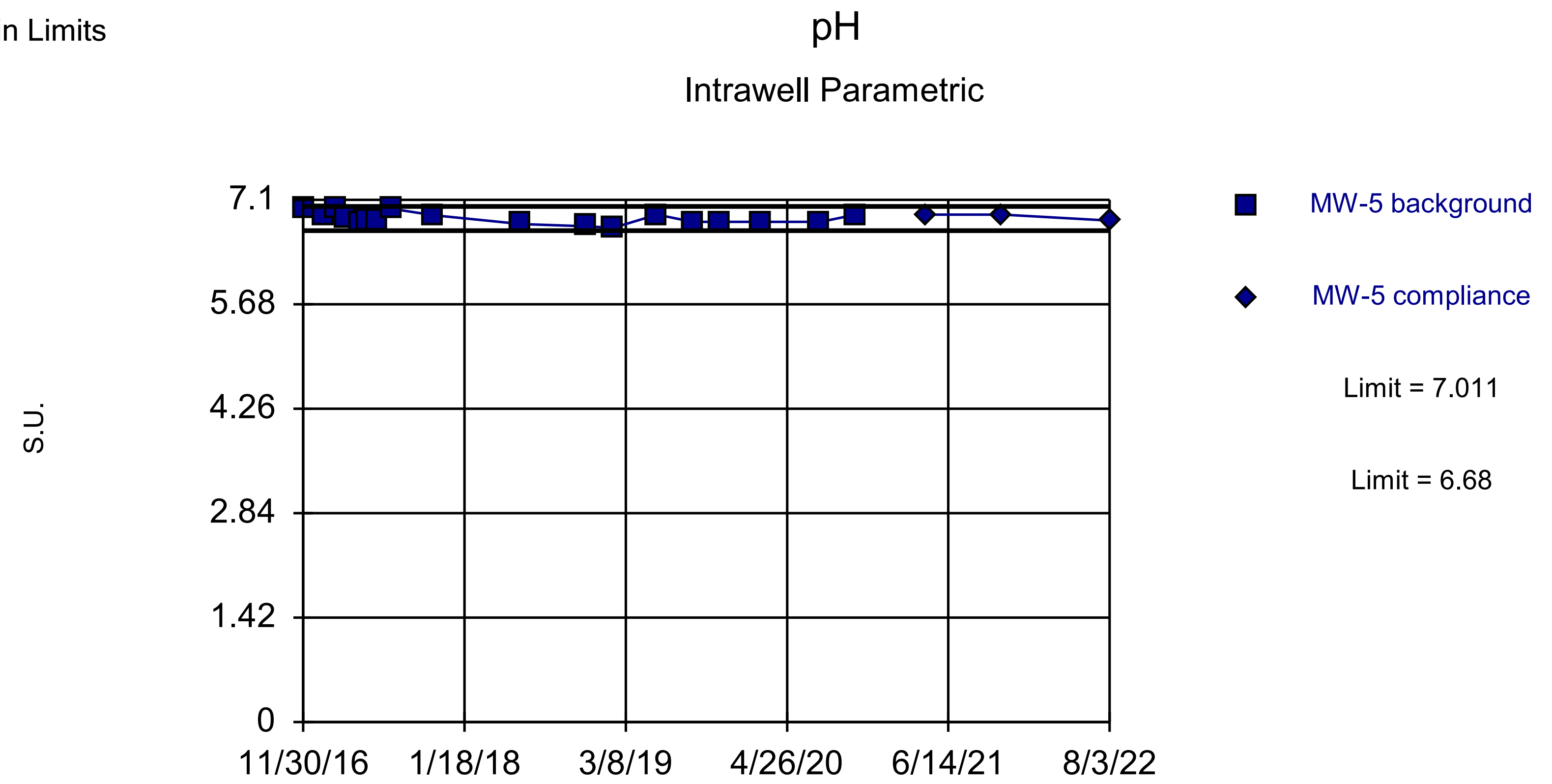


Background Data Summary: Mean=7.369, Std. Dev.=0.06927, n=17. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9505, critical = 0.851. Kappa = 2.127 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Prediction Limit Analysis Run 10/19/2022 1:18 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limits

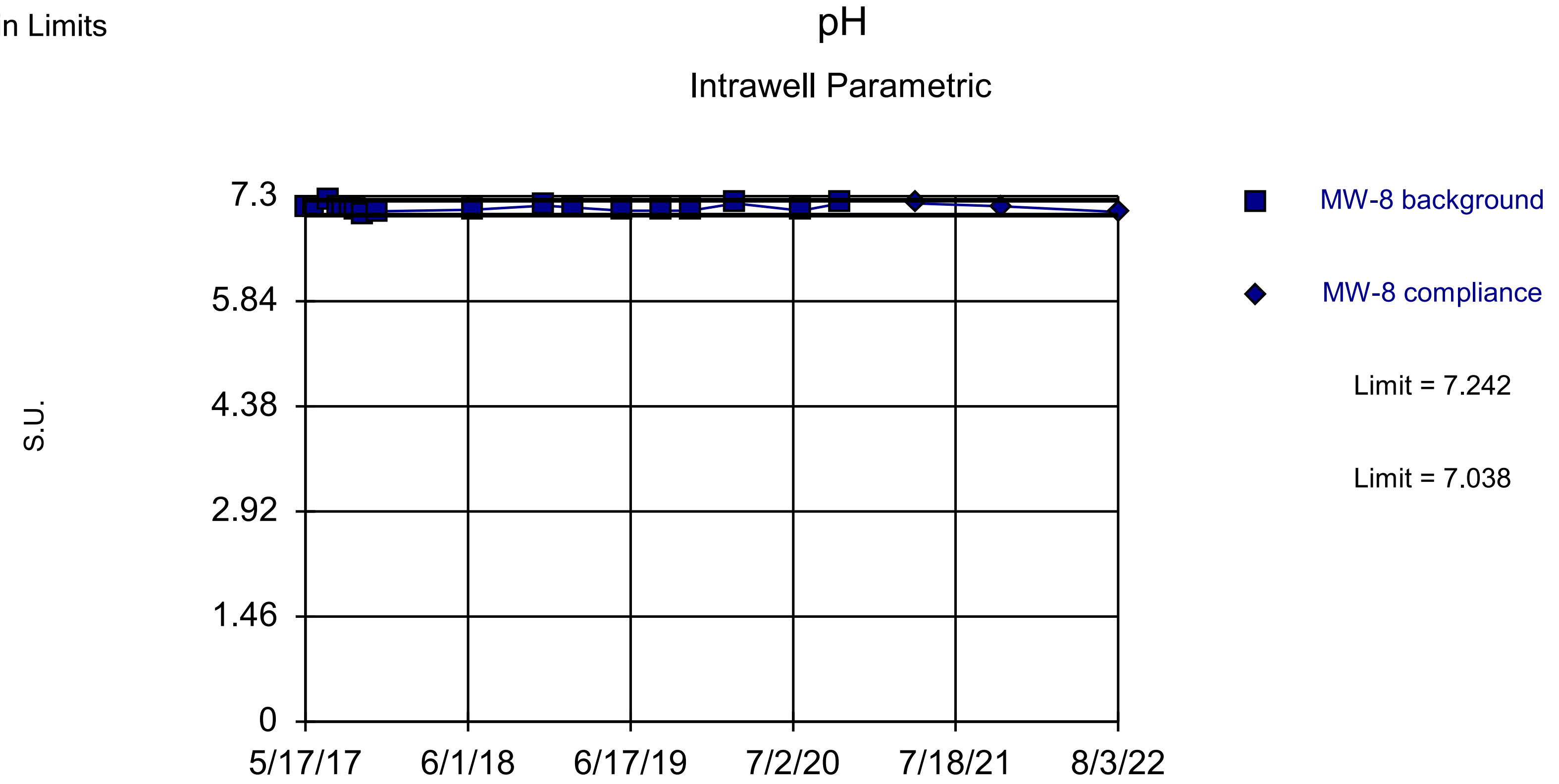


Background Data Summary: Mean=6.846, Std. Dev.=0.07853, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9237, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Prediction Limit Analysis Run 10/19/2022 1:18 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limits



Background Data Summary: Mean=7.14, Std. Dev.=0.04826, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9628, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Prediction Limit Analysis Run 10/19/2022 1:18 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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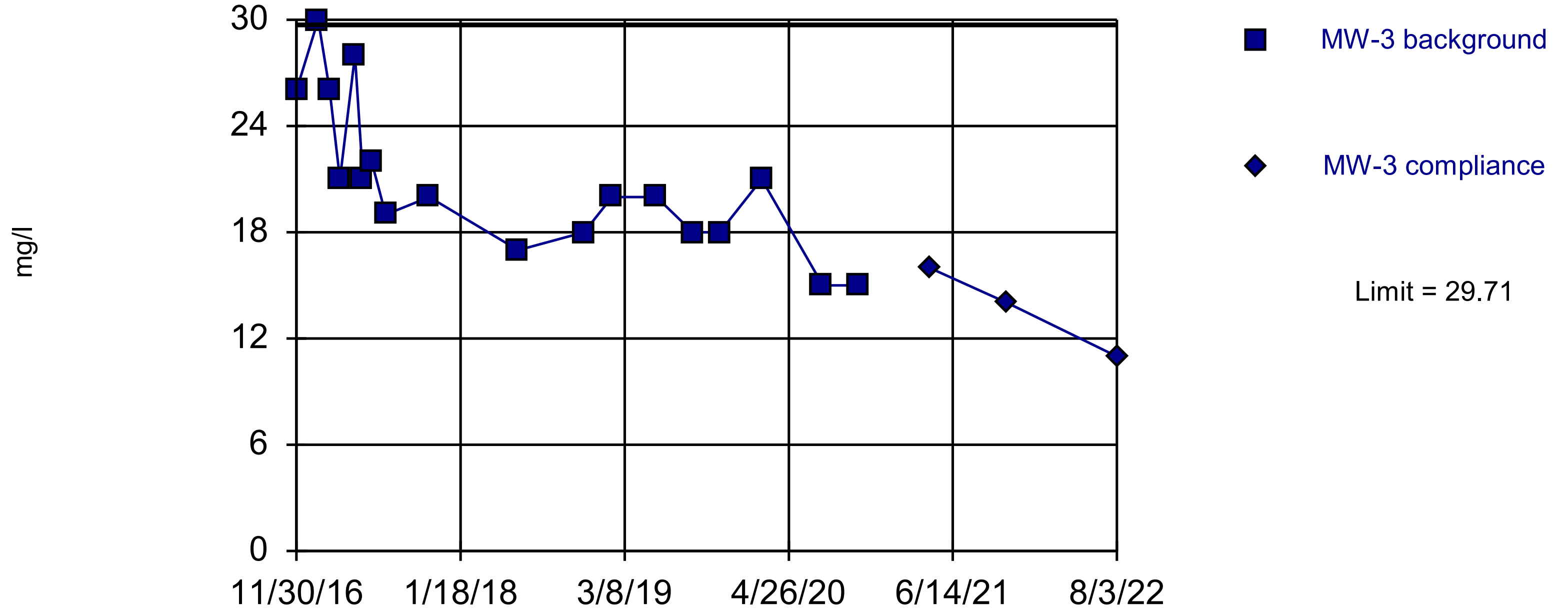
Within Limit

Sulfate

Intrawell Parametric



Background Data Summary: Mean=20.83, Std. Dev.=4.218, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9206, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

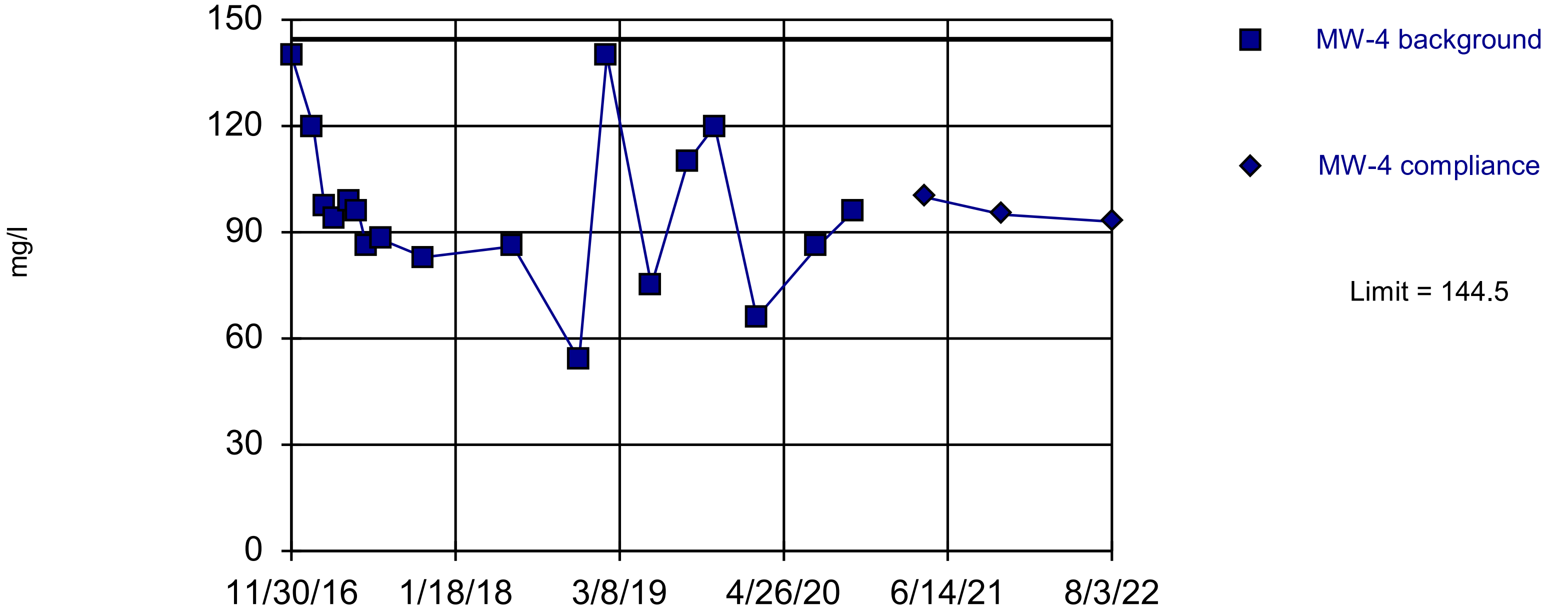
Prediction Limit Analysis Run 10/19/2022 1:18 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Sulfate

Intrawell Parametric



Background Data Summary: Mean=96.44, Std. Dev.=22.84, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9502, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

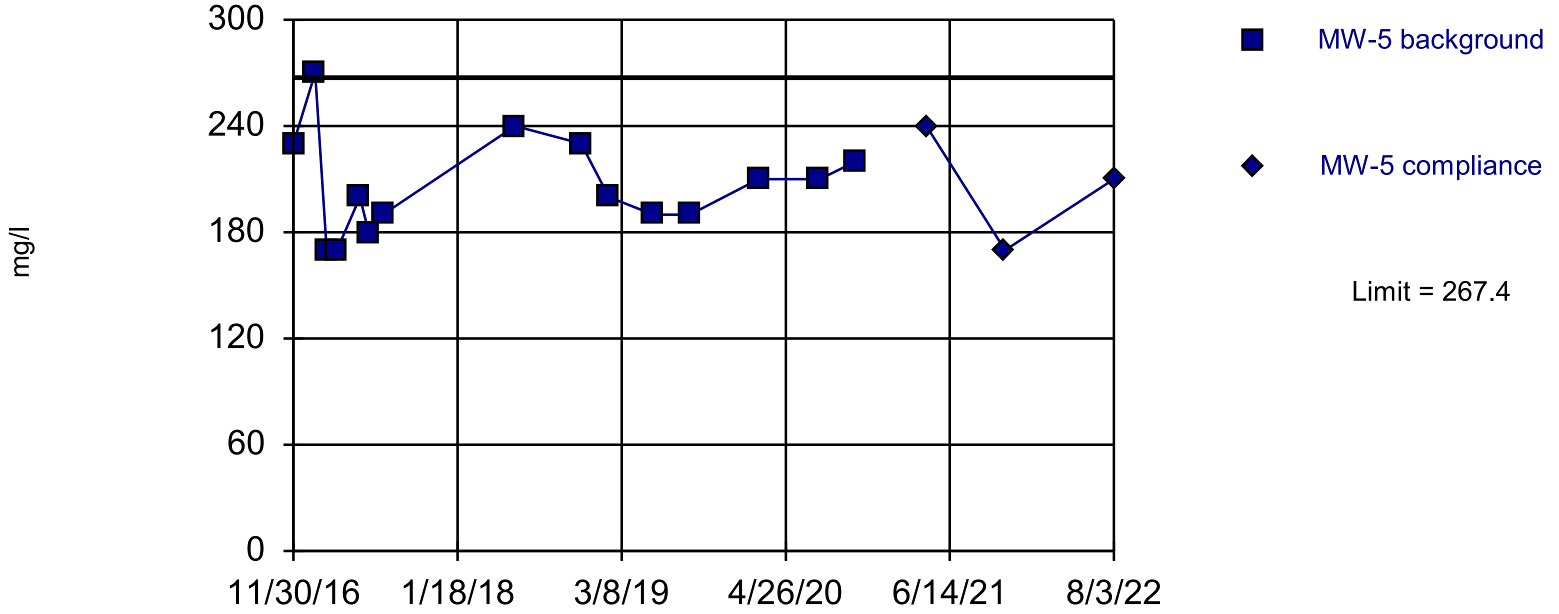
Prediction Limit Analysis Run 10/19/2022 1:18 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Sulfate

Intrawell Parametric



Background Data Summary: Mean=206.7, Std. Dev.=27.69, n=15. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9482, critical = 0.835. Kappa = 2.193 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

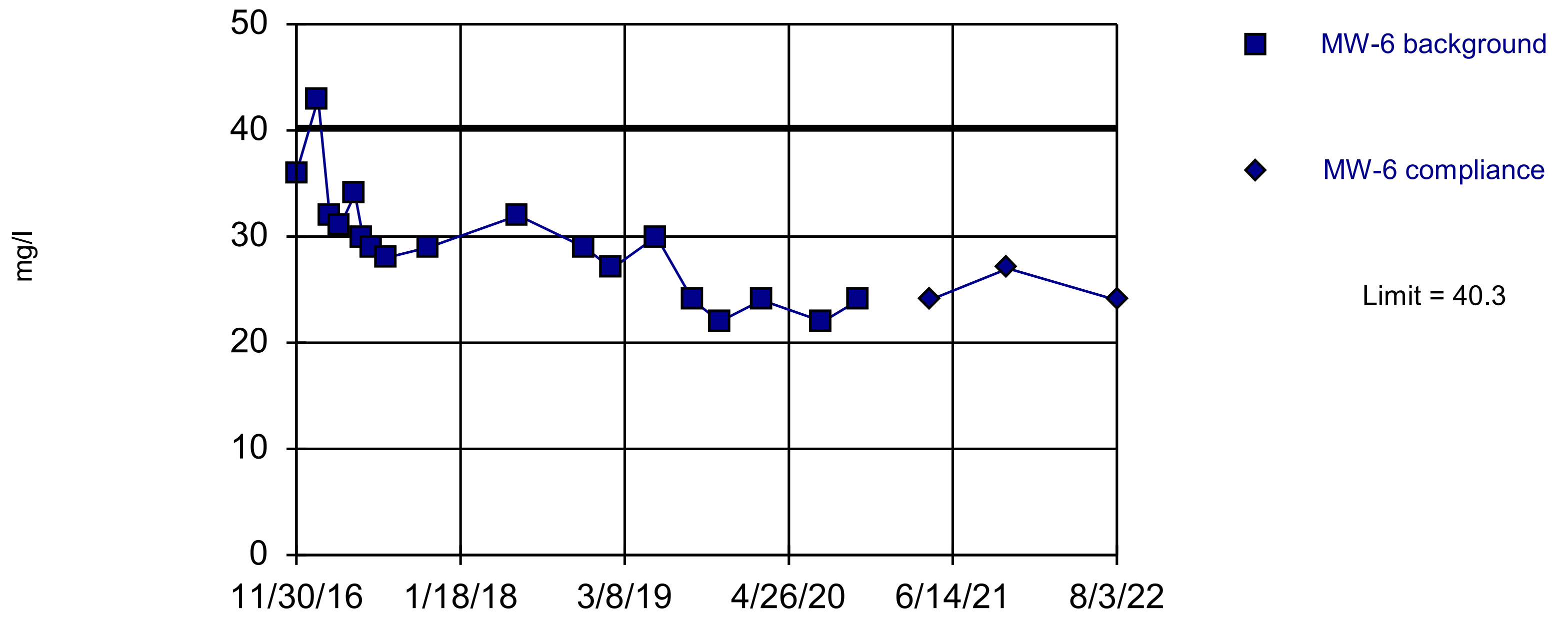
Prediction Limit Analysis Run 10/19/2022 1:18 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Sulfate

Intrawell Parametric



Background Data Summary: Mean=29.22, Std. Dev.=5.264, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9321, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Prediction Limit Analysis Run 10/19/2022 1:18 PM View: Everything Minus Detrended Data

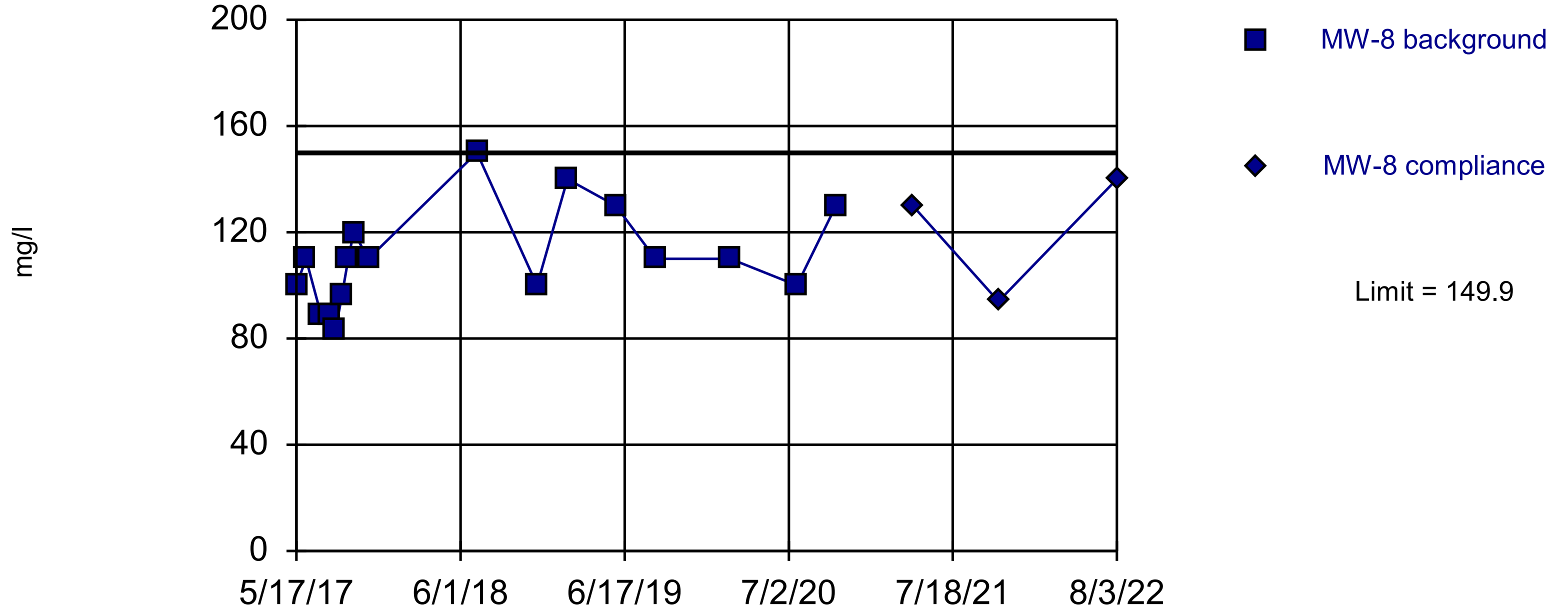
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v.9.6.35 Software licensed to GREDELL Engineering. UG

Within Limit

Sulfate

Intrawell Parametric



Background Data Summary: Mean=110.4, Std. Dev.=18.55, n=17. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9427, critical = 0.851. Kappa = 2.127 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

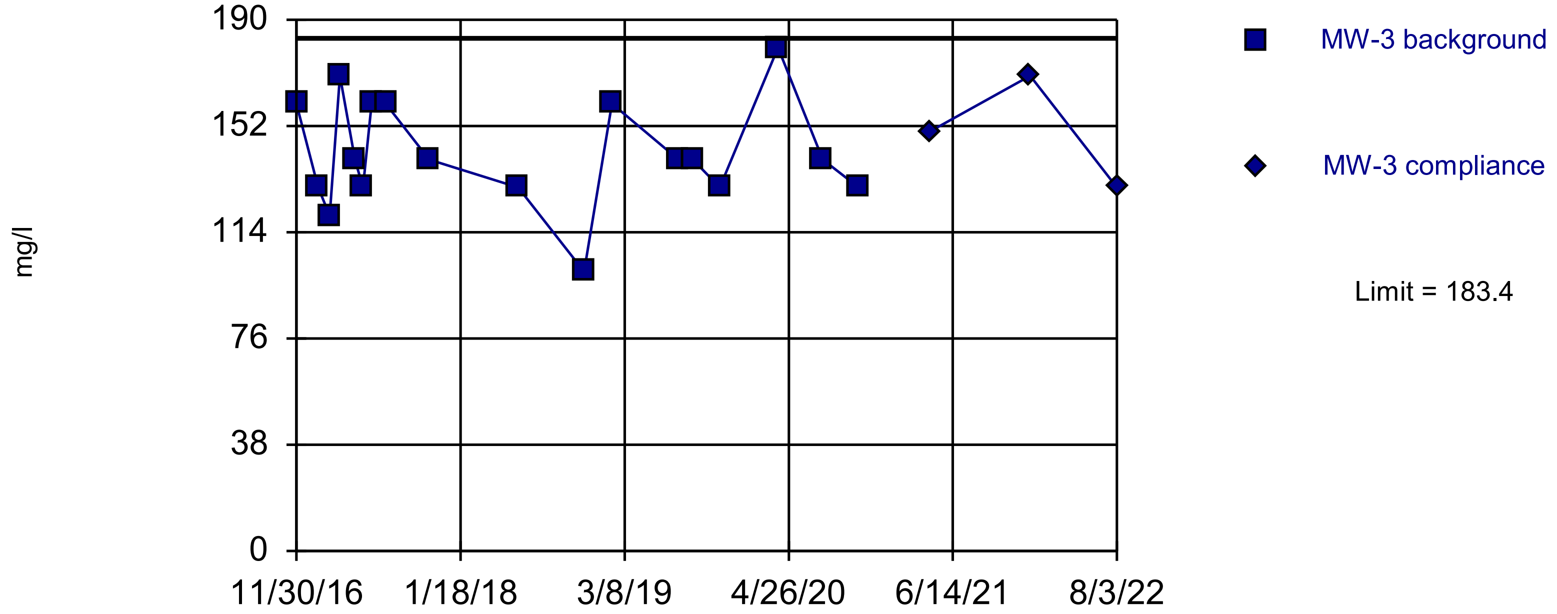
Prediction Limit Analysis Run 10/19/2022 1:18 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Total Dissolved Solids

Intrawell Parametric



Background Data Summary: Mean=142.2, Std. Dev.=19.57, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9412, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Prediction Limit Analysis Run 10/19/2022 1:19 PM View: Everything Minus Detrended Data

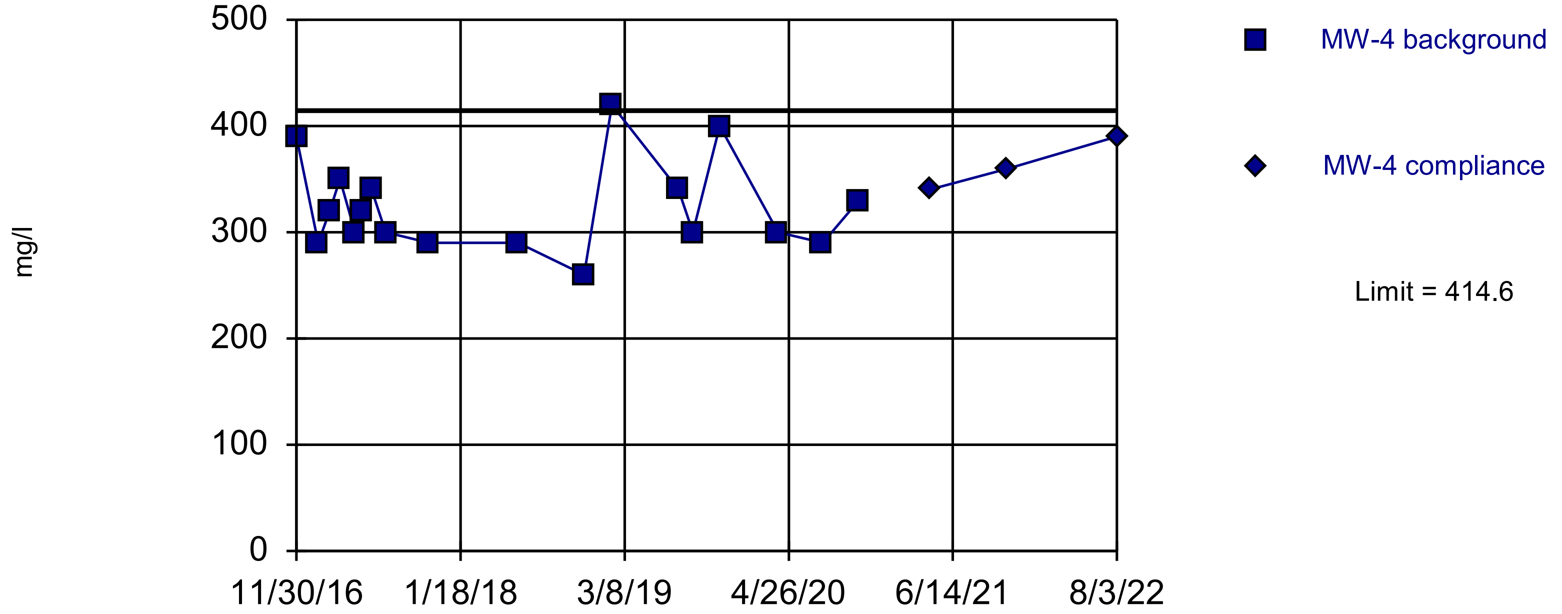
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v.9.6.35 Software licensed to GREDELL Engineering. UG

Within Limit

Total Dissolved Solids

Intrawell Parametric



Background Data Summary: Mean=323.9, Std. Dev.=43.13, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8945, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

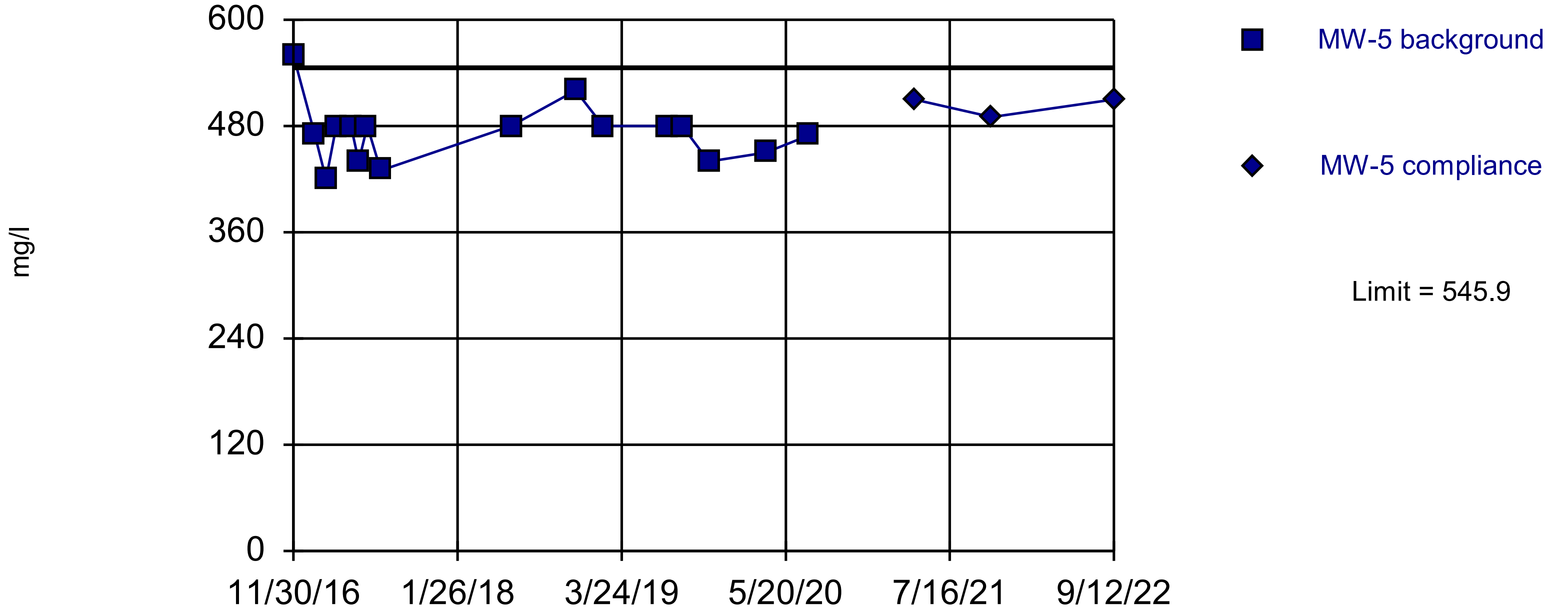
Prediction Limit Analysis Run 10/19/2022 1:19 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Total Dissolved Solids

Intrawell Parametric



Background Data Summary: Mean=472.5, Std. Dev.=34.16, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8811, critical = 0.844. Kappa = 2.15 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

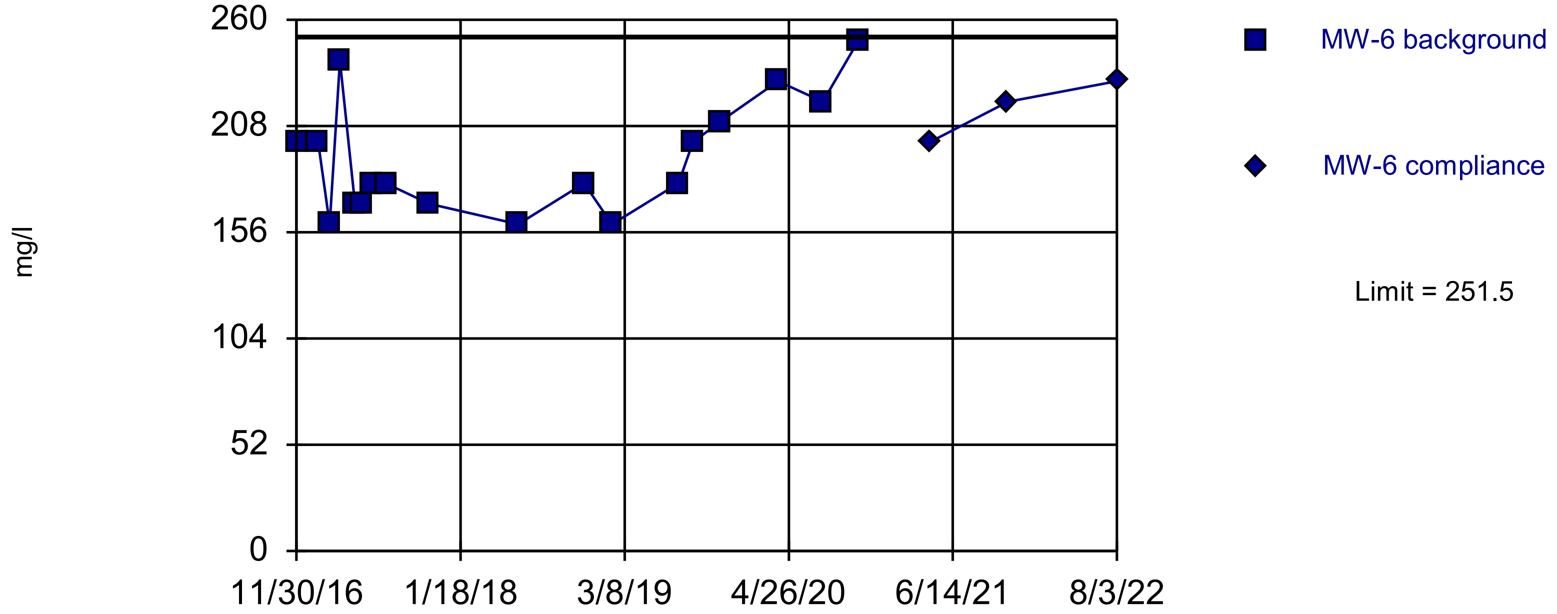
Prediction Limit Analysis Run 10/19/2022 1:19 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Total Dissolved Solids

Intrawell Parametric



Background Data Summary: Mean=192.2, Std. Dev.=28.19, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9055, critical = 0.858. Kappa = 2.104 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

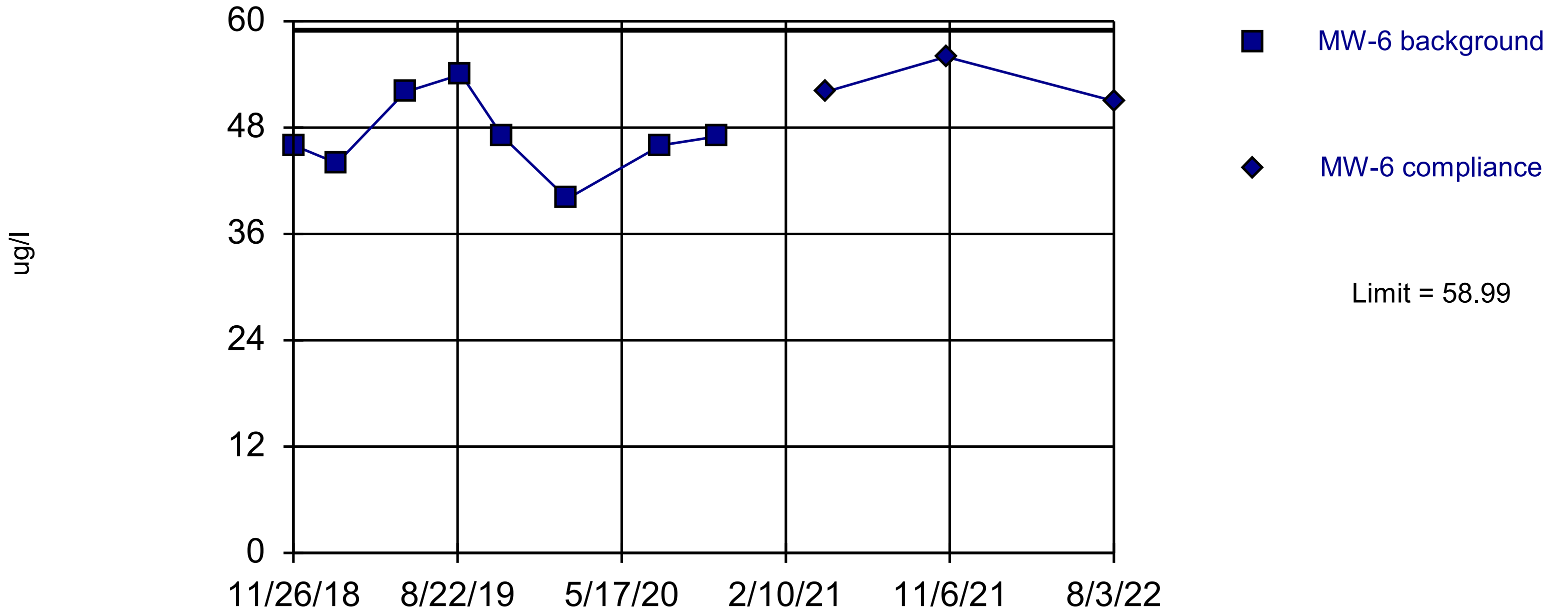
Prediction Limit Analysis Run 10/19/2022 1:19 PM View: Everything Minus Detrended Data

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Boron

Intrawell Parametric



Background Data Summary: Mean=47, Std. Dev.=4.375, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9419, critical = 0.749. Kappa = 2.74 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

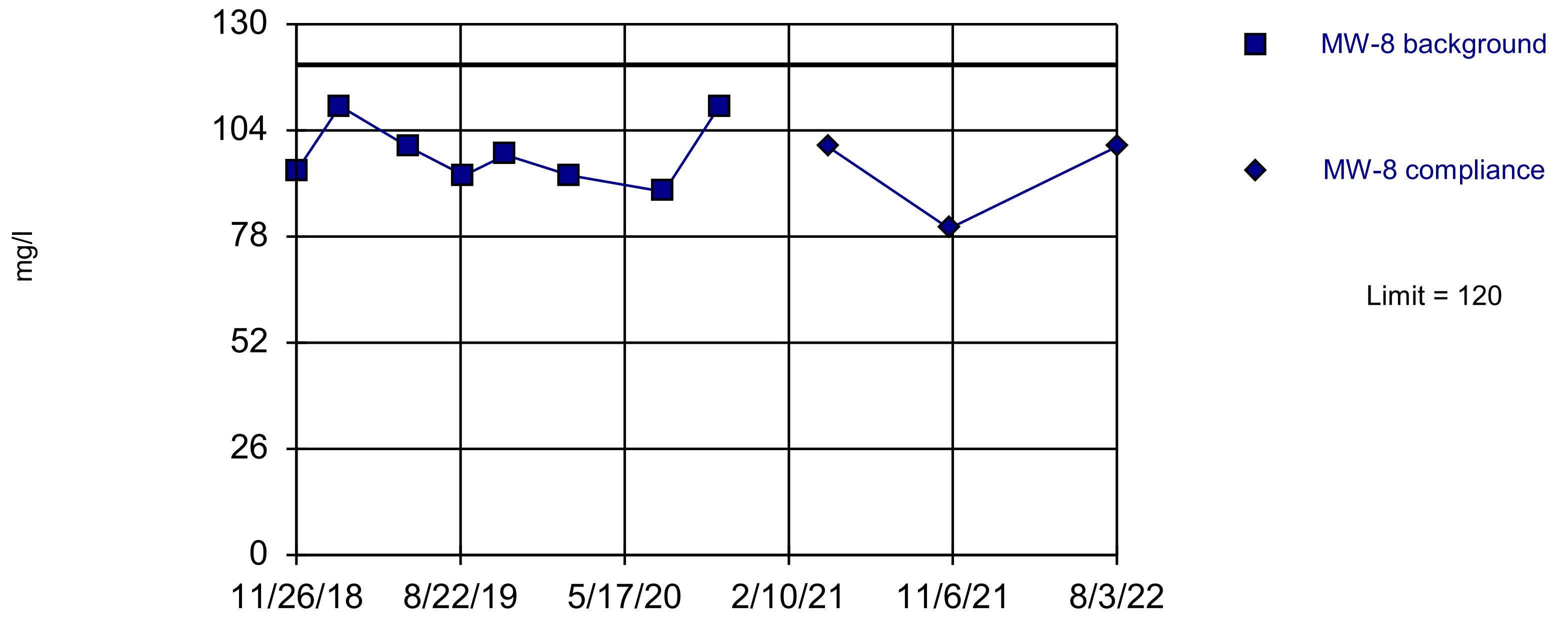
Prediction Limit Analysis Run 10/19/2022 1:21 PM View: Detrended Boron MW-6

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Calcium

Intrawell Parametric



Background Data Summary: Mean=98.38, Std. Dev.=7.909, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8713, critical = 0.749. Kappa = 2.74 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

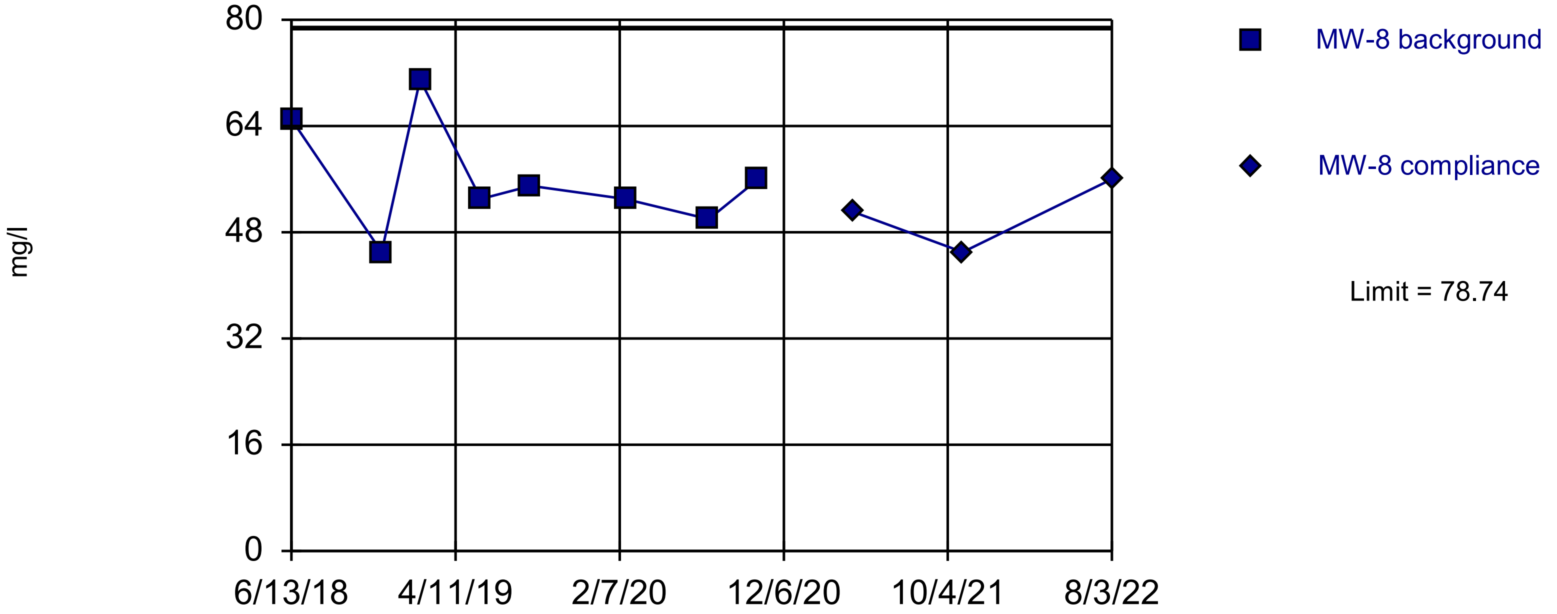
Prediction Limit Analysis Run 10/19/2022 1:23 PM View: Detrended Calcium MW-8

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limit

Chloride

Intrawell Parametric



Background Data Summary: Mean=56, Std. Dev.=8.298, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9251, critical = 0.749. Kappa = 2.74 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

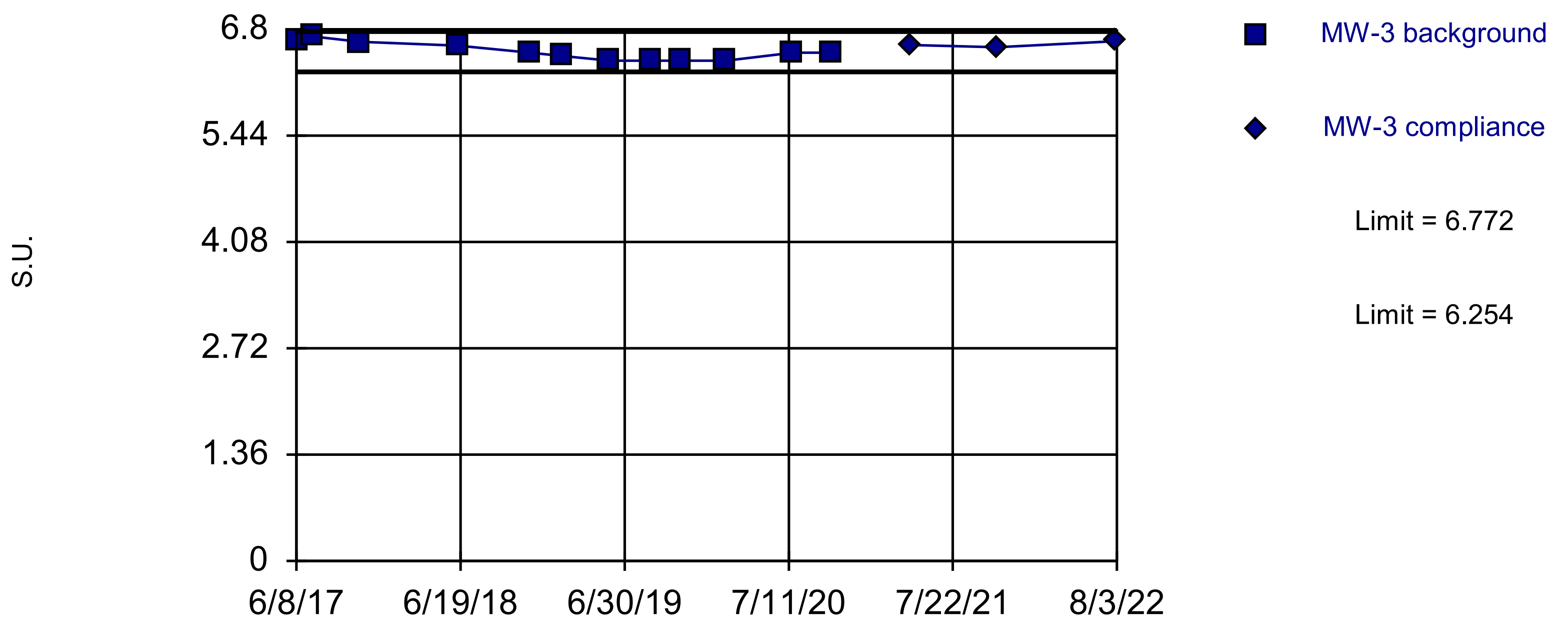
Prediction Limit Analysis Run 10/19/2022 1:23 PM View: Detrended Chloride MW-8

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limits

pH

Intrawell Parametric



Background Data Summary: Mean=6.513, Std. Dev.=0.1115, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8763, critical = 0.805. Kappa = 2.322 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

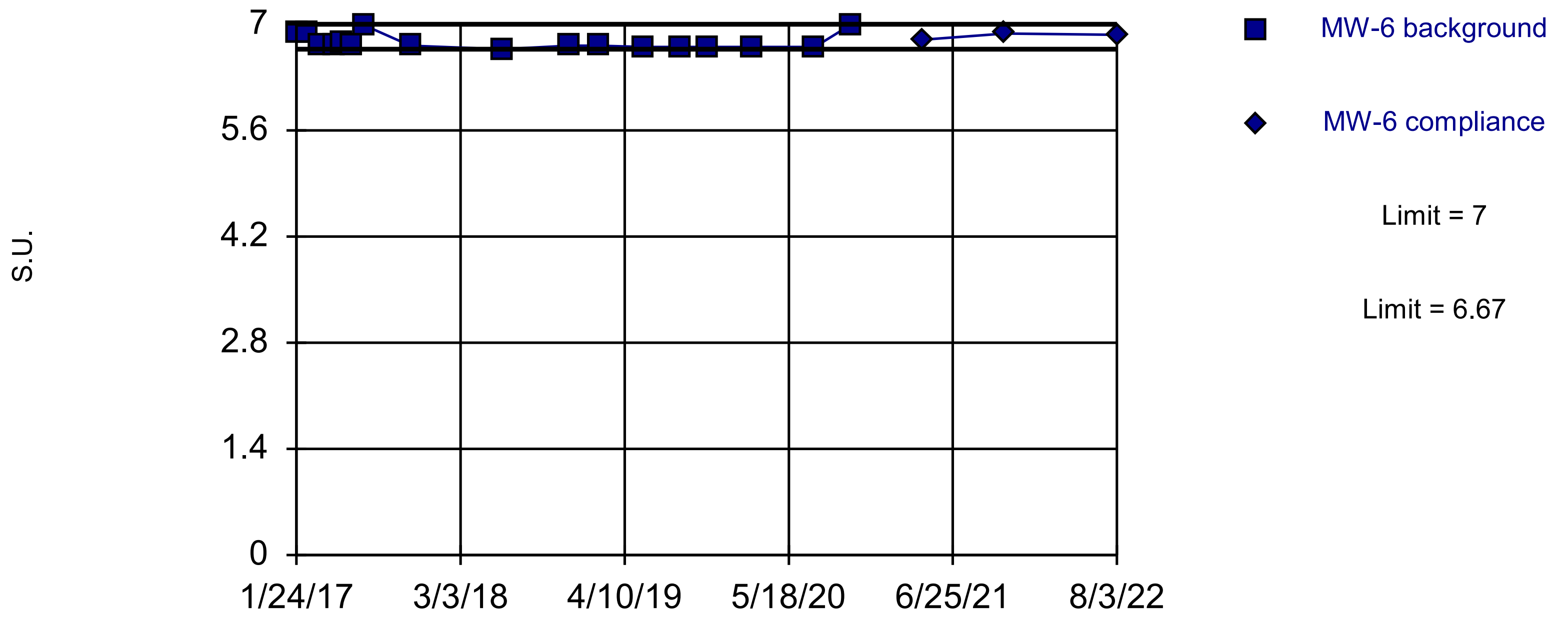
Prediction Limit Analysis Run 10/19/2022 1:24 PM View: Detrended pH MW-3

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Within Limits

pH

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limits are highest and lowest of 17 background values. Well-constituent pair annual alpha = 0.02359. Individual comparison alpha = 0.01183 (1 of 2).

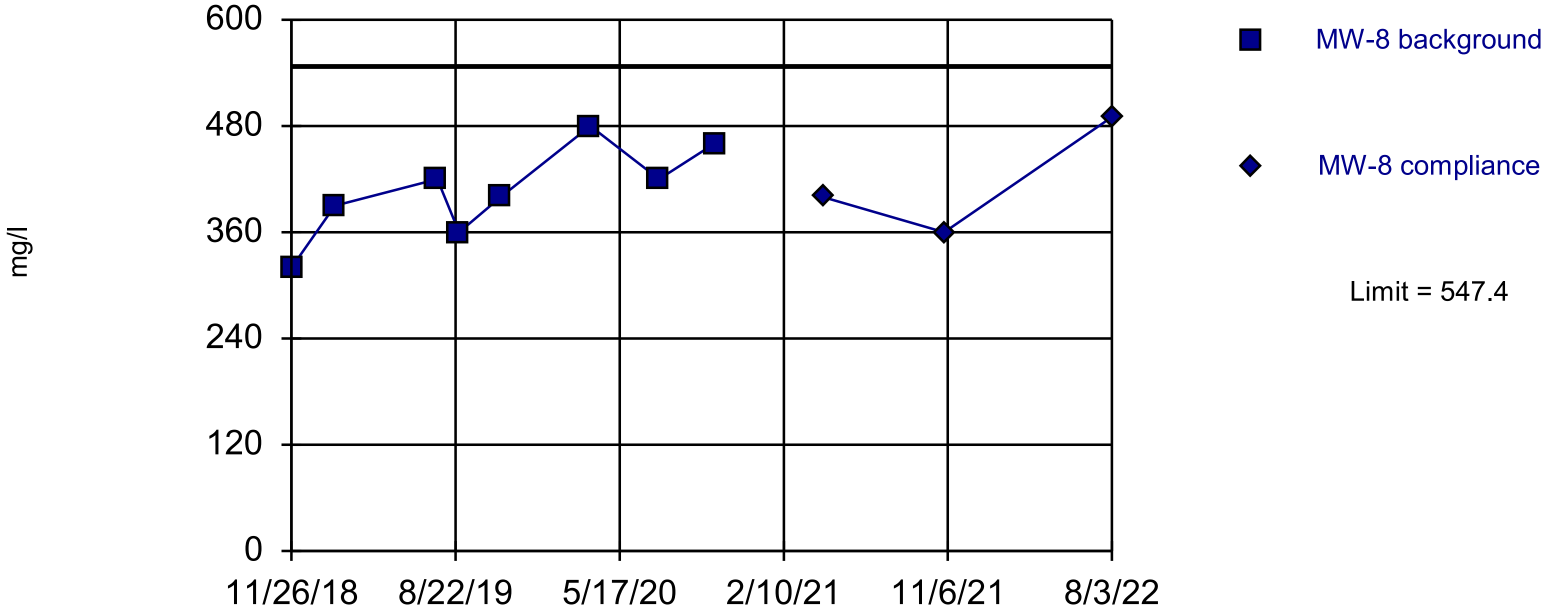
Prediction Limit   Analysis Run 10/19/2022 1:24 PM   View: Detrended pH MW-6

SBMU-Sikeston Power Station   Client: GREDELL Engineering   Data: SBMU-SPS EDD File 09-28-17

Within Limit

Total Dissolved Solids

Intrawell Parametric



Background Data Summary: Mean=406.3, Std. Dev.=51.53, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9779, critical = 0.749. Kappa = 2.74 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Prediction Limit Analysis Run 10/19/2022 1:25 PM View: Detrended TDS MW-8

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Appendix 8

Alternate Source Demonstrations

Appendix 8a

Alternate Source Demonstration

For Chloride in MW-6 - April 5, 2022

1505 East High Street
Jefferson City, Missouri 65101
Telephone (573) 659-9078
www.ger-inc.biz

GREDELL Engineering Resources, Inc.

Sikeston Board of Municipal Utilities
Sikeston Power Station
Detection Monitoring Program for Bottom Ash Pond – Chloride in MW-6
Alternate Source Demonstration

• • • • • • • • • •

Prepared for:

Sikeston BMU
Board of Municipal Utilities

Sikeston Power Station
1551 West Wakefield Avenue
Sikeston, MO 63801

STATE OF MISSOURI
THOMAS R. GREDELL
04-04-22
NUMBER
PE-021137
PROFESSIONAL ENGINEER

STATE OF MISSOURI
MIKEL C. CARLSON
4-5-22
RG 0126
REGISTERED GEOLOGIST

April 2022

PROFESSIONAL ENGINEER'S CERTIFICATION

40 CFR 257.94(e)(2) Alternate Source Demonstration

I, Thomas R. Gredell, P.E., a professional engineer licensed in the State of Missouri, hereby certify in accordance with 40 CFR 257.94(e)(2) to the accuracy of the alternate source demonstration described in the following report for the Sikeston Board of Municipal Utilities, Sikeston Power Station, Bottom Ash Pond CCR unit. The report demonstrates that the statistically significant increase of Chloride in MW-6 is not the result of a release from the Bottom Ash Pond and is attributable to an alternate source. This demonstration successfully meets the requirements of 40 CFR 257.94(e) as found in federal regulation 40 CFR 257, Subpart D – Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments. In addition, the demonstration was made using EPA Unified Guidance (Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance: EPA 530/R-09-007) and generally accepted methods.

Name: Thomas R. Gredell, P.E.

Signature: Thomas R. Gredell

Date: April 14, 2022

Registration Number: PE-021137
State of Registration: Missouri

THOMAS R. GREDELL
NUMBER
PE-021137

Sikeston Board of Municipal Utilities
Sikeston Power Station
Detection Monitoring Program for Bottom Ash Pond - Chloride in MW-6
Alternate Source Demonstration

April 2022

Table of Contents

List of Figures

List of Tables

List of Appendices

1.0 INTRODUCTION

This Alternate Source Demonstration (ASD) Report has been prepared to address the results of the semi-annual sampling event initiated on November 1, 2021 at the Sikeston Board of Municipal Utilities (SBMU) Sikeston Power Station's (SPS) Bottom Ash Pond, a coal combustion residual (CCR) surface impoundment. Following receipt of final analytical data, it was apparent that an error resulted in delayed analysis and hold time exceedance for Total Dissolved Solids (TDS) in sample MW-3, and the reported concentration of Chloride in sample MW-6 exceeded its respective prediction limit for this well. Consequently, resampling for the aforementioned well constituent pairs was initiated on December 27, 2021. Following receipt of final analytical data from the resampling event, it was confirmed that the Chloride concentration in sample MW-6 represents a statistically significant increase (SSI) over background for this well. The resample of MW-3 resulted in an unqualified result for TDS which did not suggest an SSI. SBMU-SPS requested that Gredell Engineering conduct an evaluation and develop an ASD, if warranted.

As stated in §257.94(e)(2), an owner or operator may demonstrate that a source other than the CCR unit caused the apparent SSI over background for a constituent. The owner or operator must complete the written demonstration within 90 days of detecting an SSI over background to include obtaining a certification from a qualified professional engineer verifying the accuracy of the information in the report. If a successful demonstration is completed within the 90-day period, the owner of the CCR unit may continue with a detection monitoring program. The owner or operator must also include the certified demonstration in the annual groundwater monitoring report required by §257.90(e).

Gredell Engineering has completed an evaluation of the groundwater sampling events, analytical data results, and other potential factors, for the SBMU SPS Bottom Ash Pond groundwater monitoring system to determine if an alternate source is the cause of the apparent SSI of Chloride in MW-6. This report presents the results of that evaluation and includes supporting documentation.

2.0 OBSERVATIONS AND DATA COLLECTION

The Bottom Ash Pond groundwater monitoring system consists of five wells, designated MW-3, MW-4, MW-5, MW-6, and MW-8 (Figure 1). Monitoring wells MW-3, MW-4, MW-5, and MW-6 were installed in April 2016, and sampled on an approximate monthly basis beginning in November 2016 and ending in July 2017 to establish an initial background data base. Monitoring well MW-8 was installed in April 2017 and was sampled at an increased frequency beginning in May 2017 and ending in September 2017. Additional information regarding these wells is available in the Groundwater Monitoring, Sampling and Analysis Plan (GMSAP) for the site.

The background data base for the Bottom Ash Pond is periodically updated in general accordance with U.S. Environmental Protection Agency (USEPA) Unified Guidance for statistical analysis of groundwater monitoring data (USEPA, 2009). The results of the eight initial background sampling events and ten additional sampling events included in updates to the background data base were evaluated in accordance with §257.93, and intra-well analysis using prediction limits was determined to be the most appropriate statistical analysis approach for detection monitoring. Following receipt of final analytical data reports from the contract laboratory, the reported concentration for each detection monitoring constituent from each well is compared to its respective prediction limit. If a constituent concentration exceeds the respective prediction limit for a particular well or is outside the predicted range (in the case of pH), SSI over background is suspected.

The SPS initiated its semiannual detection groundwater sampling event for the Bottom Ash Pond on November 1, 2021. The contracted laboratory received the samples on November 3, 2021 and issued final analytical results on December 9, 2021 (Appendix 1a). However, the Chloride result for sample MW-6 appeared elevated relative to the prediction limit for this well constituent pair, and the TDS result for sample MW-3 was qualified for hold time exceedance. Consequently, resampling was initiated for Chloride at MW-6 and TDS at MW-3 on December 27, 2021. The analytical laboratory received these samples on December 29, 2021 and issued the analytical report for the resampling event on January 7, 2022 (Appendix 1b).

The following table summarizes the analytical results for Chloride in MW-6 and TDS in MW-3 from the November 1, 2021 sampling and December 27, 2021 resampling events. Prediction limits for these well constituent pairs are also presented.

Table 1 -- Analytical Results and Prediction Limit Summary

.

Sampling Event Date	Well Constituent Pair	Analytical Result (mg/L)	Prediction Limit (mg/L)	SSI Suspected or Confirmed?
November 1, 2021	MW-3 TDS	130	180	No
	MW-6 Chloride	4.3	2.956	Suspected
December 27, 2021	MW-3 TDS	170	180	No
	MW-6 Chloride	3.5	2.956	Confirmed

3.0 SUMMARY OF DATA ANALYSIS AND FINDINGS

The USEPA provides Unified Guidance for statistical analysis of groundwater monitoring data (USEPA, 2009). This Unified Guidance document was reviewed to assess the validity of the apparent SSI of Chloride in MW-6. Chapter 4 of the Unified Guidance discusses groundwater monitoring programs and statistical analysis of the associated data. A key component of statistical analysis is "*to determine whether or not the increase is actually due to a contaminant release*". Three of these considerations are pertinent to the data associated with Chloride testing, MW-6 sampling, and the Bottom Ash Pond groundwater monitoring system and for that reason are listed below.

1. Chapter 4, page 4-8: *Did the test correctly identify an actual release of an indicator or hazardous constituent?*
2. Chapter 4, page 4-8: *Could observed SSIs for naturally occurring analytes be due to longer term (i.e., seasonal, or multi-year) variation?*
3. Chapter 4, page 4-9: *Are any of these contaminants observed upgradient of the regulated units?*

Each of these considerations were evaluated to determine the validity of the apparent SSI for Chloride in MW-6. The results of this evaluation are discussed below.

<u>Unified Guidance Consideration 1</u>

Since completion of the hydrogeologic site characterization (Gredell Engineering, 2017), the piezometers installed for the characterization were converted to monitoring wells MW-1 through MW-6. As documented in that report, 12 groundwater maps were developed showing the direction of flow and hydraulic gradient based on the monthly groundwater elevations. These groundwater maps demonstrate a consistent west-southwestern direction of flow showing minimal variation in hydraulic gradient over the 12-month period extending from May 2016 to April 2017. Moreover, three additional monitoring wells (MW-7 through MW-9) were installed in locations shown on Figure 1 to provide sufficient downgradient monitoring of the ash ponds at the SPS and to further refine and confirm overall groundwater flow direction. Based on over five years of monitoring since 2016, the groundwater data consistently demonstrate that MW-6 is not downgradient of the Bottom Ash Pond and groundwater flow direction remains consistently to the west-southwest.

MW-6 was installed to monitor spatial variability of groundwater geochemistry upgradient of the Bottom Ash Pond. Based on the weight of evidence that MW-6 is not hydraulically downgradient from the Bottom Ash Pond, the well is not positioned to detect a release from the pond. Therefore, the conclusion to the first consideration question from Unified Guidance listed above is negative.

The analytical results for MW-6 could not have identified an actual release of Chloride from the Bottom Ash Pond.

Unified Guidance Consideration 2

Boswell et al. (1968) published a study of the Quaternary Aquifers in the Mississippi Embayment which documented characteristics of the alluvial aquifer underlying the regulated units (i.e., the Bottom Ash Pond and Fly Ash Pond) at the site. The study stated that while the chief source of recharge is precipitation, recharge also occurs from the upward movement of groundwater from underlying aquifers. While the alluvial and Wilcox Aquifers are discussed separately, Luckey (1985) notes that the alluvial aquifer and the underlying Wilcox Aquifer commonly are hydraulically interconnected. The hydraulic connection between the alluvial aquifer and Wilcox Aquifer is further demonstrated by the potentiometric contour maps presented by Luckey (1985), which demonstrate a similar flow direction (west-southwest) in both aquifers in the Sikeston area.

Drilling records for high-yield wells (Appendix 2) at the SPS and in areas east generally document permeable sand and gravel at and near the contact between the alluvial aquifer and the underlying Wilcox Aquifer. These permeable sands and gravels and the lack of a laterally continuous low-permeability aquitard between the two aquifers permit the upward movement and mixing of water between these aquifers near the SPS.

It is also noted that the high-yield Sikeston Municipal wells (Appendix 3) at Plant 3, which is located approximately one-half mile east of the SPS, are 142 to 145 feet deep and screened in the lower part of the alluvial aquifer. Appendix 3 documents between 30 and 34 feet of drawdown or reduction in hydraulic head in the alluvial aquifer as a result municipal well pumping. This reduction in hydraulic head results in an upward hydraulic gradient from the underlying Wilcox Aquifer. The rate of upward movement of groundwater from the Wilcox into the alluvial aquifer undoubtedly increases as these high-yield wells withdraw groundwater.

High-yield irrigation wells are common to support crop farming in southeast Missouri. Luckey and Fuller (1980) state that the alluvium is the only aquifer that is used for irrigation in the area. As shown on Figure 2, the irrigation wells near the SPS are generally 140 feet deep or less and are screened in the lower part of the alluvial aquifer. Demand on the aquifer increased in 2021 due to substantially lower annual precipitation (43.63 inches) relative to calendar years 2020 and 2019 (56.04 and 57.38 inches, respectively). This additional demand on irrigation to support farming resulted in more drawdown on the alluvial aquifer in 2021 relative to previous years. The additional drawdown reduces hydraulic head relative to the underlying Wilcox Aquifer and results in greater upward flow of groundwater from the Wilcox, which then mixes and interacts with groundwater in the alluvial aquifer.

Boswell et al. (1968) also states that the alluvial aquifer contains appreciable quantities of Chloride ranging from 0.3 to 1,870 mg/L, owing to chemical dissolution of soil and rocks. Such concentrations suggest that the level of Chloride in MW-6 may be naturally occurring. Combined with the increased demand on groundwater in 2021, the current increase in Chloride is likely a temporal variation resulting from upward movement, co-mingling, and geochemical interaction of groundwater from the underlying Wilcox Aquifer. This geochemical variation is not represented by the background data set for the Bottom Ash Pond monitoring system. Consequently, the conclusion to the second consideration question from Unified Guidance listed above is affirmative.

Unified Guidance Consideration 3

Relatively high concentrations of Chloride are documented in irrigation wells, industrial supply wells, and SBMU municipal (i.e., public drinking water supply) wells located upgradient of the regulated units. Data published by the Missouri Department of Natural Resources in their 2020 Annual Water Quality Report for the SBMU municipal water system summarize location and construction of the public drinking water supply wells (Appendix 3). Several additional publications were reviewed to determine the natural occurrence and variability of Chloride in the alluvial and Wilcox Aquifers.

Luckey and Fuller (1980) presented comprehensive hydrogeologic data for the unconsolidated aquifers in southeastern Missouri. This study inventoried and sampled over 800 irrigation, high-yield industrial, and municipal wells and included data on the alluvial and Wilcox Aquifers underlying the regulated units (i.e., Bottom Ash Pond and Fly Ash Pond) at the SPS. While the alluvial and Wilcox Aquifers are typically discussed separately in the technical literature, Luckey (1985) states that these two aquifers commonly are hydraulically interconnected. This hydraulic connection between aquifers is also demonstrated by the drilling records in Appendix 2, which document permeable sand and gravel at the alluvium/Wilcox contact.

Luckey and Fuller (1980) summarize analytical data for Chloride in the alluvial and Wilcox Aquifers in the Sikeston area. Seven wells located upgradient of the Bottom Ash Pond were included in their study. Four of these wells were identified as irrigation or industrial supply wells and three were SBMU municipal wells located closer to the SPS.

Similarly, Brahana et al. (1985) presented a study of groundwater quality based on comprehensive sampling and analysis of samples from 42 wells set in the unconsolidated aquifers of the Northern Mississippi Embayment. The locations of these and other wells are indicated on Figure 2. Chloride data from these wells is summarized in Table 2 and on Figure 2.

Table 2 – Chloride Results in Upgradient Irrigation, Industrial and Municipal Wells

Well Type	Owner	Well Location	Formation	Chloride Concentration (mg/L)	Data Source
Irrigation or Industrial Supply	Roth	T26N R14E S11CBC	Alluvium	4.8	Luckey and Fuller (1980)
	Drury Dev.	T26N R14E S15CCD	Alluvium	5.3	
	Miner	T26N R14E S16DDD	Alluvium	13	
	Scott	T26N R14E S15DBB	Alluvium	9.8	
Municipal	Sikeston ID #19120	T26N R14E S19CDD	Wilcox	17	
	Sikeston ID #26235	T26N R14E S19DCB	Wilcox	7.8	
	Sikeston ID #2700	T26N R14E S19CDD	Wilcox	5.4	
	Sikeston ID #5941	T26N R14E S19CDD	Wilcox	5.2	Brahana et al. (1985)

These data demonstrate that local concentrations of Chloride up gradient of the site range from 4.8 mg/L to 17 mg/L. Therefore, the conclusion to the third consideration question from Unified Guidance listed above is affirmative.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Gredell Engineering concludes that the apparent SSI of Chloride in MW-6 is not the result of a release from the Bottom Ash Pond and is attributable to an alternate source. The following supports this conclusion:

- MW-6 is not hydraulically downgradient of the Bottom Ash Pond and is not positioned to identify a release of an indicator (Chloride) from the regulated unit. Groundwater flow direction is consistently from the east-northeast to the west-southwest as documented during all monitoring events at the SPS.
- The reported Chloride concentration in MW-6 is naturally occurring and due to temporal variation resulting from chemical dissolution of Chloride from soil or rocks, and variable upward groundwater movement from the underlying Wilcox Aquifer over a longer term (i.e., multi-year) than accounted for during the background sampling period of the regulated unit's monitoring system.
- Chloride is present in high-capacity wells located upgradient of the regulated units. Chloride concentrations range from 4.8 to 17 mg/L, as reported by the United States Department of the Interior Geological Survey and the Missouri Department of Natural Resources.

Based on these conclusions, Gredell Engineering recommends continuance of semi-annual detection monitoring in accordance with §257.94.

5.0 LIMITATIONS

This report has been prepared for the exclusive use of the client and GREDELL Engineering Resources, Inc. for the specific project discussed in accordance with generally accepted environmental practices common to this locale at this time. The report is applicable only to this specific project and identified site conditions as they existed at the time of report preparation. The use of this report by others to develop independent interpretations of data or conclusions not explicitly stated in this report are the sole responsibility of those firms or individuals.

This report is not a guarantee of subsurface conditions. Variations in subsurface conditions may be present that were not identified during this or previous investigations. Interpretations of data and recommendations made in this report are based on observations of data that were available and referred to in this report unless otherwise noted. No other warranties, expressed or implied, are provided.

6.0 REFERENCES

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Luckey, R.R. and Fuller, D.L., 1980, Hydrogeologic Data for the Mississippi Embayment of Southeastern Missouri. United States Department of the Interior Geological Survey in cooperation with Missouri Department of Natural Resources, Division of Geology and land Survey Open-File Report 79-421, Rolla, Missouri, January 1980.

Luckey, R.R., 1985, Water Resources of the Southeast Lowlands, Missouri. United States Geological Survey Water-Resources Investigations Report 84-4277, Rolla, Missouri, 1985.

Sanitas Statistical Software, © 1992-2019 SANITAS TECHNOLOGIES, Alamosa Colorado 81101-0012.

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.

Figures

N

SCALE: 1" = 400'

0 200 400

LEGEND

PROPERTY LINE	——PL——
GROUNDWATER CONTOUR	————
MONITORING WELL	MW
UP GRADIENT MONITORING LOCATION	UG
DOWN GRADIENT MONITORING LOCATION	DG
GENERAL FLOW DIRECTION	◄——
NOT MONITORED DURING THIS EVENT	NM

NOTES:

1. IMAGE PROVIDED BY BING MAPS.
2. MONITORING WELL LOCATIONS, CASING ELEVATIONS & UNDERGROUND CULVERT ELEVATIONS SURVEYED BY BOWEN ENGINEERING & SURVEYING.
3. GROUNDWATER ELEVATIONS MEASURED BY SIKESTON POWER STATION STAFF ON NOVEMBER 1, 2021.
4. MAP DEVELOPMENT BASED ON CONTOURS GENERATED BY SURFER® SOFTWARE.
5. RANGE OF HYDRAULIC GRADIENT AS DETERMINED BY SURFER® SOFTWARE 0.0005 FT./FT. TO 0.001 FT./FT.

WELL ID	GROUNDWATER ELEVATION	CASING ELEVATION	NORTHING	EASTING
MW-3	295.95	308.55	381130.00	1079946.62
MW-4	293.74	305.61	380804.62	1077766.95
MW-5	294.31	305.91	379858.94	1078477.85
MW-6	295.11	307.72	379874.77	1079384.36
MW-8	293.86	304.77	380311.20	1077940.08

THE GEOLOGIST WHO REVIEWED AND APPROVED THIS REPORT ASSUMES RESPONSIBILITY ONLY FOR GEOLOGIC INTERPRETATIONS OF DATA APPEARING ON THE PAGE AND DISCLAIMS PURSUANT TO SECTION 256.456 RSMO ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS OR OTHER DOCUMENTS OR INSTRUMENTS NOT PREPARED UNDER THE SUPERVISION OF THE GEOLOGIST RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE PROJECT TO WHICH THIS FIGURE REFERS.

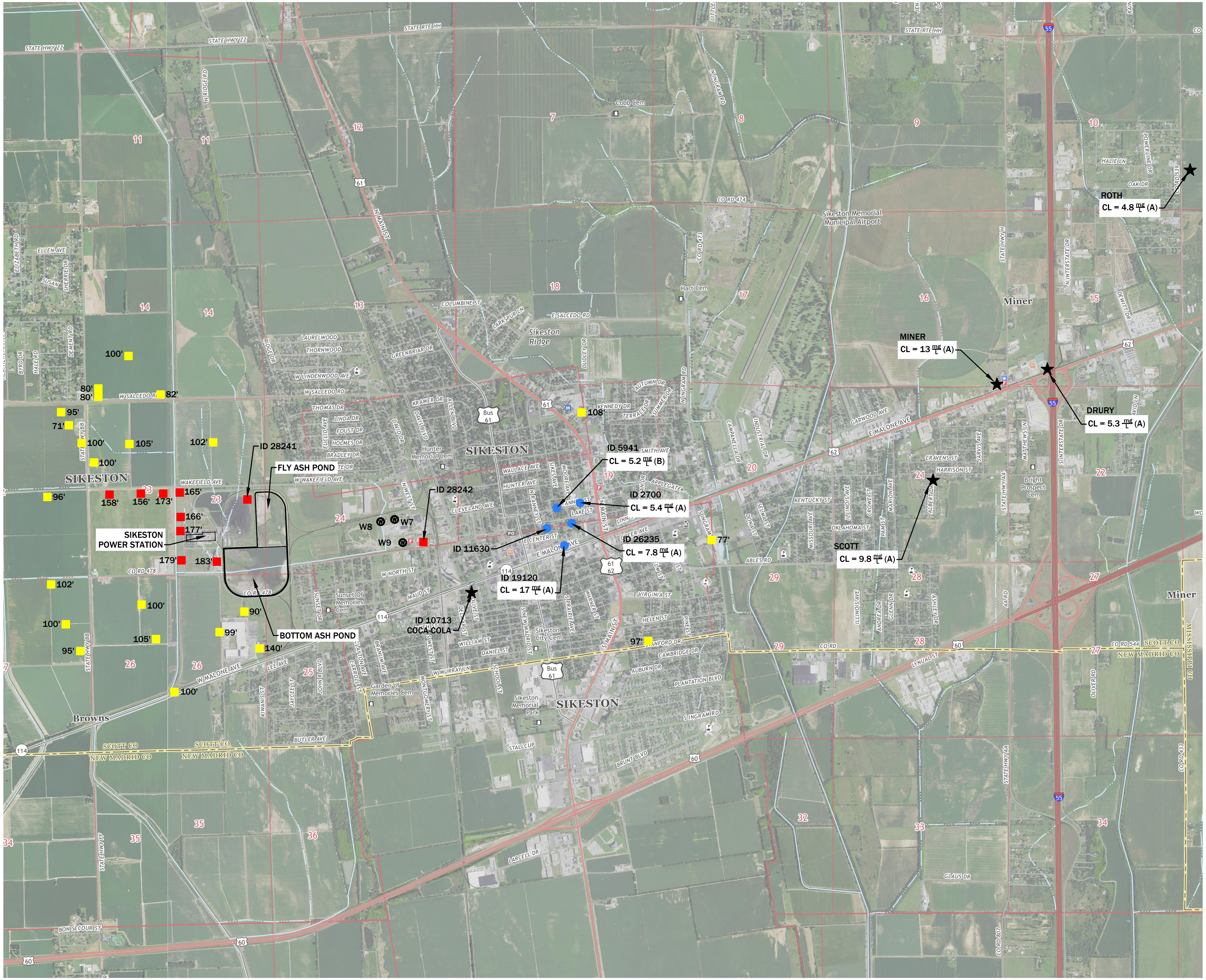
FIGURE 1
SITE MAP AND SAMPLING LOCATIONS
NOVEMBER 1, 2021

SIKESTON POWER STATION
BOTTOM ASH POND
ALTERNATE SOURCE
DEMONSTRATION

SURVEYED	DESIGNED	DRAWN	CHECKED	APPROVED	DATE	SCALE	PROJECT NAME	FILE NAME	SHEET #
NA	KE	CM	KE	MCC	03/2022	AS NOTED	SIKESTON/GWMAP/BAP	GW CONT BAP 11-2021 (2)	1 OF 1

GREDELL Engineering Resources, Inc.
ENVIRONMENTAL ENGINEERING LAND - AIR - WATER
1505 East High Street Telephone: (573) 659-9078
Jefferson City, Missouri Facsimile: (573) 659-9079
MO CORP. ENGINEERING LICENSE NO. E-2001001669-D

O:\CADDFiles\SIKESTON\GROUNDWATER MAP\BAP\GW CONT MAP BAP 11-2021 (2).dwg



SCALE: 1" = 3000'
0 1500' 3000'

N

LEGEND:

CITY OF SIKESTON MUNICIPAL SUPPLY WELL MDNR WELL REFERENCE ID UNKNOWN SOURCE: CARES REPORT (APP 2)	Ⓦ
CITY OF SIKESTON MUNICIPAL SUPPLY WELL ID NUMBER CHLORIDE CONCENTRATION SEE NOTE 3	● 28242 CL = 17 $\frac{mg}{L}$ (A)
INDUSTRIAL SUPPLY OR IRRIGATION WELL WELL OWNER CHLORIDE CONCENTRATION SEE NOTE 3	★ SCOTT CL = 17 $\frac{mg}{L}$ (A)
IRRIGATION WELLS WELL DEPTH	🟨 108'
SIKESTON POWER STATION WELLS WELL DEPTH	🟥 179'

NOTES:

1. IMAGE PROVIDED BY USGS TOPO MAPS, SIKESTON NORTH QUADRANGLE, SIKESTON SOUTH QUADRANGLE, MOREHOUSE QUADRANGLE, AND VANDUSER QUADRAGLE, 7.5-MINUTE SERIES COMBINED TOGETHER.
2. MUNICIPAL WELL LOCATIONS PROVIDED BY MISSOURI DEPARTMENT OF NATURAL RESOURCES (MDNR) MISSOURI GEOLOGICAL SURVEY GEO-SCIENCES TECHNICAL RESOURCE ASSESSMENT TOOL (GEOSTRAT, 2022) AND CARES REPORT INFORMATION (APPENDIX 3).
3. CHLORIDE DATA SOURCES:
   - A. LUCKEY AND FULLER, 1980
   - B. BRAHANA ET AL, 1985

#	DATE	REVISION DESCRIPTION	BY

FIGURE 2
SITE LOCATION MAP
WITH HIGH-YIELD WELL
LOCATIONS AND CHLORIDE DATA

BOTTOM ASH POND
ALTERNATE SOURCE
DEMONSTRATION
SIKESTON POWER STATION

SURVEYED	DESIGNED	DRAWN	CHECKED	APPROVED	DATE	SCALE	PROJECT NAME	FILE NAME	SHEET #
N/A	KE	CM	KE	MCC	3/2022	1" = 3000'	SIKESTON	BAP DEMONSTRATION	1 OF 1

GREDELL Engineering Resources, Inc.
ENVIRONMENTAL ENGINEERING LAND - AIR - WATER
1505 East High Street
Jefferson City, Missouri
Telephone: (573) 659-9078
Facsimile: (573) 659-9079
MO CORP. ENGINEERING LICENSE NO. E-2001001669-D

FILE PATH AND FILENAME: O:\CADDFiles\SIKESTON\GROUNDWATER MAP\BAP DEMONSTRATION.dwg

PRINTED ON: 3/24/22 BY: cm

Appendices

Appendix 1a

Laboratory Analytical Results and Quality Control Reports November 1, 2021 Sample Event

PDC Laboratories
PROFESSIONAL • DEPENDABLE • COMMITTED

December 09, 2021

Luke St Mary
Sikeston BMU, Sikeston Power Station
1551 W Wakefield
Sikeston, MO 63801

Dear Luke St Mary:

Please find enclosed the analytical results for the sample(s) the laboratory received. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

PDC Laboratories. appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Director of Client Services, Lisa Grant, with any feedback you have about your experience with our laboratory at 309-683-1764 or lgrant@pdclab.com.

Sincerely,

Gail G Schindler

Project Manager
(309) 692-9688 x1716
gschindler@pdclab.com

SAMPLE RECEIPT CHECK LIST

Items not applicable will be marked as in compliance

Work Order EK00904

YES	Samples received within temperature compliance when applicable
YES	COC present upon sample receipt
YES	COC completed & legible
YES	Sampler name & signature present
YES	Unique sample IDs assigned
YES	Sample collection location recorded
YES	Date & time collected recorded on COC
YES	Relinquished by client signature on COC
YES	COC & labels match
YES	Sample labels are legible
YES	Appropriate bottle(s) received
YES	Sufficient sample volume received
YES	Sample containers received undamaged
NO	Zero headspace, <6 mm present in VOA vials
NO	Trip blank(s) received
YES	All non-field analyses received within holding times
NO	Short hold time analysis
YES	Current PDC COC submitted
NO	Case narrative provided

ANALYTICAL RESULTS

Sample: EK00904-01
Name: MW-3
Matrix: Ground Water - Grab

Sampled: 11/01/21 07:45
Received: 11/03/21 09:50
PO #: 25816

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	1.0	mg/L		11/11/21 17:28	1	1.0	11/11/21 17:28	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		11/11/21 17:28	1	0.250	11/11/21 17:28	CRD	EPA 300.0 REV 2.1
Sulfate	14	mg/L		11/11/21 17:46	10	10	11/11/21 17:46	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	130	mg/L	H	11/09/21 15:31	1	17	11/09/21 16:19	ADM	SM 2540C
Total Metals - PIA									
Boron	25	ug/L		11/09/21 10:07	5	10	11/10/21 11:27	JMW	EPA 6020A
Calcium	14000	ug/L		11/09/21 10:07	5	200	11/10/21 11:27	JMW	EPA 6020A

Sample: EK00904-02
Name: MW-4
Matrix: Ground Water - Grab

Sampled: 11/01/21 13:24
Received: 11/03/21 09:50
PO #: 25816

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	16	mg/L		11/10/21 15:56	5	5.0	11/10/21 15:56	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		11/10/21 15:38	1	0.250	11/10/21 15:38	CRD	EPA 300.0 REV 2.1
Sulfate	95	mg/L		11/10/21 16:14	25	25	11/10/21 16:14	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	360	mg/L		11/04/21 08:59	1	26	11/04/21 10:19	JAA	SM 2540C
Total Metals - PIA									
Boron	870	ug/L		11/09/21 10:07	5	10	11/10/21 11:31	JMW	EPA 6020A
Calcium	76000	ug/L		11/09/21 10:07	5	200	11/10/21 11:31	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EK00904-03
Name: MW-5
Matrix: Ground Water - Grab

Sampled: 11/01/21 10:54
Received: 11/03/21 09:50
PO #: 25816

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	13	mg/L		11/10/21 17:27	5	5.0	11/10/21 17:27	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		11/10/21 16:32	1	0.250	11/10/21 16:32	CRD	EPA 300.0 REV 2.1
Sulfate	170	mg/L		11/10/21 17:45	50	50	11/10/21 17:45	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	490	mg/L		11/04/21 08:59	1	26	11/04/21 10:19	JAA	SM 2540C
Total Metals - PIA									
Boron	330	ug/L		11/09/21 10:07	5	10	11/10/21 11:34	JMW	EPA 6020A
Calcium	94000	ug/L		11/09/21 10:07	5	200	11/10/21 11:34	JMW	EPA 6020A

Sample: EK00904-04
Name: MW-6
Matrix: Ground Water - Grab

Sampled: 11/01/21 09:02
Received: 11/03/21 09:50
PO #: 25816

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	4.3	mg/L		11/10/21 18:03	1	1.0	11/10/21 18:03	CRD	EPA 300.0 REV 2.1
Fluoride	0.330	mg/L		11/10/21 18:03	1	0.250	11/10/21 18:03	CRD	EPA 300.0 REV 2.1
Sulfate	27	mg/L		11/10/21 18:21	5	5.0	11/10/21 18:21	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	220	mg/L		11/04/21 08:59	1	26	11/04/21 10:19	JAA	SM 2540C
Total Metals - PIA									
Boron	56	ug/L		11/09/21 10:07	5	10	11/10/21 11:38	JMW	EPA 6020A
Calcium	47000	ug/L		11/09/21 10:07	5	200	11/10/21 11:38	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EK00904-05
Name: MW-8
Matrix: Ground Water - Grab

Sampled: 11/01/21 11:46
Received: 11/03/21 09:50
PO #: 25816

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	45	mg/L		11/10/21 18:57	25	25	11/10/21 18:57	CRD	EPA 300.0 REV 2.1
Fluoride	0.258	mg/L		11/10/21 18:39	1	0.250	11/10/21 18:39	CRD	EPA 300.0 REV 2.1
Sulfate	94	mg/L		11/10/21 18:57	25	25	11/10/21 18:57	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	360	mg/L		11/04/21 08:59	1	26	11/04/21 10:19	JAA	SM 2540C
Total Metals - PIA									
Boron	430	ug/L		11/09/21 10:07	5	10	11/10/21 11:42	JMW	EPA 6020A
Calcium	80000	ug/L		11/09/21 10:07	5	200	11/10/21 11:42	JMW	EPA 6020A

Sample: EK00904-06
Name: FIELD DUPLICATE
Matrix: Ground Water - Field Duplicate

Sampled: 11/01/21 00:00
Received: 11/03/21 09:50
PO #: 25816

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	40	mg/L		11/10/21 19:33	5	5.0	11/10/21 19:33	CRD	EPA 300.0 REV 2.1
Fluoride	0.256	mg/L		11/10/21 19:15	1	0.250	11/10/21 19:15	CRD	EPA 300.0 REV 2.1
Sulfate	87	mg/L		11/10/21 19:51	50	50	11/10/21 19:51	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	390	mg/L		11/05/21 15:48	1	26	11/05/21 17:16	ADM/BMS	SM 2540C
Total Metals - PIA									
Boron	440	ug/L		11/09/21 10:07	5	10	11/10/21 11:45	JMW	EPA 6020A
Calcium	82000	ug/L		11/09/21 10:07	5	200	11/10/21 11:45	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EK00904-07
Name: FIELD BLANK
Matrix: Ground Water - Field Blank

Sampled: 11/01/21 13:24
Received: 11/03/21 09:50
PO #: 25816

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	< 1.0	mg/L		11/11/21 18:05	1	1.0	11/11/21 18:05	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		11/11/21 18:05	1	0.250	11/11/21 18:05	CRD	EPA 300.0 REV 2.1
Sulfate	< 1.0	mg/L		11/11/21 18:05	1	1.0	11/11/21 18:05	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	< 17	mg/L		11/08/21 17:55	1	17	11/08/21 18:11	JAA	SM 2540C
Total Metals - PIA									
Boron	11	ug/L		11/09/21 10:07	5	10	11/10/21 11:49	JMW	EPA 6020A
Calcium	< 200	ug/L		11/09/21 10:07	5	200	11/10/21 11:49	JMW	EPA 6020A

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B147394 - No Prep - SM 2540C									
Blank (B147394-BLK1)				Prepared & Analyzed: 11/04/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B147394-BS1)				Prepared & Analyzed: 11/04/21					
Solids - total dissolved solids (TDS)	1020	mg/L		1000		102	84.9-109		
Duplicate (B147394-DUP1)	**Sample: EJ05640-03**			Prepared & Analyzed: 11/04/21					
Solids - total dissolved solids (TDS)	1200	mg/L			1170			3	5
Duplicate (B147394-DUP2)	**Sample: EK00431-05**			Prepared & Analyzed: 11/04/21					
Solids - total dissolved solids (TDS)	740	mg/L	M		690			7	5
Batch B147627 - No Prep - SM 2540C									
Blank (B147627-BLK1)				Prepared & Analyzed: 11/05/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B147627-BS1)				Prepared & Analyzed: 11/05/21					
Solids - total dissolved solids (TDS)	973	mg/L		1000		97	84.9-109		
Duplicate (B147627-DUP1)	**Sample: EK00574-04**			Prepared & Analyzed: 11/05/21					
Solids - total dissolved solids (TDS)	450	mg/L			470			4	5
Duplicate (B147627-DUP2)	**Sample: EK00904-06**			Prepared & Analyzed: 11/05/21					
Solids - total dissolved solids (TDS)	410	mg/L			390			5	5
Batch B147792 - No Prep - SM 2540C									
Blank (B147792-BLK1)				Prepared & Analyzed: 11/08/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B147792-BS1)				Prepared & Analyzed: 11/08/21					
Solids - total dissolved solids (TDS)	960	mg/L		1000		96	84.9-109		
Batch B147842 - SW 3015 - EPA 6020A									
Blank (B147842-BLK1)				Prepared: 11/09/21 Analyzed: 11/10/21					
Boron	< 10	ug/L							
Calcium	< 200	ug/L							
LCS (B147842-BS1)				Prepared: 11/09/21 Analyzed: 11/10/21					
Boron	484	ug/L		555.6		87	80-120		
Calcium	5320	ug/L		5556		96	80-120		
Batch B147924 - No Prep - SM 2540C									
Blank (B147924-BLK1)				Prepared & Analyzed: 11/09/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B147924-BS1)				Prepared & Analyzed: 11/09/21					
Solids - total dissolved solids (TDS)	980	mg/L		1000		98	84.9-109		
Duplicate (B147924-DUP1)	**Sample: EK00616-01**			Prepared & Analyzed: 11/09/21					
Solids - total dissolved solids (TDS)	1010	mg/L			1060			5	5
Batch B148133 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B148133-CCB1)				Prepared & Analyzed: 11/10/21					

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B148133 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B148133-CCB1)				Prepared & Analyzed: 11/10/21					
Fluoride	0.00	mg/L							
Chloride	0.545	mg/L							
Sulfate	0.00	mg/L							
Calibration Check (B148133-CCV1)				Prepared & Analyzed: 11/10/21					
Sulfate	5.22	mg/L		5.000		104	90-110		
Chloride	5.03	mg/L		5.000		101	90-110		
Fluoride	5.28	mg/L		5.000		106	90-110		
Batch B148294 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B148294-CCB1)				Prepared & Analyzed: 11/11/21					
Sulfate	0.00	mg/L							
Chloride	0.219	mg/L							
Fluoride	0.00	mg/L							
Calibration Check (B148294-CCV1)				Prepared & Analyzed: 11/11/21					
Sulfate	4.97	mg/L		5.000		99	90-110		
Fluoride	5.02	mg/L		5.000		100	90-110		
Chloride	4.85	mg/L		5.000		97	90-110		
Matrix Spike (B148294-MS1)	**Sample: EK01080-02**			Prepared & Analyzed: 11/11/21					
Chloride	1.0E9	mg/L	Q4	1.500	9.6	NR	80-120		
Sulfate	1.00E9	mg/L	Q4	1.500	8.76	NR	80-120		
Matrix Spike Dup (B148294-MSD1)	**Sample: EK01080-02**			Prepared & Analyzed: 11/11/21					
Chloride	1.0E9	mg/L	Q4	1.500	9.6	NR	80-120	0	20
Sulfate	1.00E9	mg/L	Q4	1.500	8.76	NR	80-120	0	20
Batch B150295 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B150295-CCB1)				Prepared & Analyzed: 12/06/21					
Chloride	0.858	mg/L							
Calibration Check (B150295-CCV1)				Prepared & Analyzed: 12/06/21					
Chloride	4.73	mg/L		5.000		95	90-110		
Matrix Spike (B150295-MS1)	**Sample: EL00928-01**			Prepared & Analyzed: 12/06/21					
Chloride	7.4	mg/L	Q4	3.000	5.0	79	80-120		
Matrix Spike (B150295-MS2)	**Sample: EL00928-02**			Prepared & Analyzed: 12/07/21					
Chloride	1.0E9	mg/L	Q4	3.000	180	NR	80-120		
Matrix Spike (B150295-MS3)	**Sample: EL00928-03**			Prepared & Analyzed: 12/07/21					
Chloride	1.0E9	mg/L		3.000	370	NR	80-120		
Matrix Spike Dup (B150295-MSD1)	**Sample: EL00928-01**			Prepared & Analyzed: 12/06/21					
Chloride	7.4	mg/L	Q4	3.000	5.0	79	80-120	0.1	20
Matrix Spike Dup (B150295-MSD2)	**Sample: EL00928-02**			Prepared & Analyzed: 12/07/21					
Chloride	1.0E9	mg/L	Q4	3.000	180	NR	80-120	0	20
Matrix Spike Dup (B150295-MSD3)	**Sample: EL00928-03**			Prepared & Analyzed: 12/07/21					
Chloride	1.0E9	mg/L		3.000	370	NR	80-120	0	20

NOTES

Specifications regarding method revisions and method modifications used for analysis are available upon request. Please contact your project manager.

* Not a TNI accredited analyte

Certifications

CHI - McHenry, IL - 4314-A W. Crystal Lake Road, McHenry, IL 60050
TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17556

PIA - Peoria, IL - 2231 W. Altorfer Drive, Peoria, IL 61615
TNI Accreditation for Drinking Water, Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. 100230
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17553
Drinking Water Certifications/Accreditations: Iowa (240); Kansas (E-10338); Missouri (870)
Wastewater Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)
Solid and Hazardous Material Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

SPMO - Springfield, MO - 1805 W Sunset Street, Springfield, MO 65807
USEPA DMR-QA Program

STL - Hazelwood, MO - 944 Anglum Rd, Hazelwood, MO 63042
TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through KS KDHE Certification No. E-10389
TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. - 200080
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory, Registry No. 171050
Missouri Department of Natural Resources - Certificate of Approval for Microbiological Laboratory Service - No. 1050

Qualifiers

H	Test performed after the expiration of the appropriate regulatory/advisory maximum allowable hold time.
M	Analyte failed to meet the required acceptance criteria for duplicate analysis.
Q4	The matrix spike recovery result is unusable since the analyte concentration in the sample is greater than four times the spike level. The associated blank spike was acceptable.

Gail g Schindler

Certified by: Gail Schindler, Project Manager

PDC LABORATORIES, INC.
WWW.PDCLAB.COM

REGULATORY PROGRAM (CIRCLE):	NPDES
MORBCA	RCRA
CCDD	TACO: RES OR IND/COMM

CHAIN OF CUSTODY RECORD

STATE WHERE SAMPLE COLLECTED IL

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)

① CLIENT: SIKESTON BMU POWER STATION

ADDRESS: 1551 W WAKEFIELD

CITY STAT ZIP: SIKESTON, MO 63801

CONTACT PERSON: MR LUKE ST MARY

PROJECT NUMBER:

PROJECT LOCATION: BOTTOM ASH APP III

PURCHASE ORDER #:

PHONE NUMBER: 573-475-3131

E-MAIL:

DATE SHIPPED:

SAMPLER (PLEASE PRINT): Daniel Dillingham

SAMPLER'S SIGNATURE: Daniel A. Dillingham

MATRIX TYPES:
WW- WASTEWATER
DW- DRINKING WATER
GW- GROUND WATER
WWSL- SLUDGE
NAS- NON AQUEOUS SOLID
LCHT-LEACHATE
OIL-OIL
SO-SOIL
SOL-SOLID

③ ANALYSIS REQUESTED

④ (FOR LAB USE ONLY)
LOGIN # EK00904-07
LOGGED BY: KEG
CLIENT: SIKESTON BMU, SIKESTON POWER STATION
PROJECT: SIKESTON BOTTOM ASH APP III
PROJ. MGR.: GJ SCHINDLER

② SAMPLE DESCRIPTION (UNIQUE DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)

SAMPLE DESCRIPTION	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE GRAB	SAMPLE TYPE COMP	MATRIX TYPE	BOTTLE COUNT	PRES CODE CLIENT PROVIDED	CL, F, SO4, TDS	B, CA						REMARKS
MW-3	11-1-21	0745	X		GW	2	3,6	X	X						
MW-4	11-1-21	1324	X		GW	2	3,6	X	X						
MW-5	11-1-21	1054	X		GW	2	3,6	X	X						
MW-6	11-1-21	0922	X		GW	2	3,6	X	X						
MW-8	11-1-21	1146	X		GW	2	3,6	X	X						
DUPLICATE	11-1-21		X		GW	2	3,6	X	X						
FIELD BLANK	11-1-21	1324	X		DI	2	3,6	X	X						

CHEMICAL PRESERVATION CODES:	1 – HCL	2 – H2SO4	3 – HNO3	4 – NAOH	5 – NA2S2O3	6 – UNPRESERVED	7 – OTHER

⑤ TURNAROUND TIME REQUESTED (PLEASE CIRCLE) NORMAL RUSH
(RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE)

RUSH RESULTS VIA (PLEASE CIRCLE) EMAIL PHONE

EMAIL IF DIFFERENT FROM ABOVE:

PHONE # IF DIFFERENT FROM ABOVE:

DATE RESULTS NEEDED

⑥ *I understand that by initialing this box I give the lab permission to proceed with analysis, even though it may not meet all sample conformance requirements as defined in the receiving facility's Sample Acceptance Policy and the data will be qualified. Qualified data may NOT be acceptable to report to all regulatory authorities.*

PROCEED WITH ANALYSIS AND QUALIFY RESULTS: (INITIALS) ______________

⑦ RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	DATE / TIME
	DATE 11/2/21 TIME 0830		DATE TIME
	DATE TIME		DATE TIME
	DATE TIME	Kathy Gray	DATE 11/03/21 TIME 0950

⑧ COMMENTS: (FOR LAB USE ONLY)

SAMPLE TEMPERATURE UPON RECEIPT 1.4 °C

CHILL PROCESS STARTED PRIOR TO RECEIPT [✓ Y] OR N

SAMPLE(S) RECEIVED ON ICE [✓ Y] OR N

SAMPLE ACCEPTANCE NONCONFORMANT REPORT IS NEEDED Y OR [✓ N]

DATE AND TIME TAKEN FROM SAMPLE BOTTLE ______________

Appendix 1b

Laboratory Analytical Results and Quality Control Reports December 27, 2021 Resample Event

PDC Laboratories
PROFESSIONAL • DEPENDABLE • COMMITTED

January 07, 2022

Luke St Mary
Sikeston BMU, Sikeston Power Station
1551 W Wakefield
Sikeston, MO 63801

Dear Luke St Mary:

Please find enclosed the analytical results for the sample(s) the laboratory received. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

PDC Laboratories. appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Director of Client Services, Lisa Grant, with any feedback you have about your experience with our laboratory at 309-683-1764 or lgrant@pdclab.com.

Sincerely,

Gail g Schindler

Project Manager
(309) 692-9688 x1716
gschindler@pdclab.com

SAMPLE RECEIPT CHECK LIST

Items not applicable will be marked as in compliance

Work Order EL04922

YES	Samples received within temperature compliance when applicable
YES	COC present upon sample receipt
YES	COC completed & legible
YES	Sampler name & signature present
YES	Unique sample IDs assigned
YES	Sample collection location recorded
YES	Date & time collected recorded on COC
YES	Relinquished by client signature on COC
YES	COC & labels match
YES	Sample labels are legible
YES	Appropriate bottle(s) received
YES	Sufficient sample volume received
YES	Sample containers received undamaged
NO	Zero headspace, <6 mm present in VOA vials
NO	Trip blank(s) received
YES	All non-field analyses received within holding times
NO	Short hold time analysis
YES	Current PDC COC submitted
NO	Case narrative provided

ANALYTICAL RESULTS

Sample: EL04922-01
Name: MW-3
Matrix: Ground Water - Grab

Sampled: 12/27/21 07:53
Received: 12/29/21 11:40
PO #: 25816

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	170	mg/L		01/03/22 09:57	1	26	01/03/22 11:18	JAA	SM 2540C

Sample: EL04922-02
Name: MW-6
Matrix: Ground Water - Grab

Sampled: 12/27/21 08:56
Received: 12/29/21 11:40
PO #: 25816

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	3.5	mg/L		01/03/22 17:58	1	1.0	01/03/22 17:58	CRD	EPA 300.0 REV 2.1

Sample: EL04922-03
Name: DUPLICATE
Matrix: Ground Water - Field Duplicate

Sampled: 12/27/21 00:00
Received: 12/29/21 11:40
PO #: 25816

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	3.4	mg/L		01/03/22 18:16	1	1.0	01/03/22 18:16	CRD	EPA 300.0 REV 2.1

Sample: EL04922-04
Name: FIELD BLANK
Matrix: Ground Water - Field Blank

Sampled: 12/27/21 08:56
Received: 12/29/21 11:40
PO #: 25816

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	< 1.0	mg/L		01/03/22 18:34	1	1.0	01/03/22 18:34	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	20	mg/L		01/03/22 09:57	1	17	01/03/22 11:18	JAA	SM 2540C

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B220779 - No Prep - SM 2540C									
Blank (B220779-BLK1)				Prepared & Analyzed: 01/03/22					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B220779-BS1)				Prepared & Analyzed: 01/03/22					
Solids - total dissolved solids (TDS)	960	mg/L		1000		96	84.9-109		
Duplicate (B220779-DUP1)	**Sample: EL04894-02**			Prepared & Analyzed: 01/03/22					
Solids - total dissolved solids (TDS)	480	mg/L	M		520			8	5
Batch B220859 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B220859-CCB1)				Prepared & Analyzed: 01/03/22					
Chloride	0.240	mg/L							
Calibration Check (B220859-CCV1)				Prepared & Analyzed: 01/03/22					
Chloride	4.99	mg/L		5.000		100	90-110		

NOTES

Specifications regarding method revisions and method modifications used for analysis are available upon request. Please contact your project manager.

* Not a TNI accredited analyte

Certifications

CHI - McHenry, IL - 4314-A W. Crystal Lake Road, McHenry, IL 60050
TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17556

PIA - Peoria, IL - 2231 W. Altorfer Drive, Peoria, IL 61615
TNI Accreditation for Drinking Water, Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. 100230
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17553
Drinking Water Certifications/Accreditations: Iowa (240); Kansas (E-10338); Missouri (870)
Wastewater Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)
Solid and Hazardous Material Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

SPMO - Springfield, MO - 1805 W Sunset Street, Springfield, MO 65807
USEPA DMR-QA Program

STL - Hazelwood, MO - 944 Anglum Rd, Hazelwood, MO 63042
TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through KS KDHE Certification No. E-10389
TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. - 200080
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory, Registry No. 171050
Missouri Department of Natural Resources - Certificate of Approval for Microbiological Laboratory Service - No. 1050

Qualifiers

M Analyte failed to meet the required acceptance criteria for duplicate analysis.

Gail g Schindler

Certified by: Gail Schindler, Project Manager

PDC LABORATORIES, INC.
WWW.PDCLAB.COM

REGULATORY PROGRAM (CIRCLE):	NPDES
MORBCA	RCRA
CCDD	TACO: RES OR IND/COMM

CHAIN OF CUSTODY RECORD

STATE WHERE SAMPLE COLLECTED IL

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)

① CLIENT: SIKESTON POWER STATION

PROJECT NUMBER:
PROJECT LOCATION:
PURCHASE ORDER #:

ADDRESS: 1551 W WAKEFIELD

PHONE NUMBER: 573-475-3131
E-MAIL:
DATE SHIPPED:

CITY STAT ZIP: SIKESTON, MO 63801

CONTACT PERSON: MR LUKE ST MARY

SAMPLER (PLEASE PRINT): Daniel Dillingham

SAMPLER'S SIGNATURE:

MATRIX TYPES:
WW- WASTEWATER
DW- DRINKING WATER
GW- GROUND WATER
WWSL- SLUDGE
NAS- NON AQUEOUS SOLID
LCHT-LEACHATE
OIL-OIL
SO-SOIL
SOL-SOLID

③ ANALYSIS REQUESTED

④ (FOR LAB USE ONLY)
LOGIN # EL04922-04
LOGGED BY: KEG

SIKESTON BMU, SIKESTON POWER STATION

SIKESTON BOTTOM ASH APP III RESAMPLES

GJ SCHINDLER

② SAMPLE DESCRIPTION (UNIQUE DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE GRAB	SAMPLE TYPE COMP	MATRIX TYPE	BOTTLE COUNT	PRES CODE CLIENT PROVIDED	TDS	CL						REMARKS
MW-3	12-27-21	0753	X		GW	1	6	X							
MW-6	12-27-21	0856	X		GW	1	6		X						
DUPLICATE	12-27-21		X		GW	1	6		X						
FIELD BLANK	12-27-21	0856	X		DI	1	6	X	X						

CHEMICAL PRESERVATION CODES: 1 – HCL | 2 – H2SO4 | 3 – HNO3 | 4 – NAOH | 5 – NA2S2O3 | 6 – UNPRESERVED | 7 – OTHER

⑤ TURNAROUND TIME REQUESTED (PLEASE CIRCLE) NORMAL RUSH
(RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE)
RUSH RESULTS VIA (PLEASE CIRCLE) EMAIL PHONE
EMAIL IF DIFFERENT FROM ABOVE:
PHONE # IF DIFFERENT FROM ABOVE:

DATE RESULTS NEEDED

⑥ *I understand that by initialing this box I give the lab permission to proceed with analysis, even though it may not meet all sample conformance requirements as defined in the receiving facility's Sample Acceptance Policy and the data will be qualified. Qualified data may NOT be acceptable to report to all regulatory authorities.*

PROCEED WITH ANALYSIS AND QUALIFY RESULTS: (INITIALS) ____________

⑦ RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	DATE / TIME
	DATE 12-28-21 TIME 0830		DATE TIME
RELINQUISHED BY: (SIGNATURE)	DATE TIME	RECEIVED BY: (SIGNATURE)	DATE TIME
RELINQUISHED BY: (SIGNATURE)	DATE TIME	RECEIVED BY: (SIGNATURE) Kathy Gray	DATE 12/29/21 TIME 1140

⑧ COMMENTS: (FOR LAB USE ONLY)

SAMPLE TEMPERATURE UPON RECEIPT 1.7 °C
CHILL PROCESS STARTED PRIOR TO RECEIPT [✓ Y] OR N
SAMPLE(S) RECEIVED ON ICE [✓ Y] OR N
SAMPLE ACCEPTANCE NONCONFORMANT REPORT IS NEEDED Y OR [✓ N]
DATE AND TIME TAKEN FROM SAMPLE BOTTLE ____________

Qualtrax ID #3219

Appendix 2

Geologic Drilling Logs for High-Yield Wells Near SPS

164 WL-81-Spls

STATE OF MISSOURI
DIVISION OF
GEOLOGICAL SURVEY AND WATER RESOURCES

LOG NO. 19120

OWNER City of Sikeston

COUNTY Scott

FARM

WELL NO. 6

T 26

14R ~~13E~~

DRIVER Layne-Arkansas Co.

DATE 8-10-60

19

ELEV Brownings 330

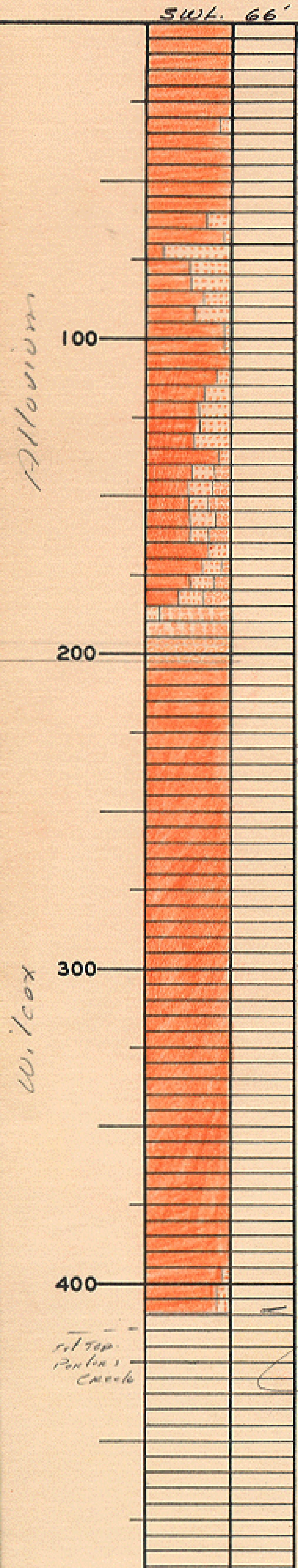
PROD. 1641 GPM.

LOGGED BY J Wells 8-26-60

INDEX SHEET NO.

REMARKS 307' of 18" csg. 34" hole @ bottom.

SWL. 66'



SD. BRN, MED-CRSE
d/o
d/o
d/o
d/o w/occ GRAN.
SD. MED-V/CRSE w/GRAN.
do
do
do
do
do
do
SD BRN, MED to GRAN.
do
do
do
do
do
do
SD.-CRSE to GRAN
do
do
do
do
do
do
do w/pea GRAVEL

SS

PDWP # 4010743

yellow fn to v/crse
do highly polished
do w/GRAN.
do
do
do
do
do
do
do
SD. v/fn to occ crse.
silty-
SD v/fn to med. silty. gray.
do
"
"
"
SD-gray v/fn to crse-silty-
SD gray v/fn to crse
SD-med to crse.
SD. v/fn to occ v/crse. silty
do increasing amts of v/crse to gran.
do inc.

TD 409

WL-79-Spls

STATE OF MISSOURI
DIVISION OF
GEOLOGICAL SURVEY AND WATER RESOURCES

LOG NO. 26235	OWNER City of Sikeston Water Works	
COUNTY Scott	FARM ½ blk N. of Water & Light Plant in alley.	WELL NO. 7.
T 26	R 14E	

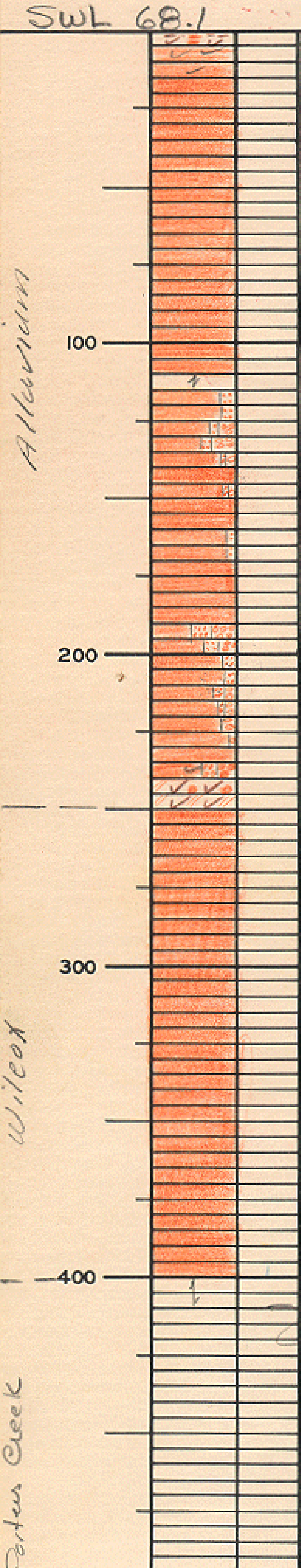
Sikeston North

DRILLER Layne Arkansas
DATE 16-6-69 - Spls Rec: 23-6-69
ELEV Sikeston North 327
LOGGED BY Wells July 1-69
PROD. ~~test~~ 1500 gpm 44 ft dd

19
0

REMARKS

SWL 68.1



CLAY & SOIL - BRN w/SAND
SAND - BRN - v/fn - fn - w/CLAYEY
" " " " dirty
SAND - CLEAN - well sort fn-med
do
do
SAND - CLEAN v/fn - fn - well sort
Do
SAND - CLEAN v/fn - well Sorted
do
do
SAND - CLEAN - v/fn - occ crse
Do.
SAND - CLEAN - fn - crse well sort
do - - Poorly sorted
— FN - v/crse - occ Gran,
Do.
Do.
Do.
- FN - crse
Do w/ occ v/crse.
Do ⁊ Gran.
PDWP# 4010743
FN - v/crse w/Gran.
Do
Do w/PEA Gravel.
P-
Do - Basically crse
CRSE - w/ occ Gran & P.G.
Crse - v/crse - w/ Gran & Pea Grav.
Crse - v/crse
Do
Do - w/Gran
Do
Do
Do
MED - crse w/ v/crse & Gran
Do
SAND - MED. w/Gran & Pea Grav.
Do
SAND - crse w/Gran
Do.
crse - v/crse w/Gran & Pea Grav.
MED - crse w/ Gran & Pea Gravel.
" - " w/PG
med - v/crse w/PG
do
fn - crse w/PG & Pebbles Dirty
CLAY - BRN w/ Pebbles
" " Silty.
SAND - fn - med.
DO
SAND - v/fn - fn
Do
Do
Do
SAND - TAN - v/fn - med.
Do
Do
Do
Do.
Do
Do
Do
Do
Do
Do
Do
Do
SAND - LT TAN - fn - med.
Do
Do - w/ sm crse.
DO
SAND - TAN - fn - crse
Do
Do.
SAND - TAN - fn - v/crse
DO
SAND - Reddish Brn - fn - crse
DO.

← Driller logs "Blue clay 399-410' ")

MISSOURI BUREAU OF GEOLOGY & MINES, ROLLA, MO.

MO SURVEY No 2700

OWNER City of Sikeston

Lon Swanner Water Commissioner

COUNTY Scott

FARM Municipal Plant of Sikeston

WELL No 3

T 26N R 14E

DRILLER Corless well supply Co.

DATE Dec. 1932

ELEVATION 327

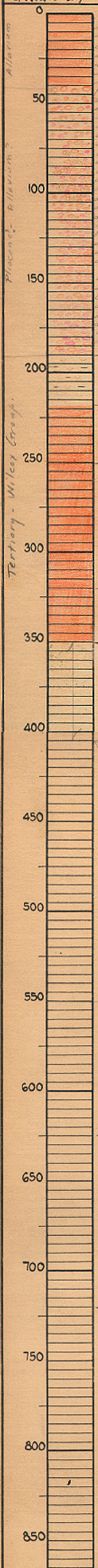
PRODUCTION

19

SAMPLES STUDIED 12-15-38 Hundhausen

REMARKS

S.W.L. = 27'



sand, sub-ang. arkose - magnetite
do
do.
do. + garnet
do
do.
do. + garnet magnetite
do.
pebbles. igneous pebbles
do
do
do
do
do.
do
do
do
do
do.
do. crinoid stem
do
do
do
do
do
do
do
do
do
do
do
do. silicified fossils
do
do
do
do
do
do

PDWP # 4010743

8/23/62
Temp 59°
Cond. 220 micromhos
pH 7.2
from USGS

1 sample 194' to 218'
Tan-grey clay - Lignite.

1 sample 218' - to 250'
medium coarse ang. sand

1 sample 260' to 320'
do.

1 sample 320' - 350'

T.D. = 405'

150' Midway

- Est. Top Ripley

625
325
300

- Est. Top Paleozoic.

MISSOURI BUREAU OF GEOLOGY & MINES, ROLLA, MO.

MO SURVEY No 2700

OWNER City of Sikeston

COUNTY Scott

FARM @ Municipal Plant

WELL No 3

T 26N R 14E

DRILLER Corliss Well Co.

DATE Dec. 1932

ELEVATION 327

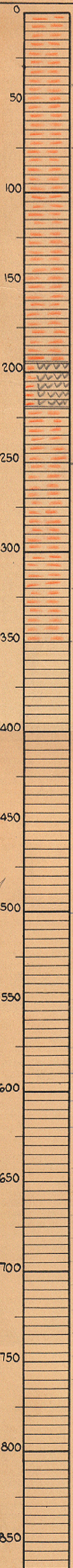
PRODUCTION 750 G.P.M.

19

SAMPLES STUDIED Farrar

REMARKS From sples. submitted.

Elev. 300
27-11A



Sand, polished in the larger grains some rounded fragments of granite with a small amt of green & dark colored igneous rock

PDWP # 7010743

Much coarser & less rounded igneous rock, fragments chiefly granitic.
Very fine sand in small amount mixed with this

Chiefly medium grained sand some coarse material as above

ANAL. No. 2091
T.D.S. 153.0
CL. 6.3
SO4 1.4

194 Polished clear qtz grains in small amt
chiefly drab brownish grey clay which is somewhat micaceous.
218

Clear angular qtz sand some of the larger grains are polished.

250

one sple

320

One sple.

350

327
218
109

no sples.

-405 T.D

800 GPM - No decrease
SWL - 27 No change
P. Setting 100 4 132
Same
Cook deep water turbine
1000 GPM Cap. - 400 M.
15 hrs - D.D. 3'
No device for meas.
SWL -
Quest. 9/27/34 - R.m.

Drilled 412' of 12" W.I.csg.
SWL 29' 15' Drawdown
Yield 920 Yield.
Top Seal Lead.
Drain or Ejector Eject.
Outlet of Drain Sewer
Pump Type Turbine
Mfg. Layne
Power Elec
Capacity 750

Letter 9-34 Basch.

W.L.

MISSOURI BUREAU OF GEOLOGY & MINES, ROLLA, MO.

MO SURVEY № 5941	OWNER City of Sikeston	
COUNTY Scott	FARM Well located on NW corner of the Waterworks property	WELL № 4
T 26 N	R 14 E	DRILLER Carless Well Co.
		DATE 2-1-40 to 3-28-1940
19	ELEVATION 324'	PRODUCTION 100' 905 GPM; D.D.
	SAMPLES STUDIED 4-2-40 Hundhausen	

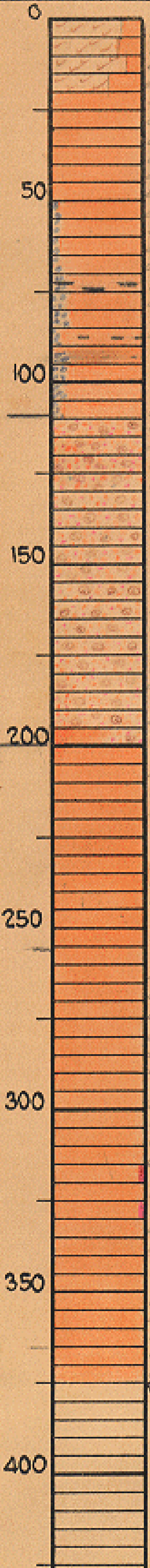
REMARKS 60 ft of 8" Screen.
S.W.L. 40 feet.

SS

PDWP # 40101743

Pleistocene & Recent

Wilcox



brn. silt-clay - arkosic sand magnetite
do.
do
do
Sand - ang. arkosic - some chert.
do.
do
do
do
do - coarser grained
do. some limestone sand
do
do
do
do. + Lignite
Sand as above - limestone sand grains
do. coarser sand
do + lignite
Very coarse grained sand - grits.
do
do
do
Coarse gravel & sand - chert
do
do
do
Very coarse
do
do
do
do
do
do
do
do
do
do
do
do
do - much finer grained sand
do - polished, poorly sorted ang. sand.
do
do - kyanite
do
do
do coarser grained.
do some orange grains
do
do
very coarse - crackled grains
do finer grained.
med-grained - ang. sand
do
do
do
do
do
do
do
do
do
do
do
med fine grained crackled sand blk. ch.
do
do - black tourmaline
do
do
do
do - coarser grained
do
do
do
do + vermiculite?
do

T.D. = 375

Rm

WL 83 S

STATE OF MISSOURI
DIVISION OF
GEOLOGICAL SURVEY AND WATER RESOURCES

LOG NO. 11,630

OWNER City of Sikeston

COUNTY Scott

FARM

WELL N 5

T 26 14 R ~~13~~E

DRILLER Layne Arkansas

DATE 7-6,51 – 8-15 51

19

ELEV. 330 Browning ~~335 Banks~~

PROD. 880 gpm

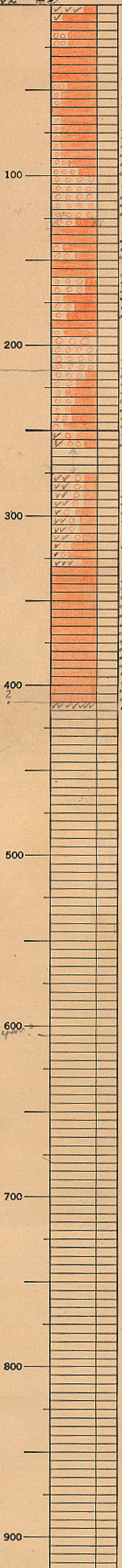
LOGGED BY, S. Marinkovic August 29,51

REMARKS

330' of 12" csg
60' of 8" csg
80' of 8" screen

32" o.5
80' o.5 32" & 330' o.f 17" hole
At. Water tank

SWL 52'



Pleistocene & Recent

Wilcox

2

Porter's Creek

clay...

soil and sand
rounded sand, igneous frag.
do
gravel, coarse sand
do
rounded sand
do
do
do
coarse sand, gravel
do
do
rounded sand
rounded sand, gravel
do
do
do
do
do
gravel of igneous fragments
do
do
do
do
gravel, coarse sand
coarse sand
do
do, gravel
do, gravel
coarse sand
do
gravel, coarse sand
do
do
do
do
medium coarse sand
gravel coarse sand
gravel
do
do
do
do sand
do
do
do
do
do
do
do, clay
do

clay, gravel, sand
do
do
do
do
do
clay, fine sand, gravel
do
do
do
do
fine clean sand, ang. to rounded
do
do
do
do
do
do
do
do
do
do
do
coarse rounded pol. sand
do
do
do
Gumbo according to drillers Log

T. D. ~~415~~ ft.
421' 7"

SS

PDWP#
4010743

Index Sheet #1

Screen
80' of 8"
Shutter type #B slot.
Layne Co. screen

Air line
120'

Pump setting
100' column
4' pump bowls
20' suction pipe

= Est. Top Paleoz. - from log # 2122

77

STATE OF MISSOURI
DIVISION OF
GEOLOGICAL SURVEY AND WATER RESOURCES

LOG NO. 28241

OWNER Sikeston Power Plant

COUNTY Scott

FARM

WELL NO. 2

T 26 **R** 13E

DRILLER Layne-Western

DATE

ELEV. 305 Fant 50'

PROD.

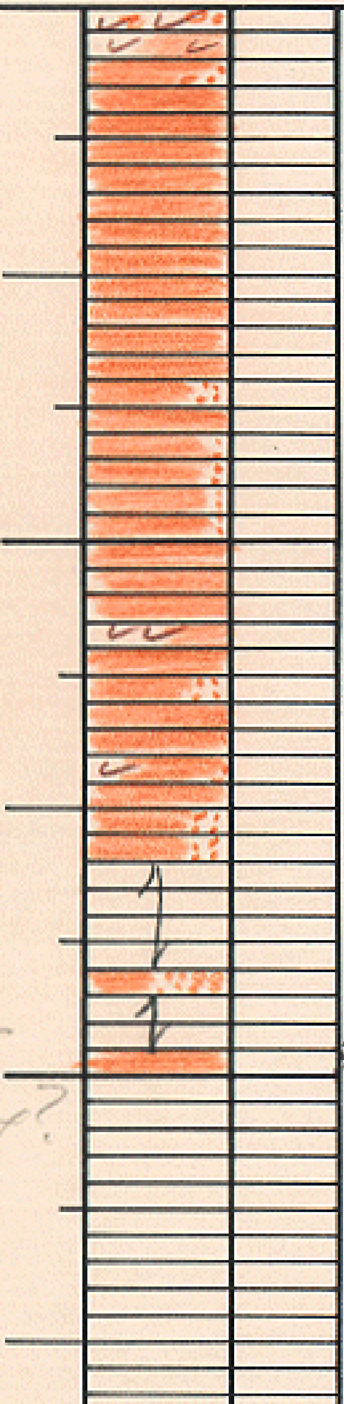
LOGGED BY Wells.

23

REMARKS 80'W, 15'N of Well #2 location

PDWP# 4010743

Alluvium



oxidized, hematite stain.

"

yell sd.

?

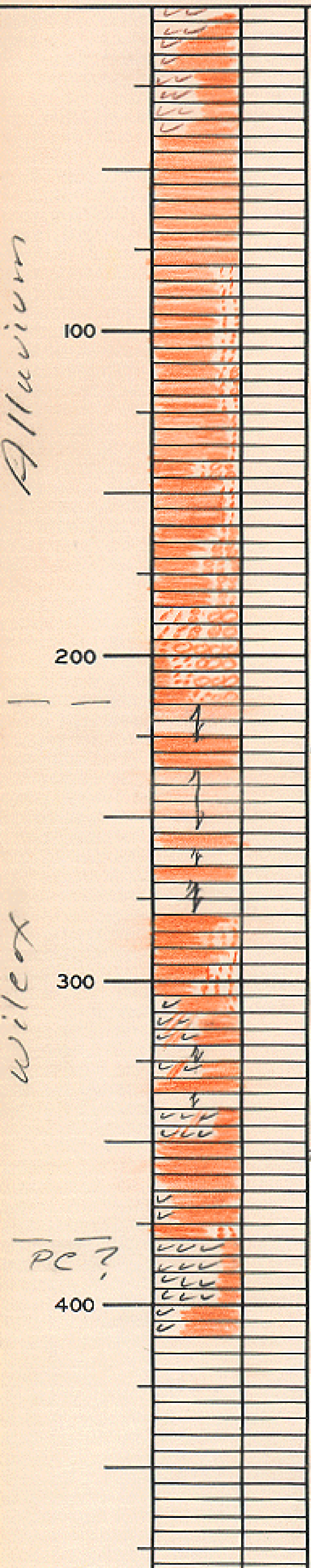
Wilcox?

80

STATE OF MISSOURI
DIVISION OF
GEOLOGICAL SURVEY AND WATER RESOURCES

LOG NO. 28242
OWNER Sikeston Power Plant
COUNTY Scott
FARM
WELL NO. 4-79
T 26
R 13E
DRILLER Layne-Western
DATE
ELEV. 328 F.anz '80
PROD.
LOGGED BY Wells
24

REMARKS



✓ Poor Spls -

PDWP# 4010743

Fn white wellsort sd.

Fn-vfn white sd.

Am

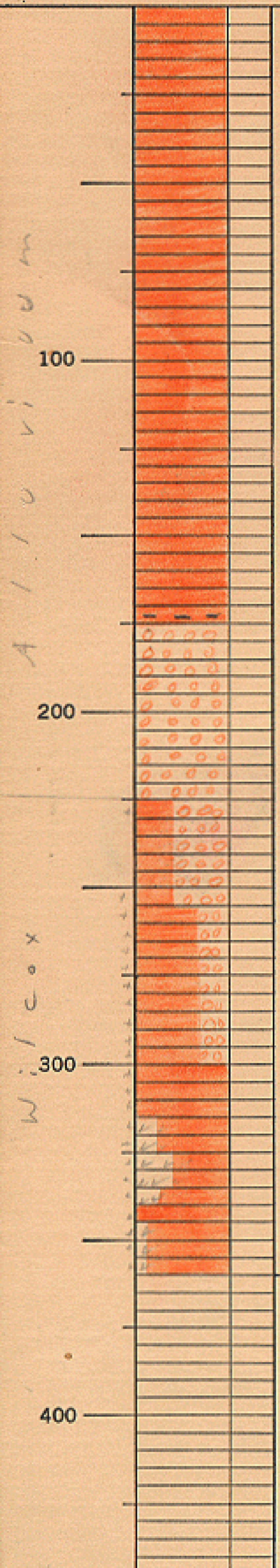
WL 71 S

STATE OF MISSOURI
DIVISION OF
GEOLOGICAL SURVEY AND WATER RESOURCES

LOG NO. 10713	OWNER Sikeston, Mo. Coca - Cola Bottling Co.	
COUNTY Scott	FARM 111-113 ~~#~~ Concord St. Memphis, Tenn.	WELL NO. No. 1
T 26 R 14E	DRILLER Carloss Well Co.	
	DATE Mar. 1949	
19	ELEV. ~~Drawing~~ 328 ~~Bar~~ LOGGED BY McNeal 5/11/49	PROD.

Index Sheet

REMARKS



med to crs ang to rounded frosty to polished sd some igneous

SS

do trace lignite
gravel polished chts qtz igneous

do med to crs polished sd
trace med ang pyritic sst

do FeS_2

f to med ang sst FeS_2

do gry mica sh

→360'

Appendix 3a

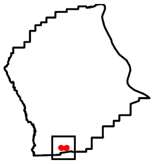
2020 Sikeston Public Well Assessment Reports (CARES)

Sikeston

General System Information

PWSS No. 4010743

Prepared by CARES, University of Missouri Extension

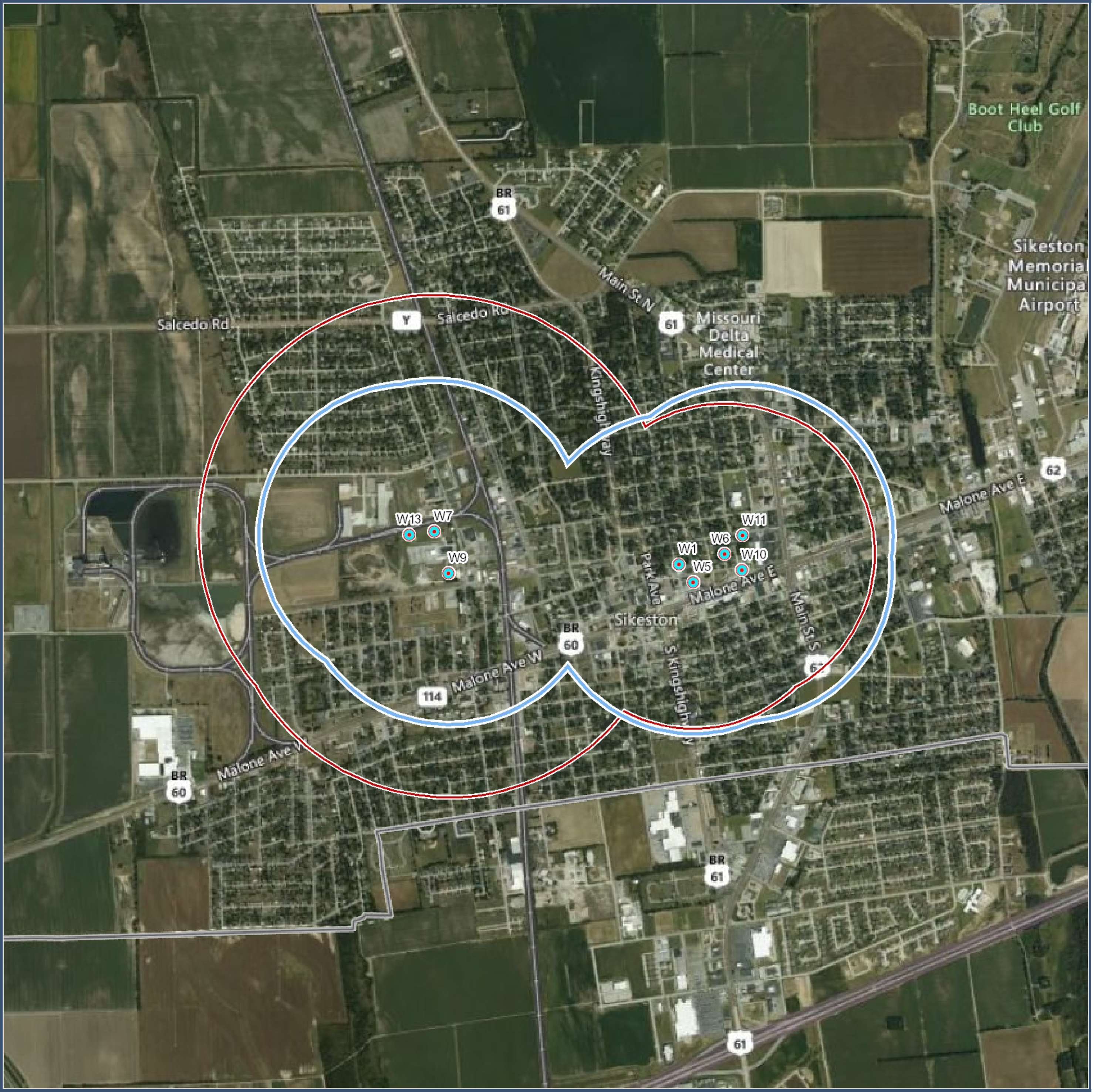
Name	Sikeston
PWSSID	MO4010743
Population Served	16,393
Primary County Served	Scott
Service Connections	7,908
Source(s) of Water	Southeast Missouri Lowlands Groundwater Province
System Classification	Community (C)
Primary Source Type	Groundwater (GW)
System Type	Municipality
System Treatment	4-log Treatment of Viruses, Fluoridation, Greensand Filtration, Sedimentation, Gaseous Pre-Chlorination, Permanganate, Slat Tray Aeration, Gaseous Post-Chlorination, Diffused Aeration, (Pre) pH Adjustment, pH Adjustment, Rapid Sand Filtration
DNR Region of Operations	Southeast Regional Office
Source Water/Wellhead Protection Plan	No
Drinking Water Watch	Drinking Water Watch
Reference Maps	 

Sikeston

Overview Map (Aerial)
PWSS No. 4010743 - 8 Wells, Scott County

Map Prepared: Jun 11, 2020
Data Release: May 4, 2020

MISSOURI DEPARTMENT OF NATURAL RESOURCES
Prepared by CARES, University of Missouri Extension



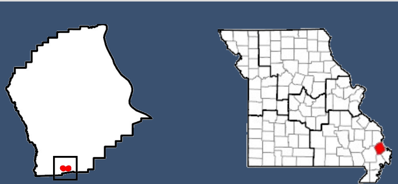
Groundwater System

● System Well

Source Water Protection Boundary

○ 20-Year Time of Travel

○ Half-Mile Buffer



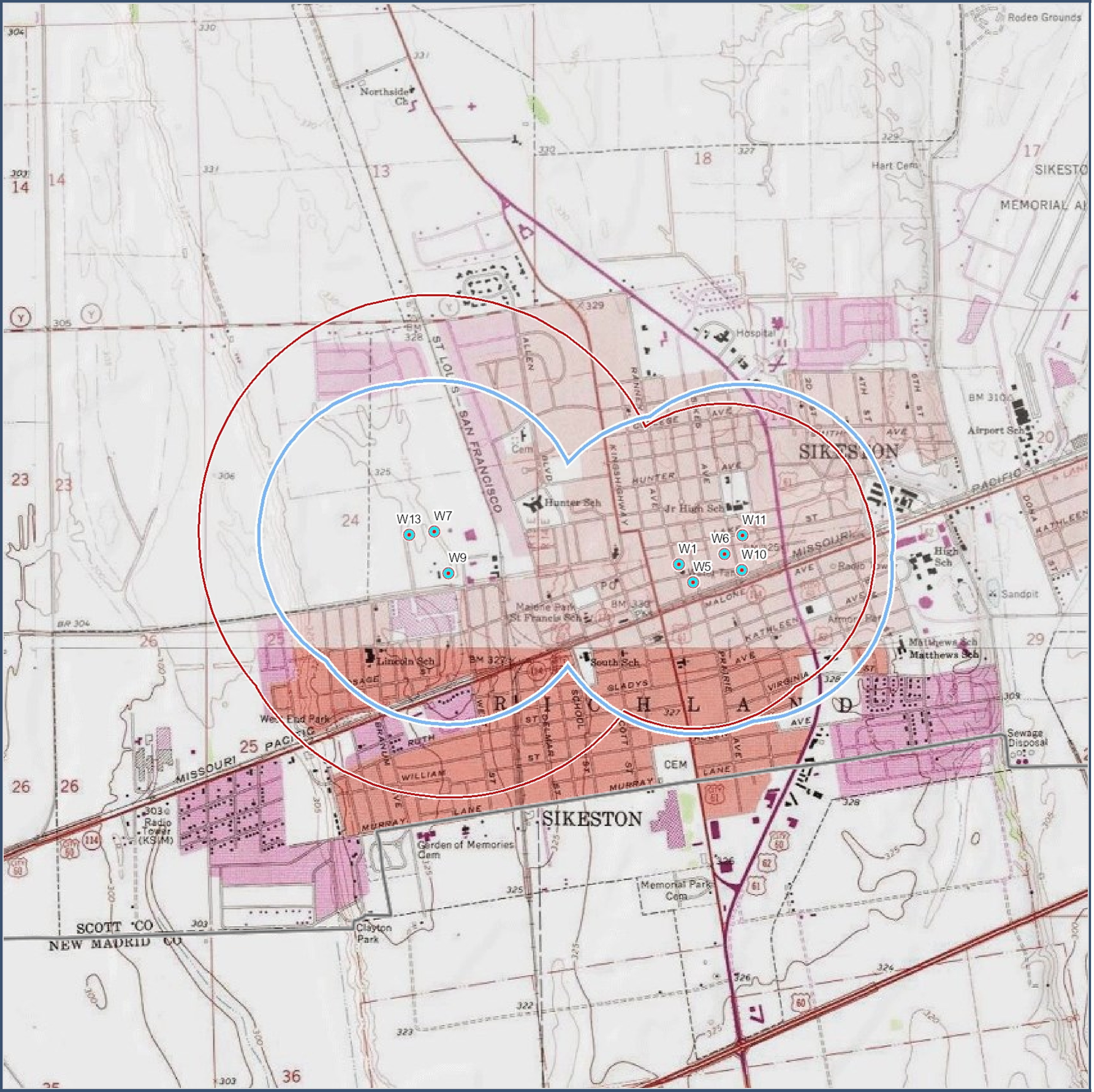
SWAP - Source Water Assessment Plan -
http://drinkingwater.missouri.edu/swap
Aerial Photos: Bing Maps, Microsoft. Jun 11, 2020.

Sikeston

Overview Map (Topo)
PWSS No. 4010743 - 8 Wells, Scott County

Map Prepared: Jun 11, 2020
Data Release: May 4, 2020

MISSOURI DEPARTMENT OF NATURAL RESOURCES
Prepared by CARES, University of Missouri Extension



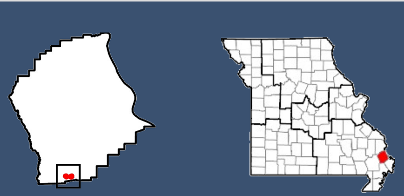
Groundwater System

● System Well

Source Water Protection Boundary

○ 20-Year Time of Travel

○ Half-Mile Buffer



SWAP - Source Water Assessment Plan -
http://drinkingwater.missouri.edu/swap
For basemap symbols, see the U.S. Geological Survey (USGS) publication: Topographic Map Symbols.

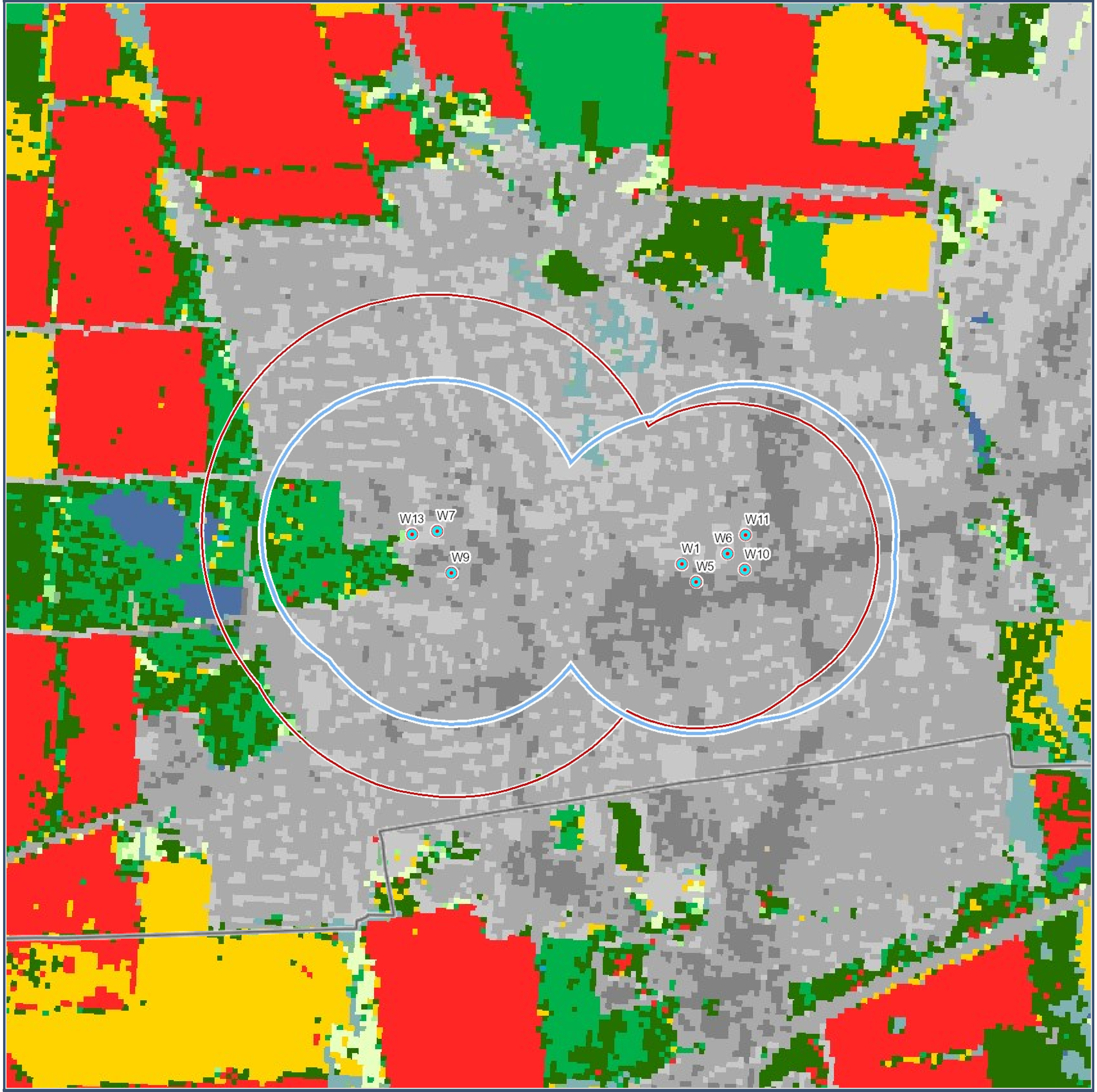
Sikeston

Overview Map (Land Use)
PWSS No. 4010743 - 8 Wells, Scott County

Map Prepared: Jun 11, 2020
Data Release: May 4, 2020

MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Prepared by CARES, University of Missouri Extension



Land Use

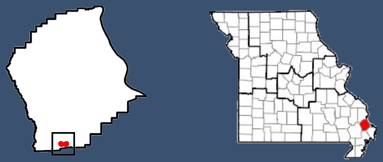
■ Corn
■ Cotton
■ Rice
■ Soybeans
■ Other Crop
■ Other Hay/Non Alfalfa
■ Grassland/Pasture
■ Forest/Shrubland
■ Developed/High Intensity
■ Developed/Low-Med Intensity
■ Developed/Open Space
■ Open Water
■ Wetlands
■ Barren

Groundwater System
◉ System Well

Source Water Protection Boundary
◯ 20-Year Time of Travel
◯ Half-Mile Buffer

SWAP - Source Water Assessment Plan -
http://drinkingwater.missouri.edu/swap
Aerial Photos: Bing Maps, Microsoft. Jun 11, 2020.

0 0.5 1
Miles



Sikeston

Land Use Statistics
PWSS No. 4010743

Map Prepared: Jun 11, 2020
Data Release: May 4, 2020

Prepared by CARES, University of Missouri Extension

Land Use	% Land Area, 2017	% Land Area, 2018	% Land Area, 2019	Avg. % Land Area
Corn	0	0	0	0
Cotton	0	0	0	0
Rice	0	0	0	0
Soybeans	0	0.04	0	0.01
Other Crop	0	0	0	0
Other Hay/Non-Alfalfa	0	0	0	0
Grassland/Pasture	0	0	0	0
Forest/Shrubland	0	0	0	0
Developed/High Intensity	23.04	22.78	23.04	22.95
Developed/Low-Med Intensity	62.14	61.83	61.3	61.76
Developed/Open Space	14.82	15.35	15.66	15.27
Open Water	0	0	0	0
Wetlands	0	0	0	0
Barren	0	0	0	0

Sikeston

Well/Intake Data - PWSS No. 4010743
Scott County, Sheet 1 of 2

Sheet Prepared: Jun 11, 2020

MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Prepared by CARES, University of Missouri Extension

Well Number	W1	W5	W6	W7	W9
Local Well Name	Well #1, Plant #2	Well #6, Plant #2	Well #7, Plant #2	Well #8, Plant #3	Well #10, Plant #3
Well ID #	13051	13049	13048	13047	13045
DGLS ID #	0011630	0019120	0026235		
Status	Active	Active	Active	Active	Emergency
Latitude	36.879040	36.878180	36.879540	36.880623	36.878620
Longitude	-89.586450	-89.585580	-89.583700	-89.601124	-89.600250
12-Digit Hydrologic Unit	080202010305	080202010305	080202010305	080202040604	080202040604
County	Scott	Scott	Scott	Scott	Scott
MoDNR Region	Southeast	Southeast	Southeast	Southeast	Southeast
Groundwater Province[1]	Southeast Missouri Lowlands Gr	Southeast Missouri Lowlands Gr	Southeast Missouri Lowlands Gr	Southeast Missouri Lowlands Gr	Southeast Missouri Lowlands Gr
Source Aquifer(s)[2]	Wilcox aquifer	Wilcox aquifer	Wilcox aquifer	Alluvial aquifer	Alluvial aquifer
Confined/Unconfined[3]	Unconfined	Unconfined	Unconfined	Unconfined	Unconfined
Regional Drilling Area[4]	Area 5	Area 5	Area 5	Area 5	Area 5
Total Dissolved Solids[5]	undetermined	undetermined	undetermined	undetermined	undetermined
Date Drilled (year)	1951	1960	1969	1976	1959
Material (C/U)	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated
Casing Base Formation	Wilcox	Wilcox	Wilcox	Alluvium	Alluvium
Total Depth Formation	Midway	Wilcox	Midway	Alluvium	Alluvium
Total Depth	421	401	404	145	142
Ground Elevation (ft)	327	326	326	325	325
Casing Depth (ft)	331	307	309	108	119
Casing Size (in)	12	18	18	18	12
Casing Type				Steel	Steel
Screen Length (ft)	81	80	80	30	21
Screen Size (in)	8	12	12	12	12
Static Water Level (ft)	60	66	65	27	30
Well Yield (gpm)	600	1100	1450	1300	1000
Head (ft)	90	69	105	57	34
Draw Down (ft)	60	54	59	33	
Pump Test Date (year)	1975	1960	1992	1976	1987
Pump Type	Vertical Turbine	Vertical Turbine	Vertical Turbine	Vertical Turbine	Vertical Turbine
Pump Manufacturer					
Pump Depth (ft)	150	135	170	84	64
Pump Capacity (gpm)	863	1500	1600	1350	1150
Pump Meter (Y/N)					
GWUDISW (Y/N)					
Surface Drainage					
State Approved (Y/N)					
Liquefaction Risk	High	High	High	High	High
Landslide Risk	Low	Low	Low	Low	Low
Collapse Risk	Low	Low	Low	Low	Low
Flood Risk	Low	Low	Low	Low	Low
Surface Contamination Risk	Low	Low	Low	Moderate	Moderate
Conduit Flow Risk[6]	K6	K6	K6	K6	K6

Sikeston

Well/Intake Data - PWSS No. 4010743 Sheet Prepared: Aug 12, 2020
Scott County, Sheet 2 of 2

Prepared by CARES, University of Missouri Extension

Well Number	W10	W11	W13
Local Well Name	Well #11, Plant #1	Well #12	Well #13 Plant #3
Well ID #	13044	13043	18782
DGLS ID #			
Status	Active	Active	Active
Latitude	36.878770	36.880440	36.880459
Longitude	-89.582680	-89.582630	-89.602615
12-Digit Hydrologic Unit	080202010305	080202010305	080202040604
County	Scott	Scott	Scott
MoDNR Region	Southeast	Southeast	Southeast
Groundwater Province[1]	Southeast Missouri Lowlands	Southeast Missouri Lowlands	Southeast Missouri Lowlands
Source Aquifer(s)[2]	Wilcox	Wilcox	Alluvial
Confined/Unconfined[3]	Unconfined	Unconfined	Unconfined
Regional Drilling Area[4]	Area 5	Area 5	Area 5
Total Dissolved Solids[5]	undetermined	undetermined	undetermined
Date Drilled (year)	1987	1991	2013
Material (C/U)	Unconsolidated	Unconsolidated	Unconsolidated
Casing Base Formation	Wilcox	Wilcox	Alluvium
Total Depth Formation	Wilcox	Wilcox	Alluvium
Total Depth	390	391	160
Ground Elevation (ft)	325	325	325
Casing Depth (ft)	300	292	111
Casing Size (in)	16	18	16
Casing Type	Steel	Steel	Steel
Screen Length (ft)	80	80	110
Screen Size (in)	10	12	
Static Water Level (ft)	65	80	31
Well Yield (gpm)	1062	835	2400
Head (ft)	109	94	69
Draw Down (ft)	43		
Pump Test Date (year)	1987	1991	
Pump Type	Vertical Turbine	Vertical Turbine	Vertical Turbine
Pump Manufacturer			
Pump Depth (ft)	174	174	100
Pump Capacity (gpm)	1000	1000	1000
Pump Meter (Y/N)			
GWUDISW (Y/N)			
Surface Drainage			
State Approved (Y/N)			
Liquefaction Risk	High	High	High
Landslide Risk	Low	Low	Low
Collapse Risk	Low	Low	Low
Flood Risk	Low	Low	Low
Surface Contamination Risk	Low	Low	Moderate
Conduit Flow Risk[6]	K6	K6	K6

Sikeston

Contaminant Summary
PWSS No. 4010743

Sheet Prepared: Jun 11, 2020

Prepared by CARES, University of Missouri Extension

57 potential contaminant sources in the listed databases (multiple databases may list the same contaminant source):

	Database
✔	ACRES (Assessment, Cleanup And Redevelopment Exchange System)
✔	AIR (Integrated Compliance Information System-Air)
✔	AIRS/AFS (Air Facility System)
✔	AIRS/AQS (Air Quality System)
	BR (Biennial Reporters)
	BRAC (Base Realignment And Closure)
✔	CAMDBS (Clean Air Markets Division Business Systems)
	CEDRI (Compliance And Emissions Data Reporting Interface)
	ECRM (Enforcement Criminal Records Management)
	E-GGRT (Electronic Greenhouse Gas Reporting Tool)
	EGRID (Emissions & Generation Resource Integrated Database)
✔	EIA-860 (Energy Information Administration-860 Database)
✔	EIS (Emission Inventory System)
	FFDOCKET (Federal Facility Hazardous Waste Compliance Docket)
✔	ICIS (Integrated Compliance Information System)
	LMOP (Landfill Methane Outreach Program)
	LUST-ARRA (Leaking Underground Storage Tank - American Recovery And Reinvestment Act)
	MN-TEMPO (Minnesota - Permitting, Compliance, & Enforcement)
✔	MO-DNR (Missouri Department Of Natural Resources)
✔	NCDB (National Compliance Database)
✔	NPDES (National Pollutant Discharge Elimination System)
	OTAQREG (Office Of Transportation And Air Quality Fuels Registration)
	RADINFO (Radiation Information System)
	RBLC (Ract/Bact/Laer Clearinghouse)
✔	RCRAINFO (Resource Conservation And Recovery Act Information System)
	RFS (Renewable Fuel Standard)
	RMP (Risk Management Plan)
✔	SEMS (Superfund Enterprise Management System)
✔	SFDW (Safe Drinking Water Information System)
	SSTS (Section Seven Tracking System)
	STATE (State Systems)
	TRIS (Toxics Release Inventory System)
	TSCA (Toxic Substances Control Act)
✔	SWIP (Source Water Inventory Project Field Inventory - see below)

60 potential contaminant sources in the SWIP Field Inventory:

Count	Site Type
0	Airport or abandoned airfield
0	Animal feedlot
0	Apartments and condominiums
0	Asphalt plant
6	Auto repair shop
8	Automotive dealership
0	Barber and beauty shop
0	Boat yard and marina
0	CAFO
0	Campground
2	Car wash
0	Cement Plant
0	Cemetery
0	Communication equipment mfg
0	Country club
3	Dry cleaner
1	Dumping and/or burning site
0	Electric equipment mfg or storage
0	Electric substation
0	Farm machinery storage
3	Feed/Fertilizer/Co-op
2	Fire station
2	Funeral service and crematory
1	Furniture manufacturer
0	Furniture repair or finishing shop
0	Garden and/or nursery
0	Garden, nursery, and/or florist
0	Gasoline service station
0	Golf courses
0	Government office
0	Grain bin
3	Hardware and lumber store
0	Hazardous waste (Federal facility)
1	Highway maintenance facility
0	Jewelry or metal plating shop
0	Junk yard or salvage yard
0	Lagoon (commercial)
0	Lagoon (industrial)
0	Lagoon (municipal)
0	Lagoon (residential)
0	Landfill (municipal)
0	Laundromat
0	Livestock auction
0	Machine or metalworking shop
2	Manufacturing (general)
0	Material stockpile (industrial)
0	Medical institution
0	Metal production facility
0	Mining operation
7	Other
1	Paint store
0	Park land
0	Parking lot
1	Petroleum production or storage
0	Pharmacies
0	Photography shop or processing lab
0	Pit toilet
0	Plastic material and synthetic mfg
1	Print shop
0	Railroad yard
0	Recycling/reduction facility
0	Research lab
0	Restaurant
1	Sawdust pile
0	School
0	Sports and hobby shop
0	Swimming pool
0	Tailing pond
5	Tank (above-ground fuel)
0	Tank (other)
0	Tank (pesticide)
6	Tank (underground fuel)
0	Trucking terminal
1	Veterinary service
0	Wastewater treatment facility
2	Well (abandoned)
1	Well (domestic)
0	Well (irrigation)
0	Well (livestock)
0	Well (monitoring)
0	Well (public water supply)
0	Well (unknown)

Sikeston

Susceptibility Determination
PWSS No. 4010743

Sheet Prepared: Jun 11, 2020

MISSOURI DEPARTMENT OF NATURAL RESOURCES
Prepared by CARES, University of Missouri Extension

The Missouri Department of Natural Resources (MoDNR) has assembled this information to assess the susceptibility of drinking water sources to contamination. There are many unforseen and unpredictable factors that may cause a source to be contaminated. MoDNR routinely monitors all public supplies to ensure public health is protected. Public water systems and local communities are encouraged to take all measures possible to reduce the susceptibility of their drinking water source to chemical contamination. For more information, call 1-800-361-4827.

Dots containing numeric values correspond to the number of individual wells or surface water intakes.

GROUND WATER

	Minimally Susceptible	Moderately Susceptible	Highly Susceptible	Undetermined
Geological and Hydrogeological Assessment Criteria				
Are any system wells deemed by the Public Drinking Water Branch to be under the direct influence of surface water?	○	○	○	●
Are any system wells potentially prone to karst conditions or solution flow?	●	○	○	○
Do any system wells draw water from a source with high total dissolved solids (TDS)?	○	○	○	●
Are any system wells located proximal to known subsurface or groundwater contamination?	○	○	○	●
Do any system wells draw water from an unconfined aquifer?	●	○	○	○
Based on known stratigraphic relationships for each well, the risk of contamination from surface sources is:	5	3	○	○
Well Construction and Maintenance Assessment Criteria				
Are all system wells state-approved?	○	○	○	●
Do any system wells exhibit structural defects, construction deficiencies, or other conditions that might allow contamination to enter the well at the wellhead?	○	○	○	●
Are security measures in place to prevent unauthorized tampering with all system wells?	○	○	○	●
Does the system have back-up, emergency power available?	○	○	○	●
Monitoring Assessment Criteria				
Have any system wells exhibited consistent detections for any of the following parameters in raw water?				
Volatile Organic Chemicals (VOC):	○	○	●	○
Synthetic Organic Chemicals (SOC):	●	○	○	○
Inorganic Compounds (IOC):	●	○	○	○
Nitrates/Nitrites:	●	○	○	○
Radionuclides:	●	○	○	○
Bacteria/Viruses/Microbial Pathogens:	○	○	○	●
Natural Hazard Assessment Criteria				
The number of system wells located in a region prone to flooding.	8	○	○	○
The number of system wells located in a region that may experience the following conditions in the event of a large-scale earthquake.				
Potential liquefaction risk:	○	○	8	○
Potential landslide risk:	8	○	○	○
Potential subsurface collapse/instability risk:	8	○	○	○
Are any system wells prone to declining water levels during a prolonged drought?	○	○	○	●
Do all system wells have lightning surge protection?	○	○	○	●
Potential Contaminant Inventory Assessment Criteria				
Potential sources of contamination exist within the wellhead protection area:	○	●	○	○
A system well is located in an area with a high density of transportation corridors:	○	1	7	○
A system well is located in an area that may have improperly maintained or faulty on-site septic systems:	○	○	○	●
Additional Assessment Criteria				
Does the system have a wellhead/source water protection plan endorsed by the Department of Natural Resources?	○	●	○	○
Does the system have an emergency interconnection with a neighboring public water system?	○	●	○	○

Sikeston

Notes
PWSS No. 4010743

Map Prepared: Jun 11, 2020
Data Release: May 4, 2020

Prepared by CARES, University of Missouri Extension

1 For additional information about Missouri's regional groundwater provinces, please visit the Missouri Department of Natural Resources' Water Resources Center Web page or contact the Missouri Geological Survey.

2 Source aquifers are determined from well log information, where available, and on general water quality characteristics for the regional groundwater province within which each well is located. Source aquifers for wells with little or no well log information are inferred based on best available information.

Additional Source Aquifer Notes:

- Water sources labeled "Cincinnatian, Pennsylvanian, or Devonian/Silurian" are not regionally extensive aquifer systems in Missouri. These represent isolated, localized water-bearing formations. Broad water quality descriptions are Not currently available for these sources. "Precambrian" water sources exhibit water quality characteristics similar to the St. Francois aquifer.
- The Springfield Plateau aquifer is regionally extensive only in southwest and west-central Missouri. Aquifers labeled "Mississippian" or "Springfield Plateau (equivalent)" refer to wells that draw water from the same geological formations that comprise the Springfield Plateau aquifer, but are located in areas of the state not hydraulically connected to the regional aquifer system. Broad water quality generalizations are not available for these isolated, localized water-bearing units.

3 Unconfined aquifers are generally more vulnerable to surface or shallow subsurface contamination and warrant additional protections around the wellhead. Confined aquifers are not as vulnerable to surface or shallow subsurface contamination, but may exhibit naturally elevated levels of dissolved minerals, radionuclides, or variations in other water quality parameters such as dissolved oxygen and pH.

4 Please refer to 10 CSR 23-3.090 and 10 CSR 23-3.100 for additional information about well construction standards for Missouri's regional well drilling areas.

5 TDS1 Total dissolved solids information is currently only available for the Ozark and Springfield Plateau aquifers. Information is based on broad, regional groundwater quality trends, rather than on well-specific monitoring.

6 K6 This well is not constructed in materials prone to conduit or solution flow.

Appendix 3b

2014 Sikeston Public Well Assessment Reports (CARES)

Sikeston

PWSS No. 4010743

8 Wells, Scott County

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS
UNIVERSITY OF MISSOURI

Map Update: Jun 06, 2014

Missouri Department of
Natural Resources

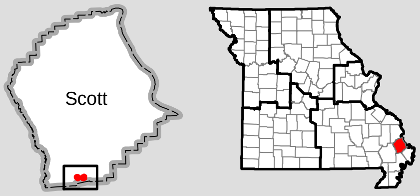
Well System

● System Well

SWAP Delineation Boundary

⭕ 20-year time of travel

⭕ Half-mile buffer



N

Miles

0 0.45 0.9

SWAP - Source Water Assessment Plan --
http://drinkingwater.missouri.edu/swap/
Aerial photos: USDA National Agriculture Inventory Program (NAIP), 2012.

Sikeston

PWSS No. 4010743

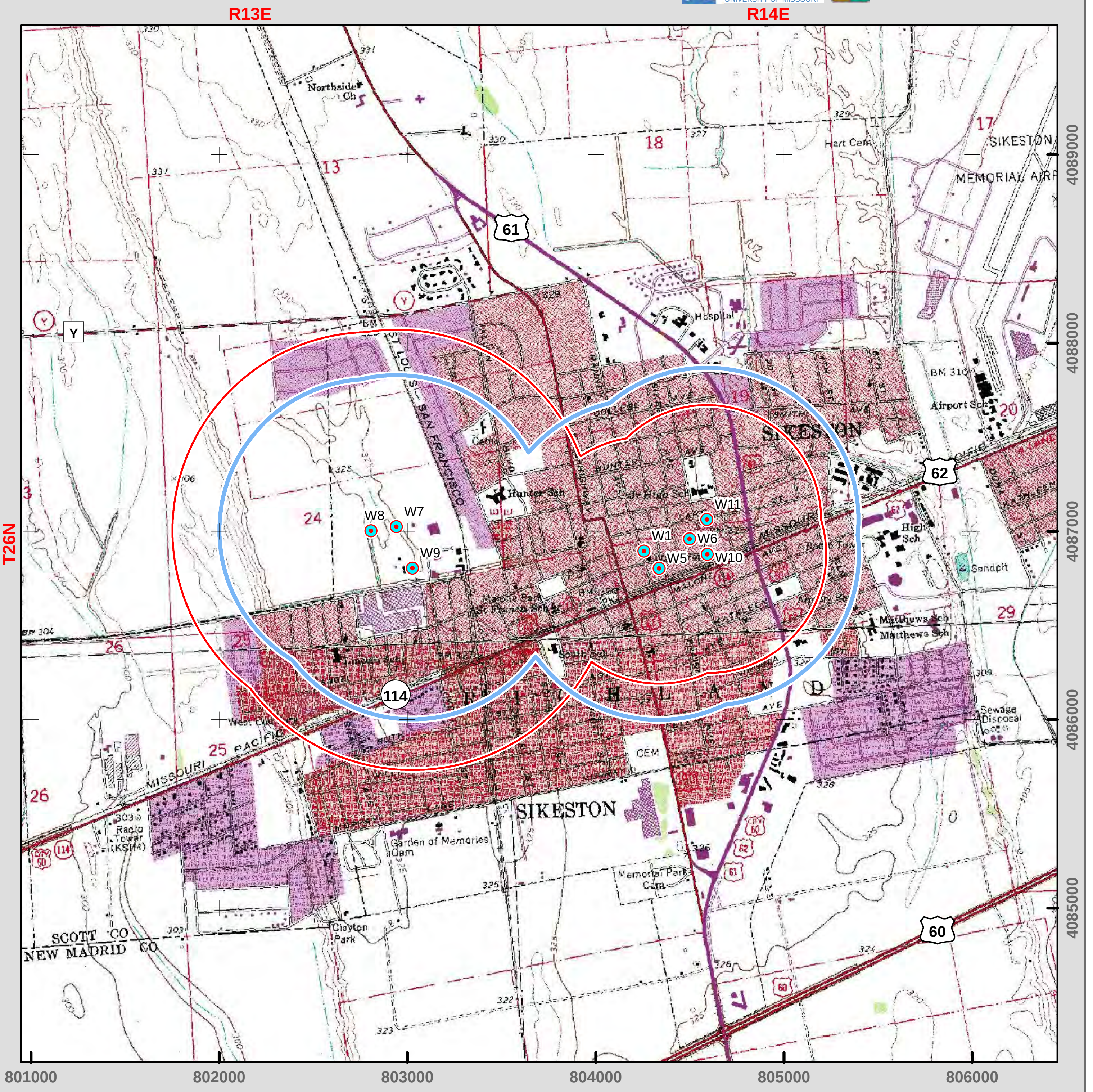
8 Wells, Scott County

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS
UNIVERSITY OF MISSOURI

Map Update: Jun 06, 2014

Missouri Department of
Natural Resources



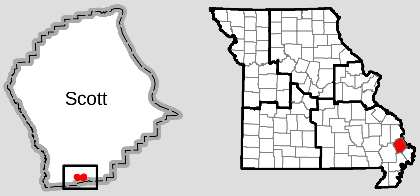
Well System

● System Well

SWAP Delineation Boundary

○ 20-year time of travel

○ Half-mile buffer



Miles

0 0.45 0.9

SWAP - Source Water Assessment Plan --
http://drinkingwater.missouri.edu/swap/
For basemap symbols, see the U.S. Geological Survey (USGS) publication: Topographic Map Symbols.

Sikeston

PWSS No. 4010743

Scott County, sheet 1 of 2

8 wells

Sheet Update: Jun 09, 2014

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS
UNIVERSITY OF MISSOURI

Missouri Department of
Natural Resources

Well Number	W1	W5	W6	W7	W8
Extended PWS #	4010743101	4010743105	4010743106	4010743107	4010743108
Local Well Name	Well #1, Plant #2	Well #6, Plant #2	Well #7, Plant #2	Well #8, Plant #3	Well #9, Plant #3
Well ID #	13051	13049	13048	13047	13046
DGLS ID #	0011630	0019120	0026235		
Facility Type	City	City	City	City	City
Status	Active	Active	Active	Active	Active
Latitude	36.87904	36.87818	36.87954	36.8806231803	36.880473182
Longitude	-89.58645	-89.58558	-89.5837	-89.6011240613	-89.6026440566
Location Method	GPS	GPS	GPS	GPS	GPS
Method Accuracy (ft)	38	43	43	43	39
USGS 7.5 Quadrangle	Sikeston North	Sikeston North	Sikeston North	Sikeston North	Sikeston North
County	Scott	Scott	Scott	Scott	Scott
MoDNR Region	Southeast	Southeast	Southeast	Southeast	Southeast
Date Drilled (year)	1951	1960	1969	1976	1976
Material (C/U)	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated
Base of Casing Formation	Wilcox	Wilcox	Wilcox	Alluvium	Alluvium
Total Depth Formation	Midway	Wilcox	Midway	Alluvium	Alluvium
Total Depth	421	401	404	145	143
Ground Elevation (ft)					
Top Seal					
Bottom Seal					
Casing Depth (ft)	331	307	309	108	108
Casing Size (in)	12	18	18	18	18
Casing Type				Steel	Steel
Elev. of Casing Top (ft)					
Outer Casing Depth (ft)					
Outer Casing Size (in)					
Screen Length (ft)	81	80	80	30	30
Screen Size (in)	8	12	12	12	12
Static Water Level (ft)	60	66	65	27	27
Well Yield (gpm)	600	1100	1450	1300	1300
Head (ft)					
Draw Down (ft)	60	54	59	33	34
Pump Test Date (year)	1975	1960	1992	1976	
Pump Type	Vertical Turbine	Vertical Turbine	Vertical Turbine	Vertical Turbine	Vertical Turbine
Pump Manufacturer					
Pump Depth (ft)	150	135	170	84	84
Pump Capacity (gpm)	863	1500	1600	1350	1350
Pump Meter (Y/N)					
VOC Detection (Y/N)	N	N	N	N	N
Nitrate Detection (Y/N)	N	N	N	N	N
Chlorination (Y/N)	Y	Y	Y	Y	Y
Filtration (Y/N)	Y	Y	Y	Y	Y
GWUDISW (Y/N)					
Surface Drainage					
State Approved(Y/N)					
Date Abandoned (year)					
Date Plugged (year)					

Sikeston

PWSS No. 4010743

Scott County, sheet 2 of 2

8 wells

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Missouri Department of
Natural Resources

Well Number	W9	W10	W11
Extended PWS #	4010743109	4010743110	4010743111
Local Well Name	Well #10, Plant #3	Well #11, Plant #1	Well #12
Well ID #	13045	13044	13043
DGLS ID #			
Facility Type	City	City	City
Status	Active	Active	Active
Latitude	36.87862	36.87877	36.88044
Longitude	-89.60025	-89.58268	-89.58263
Location Method	GPS	GPS	GPS
Method Accuracy (ft)	65	44	45
USGS 7.5 Quadrangle	Sikeston North	Sikeston North	Sikeston North
County	Scott	Scott	Scott
MoDNR Region	Southeast	Southeast	Southeast
Date Drilled (year)	1959	1987	1991
Material (C/U)	Unconsolidated	Unconsolidated	Unconsolidated
Base of Casing Formation	Alluvium	Wilcox	Wilcox
Total Depth Formation	Alluvium	Wilcox	Wilcox
Total Depth	142	390	382
Ground Elevation (ft)			
Top Seal			
Bottom Seal			
Casing Depth (ft)	119	300	292
Casing Size (in)	12	16	18
Casing Type	Steel	Steel	Steel
Elev. of Casing Top (ft)			
Outer Casing Depth (ft)			
Outer Casing Size (in)			
Screen Length (ft)	21	80	80
Screen Size (in)	12	10	12
Static Water Level (ft)	30	65	
Well Yield (gpm)	1000	1062	
Head (ft)			
Draw Down (ft)		43	
Pump Test Date (year)	1987	1987	
Pump Type	Vertical Turbine	Vertical Turbine	Vertical Turbine
Pump Manufacturer			
Pump Depth (ft)	64	174	174
Pump Capacity (gpm)	1150	1000	1000
Pump Meter (Y/N)			
VOC Detection (Y/N)	N	N	N
Nitrate Detection (Y/N)	N	N	N
Chlorination (Y/N)	Y	Y	Y
Filtration (Y/N)	Y	Y	Y
GWUDISW (Y/N)			
Surface Drainage			
State Approved(Y/N)			
Date Abandoned (year)			
Date Plugged (year)			

Sikeston

PWSS No. 4010743

Scott County, sheet 1 of 4

162 potential contaminant sources

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Map C.No.	CARES ID	Site Name	Type	Location Code	Accuracy Code	Method Code	Database Code
C1	140966	Elanco Products		UN	NV	UN	Dealcov
C2	108627	Scott-New Madrid Electric Coop		UN	NV	UN	Chemcov
C3	108628	Coleman Plant		UN	NV	UN	Chemcov
C4	108630	Sikeston Bd of Municipal Utilities		UN	NV	UN	Chemcov
C5	110225	Board Of Municipal Utilities		UN	NV	UN	Tanks
C6	110226	Board Of Municipal Utilities		UN	NV	UN	Tanks
C7	110379	Boyer Construction Company		UN	NV	UN	Tanks
C8	110498	Bridger Equipment Company		UN	NV	UN	Tanks
C9	110543	Brown Sand & Gravel Co, Inc		UN	NV	UN	Tanks
C10	111299	Charles Terrell		UN	NV	UN	Tanks
C11	111413	City Garage		UN	NV	UN	Tanks
C12	111527	City Of Miner		UN	NV	UN	Tanks
C13	111831	Community Shelter Workshop		UN	NV	UN	Tanks
C14	111964	Cooney Equipment Company		UN	NV	UN	Tanks
C15	112305	Dekalb Ag Research		UN	NV	UN	Tanks
C16	112309	Dekalb-pfizer Genetics		UN	NV	UN	Tanks
C17	112488	Don King Equipment		UN	NV	UN	Tanks
C18	113154	Ferrell Excavating		UN	NV	UN	Tanks
C19	113947	Hale Auction Company		UN	NV	UN	Tanks
C20	114303	Holiday 66 Service		UN	NV	UN	Tanks
C21	114332	Home Oil Co		UN	NV	UN	Tanks
C22	114397	Hucks #139		UN	NV	UN	Tanks
C23	114828	Joe Williams		UN	NV	UN	Tanks
C24	115060	Kellett Oil Co.		UN	NV	UN	Tanks
C25	115145	Kimo's Office Building		UN	NV	UN	Tanks
C26	115609	Lewis Bros Bakeries, Inc		UN	NV	UN	Tanks
C27	115921	Malone & Hyde Drug Dist-never Owned		UN	NV	UN	Tanks
C28	116354	Mhtd Dist Garage		UN	NV	UN	Tanks
C29	116376	Mid South Tractor Parts		UN	NV	UN	Tanks
C30	117395	Par Gas (sinclair)		UN	NV	UN	Tanks
C31	117520	Pepsi Cola		UN	NV	UN	Tanks
C32	118701	Santie Wholesale Oil Co		UN	NV	UN	Tanks
C33	118714	Saunders System Inc		UN	NV	UN	Tanks
C34	118760	Scott Co R-v School Dist		UN	NV	UN	Tanks
C35	118765	Scott-new Madrid-mississippi El Cor		UN	NV	UN	Tanks
C36	118815	Semo Motor Company		UN	NV	UN	Tanks
C37	118816	Semo Nursing Center Inc		UN	NV	UN	Tanks
C38	119100	Sikeston		UN	NV	UN	Tanks
C39	119102	Sikeston Coca-cola Bottling Co		UN	NV	UN	Tanks
C40	119103	Sikeston Concrete Prods Co, Inc		UN	NV	UN	Tanks
C41	119104	Sikeston General Oil Co		UN	NV	UN	Tanks
C42	119106	Sikeston Maint Shed		UN	NV	UN	Tanks
C43	119107	Sikeston Pepsi Cola		UN	NV	UN	Tanks
C44	119381	Southwestern Bell		UN	NV	UN	Tanks
C45	120481	Todd Corporation		UN	NV	UN	Tanks
C46	120611	Trigg Shell		UN	NV	UN	Tanks
C47	120622	Troop E Satellite		UN	NV	UN	Tanks
C48	120761	Union Pacific		UN	NV	UN	Tanks
C49	120798	United Parcel Service, Inc		UN	NV	UN	Tanks
C50	120840	Uptown Shell		UN	NV	UN	Tanks

Method Codes

Code	Address Matching (Geocoding)
A2	Block/Group
A3	Street Centerline
A4	Nearest Street Intersection
A5	Primary Street Name
A6	Digitization
AO	Other Address Matching
Z1	ZIP Code Centroid
	Census - 1990
C1	Block Centroid
C2	Block/Group Centroid
C3	Tract Centroid

Code	Global Positioning System
G1	Static Mode
G2	Kinematic Mode
G3	Differential Post Processing
G4	Precise Positioning Service
G5	Signal Averaging
G6	Real Time Differential Processing
	Interpolation
I1	Topo Map
I2	Aerial Photography (DOQQ)
I3	Satellite Imagery

Code	Other
P1	Land Survey
S2	Quarter Description
UN	Unknown

Location Codes

BL	Building
CF	Center of Facility
IN	Intersection
LS	Lagoon or Pond
MG	Main Access Point (Gate)
MA	Main Office
OT	Other
PL	Pile
RD	Road
TK	Tank, Standpipe, or Tower
WL	Well
UN	Unknown

Accuracy Codes

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m	Meters
km	Kilometers
	English
ft	Feet
yd	Yards
mi	Miles
UN	Unknown
NF	Site not found at database position
NV	Site position not verified

Sikeston

PWSS No. 4010743

Scott County, sheet 2 of 4

162 potential contaminant sources

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Map C.No.	CARES ID	Site Name	Type	Location Code	Accuracy Code	Method Code	Database Code
C51	120845	U-pump-it		UN	NV	UN	Tanks
C52	121651	Woodtruss		UN	NV	UN	Tanks
C53	121750	Quality Plating		UN	NV	UN	SMARS
C54	122606	Jerry James Trailers Inc.		UN	NV	UN	HW Gen
C55	123286	Scott-new Madrid-mississippi Electric		UN	NV	UN	HW Gen
C56	123833	Cooney Equipment Co.		UN	NV	UN	HW Gen
C57	123835	Semo Motor Co.		UN	NV	UN	HW Gen
C58	123836	Sikeston Dry Cleaners		UN	NV	UN	HW Gen
C59	123890	Todd, Inc.		UN	NV	UN	HW Gen
C60	124108	Satterfield Body Shop	Hazar Entry	CF	33 ft	I2	HW Gen
C61	124665	Missouri Delta Community Hospital		UN	NV	UN	HW Gen
C62	124814	Auto Tire & Parts		UN	NV	UN	HW Gen
C63	125054	Stricker Body Shop		UN	NV	UN	HW Gen
C64	125343	At&t		UN	NV	UN	HW Gen
C65	125753	King Cleaners		UN	NV	UN	HW Gen
C66	125930	Mid-south Tractor Parts		UN	NV	UN	HW Gen
C67	126133	Carnell's Body Shop		UN	NV	UN	HW Gen
C68	126233	Mo Dept Of Transportation		UN	NV	UN	HW Gen
C69	126406	Heritage American Homes		UN	NV	UN	HW Gen
C70	127163	One Day Cleaners		UN	NV	UN	HW Gen
C71	127545	Kelpro, Inc.		UN	NV	UN	HW Gen
C72	127758	Chamberlain's Amoco		UN	NV	UN	HW Gen
C73	127798	Canedy Sign Co., Inc.		UN	NV	UN	HW Gen
C74	127851	Faultless Cleaners		UN	NV	UN	HW Gen
C75	128391	Don King Salvage		UN	NV	UN	HW Gen
C76	128417	Bootheel Diesel Fuel Injection		UN	NV	UN	HW Gen
C77	128903	Sikeston Light And Water		UN	NV	UN	HW Gen
C78	128972	Missouri Highway & Transportation Dept.		UN	NV	UN	HW Gen
C79	129213	Media Press		UN	NV	UN	HW Gen
C80	129679	Dekalb Plant Genetics		UN	NV	UN	HW Gen
C81	129840	Quality Plating % Usepa Region Vii		UN	NV	UN	HW Gen
C82	130016	Central States Coca-cola		UN	NV	UN	HW Gen
C83	130088	Curtis H. Cline		UN	NV	UN	HW Gen
C84	130731	Dekalb Corp		UN	NV	UN	HW Gen
C85	132505	HANDY STREET CALCIUM ARSENATE SITE		UN	NV	UN	CERCLIS
C86	132606	MRM INDUSTRIES		UN	NV	UN	CERCLIS
C87	135413	Dekalb Agresearch Inc		UN	NV	UN	APCP
C88	136492	Mcmullin Gin Co Inc		UN	NV	UN	APCP
C89	136493	Sikeston Cotton Oil Mill Inc		UN	NV	UN	APCP
C90	136501	Missouri Delta Community Hospital		UN	NV	UN	APCP
C91	136502	Old Coal-fired Generator		UN	NV	UN	APCP
C92	136503	Sikeston Power Station		UN	NV	UN	APCP
C93	136505	Hendrick Concrete Products Corp		UN	NV	UN	APCP
C94	136506	Sikeston Woodworking		UN	NV	UN	APCP
C95	136510	Daily Standard		UN	NV	UN	APCP
C96	136514	Crowder Gin Company, Inc		UN	NV	UN	APCP
C97	136517	Marnor Aluminum Processing Inc		UN	NV	UN	APCP
C98	136521	Mrm Industries Inc		UN	NV	UN	APCP
C99	136528	Faultless Cleaners Inc		UN	NV	UN	APCP
C100	136537	Sikeston		UN	NV	UN	APCP

Method Codes

Code	Address Matching (Geocoding)
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A6	Digitization
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Code	Other
P1	Land Survey
S2	Quarter Description
UN	Unknown

Location Codes

BL	Building
CF	Center of Facility
IN	Intersection
LS	Lagoon or Pond
MG	Main Access Point (Gate)
MA	Main Office
OT	Other
PL	Pile
RD	Road
TK	Tank, Standpipe, or Tower
WL	Well
UN	Unknown

Accuracy Codes

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m	Meters
km	Kilometers
	English
ft	Feet
yd	Yards
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UN	Unknown
NF	Site not found at database position
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Sikeston

PWSS No. 4010743

Scott County, sheet 3 of 4

162 potential contaminant sources

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Map C.No.	CARES ID	Site Name	Type	Location Code	Accuracy Code	Method Code	Database Code
C101	136539	King Laundry And Dry Cleaners		UN	NV	UN	APCP
C102	136540	Sikeston Dry Cleaners		UN	NV	UN	APCP
C103	385324	Magic Car Wash	Car wash	BL	33 ft	I2	CARES
C104	385325	Williams Auto Sales	Auto repair shop	BL	33 ft	I2	CARES
C105	385326	Rogers Auto Sales	Automotive dealership	BL	33 ft	I2	CARES
C106	385327	The House of Color	Paint store	BL	33 ft	I2	CARES
C107	385328	Drakes Auto Sales	Automotive dealership	BL	33 ft	I2	CARES
C108	385329	Hucks	Tank (underground fuel)	BL	33 ft	I2	CARES
C109	385330	Jim's Auto Sales	Automotive dealership	BL	33 ft	I2	CARES
C110	385331	Cox's Car Wash	Car wash	BL	33 ft	I2	CARES
C111	385332	Sinclair Gas	Tank (above-ground fuel)	BL	33 ft	I2	CARES
C112	385333	Midtown Motors	Automotive dealership	CF	33 ft	I2	CARES
C113	385334	C&C Motors	Automotive dealership	BL	33 ft	I2	CARES
C114	385335	Moll Priniting Company	Print shop	BL	33 ft	I2	CARES
C115	385336	Feeders Supply	Feed/Fertilizer/Co-op	BL	33 ft	I2	CARES
C116	385338	Meeks Print Shop	Other	BL	33 ft	I2	CARES
C117	385339	Cornell's Collision Repair	Auto repair shop	BL	33 ft	I2	CARES
C118	385340	FG Convienience Store	Tank (underground fuel)	BL	33 ft	I2	CARES
C119	385341	Rhodes Convienience Store	Tank (underground fuel)	BL	33 ft	I2	CARES
C120	385342	Animal Health Center	Veterinary service	BL	33 ft	I2	CARES
C121	385343	Elite Car Wash	Other	BL	33 ft	I2	CARES
C122	385344	Sikeston Fire Department	Fire station	BL	33 ft	I2	CARES
C123	385345	Allsops Woodworking	Furniture manufacturer	BL	33 ft	I2	CARES
C124	385346	Sonny's Solid Waste	Tank (above-ground fuel)	CF	33 ft	I2	CARES
C125	385349	Auto Repair	Auto repair shop	BL	33 ft	I2	CARES
C126	385350		Well (domestic)	WL	33 ft	I2	CARES
C127	385351	Riggs Building Supplies and Home Center	Hardware and lumber store	BL	33 ft	I2	CARES
C128	385352	Sabona Mfg.	Manufacturing (general)	BL	33 ft	I2	CARES
C129	385353	Janitrol/Janitor Supply	Other	BL	33 ft	I2	CARES
C130	385354	Patriot/Heritage Homes	Manufacturing (general)	BL	33 ft	I2	CARES
C131	385355	Sheltered Workshop	Sawdust pile	CF	33 ft	I2	CARES
C132	385356	Aramark	Dry cleaner	BL	33 ft	I2	CARES
C133	385357		Other	TK	33 ft	I2	CARES
C134	385358	Riggs Wholesale Co.	Hardware and lumber store	BL	33 ft	I2	CARES
C135	385359	Electric Substation	Other	CF	33 ft	I2	CARES
C136	385440	Sikeston Auto Service	Auto repair shop	BL	33 ft	I2	CARES
C137	385441	Sinclair Service Station	Tank (above-ground fuel)	BL	33 ft	I2	CARES
C138	385442	Phillips 66	Tank (underground fuel)	BL	33 ft	I2	CARES
C139	385443	Sikeston Laundry and Drycleaners	Dry cleaner	BL	33 ft	I2	CARES
C140	385444	C & K Building Materials	Hardware and lumber store	BL	33 ft	I2	CARES
C141	385445	King Laudry and Cleaners	Dry cleaner	BL	33 ft	I2	CARES
C142	385446	Moll Printing Co.	Other	BL	33 ft	I2	CARES
C143	385447	Premier Motor	Automotive dealership	BL	33 ft	I2	CARES
C144	385448	Amoco	Tank (underground fuel)	BL	33 ft	I2	CARES
C145	385449	Griffs Auto Sales	Automotive dealership	BL	33 ft	I2	CARES
C146	385450	Beaver Janitor Supply	Other	TK	33 ft	I2	CARES
C147	385451	Blanchard Funeral Parlor	Funeral service and crematory	BL	33 ft	I2	CARES
C148	385452	Service Station	Tank (underground fuel)	BL	33 ft	I2	CARES
C149	385453	Cargill	Feed/Fertilizer/Co-op	CF	33 ft	I2	CARES
C150	385454		Tank (above-ground fuel)	TK	33 ft	I2	CARES

Method Codes

Code	Address Matching (Geocoding)
A2	Block/Group
A3	Street Centerline
A4	Nearest Street Intersection
A5	Primary Street Name
A6	Digitization
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Z1	ZIP Code Centroid
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I2	Aerial Photography (DOQQ)
I3	Satellite Imagery

Code	Other
P1	Land Survey
S2	Quarter Description
UN	Unknown

Location Codes

BL	Building
CF	Center of Facility
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Sikeston

PWSS No. 4010743

Scott County, sheet 4 of 4

162 potential contaminant sources

Sheet Update: Jun 09, 2014

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS UNIVERSITY OF MISSOURI

Missouri Department of Natural Resources

Map C.No.	CARES ID	Site Name	Type	Location Code	Accuracy Code	Method Code	Database Code
C151	385455	Sikeston Seed Co., Inc.	Feed/Fertilizer/Co-op	BL	33 ft	I2	CARES
C152	385456	H & H Small Engine Repair	Auto repair shop	BL	33 ft	I2	CARES
C153	385457	Auto Repair	Auto repair shop	BL	33 ft	I2	CARES
C154	385458	J J Auto Sales	Automotive dealership	BL	33 ft	I2	CARES
C155	385459	Sikeston City Dump	Dumping and/or burning site	CF	33 ft	I2	CARES
C156	385460	William Farr and Purnell Funeral Home	Funeral service and crematory	BL	33 ft	I2	CARES
C157	385461		Well (abandoned)	BL	33 ft	I2	CARES
C158	385462		Well (abandoned)	BL	33 ft	I2	CARES
C159	385463	Sikeston Fire Station	Fire station	BL	33 ft	I2	CARES
C160	385464		Tank (above-ground fuel)	TK	33 ft	I2	CARES
C161	385465	Sikeston Highway Maintenence Facility	Highway maintenance facility	CF	33 ft	I2	CARES
C162	385466	Shell	Petroleum production or storage	BL	33 ft	I2	CARES

Method Codes

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Sikeston

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Contaminant Summary Sheet

162 potential contaminant sources

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UNIVERSITY OF MISSOURI

Missouri Department of
Natural Resources

162 Potential Contaminant Sources in the Listed Databases:

	AFS (EPA AIRS Facility Sites)
16	APCP (MoDNR Air Pollution Control Program Sites)
	APF (MoDNR Active Permitted Landfills & Transfer Stations)
2	CERCLIS (EPA CERCLIS)
3	Chemcov (VA Selected Chemical Sites)
1	Dealcov (MDA Pesticide Dealer Locations)
	Dioxin (MoDNR Confirmed Dioxin List)
	Grain B (USDA Former Grain Bin Sites)
31	HW Gen (MoDNR Hazardous Waste Generators)
	HW Tran (MoDNR Hazardous Waste Transporters)
	LUST (MoDNR Leaking Underground Storage Tanks)
	MoDOT (MoDOT Highway Maintenance Facilities)
	PADS (EPA PCB Activity Data Base System)
	Perchlo (MoDNR Perchlorate Sites in Missouri)
	Pest Ap (MDA Licensed Pesticide Applicators)
	RCRIS (EPA Resource Conservation and Recovery Information System)
	Silos (USGS Minuteman II Missile Silos)
1	SMARS (MoDNR Superfund Management and Registry System)
48	Tanks (MoDNR Petroleum Tank Database)
	Tier 2 (MERC Tier II Reports)
	Tire D (MoDNR Resolved and Unresolved Waste Tire Dumps)
	TRI (EPA Toxic Release Inventory)
	VCP (MoDNR Voluntary Cleanup Program Sites)
	WQIS (MoDNR Water Quality Information System)
60	SWIP Field Inventory (see below)

60 Potential Contaminant Sources in the SWIP Field Inventory:

0	Airport or abandoned airfield
0	Animal feedlot
0	Apartments and condominiums
0	Asphalt plant
6	Auto repair shop
8	Automotive dealership
0	Barber and beauty shop
0	Boat yard and marina
0	CAFO
0	Campground
2	Car wash
0	Cement Plant
0	Cemetery
0	Communication equipment mfg
0	Country club
3	Dry cleaner
1	Dumping and/or burning site
0	Electric equipment mfg or storage
0	Electric substation
0	Farm machinery storage
3	Feed/Fertilizer/Co-op
2	Fire station
2	Funeral service and crematory
1	Furniture manufacturer
0	Furniture repair or finishing shop
0	Garden and/or nursery
0	Garden, nursery, and/or florist
0	Gasoline service station
0	Golf courses
0	Government office
0	Grain bin
3	Hardware and lumber store
0	Hazardous waste (Federal facility)
1	Highway maintenance facility
0	Jewelry or metal plating shop
0	Junk yard or salvage yard
0	Lagoon (commercial)
0	Lagoon (industrial)
0	Lagoon (municipal)
0	Lagoon (residential)
0	Landfill (municipal)
0	Laundromat
0	Livestock auction
0	Machine or metalworking shop
2	Manufacturing (general)
0	Material stockpile (industrial)
0	Medical institution
0	Metal production facility
0	Mining operation
7	Other
1	Paint store
0	Park land
0	Parking lot
1	Petroleum production or storage
0	Pharmacies
0	Photography shop or processing lab
0	Pit toilet
0	Plastic material and synthetic mfg
1	Print shop
0	Railroad yard
0	Recycling/reduction facility
0	Research lab
0	Restaurant
1	Sawdust pile
0	School
0	Sports and hobby shop
0	Swimming pool
0	Tailing pond
5	Tank (above-ground fuel)
0	Tank (other)
0	Tank (pesticide)
6	Tank (underground fuel)
0	Trucking terminal
1	Veterinary service
0	Wastewater treatment facility
2	Well (abandoned)
1	Well (domestic)
0	Well (irrigation)
0	Well (livestock)
0	Well (monitoring)
0	Well (public water supply)
0	Well (unknown)

Sikeston

PWSS No. 4010743

Susceptibility Determination Sheet

8 wells

Sheet Update: Mar 14, 2014

Prepared by:
CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS
UNIVERSITY OF MISSOURI

Missouri Department of
Natural Resources

The Missouri Department of Natural Resources (MoDNR) has assembled this information to assess the susceptibility of drinking water sources to contamination. There are many unforseen and unpredictable factors that may cause a source to be contaminated. MoDNR routinely monitors all public supplies to ensure public health is protected. Public water systems and local communities are encouraged to take all measures possible to reduce the susceptibility of their drinking water source to chemical contamination. For more information, call 1-800-361-4827.	Not Susceptible	Moderately Susceptible	Highly Susceptible	Incomplete Data
A system is highly susceptible because of construction deficiencies if:				
A well was not constructed according to plans approved by MoDNR-PDWB,				X
A well was not cased to a depth approved by MoDNR,				X
A well casing is not of sufficient weight,				X
A well is not sufficiently sealed (grouted) around the casing, or A well has developed holes in the casing or other flaws that compromise its integrity.				X
A system is highly susceptible due to direct influence of surface water if:				
A well has tested positive for surface water indicators such as algae or high turbidity.				X
A system is highly susceptible to surface contaminants if:				
A well casing does not extend 12 inches above the well house floor, or 18 inches above the ground surface,				X
A well casing does not extend four feet above the 100-year flood level, or four feet above the highest known flood elevation,				X
A well is not provided with a properly screened vent, or				X
All openings in a well casing are not properly sealed.				X
A system is highly susceptible based on detection histories if:				
Volatile Organic Chemicals (VOCs) have been detected in a well,	X			
Synthetic Organic Chemicals (SOCs) have been detected in a well,				X
Inorganic Chemicals (IOCs) have been detected in a well above naturally occurring levels,				X
Nitrates have been detected at or above one-half the MCL,	X			
Bacteria has been consistently detected in a well, or				X
Viruses or microbiological contaminants are detected in a well.				X
A system is highly susceptible to weather, vandalism, and sabotage if:				
A well is not in a locked well house of adequate construction.				X (1)
A system is moderately susceptible due to local geology if:				
A producing aquifer is less than 100 feet below the surface,	X			
A producing aquifer has conduit flow conditions due to surficial karst topography,				X
A producing aquifer is not overlain by an impermeable confining layer,				X
A producing aquifer is overlain by a conductive (>5X10e-4) formation (including soil), or				X
A producing aquifer is confined, but there are open wells nearby penetrating that layer.				X
A system is moderately susceptible to contaminants if:				
Any contaminants listed in Appendix F-a are found in the source water area,		X (2)		
Septic systems are present in the source water area,				X
A well is indirectly connected to a surface water body,				X
A submersible well pump cannot be ruled out from containing PCBs or PHAs, or				X
There is a high density of transportation corridors in the source water area.				X
A system is highly susceptible to contamination if:				
Any contaminant sites identified in the source water area are known to have contaminated groundwater that may migrate toward a well.				X

(1) This system was not assessed to determine if adequate security devices such as padlocks, gates, and lighting are in place to deter vandals and saboteurs. All water systems should have this type of protection in place.

(2) A well (or wells) serving this system has been determined to be susceptible due to the presence of potential contaminant sources. The water system and the wellhead protection team should take extra care to ensure that all potential contaminants in the source water area are handled properly to avoid contamination of the drinking water supply.

Appendix 8b

Alternate Source Demonstration

For Chloride in MW-6 - October 11, 2022

1505 East High Street
Jefferson City, Missouri 65101
Telephone (573) 659-9078
www.ger-inc.biz

GREDELL Engineering Resources, Inc.

Sikeston Board of Municipal Utilities
Sikeston Power Station
Detection Monitoring Program for Bottom Ash Pond – Chloride in MW-6
Alternate Source Demonstration

Prepared for:

BMU Sikeston
Board of Municipal Utilities
Sikeston Power Station
1551 West Wakefield Avenue
Sikeston, MO 63801

Thomas R. Gredell
STATE OF MISSOURI
THOMAS R. GREDELL
10-11-2022
NUMBER
PE-021137
PROFESSIONAL ENGINEER

STATE OF MISSOURI
CARLSON
10-11-22
RG 0126
REGISTERED GEOLOGIST

October 2022

PROFESSIONAL ENGINEER'S CERTIFICATION

40 CFR 257.94(e)(2) Alternate Source Demonstration

I, Thomas R. Gredell, P.E., a professional engineer licensed in the State of Missouri, hereby certify in accordance with 40 CFR 257.94(e)(2) to the accuracy of the alternate source demonstration described in the following report for the Sikeston Board of Municipal Utilities, Sikeston Power Station, Bottom Ash Pond CCR unit. The report demonstrates that the statistically significant increase of Chloride in MW-6 is not the result of a release from the Bottom Ash Pond and is attributable to an alternate source. This demonstration successfully meets the requirements of 40 CFR 257.94(e) as found in federal regulation 40 CFR 257, Subpart D – Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments. In addition, the demonstration was made using EPA Unified Guidance (Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance: EPA 530/R-09-007) and generally accepted methods.

Name: Thomas R. Gredell, P.E.
Signature: Thomas R Gredell
Date: October 11, 2022

Registration Number: PE-021137
State of Registration: Missouri

THOMAS R. GREDELL
NUMBER PE-021137

Sikeston Board of Municipal Utilities
Sikeston Power Station
Detection Monitoring Program for Bottom Ash Pond - Chloride in MW-6
Alternate Source Demonstration

October 2022

Table of Contents

List of Figures

List of Tables

List of Appendices

1.0 INTRODUCTION

This Alternate Source Demonstration (ASD) Report has been prepared to address the results of the semi-annual sampling event initiated on August 3, 2022 at the Sikeston Board of Municipal Utilities (SBMU) Sikeston Power Station's (SPS) Bottom Ash Pond, a coal combustion residual (CCR) surface impoundment. Following receipt of final analytical data, it was apparent that the reported concentration of Total Dissolved Solids (TDS) in sample MW-5 and Chloride in sample MW-6 exceeded their respective prediction limits. Consequently, retesting for the aforementioned well constituent pairs was initiated on September 12, 2022. Following receipt of final analytical data from the retesting event, it was confirmed that the Chloride concentration in sample MW-6 represents a statistically significant increase (SSI) over background for this well. The retesting of MW-5 did not confirm an SSI. SBMU-SPS requested that Gredell Engineering conduct an evaluation of the confirmed SSI of Chloride concentration in MW-6 and develop an ASD, if warranted.

As stated in §257.94(e)(2), an owner or operator may demonstrate that a source other than the CCR unit caused the apparent SSI over background for a constituent. The owner or operator must complete the written demonstration within 90 days of detecting an SSI over background to include obtaining a certification from a qualified professional engineer verifying the accuracy of the information in the report. If a successful demonstration is completed within the 90-day period, the owner of the CCR unit may continue with a detection monitoring program. The owner or operator must also include the certified demonstration in the annual groundwater monitoring report required by §257.90(e).

Gredell Engineering has completed an evaluation of the groundwater sampling events, analytical data results, and other potential factors, for the SBMU SPS Bottom Ash Pond groundwater monitoring system to determine if an alternate source is the cause of the apparent SSI of Chloride in MW-6. This report presents the results of that evaluation and includes supporting documentation.

2.0 OBSERVATIONS AND DATA COLLECTION

The Bottom Ash Pond groundwater monitoring system consists of five wells, designated MW-3, MW-4, MW-5, MW-6, and MW-8 (Figure 1). Monitoring wells MW-3, MW-4, MW-5, and MW-6 were installed in April 2016, and sampled on an approximate monthly basis beginning in November 2016 and ending in July 2017 to establish an initial background data base. Monitoring well MW-8 was installed in April 2017 and was sampled at an increased frequency beginning in May 2017 and ending in September 2017. Additional information regarding these wells is available in the Groundwater Monitoring, Sampling and Analysis Plan (GMSAP) for the site.

The background data base for the Bottom Ash Pond is periodically updated in general accordance with U.S. Environmental Protection Agency (USEPA) Unified Guidance for statistical analysis of groundwater monitoring data (USEPA, 2009). The results of the eight initial background sampling events and ten additional sampling events included in updates to the background data base were evaluated in accordance with §257.93, and intra-well analysis using prediction limits was determined to be the most appropriate statistical analysis approach for detection monitoring. Following receipt of final analytical data reports from the contract laboratory, the reported concentration for each detection monitoring constituent from each well is compared to its respective prediction limit. If a constituent concentration exceeds the respective prediction limit for a particular well or is outside the predicted range (in the case of pH), SSI over background is suspected.

The statistical method selected and certified for evaluation of groundwater monitoring data at this site incorporates a 1-of-2 retesting strategy in accordance with Unified Guidance for statistical analysis of groundwater monitoring data (USEPA, 2009). Therefore, a suspected SSI is confirmed if, and only if, the constituent concentration in a second statistically independent sample (retest) from the same well is also demonstrated to exceed the prediction limit.

The SPS initiated its semiannual detection groundwater sampling event for the Bottom Ash Pond on August 3, 2022. The contracted laboratory received the samples on August 5, 2022 and issued final analytical results on August 30, 2022 (Appendix 1a). However, the TDS result for sample MW-5 and the Chloride result for sample MW-6 appeared elevated relative to their respective prediction limits for these well constituent pairs. Consequently, retesting was initiated for these well constituent pairs on September 12, 2022. The analytical laboratory received these samples on September 14, 2022 and issued the analytical report for the retesting event on September 28, 2022 (Appendix 1b).

The following table summarizes the analytical results for TDS in MW-5 and Chloride in MW-6 from the August 3, 2022 sampling and September 12, 2022 retesting events. Prediction limits for these well constituent pairs are also presented. The apparent SSI of TDS in MW-5 is not confirmed by retesting, however the chloride concentration in MW-6 represents a confirmed SSI. Therefore, an evaluation is presented to determine if an alternate source is the cause of the elevated Chloride concentration in MW-6 relative to its respective baseline data.

Table 1 -- Analytical Results and Prediction Limit Summary

Sampling Event Date	Well Constituent Pair	Analytical Result (mg/L)	Prediction Limit (mg/L)	SSI Suspected or Confirmed?
August 3, 2022	MW-5 TDS	560	539.8	Suspected
	MW-6 Chloride	4.3	2.956	Suspected
September 12, 2022	MW-5 TDS	510	539.8	Not Confirmed
	MW-6 Chloride	4.7	2.956	Confirmed

3.0 SUMMARY OF DATA ANALYSIS AND FINDINGS

The USEPA provides Unified Guidance for statistical analysis of groundwater monitoring data (USEPA, 2009). This Unified Guidance document was reviewed to assess the validity of the apparent SSI of Chloride in MW-6. Chapter 4 of the Unified Guidance discusses groundwater monitoring programs and statistical analysis of the associated data. A key component of statistical analysis is "*to determine whether or not the increase is actually due to a contaminant release*". Three of these considerations are pertinent to the data associated with Chloride testing, MW-6 sampling, and the Bottom Ash Pond groundwater monitoring system and are listed below.

1. Chapter 4, page 4-8: *Did the test correctly identify an actual release of an indicator or hazardous constituent?*
2. Chapter 4, page 4-8: *Could observed SSIs for naturally occurring analytes be due to longer term (i.e., seasonal, or multi-year) variation?*
3. Chapter 4, page 4-9: *Are any of these contaminants observed upgradient of the regulated units?*

Each of these considerations were evaluated to determine the validity of the apparent SSI for Chloride in MW-6. The results of this evaluation are discussed below.

Unified Guidance Consideration 1

Since completion of the hydrogeologic site characterization (Gredell Engineering, 2017), the piezometers installed for the characterization were converted to monitoring wells MW-1 through MW-6. As documented in that report, 12 groundwater maps were developed showing the direction of flow and hydraulic gradient based on the monthly groundwater elevations. These groundwater maps demonstrate a consistent west-southwestern direction of flow showing minimal variation in hydraulic gradient over the 12-month period extending from May 2016 to April 2017. Moreover, three additional monitoring wells (MW-7 through MW-9) were installed in locations shown on Figure 1 to provide sufficient downgradient monitoring of the ash ponds at the SPS and to further refine and confirm overall groundwater flow direction. Based on over five years of monitoring since 2016, the groundwater data consistently demonstrate that MW-6 is not downgradient of the Bottom Ash Pond and groundwater flow direction remains consistently to the west-southwest.

MW-6 was installed to monitor spatial variability of groundwater geochemistry upgradient of the Bottom Ash Pond. Based on the weight of evidence that MW-6 is not hydraulically downgradient from the Bottom Ash Pond, the well is not positioned to detect a release from the pond. Therefore, the conclusion to the first consideration question from Unified Guidance listed above is negative.

The analytical results for MW-6 could not have identified an actual release of Chloride from the Bottom Ash Pond.

Unified Guidance Consideration 2

Boswell et al. (1968) published a study of the Quaternary Aquifers in the Mississippi Embayment which documented characteristics of the alluvial aquifer underlying the regulated units (i.e., the Bottom Ash Pond and Fly Ash Pond) at the site. The study stated that while the chief source of recharge is precipitation, recharge also occurs from the upward movement of groundwater from underlying aquifers. While the alluvial and Wilcox Aquifers are discussed separately, Luckey (1985) notes that the alluvial aquifer and the underlying Wilcox Aquifer commonly are hydraulically interconnected. The hydraulic connection between the alluvial aquifer and Wilcox Aquifer is further demonstrated by the potentiometric contour maps presented by Luckey (1985), which demonstrate a similar flow direction (west-southwest) in both aquifers in the Sikeston area.

Drilling records for high-yield wells (Appendix 2) at the SPS and in areas east generally document permeable sand and gravel at and near the contact between the alluvial aquifer and the underlying Wilcox Aquifer. These permeable sands and gravels and the lack of a laterally continuous low-permeability aquitard between the two aquifers permit the upward movement and mixing of water between these aquifers near the SPS.

It is also noted that the high-yield Sikeston Municipal wells (Appendix 3) at Plant 3, which is located approximately one-half mile east of the SPS, are 142 to 145 feet deep and screened in the lower part of the alluvial aquifer. Appendix 3 documents between 30 and 34 feet of drawdown or reduction in hydraulic head in the alluvial aquifer as a result municipal well pumping. This reduction in hydraulic head results in an upward hydraulic gradient from the underlying Wilcox Aquifer. The rate of upward movement of groundwater from the Wilcox into the alluvial aquifer undoubtedly increases as these high-yield wells withdraw groundwater.

High-yield irrigation wells are common to support crop farming in southeast Missouri. Luckey and Fuller (1980) state that the alluvium is the only aquifer that is used for irrigation in the area. As shown on Figure 2, the irrigation wells near the SPS are generally 140 feet deep or less and are screened in the lower part of the alluvial aquifer. Demand on the aquifer increased in 2021 due to lower annual precipitation (43.63 inches) relative to calendar years 2020 and 2019 (56.04 and 57.38 inches, respectively). Even less precipitation occurred during the first 8 months 2022 (28.2 inches), compared to the first 8 months of 2021 (32.12 inches), 2020 (42.96 inches), and 2019 (41.32 inches). This additional demand on irrigation to support farming resulted in more drawdown on the alluvial aquifer in 2021 and 2022 relative to previous years. The additional drawdown reduces hydraulic head relative to the underlying Wilcox Aquifer and results in greater upward flow of groundwater from the Wilcox, which then mixes and interacts with groundwater in the alluvial aquifer.

Boswell et al. (1968) also states that the alluvial aquifer contains appreciable quantities of Chloride ranging from 0.3 to 1,870 mg/L, owing to chemical dissolution of soil and rocks. Such concentrations suggest that the Chloride concentration in MW-6 (4.3 mg/L) may be naturally occurring. Combined with the increased demand on groundwater in 2021 and 2022, the recent increase in Chloride is likely a temporal variation resulting from upward movement, co-mingling, and geochemical interaction of groundwater from the underlying Wilcox Aquifer. This geochemical variation is not represented by the background data set for the Bottom Ash Pond monitoring system. Consequently, the conclusion to the second consideration question from Unified Guidance listed above is affirmative.

Unified Guidance Consideration 3

Relatively high concentrations of Chloride are documented in irrigation wells, industrial supply wells, and SBMU municipal (i.e., public drinking water supply) wells located upgradient of the regulated units. Data published by the Missouri Department of Natural Resources in their 2020 Annual Water Quality Report for the SBMU municipal water system summarize location and construction of the public drinking water supply wells (Appendix 3). Several additional publications were reviewed to determine the natural occurrence and variability of Chloride in the alluvial and Wilcox Aquifers.

Luckey and Fuller (1980) presented comprehensive hydrogeologic data for the unconsolidated aquifers in southeastern Missouri. This study inventoried and sampled over 800 irrigation, high-yield industrial, and municipal wells and included data on the alluvial and Wilcox Aquifers underlying the regulated units (i.e., Bottom Ash Pond and Fly Ash Pond) at the SPS. While the alluvial and Wilcox Aquifers are typically discussed separately in the technical literature, Luckey (1985) states that these two aquifers commonly are hydraulically interconnected. This hydraulic connection between aquifers is also demonstrated by the drilling records in Appendix 2, which document permeable sand and gravel at the alluvium/Wilcox contact.

Luckey and Fuller (1980) summarize analytical data for Chloride in the alluvial and Wilcox Aquifers in the Sikeston area. Seven wells located upgradient of the Bottom Ash Pond were included in their study. Four of these wells were identified as irrigation or industrial supply wells and three were SBMU municipal wells located closer to the SPS.

Similarly, Brahana et al. (1985) presented a study of groundwater quality based on comprehensive sampling and analysis of samples from 42 wells set in the unconsolidated aquifers of the Northern Mississippi Embayment. The locations of these and other wells are indicated on Figure 2. Chloride data from these wells is summarized in Table 2 and on Figure 2.

Table 2 – Chloride Results in Upgradient Irrigation, Industrial and Municipal Wells

Well Type	Owner	Well Location	Formation	Chloride Concentration (mg/L)	Data Source
Irrigation or Industrial Supply	Roth	T26N R14E S11CBC	Alluvium	4.8	Luckey and Fuller (1980)
	Drury Dev.	T26N R14E S15CCD	Alluvium	5.3	
	Miner	T26N R14E S16DDD	Alluvium	13	
	Scott	T26N R14E S15DBB	Alluvium	9.8	
Municipal	Sikeston ID #19120	T26N R14E S19CDD	Wilcox	17	
	Sikeston ID #26235	T26N R14E S19DCB	Wilcox	7.8	
	Sikeston ID #2700	T26N R14E S19CDD	Wilcox	5.4	
	Sikeston ID #5941	T26N R14E S19CDD	Wilcox	5.2	Brahana et al. (1985)

These data demonstrate that local concentrations of Chloride up gradient of the site range from 4.8 mg/L to 17 mg/L. Therefore, the conclusion to the third consideration question from Unified Guidance listed above is affirmative.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Gredell Engineering concludes that the confirmed SSI of Chloride in MW-6 is not the result of a release from the Bottom Ash Pond and is attributable to an alternate source. The following supports this conclusion:

- MW-6 is not hydraulically downgradient of the Bottom Ash Pond and is not positioned to identify a release of an indicator (Chloride) from the regulated unit. Groundwater flow direction is consistently from the east-northeast to the west-southwest as documented during all monitoring events at the SPS.
- The reported Chloride concentration in MW-6 is naturally occurring and due to temporal variation resulting from chemical dissolution of Chloride from soil or rocks, and variable upward groundwater movement from the underlying Wilcox Aquifer over a longer term (i.e., multi-year) than accounted for during the background sampling period of the regulated unit’s monitoring system.
- Chloride is present in high-capacity wells located upgradient of the regulated units. Chloride concentrations range from 4.8 to 17 mg/L, as reported by the United States Department of the Interior Geological Survey and the Missouri Department of Natural Resources.

Based on these conclusions, Gredell Engineering recommends continuance of semi-annual detection monitoring in accordance with §257.94.

5.0 LIMITATIONS

This report has been prepared for the exclusive use of the client and GREDELL Engineering Resources, Inc. for the specific project discussed in accordance with generally accepted environmental practices common to this locale at this time. The report is applicable only to this specific project and identified site conditions as they existed at the time of report preparation. The use of this report by others to develop independent interpretations of data or conclusions not explicitly stated in this report are the sole responsibility of those firms or individuals.

This report is not a guarantee of subsurface conditions. Variations in subsurface conditions may be present that were not identified during this or previous investigations. Interpretations of data and recommendations made in this report are based on observations of data that were available and referred to in this report unless otherwise noted. No other warranties, expressed or implied, are provided.

6.0 REFERENCES

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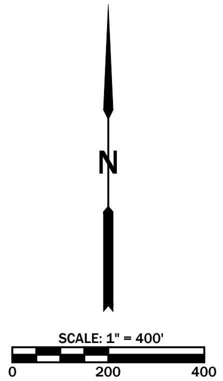
Figures



LEGEND

PROPERTY LINE	——PL——
GROUNDWATER CONTOUR	——
MONITORING WELL	(MW)
UP GRADIENT MONITORING LOCATION	UG
DOWN GRADIENT MONITORING LOCATION	DG
GENERAL FLOW DIRECTION	←

NOTES:
1. IMAGE PROVIDED BY BING MAPS.
2. MONITORING WELL LOCATIONS, CASING ELEVATIONS & UNDERGROUND CULVERT ELEVATIONS SURVEYED BY BOWEN ENGINEERING & SURVEYING.
3. GROUNDWATER ELEVATIONS MEASURED BY SIKESTON POWER STATION STAFF ON AUGUST 3, 2022.
4. MAP DEVELOPMENT BASED ON CONTOURS GENERATED BY SURFER® SOFTWARE.
5. RANGE OF HYDRAULIC GRADIENT AS DETERMINED BY SURFER® SOFTWARE 0.0005 FT./FT. TO 0.001 FT./FT.

WELL ID	GROUNDWATER ELEVATION	CASING ELEVATION	NORTHING	EASTING
MW-3	296.52	308.55	381130.00	1079946.62
MW-4	293.79	305.61	380804.62	1077766.95
MW-5	294.40	305.91	379858.94	1078477.85
MW-6	295.47	307.72	379874.77	1079384.36
MW-8	293.87	304.77	380311.20	1077940.08

THE GEOLOGIST WHO REVIEWED AND APPROVED THIS REPORT ASSUMES RESPONSIBILITY ONLY FOR GEOLOGIC INTERPRETATIONS OF DATA APPEARING ON THE PAGE AND DISCLAIMS PURSUANT TO SECTION 256.456 RSMO ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS OR OTHER DOCUMENTS OR INSTRUMENTS NOT PREPARED UNDER THE SUPERVISION OF THE GEOLOGIST RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE PROJECT TO WHICH THIS FIGURE REFERS.

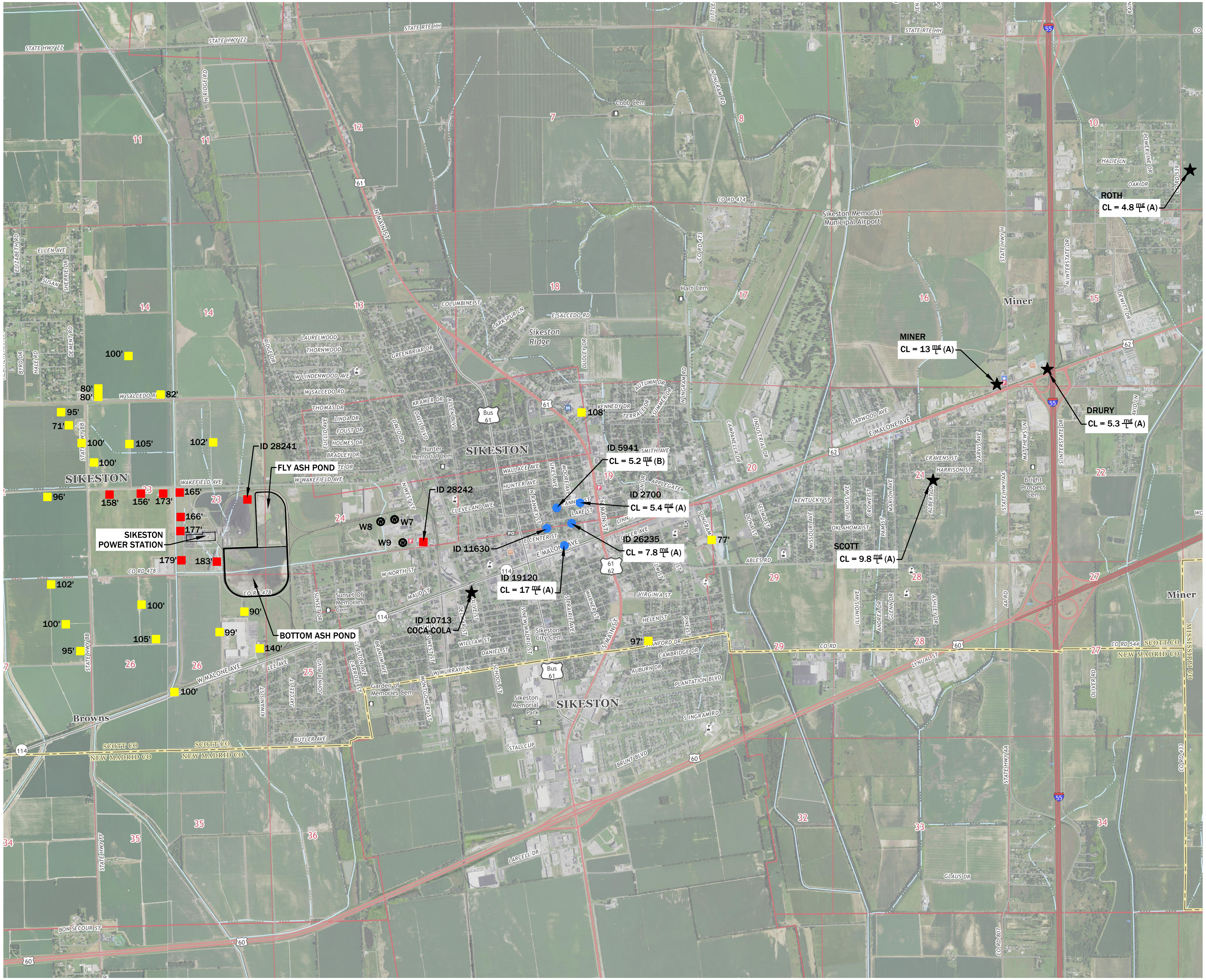
FIGURE 1
GROUNDWATER CONTOUR MAP
AUGUST 3, 2022

SIKESTON POWER STATION
BOTTOM ASH POND - CHLORIDE IN MW-6
ALTERNATE SOURCE DEMONSTRATION

SURVEYED	DESIGNED	DRAWN	CHECKED	APPROVED	DATE	SCALE	PROJECT NAME	FILE NAME	SHEET #
NA	NA	CM	KE	MCC	10/2022	AS NOTED	SIKESTON/GWMAP/BAP	BAP ALT DEMONSTRATION	1 OF 1

GREDELL Engineering Resources, Inc.
ENVIRONMENTAL ENGINEERING LAND - AIR - WATER
1505 East High Street Telephone: (573) 659-9078
Jefferson City, Missouri Facsimile: (573) 659-9079
MO CORP. ENGINEERING LICENSE NO. E-2001001669-D

FILE PATH: O:\CADDFiles\SIKESTON\GROUNDWATER MAP\BAP\BAP ALT DEMONSTRATION.dwg



N

SCALE: 1" = 3000'

0 1500' 3000'

LEGEND:

CITY OF SIKESTON MUNICIPAL SUPPLY WELL MDNR WELL REFERENCE ID UNKNOWN SOURCE: CARES REPORT (APP 2)	Ⓦ
CITY OF SIKESTON MUNICIPAL SUPPLY WELL ID NUMBER CHLORIDE CONCENTRATION SEE NOTE 3	● 28242 CL = 17 $\frac{mg}{L}$ (A)
INDUSTRIAL SUPPLY OR IRRIGATION WELL WELL OWNER CHLORIDE CONCENTRATION SEE NOTE 3	★ SCOTT CL = 17 $\frac{mg}{L}$ (A)
IRRIGATION WELLS WELL DEPTH	🟨 108'
SIKESTON POWER STATION WELLS WELL DEPTH	🟥 179'

NOTES:

1. IMAGE PROVIDED BY USGS TOPO MAPS, SIKESTON NORTH QUADRANGLE, SIKESTON SOUTH QUADRANGLE, MOREHOUSE QUADRANGLE, AND VANDUSER QUADRAGLE, 7.5-MINUTE SERIES COMBINED TOGETHER.
2. MUNICIPAL WELL LOCATIONS PROVIDED BY MISSOURI DEPARTMENT OF NATURAL RESOURCES (MDNR) MISSOURI GEOLOGICAL SURVEY GEO-SCIENCES TECHNICAL RESOURCE ASSESSMENT TOOL (GEOSTRAT, 2022) AND CARES REPORT INFORMATION (APPENDIX 3).
3. CHLORIDE DATA SOURCES:
   A. LUCKEY AND FULLER, 1980
   B. BRAHANA ET AL, 1985

#	DATE	REVISION DESCRIPTION	BY

FIGURE 2
SITE LOCATION MAP
WITH HIGH-YIELD WELL
LOCATIONS AND CHLORIDE DATA

BOTTOM ASH POND
ALTERNATE SOURCE
DEMONSTRATION
SIKESTON POWER STATION

SURVEYED	DESIGNED	DRAWN	CHECKED	APPROVED	DATE	SCALE	PROJECT NAME	FILE NAME	SHEET #
N/A	KE	CM	KE	MCC	3/2022	1" = 3000'	SIKESTON	BAP DEMONONSTRATION	1 OF 1

GREDELL Engineering Resources, Inc.
ENVIRONMENTAL ENGINEERING LAND - AIR - WATER
1505 East High Street Telephone: (573) 659-9078
Jefferson City, Missouri Facsimile: (573) 659-9079
MO CORP. ENGINEERING LICENSE NO. E-2001001669-D

FILE PATH AND FILENAME: O:\CADDFiles\SIKESTON\GROUNDWATER MAP\BAP DEMONSTRATION.dwg

PRINTED ON: 3/24/22 BY: cm

Appendices

Appendix 1a

Laboratory Analytical Results and Quality Control Reports August 3, 2022 Sample Event

Pace Analytical Services, LLC
2231 W. Altorfer Drive
Peoria, IL 61615
(800)752-6651

August 30, 2022

Luke St Mary
Sikeston BMU, Sikeston Power Station
1551 W Wakefield
Sikeston, MO 63801

Dear Luke St Mary:

Please find enclosed the analytical results for the sample(s) the laboratory received. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of Pace Analytical Services, LLC.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

Pace Analytical Services appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Director of Client Services, Lisa Grant, with any feedback you have about your experience with our laboratory at 309-683-1764 or lisa.grant@pacelabs.com.

Sincerely,
Gail g Schindler

Gail Schindler
Project Manager
(309) 692-9688 x1716
gail.schindler@pacelabs.com

SAMPLE RECEIPT CHECK LIST

Items not applicable will be marked as in compliance

Work Order FH01475

YES	Samples received within temperature compliance when applicable
YES	COC present upon sample receipt
YES	COC completed & legible
YES	Sampler name & signature present
YES	Unique sample IDs assigned
YES	Sample collection location recorded
YES	Date & time collected recorded on COC
YES	Relinquished by client signature on COC
YES	COC & labels match
YES	Sample labels are legible
YES	Appropriate bottle(s) received
YES	Sufficient sample volume received
YES	Sample containers received undamaged
NO	Zero headspace, <6 mm present in VOA vials
NO	Trip blank(s) received
YES	All non-field analyses received within holding times
NO	Short hold time analysis
YES	Current PDC COC submitted
NO	Case narrative provided

ANALYTICAL RESULTS

Sample: FH01475-01
Name: MW-3
Matrix: Ground Water - Grab

Sampled: 08/03/22 08:06
Received: 08/05/22 10:30
PO #: 28362

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	< 1.0	mg/L		08/12/22 09:47	1	1.0	08/12/22 09:47	CJP	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		08/12/22 09:47	1	0.250	08/12/22 09:47	CJP	EPA 300.0 REV 2.1
Sulfate	11	mg/L		08/15/22 15:51	5	5.0	08/15/22 15:51	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	130	mg/L	M	08/10/22 10:23	1	26	08/10/22 17:46	ZEJ	SM 2540C
Total Metals - PIA									
Boron	23	ug/L		08/11/22 10:15	5	10	08/17/22 08:18	JMW	EPA 6020A
Calcium	16000	ug/L		08/11/22 10:15	5	200	08/17/22 08:18	JMW	EPA 6020A

Sample: FH01475-02
Name: MW-4
Matrix: Ground Water - Grab

Sampled: 08/03/22 13:43
Received: 08/05/22 10:30
PO #: 28362

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	14	mg/L		08/12/22 10:41	5	5.0	08/12/22 10:41	CJP	EPA 300.0 REV 2.1
Sulfate	93	mg/L		08/15/22 16:45	25	25	08/15/22 16:45	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Fluoride	< 0.250	mg/L		08/22/22 12:26	1	0.250	08/22/22 12:26	TTH	SM 4500F C 1997
Solids - total dissolved solids (TDS)	390	mg/L		08/10/22 10:23	1	26	08/10/22 17:46	ZEJ	SM 2540C
Total Metals - PIA									
Boron	880	ug/L		08/11/22 10:15	5	10	08/17/22 08:21	JMW	EPA 6020A
Calcium	76000	ug/L		08/11/22 10:15	5	200	08/17/22 08:21	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: FH01475-03
Name: MW-5
Matrix: Ground Water - Grab

Sampled: 08/03/22 10:50
Received: 08/05/22 10:30
PO #: 28362

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	12	mg/L		08/12/22 11:35	5	5.0	08/12/22 11:35	CJP	EPA 300.0 REV 2.1
Sulfate	210	mg/L		08/15/22 17:03	50	50	08/15/22 17:03	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Fluoride	< 0.250	mg/L		08/22/22 12:34	1	0.250	08/22/22 12:34	TTH	SM 4500F C 1997
Solids - total dissolved solids (TDS)	560	mg/L		08/10/22 10:23	1	26	08/10/22 17:46	ZEJ	SM 2540C
Total Metals - PIA									
Boron	390	ug/L		08/11/22 10:15	5	10	08/17/22 08:25	JMW	EPA 6020A
Calcium	110000	ug/L		08/11/22 10:15	5	200	08/17/22 08:25	JMW	EPA 6020A

Sample: FH01475-04
Name: MW-6
Matrix: Ground Water - Grab

Sampled: 08/03/22 09:21
Received: 08/05/22 10:30
PO #: 28362

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	4.3	mg/L		08/12/22 12:11	1	1.0	08/12/22 12:11	CJP	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		08/12/22 12:11	1	0.250	08/12/22 12:11	CJP	EPA 300.0 REV 2.1
Sulfate	24	mg/L		08/12/22 13:05	5	5.0	08/12/22 13:05	CJP	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	230	mg/L		08/10/22 10:23	1	26	08/10/22 17:46	ZEJ	SM 2540C
Total Metals - PIA									
Boron	51	ug/L		08/11/22 10:15	5	10	08/17/22 08:51	JMW	EPA 6020A
Calcium	43000	ug/L		08/11/22 10:15	5	200	08/17/22 08:51	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: FH01475-05
Name: MW-8
Matrix: Ground Water - Grab

Sampled: 08/03/22 11:44
Received: 08/05/22 10:30
PO #: 28362

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	56	mg/L		08/12/22 13:42	25	25	08/12/22 13:42	CJP	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		08/12/22 13:24	1	0.250	08/12/22 13:24	CJP	EPA 300.0 REV 2.1
Sulfate	140	mg/L		08/12/22 13:42	25	25	08/12/22 13:42	CJP	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	490	mg/L		08/10/22 10:23	1	26	08/10/22 17:46	ZEJ	SM 2540C
Total Metals - PIA									
Boron	420	ug/L		08/11/22 10:15	5	10	08/17/22 08:54	JMW	EPA 6020A
Calcium	100000	ug/L		08/11/22 10:15	5	200	08/17/22 08:54	JMW	EPA 6020A

Sample: FH01475-06
Name: FIELD DUPLICATE
Matrix: Ground Water - Field Duplicate

Sampled: 08/03/22 00:00
Received: 08/05/22 10:30
PO #: 28362

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	55	mg/L		08/12/22 14:36	25	25	08/12/22 14:36	CJP	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		08/12/22 14:00	1	0.250	08/12/22 14:00	CJP	EPA 300.0 REV 2.1
Sulfate	140	mg/L		08/12/22 14:36	25	25	08/12/22 14:36	CJP	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	490	mg/L		08/10/22 10:23	1	26	08/10/22 17:46	ZEJ	SM 2540C
Total Metals - PIA									
Boron	410	ug/L		08/11/22 10:15	5	10	08/17/22 08:58	JMW	EPA 6020A
Calcium	100000	ug/L		08/11/22 10:15	5	200	08/17/22 08:58	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: FH01475-07
Name: FIELD BLANK
Matrix: Ground Water - Field Blank

Sampled: 08/03/22 09:21
Received: 08/05/22 10:30
PO #: 28362

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	< 1.0	mg/L		08/12/22 14:54	1	1.0	08/12/22 14:54	CJP	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		08/12/22 14:54	1	0.250	08/12/22 14:54	CJP	EPA 300.0 REV 2.1
Sulfate	< 1.0	mg/L		08/12/22 14:54	1	1.0	08/12/22 14:54	CJP	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	< 17	mg/L		08/10/22 10:23	1	17	08/10/22 17:46	ZEJ	SM 2540C
Total Metals - PIA									
Boron	12	ug/L		08/11/22 10:15	5	10	08/17/22 09:02	JMW	EPA 6020A
Calcium	< 200	ug/L		08/11/22 10:15	5	200	08/17/22 09:02	JMW	EPA 6020A

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B240379 - No Prep - SM 2540C									
Blank (B240379-BLK1)				Prepared & Analyzed: 08/10/22					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B240379-BS1)				Prepared & Analyzed: 08/10/22					
Solids - total dissolved solids (TDS)	1010	mg/L		1000		101	84.9-109		
Duplicate (B240379-DUP1)	**Sample: FH01475-01**			Prepared & Analyzed: 08/10/22					
Solids - total dissolved solids (TDS)	110	mg/L	M		130			17	5
Duplicate (B240379-DUP2)	**Sample: FH01475-07**			Prepared & Analyzed: 08/10/22					
Solids - total dissolved solids (TDS)	6.67	mg/L			6.67			0	5
Batch B240514 - SW 3015 - EPA 6020A									
Blank (B240514-BLK1)				Prepared: 08/11/22 Analyzed: 08/16/22					
Boron	< 10	ug/L							
Calcium	< 200	ug/L							
LCS (B240514-BS1)				Prepared: 08/11/22 Analyzed: 08/16/22					
Boron	540	ug/L		555.6		97	80-120		
Calcium	5740	ug/L		5556		103	80-120		
Batch B240840 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B240840-CCB1)				Prepared & Analyzed: 08/12/22					
Fluoride	0.00	mg/L							
Chloride	0.188	mg/L							
Sulfate	0.00	mg/L							
Calibration Check (B240840-CCV1)				Prepared & Analyzed: 08/12/22					
Fluoride	5.18	mg/L		5.000		104	90-110		
Sulfate	5.06	mg/L		5.000		101	90-110		
Chloride	5.00	mg/L		5.000		100	90-110		
Batch B240945 - No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B240945-CCB1)				Prepared & Analyzed: 08/15/22					
Sulfate	0.00	mg/L							
Calibration Check (B240945-CCV1)				Prepared & Analyzed: 08/15/22					
Sulfate	4.97	mg/L		5.000		99	90-110		
Batch B241379 - No Prep - SM 4500F C 1997									
Calibration Blank (B241379-CCB1)				Prepared & Analyzed: 08/22/22					
Fluoride	0.00800	mg/L							
Calibration Blank (B241379-CCB2)				Prepared & Analyzed: 08/22/22					
Fluoride	0.0100	mg/L							
Calibration Check (B241379-CCV1)				Prepared & Analyzed: 08/22/22					
Fluoride	0.652	mg/L		0.7000		93	90-110		
Calibration Check (B241379-CCV2)				Prepared & Analyzed: 08/22/22					
Fluoride	0.694	mg/L		0.7000		99	90-110		

NOTES

Specifications regarding method revisions, method modifications, and calculations used for analysis are available upon request. Please contact your project manager.

* Not a TNI accredited analyte

Certifications

CHI - McHenry, IL - 4314-A W. Crystal Lake Road, McHenry, IL 60050
TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17556

PIA - Peoria, IL - 2231 W. Altorfer Drive, Peoria, IL 61615
TNI Accreditation for Drinking Water, Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. 100230
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17553
Drinking Water Certifications/Accreditations: Iowa (240); Kansas (E-10338); Missouri (870)
Wastewater Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)
Solid and Hazardous Material Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

SPMO - Springfield, MO - 1805 W Sunset Street, Springfield, MO 65807
USEPA DMR-QA Program

STL - Hazelwood, MO - 944 Anglum Rd, Hazelwood, MO 63042
TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through KS KDHE Certification No. E-10389
TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. - 200080
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory, Registry No. 171050
Missouri Department of Natural Resources - Certificate of Approval for Microbiological Laboratory Service - No. 1050

Qualifiers

M	Analyte failed to meet the required acceptance criteria for duplicate analysis.

Gail g Schindler

Certified by: Gail Schindler, Project Manager

PACE ANALYTICAL SERVICES
WWW.PACELABS.COM

REGULATORY PROGRAM (CIRCLE):	NPDES
MORBCA	RCRA
CCDD	TACO: RES OR IND/COMM

CHAIN OF CUSTODY RECORD

STATE WHERE SAMPLE COLLECTED IL

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)

① CLIENT: SIKESTON BMU POWER STATION

ADDRESS: 1551 W WAKEFIELD

CITY STAT ZIP: SIKESTON, MO 63801

CONTACT PERSON: MR LUKE ST MARY

PROJECT NUMBER:

PROJECT LOCATION: BOTTOM ASH APP III

PURCHASE ORDER #:

PHONE NUMBER: 573-475-3131

E-MAIL:

DATE SHIPPED:

SAMPLER (PLEASE PRINT): Justin Jones

SAMPLER'S SIGNATURE:

MATRIX TYPES:
WW- WASTEWATER
DW- DRINKING WATER
GW- GROUND WATER
WWSL- SLUDGE
NAS- NON AQUEOUS SOLID
LCHT-LEACHATE
OIL-OIL
SO-SOIL
SOL-SOLID

③ ANALYSIS REQUESTED

④ (FOR LAB USE ONLY)
LOGIN # F1401475-07
LOGGED BY: DCW
CLIENT: SIKESTON BMU, SIKESTON POWER STATION
PROJECT: SIKESTON BOTTOM ASH APP III
PROJ. MGR.: GJ SCHINDLER

② SAMPLE DESCRIPTION (UNIQUE DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE GRAB	SAMPLE TYPE COMP	MATRIX TYPE	BOTTLE COUNT	PRES CODE CLIENT PROVIDED	CL, F, SO4, TDS	B, CA					REMARKS
MW-3	8/3/22	0806	X		GW	2	3,6	X	X					
MW-4	8/3/22	1343	X		GW	2	3,6	X	X					
MW-5	8/3/22	1050	X		GW	2	3,6	X	X					
MW-6	8/3/22	0921	X		GW	2	3,6	X	X					
MW-8	8/3/22	1144	X		GW	2	3,6	X	X					
DUPLICATE	8/3/22		X		GW	2	3,6	X	X					
FIELD BLANK	8/3/22	0921	X		DI	2	3,6	X	X					

CHEMICAL PRESERVATION CODES:	1 – HCL	2 – H2SO4	3 – HNO3	4 – NAOH	5 – NA2S2O3	6 – UNPRESERVED	7 – OTHER

⑤ TURNAROUND TIME REQUESTED (PLEASE CIRCLE) NORMAL RUSH
(RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE)
RUSH RESULTS VIA (PLEASE CIRCLE) EMAIL PHONE
EMAIL IF DIFFERENT FROM ABOVE:
PHONE # IF DIFFERENT FROM ABOVE:

DATE RESULTS NEEDED

⑥ *I understand that by initialing this box I give the lab permission to proceed with analysis, even though it may not meet all sample conformance requirements as defined in the receiving facility's Sample Acceptance Policy and the data will be qualified. Qualified data may NOT be acceptable to report to all regulatory authorities.*

PROCEED WITH ANALYSIS AND QUALIFY RESULTS: (INITIALS) ______

⑦ RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	DATE / TIME
	DATE 8/4/22 TIME 0800		DATE TIME
RELINQUISHED BY: (SIGNATURE)	DATE TIME	RECEIVED BY: (SIGNATURE)	DATE TIME
RELINQUISHED BY: (SIGNATURE)	DATE TIME	RECEIVED BY: (SIGNATURE)	DATE 8/5/22 TIME 1030

⑧ COMMENTS: (FOR LAB USE ONLY)

SAMPLE TEMPERATURE UPON RECEIPT 2.8 °C
CHILL PROCESS STARTED PRIOR TO RECEIPT [✓ Y] OR N
SAMPLE(S) RECEIVED ON ICE [✓ Y] OR N
SAMPLE ACCEPTANCE NONCONFORMANT REPORT IS NEEDED Y OR [✓ N]
DATE AND TIME TAKEN FROM SAMPLE BOTTLE ______

Appendix 1b

Laboratory Analytical Results and Quality Control Reports September 12, 2022 Retest Event

Pace Analytical Services, LLC
2231 W. Altorfer Drive
Peoria, IL 61615
(800)752-6651

September 28, 2022

Luke St Mary
Sikeston BMU, Sikeston Power Station
1551 W Wakefield
Sikeston, MO 63801

RE: SIKESTON BOTTOM ASH RESAMPLES

Dear Luke St Mary:

Please find enclosed the analytical results for the **4** sample(s) the laboratory received on **9/14/22 1:40 pm** and logged in under work order **FI02653**. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of Pace Analytical Services, LLC.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

Pace Analytical Services appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Director of Client Services, Lisa Grant, with any feedback you have about your experience with our laboratory at 309-683-1764 or lisa.grant@pacelabs.com.

Gail g Schindler

Gail Schindler
Project Manager
(309) 692-9688 x1716
gail.schindler@pacelabs.com

Pace Analytical Services, LLC
2231 W. Altorfer Drive
Peoria, IL 61615
(800)752-6651

SAMPLE RECEIPT CHECK LIST

Items not applicable will be marked as in compliance

Work Order FI02653

YES	Samples received within temperature compliance when applicable
YES	COC present upon sample receipt
YES	COC completed & legible
YES	Sampler name & signature present
YES	Unique sample IDs assigned
YES	Sample collection location recorded
YES	Date & time collected recorded on COC
YES	Relinquished by client signature on COC
YES	COC & labels match
YES	Sample labels are legible
YES	Appropriate bottle(s) received
YES	Sufficient sample volume received
YES	Sample containers received undamaged
NO	Zero headspace, <6 mm present in VOA vials
NO	Trip blank(s) received
YES	All non-field analyses received within holding times
NO	Short hold time analysis
YES	Current PDC COC submitted
NO	Case narrative provided

ANALYTICAL RESULTS

Sample: FI02653-01
Name: MW-5
Matrix: Ground Water - Grab

Sampled: 09/12/22 10:20
Received: 09/14/22 13:40
PO #: 30965

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	510	mg/L	M	09/15/22 10:35	1	26	09/15/22 11:57	ZEJ	SM 2540C

Sample: FI02653-02
Name: MW-6
Matrix: Ground Water - Grab

Sampled: 09/12/22 08:57
Received: 09/14/22 13:40
PO #: 30965

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	4.7	mg/L		09/16/22 23:12	1	1.0	09/16/22 23:12	CRD	EPA 300.0 REV 2.1

Sample: FI02653-03
Name: DUPLICATE
Matrix: Ground Water - Grab

Sampled: 09/12/22 00:00
Received: 09/14/22 13:40
PO #: 30965

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	11	mg/L		09/17/22 00:42	10	10	09/17/22 00:42	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	520	mg/L		09/15/22 10:35	1	26	09/15/22 11:57	ZEJ	SM 2540C

Sample: FI02653-04
Name: FIELD BLANK
Matrix: Ground Water - Grab

Sampled: 09/12/22 08:57
Received: 09/14/22 13:40
PO #: 30965

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	< 1.0	mg/L		09/17/22 01:00	1	1.0	09/17/22 01:00	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	< 26	mg/L		09/15/22 10:35	1	26	09/15/22 11:57	ZEJ	SM 2540C

NOTES

Specifications regarding method revisions, method modifications, and calculations used for analysis are available upon request. Please contact your project manager.

* Not a TNI accredited analyte

Certifications

CHI - McHenry, IL - 4314-A W. Crystal Lake Road, McHenry, IL 60050
TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17556

PIA - Peoria, IL - 2231 W. Altorfer Drive, Peoria, IL 61615
TNI Accreditation for Drinking Water, Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. 100230
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17553
Drinking Water Certifications/Accreditations: Iowa (240); Kansas (E-10338); Missouri (870)
Wastewater Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)
Solid and Hazardous Material Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

SPMO - Springfield, MO - 1805 W Sunset Street, Springfield, MO 65807
USEPA DMR-QA Program

STL - Hazelwood, MO - 944 Anglum Rd, Hazelwood, MO 63042
TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through KS KDHE Certification No. E-10389
TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. - 200080
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory, Registry No. 171050
Missouri Department of Natural Resources - Certificate of Approval for Microbiological Laboratory Service - No. 1050

Qualifiers

M Analyte failed to meet the required acceptance criteria for duplicate analysis.

Gail J Schindler

Certified by: Gail Schindler, Project Manager

NELAP ACCREDITED TNI LABORATORY

PACE ANALYTICAL SERVICES
WWW.PACECLABS.COM

REGULATORY PROGRAM (CIRCLE):	NPDES
MORBCA	RCRA
CCDD	TACO: RES OR IND/COMM

CHAIN OF CUSTODY RECORD

STATE WHERE SAMPLE COLLECTED IL

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)

① CLIENT: SIKESTON POWER STATION

ADDRESS: 1551 W WAKEFIELD

CITY STAT ZIP: SIKESTON, MO 63801

CONTACT PERSON: MR LUKE ST MARY

PROJECT NUMBER:

PROJECT LOCATION:

PURCHASE ORDER #:

PHONE NUMBER: 573-475-3131

E-MAIL:

DATE SHIPPED:

SAMPLER (PLEASE PRINT): Justin Lowes

SAMPLER'S SIGNATURE: J. Lowes

MATRIX TYPES:
WW- WASTEWATER
DW- DRINKING WATER
GW- GROUND WATER
WWSL- SLUDGE
NAS- NON AQUEOUS SOLID
LCHT-LEACHATE
OIL-OIL
SO-SOIL
SOL-SOLID

③ ANALYSIS REQUESTED

④ (FOR LAB USE ONLY)
LOGIN # F102653
LOGGED BY:

SIKESTON BMU, SIKESTON POWER STATION

SIKESTON BOTTOM ASH 2022 RESAMPLES

GJ SCHINDLER

② SAMPLE DESCRIPTION (UNIQUE DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE GRAB	SAMPLE TYPE COMP	MATRIX TYPE	BOTTLE COUNT	PRES CODE CLIENT PROVIDED	TDS	CL						REMARKS
MW-5	9-12-22	1020	X		GW	1	6	X							
MW-6	9-12-22	0857	X		GW	1	6		X						
DUPLICATE	9-12-22		X		GW	1	6	X	X						
FIELD BLANK	9-12-22	0857	X		DI	1	6	X	X						

CHEMICAL PRESERVATION CODES:	I – HCL	2 – H2SO4	3 – HNO3	4 – NAOH	5 – NA2S2O3	6 – UNPRESERVED	7 – OTHER

⑤ TURNAROUND TIME REQUESTED (PLEASE CIRCLE) NORMAL RUSH
(RUSH TAT IS SUBJECT TO PACE LABS APPROVAL AND SURCHARGE)
RUSH RESULTS VIA (PLEASE CIRCLE) EMAIL PHONE
EMAIL IF DIFFERENT FROM ABOVE:
PHONE # IF DIFFERENT FROM ABOVE:

DATE RESULTS NEEDED

⑥ *I understand that by initialing this box I give the lab permission to proceed with analysis, even though it may not meet all sample conformance requirements as defined in the receiving facility's Sample Acceptance Policy and the data will be qualified. Qualified data may NOT be acceptable to report to all regulatory authorities.*

PROCEED WITH ANALYSIS AND QUALIFY RESULTS: (INITIALS) ______________

⑦ RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	DATE / TIME
Ashutosh Patel	DATE 9-13-22 TIME 0700		DATE TIME
RELINQUISHED BY: (SIGNATURE)	DATE TIME	RECEIVED BY: (SIGNATURE)	DATE TIME
RELINQUISHED BY: (SIGNATURE)	DATE TIME	RECEIVED BY: (SIGNATURE)	DATE 9/14/22 TIME 1340

⑧ COMMENTS: (FOR LAB USE ONLY)
____
____

SAMPLE TEMPERATURE UPON RECEIPT 2.3 °C
CHILL PROCESS STARTED PRIOR TO RECEIPT [✓ Y] OR N
SAMPLE(S) RECEIVED ON ICE [✓ Y] OR N
SAMPLE ACCEPTANCE NONCONFORMANT REPORT IS NEEDED Y OR [✓ N]
DATE AND TIME TAKEN FROM SAMPLE BOTTLE ______________

Appendix 2

Geologic Drilling Logs for High-Yield Wells Near SPS

164

WL-81-Spls

STATE OF MISSOURI
DIVISION OF
GEOLOGICAL SURVEY AND WATER RESOURCES

LOG NO. 19120

OWNER City of Sikeston

COUNTY Scott

FARM

WELL NO. 6

T 26 **R** 14 ~~13E~~

DRILLER Layne-Arkansas Co.

DATE 8-10-60

ELEV Browning 330

PROD. 1641 GPM.

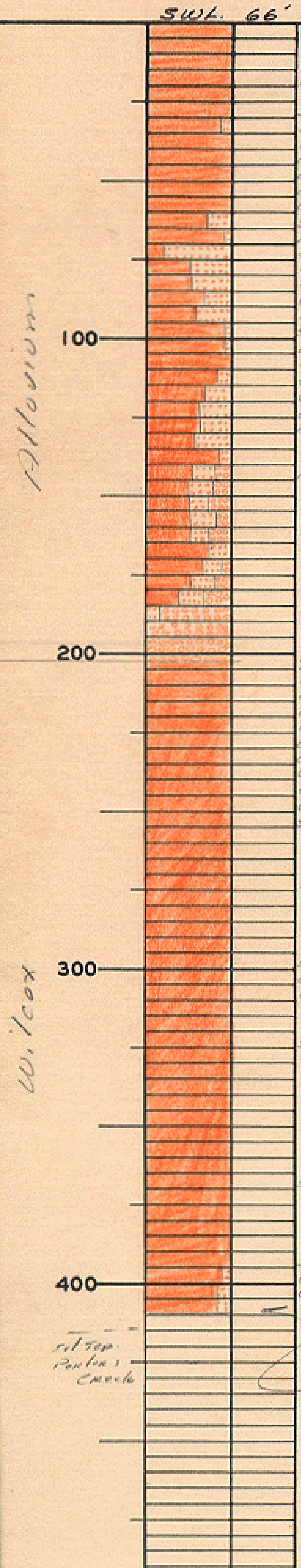
LOGGED BY J Wells 8-26-60

19

INDEX SHEET NO. 1

REMARKS 307' of 18" csg.
34" hole @ bottom.

SWL. 66'



SD. BRN, MED-CRSE
d/o
d/o
d/o
d/o w/occ GRAN.

SS

SD. MED-V/CRSE w/GRAN.
d/o
d/o
d/o
d/o
d/o
d/o

PDWP # 4010743

SD BRN, MED to GRAN.
d/o
d/o
d/o
d/o
d/o
d/o
SD-CRSE to GRAN
d/o
d/o
d/o
d/o
d/o
d/o
do w/pea GRAVEL

yellow fn to v/crse
do highly polished
do w/GRAN.
do
do
do
do
do
do
do
SD. v/fn to occ crse.

silty-

SD v/fn to med. silty. gray.
do
"
"
"
SD-gray v/fn to crse-silty-
SD gray v/fn to crse

SD-med to crse.

SD. v/fn to occ v/crse. silty
do increasing amts of v/crse to gran.
do inc.

TD 409

wl-79-5pls

STATE OF MISSOURI
DIVISION OF
GEOLOGICAL SURVEY AND WATER RESOURCES

LOG NO. 26235

OWNER City of Sikeston Water Works

COUNTY Scott

FARM ½ blk N. of Water & Light Plant in alley.

WELL NO. 7.

T 26 R 14E

Sikeston North

DRILLER Layne Arkansas

DATE 16-6-69 - Spls Rec: 23-6-69

19

0

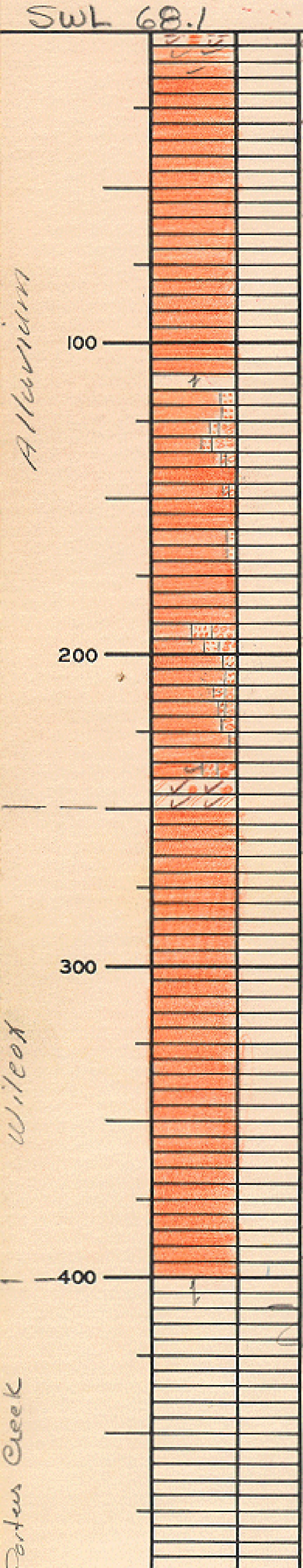
ELEV [illegible] 327

PROD. ~~test~~ 1500 gpm 44 ft dd

LOGGED BY Wells July 1-69

REMARKS

SWL 68.1



CLAY & SOIL - BRN w/SLTY
SAND - BRN - v/fn-fn - w/CLAYEY
" " " " dirty
SAND - CLEAN - well sort fn-med
do
do
SAND - CLEAN v/fn-fn. well sort.
Do
SAND - CLEAN v/fn. well Sorted
do
do
SAND - CLEAN - v/fn - occ crse.
Do.
SAND - CLEAN - fn - crse well sort
do - - Poorly sorted
— FN - v/crse - occ Gran.
Do.
Do.
Do.
- FN - crse
Do w/ occ v/crse.
Do ē Gran.
fn - v/crse w/Gran.
Do
Do w/PEA Gravel.
Do
Do - Basically crse
CRSE - w/occ Gran & P.G.
Crse - v/crse - w/Gran & Pea Grav.
Crse - v/crse
Do
Do - w/Gran
Do
Do
Do
MED - crse w/v/crse & Gran
Do
SAND - MED. w/Gran & Pea Grav.
Do
SAND - crse w/Gran
Do.
crse - v/crse w/Gran & Pea Grav.
MED - crse w/Gran & Pea Gravel.
" - " w/P.G.
med - v/crse w/P.G
do
fn - crse w/P.G. & Pebbles Dirty
CLAY - BRN w/Pebbles
" " SILTY.
SAND - fn - med.
DO
SAND - v/fn - fn
Do
Do
Do
SAND - TAN - v/fn - med.
Do
Do
Do
Do.
Do
Do
Do
Do
Do
Do
Do
Do
SAND - LT TAN - fn-med.
Do.
Do - w/Sm crse.
Do
SAND - TAN - fn - crse.
Do
Do.
SAND - TAN - fn - v/crse
DO.
SAND - Redish Brn - fn - crse
DO.

Drillers logs "Blue clay 399-410'"

PDWP# 4010743

MISSOURI BUREAU OF GEOLOGY & MINES, ROLLA, MO.

MO SURVEY Nº 2700

OWNER City of Sikeston
Lan Swanner water Commissioner

COUNTY Scott

FARM Municipal Plant of Sikeston

WELL Nº 3

T 26N R 14E

DRILLER Corless well supply Co.

DATE Dec. 1932

19

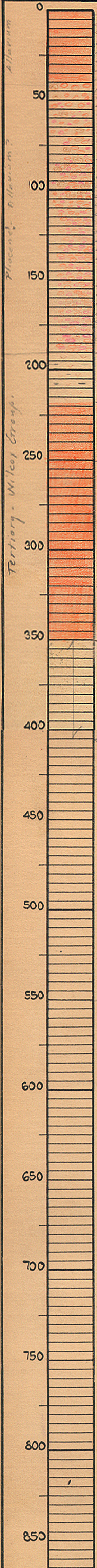
ELEVATION 327

PRODUCTION

SAMPLES STUDIED 12-15-38 Hundhausen

REMARKS

S.W.L. = 27'



sand, sub-ang. arkose - magnetite
do
do.
do. + garnet
do
do.
do. + garnet - magnetite
do.
pebbles. igneous pebbles
do
do
do
do
do.
do
do
do
do.
do. crinoid stem
do
do
do
do
do
do
do
do
do
do
do. silicified fossils
do
do
do
do
do

PDWP # 4010743

8/23/62
Temp 59°
Cond. 220 micromhos
pH 7.2
from USGS

1 sample 194' to 218'
Tan-grey clay - Lignite.

1 sample 218' - to 250'
medium coarse ang. sand

1 sample 260' to 320'
do.

1 sample 320' - 350'

T.D. = 405'

150' Midway

Est. Top Ripley

625
325
300

Est. Top Paleozoic.

MISSOURI BUREAU OF GEOLOGY & MINES, ROLLA, MO.

MO SURVEY Nº 2700

OWNER City of Sikeston

COUNTY Scott

FARM @ Municipal Plant

WELL Nº 3

T 26N R 14E

DRILLER Corliss Well Co.

DATE Dec. 1932

19

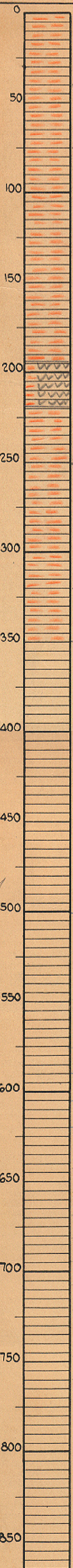
ELEVATION 327

PRODUCTION 750 G.P.M.

SAMPLES STUDIED Farrar

REMARKS From sples. submitted

Elev. 300
27-11A



Sand, polished in the larger grains some rounded fragments of granite with a small amt of green & dark colored igneous rock

PDWP # 7010743

Much coarser & less rounded igneous rock, fragments chiefly granitic
Very fine sand in small amount mixed with this

Chiefly medium grained sand some coarse material as above

ANAL. No. 2091
T.D.S. 153.0
CL. 6.3
SO_4 1.4

194 Polished clear qtz grains in small amt
Chiefly drab brownish grey clay which is somewhat micaceous.
218

Clear angular qtz sand some of the larger grains are polished.

250

one sple

327
218
109

320

One sple.

350

no sples.

-405 T.D

800 GPM - No decrease
SWL - 27 No change
P. Setting 100 4 13z
Now Same
Cook deep water turbine
1000 GPM Cap - 400 M.
15 hrs - D.D. 3'
No device for meas.
SWL -
Quest. 9/27/34 - R.M.

Drilled 412' of 12" WI csg.
SWL 29' 15' Drawdown
Yield 910 Yield.
Top Seal Lead.
Drain or Ejector Eject.
Outlet of Drain Sewer
Pump Type Turbine
Mfg. Layne
Power Elec
Capacity 750

Letter 9-34 Basch.

W.L. 3

MISSOURI BUREAU OF GEOLOGY & MINES, ROLLA, MO.

MO SURVEY № 5941	OWNER City of Sikeston	
COUNTY Scott	FARM Well located on NW corner of the Waterworks property	WELL № 4
T 26 N	R 14 E	DRILLER Careless Well Co.
		DATE 2-1-40 to 3-28-1940
19	ELEVATION 324'	PRODUCTION 100' 905 GPM; D.D.
	SAMPLES STUDIED 4-2-40 Hundhausen	

REMARKS 60 ft of 8" Screen.
S.W.L. 40 feet.

SS

PDWP # 40107743

brn-silt-clay - arkosic sand magnetite
do.
do
do
sand-ang. arkosic - some chert.
do.
do
do
do
do - coarser grained
do - some limestone sand
do
do
do
do, + lignite
sand as above - limestone sand grains
do - coarser sand
do + lignite
very coarse grained sand - grits.
do
do
do
coarse gravel + sand - chert
do
do
do
Very coarse
do
do
do
do
do
do
do
do
do
do
do
do
do - much finer grained sand
- polished, poorly sorted ang. sand.
do
do - kyanite
do
do
do coarser grained.
do some orange grains
do
do
very coarse - crackled grains
do finer grained
med-grained - ang. sand
do
do
do
do
do
do
do
do
do
do
do
med-fine grained crackled sand blk. ch.
do
do - black tourmaline
do.
do
do
do - coarser grained
do
do
do
do + vermiculite ?
do

T.D. = 375

Am

WL 83 S

STATE OF MISSOURI
DIVISION OF
GEOLOGICAL SURVEY AND WATER RESOURCES

LOG NO.	OWNER	
11,630	City of Sikeston	
COUNTY	**FARM**	**WELL N**
Scott		5

T 26 | 14 R ~~13~~E

DRILLER Layne Arkansas

DATE 7-6 51 – 8-15 51

19

ELEV. 330 Browning ~~335 Banks~~

PROD. 880 gpm

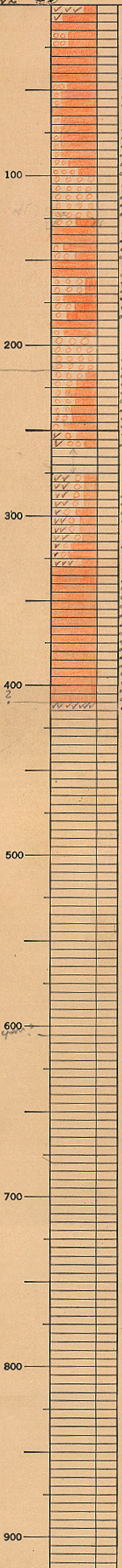
LOGGED BY. S. Marinkovu August 29 '51

REMARKS

330' of 12" csg
60' of 8" csg
80' of 8" screen

32' of 5
30' of 32" & 330' of 17" hole
At. Water tank

SWL 52'



Pleistocene & Recent

Wilcox

Porter's Creek

clay

soil and sand
rounded sand, igneous frag
do
gravel, coarse sand
do
rounded sand
do
do
do

SS

coarse sand, gravel
do
do
rounded sand
rounded sand, gravel
do
do
do
do
do
do

PDWP# 4010743

gravel of igneous fragments
do
do
do
do
gravel, coarse sand
coarse sand
do
do, gravel
do, gravel
coarse sand
do
gravel, coarse sand
do
do
do
do
medium coarse sand
gravel coarse sand
gravel
do
do
do
do sand
do
do
do
do
do
do
do, clay
do
clay, gravel, sand
do
do
do
do
do
clay, fine sand, gravel
do
do
do
do
fine clean sand, ang. to rounde
do
do
do
do
do
do
do
do
do
do
do
coarse rounded pol. sand
do
do
do
Gumbo according to drillers Log

T. D. ~~415~~ ft.
421' 7"

Index Sheet #1

Screen
80' of 8"
Shutter type #8 slot.
Layne Co. screen

Air line
120'

Pump setting
100' column
4' pump bowls
20' suction pipe

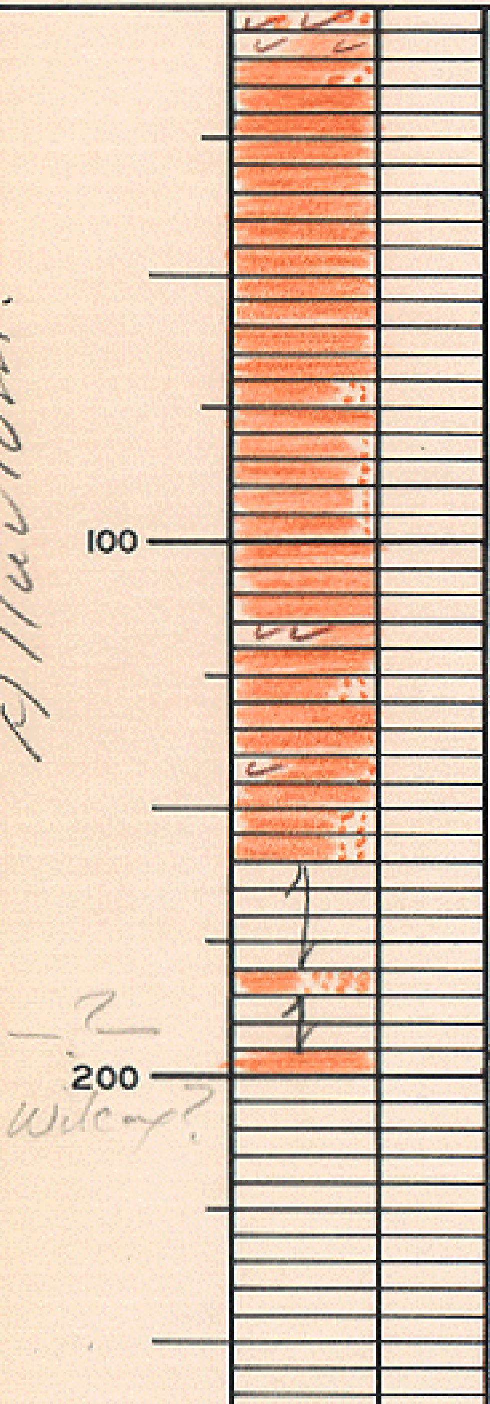
Est. Top Paleo - from log # 2122

11

STATE OF MISSOURI
DIVISION OF
GEOLOGICAL SURVEY AND WATER RESOURCES

LOG NO. 28241	OWNER Sikeston Power Plant	
COUNTY Scott	FARM	WELL NO. 2
T 26 / R 13E	DRILLER Leyne-WESTERN	
	DATE	
23	ELEV. 305 Fan 2 60	PROD.
	LOGGED BY Wells.	

REMARKS
80'W, 15'N of Well #2 location



PDWP#
4010743

oxidized, hematite stain.

"

yell sd.

80

STATE OF MISSOURI
DIVISION OF
GEOLOGICAL SURVEY AND WATER RESOURCES

LOG NO. 28242

OWNER Sikeston Power Plant

COUNTY Scott

FARM

WELL NO. 4-79

T 26

R 13E

DRILLER Layne-Western

DATE

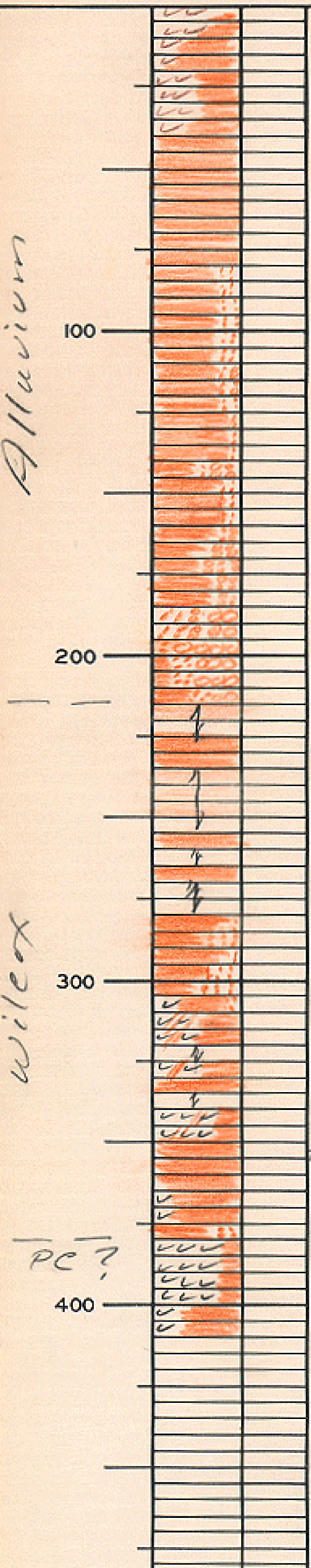
ELEV. 328 F.anz '80

PROD.

LOGGED BY Wells

24

REMARKS



√ Poor Spls -

PDWP# 4010743

Fn white well sort sd.

fn-vfn white sd.

Am

WL 71 S

STATE OF MISSOURI
DIVISION OF
GEOLOGICAL SURVEY AND WATER RESOURCES

LOG NO. 10713

OWNER Sikeston Mo. Coca-Cola Bottling Co.

COUNTY Scott

FARM 111-113 ~~E~~ Concord St.

WELL NO.

T 26 R 14E

DRILLER Carloss Well Co. Memphis Tenn

DATE Mar. 1949

ELEV. ~~Drawing~~ 328 ~~Baro~~

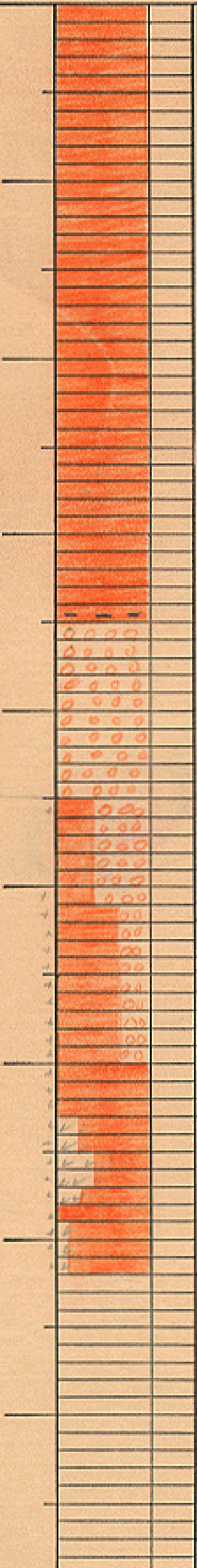
PROD.

19

LOGGED BY McNeal 5/11/49

REMARKS

Index Sheet No. 1



med to crs ang to rounded frosty to polished sd some igneous

SS

do trace lignite
gravel polished chts qtz igneous

do med to crs polished sd
trace med ang pyritic sst

do FeS_2

f to med ang sst FeS_2

do gry mica sh

360'

Appendix 3a

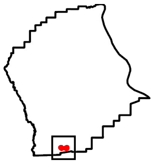
2020 Sikeston Public Well Assessment Reports (CARES)

Sikeston

General System Information

PWSS No. 4010743

Prepared by CARES, University of Missouri Extension

Name	Sikeston
PWSSID	MO4010743
Population Served	16,393
Primary County Served	Scott
Service Connections	7,908
Source(s) of Water	Southeast Missouri Lowlands Groundwater Province
System Classification	Community (C)
Primary Source Type	Groundwater (GW)
System Type	Municipality
System Treatment	4-log Treatment of Viruses, Fluoridation, Greensand Filtration, Sedimentation, Gaseous Pre-Chlorination, Permanganate, Slat Tray Aeration, Gaseous Post-Chlorination, Diffused Aeration, (Pre) pH Adjustment, pH Adjustment, Rapid Sand Filtration
DNR Region of Operations	Southeast Regional Office
Source Water/Wellhead Protection Plan	No
Drinking Water Watch	Drinking Water Watch
Reference Maps	 

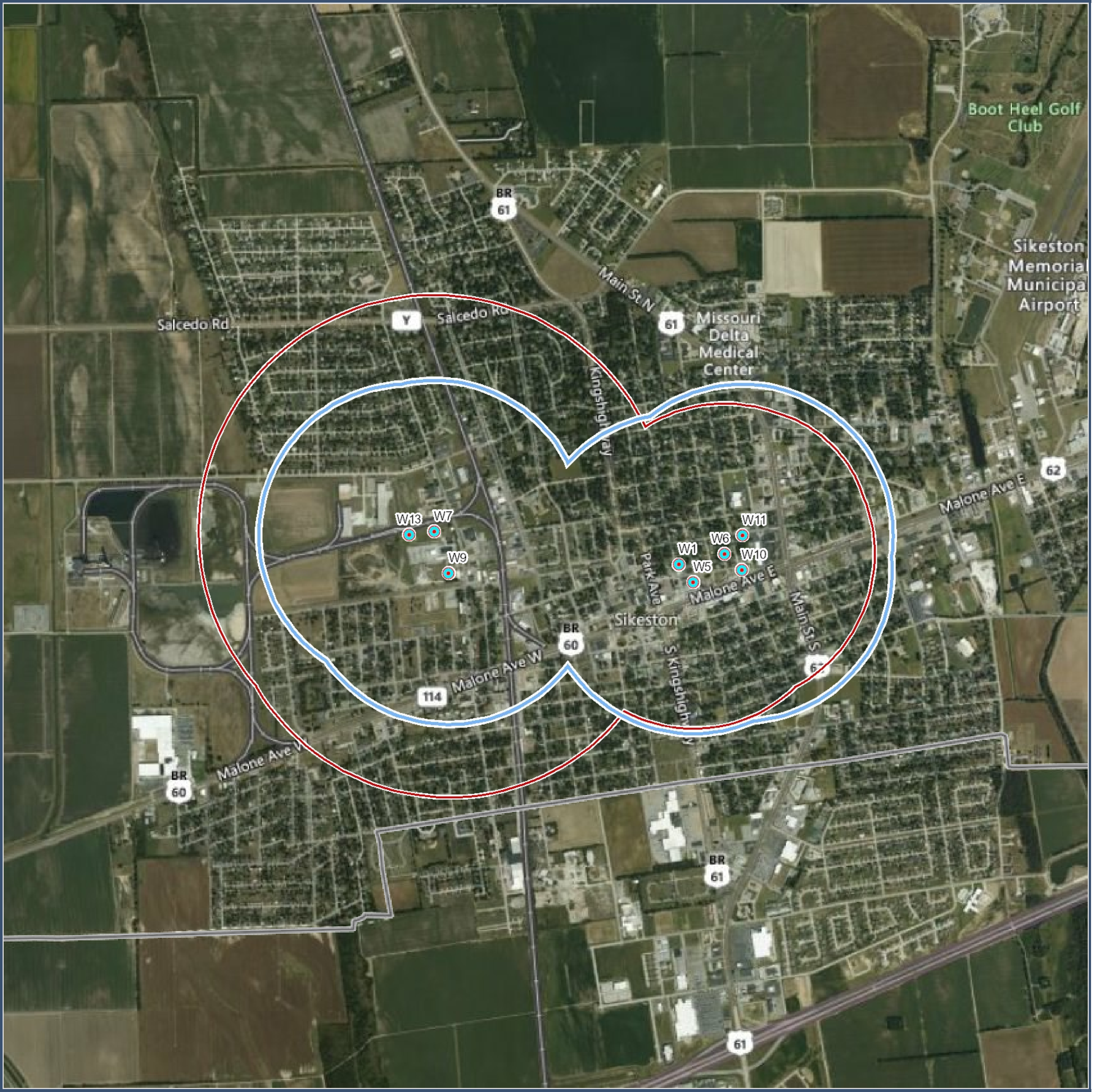
Sikeston

Overview Map (Aerial)
PWSS No. 4010743 - 8 Wells, Scott County

Map Prepared: Jun 11, 2020
Data Release: May 4, 2020

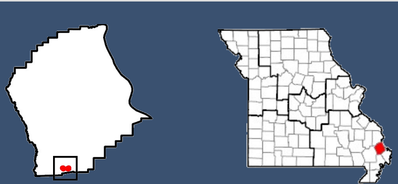
MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Prepared by CARES, University of Missouri Extension



Groundwater System
● System Well

Source Water Protection Boundary
⬭ 20-Year Time of Travel
⬭ Half-Mile Buffer



N

0 0.5 1
Miles

Although the data in this data set have been compiled, in part or in whole, by the Missouri Department of Natural Resources, no warranty, expressed or implied, is made by the department as to the accuracy of the data or related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the department in the use of these data or related materials. This map and related information are subject to change as additional information is acquired. For additional information, please contact the Department's Drinking Water Branch (Water Protection Program).

SWAP - Source Water Assessment Plan -
http://drinkingwater.missouri.edu/swap
Aerial Photos: Bing Maps, Microsoft. Jun 11, 2020.

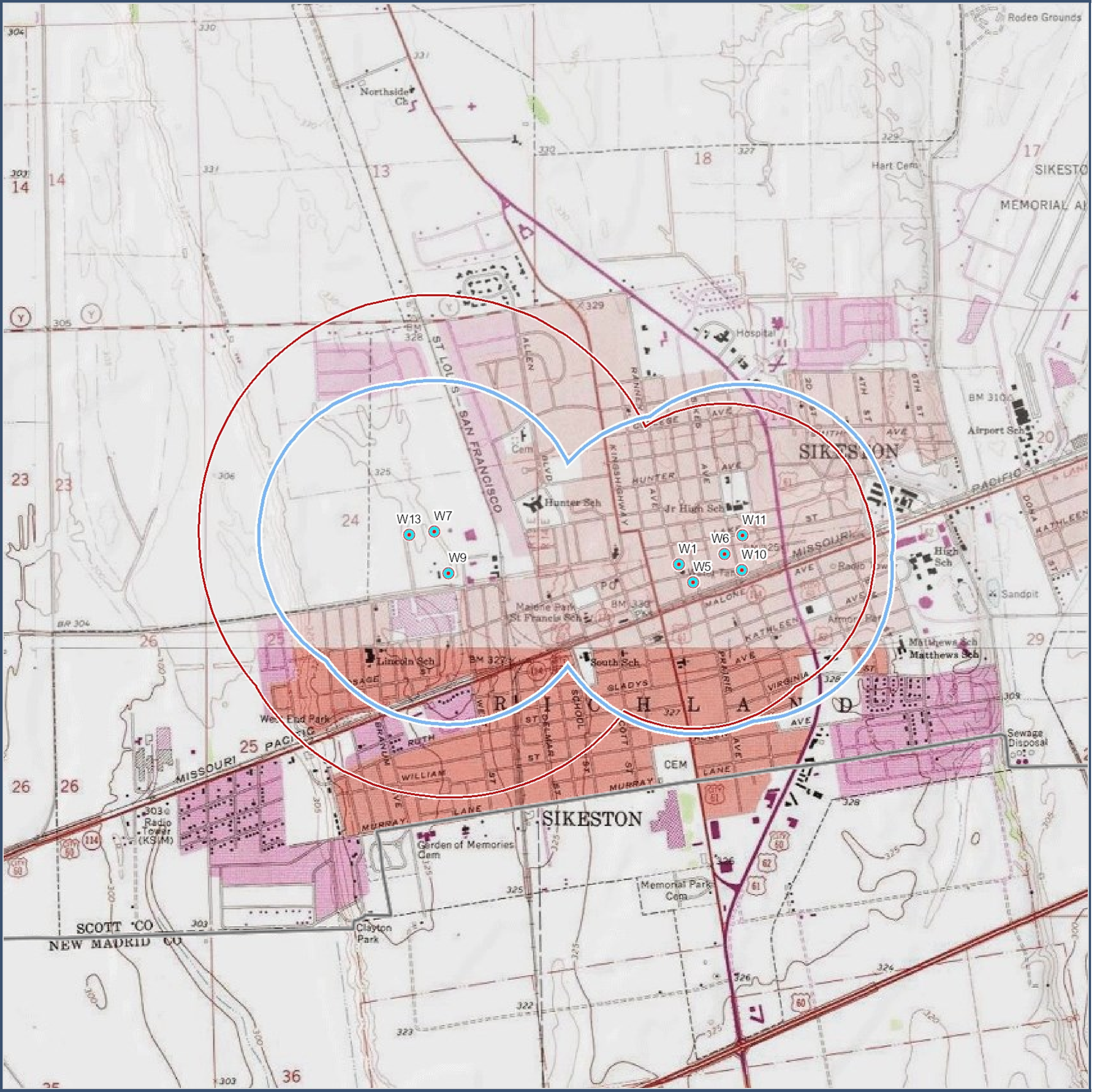
Sikeston

Overview Map (Topo)
PWSS No. 4010743 - 8 Wells, Scott County

Map Prepared: Jun 11, 2020
Data Release: May 4, 2020

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Prepared by CARES, University of Missouri Extension



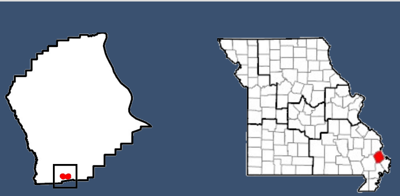
Groundwater System

● System Well

Source Water Protection Boundary

○ 20-Year Time of Travel

○ Half-Mile Buffer



SWAP - Source Water Assessment Plan - http://drinkingwater.missouri.edu/swap
For basemap symbols, see the U.S. Geological Survey (USGS) publication: Topographic Map Symbols.

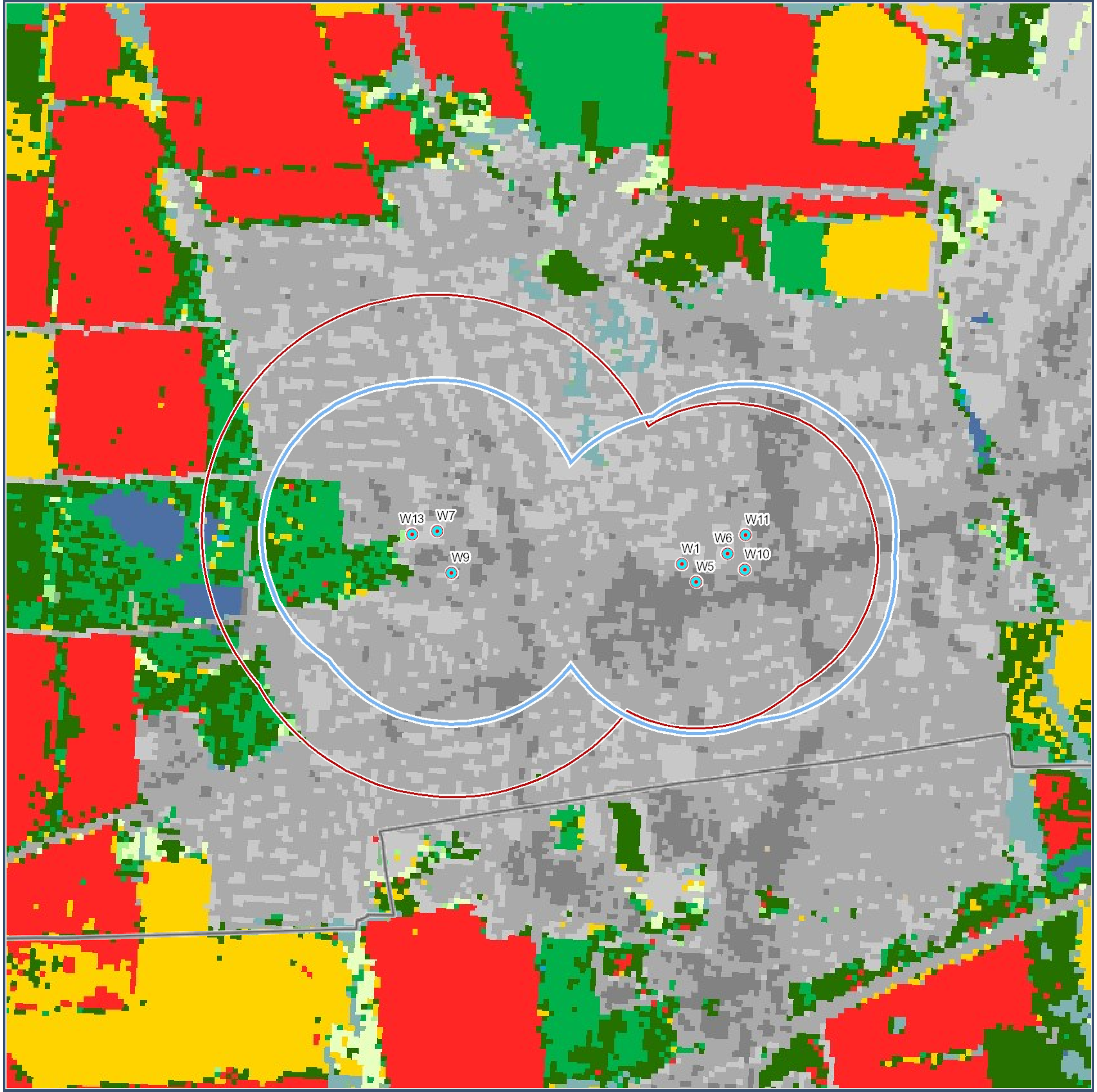
Sikeston

Overview Map (Land Use)
PWSS No. 4010743 - 8 Wells, Scott County

Map Prepared: Jun 11, 2020
Data Release: May 4, 2020

MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Prepared by CARES, University of Missouri Extension



Land Use

- 🟨 Corn
- 🟥 Cotton
- 🟦 Rice
- 🟩 Soybeans
- 🟩 Other Crop
- 🟩 Other Hay/Non Alfalfa
- ▭ Grassland/Pasture
- 🟩 Forest/Shrubland
- ▨ Developed/High Intensity
- ▨ Developed/Low-Med Intensity
- ▭ Developed/Open Space
- 🟦 Open Water
- ▨ Wetlands
- ▭ Barren

Groundwater System

- ◉ System Well

Source Water Protection Boundary

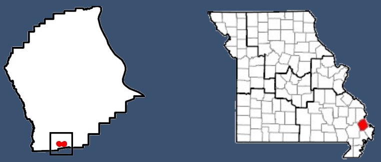
- ⬭ 20-Year Time of Travel
- ⬭ Half-Mile Buffer

SWAP - Source Water Assessment Plan -
http://drinkingwater.missouri.edu/swap
Aerial Photos: Bing Maps, Microsoft. Jun 11, 2020.

N

0 0.5 1

Miles



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Sikeston

Land Use Statistics
PWSS No. 4010743

Map Prepared: Jun 11, 2020
Data Release: May 4, 2020

Prepared by CARES, University of Missouri Extension

Land Use	% Land Area, 2017	% Land Area, 2018	% Land Area, 2019	Avg. % Land Area
Corn	0	0	0	0
Cotton	0	0	0	0
Rice	0	0	0	0
Soybeans	0	0.04	0	0.01
Other Crop	0	0	0	0
Other Hay/Non-Alfalfa	0	0	0	0
Grassland/Pasture	0	0	0	0
Forest/Shrubland	0	0	0	0
Developed/High Intensity	23.04	22.78	23.04	22.95
Developed/Low-Med Intensity	62.14	61.83	61.3	61.76
Developed/Open Space	14.82	15.35	15.66	15.27
Open Water	0	0	0	0
Wetlands	0	0	0	0
Barren	0	0	0	0

Sikeston

Well/Intake Data - PWSS No. 4010743 Sheet Prepared: Jun 11, 2020
Scott County, Sheet 1 of 2

Prepared by CARES, University of Missouri Extension

Well Number	W1	W5	W6	W7	W9
Local Well Name	Well #1, Plant #2	Well #6, Plant #2	Well #7, Plant #2	Well #8, Plant #3	Well #10, Plant #3
Well ID #	13051	13049	13048	13047	13045
DGLS ID #	0011630	0019120	0026235		
Status	Active	Active	Active	Active	Emergency
Latitude	36.879040	36.878180	36.879540	36.880623	36.878620
Longitude	-89.586450	-89.585580	-89.583700	-89.601124	-89.600250
12-Digit Hydrologic Unit	080202010305	080202010305	080202010305	080202040604	080202040604
County	Scott	Scott	Scott	Scott	Scott
MoDNR Region	Southeast	Southeast	Southeast	Southeast	Southeast
Groundwater Province[1]	Southeast Missouri Lowlands Gr	Southeast Missouri Lowlands Gr	Southeast Missouri Lowlands Gr	Southeast Missouri Lowlands Gr	Southeast Missouri Lowlands Gr
Source Aquifer(s)[2]	Wilcox aquifer	Wilcox aquifer	Wilcox aquifer	Alluvial aquifer	Alluvial aquifer
Confined/Unconfined[3]	Unconfined	Unconfined	Unconfined	Unconfined	Unconfined
Regional Drilling Area[4]	Area 5	Area 5	Area 5	Area 5	Area 5
Total Dissolved Solids[5]	undetermined	undetermined	undetermined	undetermined	undetermined
Date Drilled (year)	1951	1960	1969	1976	1959
Material (C/U)	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated
Casing Base Formation	Wilcox	Wilcox	Wilcox	Alluvium	Alluvium
Total Depth Formation	Midway	Wilcox	Midway	Alluvium	Alluvium
Total Depth	421	401	404	145	142
Ground Elevation (ft)	327	326	326	325	325
Casing Depth (ft)	331	307	309	108	119
Casing Size (in)	12	18	18	18	12
Casing Type				Steel	Steel
Screen Length (ft)	81	80	80	30	21
Screen Size (in)	8	12	12	12	12
Static Water Level (ft)	60	66	65	27	30
Well Yield (gpm)	600	1100	1450	1300	1000
Head (ft)	90	69	105	57	34
Draw Down (ft)	60	54	59	33	
Pump Test Date (year)	1975	1960	1992	1976	1987
Pump Type	Vertical Turbine	Vertical Turbine	Vertical Turbine	Vertical Turbine	Vertical Turbine
Pump Manufacturer					
Pump Depth (ft)	150	135	170	84	64
Pump Capacity (gpm)	863	1500	1600	1350	1150
Pump Meter (Y/N)					
GWUDISW (Y/N)					
Surface Drainage					
State Approved (Y/N)					
Liquefaction Risk	High	High	High	High	High
Landslide Risk	Low	Low	Low	Low	Low
Collapse Risk	Low	Low	Low	Low	Low
Flood Risk	Low	Low	Low	Low	Low
Surface Contamination Risk	Low	Low	Low	Moderate	Moderate
Conduit Flow Risk[6]	K6	K6	K6	K6	K6

Sikeston

Well/Intake Data - PWSS No. 4010743

Sheet Prepared: Aug 12, 2020

Scott County, Sheet 2 of 2

Prepared by CARES, University of Missouri Extension

Well Number	W10	W11	W13
Local Well Name	Well #11, Plant #1	Well #12	Well #13 Plant #3
Well ID #	13044	13043	18782
DGLS ID #			
Status	Active	Active	Active
Latitude	36.878770	36.880440	36.880459
Longitude	-89.582680	-89.582630	-89.602615
12-Digit Hydrologic Unit	080202010305	080202010305	080202040604
County	Scott	Scott	Scott
MoDNR Region	Southeast	Southeast	Southeast
Groundwater Province[1]	Southeast Missouri Lowlands	Southeast Missouri Lowlands	Southeast Missouri Lowlands
Source Aquifer(s)[2]	Wilcox	Wilcox	Alluvial
Confined/Unconfined[3]	Unconfined	Unconfined	Unconfined
Regional Drilling Area[4]	Area 5	Area 5	Area 5
Total Dissolved Solids[5]	undetermined	undetermined	undetermined
Date Drilled (year)	1987	1991	2013
Material (C/U)	Unconsolidated	Unconsolidated	Unconsolidated
Casing Base Formation	Wilcox	Wilcox	Alluvium
Total Depth Formation	Wilcox	Wilcox	Alluvium
Total Depth	390	391	160
Ground Elevation (ft)	325	325	325
Casing Depth (ft)	300	292	111
Casing Size (in)	16	18	16
Casing Type	Steel	Steel	Steel
Screen Length (ft)	80	80	110
Screen Size (in)	10	12	
Static Water Level (ft)	65	80	31
Well Yield (gpm)	1062	835	2400
Head (ft)	109	94	69
Draw Down (ft)	43		
Pump Test Date (year)	1987	1991	
Pump Type	Vertical Turbine	Vertical Turbine	Vertical Turbine
Pump Manufacturer			
Pump Depth (ft)	174	174	100
Pump Capacity (gpm)	1000	1000	1000
Pump Meter (Y/N)			
GWUDISW (Y/N)			
Surface Drainage			
State Approved (Y/N)			
Liquefaction Risk	High	High	High
Landslide Risk	Low	Low	Low
Collapse Risk	Low	Low	Low
Flood Risk	Low	Low	Low
Surface Contamination Risk	Low	Low	Moderate
Conduit Flow Risk[6]	K6	K6	K6

Sikeston

Contaminant Summary
PWSS No. 4010743

Sheet Prepared: Jun 11, 2020

MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Prepared by CARES, University of Missouri Extension

57 potential contaminant sources in the listed databases (multiple databases may list the same contaminant source):

	Database		Database
✔	ACRES (Assessment, Cleanup And Redevelopment Exchange System)		MN-TEMPO (Minnesota - Permitting, Compliance, & Enforcement)
✔	AIR (Integrated Compliance Information System-Air)	✔	MO-DNR (Missouri Department Of Natural Resources)
✔	AIRS/AFS (Air Facility System)	✔	NCDB (National Compliance Database)
✔	AIRS/AQS (Air Quality System)	✔	NPDES (National Pollutant Discharge Elimination System)
	BR (Biennial Reporters)		OTAQREG (Office Of Transportation And Air Quality Fuels Registration)
	BRAC (Base Realignment And Closure)		RADINFO (Radiation Information System)
✔	CAMDBS (Clean Air Markets Division Business Systems)		RBLC (Ract/Bact/Laer Clearinghouse)
	CEDRI (Compliance And Emissions Data Reporting Interface)	✔	RCRAINFO (Resource Conservation And Recovery Act Information System)
	ECRM (Enforcement Criminal Records Management)		RFS (Renewable Fuel Standard)
	E-GGRT (Electronic Greenhouse Gas Reporting Tool)		RMP (Risk Management Plan)
	EGRID (Emissions & Generation Resource Integrated Database)	✔	SEMS (Superfund Enterprise Management System)
✔	EIA-860 (Energy Information Administration-860 Database)	✔	SFDW (Safe Drinking Water Information System)
✔	EIS (Emission Inventory System)		SSTS (Section Seven Tracking System)
	FFDOCKET (Federal Facility Hazardous Waste Compliance Docket)		STATE (State Systems)
✔	ICIS (Integrated Compliance Information System)		TRIS (Toxics Release Inventory System)
	LMOP (Landfill Methane Outreach Program)		TSCA (Toxic Substances Control Act)
	LUST-ARRA (Leaking Underground Storage Tank - American Recovery And Reinvestment Act)	✔	SWIP (Source Water Inventory Project Field Inventory - see below)

60 potential contaminant sources in the SWIP Field Inventory:

Count	Site Type	Count	Site Type
0	Airport or abandoned airfield	0	Laundromat
0	Animal feedlot	0	Livestock auction
0	Apartments and condominiums	0	Machine or metalworking shop
0	Asphalt plant	2	Manufacturing (general)
6	Auto repair shop	0	Material stockpile (industrial)
8	Automotive dealership	0	Medical institution
0	Barber and beauty shop	0	Metal production facility
0	Boat yard and marina	0	Mining operation
0	CAFO	7	Other
0	Campground	1	Paint store
2	Car wash	0	Park land
0	Cement Plant	0	Parking lot
0	Cemetery	1	Petroleum production or storage
0	Communication equipment mfg	0	Pharmacies
0	Country club	0	Photography shop or processing lab
3	Dry cleaner	0	Pit toilet
1	Dumping and/or burning site	0	Plastic material and synthetic mfg
0	Electric equipment mfg or storage	1	Print shop
0	Electric substation	0	Railroad yard
0	Farm machinery storage	0	Recycling/reduction facility
3	Feed/Fertilizer/Co-op	0	Research lab
2	Fire station	0	Restaurant
2	Funeral service and crematory	1	Sawdust pile
1	Furniture manufacturer	0	School
0	Furniture repair or finishing shop	0	Sports and hobby shop
0	Garden and/or nursery	0	Swimming pool
0	Garden, nursery, and/or florist	0	Tailing pond
0	Gasoline service station	5	Tank (above-ground fuel)
0	Golf courses	0	Tank (other)
0	Government office	0	Tank (pesticide)
0	Grain bin	6	Tank (underground fuel)
3	Hardware and lumber store	0	Trucking terminal
0	Hazardous waste (Federal facility)	1	Veterinary service
1	Highway maintenance facility	0	Wastewater treatment facility
0	Jewelry or metal plating shop	2	Well (abandoned)
0	Junk yard or salvage yard	1	Well (domestic)
0	Lagoon (commercial)	0	Well (irrigation)
0	Lagoon (industrial)	0	Well (livestock)
0	Lagoon (municipal)	0	Well (monitoring)
0	Lagoon (residential)	0	Well (public water supply)
0	Landfill (municipal)	0	Well (unknown)

Sikeston

Susceptibility Determination
PWSS No. 4010743

Sheet Prepared: Jun 11, 2020

MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Prepared by CARES, University of Missouri Extension

The Missouri Department of Natural Resources (MoDNR) has assembled this information to assess the susceptibility of drinking water sources to contamination. There are many unforseen and unpredictable factors that may cause a source to be contaminated. MoDNR routinely monitors all public supplies to ensure public health is protected. Public water systems and local communities are encouraged to take all measures possible to reduce the susceptibility of their drinking water source to chemical contamination. For more information, call 1-800-361-4827.

Dots containing numeric values correspond to the number of individual wells or surface water intakes.

GROUND WATER

	Minimally Susceptible	Moderately Susceptible	Highly Susceptible	Undetermined
Geological and Hydrogeological Assessment Criteria				
Are any system wells deemed by the Public Drinking Water Branch to be under the direct influence of surface water?	○	○	○	●
Are any system wells potentially prone to karst conditions or solution flow?	●	○	○	○
Do any system wells draw water from a source with high total dissolved solids (TDS)?	○	○	○	●
Are any system wells located proximal to known subsurface or groundwater contamination?	○	○	○	●
Do any system wells draw water from an unconfined aquifer?	●	○	○	○
Based on known stratigraphic relationships for each well, the risk of contamination from surface sources is:	5	3	○	○
Well Construction and Maintenance Assessment Criteria				
Are all system wells state-approved?	○	○	○	●
Do any system wells exhibit structural defects, construction deficiencies, or other conditions that might allow contamination to enter the well at the wellhead?	○	○	○	●
Are security measures in place to prevent unauthorized tampering with all system wells?	○	○	○	●
Does the system have back-up, emergency power available?	○	○	○	●
Monitoring Assessment Criteria				
Have any system wells exhibited consistent detections for any of the following parameters in raw water?				
Volatile Organic Chemicals (VOC):	○	○	●	○
Synthetic Organic Chemicals (SOC):	●	○	○	○
Inorganic Compounds (IOC):	●	○	○	○
Nitrates/Nitrites:	●	○	○	○
Radionuclides:	●	○	○	○
Bacteria/Viruses/Microbial Pathogens:	○	○	○	●
Natural Hazard Assessment Criteria				
The number of system wells located in a region prone to flooding.	8	○	○	○
The number of system wells located in a region that may experience the following conditions in the event of a large-scale earthquake.				
Potential liquefaction risk:	○	○	8	○
Potential landslide risk:	8	○	○	○
Potential subsurface collapse/instability risk:	8	○	○	○
Are any system wells prone to declining water levels during a prolonged drought?	○	○	○	●
Do all system wells have lightning surge protection?	○	○	○	●
Potential Contaminant Inventory Assessment Criteria				
Potential sources of contamination exist within the wellhead protection area:	○	●	○	○
A system well is located in an area with a high density of transportation corridors:	○	1	7	○
A system well is located in an area that may have improperly maintained or faulty on-site septic systems:	○	○	○	●
Additional Assessment Criteria				
Does the system have a wellhead/source water protection plan endorsed by the Department of Natural Resources?	○	●	○	○
Does the system have an emergency interconnection with a neighboring public water system?	○	●	○	○

Sikeston

Notes
PWSS No. 4010743

Map Prepared: Jun 11, 2020
Data Release: May 4, 2020

Prepared by CARES, University of Missouri Extension

1 For additional information about Missouri’s regional groundwater provinces, please visit the Missouri Department of Natural Resources’ Water Resources Center Web page or contact the Missouri Geological Survey.

2 Source aquifers are determined from well log information, where available, and on general water quality characteristics for the regional groundwater province within which each well is located. Source aquifers for wells with little or no well log information are inferred based on best available information.

Additional Source Aquifer Notes:

- Water sources labeled "Cincinnatian, Pennsylvanian, or Devonian/Silurian" are not regionally extensive aquifer systems in Missouri. These represent isolated, localized water-bearing formations. Broad water quality descriptions are Not currently available for these sources. "Precambrian" water sources exhibit water quality characteristics similar to the St. Francois aquifer.
- The Springfield Plateau aquifer is regionally extensive only in southwest and west-central Missouri. Aquifers labeled "Mississippian" or "Springfield Plateau (equivalent)" refer to wells that draw water from the same geological formations that comprise the Springfield Plateau aquifer, but are located in areas of the state not hydraulically connected to the regional aquifer system. Broad water quality generalizations are not available for these isolated, localized water-bearing units.

3 Unconfined aquifers are generally more vulnerable to surface or shallow subsurface contamination and warrant additional protections around the wellhead. Confined aquifers are not as vulnerable to surface or shallow subsurface contamination, but may exhibit naturally elevated levels of dissolved minerals, radionuclides, or variations in other water quality parameters such as dissolved oxygen and pH.

4 Please refer to 10 CSR 23-3.090 and 10 CSR 23-3.100 for additional information about well construction standards for Missouri’s regional well drilling areas.

5 TDS1 Total dissolved solids information is currently only available for the Ozark and Springfield Plateau aquifers. Information is based on broad, regional groundwater quality trends, rather than on well-specific monitoring.

6 K6 This well is not constructed in materials prone to conduit or solution flow.

Appendix 3b

2014 Sikeston Public Well Assessment Reports (CARES)

Sikeston

PWSS No. 4010743

8 Wells, Scott County

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS
UNIVERSITY OF MISSOURI

Map Update: Jun 06, 2014

Missouri Department of
Natural Resources

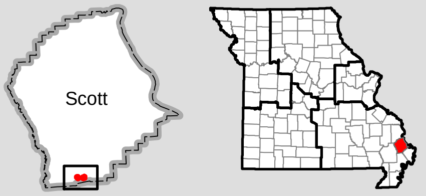
Well System

● System Well

SWAP Delineation Boundary

⭕ 20-year time of travel

⭕ Half-mile buffer



SWAP - Source Water Assessment Plan --
http://drinkingwater.missouri.edu/swap/
Aerial photos: USDA National Agriculture Inventory
Program (NAIP), 2012.

Sikeston

PWSS No. 4010743

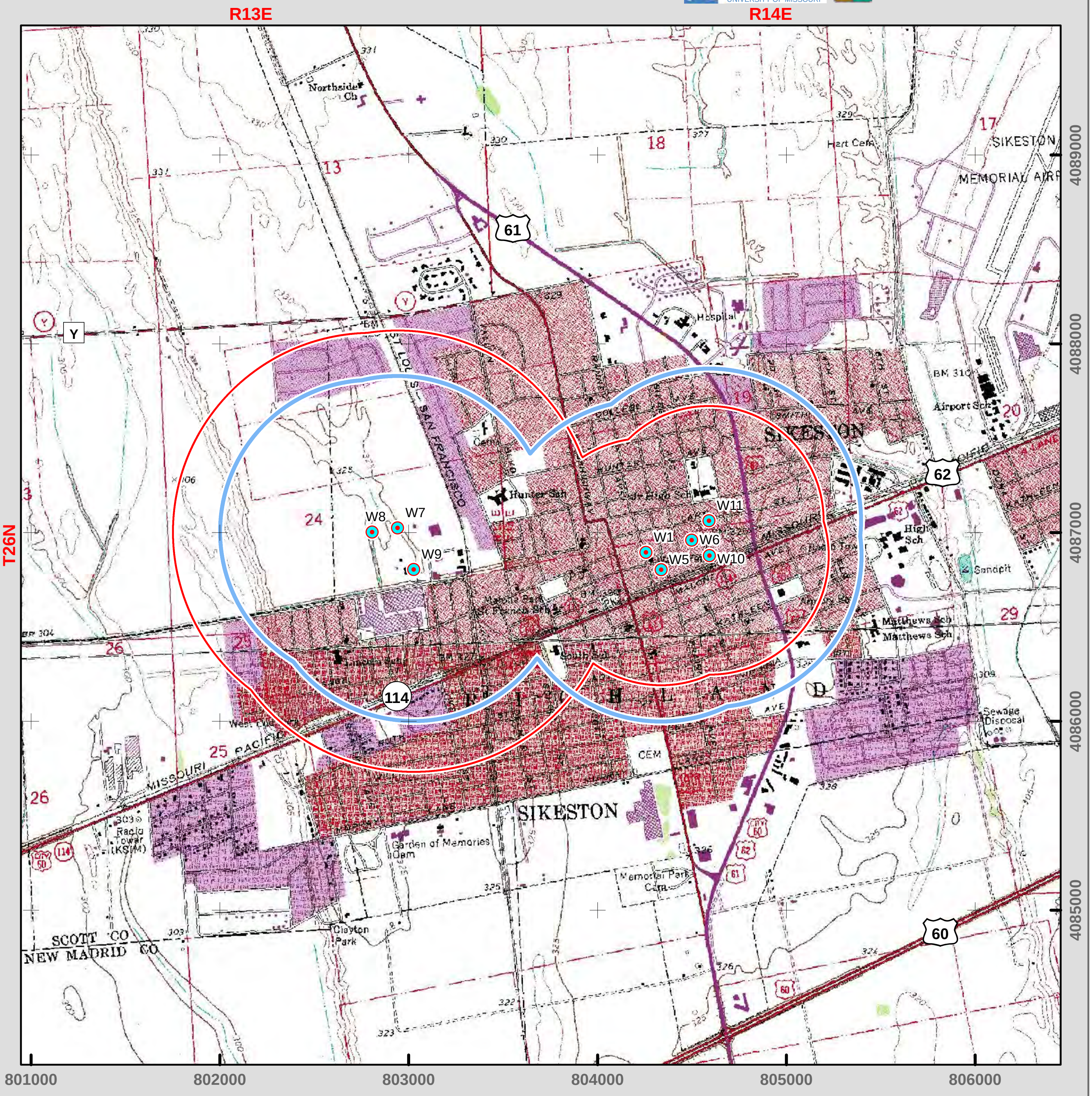
8 Wells, Scott County

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS UNIVERSITY OF MISSOURI

Map Update: Jun 06, 2014

Missouri Department of Natural Resources



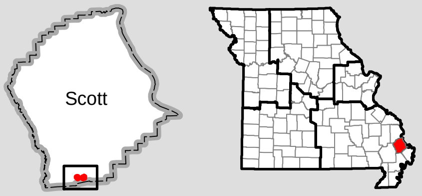
Well System

● System Well

SWAP Delineation Boundary

○ 20-year time of travel

○ Half-mile buffer



SWAP - Source Water Assessment Plan --
http://drinkingwater.missouri.edu/swap/
For basemap symbols, see the U.S. Geological Survey (USGS) publication: Topographic Map Symbols.

Miles

0 0.45 0.9

Sikeston

PWSS No. 4010743

Scott County, sheet 1 of 2

8 wells

Sheet Update: Jun 09, 2014

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS
UNIVERSITY OF MISSOURI

Missouri Department of
Natural Resources

Well Number	W1	W5	W6	W7	W8
Extended PWS #	4010743101	4010743105	4010743106	4010743107	4010743108
Local Well Name	Well #1, Plant #2	Well #6, Plant #2	Well #7, Plant #2	Well #8, Plant #3	Well #9, Plant #3
Well ID #	13051	13049	13048	13047	13046
DGLS ID #	0011630	0019120	0026235		
Facility Type	City	City	City	City	City
Status	Active	Active	Active	Active	Active
Latitude	36.87904	36.87818	36.87954	36.8806231803	36.880473182
Longitude	-89.58645	-89.58558	-89.5837	-89.6011240613	-89.6026440566
Location Method	GPS	GPS	GPS	GPS	GPS
Method Accuracy (ft)	38	43	43	43	39
USGS 7.5 Quadrangle	Sikeston North	Sikeston North	Sikeston North	Sikeston North	Sikeston North
County	Scott	Scott	Scott	Scott	Scott
MoDNR Region	Southeast	Southeast	Southeast	Southeast	Southeast
Date Drilled (year)	1951	1960	1969	1976	1976
Material (C/U)	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated
Base of Casing Formation	Wilcox	Wilcox	Wilcox	Alluvium	Alluvium
Total Depth Formation	Midway	Wilcox	Midway	Alluvium	Alluvium
Total Depth	421	401	404	145	143
Ground Elevation (ft)					
Top Seal					
Bottom Seal					
Casing Depth (ft)	331	307	309	108	108
Casing Size (in)	12	18	18	18	18
Casing Type				Steel	Steel
Elev. of Casing Top (ft)					
Outer Casing Depth (ft)					
Outer Casing Size (in)					
Screen Length (ft)	81	80	80	30	30
Screen Size (in)	8	12	12	12	12
Static Water Level (ft)	60	66	65	27	27
Well Yield (gpm)	600	1100	1450	1300	1300
Head (ft)					
Draw Down (ft)	60	54	59	33	34
Pump Test Date (year)	1975	1960	1992	1976	
Pump Type	Vertical Turbine	Vertical Turbine	Vertical Turbine	Vertical Turbine	Vertical Turbine
Pump Manufacturer					
Pump Depth (ft)	150	135	170	84	84
Pump Capacity (gpm)	863	1500	1600	1350	1350
Pump Meter (Y/N)					
VOC Detection (Y/N)	N	N	N	N	N
Nitrate Detection (Y/N)	N	N	N	N	N
Chlorination (Y/N)	Y	Y	Y	Y	Y
Filtration (Y/N)	Y	Y	Y	Y	Y
GWUDISW (Y/N)					
Surface Drainage					
State Approved(Y/N)					
Date Abandoned (year)					
Date Plugged (year)					

Sikeston

PWSS No. 4010743

Scott County, sheet 2 of 2

8 wells

Sheet Update: Jun 09, 2014

Prepared by:
CARES
CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS
UNIVERSITY OF MISSOURI

Missouri Department of
Natural Resources

Well Number	W9	W10	W11
Extended PWS #	4010743109	4010743110	4010743111
Local Well Name	Well #10, Plant #3	Well #11, Plant #1	Well #12
Well ID #	13045	13044	13043
DGLS ID #			
Facility Type	City	City	City
Status	Active	Active	Active
Latitude	36.87862	36.87877	36.88044
Longitude	-89.60025	-89.58268	-89.58263
Location Method	GPS	GPS	GPS
Method Accuracy (ft)	65	44	45
USGS 7.5 Quadrangle	Sikeston North	Sikeston North	Sikeston North
County	Scott	Scott	Scott
MoDNR Region	Southeast	Southeast	Southeast
Date Drilled (year)	1959	1987	1991
Material (C/U)	Unconsolidated	Unconsolidated	Unconsolidated
Base of Casing Formation	Alluvium	Wilcox	Wilcox
Total Depth Formation	Alluvium	Wilcox	Wilcox
Total Depth	142	390	382
Ground Elevation (ft)			
Top Seal			
Bottom Seal			
Casing Depth (ft)	119	300	292
Casing Size (in)	12	16	18
Casing Type	Steel	Steel	Steel
Elev. of Casing Top (ft)			
Outer Casing Depth (ft)			
Outer Casing Size (in)			
Screen Length (ft)	21	80	80
Screen Size (in)	12	10	12
Static Water Level (ft)	30	65	
Well Yield (gpm)	1000	1062	
Head (ft)			
Draw Down (ft)		43	
Pump Test Date (year)	1987	1987	
Pump Type	Vertical Turbine	Vertical Turbine	Vertical Turbine
Pump Manufacturer			
Pump Depth (ft)	64	174	174
Pump Capacity (gpm)	1150	1000	1000
Pump Meter (Y/N)			
VOC Detection (Y/N)	N	N	N
Nitrate Detection (Y/N)	N	N	N
Chlorination (Y/N)	Y	Y	Y
Filtration (Y/N)	Y	Y	Y
GWUDISW (Y/N)			
Surface Drainage			
State Approved(Y/N)			
Date Abandoned (year)			
Date Plugged (year)			

Sikeston

PWSS No. 4010743

Scott County, sheet 1 of 4

162 potential contaminant sources

Sheet Update: Jun 09, 2014

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS UNIVERSITY OF MISSOURI

Missouri Department of Natural Resources

Map C.No.	CARES ID	Site Name	Type	Location Code	Accuracy Code	Method Code	Database Code
C1	140966	Elanco Products		UN	NV	UN	Dealcov
C2	108627	Scott-New Madrid Electric Coop		UN	NV	UN	Chemcov
C3	108628	Coleman Plant		UN	NV	UN	Chemcov
C4	108630	Sikeston Bd of Municipal Utilities		UN	NV	UN	Chemcov
C5	110225	Board Of Municipal Utilities		UN	NV	UN	Tanks
C6	110226	Board Of Municipal Utilities		UN	NV	UN	Tanks
C7	110379	Boyer Construction Company		UN	NV	UN	Tanks
C8	110498	Bridger Equipment Company		UN	NV	UN	Tanks
C9	110543	Brown Sand & Gravel Co, Inc		UN	NV	UN	Tanks
C10	111299	Charles Terrell		UN	NV	UN	Tanks
C11	111413	City Garage		UN	NV	UN	Tanks
C12	111527	City Of Miner		UN	NV	UN	Tanks
C13	111831	Community Shelter Workshop		UN	NV	UN	Tanks
C14	111964	Cooney Equipment Company		UN	NV	UN	Tanks
C15	112305	Dekalb Ag Research		UN	NV	UN	Tanks
C16	112309	Dekalb-pfizer Genetics		UN	NV	UN	Tanks
C17	112488	Don King Equipment		UN	NV	UN	Tanks
C18	113154	Ferrell Excavating		UN	NV	UN	Tanks
C19	113947	Hale Auction Company		UN	NV	UN	Tanks
C20	114303	Holiday 66 Service		UN	NV	UN	Tanks
C21	114332	Home Oil Co		UN	NV	UN	Tanks
C22	114397	Hucks #139		UN	NV	UN	Tanks
C23	114828	Joe Williams		UN	NV	UN	Tanks
C24	115060	Kellett Oil Co.		UN	NV	UN	Tanks
C25	115145	Kimo's Office Building		UN	NV	UN	Tanks
C26	115609	Lewis Bros Bakeries, Inc		UN	NV	UN	Tanks
C27	115921	Malone & Hyde Drug Dist-never Owned		UN	NV	UN	Tanks
C28	116354	Mhtd Dist Garage		UN	NV	UN	Tanks
C29	116376	Mid South Tractor Parts		UN	NV	UN	Tanks
C30	117395	Par Gas (sinclair)		UN	NV	UN	Tanks
C31	117520	Pepsi Cola		UN	NV	UN	Tanks
C32	118701	Santie Wholesale Oil Co		UN	NV	UN	Tanks
C33	118714	Saunders System Inc		UN	NV	UN	Tanks
C34	118760	Scott Co R-v School Dist		UN	NV	UN	Tanks
C35	118765	Scott-new Madrid-mississippi El Cor		UN	NV	UN	Tanks
C36	118815	Semo Motor Company		UN	NV	UN	Tanks
C37	118816	Semo Nursing Center Inc		UN	NV	UN	Tanks
C38	119100	Sikeston		UN	NV	UN	Tanks
C39	119102	Sikeston Coca-cola Bottling Co		UN	NV	UN	Tanks
C40	119103	Sikeston Concrete Prods Co, Inc		UN	NV	UN	Tanks
C41	119104	Sikeston General Oil Co		UN	NV	UN	Tanks
C42	119106	Sikeston Maint Shed		UN	NV	UN	Tanks
C43	119107	Sikeston Pepsi Cola		UN	NV	UN	Tanks
C44	119381	Southwestern Bell		UN	NV	UN	Tanks
C45	120481	Todd Corporation		UN	NV	UN	Tanks
C46	120611	Trigg Shell		UN	NV	UN	Tanks
C47	120622	Troop E Satellite		UN	NV	UN	Tanks
C48	120761	Union Pacific		UN	NV	UN	Tanks
C49	120798	United Parcel Service, Inc		UN	NV	UN	Tanks
C50	120840	Uptown Shell		UN	NV	UN	Tanks

Method Codes

Code	Address Matching (Geocoding)	Code	Global Positioning System	Code	Other
A2	Block/Group	G1	Static Mode	P1	Land Survey
A3	Street Centerline	G2	Kinematic Mode	S2	Quarter Description
A4	Nearest Street Intersection	G3	Differential Post Processing	UN	Unknown
A5	Primary Street Name	G4	Precise Positioning Service		
A6	Digitization	G5	Signal Averaging		
AO	Other Address Matching	G6	Real Time Differential Processing		
Z1	ZIP Code Centroid		Interpolation		
	Census - 1990	I1	Topo Map		
C1	Block Centroid	I2	Aerial Photography (DOQQ)		
C2	Block/Group Centroid	I3	Satellite Imagery		
C3	Tract Centroid				

Location Codes

BL	Building
CF	Center of Facility
IN	Intersection
LS	Lagoon or Pond
MG	Main Access Point (Gate)
MA	Main Office
OT	Other
PL	Pile
RD	Road
TK	Tank, Standpipe, or Tower
WL	Well
UN	Unknown

Accuracy Codes

Code	Metric
m	Meters
km	Kilometers
	English
ft	Feet
yd	Yards
mi	Miles
UN	Unknown
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Sikeston

PWSS No. 4010743

Scott County, sheet 2 of 4

162 potential contaminant sources

Sheet Update: Jun 09, 2014

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS
UNIVERSITY OF MISSOURI

Missouri Department of
Natural Resources

Map C.No.	CARES ID	Site Name	Type	Location Code	Accuracy Code	Method Code	Database Code
C51	120845	U-pump-it		UN	NV	UN	Tanks
C52	121651	Woodtruss		UN	NV	UN	Tanks
C53	121750	Quality Plating		UN	NV	UN	SMARS
C54	122606	Jerry James Trailers Inc.		UN	NV	UN	HW Gen
C55	123286	Scott-new Madrid-mississippi Electric		UN	NV	UN	HW Gen
C56	123833	Cooney Equipment Co.		UN	NV	UN	HW Gen
C57	123835	Semo Motor Co.		UN	NV	UN	HW Gen
C58	123836	Sikeston Dry Cleaners		UN	NV	UN	HW Gen
C59	123890	Todd, Inc.		UN	NV	UN	HW Gen
C60	124108	Satterfield Body Shop	Hazar Entry	CF	33 ft	I2	HW Gen
C61	124665	Missouri Delta Community Hospital		UN	NV	UN	HW Gen
C62	124814	Auto Tire & Parts		UN	NV	UN	HW Gen
C63	125054	Stricker Body Shop		UN	NV	UN	HW Gen
C64	125343	At&t		UN	NV	UN	HW Gen
C65	125753	King Cleaners		UN	NV	UN	HW Gen
C66	125930	Mid-south Tractor Parts		UN	NV	UN	HW Gen
C67	126133	Carnell's Body Shop		UN	NV	UN	HW Gen
C68	126233	Mo Dept Of Transportation		UN	NV	UN	HW Gen
C69	126406	Heritage American Homes		UN	NV	UN	HW Gen
C70	127163	One Day Cleaners		UN	NV	UN	HW Gen
C71	127545	Kelpro, Inc.		UN	NV	UN	HW Gen
C72	127758	Chamberlain's Amoco		UN	NV	UN	HW Gen
C73	127798	Canedy Sign Co., Inc.		UN	NV	UN	HW Gen
C74	127851	Faultless Cleaners		UN	NV	UN	HW Gen
C75	128391	Don King Salvage		UN	NV	UN	HW Gen
C76	128417	Bootheel Diesel Fuel Injection		UN	NV	UN	HW Gen
C77	128903	Sikeston Light And Water		UN	NV	UN	HW Gen
C78	128972	Missouri Highway & Transportation Dept.		UN	NV	UN	HW Gen
C79	129213	Media Press		UN	NV	UN	HW Gen
C80	129679	Dekalb Plant Genetics		UN	NV	UN	HW Gen
C81	129840	Quality Plating % Usepa Region Vii		UN	NV	UN	HW Gen
C82	130016	Central States Coca-cola		UN	NV	UN	HW Gen
C83	130088	Curtis H. Cline		UN	NV	UN	HW Gen
C84	130731	Dekalb Corp		UN	NV	UN	HW Gen
C85	132505	HANDY STREET CALCIUM ARSENATE SITE		UN	NV	UN	CERCLIS
C86	132606	MRM INDUSTRIES		UN	NV	UN	CERCLIS
C87	135413	Dekalb Agresearch Inc		UN	NV	UN	APCP
C88	136492	Mcmullin Gin Co Inc		UN	NV	UN	APCP
C89	136493	Sikeston Cotton Oil Mill Inc		UN	NV	UN	APCP
C90	136501	Missouri Delta Community Hospital		UN	NV	UN	APCP
C91	136502	Old Coal-fired Generator		UN	NV	UN	APCP
C92	136503	Sikeston Power Station		UN	NV	UN	APCP
C93	136505	Hendrick Concrete Products Corp		UN	NV	UN	APCP
C94	136506	Sikeston Woodworking		UN	NV	UN	APCP
C95	136510	Daily Standard		UN	NV	UN	APCP
C96	136514	Crowder Gin Company, Inc		UN	NV	UN	APCP
C97	136517	Marnor Aluminum Processing Inc		UN	NV	UN	APCP
C98	136521	Mrm Industries Inc		UN	NV	UN	APCP
C99	136528	Faultless Cleaners Inc		UN	NV	UN	APCP
C100	136537	Sikeston		UN	NV	UN	APCP

Method Codes

Code	Address Matching (Geocoding)	Code	Global Positioning System	Code	Other
A2	Block/Group	G1	Static Mode	P1	Land Survey
A3	Street Centerline	G2	Kinematic Mode	S2	Quarter Description
A4	Nearest Street Intersection	G3	Differential Post Processing	UN	Unknown
A5	Primary Street Name	G4	Precise Positioning Service		
A6	Digitization	G5	Signal Averaging		
AO	Other Address Matching	G6	Real Time Differential Processing		
Z1	ZIP Code Centroid		Interpolation		
	Census - 1990	I1	Topo Map		
C1	Block Centroid	I2	Aerial Photography (DOQQ)		
C2	Block/Group Centroid	I3	Satellite Imagery		
C3	Tract Centroid				

Location Codes

BL	Building
CF	Center of Facility
IN	Intersection
LS	Lagoon or Pond
MG	Main Access Point (Gate)
MA	Main Office
OT	Other
PL	Pile
RD	Road
TK	Tank, Standpipe, or Tower
WL	Well
UN	Unknown

Accuracy Codes

Code	Metric
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	English
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Sikeston

PWSS No. 4010743

Scott County, sheet 3 of 4

162 potential contaminant sources

Sheet Update: Jun 09, 2014

Prepared by:
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UNIVERSITY OF MISSOURI

Missouri Department of
Natural Resources

Map C.No.	CARES ID	Site Name	Type	Location Code	Accuracy Code	Method Code	Database Code
C101	136539	King Laundry And Dry Cleaners		UN	NV	UN	APCP
C102	136540	Sikeston Dry Cleaners		UN	NV	UN	APCP
C103	385324	Magic Car Wash	Car wash	BL	33 ft	I2	CARES
C104	385325	Williams Auto Sales	Auto repair shop	BL	33 ft	I2	CARES
C105	385326	Rogers Auto Sales	Automotive dealership	BL	33 ft	I2	CARES
C106	385327	The House of Color	Paint store	BL	33 ft	I2	CARES
C107	385328	Drakes Auto Sales	Automotive dealership	BL	33 ft	I2	CARES
C108	385329	Hucks	Tank (underground fuel)	BL	33 ft	I2	CARES
C109	385330	Jim's Auto Sales	Automotive dealership	BL	33 ft	I2	CARES
C110	385331	Cox's Car Wash	Car wash	BL	33 ft	I2	CARES
C111	385332	Sinclair Gas	Tank (above-ground fuel)	BL	33 ft	I2	CARES
C112	385333	Midtown Motors	Automotive dealership	CF	33 ft	I2	CARES
C113	385334	C&C Motors	Automotive dealership	BL	33 ft	I2	CARES
C114	385335	Moll Priniting Company	Print shop	BL	33 ft	I2	CARES
C115	385336	Feeders Supply	Feed/Fertilizer/Co-op	BL	33 ft	I2	CARES
C116	385338	Meeks Print Shop	Other	BL	33 ft	I2	CARES
C117	385339	Cornell's Collision Repair	Auto repair shop	BL	33 ft	I2	CARES
C118	385340	FG Convienience Store	Tank (underground fuel)	BL	33 ft	I2	CARES
C119	385341	Rhodes Convienience Store	Tank (underground fuel)	BL	33 ft	I2	CARES
C120	385342	Animal Health Center	Veterinary service	BL	33 ft	I2	CARES
C121	385343	Elite Car Wash	Other	BL	33 ft	I2	CARES
C122	385344	Sikeston Fire Department	Fire station	BL	33 ft	I2	CARES
C123	385345	Allsops Woodworking	Furniture manufacturer	BL	33 ft	I2	CARES
C124	385346	Sonny's Solid Waste	Tank (above-ground fuel)	CF	33 ft	I2	CARES
C125	385349	Auto Repair	Auto repair shop	BL	33 ft	I2	CARES
C126	385350		Well (domestic)	WL	33 ft	I2	CARES
C127	385351	Riggs Building Supplies and Home Center	Hardware and lumber store	BL	33 ft	I2	CARES
C128	385352	Sabona Mfg.	Manufacturing (general)	BL	33 ft	I2	CARES
C129	385353	Janitrol/Janitor Supply	Other	BL	33 ft	I2	CARES
C130	385354	Patriot/Heritage Homes	Manufacturing (general)	BL	33 ft	I2	CARES
C131	385355	Sheltered Workshop	Sawdust pile	CF	33 ft	I2	CARES
C132	385356	Aramark	Dry cleaner	BL	33 ft	I2	CARES
C133	385357		Other	TK	33 ft	I2	CARES
C134	385358	Riggs Wholesale Co.	Hardware and lumber store	BL	33 ft	I2	CARES
C135	385359	Electric Substation	Other	CF	33 ft	I2	CARES
C136	385440	Sikeston Auto Service	Auto repair shop	BL	33 ft	I2	CARES
C137	385441	Sinclair Service Station	Tank (above-ground fuel)	BL	33 ft	I2	CARES
C138	385442	Phillips 66	Tank (underground fuel)	BL	33 ft	I2	CARES
C139	385443	Sikeston Laundry and Drycleaners	Dry cleaner	BL	33 ft	I2	CARES
C140	385444	C & K Building Materials	Hardware and lumber store	BL	33 ft	I2	CARES
C141	385445	King Laudry and Cleaners	Dry cleaner	BL	33 ft	I2	CARES
C142	385446	Moll Printing Co.	Other	BL	33 ft	I2	CARES
C143	385447	Premier Motor	Automotive dealership	BL	33 ft	I2	CARES
C144	385448	Amoco	Tank (underground fuel)	BL	33 ft	I2	CARES
C145	385449	Griffs Auto Sales	Automotive dealership	BL	33 ft	I2	CARES
C146	385450	Beaver Janitor Supply	Other	TK	33 ft	I2	CARES
C147	385451	Blanchard Funeral Parlor	Funeral service and crematory	BL	33 ft	I2	CARES
C148	385452	Service Station	Tank (underground fuel)	BL	33 ft	I2	CARES
C149	385453	Cargill	Feed/Fertilizer/Co-op	CF	33 ft	I2	CARES
C150	385454		Tank (above-ground fuel)	TK	33 ft	I2	CARES

Method Codes

Code	Address Matching (Geocoding)	Code	Global Positioning System	Code	Other
A2	Block/Group	G1	Static Mode	P1	Land Survey
A3	Street Centerline	G2	Kinematic Mode	S2	Quarter Description
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A5	Primary Street Name	G4	Precise Positioning Service		
A6	Digitization	G5	Signal Averaging		
AO	Other Address Matching	G6	Real Time Differential Processing		
Z1	ZIP Code Centroid		Interpolation		
	Census - 1990	I1	Topo Map		
C1	Block Centroid	I2	Aerial Photography (DOQQ)		
C2	Block/Group Centroid	I3	Satellite Imagery		
C3	Tract Centroid				

Location Codes

BL	Building
CF	Center of Facility
IN	Intersection
LS	Lagoon or Pond
MG	Main Access Point (Gate)
MA	Main Office
OT	Other
PL	Pile
RD	Road
TK	Tank, Standpipe, or Tower
WL	Well
UN	Unknown

Accuracy Codes

Code	Metric
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	English
ft	Feet
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Sikeston

PWSS No. 4010743

Scott County, sheet 4 of 4

162 potential contaminant sources

Sheet Update: Jun 09, 2014

Prepared by:

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UNIVERSITY OF MISSOURI

Missouri Department of
Natural Resources

Map C.No.	CARES ID	Site Name	Type	Location Code	Accuracy Code	Method Code	Database Code
C151	385455	Sikeston Seed Co., Inc.	Feed/Fertilizer/Co-op	BL	33 ft	I2	CARES
C152	385456	H & H Small Engine Repair	Auto repair shop	BL	33 ft	I2	CARES
C153	385457	Auto Repair	Auto repair shop	BL	33 ft	I2	CARES
C154	385458	J J Auto Sales	Automotive dealership	BL	33 ft	I2	CARES
C155	385459	Sikeston City Dump	Dumping and/or burning site	CF	33 ft	I2	CARES
C156	385460	William Farr and Purnell Funeral Home	Funeral service and crematory	BL	33 ft	I2	CARES
C157	385461		Well (abandoned)	BL	33 ft	I2	CARES
C158	385462		Well (abandoned)	BL	33 ft	I2	CARES
C159	385463	Sikeston Fire Station	Fire station	BL	33 ft	I2	CARES
C160	385464		Tank (above-ground fuel)	TK	33 ft	I2	CARES
C161	385465	Sikeston Highway Maintenence Facility	Highway maintenance facility	CF	33 ft	I2	CARES
C162	385466	Shell	Petroleum production or storage	BL	33 ft	I2	CARES

Method Codes

Code	Address Matching (Geocoding)
A2	Block/Group
A3	Street Centerline
A4	Nearest Street Intersection
A5	Primary Street Name
A6	Digitization
AO	Other Address Matching
Z1	ZIP Code Centroid
	Census - 1990
C1	Block Centroid
C2	Block/Group Centroid
C3	Tract Centroid

Code	Global Positioning System
G1	Static Mode
G2	Kinematic Mode
G3	Differential Post Processing
G4	Precise Positioning Service
G5	Signal Averaging
G6	Real Time Differential Processing
	Interpolation
I1	Topo Map
I2	Aerial Photography (DOQQ)
I3	Satellite Imagery

Code	Other
P1	Land Survey
S2	Quarter Description
UN	Unknown

Location Codes

BL	Building
CF	Center of Facility
IN	Intersection
LS	Lagoon or Pond
MG	Main Access Point (Gate)
MA	Main Office
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Sikeston

PWSS No. 4010743

Contaminant Summary Sheet

162 potential contaminant sources

Sheet Update: Jun 09, 2014

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS
UNIVERSITY OF MISSOURI

Missouri Department of
Natural Resources

162 Potential Contaminant Sources in the Listed Databases:

	AFS (EPA AIRS Facility Sites)
16	APCP (MoDNR Air Pollution Control Program Sites)
	APF (MoDNR Active Permitted Landfills & Transfer Stations)
2	CERCLIS (EPA CERCLIS)
3	Chemcov (VA Selected Chemical Sites)
1	Dealcov (MDA Pesticide Dealer Locations)
	Dioxin (MoDNR Confirmed Dioxin List)
	Grain B (USDA Former Grain Bin Sites)
31	HW Gen (MoDNR Hazardous Waste Generators)
	HW Tran (MoDNR Hazardous Waste Transporters)
	LUST (MoDNR Leaking Underground Storage Tanks)
	MoDOT (MoDOT Highway Maintenance Facilities)
	PADS (EPA PCB Activity Data Base System)

	Perchlo (MoDNR Perchlorate Sites in Missouri)
	Pest Ap (MDA Licensed Pesticide Applicators)
	RCRIS (EPA Resource Conservation and Recovery Information System)
	Silos (USGS Minuteman II Missile Silos)
1	SMARS (MoDNR Superfund Management and Registry System)
48	Tanks (MoDNR Petroleum Tank Database)
	Tier 2 (MERC Tier II Reports)
	Tire D (MoDNR Resolved and Unresolved Waste Tire Dumps)
	TRI (EPA Toxic Release Inventory)
	VCP (MoDNR Voluntary Cleanup Program Sites)
	WQIS (MoDNR Water Quality Information System)
60	SWIP Field Inventory (see below)

60 Potential Contaminant Sources in the SWIP Field Inventory:

0	Airport or abandoned airfield
0	Animal feedlot
0	Apartments and condominiums
0	Asphalt plant
6	Auto repair shop
8	Automotive dealership
0	Barber and beauty shop
0	Boat yard and marina
0	CAFO
0	Campground
2	Car wash
0	Cement Plant
0	Cemetery
0	Communication equipment mfg
0	Country club
3	Dry cleaner
1	Dumping and/or burning site
0	Electric equipment mfg or storage
0	Electric substation
0	Farm machinery storage
3	Feed/Fertilizer/Co-op
2	Fire station
2	Funeral service and crematory
1	Furniture manufacturer
0	Furniture repair or finishing shop
0	Garden and/or nursery
0	Garden, nursery, and/or florist
0	Gasoline service station
0	Golf courses
0	Government office
0	Grain bin
3	Hardware and lumber store
0	Hazardous waste (Federal facility)
1	Highway maintenance facility
0	Jewelry or metal plating shop
0	Junk yard or salvage yard
0	Lagoon (commercial)
0	Lagoon (industrial)
0	Lagoon (municipal)
0	Lagoon (residential)
0	Landfill (municipal)
0	Laundromat
0	Livestock auction

0	Machine or metalworking shop
2	Manufacturing (general)
0	Material stockpile (industrial)
0	Medical institution
0	Metal production facility
0	Mining operation
7	Other
1	Paint store
0	Park land
0	Parking lot
1	Petroleum production or storage
0	Pharmacies
0	Photography shop or processing lab
0	Pit toilet
0	Plastic material and synthetic mfg
1	Print shop
0	Railroad yard
0	Recycling/reduction facility
0	Research lab
0	Restaurant
1	Sawdust pile
0	School
0	Sports and hobby shop
0	Swimming pool
0	Tailing pond
5	Tank (above-ground fuel)
0	Tank (other)
0	Tank (pesticide)
6	Tank (underground fuel)
0	Trucking terminal
1	Veterinary service
0	Wastewater treatment facility
2	Well (abandoned)
1	Well (domestic)
0	Well (irrigation)
0	Well (livestock)
0	Well (monitoring)
0	Well (public water supply)
0	Well (unknown)

Sikeston

PWSS No. 4010743

Susceptibility Determination Sheet

8 wells

Sheet Update: Mar 14, 2014

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS
UNIVERSITY OF MISSOURI

Missouri Department of
Natural Resources

The Missouri Department of Natural Resources (MoDNR) has assembled this information to assess the susceptibility of drinking water sources to contamination. There are many unforseen and unpredictable factors that may cause a source to be contaminated. MoDNR routinely monitors all public supplies to ensure public health is protected. Public water systems and local communities are encouraged to take all measures possible to reduce the susceptibility of their drinking water source to chemical contamination. For more information, call 1-800-361-4827.	Not Susceptible	Moderately Susceptible	Highly Susceptible	Incomplete Data
A system is highly susceptible because of construction deficiencies if:				
A well was not constructed according to plans approved by MoDNR-PDWB,				X
A well was not cased to a depth approved by MoDNR,				X
A well casing is not of sufficient weight,				X
A well is not sufficiently sealed (grouted) around the casing, or A well has developed holes in the casing or other flaws that compromise its integrity.				X
A system is highly susceptible due to direct influence of surface water if:				
A well has tested positive for surface water indicators such as algae or high turbidity.				X
A system is highly susceptible to surface contaminants if:				
A well casing does not extend 12 inches above the well house floor, or 18 inches above the ground surface,				X
A well casing does not extend four feet above the 100-year flood level, or four feet above the highest known flood elevation,				X
A well is not provided with a properly screened vent, or				X
All openings in a well casing are not properly sealed.				X
A system is highly susceptible based on detection histories if:				
Volatile Organic Chemicals (VOCs) have been detected in a well,	X			
Synthetic Organic Chemicals (SOCs) have been detected in a well,				X
Inorganic Chemicals (IOCs) have been detected in a well above naturally occurring levels,				X
Nitrates have been detected at or above one-half the MCL,	X			
Bacteria has been consistently detected in a well, or				X
Viruses or microbiological contaminants are detected in a well.				X
A system is highly susceptible to weather, vandalism, and sabotage if:				
A well is not in a locked well house of adequate construction.				X (1)
A system is moderately susceptible due to local geology if:				
A producing aquifer is less than 100 feet below the surface,	X			
A producing aquifer has conduit flow conditions due to surficial karst topography,				X
A producing aquifer is not overlain by an impermeable confining layer,				X
A producing aquifer is overlain by a conductive (>5X10e-4) formation (including soil), or				X
A producing aquifer is confined, but there are open wells nearby penetrating that layer.				X
A system is moderately susceptible to contaminants if:				
Any contaminants listed in Appendix F-a are found in the source water area,		X (2)		
Septic systems are present in the source water area,				X
A well is indirectly connected to a surface water body,				X
A submersible well pump cannot be ruled out from containing PCBs or PHAs, or				X
There is a high density of transportation corridors in the source water area.				X
A system is highly susceptible to contamination if:				
Any contaminant sites identified in the source water area are known to have contaminated groundwater that may migrate toward a well.				X

(1) This system was not assessed to determine if adequate security devices such as padlocks, gates, and lighting are in place to deter vandals and saboteurs. All water systems should have this type of protection in place.
(2) A well (or wells) serving this system has been determined to be susceptible due to the presence of potential contaminant sources. The water system and the wellhead protection team should take extra care to ensure that all potential contaminants in the source water area are handled properly to avoid contamination of the drinking water supply.