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GREDELL Engineering Resources, Inc.

Sikeston Power Station

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

Prepared for:

BMU Sikeston
Board of Municipal Utilities

Sikeston Power Station
1551 West Wakefield Avenue
Sikeston, Missouri 63801

August 2022

Sikeston Power Station
2022 Annual Groundwater Monitoring Report for Fly Ash Pond
Compliance with USEPA 40 CFR 257.90(e)

Prepared for:

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1551 West Wakefield Avenue
Sikeston, Missouri 63801

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1.0 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 of electricity. The facility's two coal ash surface impoundments are located immediately east of the power station and are on properties owned and controlled by SBMU. The Bottom Ash Pond measures approximately 61 acres and borders the south edge of the Fly Ash Pond, which measures approximately 30 acres in size. 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). This report pertains specifically to the Fly 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). Analytical data also are subjected to statistical analysis in accordance with §257.93(f), with the results included in an Annual Groundwater Monitoring Report in accordance with §257.90(e). If results suggest that a statistically significant increase (SSI) in one or more constituents for detection monitoring listed in Appendix III of §257 has occurred, a written demonstration is required to determine if the SSI is attributable to alternate causative factors. If a successful demonstration is not made, an assessment monitoring program must be initiated as required under §257.95.

This report describes the results of the fifth and sixth semi-annual detection groundwater sampling events conducted at the SPS Fly Ash Pond on April 17, 2021, and October 20, 2021. Included is a description of the sampling events, groundwater elevations, water table surface, field activity summaries, final analytical data, and statistical analysis results. Field sampling and reporting activities were conducted in accordance with the site-specific GMSAP (Gredell Engineering, 2018). Statistical analysis was performed in accordance with §257.93(f) using the statistical analysis method as filed in the SBMU-SPS operating record on April 15, 2019. The seventh semi-annual groundwater sampling field activities were initiated on April 9, 2022, but data analysis was not complete at the time of this report and will therefore be included in the next Annual Groundwater Monitoring Report.

2.0 GROUNDWATER MONITORING SYSTEM

The groundwater monitoring system for the Fly Ash Pond consists of five wells. Well locations are depicted on Figures 1 and 2. The wells are identified as MW-1, MW-2, MW-3, MW-7, and MW-9. MW-2 and MW-3 are located hydraulically upgradient of the Fly Ash Pond, whereas MW-1, MW-7, and MW-9 are located hydraulically downgradient of the Fly Ash Pond. Monitoring wells MW-1, MW-2, and MW-3 were installed on April 26 and 27, 2016 by Smith & Company of Poplar Bluff, Missouri during hydrogeologic characterization of the site (Gredell Engineering, 2017). Monitoring wells MW-7 and MW-9 were installed on April 18, 2017 and November 13, 2017, respectively, by Bulldog Drilling, Inc. of Dupo, Illinois to serve as additional downgradient monitoring wells. 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). Well depths are between 30 and 35.5 feet below ground surface. All five wells monitor uppermost groundwater, which is within the Holocene-age alluvial aquifer at the Fly Ash Pond site. Each well yields sufficient quantities of water for the purposes of sampling and analysis.

On September 3, 2021, MW-1R was completed as recommended in the Alternate Source Demonstration for Calcium, and Sulfate in MW-1 (Appendix 9A; Gredell Engineering, 2021a). Background sampling for MW-1R was initiated on October 20, 2021, and eight independent samples analyzed for the constituents listed in Appendices III and IV of §257 were collected prior to March 3, 2022 in accordance with §257.94(a). Following completion of the eighth background sampling event from MW-1R on March 2, 2022, detection monitoring commenced in MW-1R on April 9, 2022. Detection monitoring in MW-1 was terminated on March 2, 2022, and MW-1 was removed from the §257compliance groundwater monitoring system for the Fly Ash Pond. Field notes, analytical data reports, and QC summaries for MW-1R background samples are included in Appendices 1, 2, and 3 respectively, and a summary of the MW-1R groundwater quality data is provided in Appendix 4.

Table 1 presents a construction summary of the wells comprising the Fly Ash Pond groundwater monitoring system and MW-1. Figures 1 and 2 depict well locations and groundwater contour maps of the uppermost aquifer for the April 17, 2021, and October 20, 2021 semi-annual sampling events. These maps 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. The Fly Ash Pond groundwater monitoring system is described in more detail in the revised site-specific GMSAP for this facility (Gredell Engineering, 2021c).

3.0 FIELD SAMPLING SUMMARY

SPS environmental staff performed groundwater sampling on April 17, 2021, and October 20, 2021. These sampling events represent the fifth and sixth semi-annual detection groundwater sampling events conducted at the SPS Fly Ash Pond.

Following the April 17, 2021 sampling event, monitoring wells MW-1 and MW-2 were resampled on June 15, 2021. Groundwater at MW-1 was resampled for Sulfate and Calcium. Groundwater at MW-2 was resampled for Total Dissolved Solids (TDS).

Following the October 20, 2021 sampling event, monitoring wells MW-2 and MW-9 were resampled on December 27, 2021. Groundwater at MW-2 was resampled for Boron. Groundwater at MW-9 was resampled for pH, Fluoride, and TDS.

The seventh semi-annual groundwater sampling field activities were initiated on April 9, 2022, but data analysis was not complete at the time of this annual report. Therefore, final analytical data (and evaluation) for the seventh event will be included in the next Annual Groundwater Monitoring Report.

Field procedures for the April 17, 2021 and October 20, 2021 sampling events, subsequent resampling events, and background sampling at MW-1R were conducted in the manner described in the following paragraphs and in accordance with the GMSAP for this facility (Gredell Engineering, 2018, and 2021c).

The environmental staff inspected each monitoring well upon arrival. Wells appeared 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 indicator parameters (turbidity, temperature, dissolved oxygen, and oxidation/reduction potential) were also monitored for stability prior to groundwater sample collection. Following stabilization of all indicator parameters, final pH and specific conductance values were recorded and groundwater samples were then collected.

Field tests of indicator parameters were performed using an In-Situ, Inc. SmarTROLL MP flow cell unit and HF Scientific MicroTPI field portable turbidimeter. Following the seventh semi-annual groundwater sampling, it was determined that the SmarTROLL MP was malfunctioning and not providing accurate results. Subsequent inspection by the manufacturer revealed that the unit could not be repaired, and a replacement meter was ordered. As a result of manufacturer delays in meter replacement, data analysis for the seventh semi-annual groundwater sampling was not

complete at the time of this report and will therefore be included in the next Annual Groundwater Monitoring Report.

Groundwater samples were collected using low-flow sampling techniques and dedicated sampling equipment. Each detection monitoring groundwater sample was subsequently analyzed for the constituents listed in §257 Appendix III. Each background groundwater sample at MW-1R was subsequently analyzed for the constituents listed in §257 Appendix III and Appendix IV. All monitoring wells produced sufficient volume of groundwater for full analysis.

Field notes documenting the fifth and sixth detection monitoring events and the respective resampling events are presented in Appendix 1. Field sampling notes are summarized in Table 3, including initial and final water level measurements, purge volumes, and pH. Laboratory analytical reports for each sampling event, including the field blanks, sample duplicates, and MW-1R background data, are included in Appendix 2. Quality Assurance/Quality Control (QA/QC) documentation is presented in Appendix 3. A summary of background and detection monitoring analytical data, including field parameters, is presented in Appendix 4.

3.1 Field Quality Assurance/Quality Control

Field QA/QC during each sampling event included the collection of one field blank and one field duplicate sample. The field blank collected during the October 20, 2021 sampling event was not analyzed for Chloride, Fluoride, Sulfate or TDS due to bottle breakage at the laboratory. The duplicates during the April 17, 2021 and October 20, 2021 events were collected at MW-1 (duplicate results are summarized in Table 5). Rinsate blanks were not collected because dedicated sampling equipment was used. Samples were shipped to PDC Laboratories' primary facility located in Peoria, Illinois using standard chain-of-custody documentation/procedures. Laboratory reports in early 2022 were provided by Pace Analytical Services, LLC, which acquired PDC Laboratories operations in late 2021,

Samples collected during the April 17, 2021 event were received by the primary facility on April 20, 2021 and subsequently analyzed for the six detection monitoring constituents listed in §257 Appendix III and required under §257.94(b) (Table 4). Final revised hard copy analytical results were received on June 11, 2021.

Samples collected during the June 15, 2021 resample event were received by the primary facility on June 17, 2021 and subsequently analyzed for the requested analytes. Final hard copy analytical results were received on July 16, 2021.

Samples collected during the October 20, 2021 event were received by the primary facility on October 22, 2021 and subsequently analyzed for the six detection monitoring constituents listed in §257 Appendix III and required under §257.94(b) (Table 4). Final hard copy analytical results were received on December 10, 2021.

Samples collected during the December 27, 2021 resample event were received by the primary facility on December 29, 2021 and subsequently analyzed for the requested analytes. Final hard copy analytical results were received on January 7, 2022.

Sample dates, dates samples were received by the lab, and dates data reports were received for MW-1R background samples are summarized in Table 6.

4.0 ANALYTICAL SUMMARY

Hard copy analytical data for each monitoring well sampled during the April 2021 and October 2021 detection monitoring events and the respective June 2021 and December 27, 2021 resample events, and the MW-1R background groundwater sampling events are provided in Appendix 2. The data pertain to groundwater quality results from the uppermost aquifer in the area bordering the Fly Ash Pond, along with sample duplicate and field blank results.

4.1 Laboratory Quality Control

Laboratory analyses of all groundwater samples collected were completed by PDC Laboratories, Inc., of Peoria, Illinois. It is noted that Pace Analytical Services, LLC. acquired PDC Laboratories in the past year, and reports after 2021 reflect this transition. The results were accompanied by appropriate QA/QC documentation. That documentation is presented in Appendix 3.

4.2 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 for background groundwater monitoring samples, detection monitoring samples, and resamples were performed within appropriate hold times (except for TDS in MW-2 during the April 2021 event) and both initial and continuing calibrations met acceptance criteria for all analyses. Similarly, method blanks and LCS analyses met acceptance criteria. The case narratives for the 2021 detection monitoring and resampling events indicate that all quality controls met acceptance criteria with the following exceptions:

Detection sampling event April 17, 2021

- A batch Quality Control sample for TDS is flagged “M” because the RPD was outside acceptance criteria.
- Several batch Quality Control samples for Sulfate are flagged “Q4” because the associated sample concentrations exceeded four times the spiked values.

- Several batch Quality Control samples for Chloride are flagged “Q1” or “Q2” because the Matrix Spike (MS) or Matrix Spike Duplicate were outside acceptance criteria.

Resample event June 15, 2021. All quality controls met acceptance criteria.

Detection sampling event October 20, 2021

- A batch Quality Control sample for TDS is flagged “M” and “H” because the RPD was outside acceptance criteria and was analyzed after expiration of the hold time.
- Several batch Quality Control samples for Sulfate are flagged “Q4” because the associated sample concentrations exceeded four times the spiked values.
- Several batch Quality Control samples for Chloride are flagged “Q1” or “Q2” because the Matrix Spike (MS) or Matrix Spike Duplicate were outside acceptance criteria.

Resample event December 27, 2021

- A batch sample duplicate for TDS is flagged “M” because the RPD was outside acceptance criteria.

Additional QA/QC comments 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-1 was collected during both detection monitoring events. The RPD was calculated for all detected chemical parameters. A summary table showing the results of the RPD calculations is included as Table 5. 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 the both the April and October 2021 detection sampling events and one field blank was incorporated into the data set for the June and December 2021 resample events. Results for the field blanks showed no reportable concentrations except for Boron during the April and October sampling events, and Calcium during the June resample event. Field blank results for Chloride, Fluoride, Sulfate, and TDS were not reported for the October sampling event due to a laboratory-reported mishap.
- *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 was more frequent. Reference to Appendix 3 should be made for comments related to these and other laboratory control samples.

4.3 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 (Gredell Engineering, 2021c). Procedures specified in that plan have been followed. Approved sampling procedures should be reviewed annually. Groundwater monitoring data are 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.

4.4 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.

4.5 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 3). Furthermore, the sample must have been analyzed within the specified holding time and in such a manner that analytical QC acceptance criteria are met.

5.0 STATISTICAL ANALYSIS

The statistical analysis method used to evaluate groundwater within the uppermost aquifer for the Fly Ash Pond monitoring system 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).

A complete background data set has been obtained for groundwater, representing the uppermost aquifer, moving below the Fly Ash Pond at the SPS. The background data used to evaluate groundwater quality during the April 17, 2021, sampling event is based on the eight rounds of background data collected from March to December 2018. The background data set was updated in October 2021 to include an additional five rounds of data collected from March 2019 to April 2021. This updated background data sets were used to evaluate groundwater quality for the October 20, 2021 sampling event. Updates to the background data set are permitted every two years, but SSIs will not be included in background unless they are unconfirmed in accordance with Unified Guidance (USEPA, 2009).

Statistical analysis was performed in accordance with §257.93 using Sanitas© for Ground Water (Version 9.6.31; 2021). Intra-well prediction intervals were compared at the 99 percent confidence level for each Appendix III constituent. The groundwater analytical results from the April and October 2021 detection monitoring events were compared to the respective prediction limits (Table 7) to determine if SSIs over background exist in the data sets.

If the number of reportable concentrations of a given constituent in a background data set for a given well was not sufficient to permit parametric analysis, non-parametric prediction interval analysis was conducted. Both parametric and non-parametric prediction limit analysis were performed for the Fly Ash Pond groundwater monitoring system data. Prediction intervals were based on the background monitoring data (Appendix 4), including results reported as less than detection limits. Initially, outlier and trend analysis were performed for the background data set using Exploratory Data Analysis (EDA) with Sanitas©. EDA tools include histograms, probability plots, time-series plots, box and whiskers plots, and trend testing.

Because the background data used to evaluate the April 17, 2021 detection monitoring data span a collection period of less than one year, variance in the data set may be attributable to natural seasonal variation. Therefore, all background data were retained as recommended by Unified Guidance (USEPA, 2009) when no basis for likely error or discrepancy can be identified. Following future updates to the background data set, the identification of potential outliers will be re-evaluated.

The background data set used to evaluate the October 20, 2021 detection monitoring data consist of 13 rounds of groundwater collected from March 2018 to April 2021. Incorporation of these

additional data resulted in a more robust data set that includes some natural seasonal variation. Accordingly, EDA performed with Sanitas© to conduct outlier and trend analysis allowed for identification and screening of potential outliers and removal of trends from the background data sets.

The results of the statistical analysis for the April 2021 and October 2021 sampling events are described below. A complete database summarizing the sample results, screened data, dates of sampling, and the purpose of sampling event, as per §257.90(e)(3), is provided in Appendix 4. A statistical power curve, based on the updated background data, is provided in Appendix 5. Trend analysis (time-series) plots of background data for all detection monitoring constituents are presented in Appendix 6. Box and whiskers plots of background data are presented in Appendix 7. Prediction limit charts are provided in Appendix 8.

5.1 Statistical Results

The statistical analysis for the Fly Ash Pond groundwater monitoring system suggests three prediction limit exceedances in the April 2021 data set. Two are associated with Sulfate and Calcium in MW-1 and one is associated with TDS in MW-2. The associated prediction limits for these well constituent pairs are summarized in Table 7. Each of these well constituent pairs were resampled on June 15, 2021 and the initial results were confirmed with the laboratory data report received on July 16, 2021. In accordance with §257.94, Alternate Source Demonstrations (ASDs) were prepared to address these prediction limit exceedances and are included as Appendix 9. The ASDs were completed successfully and certified in accordance with §257.94(e)(2) on October 14, 2021.

The statistical analysis for the October 2021 Fly Ash Pond groundwater monitoring results suggests four prediction limit exceedances. One is Boron in MW-2, and the remaining three are pH, Fluoride, and TDS in MW-9. The associated prediction limits for these well constituent pairs are summarized on Table 7. Monitoring wells MW-2 and MW-9 were resampled on December 27, 2021, and the initial results for pH and Fluoride in MW-9 were confirmed with the field reports (Appendix 1) and laboratory data report (Appendix 2) received on January 7, 2022. In accordance with §257.94, an ASD was prepared to address these SSIs and is included as Appendix 9. The ASD was completed successfully and certified in accordance with §257.94(e)(2) on April 5, 2022.

As a result of the successful ASDs, detection monitoring in accordance with §257.94 has continued on a semi-annual basis as specified in §257.94(b).

6.0 SUMMARY

The fifth semi-annual sampling event was conducted by SPS environmental staff on April 17, 2021. Resampling was conducted on June 15, 2021, and prediction limit exceedances of Sulfate and Calcium in MW-1 and TDS in MW-2 were confirmed on July 16. 2021. In response, ASDs were prepared and successfully completed (Appendix 9). Consequently, GREDELL Engineering Resources, Inc. concludes the statistical analysis results for samples obtained during the fifth semi-annual sampling events do not indicate SSIs associated with the Fly Ash Pond.

The sixth semi-annual sampling event was conducted by SPS environmental staff on October 20, 2021. Resampling was conducted on December 27, 2021 and prediction limit exceedances of pH and Fluoride in MW-9 were confirmed on January 7, 2022. In response, an ASD was prepared and successfully completed (Appendix 9). Consequently, GREDELL Engineering Resources, Inc. concludes the statistical analysis results for samples obtained during the sixth semi-annual groundwater detection monitoring event do not indicate SSIs associated with the Fly Ash Pond.

The seventh semi-annual groundwater sampling field activities was initiated on April 9, 2022, but data analysis was not complete at the time of this report. Therefore, analytical data (and evaluation) for the April 2022 event will be included in the next Annual Groundwater Monitoring Report.

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. No other warranties, expressed or implied, are provided.

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. The report is applicable only to this specific project and known site conditions as they existed at the time of report preparation.

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. The use of this report and interpretations of data or conclusions developed by others are the sole responsibility of those firms or individuals.

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., 2018, *Sikeston Power Station Groundwater Monitoring and Sampling Plan for Compliance with Missouri State Operating Permit #MO-0095575*, dated September 2018.

GREDELL Engineering Resources, Inc., 2021a, *Sikeston Board of Municipal Utilities Sikeston Power Station Detection Monitoring Program for Fly Ash Pond – Calcium, and Sulfate in MW-1 Alternate Source Demonstration*, dated October 14, 2021.

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GREDELL Engineering Resources, Inc., 2022, *Sikeston Board of Municipal Utilities Sikeston Power Station Detection Monitoring Program for Fly Ash Pond – pH and Fluoride in MW-9 Alternate Source Demonstration*, dated April 5, 2022.

Sanitas Statistical Software, © 1992-2019 SANITAS TECHNOLOGIES, Alamosa Colorado 81101-0012.

U.S. Environmental Protection Agency, March 2009, Statistical Analysis of Groundwater Monitoring *Data at RCRA Facilities Unified Guidance*: USEPA 530/R-09-007, Office of Resource Conservation and Recovery, Program Implementation and Information Division, Washington, D.C.

FIGURES

O:\CADDFiles\SIKESTON\GROUNDWATER MAP\FAP\GW CONT MAP FAP OCT 26.dwg, 10/27/2021 8:31:02 AM, AutoCAD PDF (General Documentation).pc3

MONITORING WELL ID	GROUNDWATER ELEVATION (FEET)	CASING ELEVATION (FEET)	NORTHING	EASTING
MW-1	297.32	312.77	383119.51	1078467.90
MW-2	298.49	306.01	383207.42	1079751.30
MW-3	298.05	308.55	381130.00	1079946.62
MW-7	297.08	315.03	381584.50	1078847.00
MW-9	297.48	314.68	382429.94	1078825.60

NOTES:
1. IMAGE PROVIDED BY BING MAPS.
2. MONITORING WELL LOCATIONS, CASING ELEVATIONS & UNDERGROUND CULVERT ELEVATIONS SURVEYED BY DAVIS ENGINEERING & SURVEYING.
3. GROUNDWATER ELEVATIONS MEASURED BY SIKESTON POWER STATION STAFF ON APRIL 17, 2021.
4. MAP DEVELOPMENT BASED ON CONTOURS GENERATED BY SURFER® SOFTWARE.
5. DIRECTION OF GROUNDWATER FLOW GRADIENT AS DETERMINED BY SURFER® SOFTWARE 0.0001 FT./FT. TO 0.001 FT./FT.

LEGEND
- PROPERTY LINE — PL
- GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
- MONITORING WELL — MW
- UP GRADIENT MONITORING LOCATION — UG
- DOWN GRADIENT MONITORING LOCATION — DG
- GENERAL FLOW DIRECTION

SCALE: 1" = 400'
0 200 400
N

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

FIGURE 1
GROUNDWATER CONTOUR MAP
APRIL 17, 2021

SURVEYED	DESIGNED	DRAWN	CHECKED	APPROVED	DATE	SCALE	PROJECT NAME	FILE NAME	SHEET #
NA	NA	AM	KE	MCC	10/2021	AS NOTED	SIKESTON/GWMAP/FAP	GWCONT FAP 2022	1 OF 2

N

SCALE: 1" = 400'

0 200 400

LEGEND

- PROPERTY LINE — PL —
- GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
- 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 OCTOBER 20, 2021.
4. MAP DEVELOPMENT BASED ON CONTOURS GENERATED BY SURFER® SOFTWARE.
5. RANGE OF GROUNDWATER FLOW GRADIENT AS DETERMINED BY SURFER® SOFTWARE 0.0001 FT./FT. TO 0.001 FT./FT.

MONITORING WELL ID	GROUNDWATER ELEVATION (FEET)	CASING ELEVATION (FEET)	NORTHING	EASTING
MW-1	295.36	312.77	383119.51	1078467.90
MW-1R	295.69	314.34	382926.45	1078801.61
MW-2	296.55	308.55	381130.00	1079946.62
MW-3	296.04	315.03	381584.50	1078847.00
MW-7	295.08	314.68	382429.94	1078825.60
MW-9	295.53	314.68	382429.94	1078825.60

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
OCTOBER 20, 2021

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

SURVEYED	DESIGNED	DRAWN	CHECKED	APPROVED	DATE	SCALE	PROJECT NAME	FILE NAME	SHEET #
NA	NA	AM	KE	MCC	10/2021	AS NOTED	SIKESTON/GWMAP/FAP	GWCONT FAP 2022	2 OF 2

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TABLES

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

Table 1
Groundwater Monitoring Well Summary - Fly Ash Pond

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-1	383119.51	1078467.90	310.41	312.77	37.84	274.93	10	285.1
MW-1R	382926.45	1078801.61	311.41	314.34	38.16	276.10	10	286.4
MW-2	383207.42	1079751.30	305.53	308.01	37.42	270.59	10	280.8
MW-3	381130.00	1079946.62	306.11	308.55	37.21	271.34	10	281.5
MW-7	381584.50	1078847.00	312.70	315.03	37.37	277.66	10	287.9
MW-9	382429.94	1078825.60	311.85	314.68	37.28	277.40	10	287.6

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: GREDELL Engineering Resources, Inc.

Prepared by: KAE
Checked by: MCC

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Table 2
Historical Groundwater Level Summary

Well ID	MW-1	MW-2	MW-3	MW-7	MW-9
Date	Groundwater Elevation (feet MSL)				
05/12/16	297.50	298.66	298.13	NM	NM
06/28/16	296.60	298.01	297.58	NM	NM
07/15/16	296.57	297.86	297.37	NM	NM
08/08/16	295.62	297.06	297.05	NM	NM
09/08/16	296.06	297.27	296.76	NM	NM
10/05/16	295.86	296.96	296.40	NM	NM
11/01/16	295.47	296.66	296.10	NM	NM
11/30/16	295.45	296.60	296.03	NM	NM
01/24/17	NM	NM	296.35	NM	NM
01/26/17	295.77	296.76	296.35	NM	NM
02/22/17	NM	NM	296.00	NM	NM
02/24/17	295.47	296.40	296.00	NM	NM
03/20/17	296.11	296.96	296.45	NM	NM
04/19/17	296.04	296.86	296.35	NM	NM
04/27/17	NM	NM	296.72	NM	NM
05/17/17	NM	NM	297.81	NM	NM
06/08/17	NM	NM	297.81	NM	NM
07/13/17	NM	NM	296.98	NM	NM
10/31/17	NM	NM	295.22	NM	NM
03/21/18	295.92	296.96	296.65	295.83	296.13
04/15/18	297.07	297.86	297.60	296.95	297.18
05/23/18	296.78	298.01	297.62	296.66	296.98
06/13/18	NM	NM	297.33	NM	NM
06/27/18	296.37	297.61	297.21	296.26	296.56
08/01/18	295.22	296.60	296.15	295.08	295.48
09/05/18	294.79	296.11	295.68	294.71	295.01
11/06/18	295.01	296.21	295.74	294.85	295.17
11/26/18	NM	NM	295.63	NM	NM
12/12/18	295.12	296.21	295.79	295.06	295.36
01/08/19	295.66	296.72	296.38	295.53	295.80
02/05/19	NM	NM	296.73	NM	NM
02/22/19	297.70	298.67	298.35	297.59	297.84
03/27/19	297.69	298.93	298.51	297.58	297.93
04/16/19	298.15	299.29	298.93	298.01	298.38
05/14/19	298.27	299.66	299.25	298.15	298.52
05/28/19	NM	NM	298.95	NM	NM
06/12/19	297.82	299.24	298.82	297.76	298.10
07/17/19	297.32	298.77	298.38	297.25	297.55
07/24/19	297.40	298.80	298.41	297.33	297.65
08/14/19	296.61	298.15	297.80	296.65	296.96
08/28/19	NM	NM	297.55	NM	NM
09/16/19	296.24	297.70	297.22	296.14	296.50
09/24/19	296.09	297.53	297.05	295.98	296.33
10/10/19	295.92	297.29	296.84	295.80	296.13
10/22/19	295.92	297.24	296.80	295.74	296.12
11/04/19	NM	NM	297.34	NM	NM
01/28/20	297.61	298.73	298.34	297.42	297.80
02/18/20	NM	NM	299.00	NM	NM
03/30/20	NM	NM	300.09	NM	NM
04/06/20	299.16	300.40	300.00	298.99	299.41
05/21/20	298.50	300.02	299.55	NM	298.71
09/22/20	296.53	297.97	297.47	296.33	296.78
12/08/20	296.63	298.00	NM	NM	NM
01/26/21	NM	NM	NM	296.51	296.82
04/17/21	297.32	298.49	298.05	297.08	297.48
10/20/21	295.36	296.55	296.04	295.08	295.53

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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Table 3
Water Levels and Field Parameter Summary
April 17, 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-1	Downgradient	15.45	15.45	300	6,880	7.3
MW-2	Upgradient	9.52	9.52	300	2,260	6.3
MW-3	Upgradient	10.50	10.50	300	6,460	6.6
MW-7	Downgradient	17.95	17.95	300	2,660	7.4
MW-9	Downgradient	17.20	17.20	300	1,720	7.4

NOTES:

1. Sequence of sampling is MW-3, MW-2, MW-1, MW-7, then MW-9.
   Note MW-1 and MW-2 resampled June 15, 2021.
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.

Water Levels and Field Parameter Summary
October 20, 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-1	Downgradient	17.41	17.41	300	4,420	7.33
MW-2	Upgradient	11.46	11.46	300	2,900	6.25
MW-3	Upgradient	12.51	12.51	300	4,040	6.52
MW-7	Downgradient	19.95	19.95	300	2,760	7.35
MW-9	Downgradient	19.15	19.15	300	2,920	7.52
MW-1R[6]	Downgradient	18.65	18.65	300	4,680	6.55

NOTES:

1. Sequence of sampling is MW-3, MW-2, MW-1, MW-7, MW-9, then MW-1R.
   Note, MW-2 and MW-9 resampled december 27, 2021.
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.
6. MW-1R sampled for background monitoring subsequent to detection monitoring of MW-1, MW-2, MW-3, MW-7, and MW-9.

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Table 4
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.

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Table 5
Relative Percent Differences Summary -
April 17, 2021

Chemical Parameter	Units	MW-1	DUP	Relative Percent Difference
pH	S.U.	7.3	7.3	0.00
Chloride	µg/L	3.5	4.1	15.79
Fluoride	mg/L	<0.250	<0.250	NA
Sulfate	mg/L	37	38	2.67
Total Dissolved Solids	mg/L	200	210	4.88
Boron	mg/L	500	550	9.52
Calcium	mg/L	53000	52000	1.90

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.

Relative Percent Differences Summary -
October 20, 2021

Chemical Parameter	Units	MW-1	DUP	Relative Percent Difference
pH	S.U.	7.33	7.33	0.00
Chloride	µg/L	3.1	3.1	0.00
Fluoride	mg/L	<0.250	<0.250	N/A
Sulfate	mg/L	28	30	6.90
Total Dissolved Solids	mg/L	230	210	9.09
Boron	µg/L	410	470	13.64
Calcium	mg/L	41	42	2.41

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.

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Table 6
MW-1R Sampling and Analytical Reporting Date Summary

Background Sampling Event	Sampling Event Date	Date Samples Received by Laboratory	Date final Analytical Report Received from Laboratory
1	10/20/2021	10/22/2021	3/15/2022
2	11/1/2021	11/3/2021	3/15/2022
3	11/16/2021	11/18/2021	3/15/2022
4	12/7/2021	12/9/2021	3/15/2022
5	12/27/2021	21-29-21	3/15/2022
6	1/17/2022	1/19/2022	3/15/2022
7	2/7/2022	2/9/2022	3/15/2022
8	3/2/2022	3/4/2022	4/13/2022

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Table 7
Intra-Well Prediction Limit Summaries
April 17, 2021 Sampling Event

Chemical Parameter	Units	MW-1	MW-2	MW-3	MW-7	MW-9
40 CFR 257 Appendix III Constituents for Detection Monitoring						
pH Upper	S.U.	7.5	6.5	6.6	7.4	7.4
pH Lower	S.U.	6.9	5.9	6.4	7.2	7.3
Boron	µg/L	544.6	60.53	32.7	2385	6236
Calcium	mg/L	45.18	25.29	19.49	152.9	95.09
Chloride	mg/L	12.2	8.15	1.598	15.22	23.28
Fluoride	mg/L	0.313	0.335	0.4083	0.8677	1.14
Sulfate	mg/L	31.57	22.33	21.97	259.2	301.1
Total Dissolved Solids	mg/L	223.2	169.4	177.8	617.2	630.8

NOTES:

1. Prediction limits based on eight rounds of background data spanning March 2018 to December 2018.
2. Prediction limits summarized from Sanitas outputs provided in Appendix 8 for fifth Detection Sampling Event.

Intra-Well Prediction Limit Summaries
October 20, 2021 Sampling Event

Chemical Parameter	Units	MW-1	MW-2	MW-3	MW-7	MW-9
40 CFR 257 Appendix III Constituents for Detection Monitoring						
pH Upper	S.U.	7.433	6.405	6.626	7.42	7.477
pH Lower	S.U.	6.95	6.013	6.359	7.148	7.237
Boron	µg/L	532.9	59.94	33.39	2352	6408
Calcium	mg/L	65.01	24.21	19.08	144	97.23
Chloride	mg/L	10.27	7.525	1.623	14.94	22.51
Fluoride	mg/L	0.316	0.336	0.386	0.831	1.101
Sulfate	mg/L	41.19	21.42	21.29	259	279.2
Total Dissolved Solids	mg/L	289.9	171.5	166.7	584.1	653

NOTES:

1. Prediction limits based on thirteen rounds of background data spanning March 2018 to April 2021.
2. Prediction limits summarized from Sanitas outputs provided in Appendix 8 for sixth Detection Sampling Event.

APPENDICES

Appendix 1

Field Sampling Notes

Appendix 1

Field Sampling Notes
April 17, 2021

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	4-17-21	0620	4.00	=	4.0	1413	=	1412.9	Temperature (°C)	=	~~22~~ 16		232.0	Temperature (°C)	=	21.82	0.02	=	0.02
			7.00	=	7.0				Standard (mV)	=	229	=		Tap Water Source	=	Sitestar City	10.0	=	10.0
			10.00	=	10.0									Barometric Pressure (mm/Hg)	=	1000.4	1000	=	1000.0
														Measurement	=	10206			
End of Day Check	4-17-21	1500	4.00	=	4.1	1413	=	1468.3	Temperature (°C)	=	21.81		AP ~~284.5~~ 217.5	Temperature (°C)	=	19.96	0.02	=	0.01
			7.00	=	7.0				Standard (mV)	=	229	=		Tap Water Source	=	Sitestar City	10.0	=	9.89
			10.00	=	10.0									Barometric Pressure (mm/Hg)	=	1001.8	1000	=	980.3
														Measurement	=	10210			

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: 4-17-21 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: 4-17-21

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 (Signed) Lab Tech (Title) 4-17-21 (Date)

Field Sampling Log

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

Initial Water Level (feet btoc): 10.50 Date: 4-17-21

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 4-17-21

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? (Y) / N

Time Purging Initiated: 0711 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 10.50 Total Volume Purged (mL): 6460

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 36.99 Water Level after Sampling (feet btoc): 10.50 (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 0812

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)
0713		340	16.24	204.02	22.6	7.2	24.3	22.23	10.50	Red Flake, no odor
0715	260	860	14.99	209.36	21.26	6.7	40.3	17.32	10.50	" "
0717	260	1380	14.52	209.46	19.97	6.6	42.9	16.28	10.50	Clear, no odor
0719	260	1900	14.36	208.46	19.65	6.5	44.3	12.20	10.50	" "
0721	250	2400	14.24	206.96	18.42	6.5	43.6	11.95	10.50	" "
0723	250	2900	14.18	205.72	17.46	6.5	41.0	9.89	10.50	" "
0725	260	3420	14.14	202.87	16.46	6.5	41.3	9.08	10.50	" "
0727	250	3920	14.13	201.22	16.04	6.5	39.5	6.99	10.50	" "
0729	260	4440	14.09	199.89	14.55	6.5	38.8	5.59	10.50	" "
0731	250	4940	14.07	197.38	13.77	6.6	37.7	4.81	10.50	" "
0733	240	5420	14.05	196.29	13.12	6.6	36.7	4.36	10.50	" "
0735	250	5920	14.04	195.11	12.57	6.6	35.1	3.74	10.50	" "
0737	270	6460	14.04	196.77	12.04	6.6	34.3	3.47	10.50	" "

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): 10.50

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)
04-17-21 0737	270	14.04	196.77	12.04	6.6	34.3	3.47

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 Cloudy 49° 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: 4-17-21 By: [signature] Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 2
Name (Field Staff): A Patel D Dillingham
Date: 04-17-21

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 (Signed) Lab Tech (Title) 4-17-21 (Date)

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): 9.52 Date: 04-17-21

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 04-17-21

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? (Y) / N

Time Purging Initiated: 0832 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 9.52 Total Volume Purged (mL): 2260

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 37.17 Water Level after Sampling (feet btoc): 9.52 (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 0917

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)
0834		360	13.58	183.04	10.98	6.4	18.1	1.83	9.52	Clear, no odor
0836	230	820	14.24	179.53	11.41	6.3	19.7	3.72	9.52	" "
0838	230	1280	14.49	178.55	13.06	6.3	20.6	1.64	9.52	" "
0840	240	1760	14.63	178.14	13.26	6.3	20.7	1.32	9.52	" "
0842	280	2260	14.70	178.91	12.22	6.3	21.7	1.68	9.52	" "

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): 9.52

Monitoring Event: Annual ( ) Semi-Annual (Y) 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)
4-17-21 0842	250	14.70	178.91	12.02	6.3	21.7	1.68

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 52 °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: 4-17-21 By: Ashish Patel Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 1
Name (Field Staff): A Patel D Dillingham
Date: 4-17-21

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 (Signed) Lab Tech (Title) 4-17-21 (Date)

Prepared by: GREDELL Engineering Resources, Inc. January 2017

Field Sampling Log

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

Initial Water Level (feet btoc): 15.45 Date: 4-17-21

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 4-17-21

Name (Sample Collector): D Dillingham

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): 15.45 Total Volume Purged (mL): 6880

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 37.62 Water Level after Sampling (feet btoc): 15.45 (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1129

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		300	14.85	407.20	48.99	7.2	-39.7	75.85	15.45	Yellow no flake, odor
1022	200	700	15.03	406.83	49.76	7.3	-54.4	63.83	15.45	" "
1024	230	1160	15.12	407.26	45.78	7.4	-60.6	55.25	15.45	" "
1026	250	1660	15.20	407.18	43.02	7.4	-65.0	61.49	15.45	" "
1028	250	2160	15.30	405.51	39.58	7.4	-69.3	231.10	15.45	" "
1030	220	2600	15.39	406.12	36.53	7.4	-71.0	35.96	15.45	" "
1032	230	3060	15.41	411.15	34.14	7.4	-72.9	29.03	15.45	" "
1034	240	3540	15.46	413.15	32.99	7.4	-73.8	25.82	15.45	" "
1036	230	4000	15.46	419.09	29.26	7.4	-74.7	20.89	15.45	clear, no odor
1038	240	4480	15.47	420.57	28.53	7.4	-75.6	24.34	15.45	" "
1040	240	4960	15.43	423.90	25.57	7.4	-76.0	21.58	15.45	" "
1042	250	5460	15.49	423.34	22.67	7.4	-76.9	16.01	15.45	" "
1044	230	5920	15.57	422.76	21.48	7.3	-76.0	10.86	15.45	" "
1046	240	6400	15.58	432.20	17.85	7.3	-76.5	11.17	15.45	" "
1048	240	6880	15.61	431.10	17.90	7.3	-77.5	10.92	15.45	" "

btoc - below top of casing

Field Sampling Log

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

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing Dedicated: (Y) / N

Water Level @ Sampling (feet btoc): 15.45

Monitoring Event: Annual ( ) Semi-Annual (M) 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)
4-17-21 1048	240	15.61	431.10	17.90	7.3	-77.5	10.92

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 54°F

Sample Characteristics: Clear, Colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:

Collected Duplicated

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

Date: 4-17-21 By: Ashish Patel Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 7
Name (Field Staff): A Patel D Dillingham
Date: 4-17-21

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 Abdul Patel (Signed) Lab Tech (Title) 4-17-21 (Date)

Field Sampling Log

Monitoring Well ID: MW 7 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 17.95 Date: 04-17-21

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 04-17-21

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? (Y) / N

Time Purging Initiated: 1218 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 17.95 Total Volume Purged (mL): 2660

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 37.24 Water Level after Sampling (feet btoc): 17.95 (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1303

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)
1220		420	16.64	834.97	6.83	7.3	-17.9	1.84	17.95	clear, no odor
1222	280	980	15.53	862.70	4.10	7.4	-19.4	0.64	17.95	" "
1224	270	1520	15.30	861.86	3.64	7.4	-20.0	0.70	17.95	" "
1226	280	2080	15.26	867.22	3.37	7.4	-19.6	0.60	17.95	" "
1228	290	2660	15.17	869.47	3.40	7.4	-19.6	0.85	17.95	" "

btoc - below top of casing

Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring Monitoring Well ID: MW 7

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing Dedicated: (Y) / N

Water Level @ Sampling (feet btoc): 17.95

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)
04-17-21 1228	290	15.17	869.97	3.40	7.4	-19.6	0.85

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 Cloudy 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: 4-17-21 By: Ashish Patel 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: 04-17-21

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 (Signed) Lab Tech (Title) 4-17-21 (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): 17.20 Date: 04-17-21

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 04-17-21

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? (Y) / N

Time Purging Initiated: 1318 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 17.20 Total Volume Purged (mL): 1720

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 37.13 Water Level after Sampling (feet btoc): 17.20 (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1401

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)
1320		340	15.21	1073.4	13.42	7.5	-24.2	1.13	17.20	Clear, no odor
1322	230	800	15.17	1086.3	12.62	7.5	-24.6	0.80	17.20	" "
1324	240	1280	15.12	1096.4	6.90	7.4	-20.4	1.09	17.20	" "
1326	220	1720	15.15	1098.1	7.52	7.4	-19.7	0.91	17.20	" "

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): 17.20

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)
4-17-21 1326	220	15.16	1098.1	7.52	7.4	-19.7	2.91

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 58°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: 4-17-21 By: [signature] Title: Lab Tech

Appendix 1

Field Sampling Notes
June 15, 2021 Resample

Field Instrumentation Calibration Log

Facility: SBMU SPS CCR Groundwater Sampling **Calibrated by:** Ashish Patel

Field Instruments: In-Situ smarTROLL Field Meter — **S/N #:** 474247

Field Instruments: HF scientific, inc. Micro TPI Field Portable Turbidimeter — **S/N #:** 20160 7366

	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	6-15-2021	0835	4.00	=	4.00	1413	=	1412.8	Temperature (°C)	=	20.53	= 229.4	Temperature (°C)	=	18.92	0.02	=	0.02
			7.00	=	7.00				Standard (mV)	=	229.0		Tap Water Source	=	Silverstone City	10.0	=	10.0
			10.00	=	10.00								Barometric Pressure (mm/Hg)	=	1004.9	1000	=	1000.0
													Measurement	=	100.13			
End of Day Check	6-15-2021	1245	4.00	=	4.07	1413	=	1437.1	Temperature (°C)	=	20.44	= 185.9	Temperature (°C)	=	23.17	0.02	=	0.01
			7.00	=	7.08				Standard (mV)	=	229.0		Tap Water Source	=	Silverstone City	10.0	=	9.81
			10.00	=	10.04								Barometric Pressure (mm/Hg)	=	1005.2	1000	=	993.8
													Measurement	=	100.10			

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: 6-15-21 By: Ashish Patel

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 2
Name (Field Staff): A Patel D Dillingham
Date: 6-15-21

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 [signature] Lab Tech 6-15-21
Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc. January 2017

Field Sampling Log

Monitoring Well ID: MW2 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 9.90 Date: 6-15-21

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 6-15-21

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? (Y) / N

Time Purging Initiated: 1005 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 9.90 Total Volume Purged (mL): 3880

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 37.15 Water Level after Sampling (feet btoc): 9.90 (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1052

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)
1007		440	20.53	154.34	20.50	6.31	61.4	4.19	9.90	clear, no odor
1009	290	1020	17.66	161.12	25.23	6.31	60.6	2.93	9.90	" "
1011	290	1600	17.74	163.25	23.28	6.29	60.1	2.87	9.90	" "
1013	300	2200	17.03	163.26	21.43	6.28	59.5	3.13	9.90	" "
1015	280	2760	17.01	164.14	19.79	6.28	61.3	1.84	9.90	" "
1017	280	3320	17.05	164.17	18.64	6.27	58.7	1.80	9.90	" "
1019	280	3880	17.03	165.40	18.10	6.29	55.1	1.55	9.90	" "

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Prepared by: GREDELL Engineering Resources, Inc.

January 2017

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): 9.90

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)
6-15-21 1019	280	17.03	165.40	18.10	6.29	55.1	1.55

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 81°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: 6-15-21 By: Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 1
Name (Field Staff): A Patel D Dillingham
Date: 6-15-21

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 (Signed) Lab Tech (Title) 6-15-21 (Date)

Field Sampling Log

Monitoring Well ID: MW1 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 16.04 Date: 6-15-21

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 6-15-21

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? (Y) / N

Time Purging Initiated: 1114 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 16.04 Total Volume Purged (mL): 7600

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 37.61 Water Level after Sampling (feet btoc): 16.04 (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1220

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)
1116		440	20.21	338.42	8.05	7.33	-35.1	12.11	16.04	Yellow Flake, NO odor
1118	280	1000	17.91	357.05	7.24	7.38	-39.4	12.37	16.04	" "
1120	240	1580	17.29	364.47	6.13	7.40	-42.3	86.89	16.04	" "
1122	280	2140	16.66	371.94	5.19	7.38	-43.1	13.35	16.04	" "
1124	270	2680	16.60	374.13	4.59	7.39	-45.2	11.34	16.04	" "
1126	270	3220	16.74	378.47	4.23	7.39	-46.1	32.54	16.04	" "
1128	270	3760	16.74	379.71	4.12	7.38	-42.7	12.00	16.04	" "
1130	320	4360	16.88	381.30	3.85	7.36	-49.9	16.70	16.04	" "
1132	270	4920	17.00	390.20	3.91	7.35	-56.6	6.60	16.04	" "
1134	270	5440	16.82	401.45	3.87	7.34	-54.4	5.88	16.04	Clear, NO odor
1136	280	6000	16.83	394.32	3.71	7.32	-55.9	5.52	16.04	" "
1138	260	6520	16.87	347.48	3.71	7.32	-56.7	4.38	16.04	" "
1140	280	7080	16.88	402.06	3.67	7.31	-58.0	4.42	16.04	" "
1142	260	7600	16.83	407.82	3.71	7.30	-58.6	4.30	16.04	" "

btoc - below top of casing

Field Sampling Log

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

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing Dedicated: (Y) / N

Water Level @ Sampling (feet btoc): 16.04

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)
6-15-21 1142	260	16.83	457.82	3.71	7.30	-58.6	4.30

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 82°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: 6-15-21 By: Ashish Patel Title: Lab Tech

Appendix 1

Field Sampling Notes
October 20, 2021

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 #: 20160736

	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	10-20-2021	0625	4.00	=	4.00	1413	=	1414.2	Temperature (°C)	=	18.47	= 229.3	Temperature (°C)	=	17.12	0.02	=	0.02
			7.00	=	7.00								Tap Water Source	=	Sikeston City	10.0	=	10.0
			10.00	=	10.00			~~1419.2~~ AP	Standard (mV)	=	229.0		Barometric Pressure (mm/Hg)	=	1009.2	1000	=	1000.0
													Measurement	=	100.11			
End of Day Check	10-20-2021		4.00	=	4.07	1413	=	1421.3	Temperature (°C)	=	18.34	= 219.5	Temperature (°C)	=	19.19	0.02	=	0.01
			7.00	=	7.09								Tap Water Source	=	Sikeston City	10.0	=	9.93
			10.00	=	10.02				Standard (mV)	=	229.0		Barometric Pressure (mm/Hg)	=	1,005.6	1000	=	996.1
													Measurement	=	100.34			

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: 10-20-2021 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: 10-20-2021

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 (Signed) Lab Tech (Title) 10-20-21 (Date)

Field Sampling Log

Monitoring Well ID: MW3 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 12.51 Date: 10-20-2021

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 10-20-2021

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? (Y) / N

Time Purging Initiated: 0738 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 12.51 Total Volume Purged (mL): 4040

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 36.98 Water Level after Sampling (feet btoc): 12.51 (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 0822

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)
0740		260	13.95	201.74	16.69	6.99	33.4	9.55	12.51	Yellow, NO odor flake
0742	210	680	13.49	200.82	13.78	6.64	45.9	7.44	12.51	" "
0744	210	1100	13.21	198.29	12.43	6.50	50.3	5.89	12.51	" "
0746	240	1580	13.10	197.28	11.92	6.47	49.7	2.63	12.51	" "
0748	240	2060	13.04	193.22	11.25	6.48	47.0	3.00	12.51	Clear, NO odor
0750	260	2580	12.99	190.93	10.85	6.50	45.6	0.53	12.51	" "
0752	240	3060	12.95	190.55	10.73	6.50	41.3	1.24	12.51	" "
0754	250	3560	12.90	188.25	10.17	6.52	36.8	1.78	12.51	" "
0756	240	4040	12.85	188.97	10.32	6.52	33.6	1.35	12.51	" "

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Prepared by: GREDELL Engineering Resources, Inc.

January 2017

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): 12.51

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)
10-20-21 0756	240	12.85	188.97	10.32	6.52	33.6	1.35

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 48°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: 10-20-21 By: [signature] Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 2
Name (Field Staff): A Patel D Dillingham
Date: 10-20-2021

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 A Patel Lab Tech 10-20-21
Signed Title Date

Field Sampling Log

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

Initial Water Level (feet btoc): 11.46 Date: 10-20-21

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 10-20-21

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? (Y) / N

Time Purging Initiated: 0846 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 11.46 Total Volume Purged (mL): 2900

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 37.08 Water Level after Sampling (feet btoc): 11.46 (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)
0848		400	15.34	184.93	10.77	6.30	8.1	8.34	11.46	Clear, no odor
0850	270	940	14.96	182.92	9.42	6.27	10.9	5.73	11.46	" "
0852	240	1420	14.78	182.81	8.62	6.26	13.1	3.24	11.46	" "
0854	240	1900	14.72	187.95	7.15	6.25	14.3	1.75	11.46	" "
0856	250	2400	14.76	186.00	8.56	6.25	16.3	1.81	11.46	" "
0858	250	2900	14.85	188.00	5.97	6.25	19.6	1.36	11.46	" "

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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): 11.46

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)
10-20-21 0858	250	14.85	188.00	5.97	6.25	19.6	1.36

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 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: 10-20-21 By: [signature] Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 1
Name (Field Staff): A Patel D Dillingham
Date: 10-20-21

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 (Signed) Lab Tech (Title) 10-20-21 (Date)

Field Sampling Log

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

Initial Water Level (feet btoc): 17.41 Date: 10-20-21

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 10-20-21

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? (Y) / N

Time Purging Initiated: 1021 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 17.41 Total Volume Purged (mL): 4420

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 37.63 Water Level after Sampling (feet btoc): 17.41 (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1110

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)
1023		360	16.30	328.06	10.72	7.18	-62.5	5.32	17.41	Clear, no odor
1025	260	880	15.01	336.13	7.30	7.29	-69.8	2.57	17.41	" "
1027	260	1400	14.58	342.41	6.50	7.31	-75.8	1.47	17.41	" "
1029	250	1900	14.45	349.97	5.96	7.31	-79.5	1.07	17.41	" "
1031	270	2440	14.36	352.96	5.20	7.32	-82.9	1.77	17.41	" "
1033	260	2960	14.39	355.69	4.93	7.34	-86.4	5.02	17.41	" "
1035	240	3440	14.35	357.56	4.79	7.33	-89.0	1.33	17.41	" "
1037	220	3820	14.36	359.65	4.54	7.32	-90.0	1.56	17.41	" "
1039	270	4420	14.43	362.84	4.51	7.33	-91.5	1.31	17.41	" "

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Field Sampling Log

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

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing Dedicated: (Y) / N

Water Level @ Sampling (feet btoc): 17.41

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)
10-20-21 1039	270	14.43	362.84	4.51	7.33	-91.5	1.31

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 63°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: 10-20-21 By: Abish Patel Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 7
Name (Field Staff): A Patel D Dillingham
Date: 10-20-21

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 [signature] Russell Crew Leader 10-20-21
Signed Title Date

Field Sampling Log

Monitoring Well ID: MW7 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 19.95 Date: 10-20-21

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 10-20-21

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? (Y) / N

Time Purging Initiated: 1131 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 19.95 Total Volume Purged (mL): 2760

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 37.21 Water Level after Sampling (feet btoc): 19.95 (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1212

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)
1133		380	17.37	809.94	8.31	7.28	-44.4	2.42	19.95	Clear, no odor
1135	240	860	15.57	841.48	5.28	7.34	-46.1	0.87	19.95	" "
1137	230	1320	14.99	850.05	5.09	7.35	-44.3	0.96	19.95	" "
1139	240	1800	14.77	853.82	4.91	7.34	-45.4	0.85	19.95	" "
1141	250	2300	14.67	852.85	3.79	7.35	-44.9	0.95	19.95	" "
1143	230	2760	14.58	855.28	3.75	7.35	-44.0	0.75	19.95	" "

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Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring Monitoring Well ID: MW 7

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing Dedicated: (Y) / N

Water Level @ Sampling (feet btoc): 19.95

Monitoring Event: Annual ( ) Semi-Annual (Y) 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)
10-20-21 1143	230	14.58	855.28	3.75	7.35	-44.0	0.75

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

AP 72 °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: 10-20-21 By: [signature] Title: Lead Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 9
Name (Field Staff): A Patel O Dillingham
Date: 10-20-21

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 (Signed) | Lab Tech (Title) | 10-20-21 (Date)

Field Sampling Log

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

Initial Water Level (feet btoc): 19.15 Date: 10-20-21

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 10-20-21

Name (Sample Collector): A Patel

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? (Y) / N

Time Purging Initiated: 1305 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 19.15 Total Volume Purged (mL): 2820

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 37.12 Water Level after Sampling (feet btoc): 19.15 (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1343

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)
1307		360	18.22	1,013.7	11.15	7.52	12.6	7.64	19.15	clear, no odor
1309	250	860	16.52	1052.9	8.84	7.52	14.8	1.12	19.15	" "
1311	240	1340	15.85	1057.0	7.18	7.52	14.5	0.79	19.15	" "
1313	240	1820	15.57	1041.9	6.88	7.53	14.2	0.92	19.15	" "
1315	260	2340	15.57	1032.9	6.31	7.52	14.4	0.69	19.15	" "
1317	240	2820	15.70	1020.5	6.16	7.52	13.1	0.87	19.15	" "

btoc - below top of casing

Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring Monitoring Well ID: MW9

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing Dedicated: (Y) / N

Water Level @ Sampling (feet btoc): 19.15

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)
10-20-21 1317	240	15.70	1025	6.16	7.52	131	0.83

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 73°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: 10-20-21 By: [signature] Title: Lead Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 1-R
Name (Field Staff): A Patel D Dillingham
Date: 10-20-21

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 Abhishek Patel (Signed) Lab Tech (Title) 10-20-21 (Date)

Prepared by: GREDELL Engineering Resources, Inc. January 2017

Field Sampling Log

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

Initial Water Level (feet btoc): 18.65 Date: 10-20-21

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 10-20-21

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? (Y) / N

Time Purging Initiated: 1410 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 18.65 Total Volume Purged (mL): 4680

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 38.05 Water Level after Sampling (feet btoc): 18.65 (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1517

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)
1412		300	17.26	491.85	8.84	6.68	30.2	6.12	18.65	clear, no odor
1414	210	720	16.48	495.48	9.23	6.66	30.6	6.59	18.65	" "
1416	230	1180	15.51	507.29	8.37	6.63	31.3	3.04	18.65	" "
1418	240	1660	15.24	515.42	7.41	6.61	31.9	2.31	18.65	" "
1420	260	2180	15.17	517.87	8.10	6.59	33.3	2.01	18.65	" "
1422	250	2680	15.28	519.61	8.18	6.57	32.6	1.81	18.65	" "
1424	240	3160	15.13	518.84	7.36	6.56	32.3	2.78	18.65	" "
1426	250	3660	15.22	520.75	6.92	6.56	31.8	4.40	18.65	" "
1428	270	4200	15.21	515.54	6.35	6.55	31.4	4.33	18.65	" "
1430	240	4680	15.25	511.27	6.41	6.55	32.2	4.62	18.65	" "

btoc - below top of casing

Field Sampling Log

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

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing Dedicated: (Y) / N

Water Level @ Sampling (feet btoc): 18-65

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)
10-20-21 1430	240	15.25	511.27	6.41	6.55	32.2	4.62

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 75 °F

Sample Characteristics: Clear, Colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:

Collected Field ~~Blank~~ AP Duplicate

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

Date: 10-20-21 By: Ashish Patel Title: Lab Tech

Appendix 1

Field Sampling Notes
December 27, 2021 Resample

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 #: 20160736 6

	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)	=	13.34	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)	=	994.35	1000	=	1000.0
														Measurement	=	99.93			
End of Day Check	12-27-2021	1330	4.00	=	4.10	1413	=	1374.2	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	=	Silkeston City	10.0	=	9.94
			10.00	=	10.05									Barometric Pressure (mm/Hg)	=	994.37	1000	=	994.9
														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 2
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 [signature] Signed — Lab Tech Title — 12-27-21 Date

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 Dillingham

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 (1) ✓

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	~~300~~ 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 cloudy a little bit

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: [signature] Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 9
Name (Field Staff): A Patel O 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 [signature] Lab Tech 12-27-21
Signed Title Date

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 Dillingham

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	8.88	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

Appendix 1

Field Sampling Notes
MW-1R Background - October 20, 2021

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 #: 20160736

	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	10-20-2021	0625	4.00	=	4.00	1413	=	1414.2	Temperature (°C)	=	18.47	= 229.3	Temperature (°C)	=	17.12	0.02	=	0.02
			7.00	=	7.00								Tap Water Source	=	Sikeston City	10.0	=	10.0
			10.00	=	10.00			~~1419.2~~ AP	Standard (mV)	=	229.0		Barometric Pressure (mm/Hg)	=	1009.2	1000	=	1000.0
													Measurement	=	100.11			
End of Day Check	10-20-2021		4.00	=	4.07	1413	=	1421.3	Temperature (°C)	=	18.34	= 219.5	Temperature (°C)	=	19.19	0.02	=	0.01
			7.00	=	7.09								Tap Water Source	=	Sikeston City	10.0	=	9.93
			10.00	=	10.02				Standard (mV)	=	229.0		Barometric Pressure (mm/Hg)	=	1,005.6	1000	=	996.1
													Measurement	=	100.34			

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: 10-20-2021 By: Ashish Patel

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 1-R
Name (Field Staff): A Patel D Dillingham
Date: 10-20-21

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 Abhishek Patel (Signed) Lab Tech (Title) 10-20-21 (Date)

Prepared by: GREDELL Engineering Resources, Inc. January 2017

Field Sampling Log

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

Initial Water Level (feet btoc): 18.65 Date: 10-20-21

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 10-20-21

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? (Y) / N

Time Purging Initiated: 1410 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 18.65 Total Volume Purged (mL): 4680

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 38.05 Water Level after Sampling (feet btoc): 18.65 (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1517

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)
1412		300	17.26	491.85	8.84	6.68	30.2	6.12	18.65	clear, no odor
1414	210	720	16.48	495.48	9.23	6.66	30.6	6.59	18.65	" "
1416	230	1180	15.51	507.29	8.37	6.63	31.3	3.04	18.65	" "
1418	240	1660	15.24	515.42	7.41	6.61	31.9	2.31	18.65	" "
1420	260	2180	15.17	517.87	8.10	6.59	33.3	2.01	18.65	" "
1422	250	2680	15.28	519.61	8.18	6.57	32.6	1.81	18.65	" "
1424	240	3160	15.13	518.84	7.36	6.56	32.3	2.78	18.65	" "
1426	250	3660	15.22	520.75	6.92	6.56	31.8	4.40	18.65	" "
1428	270	4200	15.21	515.54	6.35	6.55	31.4	4.33	18.65	" "
1430	240	4680	15.25	511.27	6.41	6.55	32.2	4.62	18.65	" "

btoc - below top of casing

Field Sampling Log

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

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing Dedicated: (Y) / N

Water Level @ Sampling (feet btoc): 18-65

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)
10-20-21 1430	240	15.25	511.27	6.41	6.55	32.2	4.62

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 75 °F

Sample Characteristics: Clear, Colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:

Collected Field ~~Blank~~ AP Duplicate

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

Date: 10-20-21 By: Ashish Patel Title: Lab Tech

Appendix 1

Field Sampling Notes
MW-1R Background – November 1, 2021

Field Instrumentation Calibration Log

Facility: SBMU SPS CCR Groundwater Sampling

Calibrated by: Ashish Patel

Field Instruments: In-Situ smarTROLL Field Meter

S/N #: U74247

HF scientific, inc. Micro TPI Field Portable Turbidimeter

S/N #: 20607366

	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	=	102.37			

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

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 1R
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 [signature] Lab Tech 11-01-2021
Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc. January 2017

Field Sampling Log

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

Initial Water Level (feet btoc): 18.75 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: 1440 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 18.75 Total Volume Purged (mL): 3480

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 38.05 Water Level after Sampling (feet btoc): 18.75 (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1542

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)
1442		380	14.72	609.77	1.13	6.81	13.9	2.58	18.75	Clear, No Odor
1444	250	880	13.68	614.17	0.97	6.64	17.9	2.40	18.75	" "
1446	250	1380	13.31	693.19	0.84	6.58	18.9	2.70	18.75	" "
1448	260	1900	13.17	672.31	0.74	6.56	18.6	3.24	18.75	" "
1450	270	2440	13.28	552.29	0.70	6.50	18.5	4.80	18.75	" "
1452	260	2960	13.04	540.24	0.64	6.55	18.3	4.56	18.75	" "
1454	260	3480	12.98	532.44	0.60	6.55	16.9	5.38	18.75	" "

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): 18.75

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 1454	260	12.98	532.44	0.60	6.55	16.9	5.38

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 57°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: [signature] Title: Lab Tech

Appendix 1

Field Sampling Notes
MW-1R Background - November 16, 2021

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 #: 20160736G

	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	11-16-2021	0745	4.00	=	4.00	1413	=	1414.9	Temperature (°C)	=	16.68	= 229.5	Temperature (°C)	=	16.48	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)	=	1003.9	1000	=	1000.0
													Measurement	=	100.12			
End of Day Check	11-16-2021	1040	4.00	=	4.06	1413	=	1414.2	Temperature (°C)	=	16.74	= 227.1	Temperature (°C)	=	14.2	0.02	=	0.02
			7.00	=	7.08				Standard (mV)	=	229.0		Tap Water Source	=	Sikeston City	10.0	=	9.98
			10.00	=	10.07								Barometric Pressure (mm/Hg)	=	1004.3	1000	=	1004
													Measurement	=	99.51			

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: 11-16-21 By: Ashish Patel

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 1R
Name (Field Staff): A Patel D Dillingham
Date: 11-16-21

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: A Patel (Signed) Lead Tech (Title) 11-16-21 (Date)

Field Sampling Log

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

Initial Water Level (feet btoc): 18.85 Date: 11-16-2021

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 11-16-2021

Name (Sample Collector): D Dillingham.

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? (Y) / N

Time Purging Initiated: 0841 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 18.85 Total Volume Purged (mL): 3300

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 38.06 Water Level after Sampling (feet btoc): 18.85 (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 0942

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)
0843		320	12.81	526.19	1.34	6.95	35.2	1.10	18.85	clear, no odor
0845	240	800	12.23	527.68	1.37	6.72	36.8	1.63	18.85	" "
0847	250	1300	11.66	536.11	1.20	6.62	40.4	1.29	18.85	" "
0849	250	1800	11.53	534.99	1.15	6.57	41.7	1.29	18.85	" "
0851	250	2300	11.51	537.63	0.81	6.55	41.8	1.11	18.85	" "
0853	250	2800	11.48	535.64	0.80	6.54	41.8	1.27	18.85	" "
0855	250	3300	11.47	540.42	0.94	6.54	41.9	1.27	18.85	" "

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): 18.85

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)
11-16-21 0855	250	11.47	540.42	0.94	6.54	41.9	1.27

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 52°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: 11-16-21 By: [signature] Title: Lab Tech

Appendix 1

Field Sampling Notes
MW-1R Background – December 7, 2021

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 #:** 2016007366

	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	12-7-2021	0800	4.00	=	4.00	1413	=	1412.2	Temperature (°C)	=	15.45	= 229.6	Temperature (°C)	=	14.93	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)	=	1011.9	1000	=	1000.0
													Measurement	=	99.95			
End of Day Check	12-7-2021		4.00	=	4.05	1413	=	1457.2	Temperature (°C)	=	15.11	= 229.0	Temperature (°C)	=	13.53	0.02	=	0.02
			7.00	=	7.05				Standard (mV)	=	229.0		Tap Water Source	=	Sikeston City	10.0	=	10.23
			10.00	=	10.07								Barometric Pressure (mm/Hg)	=	1011.8	1000	=	994.7
													Measurement	=	96.79			

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: 12-7-2021 By: Ashish Patel

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 1-R
Name (Field Staff): A Patel D Dillingham
Date: 12-7-21

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 [signature] Lab Tech 12-7-21
Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc. January 2017

Field Sampling Log

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

Initial Water Level (feet btoc): 18.90 Date: 12-7-21

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 12-7-21

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? (Y) / N

Time Purging Initiated: 0846 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 18.90 Total Volume Purged (mL): 2740

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 38.06 Water Level after Sampling (feet btoc): 18.90 (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 0947

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)
0848		320	9.72	611.18	1.46	7.16	-2.5	1.09	18.90	clear, no odor
0850	240	800	9.35	622.85	1.14	6.82	-1.5	1.97	18.90	" "
0852	230	1260	9.23	604.78	1.02	6.68	4.1	1.35	18.90	" "
0854	250	1760	9.15	592.70	0.95	6.61	7.4	1.00	18.90	" "
0856	230	2220	9.18	579.67	0.90	6.59	9.5	0.91	18.90	" "
0858	260	2740	9.14	576.38	0.98	6.58	11.2	0.91	18.90	" "

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): 18.90

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)
12-7-21 0858	260	9.14	576.32	0.98	6.58	11.2	0.91

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, 32°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: 12-7-21 By: Josh Foster Title: Lab Tech

Appendix 1

Field Sampling Notes
MW-1R Background - December 27, 2021

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 #: 20160736 6

	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)	=	13.34	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)	=	994.35	1000	=	1000.0
														Measurement	=	99.93			
End of Day Check	12-27-2021	1330	4.00	=	4.10	1413	=	1374.2	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	=	Silkeston City	10.0	=	9.94
			10.00	=	10.05									Barometric Pressure (mm/Hg)	=	994.37	1000	=	994.9
														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 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 A Patel (Signed) Lab Tech (Title) 12-27-21 (Date)

Prepared by: GREDELL Engineering Resources, Inc. January 2017

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	1.22	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 1204	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 62° 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: [signature] Title: Lab Tech

Appendix 1

Field Sampling Notes
MW-1R Background - January 17, 2022

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	01-17-2020	0820	4.00	=	4.00	1413	=	1411.9	Temperature (°C)	=	11.33	=	229.4	Temperature (°C)	=	10.69	0.02	=	0.02
			7.00	=	7.00				Standard (mV)	=	229.0			Tap Water Source	=	Silverton City	10.0	=	10.0
			10.00	=	10.00									Barometric Pressure (mm/Hg)	=	1001.7	1000	=	1000.2
														Measurement	=	100.09			
End of Day Check	01-17-2020	1040	4.00	=	4.05	1413	=	1444.7	Temperature (°C)	=	10.74	=	227.9	Temperature (°C)	=	6.44	0.02	=	0.02
			7.00	=	7.08				Standard (mV)	=	229.0			Tap Water Source	=	Silverton City	10.0	=	10.04
			10.00	=	10.09									Barometric Pressure (mm/Hg)	=	1003.7	1000	=	988.3
														Measurement	=	101.47			

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: 1-17-22 By: Ashish Patel

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 1R
Name (Field Staff): A Patel, D Dillingham
Date: 1-17-22

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 [signature] Lab Tech 1-17-22
Signed Title Date

Field Sampling Log

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

Initial Water Level (feet btoc): 18.00 Date: 1-17-22

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 1-17-22

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? (Y) / N

Time Purging Initiated: 0908 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 18.00 Total Volume Purged (mL): 2960

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 38.06 Water Level after Sampling (feet btoc): 18 (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1011

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)
0910		300	4.16	693.71	1.80	7.06	11.9	1.10	18.00	clear, no odor
0912	200	700	4.26	697.90	1.40	6.80	-15.8	1.77	18.00	" "
0914	200	1100	4.36	704.81	1.48	6.65	-9.0	1.53	18.00	" "
0916	250	1600	4.38	705.62	1.33	6.61	-5.5	1.53	18.00	" "
0918	200	2000	4.44	706.32	1.00	6.58	-3.0	1.40	18.00	" "
0920	240	2480	4.50	714.67	0.92	6.57	-1.2	1.35	18.00	" "
0922	240	2960	4.56	707.25	1.02	6.56	-0.3	1.46	18.00	" "

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): 18.00

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)
1-17-22 0922	240	4.56	707.25	1.02	6.56	-0.3	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: Cloudy 31°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: 1-17-22 By: Ashish Patel Title: Lab Tech

Appendix 1

Field Sampling Notes
MW-1R Background - February 7, 2022

Field Instrumentation Calibration Log

Facility: SBMU SPS CCR Groundwater Sampling Calibrated by: Joshua Perez

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	2/7/2022	0745	4.00	=	4.00	1413	=	1410.3	Temperature (°C)	=	9.53	= 229.9	Temperature (°C)	=	9.69	0.02	=	0.02
			7.00	=	7.00				Standard (mV)	=	229		Tap Water Source	=	Sikeston City	10.0	=	10.0
			10.00	=	10.00								Barometric Pressure (mm/Hg)	=	1013.3	1000	=	1000.0
													Measurement	=	99.97			
End of Day Check	2/7/2022	1100	4.00	=	4.04	1413	=	1473.7	Temperature (°C)	=	9.34	= 228.8	Temperature (°C)	=	6.38	0.02	=	0.03
			7.00	=	7.08				Standard (mV)	=	229		Tap Water Source	=	Sikeston City	10.0	=	9.92
			10.00	=	10.09								Barometric Pressure (mm/Hg)	=	1014.0	1000	=	995.4
													Measurement	=	101.19			

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: 2/7/22 By: Joshua Perez

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW-1R
Name (Field Staff): Ashish Patel D Dillingham
Date: 2-7-22

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 Ashish Patel (Signed) Lead Tech (Title) 2-7-22 (Date)

Field Sampling Log

Monitoring Well ID: MW1R Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 18.12 Date: 2-7-2022

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 2-7-2022

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? (Y) / N

Time Purging Initiated: 0902 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 18.12 Total Volume Purged (mL): 3700

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 38.28 Water Level after Sampling (feet btoc): 18.12 (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 10.08

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)
0904		340	2.98	922.67	1.91	7.20	32.6	1.42	18.12	CLEAR, NO ODOR
0906	230	800	3.06	936.20	1.38	6.89	15.2	1.36	18.12	" "
0908	240	1280	3.12	929.74	1.29	6.72	15.4	1.33	18.12	" "
0910	240	1760	3.14	920.31	1.05	6.69	18.2	1.08	18.12	" "
0912	250	2260	3.15	908.74	0.92	6.58	19.7	1.26	18.12	" "
0914	240	2740	3.15	889.08	1.05	6.55	21.6	1.14	18.12	" "
0916	250	3240	3.14	838.54	0.87	6.55	21.5	1.05	18.12	" "
0918	230	3700	3.14	794.36	0.84	6.55	21.9	1.04	18.12	" "

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Prepared by: GREDELL Engineering Resources, Inc.

January 2017

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): 18.12

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)
2-7-22 0918	230	3.14	794.36	0.84	6.55	21.9	1.04

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 32°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: 2-7-22 By: [signature] Title: Lab Tech

Appendix 1

Field Sampling Notes
MW-1R Background - March 2, 2022

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 #: 20160736G

	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	03-02-2022	0745	4.00	=	4.00	1413	=	1414.4	Temperature (°C)	=	6.74	=	229.6	Temperature (°C)	=	6.79	0.02	=	0.02
			7.00	=	7.00									Tap Water Source	=	Siloam City	10.0	=	10.0
			10.00	=	10.00				Standard (mV)	=	229.0			Barometric Pressure (mm/Hg)	=	1006.7	1000	=	1000.0
														Measurement	=	100.03			
End of Day Check	03-02-2022	1030	4.00	=	4.06	1413	=	1343.9	Temperature (°C)	=	6.89	=	226.5	Temperature (°C)	=	6.78	0.02	=	0.02
			7.00	=	7.12									Tap Water Source	=	Siloam City	10.0	=	10.28
			10.00	=	10.10				Standard (mV)	=	229.0			Barometric Pressure (mm/Hg)	=	1007.1	1000	=	1003
														Measurement	=	101.24			

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: 3-2-22 By: Ashish Patel

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 1R
Name (Field Staff): A Patel D Dillingham
Date: 3-2-2022

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 [signature] Lab Tech 3-2-2022
Signed Title Date

Field Sampling Log

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

Initial Water Level (feet btoc): 17.31 Date: 3-2-2022

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 3-2-2022

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? (Y) / N

Time Purging Initiated: 0856 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 17.31 Total Volume Purged (mL): 3560

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 38.09 Water Level after Sampling (feet btoc): 17.31 (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 0956

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)
0858		460	2.70	724.41	2.14	6.94	20.9	3.15	17.31	clear, no odor
0900	260	980	2.27	667.15	1.46	6.73	26.2	8.87	17.31	white flake, no odor
0902	250	1480	2.16	595.49	1.11	6.64	31.1	4.93	17.31	" "
0904	260	2000	2.11	541.38	1.08	6.62	32.1	16.65	17.31	" "
0906	270	2540	2.10	523.81	1.01	6.60	34.1	4.41	17.31	white flake, no odor
0908	250	3040	2.09	518.81	1.03	6.58	35.3	4.43	17.31	" "
0910	260	3560	2.07	514.97	0.91	6.57	36.1	4.31	17.31	" "

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Prepared by: GREDELL Engineering Resources, Inc.

January 2017

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): 17.31

Monitoring Event: Annual ( ) Semi-Annual ( ) Quarterly ( ) Monthly ( ) Other 4

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)
03-2-2022 0910	260	2.07	514.97	0.91	6.57	36.1	4.31

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 53 °F

Sample Characteristics: White Flake, Colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:

Collect Field Duplicate

Had some Yellow Flake in Sample bottle during Sampling.

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

Date: 3-2-2022 By: Ashish Patel Title: Lab Tech

Appendix 2

Laboratory Analytical Results

Appendix 2

Laboratory Analytical Results
April 17, 2021

June 11, 2021

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

Dear Luke St Mary:

Please find enclosed the **revised** 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, Inc.

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, Inc. 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,

David J 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 ED03824

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: ED03824-01
Name: MW-1
Matrix: Ground Water - Grab

Sampled: 04/17/21 10:48
Received: 04/20/21 09:40
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	3.5	mg/L	Q3	04/26/21 10:46	1	1.0	04/26/21 10:46	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		04/26/21 10:46	1	0.250	04/26/21 10:46	CRD	EPA 300.0 REV 2.1
Sulfate	37	mg/L	Q4	04/26/21 11:40	10	10	04/26/21 11:40	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	200	mg/L		04/21/21 13:06	1	26	04/21/21 16:42	BMA	SM 2540C
Total Metals - PIA									
Boron	500	ug/L		04/26/21 14:13	5	10	04/29/21 09:14	JMW	EPA 6020A
Calcium	53000	ug/L		04/26/21 14:13	5	200	04/29/21 09:14	JMW	EPA 6020A

Sample: ED03824-02
Name: MW-2
Matrix: Ground Water - Grab

Sampled: 04/17/21 08:42
Received: 04/20/21 09:40
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	3.8	mg/L		04/28/21 01:37	1	1.0	04/28/21 01:37	EJO	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		04/28/21 01:37	1	0.250	04/28/21 01:37	EJO	EPA 300.0 REV 2.1
Sulfate	17	mg/L		04/28/21 14:23	5	5.0	04/28/21 14:23	EJO	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	150	mg/L	H	05/11/21 08:51	1	26	05/11/21 12:23	BCR	SM 2540C
Total Metals - PIA									
Boron	41	ug/L		04/26/21 14:13	5	10	04/29/21 09:18	JMW	EPA 6020A
Calcium	19000	ug/L		04/26/21 14:13	5	200	04/29/21 09:18	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: ED03824-03
Name: MW-3
Matrix: Ground Water - Grab

Sampled: 04/17/21 07:37
Received: 04/20/21 09:40
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	< 1.0	mg/L	Q3	04/26/21 11:58	1	1.0	04/26/21 11:58	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		04/26/21 11:58	1	0.250	04/26/21 11:58	CRD	EPA 300.0 REV 2.1
Sulfate	15	mg/L	Q4	04/26/21 12:52	10	10	04/26/21 12:52	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	150	mg/L		04/21/21 13:06	1	26	04/21/21 16:42	BMA	SM 2540C
Total Metals - PIA									
Boron	16	ug/L		04/26/21 14:13	5	10	04/29/21 09:21	JMW	EPA 6020A
Calcium	17000	ug/L		04/26/21 14:13	5	200	04/29/21 09:21	JMW	EPA 6020A

Sample: ED03824-04
Name: MW-7
Matrix: Ground Water - Grab

Sampled: 04/17/21 12:28
Received: 04/20/21 09:40
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	1.8	mg/L		04/26/21 13:10	1	1.0	04/26/21 13:10	CRD	EPA 300.0 REV 2.1
Fluoride	0.522	mg/L		04/26/21 13:10	1	0.250	04/26/21 13:10	CRD	EPA 300.0 REV 2.1
Sulfate	160	mg/L		04/26/21 14:23	25	25	04/26/21 14:23	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	520	mg/L		04/21/21 13:06	1	26	04/21/21 16:42	BMA	SM 2540C
Total Metals - PIA									
Boron	2200	ug/L		04/26/21 14:13	5	10	05/11/21 10:02	JMW	EPA 6020A
Calcium	120000	ug/L		04/26/21 14:13	5	200	04/29/21 09:25	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: ED03824-05
Name: MW-9
Matrix: Ground Water - Grab

Sampled: 04/17/21 13:26
Received: 04/20/21 09:40
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	21	mg/L		04/23/21 15:04	10	10	04/23/21 15:04	CRD	EPA 300.0 REV 2.1
Fluoride	0.775	mg/L		05/11/21 21:30	1	0.250	05/11/21 21:30	CRD	EPA 300.0 REV 2.1
Sulfate	250	mg/L		04/23/21 15:23	50	50	04/23/21 15:23	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	630	mg/L		04/21/21 13:10	1	26	04/21/21 14:48	BMA	SM 2540C
Total Metals - PIA									
Boron	6200	ug/L		04/26/21 14:13	5	10	04/29/21 10:05	JMW	EPA 6020A
Calcium	57000	ug/L		04/26/21 14:13	5	200	04/29/21 10:05	JMW	EPA 6020A

Sample: ED03824-06
Name: DUPLICATE WELL
Matrix: Ground Water - Field Duplicate

Sampled: 04/17/21 00:00
Received: 04/20/21 09:40
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	4.1	mg/L		04/23/21 16:17	1	1.0	04/23/21 16:17	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		04/23/21 16:17	1	0.250	04/23/21 16:17	CRD	EPA 300.0 REV 2.1
Sulfate	38	mg/L		04/23/21 16:35	5	5.0	04/23/21 16:35	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	210	mg/L		04/21/21 13:10	1	26	04/21/21 14:48	BMA	SM 2540C
Total Metals - PIA									
Boron	550	ug/L		04/26/21 14:13	5	10	04/29/21 10:09	JMW	EPA 6020A
Calcium	52000	ug/L		04/26/21 14:13	5	200	04/29/21 10:09	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: ED03824-07
Name: FIELD BLANK
Matrix: Ground Water - Field Blank

Sampled: 04/17/21 12:28
Received: 04/20/21 09:40
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	< 1.0	mg/L		04/28/21 00:04	1	1.0	04/28/21 00:04	EJO	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		04/28/21 00:04	1	0.250	04/28/21 00:04	EJO	EPA 300.0 REV 2.1
Sulfate	< 1.0	mg/L		04/28/21 00:04	1	1.0	04/28/21 00:04	EJO	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	< 17	mg/L	H	05/11/21 08:55	1	17	05/11/21 12:23	BCR	SM 2540C
Total Metals - PIA									
Boron	10	ug/L		04/26/21 14:13	5	10	05/12/21 12:46	JMW	EPA 6020A
Calcium	< 200	ug/L		04/26/21 14:13	5	200	04/29/21 10:12	JMW	EPA 6020A

Appendix 2

Laboratory Analytical Results
June 15, 2021 Resample

July 16, 2021

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

RE: Sikeston Bottom Ash App III and App IV 2019

Dear Luke St Mary:

Please find enclosed the analytical results for the **4** sample(s) the laboratory received on **6/17/21 10:10 am** and logged in under work order **EF03688**. 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, Inc.

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, Inc. 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 J Schindler

Gail 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 EF03688

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: EF03688-01
Name: MW-1
Matrix: Ground Water - Grab

Sampled: 06/15/21 11:42
Received: 06/17/21 10:10
PO #: 25814

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Sulfate	38	mg/L		06/21/21 19:02	10	10	06/21/21 19:02	CRD	EPA 300.0 REV 2.1
Total Metals - PIA									
Calcium	48	mg/L		06/24/21 14:31	5	0.20	06/25/21 14:31	JMW	EPA 6020A

Sample: EF03688-02
Name: DUPLICATE
Matrix: Ground Water - Grab

Sampled: 06/15/21 11:42
Received: 06/17/21 10:10
PO #: 25814

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Sulfate	37	mg/L		06/21/21 19:56	10	10	06/21/21 19:56	CRD	EPA 300.0 REV 2.1
Total Metals - PIA									
Calcium	47	mg/L		06/24/21 14:31	5	0.20	06/25/21 14:35	JMW	EPA 6020A

Sample: EF03688-03
Name: MW-2
Matrix: Ground Water - Grab

Sampled: 06/15/21 10:19
Received: 06/17/21 10:10
PO #: 25814

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	350	mg/L		06/18/21 08:08	1	26	06/18/21 11:20	BCR	SM 2540C

ANALYTICAL RESULTS

Sample: EF03688-04
Name: FIELD BLANK
Matrix: Ground Water - Field Blank

Sampled: 06/15/21 10:19
Received: 06/17/21 10:10
PO #: 25814

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Sulfate	< 1.0	mg/L		06/21/21 20:14	1	1.0	06/21/21 20:14	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	< 17	mg/L		06/18/21 08:08	1	17	06/18/21 11:20	BCR	SM 2540C
Total Metals - PIA									
Calcium	0.20	mg/L		06/24/21 14:31	5	0.20	06/25/21 14:39	JMW	EPA 6020A

Appendix 2

Laboratory Analytical Results
October 20, 2021

December 10, 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,

David 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 EJ04453

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
YES	Case narrative provided

Case Narrative

Due to a lab accident, we do not have Field Blank sample to complete analysis for Cl, F, SO4 or TDS.

ANALYTICAL RESULTS

Sample: EJ04453-01
Name: MW-1
Matrix: Ground Water - Grab

Sampled: 10/20/21 10:39
Received: 10/22/21 10:30
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	3.1	mg/L		11/01/21 16:26	1	1.0	11/01/21 19:45	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		11/01/21 19:45	1	0.250	11/01/21 19:45	CRD	EPA 300.0 REV 2.1
Sulfate	28	mg/L		11/01/21 20:03	10	10	11/01/21 20:03	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	230	mg/L		10/26/21 09:49	1	26	10/26/21 13:28	JAA	SM 2540C
Total Metals - PIA									
Boron	410	ug/L		11/01/21 15:59	5	10	11/03/21 09:53	JMW	EPA 6020A
Calcium	41000	ug/L		11/01/21 15:59	5	200	11/03/21 09:53	JMW	EPA 6020A

Sample: EJ04453-02
Name: MW-2
Matrix: Ground Water - Grab

Sampled: 10/20/21 08:58
Received: 10/22/21 10:30
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	4.2	mg/L		11/01/21 20:21	1	1.0	11/01/21 20:21	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		11/01/21 20:21	1	0.250	11/01/21 20:21	CRD	EPA 300.0 REV 2.1
Sulfate	15	mg/L	Q4	11/01/21 21:15	10	10	11/01/21 21:15	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	140	mg/L		10/26/21 09:49	1	26	10/26/21 13:28	JAA	SM 2540C
Total Metals - PIA									
Boron	64	ug/L		11/01/21 15:59	5	10	11/03/21 09:57	JMW	EPA 6020A
Calcium	19000	ug/L		11/01/21 15:59	5	200	11/03/21 09:57	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ04453-03
Name: MW-3
Matrix: Ground Water - Grab

Sampled: 10/20/21 07:56
Received: 10/22/21 10:30
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	< 1.0	mg/L	Q3	11/01/21 21:33	1	1.0	11/01/21 21:33	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		11/01/21 21:33	1	0.250	11/01/21 21:33	CRD	EPA 300.0 REV 2.1
Sulfate	13	mg/L	Q4	11/01/21 23:04	5	5.0	11/01/21 23:04	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	130	mg/L		10/26/21 09:49	1	26	10/26/21 13:28	JAA	SM 2540C
Total Metals - PIA									
Boron	30	ug/L		11/01/21 15:59	5	10	11/03/21 10:00	JMW	EPA 6020A
Calcium	14000	ug/L		11/01/21 15:59	5	200	11/03/21 10:00	JMW	EPA 6020A

Sample: EJ04453-04
Name: MW-7
Matrix: Ground Water - Grab

Sampled: 10/20/21 11:43
Received: 10/22/21 10:30
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	3.7	mg/L		11/01/21 23:22	1	1.0	11/01/21 23:22	CRD	EPA 300.0 REV 2.1
Fluoride	0.375	mg/L		11/01/21 23:22	1	0.250	11/01/21 23:22	CRD	EPA 300.0 REV 2.1
Sulfate	160	mg/L		11/01/21 23:40	25	25	11/01/21 23:40	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	520	mg/L		10/26/21 09:49	1	26	10/26/21 13:28	JAA	SM 2540C
Total Metals - PIA									
Boron	1900	ug/L		11/01/21 15:59	5	10	11/03/21 10:04	JMW	EPA 6020A
Calcium	120000	ug/L		11/01/21 15:59	5	200	11/03/21 10:04	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ04453-05
Name: MW-9
Matrix: Ground Water - Grab

Sampled: 10/20/21 13:17
Received: 10/22/21 10:30
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	18	mg/L		11/02/21 00:16	5	5.0	11/02/21 00:16	CRD	EPA 300.0 REV 2.1
Fluoride	1.33	mg/L		11/01/21 23:58	1	0.250	11/01/21 23:58	CRD	EPA 300.0 REV 2.1
Sulfate	240	mg/L		11/02/21 11:45	50	50	11/02/21 11:45	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	490	mg/L	H, M	12/08/21 14:07	1	26	12/08/21 16:35	JAA	SM 2540C
Total Metals - PIA									
Boron	5500	ug/L		11/01/21 15:59	5	10	11/03/21 10:08	JMW	EPA 6020A
Calcium	57000	ug/L		11/01/21 15:59	5	200	11/03/21 10:08	JMW	EPA 6020A

Sample: EJ04453-06
Name: DUPLICATE WELL
Matrix: Ground Water - Grab

Sampled: 10/20/21 00:00
Received: 10/22/21 10:30
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	3.1	mg/L		11/02/21 00:52	1	1.0	11/02/21 00:52	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		11/02/21 00:52	1	0.250	11/02/21 00:52	CRD	EPA 300.0 REV 2.1
Sulfate	30	mg/L		11/02/21 01:10	5	5.0	11/02/21 01:10	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	210	mg/L		10/27/21 11:09	1	26	10/27/21 12:40	ADM	SM 2540C
Total Metals - PIA									
Boron	470	ug/L		11/01/21 15:59	5	10	11/03/21 10:11	JMW	EPA 6020A
Calcium	42000	ug/L		11/01/21 15:59	5	200	11/03/21 10:11	JMW	EPA 6020A

Sample: EJ04453-07
Name: FIELD BLANK
Matrix: Ground Water - Field Blank

Sampled: 10/20/21 13:17
Received: 10/22/21 10:30
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Total Metals - PIA									
Boron	35	ug/L		11/01/21 15:59	5	10	11/03/21 10:15	JMW	EPA 6020A
Calcium	< 200	ug/L		11/01/21 15:59	5	200	11/03/21 10:15	JMW	EPA 6020A

Appendix 2

Laboratory Analytical Results
December 27, 2021 Resample

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,

David J 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 EL04894

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: EL04894-01
Name: MW-2
Matrix: Ground Water - Regular Sample

Sampled: 12/27/21 10:07
Received: 12/29/21 11:40
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Total Metals - PIA									
Boron	43	ug/L		01/04/22 07:53	5	10	01/05/22 10:38	JMW	EPA 6020A

Sample: EL04894-02
Name: MW-9
Matrix: Ground Water - Regular Sample

Sampled: 12/27/21 11:20
Received: 12/29/21 11:40
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Fluoride	1.79	mg/L		01/03/22 15:51	1	0.250	01/03/22 15:51	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	520	mg/L	M	01/03/22 09:57	1	26	01/03/22 11:18	JAA	SM 2540C

Sample: EL04894-03
Name: DUPLICATE
Matrix: Ground Water - Regular Sample

Sampled: 12/27/21 00:00
Received: 12/29/21 11:40
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Fluoride	1.80	mg/L		01/03/22 17:21	1	0.250	01/03/22 17:21	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	570	mg/L		01/03/22 09:57	1	26	01/03/22 11:18	JAA	SM 2540C

ANALYTICAL RESULTS

Sample: EL04894-04
Name: FIELD BLANK
Matrix: Ground Water - Regular Sample

Sampled: 12/27/21 10:07
Received: 12/29/21 11:40
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Fluoride	< 0.250	mg/L		01/03/22 17:40	1	0.250	01/03/22 17:40	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	< 17	mg/L		01/03/22 09:57	1	17	01/03/22 11:18	JAA	SM 2540C
Total Metals - PIA									
Boron	< 10	ug/L		01/04/22 07:53	5	10	01/05/22 10:42	JMW	EPA 6020A

Appendix 2

Laboratory Analytical Results
MW-1R Background - October 20, 2021

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

March 15, 2022

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

RE: SIKESTON FLY ASH APP III & IV 2021

Dear Luke St Mary:

Please find enclosed the **revised** analytical results for the **2** sample(s) the laboratory received on **10/22/21 10:30 am** and logged in under work order **EJ04431**. 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 J 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 EJ04431

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
YES	Short hold time analysis
YES	Current PDC COC submitted
NO	Case narrative provided

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

ANALYTICAL RESULTS

Sample: EJ04431-01
Name: MW-1R
Matrix: Ground Water - Grab

Sampled: 10/20/21 14:30
Received: 10/22/21 10:30

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical - Greensburg									
Radium 226 - subcontracted	0.184	pCi/L			1	0.166	11/19/21 17:11		904.0 903.1
Radium 228 - subcontracted	-0.0411	pCi/L			1	0.737	11/22/21 14:36		904.0 903.1

Sample: EJ04431-02
Name: MW-1R DUPLICATE
Matrix: Ground Water - Grab

Sampled: 10/20/21 14:30
Received: 10/22/21 10:30

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical - Greensburg									
Radium 226 - subcontracted	0.125	pCi/L			1	0.675	11/19/21 17:19		904.0 903.1
Radium 228 - subcontracted	0.182	pCi/L			1	0.734	11/22/21 14:36		904.0 903.1

ANALYTICAL RESULTS

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

ANALYTICAL RESULTS

Sample: EJ04431-01
Name: MW-1R
Matrix: Ground Water - Grab

Sampled: 10/20/21 14:30
Received: 10/22/21 10:30

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	11	mg/L		11/03/21 21:38	10	10	11/03/21 21:38	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		11/03/21 21:20	1	0.250	11/03/21 21:20	CRD	EPA 300.0 REV 2.1
Sulfate	120	mg/L		11/05/21 13:33	25	25	11/05/21 13:33	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	330	mg/L		10/27/21 13:39	1	26	10/27/21 15:35	ADM	SM 2540C
Trivalent chromium	< 0.0040	mg/L		11/01/21 11:22	1	0.0040	11/01/21 15:09	KMC	calculation
Total Metals - PIA									
Antimony	< 3.0	ug/L		11/01/21 15:59	5	3.0	11/03/21 09:46	JMW	EPA 6020A
Arsenic	1.3	ug/L		11/01/21 15:59	5	1.0	11/03/21 09:46	JMW	EPA 6020A
Barium	38	ug/L		11/01/21 15:59	5	1.0	11/03/21 09:46	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		11/01/21 15:59	5	1.0	11/03/21 09:46	JMW	EPA 6020A
Boron	2100	ug/L		11/01/21 15:59	5	10	11/03/21 09:46	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		11/01/21 15:59	5	1.0	11/03/21 09:46	JMW	EPA 6020A
Calcium	62000	ug/L		11/01/21 15:59	5	200	11/03/21 09:46	JMW	EPA 6020A
Chromium	< 0.0040	mg/L		11/01/21 11:22	1	0.0040	11/01/21 15:09	KMC	EPA 200.8 REV 5.4
Cobalt	6.0	ug/L		11/01/21 15:59	5	2.0	11/03/21 09:46	JMW	EPA 6020A
Lead	< 1.0	ug/L		11/01/21 15:59	5	1.0	11/03/21 09:46	JMW	EPA 6020A
Mercury	< 0.20	ug/L		11/01/21 15:59	5	0.20	11/03/21 09:46	JMW	EPA 6020A
Molybdenum	160	ug/L		11/01/21 15:59	5	1.0	11/03/21 09:46	JMW	EPA 6020A
Selenium	< 1.0	ug/L		11/01/21 15:59	5	1.0	11/03/21 09:46	JMW	EPA 6020A
Thallium	< 1.0	ug/L		11/01/21 15:59	5	1.0	11/03/21 09:46	JMW	EPA 6020A
Lithium	0.010	mg/L		11/01/21 15:59	1	0.010	11/04/21 09:58	TJJ	EPA 6010B

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

ANALYTICAL RESULTS

Sample: EJ04431-02
Name: MW-1R DUPLICATE
Matrix: Ground Water - Grab

Sampled: 10/20/21 14:30
Received: 10/22/21 10:30

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	11	mg/L		11/03/21 21:01	10	10	11/03/21 21:01	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		11/03/21 20:43	1	0.250	11/03/21 20:43	CRD	EPA 300.0 REV 2.1
Sulfate	130	mg/L		11/05/21 13:51	25	25	11/05/21 13:51	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	330	mg/L		10/27/21 13:39	1	26	10/27/21 15:35	ADM	SM 2540C
Trivalent chromium	< 0.0040	mg/L		11/01/21 11:22	1	0.0040	11/01/21 15:12	KMC	calculation
Total Metals - PIA									
Antimony	< 3.0	ug/L		11/01/21 15:59	5	3.0	11/03/21 09:50	JMW	EPA 6020A
Arsenic	1.2	ug/L		11/01/21 15:59	5	1.0	11/03/21 09:50	JMW	EPA 6020A
Barium	40	ug/L		11/01/21 15:59	5	1.0	11/03/21 09:50	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		11/01/21 15:59	5	1.0	11/03/21 09:50	JMW	EPA 6020A
Boron	2200	ug/L		11/01/21 15:59	5	10	11/03/21 09:50	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		11/01/21 15:59	5	1.0	11/03/21 09:50	JMW	EPA 6020A
Calcium	64000	ug/L		11/01/21 15:59	5	200	11/03/21 09:50	JMW	EPA 6020A
Chromium	< 0.0040	mg/L		11/01/21 11:22	1	0.0040	11/01/21 15:12	KMC	EPA 200.8 REV 5.4
Cobalt	6.3	ug/L		11/01/21 15:59	5	2.0	11/03/21 09:50	JMW	EPA 6020A
Lead	< 1.0	ug/L		11/01/21 15:59	5	1.0	11/03/21 09:50	JMW	EPA 6020A
Mercury	< 0.20	ug/L		11/01/21 15:59	5	0.20	11/03/21 09:50	JMW	EPA 6020A
Molybdenum	160	ug/L		11/01/21 15:59	5	1.0	11/03/21 09:50	JMW	EPA 6020A
Selenium	< 1.0	ug/L		11/01/21 15:59	5	1.0	11/03/21 09:50	JMW	EPA 6020A
Thallium	< 1.0	ug/L		11/01/21 15:59	5	1.0	11/03/21 09:50	JMW	EPA 6020A
Lithium	< 0.010	mg/L		11/01/21 15:59	1	0.010	11/04/21 10:00	TJJ	EPA 6010B

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

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

Memos

Radium subcontracted - report attached
Revised Report - lowered Lithium RL to 10 ug/l

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

Gail J Schindler

Certified by: Gail Schindler, Project Manager

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

November 23, 2021

Alan Hogan
PDC Laboratories Inc.
2231 W. Altorfer Dr.
Peoria, IL 61615

RE: Project: EJ04431
Pace Project No.: 30448924

Dear Alan Hogan:

Enclosed are the analytical results for sample(s) received by the laboratory on October 29, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Alexis E. Ozoroski
alexis.ozoroski@pacelabs.com
(724)850-5600
Project Manager

Enclosures

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: EJ04431
Pace Project No.: 30448924

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: EJ04431
Pace Project No.: 30448924

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30448924001	**EJ04431-01/MW-1R**	Drinking Water	10/20/21 14:30	10/29/21 10:15
30448924002	**EJ04431-02/MW-1R (DUPLICATE)**	Drinking Water	10/20/21 14:30	10/29/21 10:15

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: EJ04431
Pace Project No.: 30448924

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30448924001	**EJ04431-01/MW-1R**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
30448924002	**EJ04431-02/MW-1R (DUPLICATE)**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: EJ04431
Pace Project No.: 30448924

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: PDC Laboratories Inc
Date: November 23, 2021

General Information:
2 samples were analyzed for EPA 903.1 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: EJ04431
Pace Project No.: 30448924

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: PDC Laboratories Inc
Date: November 23, 2021

General Information:
2 samples were analyzed for EPA 904.0 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: EJ04431
Pace Project No.: 30448924

Sample: EJ04431-01/MW-1R **Lab ID: 30448924001** Collected: 10/20/21 14:30 Received: 10/29/21 10:15 Matrix: Drinking Water
PWS: Site ID: Sample Type:
Comments: • The sampler's name and signature were not listed on the COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.184 ± 0.208 (0.166) C:NA T:95%**	pCi/L	11/19/21 17:11	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**-0.0411 ± 0.311 (0.737) C:73% T:91%**	pCi/L	11/22/21 14:36	15262-20-1	

Sample: EJ04431-02/MW-1R (DUPLICATE) **Lab ID: 30448924002** Collected: 10/20/21 14:30 Received: 10/29/21 10:15 Matrix: Drinking Water
PWS: Site ID: Sample Type:
Comments: • The sampler's name and signature were not listed on the COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.125 ± 0.347 (0.675) C:NA T:96%**	pCi/L	11/19/21 17:19	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.182 ± 0.333 (0.734) C:71% T:90%**	pCi/L	11/22/21 14:36	15262-20-1	

REPORT OF LABORATORY ANALYSIS

Appendix 2

Laboratory Analytical Results
MW-1R Background – November 1, 2021

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

March 15, 2022

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

RE: SIKESTON FLY ASH APP III & IV 2021

Dear Luke St Mary:

Please find enclosed the **revised** analytical results for the **2** sample(s) the laboratory received on **11/3/21 9:50 am** and logged in under work order **EK00645**. 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 J 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 EK00645

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
NO	All non-field analyses received within holding times
YES	Short hold time analysis
YES	Current PDC COC submitted
NO	Case narrative provided

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

ANALYTICAL RESULTS

Sample: EK00645-01
Name: MW-1R
Matrix: Ground Water - Grab

Sampled: 11/01/21 14:54
Received: 11/03/21 09:50

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical - Greensburg									
Radium 226 - subcontracted	0.0676	pCi/L			1	1.01	12/06/21 17:05		904.0 903.1
Radium 228 - subcontracted	0.516	pCi/L			1	0.805	12/06/21 11:15		904.0 903.1

Sample: EK00645-02
Name: MW-1R DUPLICATE
Matrix: Ground Water - Grab

Sampled: 11/01/21 14:54
Received: 11/03/21 09:50

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical - Greensburg									
Radium 226 - subcontracted	0.186	pCi/L			1	0.812	12/06/21 17:05		904.0 903.1
Radium 228 - subcontracted	-0.105	pCi/L			1	0.832	12/06/21 11:15		904.0 903.1

ANALYTICAL RESULTS

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

ANALYTICAL RESULTS

Sample: EK00645-01
Name: MW-1R
Matrix: Ground Water - Grab

Sampled: 11/01/21 14:54
Received: 11/03/21 09:50

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	12	mg/L		11/10/21 14:08	5	5.0	11/10/21 14:08	CRD	EPA 300.0 REV 2.1
Fluoride	0.286	mg/L		11/10/21 13:50	1	0.250	11/10/21 13:50	CRD	EPA 300.0 REV 2.1
Sulfate	110	mg/L		11/10/21 14:26	25	25	11/10/21 14:26	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Trivalent Chromium	< 4.0	ug/L		11/05/21 16:07	5	4.0	11/08/21 11:07	JMW	calculated
Solids - total dissolved solids (TDS)	330	mg/L		11/05/21 15:48	1	26	11/05/21 17:16	ADM/BMS	SM 2540C
Total Metals - PIA									
Antimony	< 3.0	ug/L		11/05/21 16:07	5	3.0	11/08/21 11:07	JMW	EPA 6020A
Arsenic	1.4	ug/L		11/05/21 16:07	5	1.0	11/08/21 17:22	JMW	EPA 6020A
Barium	33	ug/L		11/05/21 16:07	5	1.0	11/08/21 11:07	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		11/05/21 16:07	5	1.0	11/08/21 17:22	JMW	EPA 6020A
Boron	1900	ug/L		11/05/21 16:07	5	10	11/08/21 17:22	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		11/05/21 16:07	5	1.0	11/08/21 11:07	JMW	EPA 6020A
Calcium	49000	ug/L		11/05/21 16:07	5	200	11/08/21 11:07	JMW	EPA 6020A
Chromium	< 4.0	ug/L		11/05/21 16:07	5	4.0	11/08/21 11:07	JMW	EPA 6020A
Cobalt	4.6	ug/L		11/05/21 16:07	5	2.0	11/08/21 11:07	JMW	EPA 6020A
Lead	< 1.0	ug/L		11/05/21 16:07	5	1.0	11/08/21 11:07	JMW	EPA 6020A
Mercury	< 0.20	ug/L		11/05/21 16:07	5	0.20	11/08/21 11:07	JMW	EPA 6020A
Molybdenum	140	ug/L		11/05/21 16:07	5	1.0	11/08/21 11:07	JMW	EPA 6020A
Selenium	< 1.0	ug/L		11/05/21 16:07	5	1.0	11/08/21 11:07	JMW	EPA 6020A
Thallium	< 1.0	ug/L		11/05/21 16:07	5	1.0	11/08/21 11:07	JMW	EPA 6020A
Lithium	< 0.010	mg/L		11/05/21 16:07	1	0.010	11/09/21 11:46	TJJ	EPA 6010B

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

ANALYTICAL RESULTS

Sample: EK00645-02
Name: MW-1R DUPLICATE
Matrix: Ground Water - Grab

Sampled: 11/01/21 14:54
Received: 11/03/21 09:50

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	11	mg/L		11/10/21 15:02	5	5.0	11/10/21 15:02	CRD	EPA 300.0 REV 2.1
Fluoride	0.275	mg/L		11/10/21 14:44	1	0.250	11/10/21 14:44	CRD	EPA 300.0 REV 2.1
Sulfate	110	mg/L		11/10/21 15:20	25	25	11/10/21 15:20	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Trivalent Chromium	< 4.0	ug/L		11/05/21 16:07	5	4.0	11/08/21 11:10	JMW	calculated
Solids - total dissolved solids (TDS)	310	mg/L		11/05/21 15:48	1	26	11/05/21 17:16	ADM/BMS	SM 2540C
Total Metals - PIA									
Antimony	< 3.0	ug/L		11/05/21 16:07	5	3.0	11/08/21 11:10	JMW	EPA 6020A
Arsenic	1.5	ug/L		11/05/21 16:07	5	1.0	11/08/21 17:26	JMW	EPA 6020A
Barium	38	ug/L		11/05/21 16:07	5	1.0	11/08/21 11:10	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		11/05/21 16:07	5	1.0	11/08/21 17:26	JMW	EPA 6020A
Boron	2100	ug/L		11/05/21 16:07	5	10	11/08/21 17:26	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		11/05/21 16:07	5	1.0	11/08/21 11:10	JMW	EPA 6020A
Calcium	58000	ug/L		11/05/21 16:07	5	200	11/08/21 11:10	JMW	EPA 6020A
Chromium	< 4.0	ug/L		11/05/21 16:07	5	4.0	11/08/21 11:10	JMW	EPA 6020A
Cobalt	5.4	ug/L		11/05/21 16:07	5	2.0	11/08/21 11:10	JMW	EPA 6020A
Lead	< 1.0	ug/L		11/05/21 16:07	5	1.0	11/08/21 11:10	JMW	EPA 6020A
Mercury	< 0.20	ug/L		11/05/21 16:07	5	0.20	11/08/21 11:10	JMW	EPA 6020A
Molybdenum	160	ug/L		11/05/21 16:07	5	1.0	11/08/21 11:10	JMW	EPA 6020A
Selenium	< 1.0	ug/L		11/05/21 16:07	5	1.0	11/08/21 11:10	JMW	EPA 6020A
Thallium	< 1.0	ug/L		11/05/21 16:07	5	1.0	11/08/21 11:10	JMW	EPA 6020A
Lithium	< 0.010	mg/L		11/05/21 16:07	1	0.010	11/09/21 11:53	TJJ	EPA 6010B

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

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

Memos

Radium subcontracted - report attached
Revised Report - lowered Lithium RL to 10 ug/l

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
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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

Gail J Schindler

Certified by: Gail Schindler, Project Manager

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

December 08, 2021

Gail J. Schindler
PDC Laboratories
2231 W. Altorfer Drive
Peoria, IL 61615

RE: Project: EK00645
Pace Project No.: 30450682

Dear Gail Schindler:

Enclosed are the analytical results for sample(s) received by the laboratory on November 08, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Alexis E. Ozoroski
alexis.ozoroski@pacelabs.com
(724)850-5600
Project Manager

Enclosures

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: EK00645
Pace Project No.: 30450682

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: EK00645
Pace Project No.: 30450682

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30450682001	**EK00645-01**	Water	11/01/21 14:54	11/08/21 10:30
30450682002	**EK00645-02**	Water	11/01/21 14:54	11/08/21 10:30

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: EK00645
Pace Project No.: 30450682

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30450682001	**EK00645-01**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
30450682002	**EK00645-02**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: EK00645
Pace Project No.: 30450682

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: PDC Laboratories Inc
Date: December 08, 2021

General Information:
2 samples were analyzed for EPA 903.1 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: EK00645
Pace Project No.: 30450682

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: PDC Laboratories Inc
Date: December 08, 2021

General Information:
2 samples were analyzed for EPA 904.0 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: EK00645
Pace Project No.: 30450682

Sample: EK00645-01 **Lab ID: 30450682001** Collected: 11/01/21 14:54 Received: 11/08/21 10:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.0676 ± 0.513 (1.01) C:NA T:92%**	pCi/L	12/06/21 17:05	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.516 ± 0.404 (0.805) C:71% T:91%**	pCi/L	12/06/21 11:15	15262-20-1	

Sample: EK00645-02 **Lab ID: 30450682002** Collected: 11/01/21 14:54 Received: 11/08/21 10:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.186 ± 0.438 (0.812) C:NA T:99%**	pCi/L	12/06/21 17:05	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**-0.105 ± 0.350 (0.832) C:71% T:89%**	pCi/L	12/06/21 11:15	15262-20-1	

REPORT OF LABORATORY ANALYSIS

Appendix 2

Laboratory Analytical Results
MW-1R Background - November 16, 2021

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

March 15, 2022

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

RE: SIKESTON FLY ASH APP III & IV 2021

Dear Luke St Mary:

Please find enclosed the **revised** analytical results for the **2** sample(s) the laboratory received on **11/18/21 10:30 am** and logged in under work order **EK03830**. 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 J 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 EK03830

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
NO	All non-field analyses received within holding times
YES	Short hold time analysis
YES	Current PDC COC submitted
NO	Case narrative provided

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

ANALYTICAL RESULTS

Sample: EK03830-01
Name: MW-1R
Matrix: Ground Water - Grab

Sampled: 11/16/21 08:55
Received: 11/18/21 10:30

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical - Greensburg									
Radium 226 - subcontracted	0.513	pCi/L			1	1.02	12/29/21 14:12		904.0 903.1
Radium 228 - subcontracted	0.552	pCi/L			1	0.845	01/03/22 14:55		904.0 903.1

Sample: EK03830-02
Name: MW-1R DUPLICATE
Matrix: Ground Water - Grab

Sampled: 11/16/21 00:00
Received: 11/18/21 10:30

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical - Greensburg									
Radium 226 - subcontracted	-0.122	pCi/L			1	0.799	12/29/21 14:27		904.0 903.1
Radium 228 - subcontracted	0.572	pCi/L			1	0.99	01/03/22 14:55		904.0 903.1

ANALYTICAL RESULTS

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

ANALYTICAL RESULTS

Sample: EK03830-01
Name: MW-1R
Matrix: Ground Water - Grab

Sampled: 11/16/21 08:55
Received: 11/18/21 10:30

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	14	mg/L		11/23/21 22:33	5	5.0	11/23/21 22:33	CRD	EPA 300.0 REV 2.1
Fluoride	0.366	mg/L		11/23/21 22:15	1	0.250	11/23/21 22:15	CRD	EPA 300.0 REV 2.1
Sulfate	140	mg/L		11/23/21 22:51	25	25	11/23/21 22:51	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	360	mg/L		11/22/21 14:39	1	26	11/22/21 16:00	ADM	SM 2540C
Total Metals - PIA									
Antimony	< 3.0	ug/L		11/24/21 16:16	5	3.0	11/29/21 12:42	JMW	EPA 6020A
Arsenic	< 1.0	ug/L		11/24/21 16:16	5	1.0	11/29/21 12:42	JMW	EPA 6020A
Barium	49	ug/L		11/24/21 16:16	5	1.0	11/29/21 12:42	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		11/24/21 16:16	5	1.0	11/29/21 12:42	JMW	EPA 6020A
Boron	2800	ug/L		11/24/21 16:16	5	10	11/29/21 12:42	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		11/24/21 16:16	5	1.0	11/29/21 12:42	JMW	EPA 6020A
Calcium	72000	ug/L		11/24/21 16:16	5	200	11/29/21 12:42	JMW	EPA 6020A
Chromium	< 4.0	ug/L		11/24/21 16:16	5	4.0	11/29/21 12:42	JMW	EPA 6020A
Cobalt	8.0	ug/L		11/24/21 16:16	5	2.0	11/29/21 12:42	JMW	EPA 6020A
Lead	< 1.0	ug/L		11/24/21 16:16	5	1.0	11/29/21 12:42	JMW	EPA 6020A
Mercury	< 0.20	ug/L		11/24/21 16:16	5	0.20	11/29/21 12:42	JMW	EPA 6020A
Molybdenum	170	ug/L		11/24/21 16:16	5	1.0	11/29/21 12:42	JMW	EPA 6020A
Selenium	< 1.0	ug/L		11/24/21 16:16	5	1.0	11/29/21 12:42	JMW	EPA 6020A
Thallium	< 1.0	ug/L		11/24/21 16:16	5	1.0	11/29/21 12:42	JMW	EPA 6020A
Lithium	0.010	mg/L		11/24/21 16:16	1	0.010	12/01/21 14:17	TJJ	EPA 6010B

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

ANALYTICAL RESULTS

Sample: EK03830-02
Name: MW-1R DUPLICATE
Matrix: Ground Water - Grab

Sampled: 11/16/21 00:00
Received: 11/18/21 10:30

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	15	mg/L		11/29/21 11:08	5	5.0	11/29/21 11:08	CRD	EPA 300.0 REV 2.1
Sulfate	150	mg/L		11/29/21 11:27	25	25	11/29/21 11:27	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Fluoride	< 0.250	mg/L		12/01/21 12:24	1	0.250	12/01/21 12:24	TTH	SM 4500F C 1997
Solids - total dissolved solids (TDS)	300	mg/L		11/22/21 14:39	1	26	11/22/21 16:00	ADM	SM 2540C
Total Metals - PIA									
Antimony	< 3.0	ug/L		11/24/21 16:16	5	3.0	11/29/21 12:46	JMW	EPA 6020A
Arsenic	< 1.0	ug/L		11/24/21 16:16	5	1.0	11/29/21 12:46	JMW	EPA 6020A
Barium	46	ug/L		11/24/21 16:16	5	1.0	11/29/21 12:46	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		11/24/21 16:16	5	1.0	11/29/21 12:46	JMW	EPA 6020A
Boron	2800	ug/L		11/24/21 16:16	5	10	11/29/21 12:46	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		11/24/21 16:16	5	1.0	11/29/21 12:46	JMW	EPA 6020A
Calcium	73000	ug/L		11/24/21 16:16	5	200	11/29/21 12:46	JMW	EPA 6020A
Chromium	< 4.0	ug/L		11/24/21 16:16	5	4.0	11/29/21 12:46	JMW	EPA 6020A
Cobalt	8.5	ug/L		11/24/21 16:16	5	2.0	11/29/21 12:46	JMW	EPA 6020A
Lead	< 1.0	ug/L		11/24/21 16:16	5	1.0	11/29/21 12:46	JMW	EPA 6020A
Mercury	< 0.20	ug/L		11/24/21 16:16	5	0.20	11/29/21 12:46	JMW	EPA 6020A
Molybdenum	170	ug/L		11/24/21 16:16	5	1.0	11/29/21 12:46	JMW	EPA 6020A
Selenium	< 1.0	ug/L		11/24/21 16:16	5	1.0	11/29/21 12:46	JMW	EPA 6020A
Thallium	< 1.0	ug/L		11/24/21 16:16	5	1.0	11/29/21 12:46	JMW	EPA 6020A
Lithium	< 0.010	mg/L		11/24/21 16:16	1	0.010	12/01/21 14:20	TJJ	EPA 6010B

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

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

Memos

Radium subcontracted - report attached
Revised Report - lowered Lithium RL to 10 ug/l

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

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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

Gail J Schindler

Certified by: Gail Schindler, Project Manager

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

January 04, 2022

Gail J. Schindler
PDC Laboratories
2231 W. Altorfer Drive
Peoria, IL 61615

RE: Project: EK03830
Pace Project No.: 30452430

Dear Gail Schindler:

Enclosed are the analytical results for sample(s) received by the laboratory on November 29, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:
- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Alexis E. Ozoroski
alexis.ozoroski@pacelabs.com
(724)850-5600
Project Manager

Enclosures

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: EK03830
Pace Project No.: 30452430

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: EK03830
Pace Project No.: 30452430

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30452430001	**EK03830-01**	Water	11/16/21 08:55	11/29/21 09:40
30452430002	**EK03830-02**	Water	11/16/21 00:00	11/29/21 09:40

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: EK03830
Pace Project No.: 30452430

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30452430001	**EK03830-01**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
30452430002	**EK03830-02**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: EK03830
Pace Project No.: 30452430

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: PDC Laboratories Inc
Date: January 04, 2022

General Information:
2 samples were analyzed for EPA 903.1 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: EK03830
Pace Project No.: 30452430

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: PDC Laboratories Inc
Date: January 04, 2022

General Information:
2 samples were analyzed for EPA 904.0 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: EK03830
Pace Project No.: 30452430

Sample: EK03830-01 **Lab ID: 30452430001** Collected: 11/16/21 08:55 Received: 11/29/21 09:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.513 ± 0.618 (1.02) C:NA T:91%**	pCi/L	12/29/21 14:12	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.552 ± 0.429 (0.846) C:70% T:84%**	pCi/L	01/03/22 14:55	15262-20-1	

Sample: EK03830-02 **Lab ID: 30452430002** Collected: 11/16/21 00:00 Received: 11/29/21 09:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**-0.122 ± 0.338 (0.799) C:NA T:94%**	pCi/L	12/29/21 14:27	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.572 ± 0.492 (0.990) C:65% T:78%**	pCi/L	01/03/22 14:55	15262-20-1	

REPORT OF LABORATORY ANALYSIS

Appendix 2

Laboratory Analytical Results
MW-1R Background – December 7, 2021

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

March 15, 2022

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

RE: SIKESTON FLY ASH APP III & IV 2021

Dear Luke St Mary:

Please find enclosed the **revised** analytical results for the **2** sample(s) the laboratory received on **12/9/21 10:30 am** and logged in under work order **EL02011**. 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 J 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 EL02011

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
YES	Short hold time analysis
YES	Current PDC COC submitted
NO	Case narrative provided

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

ANALYTICAL RESULTS

Sample: EL02011-01
Name: MW-1R
Matrix: Ground Water - Grab

Sampled: 12/07/21 08:58
Received: 12/09/21 10:30

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical - Greensburg									
Radium 226 - subcontracted	-0.298	pCi/L			1	0.946	01/24/22 11:24		904.0 903.1
Radium 228 - subcontracted	0.53	pCi/L			1	0.86	01/19/22 11:27		904.0 903.1

Sample: EL02011-02
Name: MW-1R DUPLICATE
Matrix: Ground Water - Grab

Sampled: 12/07/21 00:00
Received: 12/09/21 10:30

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical - Greensburg									
Radium 226 - subcontracted	-0.257	pCi/L			1	0.965	01/24/22 11:39		904.0 903.1
Radium 228 - subcontracted	-0.104	pCi/L			1	1.09	01/19/22 11:31		904.0 903.1

ANALYTICAL RESULTS

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

ANALYTICAL RESULTS

Sample: EL02011-01
Name: MW-1R
Matrix: Ground Water - Grab

Sampled: 12/07/21 08:58
Received: 12/09/21 10:30

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	13	mg/L		12/16/21 20:09	5	5.0	12/16/21 20:09	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		12/16/21 19:51	1	0.250	12/16/21 19:51	CRD	EPA 300.0 REV 2.1
Sulfate	120	mg/L		12/16/21 20:27	25	25	12/16/21 20:27	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	350	mg/L		12/13/21 10:46	1	26	12/13/21 12:00	JAA	SM 2540C
Total Metals - PIA									
Antimony	< 3.0	ug/L		12/13/21 09:59	5	3.0	12/14/21 12:39	JMW	EPA 6020A
Arsenic	< 1.0	ug/L		12/13/21 09:59	5	1.0	12/14/21 12:39	JMW	EPA 6020A
Barium	37	ug/L		12/13/21 09:59	5	1.0	12/14/21 12:39	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		12/13/21 09:59	5	1.0	12/14/21 12:39	JMW	EPA 6020A
Boron	2300	ug/L		12/13/21 09:59	5	10	12/14/21 12:39	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		12/13/21 09:59	5	1.0	12/14/21 12:39	JMW	EPA 6020A
Calcium	60000	ug/L		12/13/21 09:59	5	200	12/14/21 12:39	JMW	EPA 6020A
Chromium	< 4.0	ug/L		12/13/21 09:59	5	4.0	12/14/21 12:39	JMW	EPA 6020A
Cobalt	7.0	ug/L		12/13/21 09:59	5	2.0	12/14/21 12:39	JMW	EPA 6020A
Lead	< 1.0	ug/L		12/13/21 09:59	5	1.0	12/14/21 12:39	JMW	EPA 6020A
Mercury	< 0.20	ug/L		12/13/21 09:59	5	0.20	12/14/21 12:39	JMW	EPA 6020A
Molybdenum	180	ug/L		12/13/21 09:59	5	1.0	12/14/21 12:39	JMW	EPA 6020A
Selenium	< 1.0	ug/L		12/13/21 09:59	5	1.0	12/14/21 12:39	JMW	EPA 6020A
Thallium	< 1.0	ug/L		12/13/21 09:59	5	1.0	12/14/21 12:39	JMW	EPA 6020A
Lithium	0.011	mg/L		12/13/21 09:59	1	0.010	12/14/21 09:10	TJJ	EPA 6010B

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

ANALYTICAL RESULTS

Sample: EL02011-02
Name: MW-1R DUPLICATE
Matrix: Ground Water - Grab

Sampled: 12/07/21 00:00
Received: 12/09/21 10:30

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	13	mg/L		12/16/21 21:39	5	5.0	12/16/21 21:39	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		12/16/21 21:21	1	0.250	12/16/21 21:21	CRD	EPA 300.0 REV 2.1
Sulfate	140	mg/L		12/16/21 21:57	25	25	12/16/21 21:57	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	400	mg/L		12/13/21 10:46	1	26	12/13/21 12:00	JAA	SM 2540C
Total Metals - PIA									
Antimony	< 3.0	ug/L		12/13/21 09:59	5	3.0	12/14/21 12:43	JMW	EPA 6020A
Arsenic	< 1.0	ug/L		12/13/21 09:59	5	1.0	12/14/21 12:43	JMW	EPA 6020A
Barium	37	ug/L		12/13/21 09:59	5	1.0	12/14/21 12:43	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		12/13/21 09:59	5	1.0	12/14/21 12:43	JMW	EPA 6020A
Boron	2300	ug/L		12/13/21 09:59	5	10	12/14/21 12:43	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		12/13/21 09:59	5	1.0	12/14/21 12:43	JMW	EPA 6020A
Calcium	61000	ug/L		12/13/21 09:59	5	200	12/14/21 12:43	JMW	EPA 6020A
Chromium	< 4.0	ug/L		12/13/21 09:59	5	4.0	12/14/21 12:43	JMW	EPA 6020A
Cobalt	7.1	ug/L		12/13/21 09:59	5	2.0	12/14/21 12:43	JMW	EPA 6020A
Lead	< 1.0	ug/L		12/13/21 09:59	5	1.0	12/14/21 12:43	JMW	EPA 6020A
Mercury	< 0.20	ug/L		12/13/21 09:59	5	0.20	12/14/21 12:43	JMW	EPA 6020A
Molybdenum	190	ug/L		12/13/21 09:59	5	1.0	12/14/21 12:43	JMW	EPA 6020A
Selenium	< 1.0	ug/L		12/13/21 09:59	5	1.0	12/14/21 12:43	JMW	EPA 6020A
Thallium	< 1.0	ug/L		12/13/21 09:59	5	1.0	12/14/21 12:43	JMW	EPA 6020A
Lithium	< 0.010	mg/L		12/13/21 09:59	1	0.010	12/14/21 09:12	TJJ	EPA 6010B

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

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

Memos

Radium Subcontracted - Report Attached
Revised Report - lowered Lithium RL to 10 ug/l

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

Gail J Schindler

Certified by: Gail Schindler, Project Manager

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

January 24, 2022

Gail J. Schindler
PDC Laboratories
2231 W. Altorfer Drive
Peoria, IL 61615

RE: Project: EL02011
Pace Project No.: 30457158

Dear Gail Schindler:

Enclosed are the analytical results for sample(s) received by the laboratory on December 20, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:
- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Alexis E. Ozoroski
alexis.ozoroski@pacelabs.com
(724)850-5600
Project Manager

Enclosures

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: EL02011
Pace Project No.: 30457158

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Florida: Cert E871149 SEKS WET
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: EL02011
Pace Project No.: 30457158

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30457158001	**EL02011-01**	Water	12/07/21 08:58	12/20/21 09:30
30457158002	**EL02011-02**	Water	12/07/21 00:00	12/20/21 09:30

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: EL02011
Pace Project No.: 30457158

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30457158001	**EL02011-01**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
30457158002	**EL02011-02**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: EL02011
Pace Project No.: 30457158

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: PDC Laboratories Inc
Date: January 24, 2022

General Information:
2 samples were analyzed for EPA 903.1 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: EL02011
Pace Project No.: 30457158

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: PDC Laboratories Inc
Date: January 24, 2022

General Information:
2 samples were analyzed for EPA 904.0 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: EL02011
Pace Project No.: 30457158

Sample: EL02011-01 **Lab ID: 30457158001** Collected: 12/07/21 08:58 Received: 12/20/21 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**-0.298 ± 0.389 (0.946) C:NA T:94%**	pCi/L	01/24/22 11:24	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.530 ± 0.435 (0.860) C:63% T:87%**	pCi/L	01/19/22 11:27	15262-20-1	

Sample: EL02011-02 **Lab ID: 30457158002** Collected: 12/07/21 00:00 Received: 12/20/21 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**-0.257 ± 0.399 (0.965) C:NA T:92%**	pCi/L	01/24/22 11:39	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**-0.104 ± 0.458 (1.09) C:58% T:85%**	pCi/L	01/19/22 11:31	15262-20-1	

REPORT OF LABORATORY ANALYSIS

Appendix 2

Laboratory Analytical Results
MW-1R Background - December 27, 2021

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

March 15, 2022

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

RE: SIKESTON FLY ASH APP III & IV 2021

Dear Luke St Mary:

Please find enclosed the **revised** analytical results for the **2** sample(s) the laboratory received on **12/29/21 11:40 am** and logged in under work order **EL04899**. 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 J 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 EL04899

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

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

ANALYTICAL RESULTS

Sample: EL04899-01
Name: MW-1R
Matrix: Ground Water - Grab

Sampled: 12/27/21 12:09
Received: 12/29/21 11:40

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical - Greensburg									
Radium 226 - subcontracted	-0.286	pCi/L			1	0.807	02/02/22 12:25		904.0 903.1
Radium 228 - subcontracted	0.43	pCi/L			1	0.952	01/28/22 14:52		904.0 903.1

Sample: EL04899-02
Name: MW-1R DUPLICATE
Matrix: Ground Water - Grab

Sampled: 12/27/21 00:00
Received: 12/29/21 11:40

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical - Greensburg									
Radium 226 - subcontracted	0.263	pCi/L			1	0.987	02/02/22 12:25		904.0 903.1
Radium 228 - subcontracted	0.5	pCi/L			1	0.956	02/02/22 12:25		904.0 903.1

ANALYTICAL RESULTS

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

ANALYTICAL RESULTS

Sample: EL04899-01
Name: MW-1R
Matrix: Ground Water - Grab

Sampled: 12/27/21 12:09
Received: 12/29/21 11:40

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	17	mg/L		01/03/22 14:20	5	5.0	01/03/22 14:20	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		01/03/22 14:02	1	0.250	01/03/22 14:02	CRD	EPA 300.0 REV 2.1
Sulfate	210	mg/L		01/03/22 14:38	25	25	01/03/22 14:38	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	390	mg/L		01/03/22 09:57	1	26	01/03/22 11:18	JAA	SM 2540C
Total Metals - PIA									
Antimony	< 3.0	ug/L		01/04/22 07:53	5	3.0	01/05/22 10:46	JMW	EPA 6020A
Arsenic	< 1.0	ug/L		01/04/22 07:53	5	1.0	01/05/22 10:46	JMW	EPA 6020A
Barium	52	ug/L		01/04/22 07:53	5	1.0	01/05/22 10:46	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		01/04/22 07:53	5	1.0	01/05/22 10:46	JMW	EPA 6020A
Boron	3100	ug/L		01/04/22 07:53	5	10	01/05/22 10:46	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		01/04/22 07:53	5	1.0	01/05/22 10:46	JMW	EPA 6020A
Calcium	97000	ug/L		01/04/22 07:53	5	200	01/05/22 10:46	JMW	EPA 6020A
Chromium	< 4.0	ug/L		01/04/22 07:53	5	4.0	01/05/22 10:46	JMW	EPA 6020A
Cobalt	9.6	ug/L		01/04/22 07:53	5	2.0	01/05/22 10:46	JMW	EPA 6020A
Lead	< 1.0	ug/L		01/04/22 07:53	5	1.0	01/05/22 10:46	JMW	EPA 6020A
Mercury	< 0.20	ug/L		01/04/22 07:53	5	0.20	01/05/22 10:46	JMW	EPA 6020A
Molybdenum	200	ug/L		01/04/22 07:53	5	1.0	01/05/22 10:46	JMW	EPA 6020A
Selenium	< 1.0	ug/L		01/04/22 07:53	5	1.0	01/05/22 10:46	JMW	EPA 6020A
Thallium	< 1.0	ug/L		01/04/22 07:53	5	1.0	01/05/22 10:46	JMW	EPA 6020A
Lithium	0.019	mg/L		01/04/22 07:53	1	0.010	01/11/22 10:57	TJJ	EPA 6010B

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

ANALYTICAL RESULTS

Sample: EL04899-02
Name: MW-1R DUPLICATE
Matrix: Ground Water - Grab

Sampled: 12/27/21 00:00
Received: 12/29/21 11:40

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	15	mg/L		01/03/22 15:14	5	5.0	01/03/22 15:14	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		01/03/22 14:56	1	0.250	01/03/22 14:56	CRD	EPA 300.0 REV 2.1
Sulfate	180	mg/L		01/03/22 15:32	25	25	01/03/22 15:32	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	380	mg/L		01/03/22 09:57	1	26	01/03/22 11:18	JAA	SM 2540C
Total Metals - PIA									
Antimony	< 3.0	ug/L		01/04/22 07:53	5	3.0	01/05/22 10:49	JMW	EPA 6020A
Arsenic	< 1.0	ug/L		01/04/22 07:53	5	1.0	01/05/22 10:49	JMW	EPA 6020A
Barium	49	ug/L		01/04/22 07:53	5	1.0	01/05/22 10:49	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		01/04/22 07:53	5	1.0	01/05/22 10:49	JMW	EPA 6020A
Boron	2700	ug/L		01/04/22 07:53	5	10	01/05/22 10:49	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		01/04/22 07:53	5	1.0	01/05/22 10:49	JMW	EPA 6020A
Calcium	91000	ug/L		01/04/22 07:53	5	200	01/05/22 10:49	JMW	EPA 6020A
Chromium	< 4.0	ug/L		01/04/22 07:53	5	4.0	01/05/22 10:49	JMW	EPA 6020A
Cobalt	9.4	ug/L		01/04/22 07:53	5	2.0	01/05/22 10:49	JMW	EPA 6020A
Lead	< 1.0	ug/L		01/04/22 07:53	5	1.0	01/05/22 10:49	JMW	EPA 6020A
Mercury	< 0.20	ug/L		01/04/22 07:53	5	0.20	01/05/22 10:49	JMW	EPA 6020A
Molybdenum	190	ug/L		01/04/22 07:53	5	1.0	01/05/22 10:49	JMW	EPA 6020A
Selenium	< 1.0	ug/L		01/04/22 07:53	5	1.0	01/05/22 10:49	JMW	EPA 6020A
Thallium	< 1.0	ug/L		01/04/22 07:53	5	1.0	01/05/22 10:49	JMW	EPA 6020A
Lithium	0.013	mg/L		01/04/22 07:53	1	0.010	01/11/22 11:00	TJJ	EPA 6010B

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

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

Memos

Radium Subcontracted - Report Attached
Revised Report - lowered Lithium RL to 10 ug/l

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

Gail J Schindler

Certified by: Gail Schindler, Project Manager

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

February 03, 2022

Gail J. Schindler
PDC Laboratories
2231 W. Altorfer Drive
Peoria, IL 61615

RE: Project: EL04899
Pace Project No.: 30459060

Dear Gail Schindler:

Enclosed are the analytical results for sample(s) received by the laboratory on January 11, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Karen L. Smetanka
karen.smetanka@pacelabs.com
(724)850-5600
Project Manager

Enclosures

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: EL04899
Pace Project No.: 30459060

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Florida: Cert E871149 SEKS WET
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: EL04899
Pace Project No.: 30459060

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30459060001	**EL04899-01**	Water	12/27/21 12:09	01/11/22 09:30
30459060002	**EL04899-02**	Water	12/27/21 00:00	01/11/22 09:30

Pace Analytical Services, LLC
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Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: EL04899
Pace Project No.: 30459060

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30459060001	**EL04899-01**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
30459060002	**EL04899-02**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: EL04899
Pace Project No.: 30459060

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: PDC Laboratories Inc
Date: February 03, 2022

General Information:
2 samples were analyzed for EPA 903.1 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: EL04899
Pace Project No.: 30459060

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: PDC Laboratories Inc
Date: February 03, 2022

General Information:
2 samples were analyzed for EPA 904.0 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: EL04899
Pace Project No.: 30459060

Sample: EL04899-01 **Lab ID: 30459060001** Collected: 12/27/21 12:09 Received: 01/11/22 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**-0.286 ± 0.299 (0.807) C:NA T:97%**	pCi/L	02/02/22 12:25	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.430 ± 0.458 (0.952) C:65% T:87%**	pCi/L	01/28/22 14:52	15262-20-1	

Sample: EL04899-02 **Lab ID: 30459060002** Collected: 12/27/21 00:00 Received: 01/11/22 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.263 ± 0.548 (0.987) C:NA T:91%**	pCi/L	02/02/22 12:25	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.500 ± 0.468 (0.956) C:68% T:82%**	pCi/L	01/28/22 14:52	15262-20-1	

REPORT OF LABORATORY ANALYSIS

Appendix 2

Laboratory Analytical Results
MW-1R Background - January 17, 2022

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

March 15, 2022

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

RE: SIKESTON FLY ASH APP III & IV 2021

Dear Luke St Mary:

Please find enclosed the **revised** analytical results for the **2** sample(s) the laboratory received on **1/19/22 10:30 am** and logged in under work order **FA03341**. 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 J 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 FA03341

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

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

ANALYTICAL RESULTS

Sample: FA03341-01
Name: MW-1R
Matrix: Ground Water - Grab

Sampled: 01/17/22 09:22
Received: 01/19/22 10:30

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical - Greensburg									
Radium 226 - subcontracted	-0.406	pCi/L			1	1.07	02/15/22 12:16		904.0 903.1
Radium 228 - subcontracted	0.556	pCi/L			1	0.859	02/09/22 14:42		904.0 903.1

Sample: FA03341-02
Name: MW-1R DUPLICATE
Matrix: Ground Water - Grab

Sampled: 01/17/22 09:22
Received: 01/19/22 10:30

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical - Greensburg									
Radium 226 - subcontracted	-0.0641	pCi/L			1	0.904	02/15/22 12:35		904.0 903.1
Radium 228 - subcontracted	0.467	pCi/L			1	0.9	02/09/22 14:42		904.0 903.1

ANALYTICAL RESULTS

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

ANALYTICAL RESULTS

Sample: FA03341-01
Name: MW-1R
Matrix: Ground Water - Grab

Sampled: 01/17/22 09:22
Received: 01/19/22 10:30

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	17	mg/L		01/24/22 15:27	5	5.0	01/24/22 15:27	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		01/24/22 15:08	1	0.250	01/24/22 15:08	CRD	EPA 300.0 REV 2.1
Sulfate	190	mg/L		01/24/22 15:45	25	25	01/24/22 15:45	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	440	mg/L		01/20/22 10:29	1	26	01/20/22 12:56	ADM	SM 2540C
Total Metals - PIA									
Antimony	< 3.0	ug/L		01/25/22 08:40	5	3.0	01/25/22 17:06	KMC	EPA 6020A
Arsenic	< 1.0	ug/L		01/25/22 08:40	5	1.0	01/25/22 17:06	KMC	EPA 6020A
Barium	44	ug/L		01/25/22 08:40	5	1.0	01/25/22 17:06	KMC	EPA 6020A
Beryllium	< 1.0	ug/L		01/25/22 08:40	5	1.0	01/25/22 17:06	KMC	EPA 6020A
Boron	2700	ug/L		01/25/22 08:40	5	15	01/25/22 17:06	KMC	EPA 6020A
Cadmium	< 1.0	ug/L		01/25/22 08:40	5	1.0	01/25/22 17:06	KMC	EPA 6020A
Calcium	88000	ug/L		01/25/22 08:40	5	200	01/27/22 13:13	KMC	EPA 6020A
Chromium	< 4.0	ug/L		01/25/22 08:40	5	4.0	01/25/22 17:06	KMC	EPA 6020A
Cobalt	7.8	ug/L		01/25/22 08:40	5	2.0	01/25/22 17:06	KMC	EPA 6020A
Lead	< 1.0	ug/L		01/25/22 08:40	5	1.0	01/25/22 17:06	KMC	EPA 6020A
Mercury	< 0.20	ug/L		01/25/22 08:40	5	0.20	01/25/22 17:06	KMC	EPA 6020A
Molybdenum	190	ug/L		01/25/22 08:40	5	1.0	01/27/22 13:13	KMC	EPA 6020A
Selenium	< 1.0	ug/L		01/25/22 08:40	5	1.0	01/25/22 17:06	KMC	EPA 6020A
Thallium	< 1.0	ug/L		01/25/22 08:40	5	1.0	01/25/22 17:06	KMC	EPA 6020A
Lithium	0.017	mg/L		01/25/22 08:40	1	0.010	01/26/22 13:02	TJJ	EPA 6010B

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

ANALYTICAL RESULTS

Sample: FA03341-02
Name: MW-1R DUPLICATE
Matrix: Ground Water - Grab

Sampled: 01/17/22 09:22
Received: 01/19/22 10:30

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	17	mg/L		01/24/22 16:21	5	5.0	01/24/22 16:21	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		01/24/22 16:03	1	0.250	01/24/22 16:03	CRD	EPA 300.0 REV 2.1
Sulfate	190	mg/L		01/24/22 17:15	25	25	01/24/22 17:15	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	420	mg/L		01/20/22 10:29	1	26	01/20/22 12:56	ADM	SM 2540C
Total Metals - PIA									
Antimony	< 3.0	ug/L		01/25/22 08:40	5	3.0	01/25/22 17:09	KMC	EPA 6020A
Arsenic	< 1.0	ug/L		01/25/22 08:40	5	1.0	01/25/22 17:09	KMC	EPA 6020A
Barium	43	ug/L		01/25/22 08:40	5	1.0	01/25/22 17:09	KMC	EPA 6020A
Beryllium	< 1.0	ug/L		01/25/22 08:40	5	1.0	01/25/22 17:09	KMC	EPA 6020A
Boron	2800	ug/L		01/25/22 08:40	5	15	01/25/22 17:09	KMC	EPA 6020A
Cadmium	< 1.0	ug/L		01/25/22 08:40	5	1.0	01/25/22 17:09	KMC	EPA 6020A
Calcium	89000	ug/L		01/25/22 08:40	5	200	01/27/22 13:17	KMC	EPA 6020A
Chromium	< 4.0	ug/L		01/25/22 08:40	5	4.0	01/25/22 17:09	KMC	EPA 6020A
Cobalt	7.9	ug/L		01/25/22 08:40	5	2.0	01/25/22 17:09	KMC	EPA 6020A
Lead	< 1.0	ug/L		01/25/22 08:40	5	1.0	01/25/22 17:09	KMC	EPA 6020A
Mercury	< 0.20	ug/L		01/25/22 08:40	5	0.20	01/25/22 17:09	KMC	EPA 6020A
Molybdenum	200	ug/L		01/25/22 08:40	5	1.0	01/27/22 13:17	KMC	EPA 6020A
Selenium	< 1.0	ug/L		01/25/22 08:40	5	1.0	01/25/22 17:09	KMC	EPA 6020A
Thallium	< 1.0	ug/L		01/25/22 08:40	5	1.0	01/25/22 17:09	KMC	EPA 6020A
Lithium	0.015	mg/L		01/25/22 08:40	1	0.010	01/26/22 13:04	TJJ	EPA 6010B

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

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

Memos

Radium Subcontracted - Report Attached
Revised Report - lowered Lithium RL to 10 ug/l

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
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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

Gail J Schindler

Certified by: Gail Schindler, Project Manager

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

March 09, 2022

Gail J. Schindler
PDC Laboratories
2231 W. Altorfer Drive
Peoria, IL 61615

RE: Project: FA03341
Pace Project No.: 30461168

Dear Gail Schindler:

Enclosed are the analytical results for sample(s) received by the laboratory on January 26, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:
- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Karen L. Smetanka
karen.smetanka@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Chenise Lambert-Sykes, PDC

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: FA03341
Pace Project No.: 30461168

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Florida: Cert E871149 SEKS WET
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: FA03341
Pace Project No.: 30461168

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30461168001	**FA03341-01**	Water	01/17/22 09:22	01/26/22 09:50
30461168002	**FA03341-02**	Water	01/17/22 09:22	01/26/22 09:50

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: FA03341
Pace Project No.: 30461168

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30461168001	**FA03341-01**	EPA 903.1	RPS	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
30461168002	**FA03341-02**	EPA 903.1	RPS	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: FA03341
Pace Project No.: 30461168

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: PDC Laboratories Inc
Date: March 09, 2022

General Information:
2 samples were analyzed for EPA 903.1 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: FA03341
Pace Project No.: 30461168

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: PDC Laboratories Inc
Date: March 09, 2022

General Information:
2 samples were analyzed for EPA 904.0 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FA03341
Pace Project No.: 30461168

Sample: FA03341-01 **Lab ID: 30461168001** Collected: 01/17/22 09:22 Received: 01/26/22 09:50 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • The sampler's name and signature were not listed on the COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**-0.406 ± 0.422 (1.07) C:NA T:82%**	pCi/L	02/15/22 12:16	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.556 ± 0.434 (0.859) C:72% T:80%**	pCi/L	02/09/22 14:42	15262-20-1	

Sample: FA03341-02 **Lab ID: 30461168002** Collected: 01/17/22 09:22 Received: 01/26/22 09:50 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • The sampler's name and signature were not listed on the COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**-0.0641 ± 0.417 (0.904) C:NA T:89%**	pCi/L	02/15/22 12:35	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.467 ± 0.442 (0.900) C:70% T:76%**	pCi/L	02/09/22 14:42	15262-20-1	

REPORT OF LABORATORY ANALYSIS

Appendix 2

Laboratory Analytical Results
MW-1R Background - February 7, 2022

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

March 15, 2022

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

RE: SIKESTON FLY ASH APP III & IV 2021

Dear Luke St Mary:

Please find enclosed the **revised** analytical results for the **2** sample(s) the laboratory received on **2/9/22 10:45 am** and logged in under work order **FB01553**. 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 J 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 FB01553

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

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

ANALYTICAL RESULTS

Sample: FB01553-01
Name: MW-1R
Matrix: Ground Water - Grab

Sampled: 02/07/22 09:18
Received: 02/09/22 10:45
PO #: 28361

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical - Greensburg									
Radium 226 - subcontracted	0.364	pCi/L			1	0.729	03/09/22 12:46		904.0 903.1
Radium 228 - subcontracted	-0.00683	pCi/L			1	0.66	03/04/22 14:09		904.0 903.1

Sample: FB01553-02
Name: MW-1R DUPLICATE
Matrix: Ground Water - Grab

Sampled: 02/07/22 00:00
Received: 02/09/22 10:45
PO #: 28361

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical - Greensburg									
Radium 226 - subcontracted	0.416	pCi/L			1	0.778	03/09/22 12:46		904.0 903.1
Radium 228 - subcontracted	0.171	pCi/L			1	0.68	03/04/22 14:09		904.0 903.1

ANALYTICAL RESULTS

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

ANALYTICAL RESULTS

Sample: FB01553-01
Name: MW-1R
Matrix: Ground Water - Grab

Sampled: 02/07/22 09:18
Received: 02/09/22 10:45
PO #: 28361

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	17	mg/L		02/15/22 19:14	5	5.0	02/15/22 19:14	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		02/15/22 18:56	1	0.250	02/15/22 18:56	CRD	EPA 300.0 REV 2.1
Sulfate	190	mg/L		02/15/22 19:32	25	25	02/15/22 19:32	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	450	mg/L		02/10/22 12:10	1	26	02/10/22 14:17	ADM	SM 2540C
Total Metals - PIA									
Antimony	< 3.0	ug/L		02/10/22 09:21	5	3.0	02/11/22 12:27	KMC	EPA 6020A
Arsenic	< 1.0	ug/L		02/10/22 09:21	5	1.0	02/11/22 12:27	KMC	EPA 6020A
Barium	49	ug/L		02/10/22 09:21	5	1.0	02/11/22 12:27	KMC	EPA 6020A
Beryllium	< 1.0	ug/L		02/10/22 09:21	5	1.0	02/11/22 12:27	KMC	EPA 6020A
Boron	3500	ug/L		02/10/22 09:21	5	10	02/11/22 12:27	KMC	EPA 6020A
Cadmium	< 1.0	ug/L		02/10/22 09:21	5	1.0	02/11/22 12:27	KMC	EPA 6020A
Calcium	88000	ug/L		02/10/22 09:21	5	200	02/11/22 12:27	KMC	EPA 6020A
Chromium	< 4.0	ug/L		02/10/22 09:21	5	4.0	02/11/22 12:27	KMC	EPA 6020A
Cobalt	13	ug/L		02/10/22 09:21	5	2.0	02/11/22 12:27	KMC	EPA 6020A
Lead	< 1.0	ug/L		02/10/22 09:21	5	1.0	02/11/22 12:27	KMC	EPA 6020A
Mercury	< 0.20	ug/L		02/10/22 09:21	5	0.20	02/11/22 12:27	KMC	EPA 6020A
Molybdenum	200	ug/L		02/10/22 09:21	5	1.0	02/11/22 12:27	KMC	EPA 6020A
Selenium	< 1.0	ug/L		02/10/22 09:21	5	1.0	02/11/22 12:27	KMC	EPA 6020A
Thallium	< 1.0	ug/L		02/10/22 09:21	5	1.0	02/11/22 12:27	KMC	EPA 6020A
Lithium	0.011	mg/L		02/10/22 09:21	1	0.010	02/15/22 10:21	TJJ	EPA 6010B

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

ANALYTICAL RESULTS

Sample: FB01553-02
Name: MW-1R DUPLICATE
Matrix: Ground Water - Grab

Sampled: 02/07/22 00:00
Received: 02/09/22 10:45
PO #: 28361

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	19	mg/L		02/15/22 20:09	5	5.0	02/15/22 20:09	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		02/15/22 19:50	1	0.250	02/15/22 19:50	CRD	EPA 300.0 REV 2.1
Sulfate	200	mg/L		02/15/22 20:27	25	25	02/15/22 20:27	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	440	mg/L		02/10/22 12:10	1	26	02/10/22 14:17	ADM	SM 2540C
Total Metals - PIA									
Antimony	< 3.0	ug/L		02/10/22 09:21	5	3.0	02/11/22 13:32	KMC	EPA 6020A
Arsenic	< 1.0	ug/L		02/10/22 09:21	5	1.0	02/11/22 13:32	KMC	EPA 6020A
Barium	51	ug/L		02/10/22 09:21	5	1.0	02/11/22 13:32	KMC	EPA 6020A
Beryllium	< 1.0	ug/L		02/10/22 09:21	5	1.0	02/16/22 14:32	KMC	EPA 6020A
Boron	3300	ug/L		02/10/22 09:21	5	10	02/11/22 14:44	wjm	EPA 6020A
Cadmium	< 1.0	ug/L		02/10/22 09:21	5	1.0	02/11/22 13:32	KMC	EPA 6020A
Calcium	90000	ug/L		02/10/22 09:21	5	200	02/11/22 13:32	KMC	EPA 6020A
Chromium	< 4.0	ug/L		02/10/22 09:21	5	4.0	02/11/22 13:32	KMC	EPA 6020A
Cobalt	13	ug/L		02/10/22 09:21	5	2.0	02/11/22 13:32	KMC	EPA 6020A
Lead	< 1.0	ug/L		02/10/22 09:21	5	1.0	02/11/22 13:32	KMC	EPA 6020A
Mercury	< 0.20	ug/L		02/10/22 09:21	5	0.20	02/11/22 13:32	KMC	EPA 6020A
Molybdenum	210	ug/L		02/10/22 09:21	5	1.0	02/11/22 13:32	KMC	EPA 6020A
Selenium	< 1.0	ug/L		02/10/22 09:21	5	1.0	02/11/22 13:32	KMC	EPA 6020A
Thallium	< 1.0	ug/L		02/10/22 09:21	5	1.0	02/11/22 13:32	KMC	EPA 6020A
Lithium	0.011	mg/L		02/10/22 09:21	1	0.010	02/15/22 10:24	TJJ	EPA 6010B

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

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

Memos

Radium Subcontracted - Report Attached
Revised Report - Cr added to FB01553-02 and lowered Lithium RL to 10 ug/l

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

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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

Gail J Schindler

Certified by: Gail Schindler, Project Manager

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

March 09, 2022

Gail J. Schindler
PDC Laboratories
2231 W. Altorfer Drive
Peoria, IL 61615

RE: Project: FB01553
Pace Project No.: 30466578

Dear Gail Schindler:

Enclosed are the analytical results for sample(s) received by the laboratory on February 14, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:
- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Karen L. Smetanka
karen.smetanka@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Chenise Lambert-Sykes, PDC

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: FB01553
Pace Project No.: 30466578

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Florida: Cert E871149 SEKS WET
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: FB01553
Pace Project No.: 30466578

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30466578001	**FB01553-01**	Water	02/07/22 09:18	02/14/22 10:00
30466578002	**FB01553-02**	Water	02/07/22 00:00	02/14/22 10:00

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: FB01553
Pace Project No.: 30466578

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30466578001	**FB01553-01**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30466578002	**FB01553-02**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: FB01553
Pace Project No.: 30466578

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: PDC Laboratories Inc
Date: March 09, 2022

General Information:
2 samples were analyzed for EPA 903.1 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: FB01553
Pace Project No.: 30466578

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: PDC Laboratories Inc
Date: March 09, 2022

General Information:
2 samples were analyzed for EPA 904.0 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: FB01553
Pace Project No.: 30466578

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: PDC Laboratories Inc
Date: March 09, 2022

General Information:
2 samples were analyzed for Total Radium Calculation by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FB01553
Pace Project No.: 30466578

Sample: FB01553-01 **Lab ID: 30466578001** Collected: 02/07/22 09:18 Received: 02/14/22 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.364 ± 0.447 (0.729) C:NA T:105%**	pCi/L	03/09/22 12:46	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**-0.00683 ± 0.281 (0.660) C:76% T:95%**	pCi/L	03/04/22 14:09	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.364 ± 0.728 (1.39)**	pCi/L	03/09/22 22:00	7440-14-4	

Sample: FB01553-02 **Lab ID: 30466578002** Collected: 02/07/22 00:00 Received: 02/14/22 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.416 ± 0.482 (0.778) C:NA T:102%**	pCi/L	03/09/22 12:46	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.171 ± 0.310 (0.680) C:81% T:90%**	pCi/L	03/04/22 14:09	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.587 ± 0.792 (1.46)**	pCi/L	03/09/22 22:00	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Appendix 2

Laboratory Analytical Results
MW-1R Background - March 2, 2022

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

April 13, 2022

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

RE: SIKESTON FLY ASH APP III & IV 2021

Dear Luke St Mary:

Please find enclosed the analytical results for the **2** sample(s) the laboratory received on **3/4/22 10:30 am** and logged in under work order **FC00999**. 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 J 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 FC00999

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

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

ANALYTICAL RESULTS

Sample: FC00999-01
Name: MW-1R
Matrix: Ground Water - Grab

Sampled: 03/02/22 09:10
Received: 03/04/22 10:30
PO #: 28361

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical - Greensburg									
Radium 226 - subcontracted	0.0869	pCi/L			1	0.569	04/11/22 16:34	IR30	904.0 903.1
Rad 226 and 228-Subcontract	0.23	pCi/L			1	1.82	04/12/22 12:11		904.0 903.0
Radium 228 - subcontracted	0.143	pCi/L			1	1.25	04/05/22 14:53	IR30	904.0 903.1

Sample: FC00999-02
Name: MW-1R DUPLICATE
Matrix: Ground Water - Grab

Sampled: 03/02/22 09:10
Received: 03/04/22 10:30
PO #: 28361

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - PACE Analytical - Greensburg									
Radium 226 - subcontracted	0.393	pCi/L			1	0.118	04/11/22 16:34	IR30	904.0 903.1
Rad 226 and 228-Subcontract	1.3	pCi/L			1	1.16	04/12/22 12:11		904.0 903.0
Radium 228 - subcontracted	0.907	pCi/L			1	1.04	04/05/22 14:53	IR30	904.0 903.1

ANALYTICAL RESULTS

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

ANALYTICAL RESULTS

Sample: FC00999-01
Name: MW-1R
Matrix: Ground Water - Grab

Sampled: 03/02/22 09:10
Received: 03/04/22 10:30
PO #: 28361

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	12	mg/L		03/10/22 22:07	5	5.0	03/10/22 22:07	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		03/10/22 21:49	1	0.250	03/10/22 21:49	CRD	EPA 300.0 REV 2.1
Sulfate	130	mg/L		03/10/22 22:25	50	50	03/10/22 22:25	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	290	mg/L		03/07/22 12:42	1	26	03/07/22 15:21	JLC1/ADM	SM 2540C
Total Metals - PIA									
Antimony	< 3.0	ug/L		03/08/22 08:57	5	3.0	03/08/22 13:48	JMW	EPA 6020A
Arsenic	< 1.0	ug/L		03/08/22 08:57	5	1.0	03/08/22 13:48	JMW	EPA 6020A
Barium	41	ug/L		03/08/22 08:57	5	1.0	03/08/22 13:48	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		03/08/22 08:57	5	1.0	03/08/22 13:48	JMW	EPA 6020A
Boron	2600	ug/L		03/08/22 08:57	5	10	03/08/22 13:48	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		03/08/22 08:57	5	1.0	03/08/22 13:48	JMW	EPA 6020A
Calcium	65000	ug/L		03/08/22 08:57	5	200	03/08/22 13:48	JMW	EPA 6020A
Chromium	< 4.0	ug/L		03/08/22 08:57	5	4.0	03/08/22 13:48	JMW	EPA 6020A
Cobalt	7.3	ug/L		03/08/22 08:57	5	2.0	03/08/22 13:48	JMW	EPA 6020A
Lead	< 1.0	ug/L		03/08/22 08:57	5	1.0	03/08/22 13:48	JMW	EPA 6020A
Mercury	< 0.20	ug/L		03/08/22 08:57	5	0.20	03/08/22 13:48	JMW	EPA 6020A
Molybdenum	150	ug/L		03/08/22 08:57	5	1.0	03/08/22 13:48	JMW	EPA 6020A
Selenium	< 1.0	ug/L		03/08/22 08:57	5	1.0	03/08/22 13:48	JMW	EPA 6020A
Thallium	< 1.0	ug/L		03/08/22 08:57	5	1.0	03/08/22 13:48	JMW	EPA 6020A
Lithium	< 0.010	mg/L		03/08/22 08:57	1	0.010	03/11/22 13:44	TJJ	EPA 6010B

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

ANALYTICAL RESULTS

Sample: FC00999-02
Name: MW-1R DUPLICATE
Matrix: Ground Water - Grab

Sampled: 03/02/22 09:10
Received: 03/04/22 10:30
PO #: 28361

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	12	mg/L		03/10/22 23:38	5	5.0	03/10/22 23:38	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		03/10/22 23:19	1	0.250	03/10/22 23:19	CRD	EPA 300.0 REV 2.1
Sulfate	130	mg/L		03/10/22 23:57	50	50	03/10/22 23:57	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	270	mg/L		03/07/22 12:42	1	26	03/07/22 15:21	JLC1/ADM	SM 2540C
Total Metals - PIA									
Antimony	< 3.0	ug/L		03/08/22 08:57	5	3.0	03/08/22 13:52	JMW	EPA 6020A
Arsenic	< 1.0	ug/L		03/08/22 08:57	5	1.0	03/08/22 13:52	JMW	EPA 6020A
Barium	41	ug/L		03/08/22 08:57	5	1.0	03/08/22 13:52	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		03/08/22 08:57	5	1.0	03/08/22 13:52	JMW	EPA 6020A
Boron	2800	ug/L		03/08/22 08:57	5	10	03/08/22 13:52	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		03/08/22 08:57	5	1.0	03/08/22 13:52	JMW	EPA 6020A
Calcium	78000	ug/L		03/08/22 08:57	5	200	03/08/22 13:52	JMW	EPA 6020A
Chromium	< 4.0	ug/L		03/08/22 08:57	5	4.0	03/08/22 13:52	JMW	EPA 6020A
Cobalt	8.6	ug/L		03/08/22 08:57	5	2.0	03/08/22 13:52	JMW	EPA 6020A
Lead	< 1.0	ug/L		03/08/22 08:57	5	1.0	03/08/22 13:52	JMW	EPA 6020A
Mercury	< 0.20	ug/L		03/08/22 08:57	5	0.20	03/08/22 13:52	JMW	EPA 6020A
Molybdenum	190	ug/L		03/08/22 08:57	5	1.0	03/08/22 13:52	JMW	EPA 6020A
Selenium	< 1.0	ug/L		03/08/22 08:57	5	1.0	03/08/22 13:52	JMW	EPA 6020A
Thallium	< 1.0	ug/L		03/08/22 08:57	5	1.0	03/08/22 13:52	JMW	EPA 6020A
Lithium	< 0.010	mg/L		03/08/22 08:57	1	0.010	03/11/22 13:47	TJJ	EPA 6010B

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

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

Memos

Radium Subcontracted - Report Attached

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

Gail J Schindler

Certified by: Gail Schindler, Project Manager

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

April 12, 2022

Ms. Janet Clutters
PDC Laboratories
2231 W. Altorfer Drive
Peoria, IL 61615

RE: Project: FC00999
Pace Project No.: 30473882

Dear Ms. Clutters:

Enclosed are the analytical results for sample(s) received by the laboratory on March 11, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Karen L. Smetanka
karen.smetanka@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Ms. Valerie Bennett, PDC Laboratories
Valerie Bennett, PDC Laboratories
Chenise Lambert-Sykes, PDC

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: FC00999
Pace Project No.: 30473882

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: FC00999
Pace Project No.: 30473882

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30473882001	**FC00999-01**	Water	03/02/22 09:10	03/11/22 09:20
30473882002	**FC00999-02**	Water	03/02/22 09:10	03/11/22 09:20

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: FC00999
Pace Project No.: 30473882

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30473882001	**FC00999-01**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30473882002	**FC00999-02**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: FC00999
Pace Project No.: 30473882

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: PDC Laboratories Inc(PACE IL)
Date: April 12, 2022

General Information:
2 samples were analyzed for EPA 903.1 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: FC00999
Pace Project No.: 30473882

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: PDC Laboratories Inc(PACE IL)
Date: April 12, 2022

General Information:
2 samples were analyzed for EPA 904.0 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: FC00999
Pace Project No.: 30473882

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: PDC Laboratories Inc(PACE IL)
Date: April 12, 2022

General Information:
2 samples were analyzed for Total Radium Calculation by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FC00999
Pace Project No.: 30473882

Sample: FC00999-01 **Lab ID: 30473882001** Collected: 03/02/22 09:10 Received: 03/11/22 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.0869 ± 0.295 (0.569) C:NA T:84%**	pCi/L	04/11/22 16:34	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.143 ± 0.554 (1.25) C:69% T:84%**	pCi/L	04/05/22 14:53	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.230 ± 0.849 (1.82)**	pCi/L	04/12/22 12:11	7440-14-4	

Sample: FC00999-02 **Lab ID: 30473882002** Collected: 03/02/22 09:10 Received: 03/11/22 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.393 ± 0.261 (0.118) C:NA T:88%**	pCi/L	04/11/22 16:34	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.907 ± 0.558 (1.04) C:71% T:88%**	pCi/L	04/05/22 14:53	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.30 ± 0.819 (1.16)**	pCi/L	04/12/22 12:11	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Appendix 3

Laboratory Quality Assurance/Quality Control Data

Appendix 3

Laboratory Quality Assurance/Quality Control Data
April 17, 2021

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B128301 - No Prep - SM 2540C									
Blank (B128301-BLK1)				Prepared & Analyzed: 04/21/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B128301-BS1)				Prepared & Analyzed: 04/21/21					
Solids - total dissolved solids (TDS)	967	mg/L		1000		97	84.9-109		
Batch B128302 - No Prep - SM 2540C									
Blank (B128302-BLK1)				Prepared & Analyzed: 04/21/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B128302-BS1)				Prepared & Analyzed: 04/21/21					
Solids - total dissolved solids (TDS)	933	mg/L		1000		93	84.9-109		
Batch B128517 - No Prep - SM 2540C									
Blank (B128517-BLK1)				Prepared & Analyzed: 04/23/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B128517-BS1)				Prepared & Analyzed: 04/23/21					
Solids - total dissolved solids (TDS)	1040	mg/L		1000		104	84.9-109		
Duplicate (B128517-DUP1)	**Sample: ED03824-02**			Prepared & Analyzed: 04/23/21					
Solids - total dissolved solids (TDS)	240	mg/L	M		200			18	5
Batch B128694 - SW 3015 - EPA 6020A									
Blank (B128694-BLK1)				Prepared: 04/26/21 Analyzed: 04/29/21					
Boron	< 10	ug/L							
Calcium	< 200	ug/L							
LCS (B128694-BS1)				Prepared: 04/26/21 Analyzed: 04/29/21					
Boron	486	ug/L		555.6		88	80-120		
Calcium	5720	ug/L		5556		103	80-120		
Batch B128758 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B128758-CCB1)				Prepared & Analyzed: 04/23/21					
Sulfate	0.00	mg/L							
Fluoride	0.00	mg/L							
Chloride	0.698	mg/L							
Calibration Check (B128758-CCV1)				Prepared & Analyzed: 04/23/21					
Chloride	5.14	mg/L		5.000		103	90-110		
Fluoride	4.97	mg/L		5.000		99	90-110		
Sulfate	4.99	mg/L		5.000		100	90-110		
Batch B128788 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B128788-CCB1)				Prepared & Analyzed: 04/26/21					
Chloride	0.00	mg/L							
Fluoride	0.00	mg/L							
Sulfate	0.00	mg/L							
Calibration Check (B128788-CCV1)				Prepared & Analyzed: 04/26/21					

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B128788 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Check (B128788-CCV1)				Prepared & Analyzed: 04/26/21					
Fluoride	4.87	mg/L		5.000		97	90-110		
Chloride	4.72	mg/L		5.000		94	90-110		
Sulfate	4.88	mg/L		5.000		98	90-110		
Matrix Spike (B128788-MS1)	**Sample: ED03824-01**			Prepared & Analyzed: 04/26/21					
Fluoride	1.74	mg/L		1.500	0.167	105	80-120		
Sulfate	1.00E9	mg/L	Q4	1.500	37.5	NR	80-120		
Chloride	5.4	mg/L	Q1	1.500	3.5	130	80-120		
Matrix Spike (B128788-MS2)	**Sample: ED03824-03**			Prepared & Analyzed: 04/26/21					
Sulfate	1.00E9	mg/L	Q4	1.500	15.4	NR	80-120		
Chloride	2.4	mg/L	Q1	1.500	ND	158	80-120		
Fluoride	1.79	mg/L		1.500	0.219	105	80-120		
Matrix Spike Dup (B128788-MSD1)	**Sample: ED03824-01**			Prepared & Analyzed: 04/26/21					
Fluoride	1.75	mg/L		1.500	0.167	105	80-120	0.1	20
Sulfate	1.00E9	mg/L	Q4	1.500	37.5	NR	80-120	0	20
Chloride	5.4	mg/L	Q2	1.500	3.5	128	80-120	0.6	20
Matrix Spike Dup (B128788-MSD2)	**Sample: ED03824-03**			Prepared & Analyzed: 04/26/21					
Fluoride	1.77	mg/L		1.500	0.219	103	80-120	1	20
Sulfate	1.00E9	mg/L	Q4	1.500	15.4	NR	80-120	0	20
Chloride	2.3	mg/L	Q2	1.500	ND	157	80-120	1	20
Batch B128930 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B128930-CCB1)				Prepared & Analyzed: 04/27/21					
Chloride	0.207	mg/L							
Sulfate	0.0604	mg/L							
Fluoride	0.00	mg/L							
Calibration Check (B128930-CCV1)				Prepared & Analyzed: 04/27/21					
Sulfate	5.05	mg/L		5.000		101	90-110		
Chloride	5.00	mg/L		5.000		100	90-110		
Fluoride	4.66	mg/L		5.000		93	90-110		
Batch B128934 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B128934-CCB1)				Prepared & Analyzed: 04/27/21					
Fluoride	0.00	mg/L							
Chloride	0.943	mg/L							
Calibration Check (B128934-CCV1)				Prepared & Analyzed: 04/27/21					
Fluoride	5.07	mg/L		5.000		101	90-110		
Chloride	5.05	mg/L		5.000		101	90-110		
Batch B129075 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B129075-CCB1)				Prepared & Analyzed: 04/28/21					
Sulfate	0.00	mg/L							
Calibration Check (B129075-CCV1)				Prepared & Analyzed: 04/28/21					
Sulfate	5.01	mg/L		5.000		100	90-110		
Batch B130177 - No Prep - SM 2540C									

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B130177 - No Prep - SM 2540C									
Blank (B130177-BLK1)				Prepared & Analyzed: 05/11/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B130177-BS1)				Prepared & Analyzed: 05/11/21					
Solids - total dissolved solids (TDS)	960	mg/L		1000		96	84.9-109		
Batch B130353 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B130353-CCB1)				Prepared & Analyzed: 05/11/21					
Fluoride	0.00	mg/L							
Calibration Check (B130353-CCV1)				Prepared & Analyzed: 05/11/21					
Fluoride	4.95	mg/L		5.000		99	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

Memos

Revised report - included reanalysis results

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.
Q1	Matrix Spike failed % recovery acceptance limits. The associated blank spike recovery was acceptable.
Q2	Matrix Spike Duplicate failed % recovery acceptance limits. The associated blank spike recovery was acceptable.
Q3	Matrix Spike/Matrix Spike Duplicate both failed % recovery acceptance limits. The associated blank spike recovery was acceptable.
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 J 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	PROJECT NUMBER	PROJECT LOCATION	PURCHASE ORDER #
SIKESTON BMU POWER STATION		FLY ASH APP III	
ADDRESS: 1551 W WAKEFIELD	PHONE NUMBER: 573-475-3131	E-MAIL	DATE SHIPPED
CITY / STAT / ZIP: SIKESTON, MO 63801	SAMPLER (PLEASE PRINT): Daniel Dillingham		
CONTACT PERSON: MR LUKE ST MARY	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 # EDO3824
LOGGED BY:
CLIENT: SIKESTON BMU, SIKESTON POWER STATION
PROJECT: SIKESTON FLY 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-1	4-17-21	1048	X		GW	2	3,6	X	X	
MW-2	4-17-21	0842	X		GW	2	3,6	X	X	
MW-3	4-17-21	0737	X		GW	2	3,6	X	X	
MW-7	4-17-21	1228	X		GW	2	3,6	X	X	
MW-9	4-17-21	1326	X		GW	2	3,6	X	X	
DUPLICATE	4-17-21		X		GW	2	3,6	X	X	
FIELD BLANK	4-17-21	1228	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
Ashish Patel	4-19-21	0730			
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE 4/20/21	TIME 940

(8) COMMENTS: (FOR LAB USE ONLY)

SAMPLE TEMPERATURE UPON RECEIPT 3.6 °C
CHILL PROCESS STARTED PRIOR TO RECEIPT Y OR N
SAMPLE(S) RECEIVED ON ICE Y OR N
SAMPLE ACCEPTANCE NONCONFORMANT Y OR N
REPORT IS NEEDED
DATE AND TIME TAKEN FROM SAMPLE BOTTLE _____

Appendix 3

Laboratory Quality Assurance/Quality Control Data
June 15, 2021 Resample

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B134021 - No Prep - SM 2540C									
Blank (B134021-BLK1)				Prepared & Analyzed: 06/18/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B134021-BS1)				Prepared & Analyzed: 06/18/21					
Solids - total dissolved solids (TDS)	940	mg/L		1000		94	84.9-109		
Batch B134342 - No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B134342-CCB1)				Prepared & Analyzed: 06/21/21					
Sulfate	0.00	mg/L							
Calibration Check (B134342-CCV1)				Prepared & Analyzed: 06/21/21					
Sulfate	5.07	mg/L		5.000		101	90-110		
Batch B134677 - SW 3015 - EPA 6020A									
Blank (B134677-BLK1)				Prepared: 06/24/21 Analyzed: 06/25/21					
Calcium	< 0.20	mg/L							
LCS (B134677-BS1)				Prepared: 06/24/21 Analyzed: 06/25/21					
Calcium	5.64	mg/L		5.556		102	80-120		

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

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TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279
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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
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Missouri Department of Natural Resources - Certificate of Approval for Microbiological Laboratory Service - No. 1050

Gail J Schindler

Certified by: Gail Schindler, Project Manager

PDC LABORATORIES, INC.
WWW.PDCLAB.COM

REGULATORY PROGRAM (Check one:)		NPDES	
MORBCA	☐	RCRA	☐
CCDD	☐	TACO: RES OR IND/COMM	☐

CHAIN OF CUSTODY RECORD

STATE WHERE SAMPLE COLLECTED: MO

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

1 CLIENT	PROJECT NUMBER	PROJECT LOCATION	PURCHASE ORDER #
SIKESTON BMU POWER STATION		FLYASH RESAMPLES	
ADDRESS	**PHONE NUMBER**	**E-MAIL**	**DATE SHIPPED**
1551 W WAKEFIELD	573.475.3131	LSTMARY@SBMU.NET	
CITY STATE ZIP	**SAMPLER (PLEASE PRINT)**	**MATRIX TYPES:**	
SIKESTON, MO 63801	Daniel Dillingham	WW- WASTEWATER DW- DRINKING WATER GW- GROUND WATER WWSL- SLUDGE NAS- NON AQUEOUS SOLID LCHT-LEACHATE OIL-OIL SO-SOIL SOL-SOLID	
CONTACT PERSON	**SAMPLER'S SIGNATURE**		
LUKE ST MARY	Daniel a. Dillingham		

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	3 ANALYSIS REQUESTED + SO4	+ CA	+ TDS	REMARKS
MW-1	6-15-21	1142	X		GW	2		X	X		
DUPLICATE	6-15-21		X		GW	2		X	X		
MW-2	6-15-21	1019	X		GW	1				X	
FIELD BLANK	6-15-21	1019	X		GW	2		X	X	X	

4 (FOR LAB USE ONLY)	
LOGIN #	EF03688-04
LOGGED BY:	KEG
CLIENT:	SIKESTON BMU
PROJECT:	Sikeston RESAMPLES JUNE 2021
PROJ. MGR.:	GAIL
CUSTODY SEAL #:	

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

5 TURNAROUND TIME REQUESTED (PLEASE CHECK) (RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE) ☒ NORMAL ☐ RUSH — 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
	Ashish Patel	6-16-21	0730			
	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
				Kathryn Gray	06/17/21	1010

8 COMMENTS: (FOR LAB USE ONLY)

SAMPLE TEMPERATURE UPON RECEIPT 2.2 °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

Laboratory Quality Assurance/Quality Control Data
October 20, 2021

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B146423 - No Prep - SM 2540C									
Blank (B146423-BLK1)				Prepared & Analyzed: 10/26/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B146423-BS1)				Prepared & Analyzed: 10/26/21					
Solids - total dissolved solids (TDS)	973	mg/L		1000		97	84.9-109		
Duplicate (B146423-DUP2)	**Sample: EJ04453-01**			Prepared & Analyzed: 10/26/21					
Solids - total dissolved solids (TDS)	230	mg/L			230			0	5
Batch B146583 - No Prep - SM 2540C									
Blank (B146583-BLK1)				Prepared & Analyzed: 10/27/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B146583-BS1)				Prepared & Analyzed: 10/27/21					
Solids - total dissolved solids (TDS)	1020	mg/L		1000		102	84.9-109		
Batch B147059 - SW 3015 - EPA 6020A									
Blank (B147059-BLK1)				Prepared: 11/01/21 Analyzed: 11/03/21					
Boron	< 10	ug/L							
Calcium	< 200	ug/L							
LCS (B147059-BS1)				Prepared: 11/01/21 Analyzed: 11/03/21					
Boron	507	ug/L		555.6		91	80-120		
Calcium	5400	ug/L		5556		97	80-120		
Batch B147152 - IC No Prep - EPA 300.0 REV 2.1									
Blank (B147152-BLK1)				Prepared & Analyzed: 11/01/21					
Fluoride	< 0.250	mg/L							
Sulfate	< 1.0	mg/L							
Chloride	< 1.0	mg/L							
Blank (B147152-BLK2)				Prepared & Analyzed: 11/01/21					
Chloride	< 1.0	mg/L							
Fluoride	< 0.250	mg/L							
Sulfate	< 1.0	mg/L							
Calibration Blank (B147152-CCB1)				Prepared & Analyzed: 11/01/21					
Chloride	0.172	mg/L							
Sulfate	0.00	mg/L							
Fluoride	0.0981	mg/L							
Calibration Blank (B147152-CCB2)				Prepared & Analyzed: 11/01/21					
Chloride	0.174	mg/L							
Fluoride	0.104	mg/L							
Sulfate	0.00	mg/L							
Calibration Check (B147152-CCV1)				Prepared & Analyzed: 11/01/21					
Fluoride	5.12	mg/L		5.000		102	90-110		
Sulfate	5.15	mg/L		5.000		103	90-110		
Chloride	5.04	mg/L		5.000		101	90-110		
Calibration Check (B147152-CCV2)				Prepared & Analyzed: 11/01/21					

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B147152 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Check (B147152-CCV2)				Prepared & Analyzed: 11/01/21					
Fluoride	4.89	mg/L		5.000		98	90-110		
Sulfate	4.87	mg/L		5.000		97	90-110		
Chloride	4.84	mg/L		5.000		97	90-110		
MRL Check (B147152-MRL1)				Prepared & Analyzed: 11/01/21					
Chloride	< 1.0	mg/L		0.5000			0-200		
Fluoride	0.258	mg/L		0.5000		52	0-200		
Sulfate	0.278	mg/L		0.5000		56	0-200		
MRL Check (B147152-MRL2)				Prepared & Analyzed: 11/01/21					
Sulfate	0.277	mg/L		0.5000		55	0-200		
Chloride	< 1.0	mg/L		0.5000			0-200		
Fluoride	0.281	mg/L		0.5000		56	0-200		
Matrix Spike (B147152-MS2)	**Sample: EJ04453-02**			Prepared & Analyzed: 11/01/21					
Fluoride	1.54	mg/L		1.500	0.160	92	80-120		
Chloride	5.8	mg/L		1.500	4.2	102	80-120		
Sulfate	1.00E9	mg/L	Q4	1.500	15.3	NR	80-120		
Matrix Spike (B147152-MS3)	**Sample: EJ04453-03**			Prepared & Analyzed: 11/01/21					
Chloride	2.2	mg/L	Q1	1.500	ND	145	80-120		
Fluoride	1.70	mg/L		1.500	0.190	100	80-120		
Sulfate	1.00E9	mg/L	Q4	1.500	13.3	NR	80-120		
Matrix Spike Dup (B147152-MSD2)	**Sample: EJ04453-02**			Prepared & Analyzed: 11/01/21					
Sulfate	1.00E9	mg/L	Q4	1.500	15.3	NR	80-120	0	20
Fluoride	1.59	mg/L		1.500	0.160	95	80-120	3	20
Chloride	5.9	mg/L		1.500	4.2	114	80-120	3	20
Matrix Spike Dup (B147152-MSD3)	**Sample: EJ04453-03**			Prepared & Analyzed: 11/01/21					
Fluoride	1.66	mg/L		1.500	0.190	98	80-120	2	20
Chloride	2.1	mg/L	Q2	1.500	ND	139	80-120	4	20
Sulfate	1.00E9	mg/L	Q4	1.500	13.3	NR	80-120	0	20
Batch B147361 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B147361-CCB1)				Prepared & Analyzed: 11/02/21					
Sulfate	0.00	mg/L							
Calibration Check (B147361-CCV1)				Prepared & Analyzed: 11/02/21					
Sulfate	4.86	mg/L					90-110		
Batch B150295 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B150295-CCB1)				Prepared & Analyzed: 12/06/21					
Sulfate	0.00	mg/L							
Calibration Check (B150295-CCV1)				Prepared & Analyzed: 12/06/21					
Sulfate	5.18	mg/L		5.000		104	90-110		
Batch B150388 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B150388-CCB1)				Prepared & Analyzed: 12/07/21					
Fluoride	0.00	mg/L							
Calibration Check (B150388-CCV1)				Prepared & Analyzed: 12/07/21					
Fluoride	5.03	mg/L		5.000		101	90-110		

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B150448 - No Prep - SM 2540C									
Blank (B150448-BLK1)				Prepared & Analyzed: 12/08/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B150448-BS1)				Prepared & Analyzed: 12/08/21					
Solids - total dissolved solids (TDS)	987	mg/L		1000		99	84.9-109		
Duplicate (B150448-DUP1)	**Sample: EJ04453-05RE1**			Prepared & Analyzed: 12/08/21					
Solids - total dissolved solids (TDS)	620	mg/L	H, M		490			23	5

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.
Q1	Matrix Spike failed % recovery acceptance limits. The associated blank spike recovery was acceptable.
Q2	Matrix Spike Duplicate failed % recovery acceptance limits. The associated blank spike recovery was acceptable.
Q3	Matrix Spike/Matrix Spike Duplicate both failed % recovery acceptance limits. The associated blank spike recovery was acceptable.
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 J 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	PROJECT NUMBER	PROJECT LOCATION	PURCHASE ORDER #
SIKESTON BMU POWER STATION		FLY ASH APP III	
ADDRESS: 1551 W WAKEFIELD	PHONE NUMBER: 573-475-3131	E-MAIL	DATE SHIPPED
CITY STAT ZIP: SIKESTON, MO 63801	SAMPLER (PLEASE PRINT): Daniel Dillingham		
CONTACT PERSON: MR LUKE ST MARY	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 # EJ04453-07

LOGGED BY: KEZ

CLIENT: SIKESTON BMU, SIKESTON POWER STATION

PROJECT: SIKESTON FLY 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-1	10-20-21	1039	X		GW	2	3,6	X	X						
MW-2	10-20-21	0858	X		GW	2	3,6	X	X						
MW-3	10-20-21	0756	X		GW	2	3,6	X	X						
MW-7	10-20-21	1143	X		GW	2	3,6	X	X						
MW-9	10-20-21	1317	X		GW	2	3,6	X	X						
DUPLICATE	10-20-21		X		GW	2	3,6	X	X						
FIELD BLANK	10-20-21	1317	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
Ashish Patel	10-21-21 / 0700		
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	DATE / TIME
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE) Kathryn Gray	DATE 10/22/21 / TIME 1030

(8) COMMENTS: (FOR LAB USE ONLY)

SAMPLE TEMPERATURE UPON RECEIPT 2.1 °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

Laboratory Quality Assurance/Quality Control Data
December 27, 2021 Resample

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					
Fluoride	0.00	mg/L							
Calibration Check (B220859-CCV1)				Prepared & Analyzed: 01/03/22					
Fluoride	5.19	mg/L		5.000		104	90-110		
Matrix Spike (B220859-MS1)	**Sample: EL04894-02**			Prepared & Analyzed: 01/03/22					
Fluoride	3.28	mg/L		1.500	1.79	99	80-120		
Matrix Spike Dup (B220859-MSD1)	**Sample: EL04894-02**			Prepared & Analyzed: 01/03/22					
Fluoride	3.26	mg/L		1.500	1.79	98	80-120	0.7	20
Batch B220860 - SW 3015 - EPA 6020A									
Blank (B220860-BLK1)				Prepared: 01/04/22 Analyzed: 01/05/22					
Boron	< 10	ug/L							
LCS (B220860-BS1)				Prepared: 01/04/22 Analyzed: 01/05/22					
Boron	556	ug/L		555.6		100	80-120		
Matrix Spike (B220860-MS1)	**Sample: EL04894-01**			Prepared: 01/04/22 Analyzed: 01/05/22					
Boron	616	ug/L		555.6	43.3	103	75-125		
Matrix Spike Dup (B220860-MSD1)	**Sample: EL04894-01**			Prepared: 01/04/22 Analyzed: 01/05/22					
Boron	572	ug/L		555.6	43.3	95	75-125	7	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
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Drinking Water Certifications/Accreditations: Iowa (240); Kansas (E-10338); Missouri (870)
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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

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	PROJECT NUMBER	PROJECT LOCATION	PURCHASE ORDER #
SIKESTON BMU POWER STATION		FLY ASH APP III	
ADDRESS: 1551 W WAKEFIELD	PHONE NUMBER: 573-475-3131	E-MAIL	DATE SHIPPED
CITY / STAT / ZIP: SIKESTON, MO 63801	SAMPLER (PLEASE PRINT): Daniel 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
CONTACT PERSON: MR LUKE ST MARY	SAMPLER'S SIGNATURE: Daniel Dillingham		

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	3 ANALYSIS REQUESTED F	B	TDS					REMARKS
MW-2	12-27-21	1007	X		GW	1			X						
MW-9	12-27-21	1120	X		GW	1		X		X					
DUPLICATE	12-27-21		X		GW	1		X		X					
FIELD BLANK	12-27-21	1007	X		GW	2		X	X	X					

4 (FOR LAB USE ONLY)
LOGIN # EL04814-04
LOGGED BY: DCW
CLIENT: SIKESTON BMU, SIKESTON POWER STATION
PROJECT: SIKESTON FLY ASH APP III RESAMPLES
PROJ. MGR.: GJ SCHINDLER

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

8 COMMENTS: (FOR LAB USE ONLY)

SAMPLE TEMPERATURE UPON RECEIPT 1.02 °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

Laboratory Quality Assurance/Quality Control Data
MW-1R Background - October 20, 2021

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: EJ04431
Pace Project No.: 30448924

QC Batch: 471833
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30448924001, 30448924002

METHOD BLANK: 2277668
Matrix: Water
Associated Lab Samples: 30448924001, 30448924002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.171 ± 0.311 (0.682) C:68% T:95%	pCi/L	11/22/21 14:13	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: EJ04431
Pace Project No.: 30448924

QC Batch: 471832
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30448924001, 30448924002

METHOD BLANK: 2277665
Matrix: Water
Associated Lab Samples: 30448924001, 30448924002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0490 ± 0.319 (0.642) C:NA T:101%	pCi/L	11/19/21 16:58	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: EJ04431
Pace Project No.: 30448924

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. Is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

SUBCONTRACT ORDER

Transfer Chain of Custo

PDC Laboratories, Inc

EJ04431

WO# : 30448924

30448924

SENDING LABORATORY

PDC Laboratories, Inc.
2231 W Altorfer Dr
Peoria, IL 61615
(800) 752-6651

RECEIVING LABORATORY

PACE Analytical - Greensburg
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724) 850-5600

Sample: EJ04431-01
Name: MW-1R

Sampled: 10/20/21 14:30
Matrix: Ground Water
Preservative: HNO3, pH <2

001

Analysis	Due	Expires	Comments
01-Radium 226/228	11/02/21 16:00	04/18/22 14:30	

Sample: EJ04431-02
Name: MW-1R DUPLICATE

Sampled: 10/20/21 14:30
Matrix: Ground Water
Preservative: HNO3, pH <2

002

Analysis	Due	Expires	Comments
01-Radium 226/228	11/02/21 16:00	04/18/22 14:30	

Please email results to Alan Hogan at ahogan@pdclab.com

Date Shipped: 10-27-21 Total # of Containers: 2 Sample Origin (State): IL PO #: 42

Turn-Around Time Requested ☑ NORMAL ☐ RUSH Date Results Needed: _____

Relinquished By	Date/Time	Received By	Date/Time
Alan D. Hogan	10-27-21 10:30		
		Z Adegun	10-29-21 10:15

Sample Temperature Upon Receipt	____ °C
Sample(s) Received on Ice	Y or N
Proper Bottles Received in Good Condition	Y or N
Bottles Filled with Adequate Volume	Y or N
Samples Received Within Hold Time	Y or N
Date/Time Taken From Sample Bottle	Y or N

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: PDC Laboratories Project #

Courier: ☐ Fed Ex ☑ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Label: Ja
LIMS Login: SM

Tracking #: 1Z E30 654 01 9316 4072

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Thermometer Used — Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

pH paper Lot# 10D3801 Date and Initials of person examining contents: 11-5-21 Ja

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:		✓		
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH<2
All containers meet method preservation requirements.	✓			Initial when completed: JA Date/time of preservation:
				Lot # of added preservative:
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: JA Date: 11-5-21 Survey Meter SN: 1563

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

WO#: 30448924
PM: AES
CLIENT: PDC
Due Date: 11/19/21

Pace Analytical®

Sample Container Count

WO#: 30448924

PM: AES

CLIENT: PDC

Due Date: 11/19/21

Client: PDC Laboratories

Site:

Profile Number:

Notes:

Sample Line Item	Matrix	AG1H	AG1S	AG1T	AG2U	AG3S	AG3U	AG5U	AG5T	BG1U	BG2U	BP1N	BP1U	BP2S	BP2U	BP3C	BP3N	BP3S	BP3U	DG9S	GCUB	VG9H	VG9T	VG9U	VOAK	WGFU	WGKU	ZPLC	lagN
1																													1
2																													1
3																													
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

Container Codes

Glass

GJN	1 Gallon Jug with HNO3	DG9S	40mL amber VOA vial H2SO4
AG5U	100mL amber glass unprserved	VG9U	40mL clear VOA vial
AG5T	100mL amber glass Na Thiosulfate	VG9T	40mL clear VOA vial Na Thiosul
GJN	1 Gallon Jug	VG9H	40mL clear VOA vial HCl
AG1S	1L amber glass H2SO4	JGFU	4oz amber wide jar
AG1H	1L amber glass HCl	WGFU	4oz wide jar unpreserved
AG1T	1L amber glass Na Thiosulfate	BG2U	500mL clear glass unpreserved
BG1U	1L clear glass unpreserved	AG2U	500mL amber glass unpreserve
AG3S	250mL amber glass H2SO4	WGKU	8oz wide jar unpreserved
AG3U	250mL amber glass unpreserved		

Plastic / Misc.

GCUB	1 Gallon Cubitainer
12GN	1/2 Gallon Cubitainer
SP5T	120mL Coliform Na Thiosulfate
BP1N	1L plastic HNO3
BP1U	1L plastic unpreserved
BP3S	250mL plastic H2SO4
BP3N	250mL plastic HNO3
BP3U	250mL plastic unpreserved
BP3C	250ml plastic NAOH
BP2S	500mL plastic H2SO4
BP2U	500mL plastic unpreserved

EZI	5g Encore
VOAK	Kit for Volatile Solid
I	Wipe/Swab
ZPLC	Ziploc Bag

WT	Water
SL	Solid
OL	Non-aqueous liquid
WP	Wipe

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	PROJECT NUMBER	PROJECT LOCATION	PURCHASE ORDER #
SIKESTON BMU POWER STATION		FLY ASH APP III & IV	
ADDRESS: 1551 W WAKEFIELD	PHONE NUMBER: 573-475-3131	E-MAIL	DATE SHIPPED
CITY / STAT / ZIP: SIKESTON, MO 63801	SAMPLER (PLEASE PRINT): Daniel Dillingham		
CONTACT PERSON: MR LUKE ST MARY	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 # EJ04431-02
LOGGED BY: KEO
SIKESTON BMU, SIKESTON POWER STATION
SIKESTON FLY ASH APP III & IV 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	CL, F, SO4, TDS, B, CA	SB, AS, BA, BE, CD, CO	CR+3, PB, LI, HG, MO	SE, TL, RAD 226/228				REMARKS
MW-1R	10-20-21	1430	X		GW	3	3,6	X	X	X	X				
MW-1R DUPLICATE	10-20-21		X		GW	3	3,6	X	X	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
Ashish Patel	10-21-21	0700			
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
			Kathryn Gray	10/22/21	1030

(8) COMMENTS: (FOR LAB USE ONLY)

SAMPLE TEMPERATURE UPON RECEIPT 2.1 °C
CHILL PROCESS STARTED PRIOR TO RECEIPT Y OR N
SAMPLE(S) RECEIVED ON ICE Y OR N
SAMPLE ACCEPTANCE NONCONFORMANT Y OR N
REPORT IS NEEDED Y OR N
DATE AND TIME TAKEN FROM SAMPLE BOTTLE _____

Appendix 3

Laboratory Quality Assurance/Quality Control Data
MW-1R Background – November 1, 2021

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: EK00645
Pace Project No.: 30450682

QC Batch: 473857
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30450682001, 30450682002

METHOD BLANK: 2289204 Matrix: Water
Associated Lab Samples: 30450682001, 30450682002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0520 ± 0.306 (0.624) C:NA T:95%	pCi/L	12/06/21 16:30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: EK00645
Pace Project No.: 30450682

QC Batch: 473859
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30450682001, 30450682002

METHOD BLANK: 2289205
Matrix: Water
Associated Lab Samples: 30450682001, 30450682002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.167 ± 0.349 (0.770) C:74% T:85%	pCi/L	12/06/21 11:16	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: EK00645
Pace Project No.: 30450682

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. Is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

SUBCONTRACT ORDER
Transfer Chain of Custody

PDC Laboratories, Inc.

EK00645

SENDING LABORATORY

PDC Laboratories, Inc.
2231 W Altorfer Dr
Peoria, IL 61615
(800) 752-6651

RECEIVING LABORATORY

PACE Analytical - Greensburg
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724) 850-5600

Sample: EK00645-01
Name: MW-1R

Sampled: 11/01/21 14:54
Matrix: Ground Water
Preservative: HNO3, pH <2

Analysis	Due	Expires	Comments	001
01-Radium 226/228	11/12/21 16:00	04/30/22 14:54		

Sample: EK00645-02
Name: MW-1R DUPLICATE

Sampled: 11/01/21 14:54
Matrix: Ground Water
Preservative: HNO3, pH <2

Analysis	Due	Expires	Comments	002
01-Radium 226/228	11/12/21 16:00	04/30/22 14:54		

WO# : 30450682

30450682

Please email results to Gail Schindler at gschindler@pdclab.com

Date Shipped: 11-4-21 Total # of Containers: 2 Sample Origin (State): IL PO #: 42

Turn-Around Time Requested ☑ NORMAL ☐ RUSH Date Results Needed: _____

Relinquished By	Date/Time	Received By	Date/Time
[signature]	11-4-21 12:05	[signature]	11/8/21 1050

Sample Temperature Upon Receipt ____ °C
Sample(s) Received on Ice Y or N
Proper Bottles Received in Good Condition Y or N
Bottles Filled with Adequate Volume Y or N
Samples Received Within Hold Time Y or N
Date/Time Taken From Sample Bottle Y or N

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: PDC Project #

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Label AE
LIMS Login AE

Tracking #: 7751 2020 7881

Custody Seal on Cooler/Box Present: ☐ yes ☐ no Seals intact: ☐ yes ☐ no

Thermometer Used Type of Ice: Wet Blue None

Cooler Temperature Observed Temp °C Correction Factor: °C Final Temp: °C

Temp should be above freezing to 6°C

WO#: 30450682

PM: AES Due Date: 12/01/21

CLIENT: PDC

Comments:	Yes	No	N/A	pH paper Lot# 10038801 / Date and Initials of person examining contents: AE 11/17/21
Chain of Custody Present:	X			1.
Chain of Custody Filled Out:	X			2.
Chain of Custody Relinquished:	X			3.
Sampler Name & Signature on COC:		X		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	X			5.
Samples Arrived within Hold Time:	X			6.
Short Hold Time Analysis (<72hr remaining):		X		7.
Rush Turn Around Time Requested:		X		8.
Sufficient Volume:	X			9.
Correct Containers Used:	X			10.
-Pace Containers Used:		X		
Containers Intact:	X			11.
Orthophosphate field filtered			X	12.
Hex Cr Aqueous sample field filtered			X	13.
Organic Samples checked for dechlorination:			X	14.
Filtered volume received for Dissolved tests			X	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	X			16.
All containers meet method preservation requirements.	X			Initial when completed AE / Date/time of preservation / Lot # of added preservative
Headspace in VOA Vials (>6mm):			X	17.
Trip Blank Present:			X	18.
Trip Blank Custody Seals Present			X	
Rad Samples Screened < 0.5 mrem/hr	X			Initial when completed: AE / Date: 11/17/21 / Survey Meter SN: 5403

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

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: FLY ASH APP III & IV
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 # EK00645-02
LOGGED BY: WEG
SIKESTON BMU, SIKESTON POWER STATION
SIKESTON FLY ASH APP III & IV 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	CL, F, SO4, TDS, B, CA	SB, AS, BA, BE, CD, CO	CR+3, PB, LI, HG, MO	SE, TL, RAD 226/228				REMARKS
MW-1R	11/1/21	1454	X		GW	3	3,6	X	X	X	X				
MW-1R DUPLICATE	11/1/21		X		GW	3	3,6	X	X	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
Ashish Patel	11/2/21	0830			
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
			Kathy Gray	11/03/21	0950

(8) COMMENTS: (FOR LAB USE ONLY)

SAMPLE TEMPERATURE UPON RECEIPT 0.9 °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

Laboratory Quality Assurance/Quality Control Data
MW-1R Background - November 16, 2021

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: EK03830
Pace Project No.: 30452430

QC Batch: 475970
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30452430001, 30452430002

METHOD BLANK: 2299146 Matrix: Water
Associated Lab Samples: 30452430001, 30452430002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.264 ± 0.275 (0.744) C:NA T:93%	pCi/L	12/29/21 14:12	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: EK03830
Pace Project No.: 30452430

QC Batch: 475971
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30452430001, 30452430002

METHOD BLANK: 2299147 Matrix: Water
Associated Lab Samples: 30452430001, 30452430002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.146 ± 0.303 (0.669) C:75% T:91%	pCi/L	01/03/22 14:53	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: EK03830
Pace Project No.: 30452430

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. Is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

SUBCONTRACT ORDER
Transfer Chain of Custody

PDC Laboratories

EK03830

SENDING LABORATORY

PDC Laboratories, Inc.
2231 W Altorfer Dr
Peoria, IL 61615
(800) 752-6651

RECEIVING LABORATORY

PACE Analytical - Greensburg
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724) 850-5600

Sample: EK03830-01
Name: MW-1R

Sampled: 11/16/21 08:55
Matrix: Ground Water
Preservative: HNO3, pH <2

001

Analysis	Due	Expires	Comments
01-Radium 226/228	12/01/21 16:00	05/15/22 08:55	

Sample: EK03830-02
Name: MW-1R DUPLICATE

Sampled: 11/16/21 00:00
Matrix: Ground Water
Preservative: HNO3, pH <2

002

Analysis	Due	Expires	Comments
01-Radium 226/228	12/01/21 16:00	05/15/22 00:00	

WO# : 30452430

30452430

Please email results to Gail Schindler at gschindler@pdclab.com

Date Shipped: 11-22-21 Total # of Containers: 2 Sample Origin (State): IL PO #: 42

Turn-Around Time Requested ☑ NORMAL ☐ RUSH Date Results Needed: _____

Relinquished By	Date/Time	Received By	Date/Time
[signature]	11-22-21 15:45	[signature]	11/29/21 0940

Sample Temperature Upon Receipt ___ °C
Sample(s) Received on Ice Y or (N)
Proper Bottles Received in Good Condition (Y) or N
Bottles Filled with Adequate Volume (Y) or N
Samples Received Within Hold Time (Y) or N
Date/Time Taken From Sample Bottle (Y) or N

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: PDC Labs Project # #30452430

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label DL
LIMS Login VM

Tracking #: 7752 8448 4102

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Thermometer Used — Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

pH paper Lot# 1003801 Date and Initials of person examining contents: DL 11/29/21

Comments:	Yes	No	N/A	
Chain of Custody Present:	X			1.
Chain of Custody Filled Out:	X			2.
Chain of Custody Relinquished:	X			3.
Sampler Name & Signature on COC:		X		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	X			5.
Samples Arrived within Hold Time:	X			6.
Short Hold Time Analysis (<72hr remaining):		X		7.
Rush Turn Around Time Requested:		X		8.
Sufficient Volume:	X			9.
Correct Containers Used:	X			10.
-Pace Containers Used:		X		
Containers Intact:	X			11.
Orthophosphate field filtered			X	12.
Hex Cr Aqueous sample field filtered			X	13.
Organic Samples checked for dechlorination:			X	14.
Filtered volume received for Dissolved tests			X	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	X			16. 5mL HNO_3 added to 03830-01 to make pH<2
All containers meet method preservation requirements.		X		Initial when completed: DL Date/time of preservation: 11/29/21 1400 Lot # of added preservative: DL21-1282
Headspace in VOA Vials (>6mm):			X	17.
Trip Blank Present:			X	18.
Trip Blank Custody Seals Present			X	
Rad Samples Screened < 0.5 mrem/hr	X			Initial when completed: DL Date: 11/29/21 Survey Meter SN: 1563

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Pace Analytical®

Pace Greensburg Lab -Sample Container Count

Client _____ Profile Number 2232

Site _____ Notes _____

Sample Line Item	Matrix	AG1H	AG1S	AG1T	AG2U	AG3S	AG3U	AG5U	AG5T	BG1U	BG2U	BP1N	BP1U	BP2S	BP2U	BP3C	BP3N	BP3S	BP3U	DG9S	GCUB	VG9H	VG9T	VG9U	VOAK	WGFU	WGKU	ZPLC	
1																													1 GJN
2																													↓
3																													
4																													
5																													
6																													
7														#3045243															
8																													
9																													
10																													
11																													
12																													

Container Codes

Glass

GJN	1 Gallon Jug with HNO3	DG9S	40mL amber VOA vial H2SO4
G5U	100mL amber glass unprserved	VG9U	40mL clear VOA vial
G5T	100mL amber glass Na Thiosulfate	VG9T	40mL clear VOA vial Na Thiosul
GJN	1 Gallon Jug	VG9H	40mL clear VOA vial HCl
G1S	1L amber glass H2SO4	JGFU	4oz amber wide jar
G1H	1L amber glass HCl	WGFU	4oz wide jar unpreserved
G1T	1L amber glass Na Thiosulfate	BG2U	500mL clear glass unpreserved
G1U	1L clear glass unpreserved	AG2U	500mL amber glass unpreserve
G3S	250mL amber glass H2SO4	WGKU	8oz wide jar unpreserved
G3U	250mL amber glass unpreserved		

Plastic / Misc.

GCUB	1 Gallon Cubitainer
12GN	1/2 Gallon Cubitainer
SP5T	120mL Coliform Na Thiosulfate
BP1N	1L plastic HNO3
BP1U	1L plastic unpreserved
BP3S	250mL plastic H2SO4
BP3N	250mL plastic HNO3
BP3U	250mL plastic unpreserved
BP3C	250ml plastic NAOH
BP2S	500mL plastic H2SO4
BP2U	500mL plastic unpreserved

EZI	5g Encore
VOAK	Kit for Volatile Solid
I	Wipe/Swab
ZPLC	Ziploc Bag

WT	Water
SL	Solid
OL	Non-aqueous liquid
WP	Wipe

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: FLY ASH APP III & IV
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 # EK-03830-02
LOGGED BY: DW
SIKESTON BMU, SIKESTON POWER STATION
SIKESTON FLY ASH APP III & IV 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	CL, F, SO4, TDS, B, CA	SB, AS, BA, BE, CD, CO	CR+3, PB, LI, HG, MO	SE, TL, RAD 226/228	REMARKS
MW-1R	11-16-21	0855	X		GW	3	3,6	X	X	X	X	
MW-1R DUPLICATE	11-16-21		X		GW	3	3,6	X	X	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	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
RELINQUISHED BY: (SIGNATURE)	11-17-21	0800			
RELINQUISHED BY: (SIGNATURE)			RECEIVED BY: (SIGNATURE)		
RELINQUISHED BY: (SIGNATURE)			RECEIVED BY: (SIGNATURE)	11/18/21	1030

8 COMMENTS: (FOR LAB USE ONLY)
SAMPLE TEMPERATURE UPON RECEIPT 0.6 °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

Laboratory Quality Assurance/Quality Control Data
MW-1R Background – December 7, 2021

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: EL02011
Pace Project No.: 30457158

QC Batch: 478390
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30457158001, 30457158002

METHOD BLANK: 2312058
Matrix: Water
Associated Lab Samples: 30457158001, 30457158002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0933 ± 0.259 (0.502) C:NA T:95%	pCi/L	01/24/22 11:03	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: EL02011
Pace Project No.: 30457158

QC Batch: 478392
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30457158001, 30457158002

METHOD BLANK: 2312060
Matrix: Water
Associated Lab Samples: 30457158001, 30457158002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.0164 ± 0.350 (0.823) C:64% T:86%	pCi/L	01/19/22 11:29	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: EL02011
Pace Project No.: 30457158

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. Is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

SUBCONTRACT ORDER
Transfer Chain of Custody

PDC Laboratories

EL02011

SENDING LABORATORY

PDC Laboratories, Inc.
2231 W Altorfer Dr
Peoria, IL 61615
(800) 752-6651

RECEIVING LABORATORY

PACE Analytical - Greensburg
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724) 850-5600

Sample: EL02011-01
Name: MW-1R

Sampled: 12/07/21 08:58
Matrix: Ground Water
Preservative: HNO3, pH <2

Analysis	Due	Expires	Comments
01-Radium 226/228	12/20/21 16:00	06/05/22 08:58	

Sample: EL02011-02
Name: MW-1R DUPLICATE

Sampled: 12/07/21 00:00
Matrix: Ground Water
Preservative: HNO3, pH <2

Analysis	Due	Expires	Comments
01-Radium 226/228	12/20/21 16:00	06/05/22 00:00	

WO# : 30457158

30457158

Please email results to Gail Schindler at gschindler@pdclab.com

Date Shipped: 12-16-21 Total # of Containers: 2 Sample Origin (State): IL PO #: 42

Turn-Around Time Requested ☑ NORMAL ☐ RUSH Date Results Needed: _____

Relinquished By	Date/Time	Received By	Date/Time
[signature]	12/16/21 12:00		
		[signature]	12/20/21 0830

Sample Temperature Upon Receipt ___ °C
Sample(s) Received on Ice Y or (N)
Proper Bottles Received in Good Condition (Y) or N
Bottles Filled with Adequate Volume (Y) or N
Samples Received Within Hold Time (Y) or N
Date/Time Taken From Sample Bottle (Y) or N

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: PDC Project# 30457158

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label JSM
LIMS Login JSM

Tracking #: 7755 1932 6052

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☒ no

Thermometer Used N/A Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp ___ °C Correction Factor: ___ °C Final Temp: ___ °C

Temp should be above freezing to 6°C

pH paper Lot# 100281I Date and Initials of person examining contents: JSM 12/29/21

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:		✓		
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. PH<2
All containers meet method preservation requirements.	✓			Initial when completed JSM Date/time of preservation Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: JSM Date: 12/29/21 Survey Meter SN: 1563

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

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: FLY ASH APP III & IV
PURCHASE ORDER #:
PHONE NUMBER: 573-475-3131
E-MAIL:
DATE SHIPPED:
SAMPLER (PLEASE PRINT): Daniell Dillingham
SAMPLER'S SIGNATURE: Daniell 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 # ELO2011-02
LOGGED BY: KEG
SIKESTON BMU, SIKESTON POWER STATION
SIKESTON FLY ASH APP III & IV 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)	CL, F, SO4, TDS, B, CA	SB, AS, BA, BE, CD, CO	CR+3, PB, LI, HG, MO	SE, TL, RAD 226/228				REMARKS
MW-1R	12-7-21	0858	X		GW	3	3,6	X	X	X	X				
MW-1R DUPLICATE	12-7-21		X		GW	3	3,6	X	X	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
Daniell Dillingham	12-8-21	0830			
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
				12/09/21	1030

(8) COMMENTS: (FOR LAB USE ONLY)

SAMPLE TEMPERATURE UPON RECEIPT 1.0 °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

Laboratory Quality Assurance/Quality Control Data
MW-1R Background - December 27, 2021

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: EL04899
Pace Project No.: 30459060

QC Batch: 479773
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30459060001, 30459060002

METHOD BLANK: 2318429
Matrix: Water
Associated Lab Samples: 30459060001, 30459060002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.420 ± 0.409 (0.838) C:72% T:81%	pCi/L	01/28/22 14:51	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: EL04899
Pace Project No.: 30459060

QC Batch: 479772
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30459060001, 30459060002

METHOD BLANK: 2318428
Matrix: Water
Associated Lab Samples: 30459060001, 30459060002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.208 ± 0.323 (0.779) C:NA T:87%	pCi/L	02/02/22 12:25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: EL04899
Pace Project No.: 30459060

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. Is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

SUBCONTRACT ORDER
Transfer Chain of Custody

PDC Laboratories

EL04899

WO# : 30459060

30459060

SENDING LABORATORY

PDC Laboratories, Inc.
2231 W Altorfer Dr
Peoria, IL 61615
(800) 752-6651

RECEIVING LABORATORY

PACE Analytical - Greensburg
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724) 850-5600

Sample: EL04899-01
Name: MW-1R

Sampled: 12/27/21 12:09
Matrix: Ground Water
Preservative: HNO3, pH <2

001

Analysis	Due	Expires	Comments
01-Radium 226/228	01/07/22 16:00	06/25/22 12:09	

Sample: EL04899-02
Name: MW-1R DUPLICATE

Sampled: 12/27/21 00:00
Matrix: Ground Water
Preservative: HNO3, pH <2

602

Analysis	Due	Expires	Comments
01-Radium 226/228	01/07/22 16:00	06/25/22 00:00	

Please email results to Gail Schindler at gschindler@pdclab.com

Date Shipped: 1-7-22 Total # of Containers: 2 Sample Origin (State): IL PO #: 42

Turn-Around Time Requested ☑ NORMAL ☐ RUSH Date Results Needed: _____

Relinquished By	Date/Time	Received By	Date/Time
	1-7-22 15:15		1/11/22 0930

Sample Temperature Upon Receipt	____ °C
Sample(s) Received on Ice	Y or N
Proper Bottles Received in Good Condition	Y or N
Bottles Filled with Adequate Volume	Y or N
Samples Received Within Hold Time	Y or N
Date/Time Taken From Sample Bottle	Y or N

Pace Analytical®

Pace Greensburg Lab -Sample Container Count

Client PDC

Profile Number 2232

Site EL04899

Notes

Sample Line Item	Matrix	AG1H	AG1S	AG1T	AG2U	AG3S	AG3U	AG5U	AG5T	BG1U	BG2U	BP1N	BP1U	BP2S	BP2U	BP3C	BP3N	BP3S	BP3U	DG9S	GCUB	VG9H	VG9T	VG9U	VOAK	WGFU	WGKU	ZPLC	12GN
1	WT																												1
2																													
3																													
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

Container Codes

Glass

GJN	1 Gallon Jug with HNO3	DG9S	40mL amber VOA vial H2SO4
AG5U	100mL amber glass unprserved	VG9U	40mL clear VOA vial
AG5T	100mL amber glass Na Thiosulfate	VG9T	40mL clear VOA vial Na Thiosul
GJN	1 Gallon Jug	VG9H	40mL clear VOA vial HCl
AG1S	1L amber glass H2SO4	JGFU	4oz amber wide jar
AG1H	1L amber glass HCl	WGFU	4oz wide jar unpreserved
AG1T	1L amber glass Na Thiosulfate	BG2U	500mL clear glass unpreserved
BG1U	1L clear glass unpreserved	AG2U	500mL amber glass unpreserve
AG3S	250mL amber glass H2SO4	WGKU	8oz wide jar unpreserved
AG3U	250mL amber glass unpreserved		

Plastic / Misc.

GCUB	1 Gallon Cubitainer
12GN	1/2 Gallon Cubitainer
SP5T	120mL Coliform Na Thiosulfate
BP1N	1L plastic HNO3
BP1U	1L plastic unpreserved
BP3S	250mL plastic H2SO4
BP3N	250mL plastic HNO3
BP3U	250mL plastic unpreserved
BP3C	250ml plastic NAOH
BP2S	500mL plastic H2SO4
BP2U	500mL plastic unpreserved

EZI	5g Encore
VOAK	Kit for Volatile Solid
I	Wipe/Swab
ZPLC	Ziploc Bag

WT	Water
SL	Solid
OL	Non-aqueous liquid
WP	Wipe

30459060

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: PDC

Project # # 30459060

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label JAG

Tracking #: 7756 9633 4522

LIMS Login VPI

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☑ no

Thermometer Used — Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# 1002811 / Date and Initials of person examining contents: JAG 1/12/22
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:		✓		
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16.
All containers meet method preservation requirements.	✓			Initial when completed JAG / Date/time of preservation / Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: JAG / Date: 1/12/22 / Survey Meter SN: 1563

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

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: FLY ASH APP III & IV
PHONE NUMBER: 573-475-3131
E-MAIL:
PURCHASE ORDER #:
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 # EL04899-02
LOGGED BY: KGR
SIKESTON BMU, SIKESTON POWER STATION
SIKESTON FLY ASH APP III & IV 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	CL, F, SO4, TDS, B, CA	SB, AS, BA, BE, CD, CO	CR+3, PB, LI, HG, MO	SE, TL, RAD 226/228				REMARKS
MW-1R	12-27-21	1209	X		GW	3	3,6	X	X	X	X				
MW-1R DUPLICATE	12-27-21		X		GW	3	3,6	X	X	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 12-28-21 — TIME 0830 — RECEIVED BY: (SIGNATURE) — 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 11:40

8 COMMENTS: (FOR LAB USE ONLY)
SAMPLE TEMPERATURE UPON RECEIPT 2.2 °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

Laboratory Quality Assurance/Quality Control Data
MW-1R Background - January 17, 2022

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: FA03341
Pace Project No.: 30461168

QC Batch: 481100
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30461168001, 30461168002

METHOD BLANK: 2324606 Matrix: Water
Associated Lab Samples: 30461168001, 30461168002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.471 ± 0.317 (0.596) C:77% T:88%	pCi/L	02/09/22 14:41	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: FA03341
Pace Project No.: 30461168

QC Batch: 481099
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30461168001, 30461168002

METHOD BLANK: 2324605 Matrix: Water
Associated Lab Samples: 30461168001, 30461168002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0401 ± 0.261 (0.565) C:NA T:96%	pCi/L	02/15/22 12:16	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: FA03341
Pace Project No.: 30461168

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. Is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

SUBCONTRACT ORDER
Transfer Chain of Custody

Pace Analytical Services, LLC

FA03341

SENDING LABORATORY

PDC Laboratories, Inc.
2231 W Altorfer Dr
Peoria, IL 61615
(800) 752-6651

RECEIVING LABORATORY

PACE Analytical - Greensburg
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724) 850-5600

Sample: FA03341-01
Name: MW-1R

Sampled: 01/17/22 09:22
Matrix: Ground Water
Preservative: HNO3, pH <2

Analysis	Due	Expires	Comments
01-Radium 226/228	02/07/22 16:00	07/16/22 09:22	

Sample: FA03341-02
Name: MW-1R DUPLICATE

Sampled: 01/17/22 09:22
Matrix: Ground Water
Preservative: HNO3, pH <2

Analysis	Due	Expires	Comments
01-Radium 226/228	02/07/22 16:00	07/16/22 09:22	

Please email results to Gail Schindler at gschindler@pdclab.com

Date Shipped: 1-24-22 Total # of Containers: 2 Sample Origin (State): IL PO #: 42

Turn-Around Time Requested ☑ NORMAL ☐ RUSH Date Results Needed: _____

Relinquished By	Date/Time	Received By	Date/Time
	1-24-22 11:50		
			1/26/22 09:50

Sample Temperature Upon Receipt	____ °C
Sample(s) Received on Ice	Y or N
Proper Bottles Received in Good Condition	Y or N
Bottles Filled with Adequate Volume	Y or N
Samples Received Within Hold Time	Y or N
Date/Time Taken From Sample Bottle	Y or N

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: PDC Project # 30461168

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label AD

Tracking #: 776837606737 6 0

LIMS Login AD

Custody Seal on Cooler/Box Present: ☐ yes ☐ no Seals intact: ☐ yes ☒ no

Thermometer Used N/A Type of Ice: Wet Blue None

Cooler Temperature Observed Temp N/A °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# 10029311 / Date and Initials of person examining contents: AD 1/27
Chain of Custody Present:	Y			1.
Chain of Custody Filled Out:	Y			2.
Chain of Custody Relinquished:	Y			3.
Sampler Name & Signature on COC:		X		4.
Sample Labels match COC: -Includes date/time/ID Matrix: DW	X			5.
Samples Arrived within Hold Time:	Y			6.
Short Hold Time Analysis (<72hr remaining):		Y		7.
Rush Turn Around Time Requested:		Y		8.
Sufficient Volume:	Y			9.
Correct Containers Used:	Y			10.
-Pace Containers Used:		Y		
Containers Intact:	Y			11.
Orthophosphate field filtered			Y	12.
Hex Cr Aqueous sample field filtered			Y	13.
Organic Samples checked for dechlorination:			Y	14.
Filtered volume received for Dissolved tests			Y	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	Y			16.
All containers meet method preservation requirements.	Y			Initial when completed: _____ Date/time of preservation: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm):			Y	17.
Trip Blank Present:			Y	18.
Trip Blank Custody Seals Present			Y	
Rad Samples Screened < 0.5 mrem/hr	Y			Initial when completed: AD Date: 1/27/22 Survey Meter SN: 15463

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

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: MO

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:
PHONE NUMBER: 573-475-3131
PROJECT LOCATION: FLY ASH APP III & IV
E-MAIL:
PURCHASE ORDER #:
DATE SHIPPED:
SAMPLER (PLEASE PRINT): Daniell Dillingham
SAMPLER'S SIGNATURE: Daniell 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 # FA03341-02
LOGGED BY: KBG
SIKESTON BMU, SIKESTON POWER STATION
SIKESTON FLY ASH APP III & IV 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	CL, F, SO4, TDS, B, CA	SB, AS, BA, BE, CD, CO	CR+3, PB, LI, HG, MO	SE, TL, RAD 226/228	01-20-22			REMARKS
MW-1R	1-17-22	0922	X		GW	3	3,6	X	X	X	X				
MW-1R DUPLICATE	1-17-22		X		GW	3	3,6	X	X	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)

	DATE	TIME	
RELINQUISHED BY: (SIGNATURE) Ashish Patel	1-18-22	0800	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE) Kathy Gregory

DATE	TIME
DATE	TIME
DATE 01/19/22	TIME 1030

(8) COMMENTS: (FOR LAB USE ONLY)
Cr+3 not required per client email 01/04/2022

SAMPLE TEMPERATURE UPON RECEIPT 2.2 °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

Laboratory Quality Assurance/Quality Control Data
MW-1R Background - February 7, 2022

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: FB01553
Pace Project No.: 30466578

QC Batch: 486621
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30466578001, 30466578002

METHOD BLANK: 2353278
Matrix: Water
Associated Lab Samples: 30466578001, 30466578002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0449 ± 0.292 (0.589) C:NA T:100%	pCi/L	03/09/22 12:26	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: FB01553
Pace Project No.: 30466578

QC Batch: 486622
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30466578001, 30466578002

METHOD BLANK: 2353281
Matrix: Water
Associated Lab Samples: 30466578001, 30466578002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.289 ± 0.238 (0.463) C:88% T:90%	pCi/L	03/04/22 14:05	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: FB01553
Pace Project No.: 30466578

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. Is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

SUBCONTRACT ORDER
Transfer Chain of Custody

Pace Analytical Services, LLC

FB01553

SENDING LABORATORY

PDC Laboratories, Inc.
2231 W Altorfer Dr
Peoria, IL 61615
(800) 752-6651

RECEIVING LABORATORY

PACE Analytical - Greensburg
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724) 850-5600

Sample: FB01553-01
Name: MW-1R

Sampled: 02/07/22 09:18
Matrix: Ground Water
Preservative: HNO3, pH <2

001

Analysis	Due	Expires	Comments
01-Radium 226/228	02/18/22 16:00	08/06/22 09:18	

Sample: FB01553-02
Name: MW-1R DUPLICATE

Sampled: 02/07/22 00:00
Matrix: Ground Water
Preservative: HNO3, pH <2

002

Analysis	Due	Expires	Comments
01-Radium 226/228	02/18/22 16:00	08/06/22 00:00	

WO# : 30466578

30466578

Please email results to Gail Schindler at gschindler@pdclab.com

Date Shipped: 2-10-22 Total # of Containers: 2 Sample Origin (State): IL PO #: 42

Turn-Around Time Requested ☑ NORMAL ☐ RUSH Date Results Needed: _____

Relinquished By	Date/Time	Received By	Date/Time
[signature]	2-11-22 12:15	MK	2.14.22 10:00

Sample Temperature Upon Receipt	___ °C
Sample(s) Received on Ice	Y or N
Proper Bottles Received in Good Condition	Y or N
Bottles Filled with Adequate Volume	Y or N
Samples Received Within Hold Time	Y or N
Date/Time Taken From Sample Bottle	Y or N

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: PDC

Project # 30466578

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 7760 1152 1760

Label MJS
LIMS Login MJS

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☑ no

Thermometer Used _____ Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

pH paper Lot# HC169529 Date and Initials of person examining contents: 02/18/22 DD

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH<2
All containers meet method preservation requirements.	✓			Initial when completed DD Date/time of preservation: Lot # of added preservative:
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: DD Date: 02/18/22 Survey Meter SN: 2801-435

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

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 MO

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: FLY ASH APP III & IV
PURCHASE ORDER #:
PHONE NUMBER: 573-475-3131
E-MAIL:
DATE SHIPPED:
SAMPLER (PLEASE PRINT): Daniell Dillingham
SAMPLER'S SIGNATURE: Daniell 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 # FB01553
LOGGED BY:
SIKESTON BMU, SIKESTON POWER STATION
SIKESTON FLY ASH APP III & IV 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	CL, F, SO4, TDS, B, CA	SB, AS, BA, BE, CD, CO	CR+3, PB, LI, HG, MO	SE, TL, RAD 226/228	REMARKS
MW-1R	2/7/22	0918	X		GW	3	3,6	X	X	X	X	
MW-1R DUPLICATE	2/7/22		X		GW	3	3,6	X	X	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
Rishi Patel	2-8-22	0800			
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
				2/9/22	1045

(8) COMMENTS: (FOR LAB USE ONLY)

SAMPLE TEMPERATURE UPON RECEIPT 2.5 °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

Laboratory Quality Assurance/Quality Control Data
MW-1R Background - March 2, 2022

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: FC00999
Pace Project No.: 30473882

QC Batch: 493787
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30473882001, 30473882002

METHOD BLANK: 2389253
Matrix: Water
Associated Lab Samples: 30473882001, 30473882002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.592 ± 0.358 (0.657) C:70% T:91%	pCi/L	04/05/22 11:42	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: FC00999
Pace Project No.: 30473882

QC Batch: 493786
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30473882001, 30473882002

METHOD BLANK: 2389252
Matrix: Water
Associated Lab Samples: 30473882001, 30473882002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.173 (0.351) C:NA T:91%	pCi/L	04/11/22 16:03	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: FC00999
Pace Project No.: 30473882

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. Is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

SUBCONTRACT ORDER
Transfer Chain of Custody

Pace Analytical Services, LLC

FC00999

SENDING LABORATORY

PDC Laboratories, Inc.
2231 W Altorfer Dr
Peoria, IL 61615
(800) 752-6651

RECEIVING LABORATORY

PACE Analytical - Greensburg
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724) 850-5600

Sample: FC00999-01
Name: MW-1R

Sampled: 03/02/22 09:10
Matrix: Ground Water
Preservative: HNO3, pH <2

001

Analysis	Due	Expires	Comments
01-Radium 226/228	04/12/22 16:00	08/29/22 09:10	

Sample: FC00999-02
Name: MW-1R DUPLICATE

Sampled: 03/02/22 09:10
Matrix: Ground Water
Preservative: HNO3, pH <2

002

Analysis	Due	Expires	Comments
01-Radium 226/228	04/12/22 16:00	08/29/22 09:10	

WO# : 30473882

30473882

Please email results to Gail Schindler at gschindler@pdclab.com

Date Shipped: 3-9-22 Total # of Containers: 2 Sample Origin (State): IL PO #: 42

Turn-Around Time Requested ☑ NORMAL ☐ RUSH Date Results Needed: _____

Relinquished By	Date/Time	Received By	Date/Time
[signature]	3-9-22 13:00		
		[signature]	3/11/22 920

Relinquished By | Date/Time | Received By | Date/Time

Sample Temperature Upon Receipt	___ °C
Sample(s) Received on Ice	Y or (N)
Proper Bottles Received in Good Condition	(Y) or N
Bottles Filled with Adequate Volume	(Y) or N
Samples Received Within Hold Time	(Y) or N
Date/Time Taken From Sample Bottle	Y or N

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: PDC Lab. Project #

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label PS
LIMS Login VP

Tracking #: 7762 5164 2920

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Thermometer Used _____ Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

pH paper Lot# 10D2811 Date and Initials of person examining contents: 3/18/22 PS

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested: PS 3/18/22	✓	✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓	✓		10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. PHC2
All containers meet method preservation requirements.	✓			Initial when completed PS Date/time of preservation; Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present		✓		
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: PS Date: 3/18/22 Survey Meter SN: 1563

WO#: 30473882 Due Date: 04/01/22 PM: KLS CLIENT: PDC

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Pace Analytical®

Pace Greensburg Lab -Sample Container Count

Client _____ Profile Number 1867

Site FC000999 Notes _____

Sample Line Item	Matrix	AG1H	AG1S	AG1T	AG2U	AG3S	AG3U	AG5U	AG5T	BG1U	BG2U	BP1N	BP1U	BP2S	BP2U	BP3C	BP3N	BP3S	BP3U	DG9S	GCUB	VG9H	VG9T	VG9U	VOAK	WGFU	WGKU	ZPLC	12 GN
1	WT																												1
2	↓																												1
3																													
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

Container Codes

Glass

GJN	1 Gallon Jug with HNO3	DG9S	40mL amber VOA vial H2SO4
AG5U	100mL amber glass unprserved	VG9U	40mL clear VOA vial
AG5T	100mL amber glass Na Thiosulfate	VG9T	40mL clear VOA vial Na Thiosul
GJN	1 Gallon Jug	VG9H	40mL clear VOA vial HCl
AG1S	1L amber glass H2SO4	JGFU	4oz amber wide jar
AG1H	1L amber glass HCl	WGFU	4oz wide jar unpreserved
AG1T	1L amber glass Na Thiosulfate	BG2U	500mL clear glass unpreserved
BG1U	1L clear glass unpreserved	AG2U	500mL amber glass unpreserve
AG3S	250mL amber glass H2SO4	WGKU	8oz wide jar unpreserved
AG3U	250mL amber glass unpreserved		

Plastic / Misc.

GCUB	1 Gallon Cubitainer
12GN	1/2 Gallon Cubitainer
SP5T	120mL Coliform Na Thiosulfate
BP1N	1L plastic HNO3
BP1U	1L plastic unpreserved
BP3S	250mL plastic H2SO4
BP3N	250mL plastic HNO3
BP3U	250mL plastic unpreserved
BP3C	250ml plastic NAOH
BP2S	500mL plastic H2SO4
BP2U	500mL plastic unpreserved

EZI	5g Encore
VOAK	Kit for Volatile Solid
I	Wipe/Swab
ZPLC	Ziploc Bag

WT	Water
SL	Solid
OL	Non-aqueous liquid
WP	Wipe

WO# 30473882

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	PROJECT NUMBER	PROJECT LOCATION	PURCHASE ORDER #
SIKESTON BMU POWER STATION		FLY ASH APP III & IV	
ADDRESS 1551 W WAKEFIELD	**PHONE NUMBER** 573-475-3131	**E-MAIL**	**DATE SHIPPED**
CITY STAT ZIP SIKESTON, MO 63801	**SAMPLER (PLEASE PRINT)** Daniell Dilingham		**MATRIX TYPES:** WW- WASTEWATER, DW- DRINKING WATER, GW- GROUND WATER, WWSL- SLUDGE, NAS- NON AQUEOUS SOLID, LCHT-LEACHATE, OIL-OIL, SO-SOIL, SOL-SOLID
CONTACT PERSON MR LUKE ST MARY	**SAMPLER'S SIGNATURE** Daniell a. Dillingham		

(3) ANALYSIS REQUESTED

(4) (FOR LAB USE ONLY)
LOGIN # FC00999-02
LOGGED BY: DCW
SIKESTON BMU, SIKESTON POWER STATION
SIKESTON FLY ASH APP III & IV 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	CL, F, SO4, TDS, B, CA	SB, AS, BA, BE, CD, CO	CR+3, PB, LI, HG, MO	SE, TL, RAD 226/228				REMARKS
MW-1R	03/02/22	0910	X		GW	3	3,6	X	X	X	X				
MW-1R DUPLICATE	03/02/22		X		GW	3	3,6	X	X	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	RECEIVED BY: (SIGNATURE)	DATE
Ashish Patel	3/3/2022		
	TIME 0800		TIME
RELINQUISHED BY: (SIGNATURE)	DATE	RECEIVED BY: (SIGNATURE)	DATE
	TIME		TIME
RELINQUISHED BY: (SIGNATURE)	DATE	RECEIVED BY: (SIGNATURE)	DATE 3/4/22
	TIME		TIME 1030

(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 4

Fly Ash Pond Groundwater Quality Data Base

Sikeston Board of Municipal Utilities
Sikeston Power Station
Fly 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 pCi/L	Radium 228 pCi/L	Radium 226/228 (Combined) pCi/L
MW-1 (DG)	3/21/2018	Background	249.6	16.33	-108.8	0.32	28.35	7.31	**3.0**	<0.250	**22**	**150**	**360**	**21**	<3.0	<1.0	**120**	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.305	0.0476	0.353 (ND)
	4/15/2018	Background	233.8	15.17	-122.7	0.60	14.46	7.36	**2.**	**0.316**	**22**	**120**	**450**	**29**	<3.0	<1.0	**120**	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.127	0.351	0.478 (ND)
	5/23/2018	Background	220.0	18.42	-133.3	0.54	12.11	7.35	**3.3**	<0.250	**20**	**140**	**420**	**25**	<3.0	<1.0	**120**	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.000	0.378	0.378 (ND)
	6/27/2018	Background	227.4	18.59	-149.3	0.30	11.07	7.27	**6.9**	<0.250	**20**	**120**	**470**	**2**	<3.0	<1.0	**140**	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.581	0.484	1.065 (ND)
	8/1/2018	Background	264.3	18.26	-138.0	0.56	7.52	7.16	**5.6**	<0.250	**23**	**190**	**440**	**30**	<3.0	<1.0	**140**	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.305	0.588	0.893(ND)
	9/5/2018	Background	281.3	18.70	-132.1	0.41	3.20	7.14	**7.0**	**0.252**	**24**	**140**	**490**	**34**	<3.0	<1.0	**150**	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.961	0.139	**1.100**
	11/6/2018	Background	311.8	17.86	-128.8	1.00	1.30	7.11	**9.0**	**0.262**	**26**	**200**	**4 0**	**3**	<3.0	<1.0	**170**	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.843	0.439	**1.2 2**
	12/12/2018	Background	317.5	16.30	-96.3	0.45	2.27	7.06	**9.1**	**0.256**	**30**	**140**	**440**	**3**	<3.0	<1.0	**1 0**	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.660	0.763	1.423 (ND)
	3/27/2019	Detection 1	361.2	16.60	-101.9	0.36	53.91	7.13	**7.9**	<0.250	**27**	**210**	**440**	**41**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	9/24/2019	Detection 2	372.9	18.22	-127.5	0.56	0.53	7.0	**4.3**	**0.260**	**35**	(NA)	**500**	**47**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	10/22/2019		418.0	17.10	-113.4	0.32	0.96	(NA)	(NA)	(NA)	(NA)	**1 0**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	4/6/2020	Detection 3	416.5	17.32	-117.7	0.31	4.38	7.1	**5.4**	**0.255**	**39**	**230**	**520**	**4**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	5/21/2020		524.7	16.56	-125.2	3.25	3.32	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	9/22/2020	Detection 4	556.9	17.67	-95.2	4.23	0.51	7.2	**5.9**	<0.250	**67**	**310**	(NA)	**67**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	12/8/2020		462.1	15.90	80.1	4.19	2.44	(NA)	(NA)	(NA)	(NA)	(NA)	**440**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	4/17/2021	Detection 5	431.1	15.61	-77.5	17.90	10.92	7.3	**3.5**	<0.250	**37**	**200**	**500**	**53**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	6/15/2021		407.8	16.83	-58.6	3.71	4.30	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	10/20/2021	Detection 6	362.8	14.43	-91.5	4.51	1.31	7.33	**3.1**	<0.250	**2**	**230**	**410**	**41**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
MW-1R (DG)	10/20/2021	Background	511.3	15.25	32.2	6.41	4.62	6.55	**11**	<0.250	**130**	**330**	**2200**	**64**	<3.0	**1.3**	**40**	<1.0	<1.0	<4.0	**6.3**	<1.0	**10**	<0.20	**160**	<1.0	<1.0	0.184	(0.0411)	0.184 (ND)
	11/1/2021	Background	532.4	12.98	16.9	0.60	5.38	6.55	**12**	**0.2 6**	**110**	**330**	**2100**	**5**	<3.0	**1.5**	**3**	<1.0	<1.0	<4.0	**5.4**	<1.0	<10	<0.20	**160**	<1.0	<1.0	0.0676	0.516	0.600(ND)
	11/16/2021	Background	540.4	11.47	41.9	0.94	1.27	6.54	**15**	**0.366**	**150**	**360**	**2 00**	**73**	<3.0	<1.0	**49**	<1.0	<1.0	<4.0	**.5**	<1.0	**10**	<0.20	**170**	<1.0	<1.0	0.513	0.572	1.065(ND)
	12/7/2021	Background	576.3	9.14	11.2	0.98	0.91	6.58	**13**	<0.250	**140**	**400**	**2300**	**61**	<3.0	<1.0	**37**	<1.0	<1.0	<4.0	**7.1**	<1.0	**11**	<0.20	**190**	<1.0	<1.0	(0.298)	0.530	0.53(ND)
	12/27/2021	Background	757.3	8.40	21.7	1.28	1.32	6.48	**17**	<0.250	**210**	**390**	**3100**	**97**	<3.0	<1.0	**52**	<1.0	<1.0	<4.0	**9.6**	<1.0	**19**	<0.20	**200**	<1.0	<1.0	(0.286)	0.430	0.430(ND)
	1/17/2022	Background	707.3	4.56	-0.3	1.02	1.46	6.56	**17**	<0.250	**190**	**440**	**2 00**	**9**	<3.0	<1.0	**44**	<1.0	<1.0	<4.0	**7.9**	<1.0	**17**	<0.20	**200**	<1.0	<1.0	(0.406)	0.556	0.556(ND)
	2/7/2022	Background	794.4	3.14	21.9	0.84	1.04	6.55	**19**	<0.250	**200**	**450**	**3500**	**90**	<3.0	<1.0	**51**	<1.0	<1.0	<4.0	**13**	<1.0	**11**	<0.20	**210**	<1.0	<1.0	0.364	(0.007)	0.364(MD)
	3/2/2022	Background	515.0	2.07	36.1	0.91	4.31	6.57	**12**	<0.250	**130**	**290**	**2 00**	**7**	<3.0	<1.0	**41**	<1.0	<1.0	<4.0	**.6**	<1.0	<10	<0.20	**190**	<1.0	<1.0	0.393	0.907	1.300
MW-2 (UG)	3/21/2018	Background	157.8	15.86	65.3	2.72	3.41	6.35	**3.4**	<0.250	**16**	**110**	**2**	**16**	<3.0	<1.0	**130**	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.514	0.382	0.896 (ND)
	4/15/2018	Background	159.8	14.04	64.7	0.87	4.05	6.36	**2.3**	**0.335**	**1**	**63**	**23**	**14**	<3.0	<1.0	**120**	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.381	0.102	0.483 (ND)
	5/23/2018	Background	175.3	17.40	121.7	0.58	1.72	6.18	**4.2**	<0.250	**20**	**100**	**36**	**1**	<3.0	<1.0	**170**	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.119	1.080	1.199 (ND)
	6/27/2018	Background	172.1	18.38	243.8	0.27	5.30	6.16	**4.7**	<0.250	**1**	**7**	**42**	**19**	<3.0	<1.0	**1 0**	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	**1.4**	<1.0	0.488	0.518	1.006 (ND)
	8/1/2018	Background	184.2	18.48	80.7	0.75	2.61	6.11	**5.9**	<0.250	**19**	**140**	**43**	**20**	<3.0	<1.0	**200**	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	**2.0**	<1.0	0.308	0.443	0.751(ND)
	9/5/2018	Background	187.9	19.26	83.8	0.68	2.58	6.09	**6.**	<0.250	**1**	**110**	**46**	**22**	<3.0	<1.0	**220**	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	**2.2**	<1.0	0.801	0.933	**1.734**
	11/6/2018	Background	174.3	17.77	79.7	0.60	1.19	6.19	**4.2**	**0.272**	**19**	**100**	**43**	**20**	<3.0	<1.0	**170**	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.353	1.230	**1.5 3**
	12/12/2018	Background	186.3	16.78	82.3	0.67	5.78	6.13	**5.5**	**0.254**	**21**	**140**	**4**	**21**	<3.0	<1.0	**210**	<1.0	<1.0	<4.0	**2.0**	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.624	0.556	1.18 (ND)
	3/27/2019	Detection 1	165.9	15.87	70.4	0.72	2.60	6.25	**3.3**	<0.250	**20**	**130**	**31**	**17**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	9/24/2019	Detection 2	189.4	18.75	71.3	0.61	1.16	6.1	**6.6**	<0.250	**17**	**130**	**5**	**22**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	4/6/2020	Detection 3	148.7	16.04	58.2	1.36	4.70	6.3	**2.1**	**0.336**	**16**	**140**	(NA)	**15**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	5/21/2020		168.1	16.47	-0.8	6.90	2.76	(NA)	(NA)	(NA)	(NA)	(NA)	**36**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	9/22/2020	Detection 4	189.8	18.34	-9.6	6.52	0.62	6.2	**4.**	<0.250	**17**	**150**	(NA)	**21**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	12/8/2020		186.5	16.90	223.4	5.56	0.79	(NA)	(NA)	(NA)	(NA)	(NA)	**49**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	4/17/2021	Detection 5	178.9	14.70	21.7	12.02	1.68	6.3	**3.**	<0.250	**17**	(NA)	**41**	**19**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	6/15/2021		165.4	17.03	55.1	18.10	1.55	(NA)	(NA)	(NA)	(NA)	**350**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	10/20/2021	Detection 6	188.0	14.85	19.6	5.97	1.36	6.25	**4.2**	<0.250	**15**	**140**	(NA)	**19**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	12/27/2021		161.0	8.90	17.7	0.88	1.53	(NA)	(NA)	(NA)	(NA)	(NA)	**43**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)

Appendix 4
Prepared by: KAE
Checked by: MCC

Sikeston Board of Municipal Utilities
Sikeston Power Station
Fly 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 pCi/L	Radium 228 pCi/L	Radium 226/228 (Combined) pCi/L
MW-3 (UG)	3/21/2018	Background	220.7	15.22	40.7	0.38	14.88	6.57	**1.4**	**0.274**	**1**	**120**	**17**	**19**	<3.0	<1.0	**96**	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.836	0.404	1.240 (ND)
	4/15/2018	Background	224.7	14.05	39.2	0.45	10.81	6.48	**1.5**	**0.3 6**	**20**	**120**	**25**	**1**	<3.0	<1.0	**100**	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.556	0.919	1.475 (ND)
	5/23/2018	Background	221.3	17.77	43.2	0.39	13.39	6.49	**1.4**	<0.250	**20**	**100**	**20**	**1**	<3.0	<1.0	**100**	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.526	0.468	0.994 (ND)
	6/27/2018	Background	198.7	17.81	123.8	0.45	17.03	6.45	**1.2**	<0.250	**17**	**110**	**27**	**1**	<3.0	<1.0	**100**	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.214	(0.187)	0.214 (ND)
	8/1/2018	Background	209.2	16.74	41.4	0.43	10.96	6.55	**1.3**	<0.250	**17**	**150**	**21**	**1**	<3.0	<1.0	**91**	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.315	(0.0763)	0.315(ND)
	9/5/2018	Background	196.8	17.62	56.8	0.46	6.21	6.51	**1.2**	**0.30**	**15**	**100**	**22**	**17**	<3.0	<1.0	**9**	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.344	0.516	0.860(ND)
	11/6/2018	Background	206.7	16.84	63.3	0.49	2.37	6.49	**1.3**	**0.313**	**16**	**130**	**26**	**17**	<3.0	<1.0	**100**	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.547	0.792	**1.339**
	12/12/2018	Background	195.6	15.39	48.7	0.40	3.10	6.50	**1.4**	**0.334**	**1**	**160**	**2**	**17**	<3.0	<1.0	**99**	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.414	0.386	0.8 (ND)
	3/27/2019	Detection 1	196.0	15.07	52.2	0.84	12.50	6.36	**1.5**	<0.250	**19**	**140**	**22**	**16**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	9/24/2019	Detection 2	191.4	17.07	58.1	0.53	2.28	6.5	**1.2**	**0.332**	**16**	**130**	**26**	**17**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	4/6/2020	Detection 3	198.4	14.94	61.3	1.17	7.37	6.4	(NA)	**0.371**	**20**	(NA)	**29**	**16**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	5/21/2020		205.5	15.25	14.9	13.48	7.29	(NA)	**1.5**	(NA)	(NA)	**130**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	9/22/2020	Detection 4	194.1	16.65	36.7	8.29	2.13	6.5	**1.1**	<0.250	**17**	**120**	**31**	**17**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	4/17/2021	Detection 5	196.8	14.04	34.3	12.04	3.47	6.6	**1.0**	<0.250	**15**	**150**	**16**	**17**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	10/20/2021	Detection 6	189.0	12.85	33.6	10.32	1.35	6.52	<1.0	<0.250	**13**	**130**	**30**	**14**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
MW-7 (DG)	3/21/2018	Background	901.8	14.85	41.8	0.58	1.61	7.30	**12**	**0.752**	**190**	**440**	**1900**	**110**	<3.0	<1.0	**41**	<1.0	<1.0	<4.0	<2.0	<1.0	**25**	<0.20	**160**	**5.4**	<1.0	0.457	0.426	0.883 (ND)
	4/15/2018	Background	936.4	14.04	40.0	0.51	0.96	7.24	**12**	**0.794**	**210**	**420**	**1900**	**110**	<3.0	<1.0	**43**	<1.0	<1.0	<4.0	**2.0**	<1.0	**19**	<0.20	**170**	**2.3**	<1.0	0.062	(0.036)	0.0619 (ND)
	5/23/2018	Background	899.1	18.05	46.5	0.38	0.25	7.25	**11**	**0.650**	**220**	**4 0**	**1 00**	**120**	<3.0	<1.0	**44**	<1.0	<1.0	<4.0	<2.0	<1.0	**22**	<0.20	**170**	**2**	<1.0	0.517	0.379	0.896 (ND)
	6/27/2018	Background	891.4	17.91	66.4	0.22	5.84	7.22	**11**	**0.592**	**220**	**500**	**2000**	**140**	<3.0	<1.0	**4**	<1.0	<1.0	<4.0	**2.1**	<1.0	**26**	<0.20	**160**	**53**	<1.0	0.335	0.818	1.153 (ND)
	8/1/2018	Background	958.3	18.03	53.0	0.28	1.77	7.22	**9.1**	**0.60**	**230**	**590**	**2300**	**140**	<3.0	<1.0	**47**	<1.0	<1.0	<4.0	**2.2**	<1.0	**30**	<0.20	**160**	**54**	<1.0	0.473	0.411	0.884(ND)
	9/5/2018	Background	873.3	19.46	69.3	0.28	2.29	7.29	**10**	**0.700**	**220**	**520**	**2100**	**130**	<3.0	<1.0	**47**	<1.0	<1.0	<4.0	**2.0**	<1.0	**27**	<0.20	**150**	**42**	<1.0	0.474	0.178	0.652(ND)
	11/6/2018	Background	787.9	18.12	344.4	0.44	0.44	7.35	**6.3**	**0.693**	**170**	**450**	**2000**	**120**	<3.0	<1.0	**43**	<1.0	<1.0	<4.0	**2.0**	<1.0	**26**	<0.20	**150**	**15**	<1.0	1.090	0.388	**1.47**
	12/12/2018	Background	784.8	17.26	51.6	1.05	0.41	7.27	**6.**	**0.746**	**1 0**	**440**	**1 00**	**120**	<3.0	<1.0	**44**	<1.0	<1.0	<4.0	**2.1**	<1.0	**26**	<0.20	**150**	**11**	<1.0	0.355	0.620	0.975 (ND)
	3/27/2019	Detection 1	797.4	16.39	52.6	0.32	2.37	7.25	**6.6**	**0.670**	**170**	**4 0**	**1 00**	**110**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	9/24/2019	Detection 2	751.7	18.88	119.0	0.31	0.59	7.3	**3.9**	**0.6 4**	**150**	**470**	**1900**	**120**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	4/6/2020	Detection 3	865.6	16.34	68.3	0.24	1.62	7.2	**4.0**	**0.737**	**200**	**540**	**2200**	**120**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	9/22/2020	Detection 4	720.5	17.40	-80.8	3.63	0.50	(NA)	**3.1**	**0.62**	**110**	**460**	**1700**	**100**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	1/26/2021		823.6	16.40	-49.2	0.27	0.41	7.4	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	4/17/2021	Detection 5	870.0	15.17	-19.6	3.40	0.85	7.4	**1.**	**0.522**	**160**	**520**	**2200**	**120**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	10/20/2021	Detection 6	855.3	14.58	-44.0	3.75	0.75	7.35	**3.7**	**0.375**	**160**	**520**	**1900**	**120**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)

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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 pCi/L	Radium 228 pCi/L	Radium 226/228 (Combined) pCi/L
MW-9 (DG)	3/21/2018	Background	979.8	14.98	25.1	0.52	1.60	7.35	**17**	**0.929**	**230**	**4 0**	**4700**	**65**	<3.0	<1.0	**49**	<1.0	<1.0	<4.0	<2.0	<1.0	**19**	<0.20	**630**	<1.0	<1.0	0.0898	0.401	0.491 (ND)
	4/15/2018	Background	972.7	14.63	24.9	1.73	2.32	7.37	**21**	**1.09**	**240**	**460**	**5100**	**57**	<3.0	**1.2**	**49**	<1.0	<1.0	<4.0	<2.0	<1.0	**11**	<0.20	**6 0**	<1.0	<1.0	(0.132)	0.982	0.982 (ND)
	5/23/2018	Background	1020.5	18.70	25.9	0.48	0.64	7.34	**17**	**1.05**	**240**	**520**	**5 00**	**55**	<3.0	<1.0	**45**	<1.0	<1.0	**.1**	<2.0	<1.0	**15**	<0.20	**40**	<1.0	<1.0	0.260	0.0989	0.359 (ND)
	6/27/2018	Background	902.9	19.33	25.2	0.42	4.97	7.32	**15**	**0.910**	**220**	**520**	**4600**	**73**	<3.0	<1.0	**47**	<1.0	<1.0	<4.0	<2.0	<1.0	**15**	<0.20	**560**	<1.0	<1.0	0.000	0.327	0.327 (ND)
	8/1/2018	Background	942.6	19.10	20.7	0.47	2.03	7.28	**16**	**0.916**	**220**	**560**	**4500**	**76**	<3.0	<1.0	**47**	<1.0	<1.0	<4.0	<2.0	<1.0	**1**	<0.20	**500**	<1.0	<1.0	0.248	0.1700	0.418(ND)
	9/5/2018	Background	829.2	19.85	20.9	0.45	2.68	7.31	**16**	**0.957**	**1 0**	**420**	**4400**	**0**	<3.0	<1.0	**4**	<1.0	<1.0	<4.0	<2.0	<1.0	**17**	<0.20	**460**	<1.0	<1.0	(0.076)	0.707	0.707(ND)
	11/6/2018	Background	732.8	18.19	428.8	0.60	0.45	7.34	**11**	**0. 5**	**130**	**410**	**3 00**	**79**	<3.0	<1.0	**47**	<1.0	<1.0	<4.0	<2.0	<1.0	**13**	<0.20	**420**	<1.0	<1.0	0.570	0.903	1.473(ND)
	12/12/2018	Background	742.9	16.95	36.5	0.48	0.63	7.33	**12**	**0.972**	**170**	**360**	**3700**	**7**	<3.0	<1.0	**53**	<1.0	<1.0	<4.0	<2.0	<1.0	**17**	<0.20	**420**	<1.0	<1.0	0.452	0.780	1.232 (ND)
	3/27/2019	Detection 1	673.2	16.74	22.1	0.51	0.96	7.40	**11**	**0. 27**	**120**	**440**	**3100**	**70**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	9/24/2019	Detection 2	891.5	19.25	38.3	0.41	0.62	7.4	**16**	**0. 47**	**220**	**540**	**5000**	**7**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	4/6/2020	Detection 3	967.5	17.60	61.6	0.34	0.92	7.3	**1**	**0. 16**	**250**	(NA)	**4900**	**92**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	5/21/2020		1024.4	17.09	-51.1	4.95	0.59	(NA)	(NA)	(NA)	(NA)	**560**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	9/22/2020	Detection 4	891.9	17.59	-70.4	4.18	0.64	7.5	**15**	**0. 32**	**210**	**550**	**5000**	**0**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	1/26/2021		971.7	16.07	-69.1	0.34	0.47	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	4/17/2021	Detection 5	1098.1	15.16	-19.7	7.52	0.91	7.4	**21**	**0.775**	**250**	**630**	**6200**	**57**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	10/20/2021	Detection 6	1020.5	15.70	13.1	6.16	0.87	7.52	**1**	**1.330**	**240**	(NA)	**5500**	**57**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
	12/27/2021		886.0	8.57	-21.5	0.70	0.87	(NA)	(NA)	(NA)	(NA)	**520**	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)

Notes:

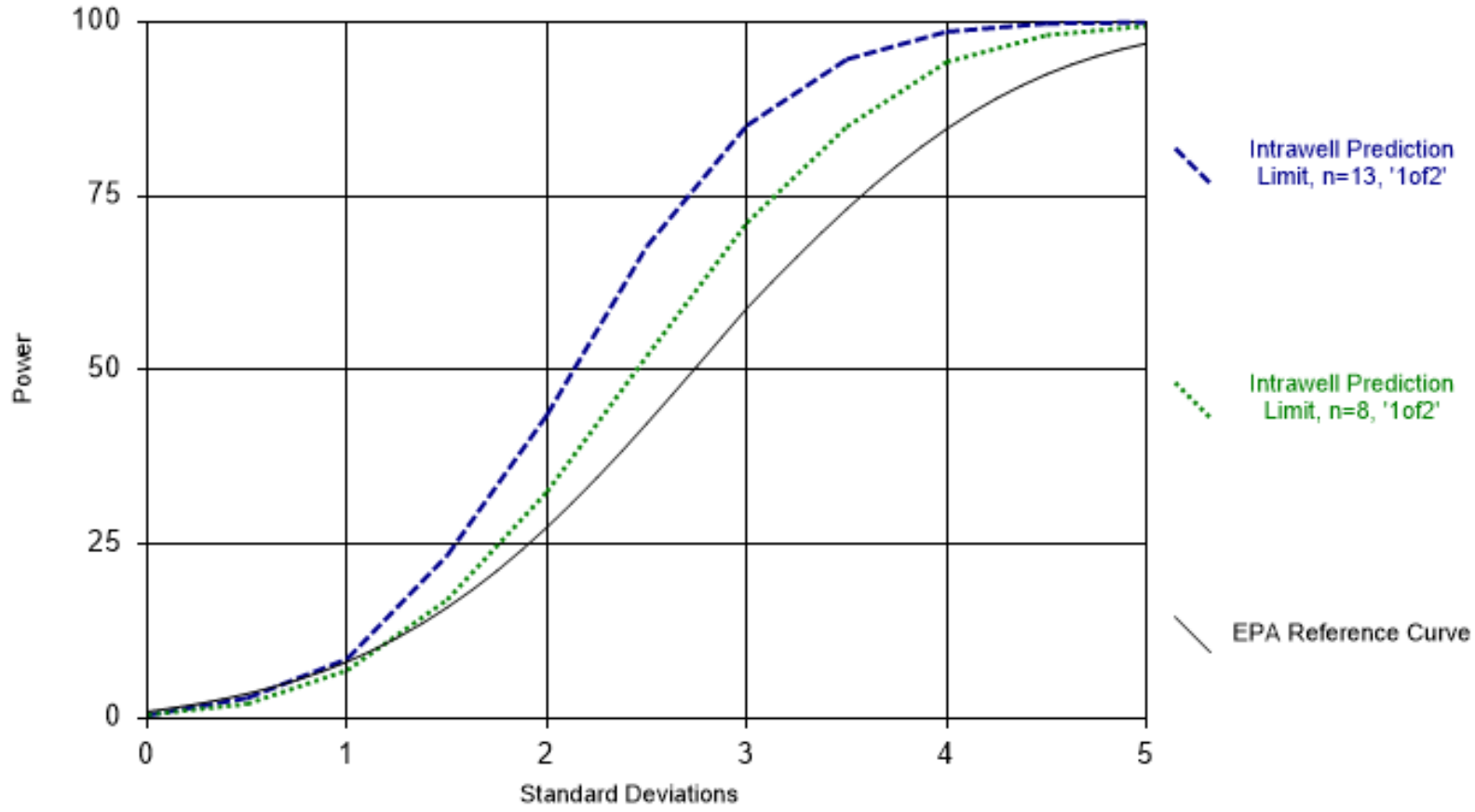
1. All data transcribed from analytical lab data sheets or field notes.
2. Less than (<) symbol denotes concentration not detected at or above reportable limits. Bold values indicate analyte detected above reporting limit.
3. (ND) denotes Radium 226 and 228 (combined) concentration not detected above minimum detectable concentration.
4. (NA) denotes analysis not conducted, not available at time of report, or not confirmed/replaced by resampling (censored data).
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. Shaded cells indicate resampling occurred. Censored data (not confirmed or replaced by resample data) indicated with (NA) in shaded cell.
9. Red text with black border represent outlier values identified by Sanitas (Dixon's Test; n<25).
10. Blue shaded cells with black border indicate data censored for removal of trend identified by Sanitas (Sen's Slope / Mann-Kendall).

Appendix 4
Prepared by: KAE
Checked by: MCC

Appendix 5

Statistical Power Curves

Power Curve



Analysis Run 7/1/2022 7:34 AM View: Confirmed Results Outliers Removed - 3-16-2022

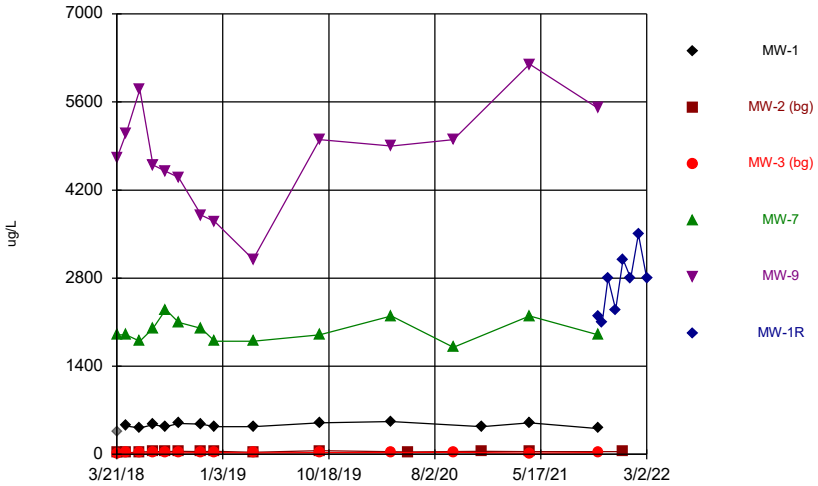
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Appendix 6

Time Series Plots

Sanitas™ v.9.6.34 Software licensed to GREDELL Engineering. UG

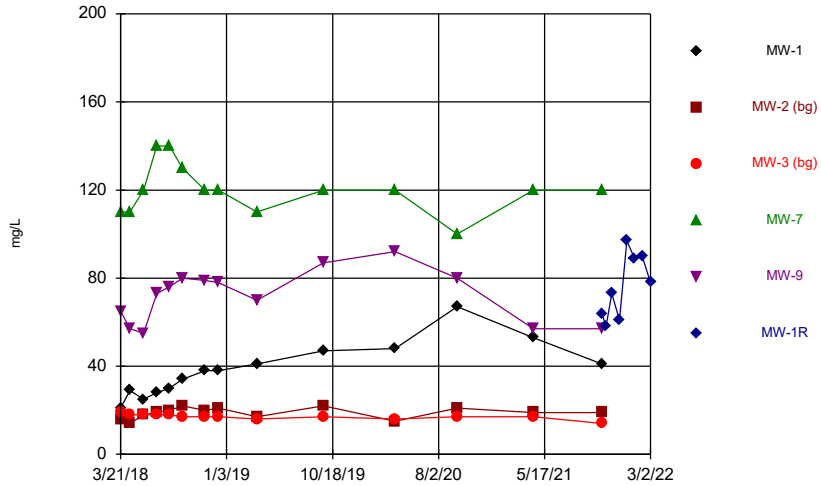
Boron



Time Series Analysis Run 7/6/2022 11:20 AM View: Confirmed Results Outliers Removed - 3-16-2022
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Sanitas™ v.9.6.34 Software licensed to GREDELL Engineering. UG

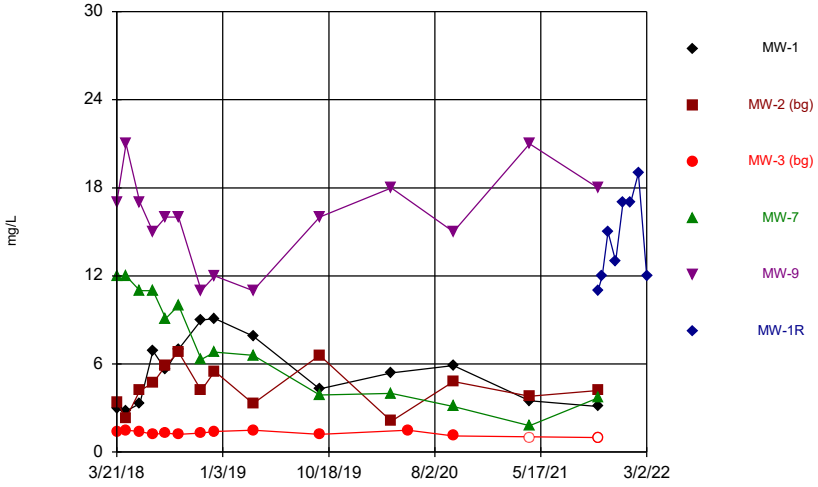
Calcium



Time Series Analysis Run 7/6/2022 11:20 AM View: Confirmed Results Outliers Removed - 3-16-2022
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Sanitas™ v.9.6.34 Software licensed to GREDELL Engineering. UG
Hollow symbols indicate censored values.

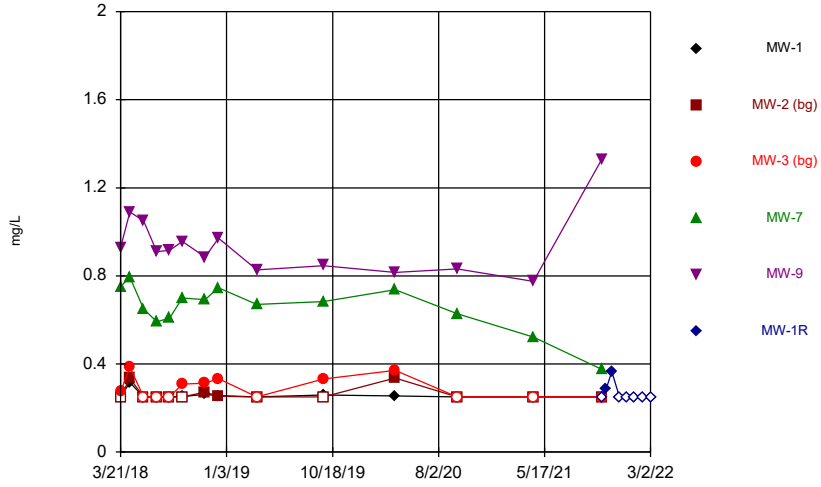
Chloride



Time Series Analysis Run 7/6/2022 11:20 AM View: Confirmed Results Outliers Removed - 3-16-2022
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

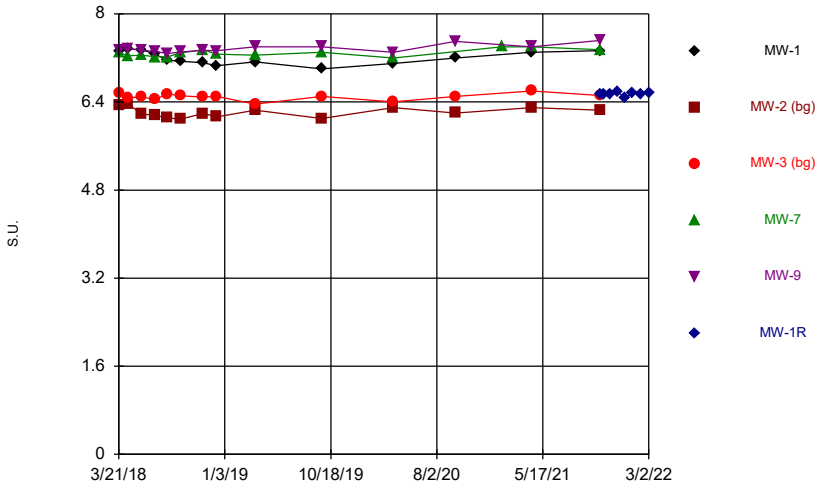
Sanitas™ v.9.6.34 Software licensed to GREDELL Engineering. UG
Hollow symbols indicate censored values.

Fluoride



Time Series Analysis Run 7/6/2022 11:20 AM View: Confirmed Results Outliers Removed - 3-16-2022
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

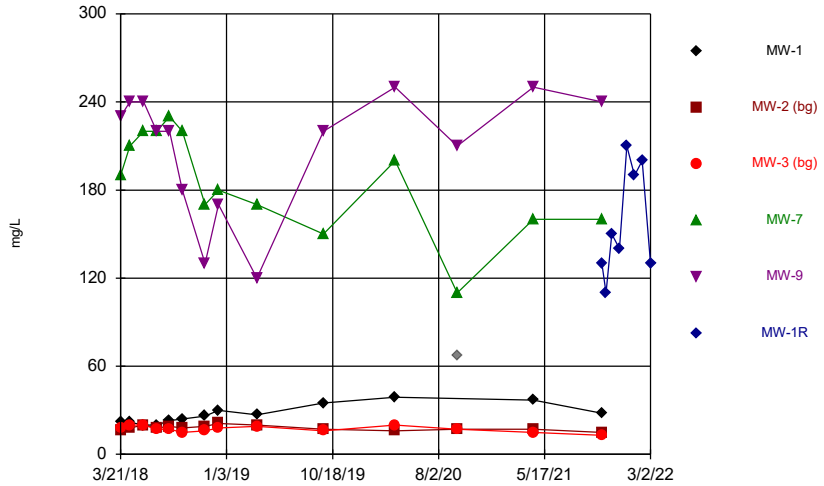
pH



Time Series Analysis Run 7/6/2022 11:20 AM View: Confirmed Results Outliers Removed - 3-16-2022
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Sanitas™ v.9.6.34 Software licensed to GREDELL Engineering. UG

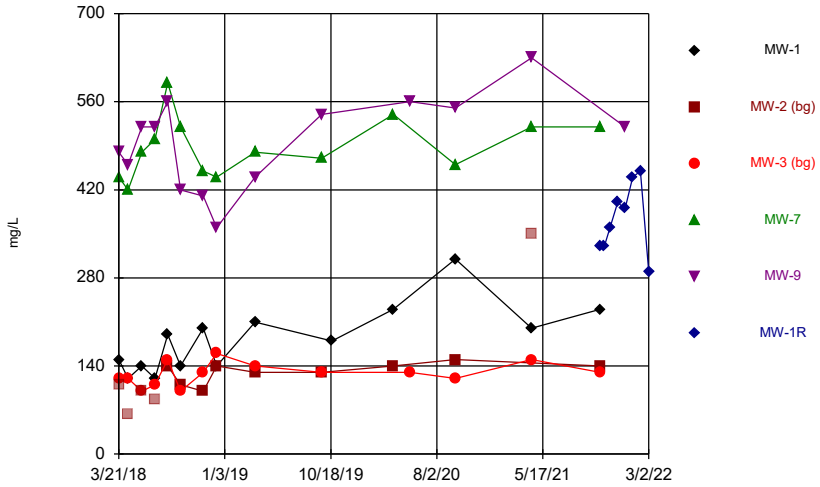
Sulfate



Time Series Analysis Run 7/6/2022 11:20 AM View: Confirmed Results Outliers Removed - 3-16-2022
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Sanitas™ v.9.6.34 Software licensed to GREDELL Engineering. UG

Total Dissolved Solids



Time Series Analysis Run 7/6/2022 11:20 AM View: Confirmed Results Outliers Removed - 3-16-2022
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Appendix 7

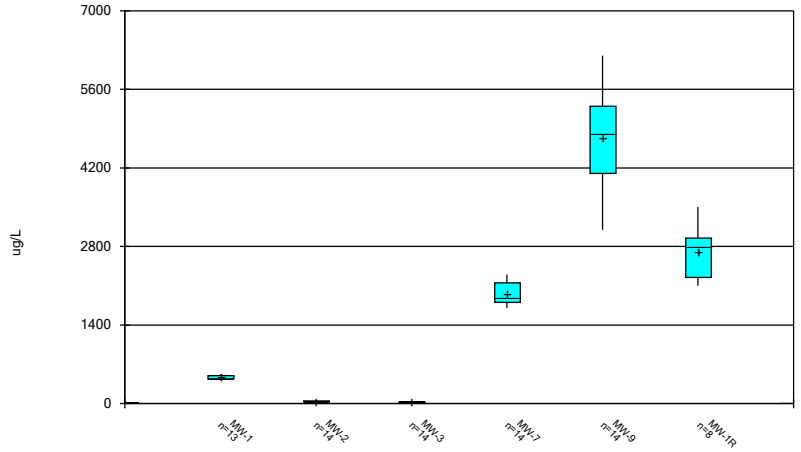
Box and Whiskers Plots

Box & Whiskers Plot

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background Printed 7/1/2022, 7:39 AM

Constituent	Well	N	Mean	Std. Dev.	Std. Err.	Median	Min.	Max.	%NDs
Boron (ug/L)	MW-1	13	461.5	34.12	9.463	450	410	520	0
Boron (ug/L)	MW-2	14	40.5	9.113	2.435	42.5	23	58	0
Boron (ug/L)	MW-3	14	24.29	4.714	1.26	25.5	16	31	0
Boron (ug/L)	MW-7	14	1964	178.1	47.59	1900	1700	2300	0
Boron (ug/L)	MW-9	14	4736	830.8	222	4800	3100	6200	0
Boron (ug/L)	MW-1R	8	2700	478.1	169	2800	2100	3500	0
Calcium (mg/L)	MW-1	14	38.57	12.34	3.298	38	21	67	0
Calcium (mg/L)	MW-2	14	18.79	2.517	0.6727	19	14	22	0
Calcium (mg/L)	MW-3	14	17.07	1.207	0.3225	17	14	19	0
Calcium (mg/L)	MW-7	14	120	11.09	2.965	120	100	140	0
Calcium (mg/L)	MW-9	14	71.86	12	3.207	74.5	55	92	0
Calcium (mg/L)	MW-1R	8	76.25	14.69	5.195	75.5	58	97	0
Chloride (mg/L)	MW-1	14	5.486	2.235	0.5973	5.5	2.8	9.1	0
Chloride (mg/L)	MW-2	14	4.414	1.433	0.383	4.2	2.1	6.8	0
Chloride (mg/L)	MW-3	13	1.308	0.1605	0.04452	1.3	1	1.5	7.692
Chloride (mg/L)	MW-7	14	7.236	3.585	0.9581	6.7	1.8	12	0
Chloride (mg/L)	MW-9	14	16	3.138	0.8386	16	11	21	0
Chloride (mg/L)	MW-1R	8	14.5	2.928	1.035	14	11	19	0
Fluoride (mg/L)	MW-1	14	0.2572	0.0174	0.004651	0.25	0.25	0.316	57.14
Fluoride (mg/L)	MW-2	14	0.2641	0.03082	0.008237	0.25	0.25	0.336	71.43
Fluoride (mg/L)	MW-3	14	0.2906	0.04944	0.01321	0.262	0.25	0.386	50
Fluoride (mg/L)	MW-7	14	0.6536	0.1079	0.02883	0.677	0.375	0.794	0
Fluoride (mg/L)	MW-9	14	0.9383	0.1437	0.03839	0.913	0.775	1.33	0
Fluoride (mg/L)	MW-1R	8	0.269	0.04117	0.01456	0.25	0.25	0.366	75
pH (S.U.)	MW-1	14	7.201	0.1176	0.03143	7.18	7	7.36	0
pH (S.U.)	MW-2	14	6.212	0.09125	0.02439	6.195	6.09	6.36	0
pH (S.U.)	MW-3	14	6.494	0.06211	0.0166	6.5	6.36	6.6	0
pH (S.U.)	MW-7	14	7.289	0.06538	0.01747	7.28	7.2	7.4	0
pH (S.U.)	MW-9	14	7.369	0.0707	0.01889	7.345	7.28	7.52	0
pH (S.U.)	MW-1R	8	6.548	0.03012	0.01065	6.55	6.48	6.58	0
Sulfate (mg/L)	MW-1	13	27.15	6.401	1.775	26	20	39	0
Sulfate (mg/L)	MW-2	14	17.93	1.73	0.4625	18	15	21	0
Sulfate (mg/L)	MW-3	14	17.21	2.119	0.5663	17	13	20	0
Sulfate (mg/L)	MW-7	14	185	34.14	9.124	185	110	230	0
Sulfate (mg/L)	MW-9	14	208.6	42.58	11.38	220	120	250	0
Sulfate (mg/L)	MW-1R	8	157.5	37.32	13.19	145	110	210	0
Total Dissolved Solids (mg/L)	MW-1	14	182.9	52.98	14.16	185	120	310	0
Total Dissolved Solids (mg/L)	MW-2	9	131.1	16.16	5.386	140	100	150	0
Total Dissolved Solids (mg/L)	MW-3	14	127.9	18.05	4.824	130	100	160	0
Total Dissolved Solids (mg/L)	MW-7	14	487.9	46.6	12.46	480	420	590	0
Total Dissolved Solids (mg/L)	MW-9	14	497.9	72.87	19.48	520	360	630	0
Total Dissolved Solids (mg/L)	MW-1R	8	373.8	56.3	19.9	375	290	450	0

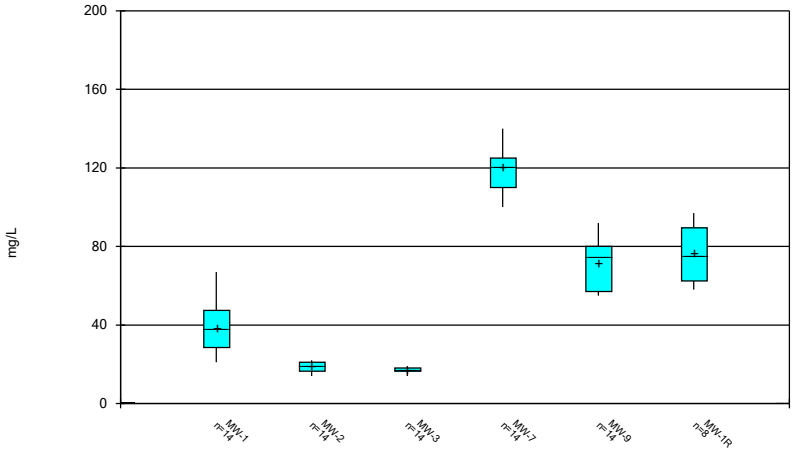
Boron



Box & Whiskers Plot Analysis Run 7/1/2022 7:38 AM View: Confirmed Results Outliers Removed - 3-16-2
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Sanitas™ v.9.6.34 Software licensed to GREDELL Engineering. UG

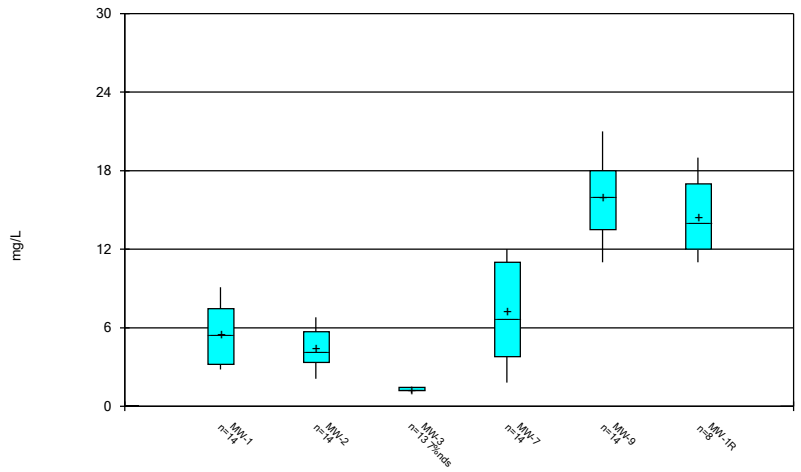
Calcium



Box & Whiskers Plot Analysis Run 7/1/2022 7:38 AM View: Confirmed Results Outliers Removed - 3-16-2
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Sanitas™ v.9.6.34 Software licensed to GREDELL Engineering. UG

Chloride



Box & Whiskers Plot Analysis Run 7/1/2022 7:38 AM View: Confirmed Results Outliers Removed - 3-16-2
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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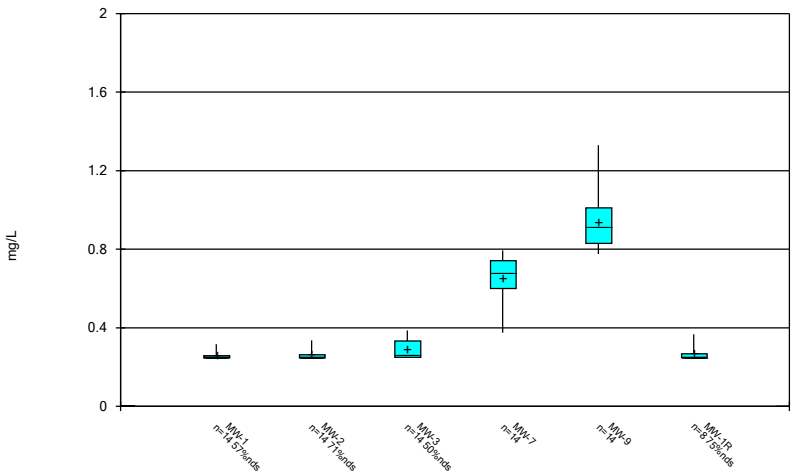
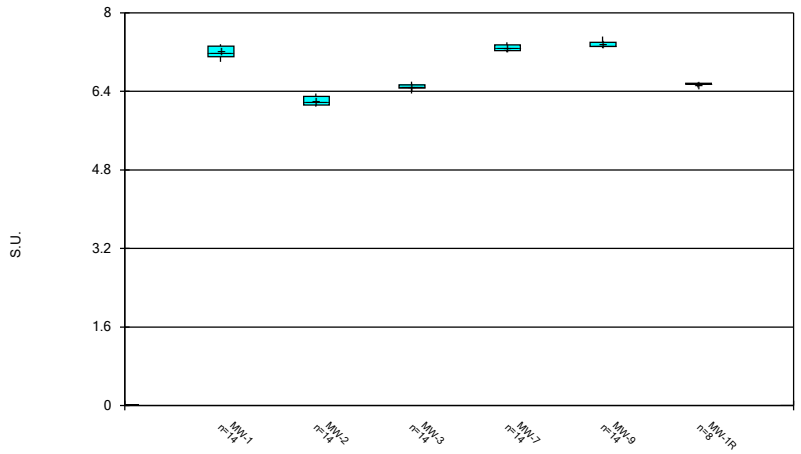
Fluoride



Box & Whiskers Plot Analysis Run 7/1/2022 7:38 AM View: Confirmed Results Outliers Removed - 3-16-2
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

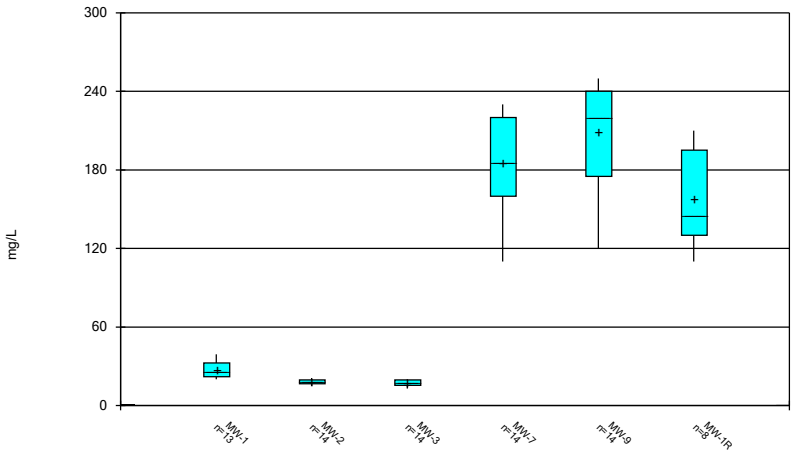
pH



Box & Whiskers Plot Analysis Run 7/1/2022 7:38 AM View: Confirmed Results Outliers Removed - 3-16-2
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Sanitas™ v.9.6.34 Software licensed to GREDELL Engineering. UG

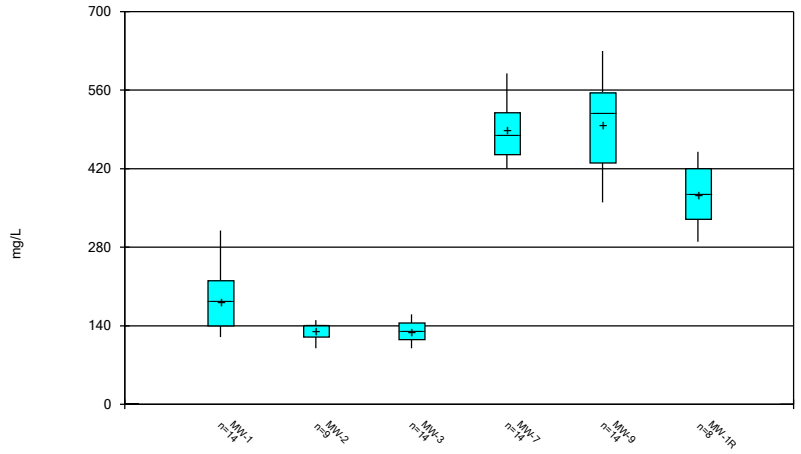
Sulfate



Box & Whiskers Plot Analysis Run 7/1/2022 7:38 AM View: Confirmed Results Outliers Removed - 3-16-2
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Sanitas™ v.9.6.34 Software licensed to GREDELL Engineering. UG

Total Dissolved Solids



Box & Whiskers Plot Analysis Run 7/1/2022 7:38 AM View: Confirmed Results Outliers Removed - 3-16-2
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Appendix 8

Prediction Limit Charts

Appendix 8

Prediction Limit Charts

Fifth Detection Sampling
(April 17, 2021 and June 15, 2021)

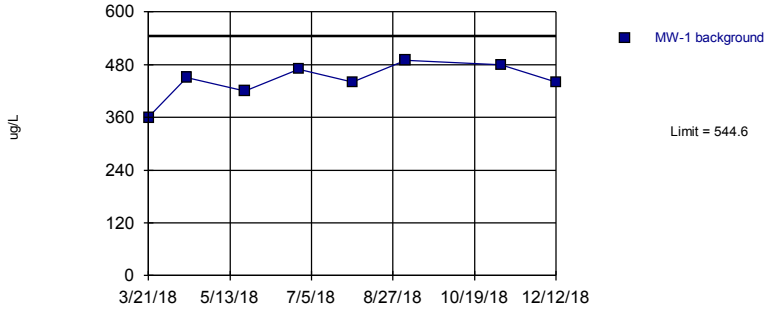
Prediction Limits - (MW-1, 2, 3, 7, & 9)

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background Printed 7/18/2019, 9:05 AM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Boron (ug/L)	MW-1	544.6	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Boron (ug/L)	MW-2	60.53	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Boron (ug/L)	MW-3	32.7	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Boron (ug/L)	MW-7	2385	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Boron (ug/L)	MW-9	6236	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/L)	MW-1	45.18	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/L)	MW-2	25.29	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/L)	MW-3	19.49	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/L)	MW-7	152.9	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/L)	MW-9	95.09	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/L)	MW-1	12.2	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/L)	MW-2	8.15	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/L)	MW-3	1.598	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/L)	MW-7	15.22	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/L)	MW-9	23.28	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Fluoride (mg/L)	MW-1	0.313	n/a	n/a	1 future	n/a	8	50	No	0.002505	Param Intra 1 of 2
Fluoride (mg/L)	MW-2	0.335	n/a	n/a	1 future	n/a	8	62.5	n/a	0.02144	NP Intra (NDs) 1 of 2
Fluoride (mg/L)	MW-3	0.4083	n/a	n/a	1 future	n/a	8	37.5	No	0.002505	Param Intra 1 of 2
Fluoride (mg/L)	MW-7	0.8677	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Fluoride (mg/L)	MW-9	1.14	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
pH (S.U.)	MW-1	7.5	6.9	n/a	1 future	n/a	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-2	6.5	5.9	n/a	1 future	n/a	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-3	6.6	6.4	n/a	1 future	n/a	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-7	7.4	7.2	n/a	1 future	n/a	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-9	7.4	7.3	n/a	1 future	n/a	8	0	No	0.001253	Param Intra 1 of 2
Sulfate (mg/L)	MW-1	31.57	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/L)	MW-2	22.33	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/L)	MW-3	21.97	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/L)	MW-7	259.2	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/L)	MW-9	301.1	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-1	223.2	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-2	169.4	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-3	177.8	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-7	617.2	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-9	630.8	n/a	n/a	1 future	n/a	8	0	No	0.002505	Param Intra 1 of 2

Boron

Intrawell Parametric, MW-1



Background Data Summary: Mean=443.8, Std. Dev.=41.04, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9079, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: AppIII

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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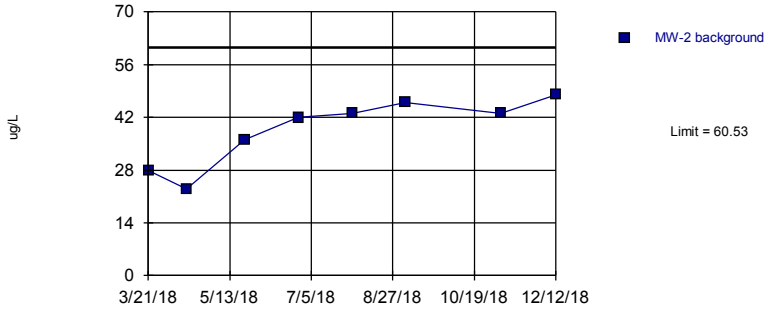
Boron

Intrawell Parametric, MW-2



Background Data Summary: Mean=38.63, Std. Dev.=8.911, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8787, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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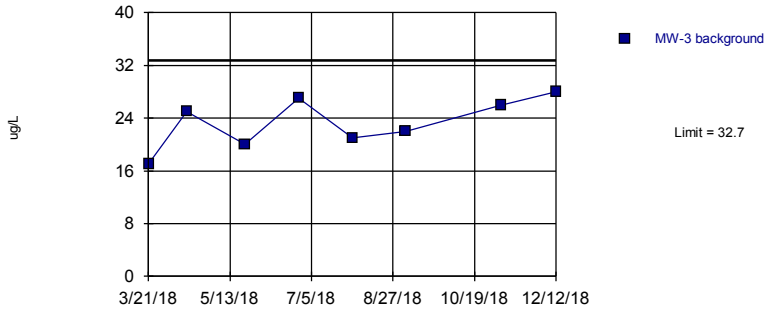
Boron

Intrawell Parametric, MW-3



Background Data Summary: Mean=23.25, Std. Dev.=3.845, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9492, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

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SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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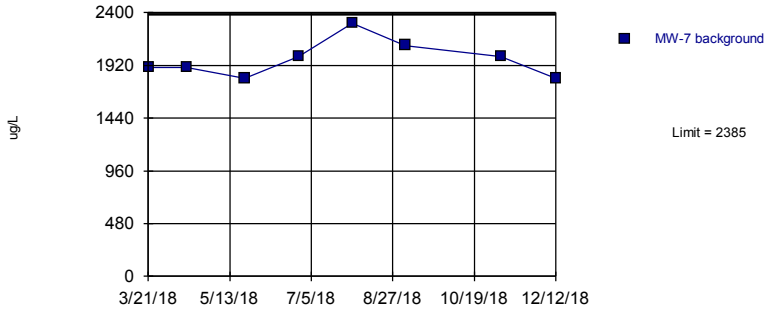
Boron

Intrawell Parametric, MW-7



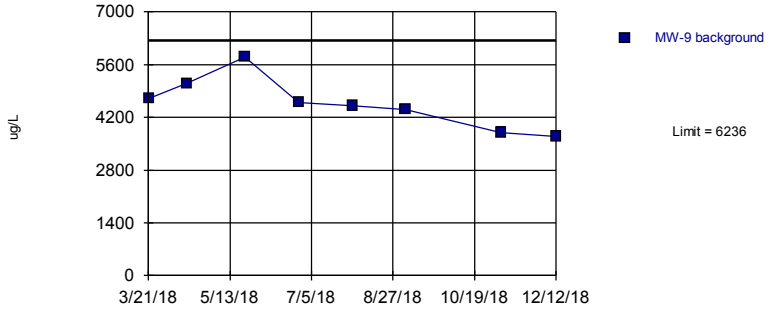
Background Data Summary: Mean=1975, Std. Dev.=166.9, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.907, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: AppIII

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Boron

Intrawell Parametric, MW-9



Background Data Summary: Mean=4575, Std. Dev.=675.6, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9478, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

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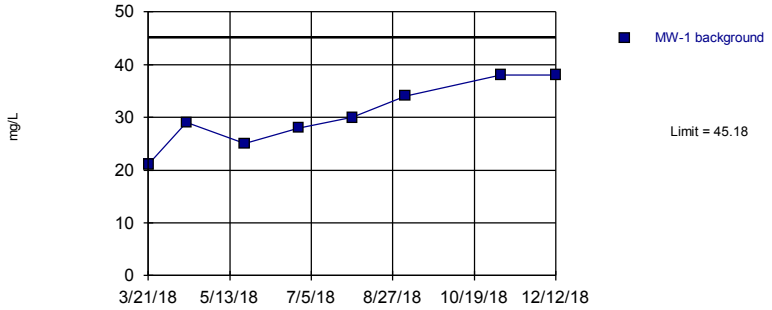
Calcium

Intrawell Parametric, MW-1



Background Data Summary: Mean=30.38, Std. Dev.=6.022, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9468, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

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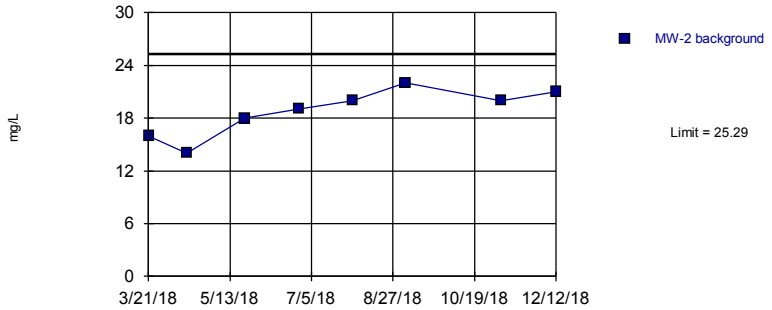
Calcium

Intrawell Parametric, MW-2



Background Data Summary: Mean=18.75, Std. Dev.=2.659, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9419, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

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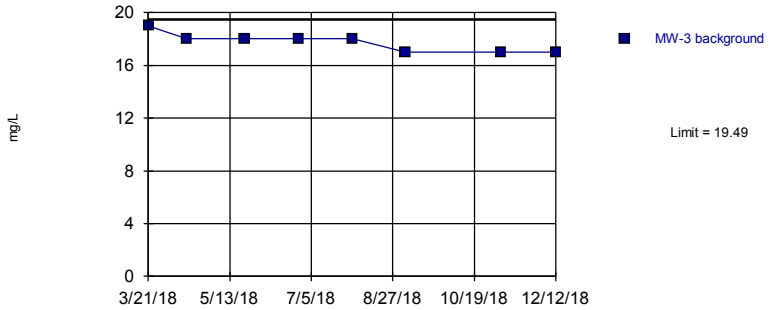
Calcium

Intrawell Parametric, MW-3



Background Data Summary: Mean=17.75, Std. Dev.=0.7071, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8268, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

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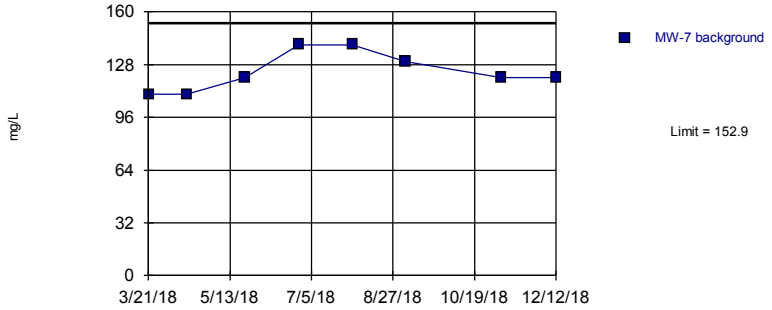
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Calcium

Intrawell Parametric, MW-7



Background Data Summary: Mean=123.8, Std. Dev.=11.88, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8748, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

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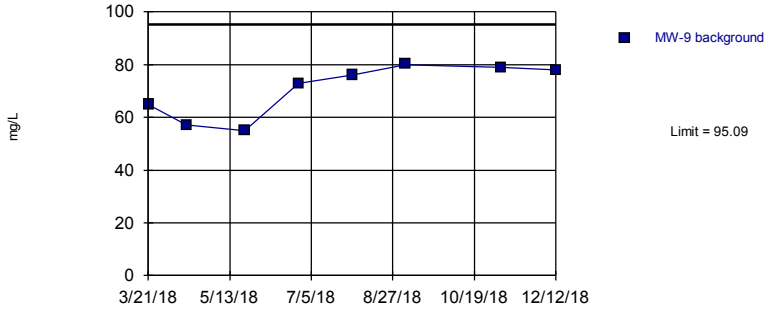
Calcium

Intrawell Parametric, MW-9



Background Data Summary: Mean=70.38, Std. Dev.=10.06, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8497, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

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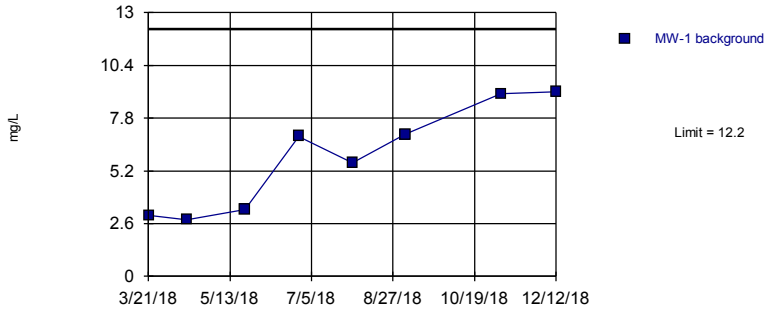
Chloride

Intrawell Parametric, MW-1



Background Data Summary: Mean=5.838, Std. Dev.=2.588, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8813, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: AppIII

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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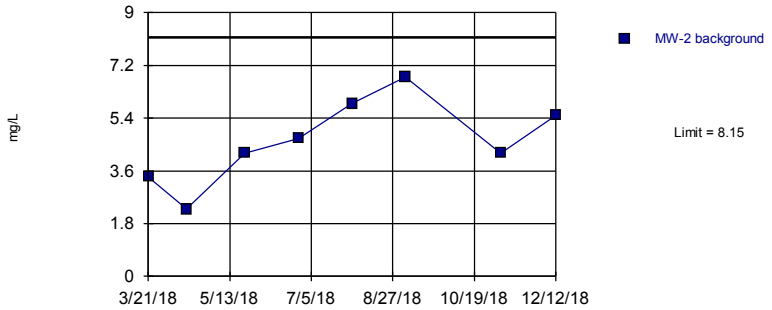
Chloride

Intrawell Parametric, MW-2



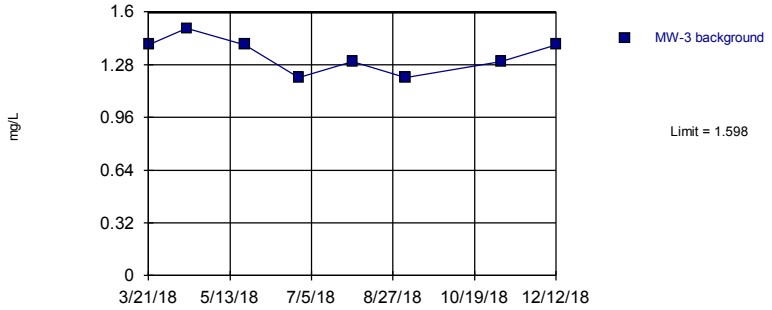
Background Data Summary: Mean=4.625, Std. Dev.=1.434, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9868, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: AppIII

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Chloride

Intrawell Parametric, MW-3



Background Data Summary: Mean=1.338, Std. Dev.=0.1061, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9112, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: AppIII

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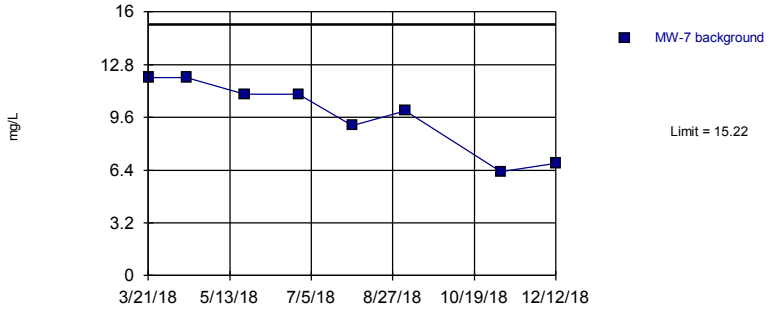
Chloride

Intrawell Parametric, MW-7



Background Data Summary: Mean=9.775, Std. Dev.=2.215, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8753, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: AppIII

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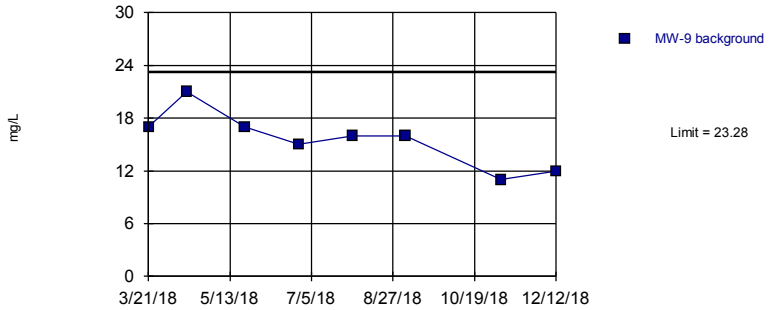
Chloride

Intrawell Parametric, MW-9



Background Data Summary: Mean=15.63, Std. Dev.=3.114, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9388, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: AppIII

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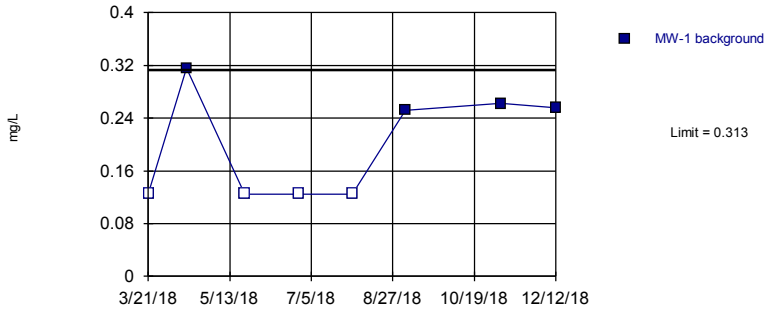
Hollow symbols indicate censored values.

Fluoride

Intrawell Parametric, MW-1



Background Data Summary (after Kaplan-Meier Adjustment): Mean=0.2608, Std. Dev.=0.02126, n=8, 50% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7822, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

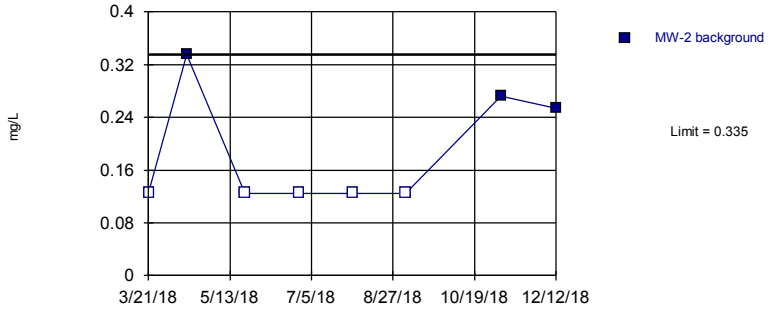
Prediction Limit Analysis Run 7/18/2019 9:03 AM View: AppIII

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Hollow symbols indicate censored values.

Fluoride

Intrawell Non-parametric, MW-2



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 62.5% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Assumes 1 future value. Insufficient data to test for seasonality: data were not deseasonalized.

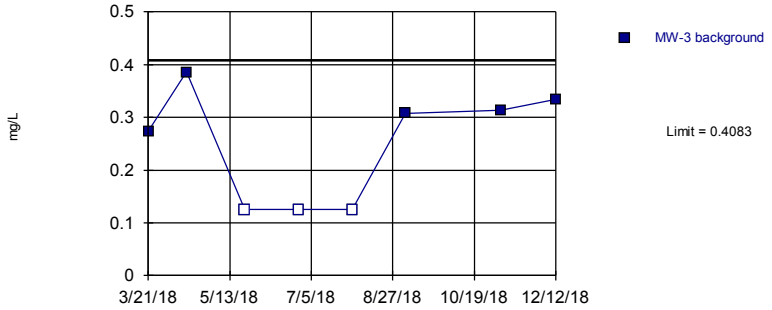
Prediction Limit Analysis Run 7/18/2019 9:03 AM View: AppIII

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Hollow symbols indicate censored values.

Fluoride

Intrawell Parametric, MW-3



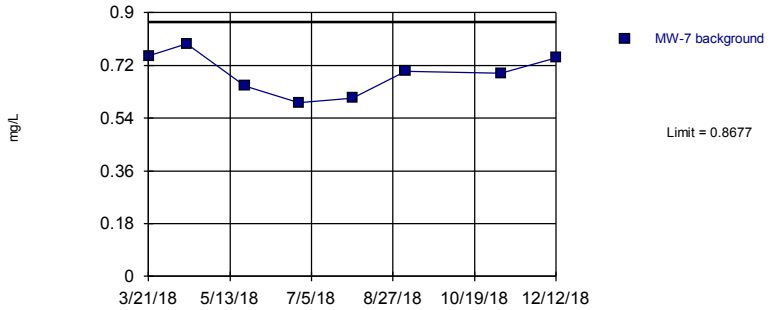
Background Data Summary (after Kaplan-Meier Adjustment): Mean=0.2956, Std. Dev.=0.04584, n=8, 37.5% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8336, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: AppIII

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Fluoride

Intrawell Parametric, MW-7



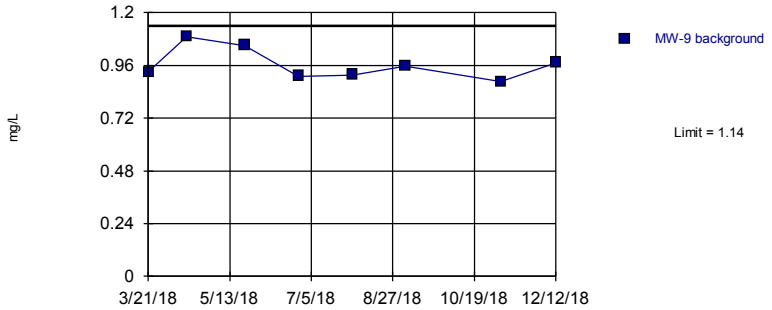
Background Data Summary: Mean=0.6919, Std. Dev.=0.07152, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9552, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: AppIII

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Fluoride

Intrawell Parametric, MW-9



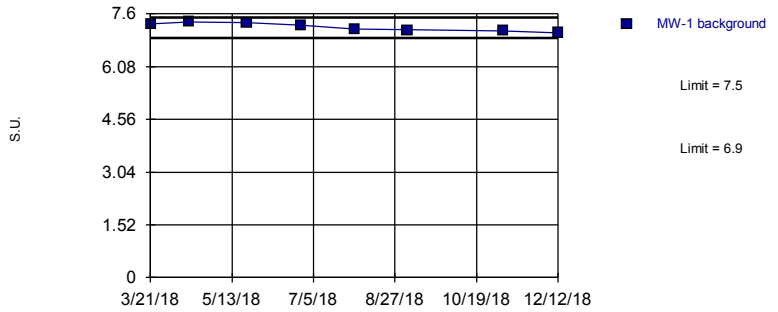
Background Data Summary: Mean=0.9636, Std. Dev.=0.07178, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8952, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: AppIII

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

pH

Intrawell Parametric, MW-1



Background Data Summary: Mean=7.22, Std. Dev.=0.1164, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9074, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: AppIII

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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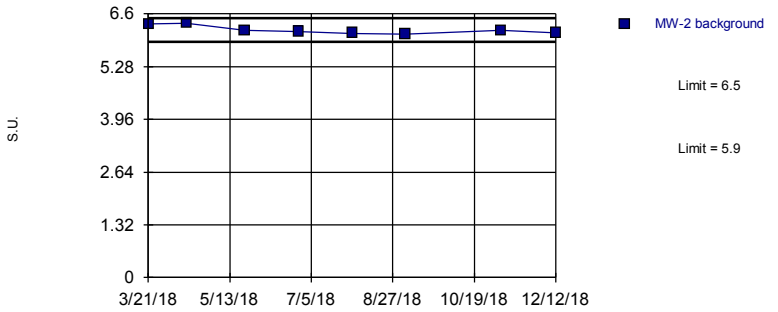
pH

Intrawell Parametric, MW-2



Background Data Summary: Mean=6.196, Std. Dev.=0.1036, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8374, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: AppIII

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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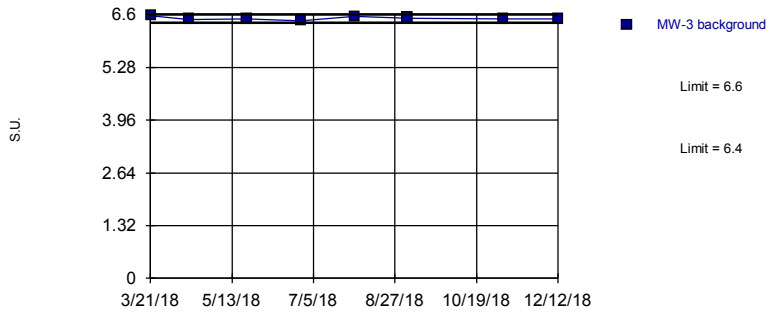
pH

Intrawell Parametric, MW-3



Background Data Summary: Mean=6.505, Std. Dev.=0.03854, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.939, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: AppIII

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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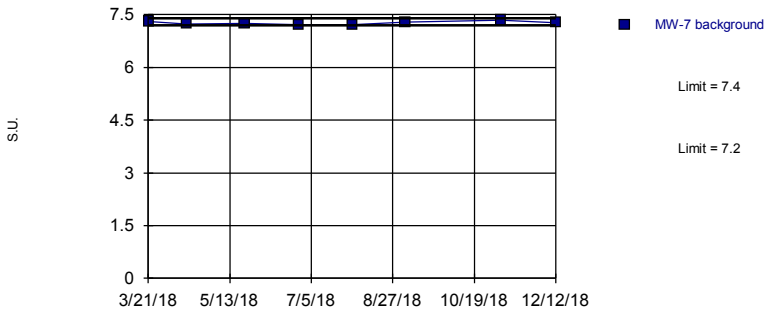
pH

Intrawell Parametric, MW-7



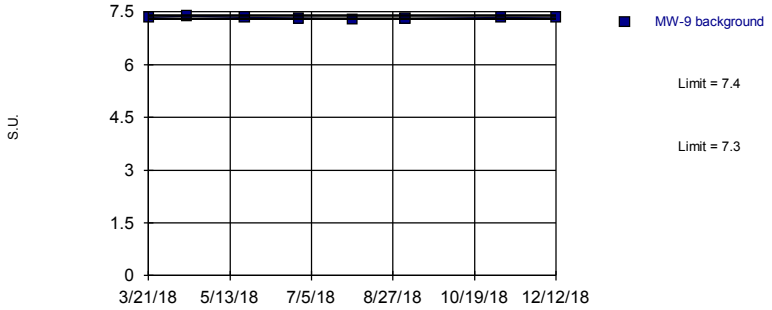
Background Data Summary: Mean=7.268, Std. Dev.=0.04464, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9288, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:03 AM View: AppIII

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

pH

Intrawell Parametric, MW-9



Background Data Summary: Mean=7.33, Std. Dev.=0.02726, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9741, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:04 AM View: AppIII

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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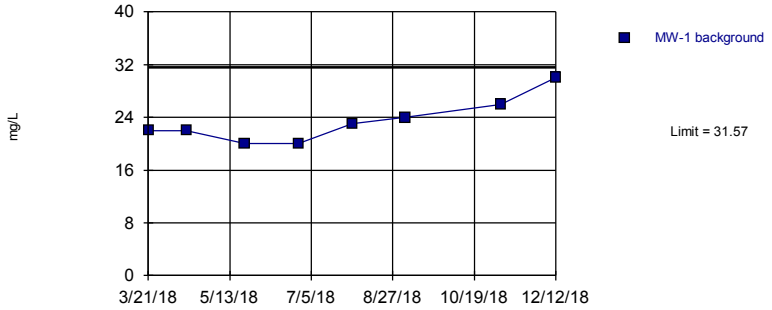
Sulfate

Intrawell Parametric, MW-1



Background Data Summary: Mean=23.38, Std. Dev.=3.335, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8964, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:04 AM View: AppIII

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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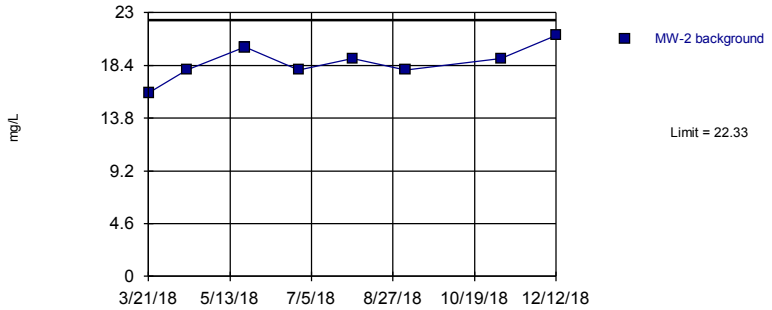
Sulfate

Intrawell Parametric, MW-2



Background Data Summary: Mean=18.63, Std. Dev.=1.506, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9528, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:04 AM View: AppIII

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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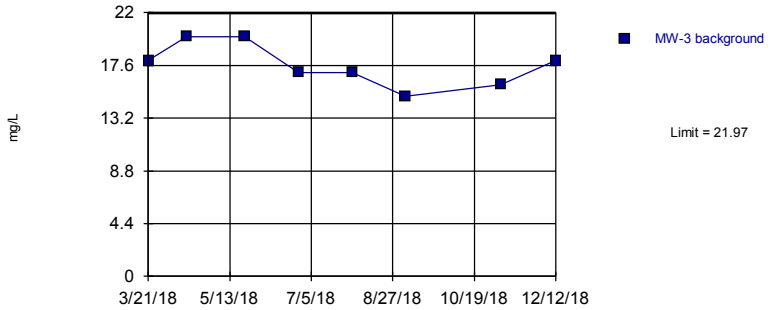
Sulfate

Intrawell Parametric, MW-3



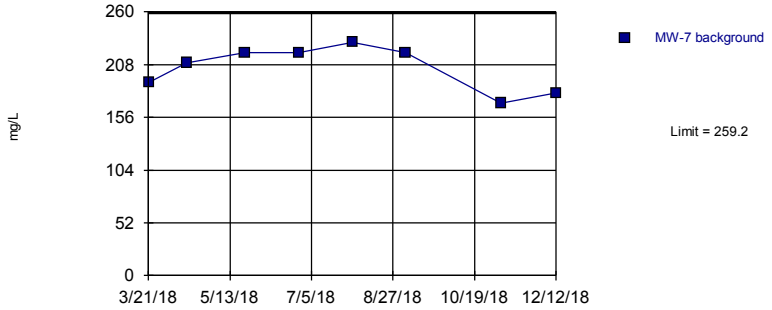
Background Data Summary: Mean=17.63, Std. Dev.=1.768, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9348, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:04 AM View: AppIII

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Sulfate

Intrawell Parametric, MW-7



Background Data Summary: Mean=205, Std. Dev.=22.04, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8819, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:04 AM View: AppIII

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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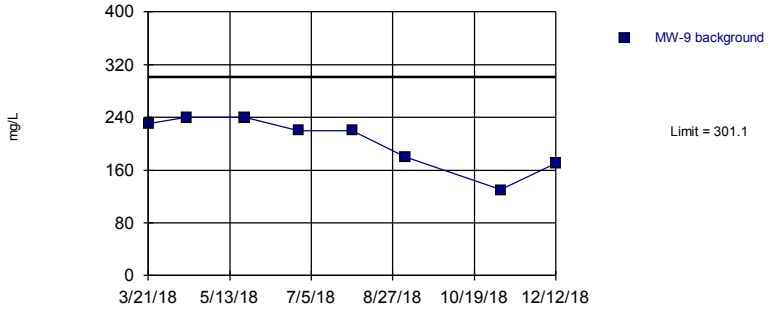
Sulfate

Intrawell Parametric, MW-9



Background Data Summary: Mean=203.8, Std. Dev.=39.62, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.864, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:04 AM View: AppIII

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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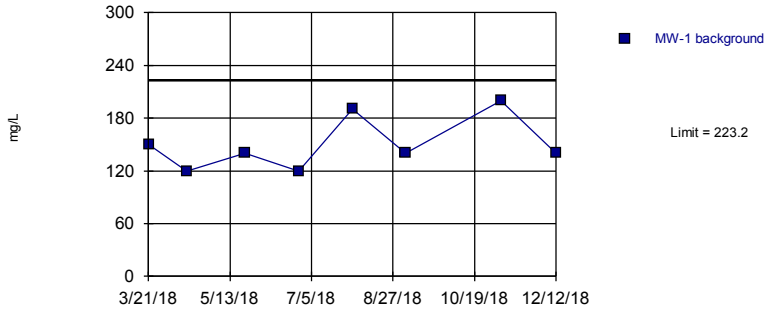
Total Dissolved Solids

Intrawell Parametric, MW-1



Background Data Summary: Mean=150, Std. Dev.=29.76, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8433, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:04 AM View: AppIII

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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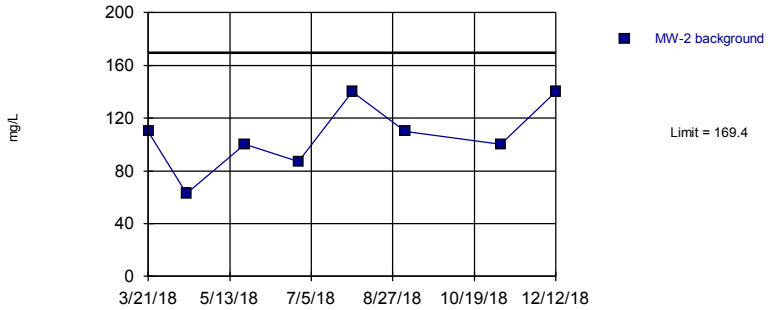
Total Dissolved Solids

Intrawell Parametric, MW-2



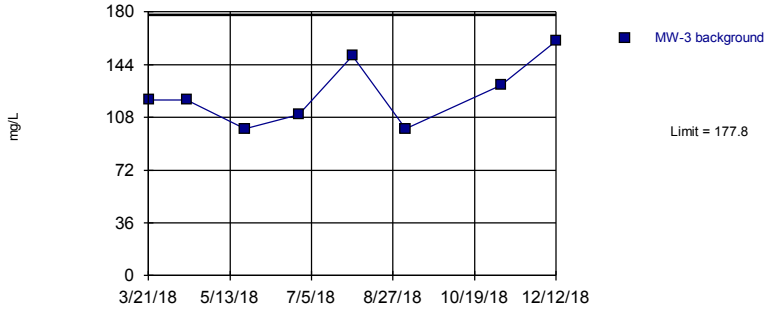
Background Data Summary: Mean=106.3, Std. Dev.=25.71, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9324, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:04 AM View: AppIII

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Total Dissolved Solids

Intrawell Parametric, MW-3



Background Data Summary: Mean=123.8, Std. Dev.=22, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9132, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:04 AM View: AppIII

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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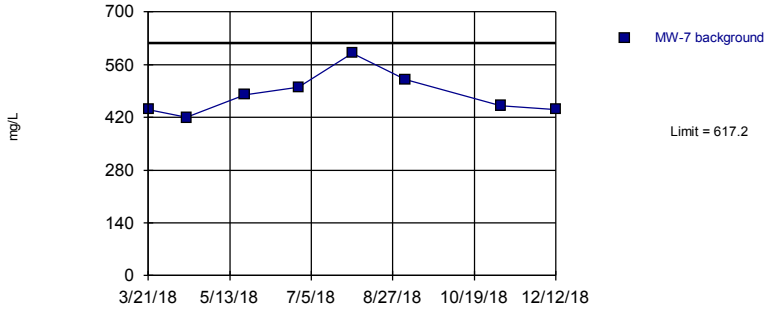
Total Dissolved Solids

Intrawell Parametric, MW-7



Background Data Summary: Mean=480, Std. Dev.=55.81, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9034, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:04 AM View: AppIII

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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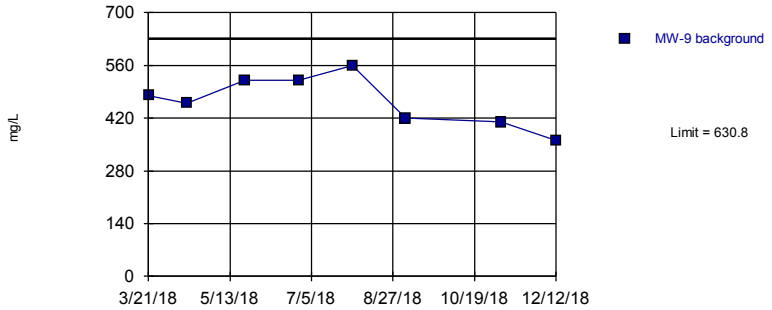
Total Dissolved Solids

Intrawell Parametric, MW-9



Background Data Summary: Mean=466.3, Std. Dev.=66.96, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.969, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Analysis Run 7/18/2019 9:04 AM View: AppIII

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Appendix 8

Prediction Limit Charts

Sixth Detection Sampling
(October 20, 2021 and December 27, 2021)

Prediction Limit

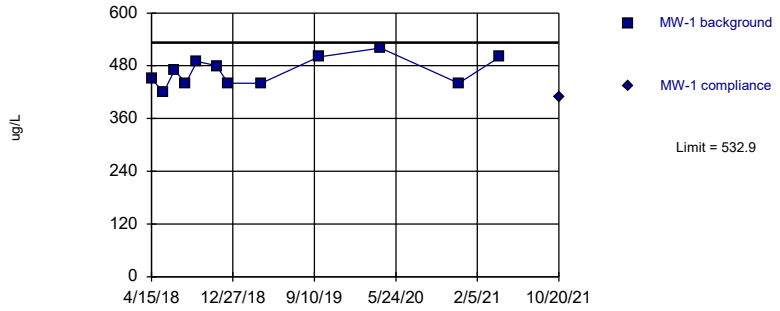
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background Printed 7/6/2022, 11:27 AM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Boron (ug/L)	MW-1	532.9	n/a	10/20/2021	410	No	12	0	No	0.002505	Param Intra 1 of 2
Boron (ug/L)	MW-2	59.94	n/a	12/27/2021	43	No	13	0	No	0.002505	Param Intra 1 of 2
Boron (ug/L)	MW-3	33.39	n/a	10/20/2021	30	No	13	0	No	0.002505	Param Intra 1 of 2
Boron (ug/L)	MW-7	2352	n/a	10/20/2021	1900	No	13	0	No	0.002505	Param Intra 1 of 2
Boron (ug/L)	MW-9	6408	n/a	10/20/2021	5500	No	13	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/L)	MW-1	65.01	n/a	10/20/2021	41	No	13	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/L)	MW-2	24.21	n/a	10/20/2021	19	No	13	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/L)	MW-3	19.08	n/a	10/20/2021	14	No	13	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/L)	MW-7	144	n/a	10/20/2021	120	No	13	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/L)	MW-9	97.23	n/a	10/20/2021	57	No	13	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/L)	MW-1	10.27	n/a	10/20/2021	3.1	No	13	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/L)	MW-2	7.525	n/a	10/20/2021	4.2	No	13	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/L)	MW-3	1.623	n/a	10/20/2021	1ND	No	12	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/L)	MW-7	14.94	n/a	10/20/2021	3.7	No	13	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/L)	MW-9	22.51	n/a	10/20/2021	18	No	13	0	No	0.002505	Param Intra 1 of 2
Fluoride (mg/L)	MW-1	0.316	n/a	10/20/2021	0.25ND	No	13	53.85	n/a	0.009692	NP Intra (NDs) 1 of 2
Fluoride (mg/L)	MW-2	0.336	n/a	10/20/2021	0.25ND	No	13	69.23	n/a	0.009692	NP Intra (NDs) 1 of 2
Fluoride (mg/L)	MW-3	0.386	n/a	10/20/2021	0.25ND	No	13	46.15	n/a	0.009692	NP Intra (normality) ...
Fluoride (mg/L)	MW-7	0.831	n/a	10/20/2021	0.375	No	13	0	No	0.002505	Param Intra 1 of 2
Fluoride (mg/L)	**MW-9**	**1.101**	**n/a**	**10/20/2021**	**1.33**	**Yes**	**13**	**0**	**No**	**0.002505**	**Param Intra 1 of 2**
pH (S.U.)	MW-1	7.433	6.95	10/20/2021	7.33	No	13	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-2	6.405	6.013	10/20/2021	6.25	No	13	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-3	6.626	6.359	10/20/2021	6.52	No	13	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-7	7.42	7.148	10/20/2021	7.35	No	13	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	**MW-9**	**7.477**	**7.237**	**10/20/2021**	**7.52**	**Yes**	**13**	**0**	**No**	**0.001253**	**Param Intra 1 of 2**
Sulfate (mg/L)	MW-1	41.19	n/a	10/20/2021	28	No	12	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/L)	MW-2	21.42	n/a	10/20/2021	15	No	13	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/L)	MW-3	21.29	n/a	10/20/2021	13	No	13	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/L)	MW-7	259	n/a	10/20/2021	160	No	13	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/L)	MW-9	279.2	n/a	10/20/2021	240	No	13	0	x^2	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-1	289.9	n/a	10/20/2021	230	No	13	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-2	171.5	n/a	10/20/2021	140	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-3	166.7	n/a	10/20/2021	130	No	13	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-7	584.1	n/a	10/20/2021	520	No	13	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-9	653	n/a	12/27/2021	520	No	13	0	No	0.002505	Param Intra 1 of 2

Within Limit

Boron

Intrawell Parametric



Background Data Summary: Mean=465.8, Std. Dev.=31.75, n=12. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9198, critical = 0.859. Kappa = 2.112 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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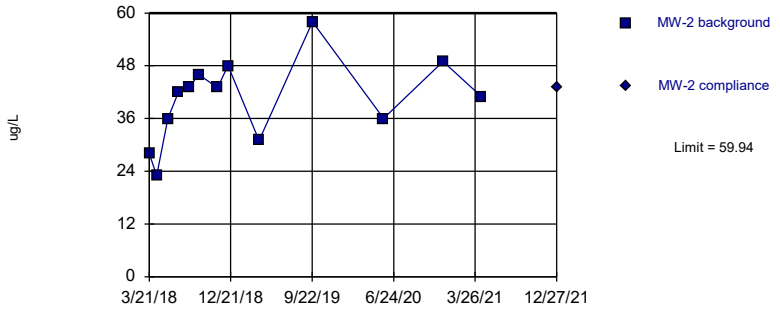
Within Limit

Boron

Intrawell Parametric



Background Data Summary: Mean=40.31, Std. Dev.=9.455, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.98, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

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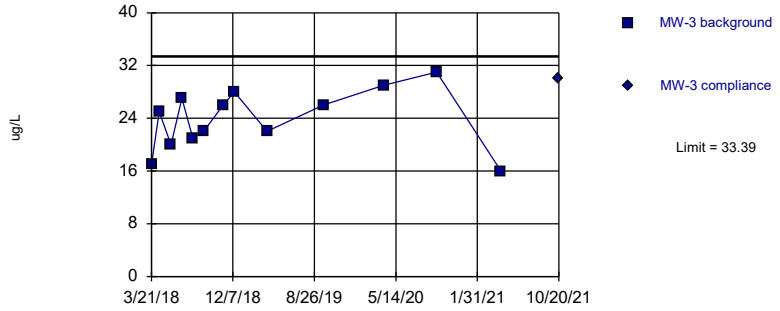
Within Limit

Boron

Intrawell Parametric



Background Data Summary: Mean=23.85, Std. Dev.=4.598, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9639, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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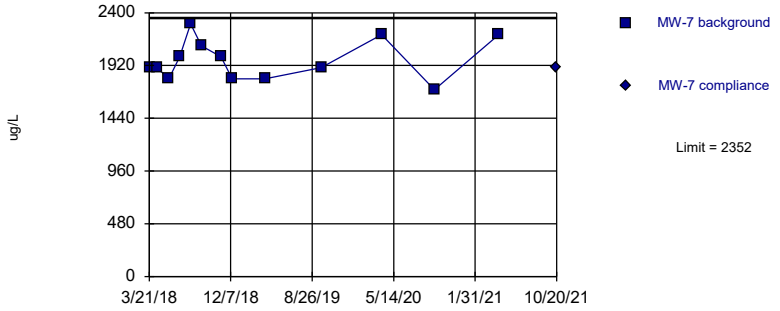
Within Limit

Boron

Intrawell Parametric



Background Data Summary: Mean=1969, Std. Dev.=184.3, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9386, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

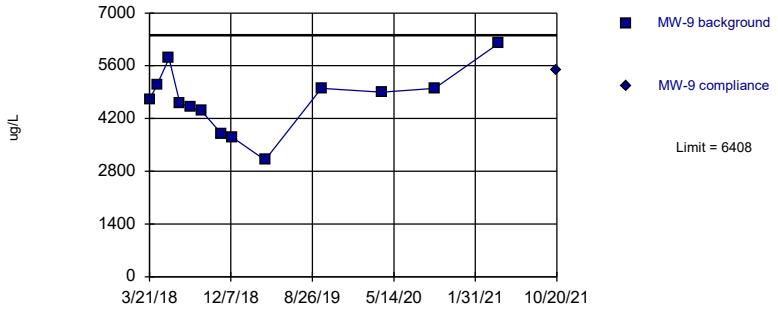
Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Within Limit

Boron

Intrawell Parametric



Background Data Summary: Mean=4677, Std. Dev.=833.8, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9713, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

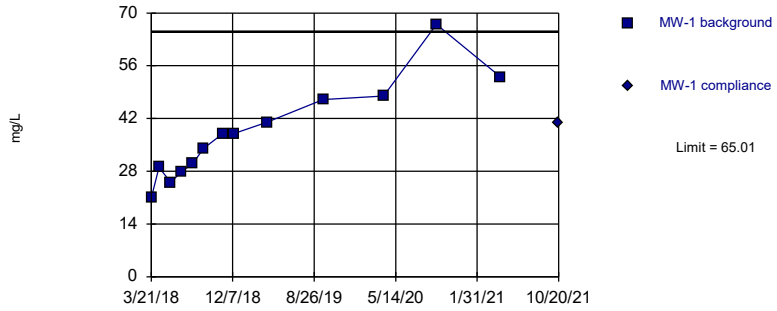
Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Within Limit

Calcium

Intrawell Parametric



Background Data Summary: Mean=38.38, Std. Dev.=12.82, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9495, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

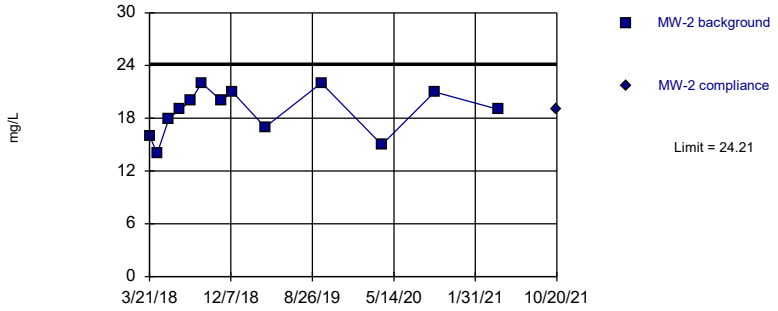
Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Within Limit

Calcium

Intrawell Parametric



Background Data Summary: Mean=18.77, Std. Dev.=2.619, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.936, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

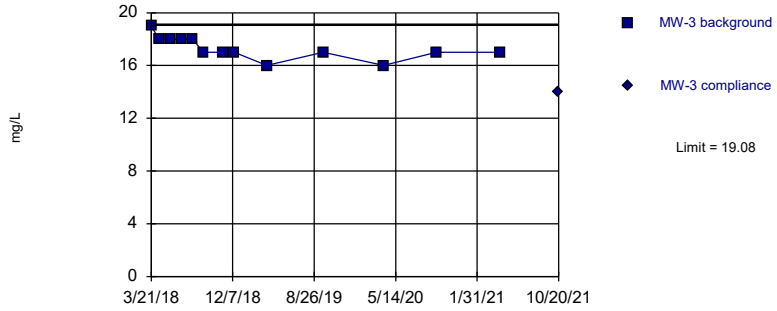
Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Within Limit

Calcium

Intrawell Parametric



Background Data Summary: Mean=17.31, Std. Dev.=0.8549, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8905, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

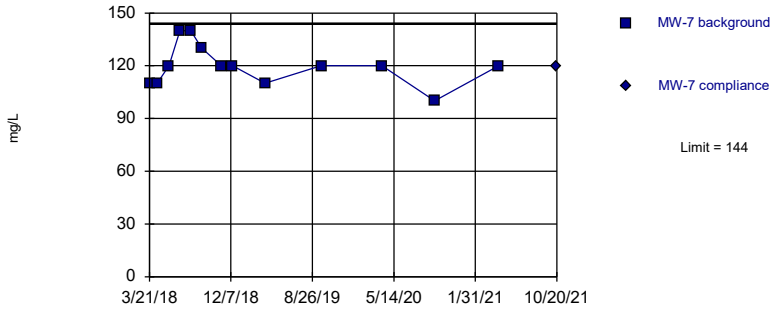
Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Within Limit

Calcium

Intrawell Parametric



Background Data Summary: Mean=120, Std. Dev.=11.55, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8997, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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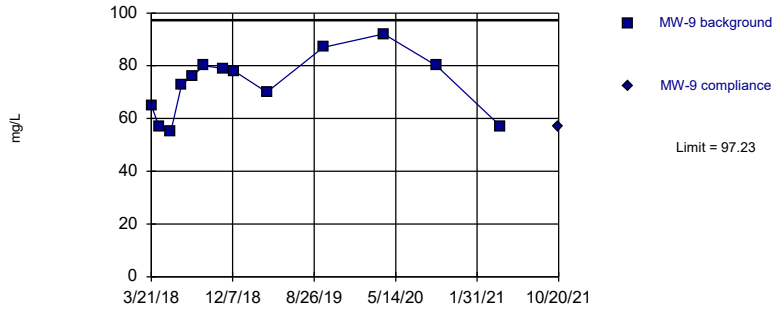
Within Limit

Calcium

Intrawell Parametric



Background Data Summary: Mean=73, Std. Dev.=11.67, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.939, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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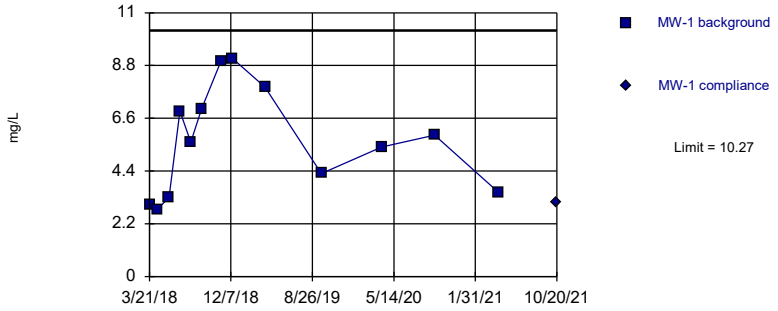
Within Limit

Chloride

Intrawell Parametric



Background Data Summary: Mean=5.669, Std. Dev.=2.214, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9289, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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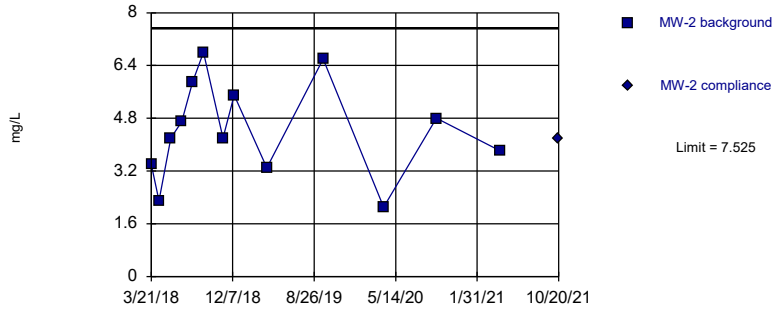
Within Limit

Chloride

Intrawell Parametric



Background Data Summary: Mean=4.431, Std. Dev.=1.49, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.965, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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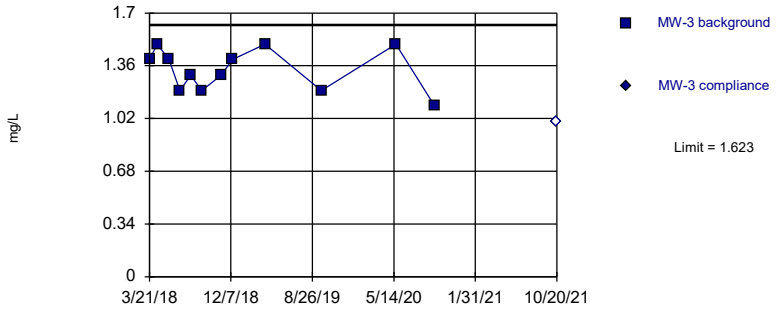
Hollow symbols indicate censored values.

Within Limit

Chloride

Intrawell Parametric



Background Data Summary: Mean=1.333, Std. Dev.=0.1371, n=12. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9077, critical = 0.859. Kappa = 2.112 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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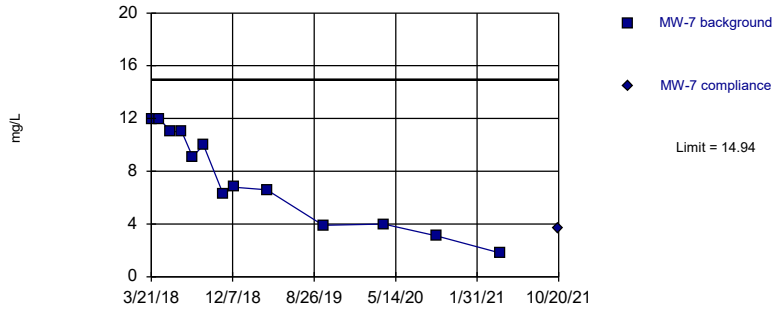
Within Limit

Chloride

Intrawell Parametric



Background Data Summary: Mean=7.508, Std. Dev.=3.578, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9179, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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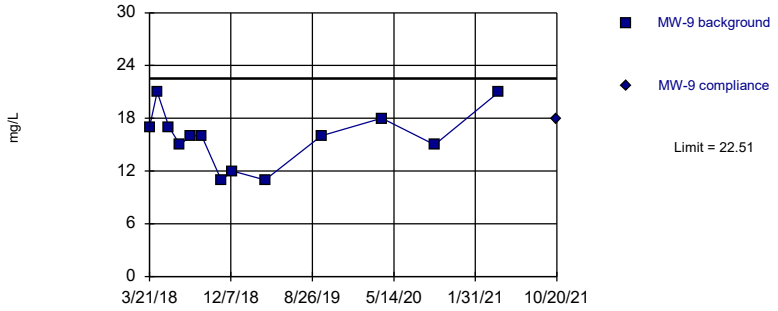
Within Limit

Chloride

Intrawell Parametric



Background Data Summary: Mean=15.85, Std. Dev.=3.211, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9243, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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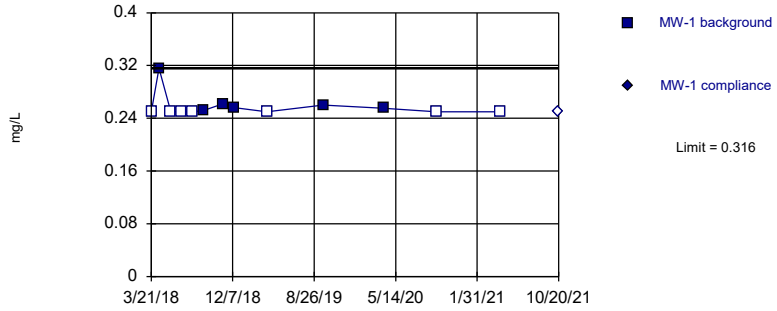
Hollow symbols indicate censored values.

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 13 background values. 53.85% NDs. Well-constituent pair annual alpha = 0.01929. Individual comparison alpha = 0.009692 (1 of 2).

Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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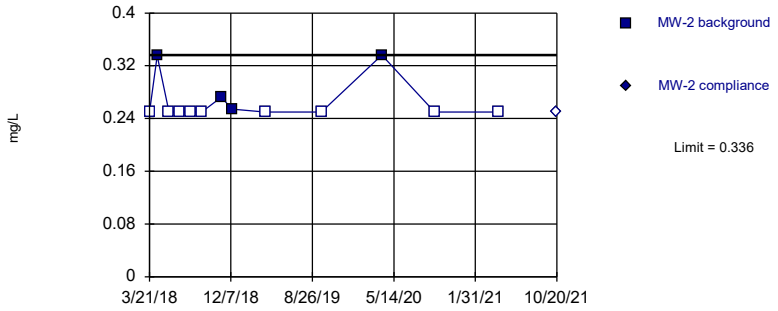
Hollow symbols indicate censored values.

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 13 background values. 69.23% NDs. Well-constituent pair annual alpha = 0.01929. Individual comparison alpha = 0.009692 (1 of 2).

Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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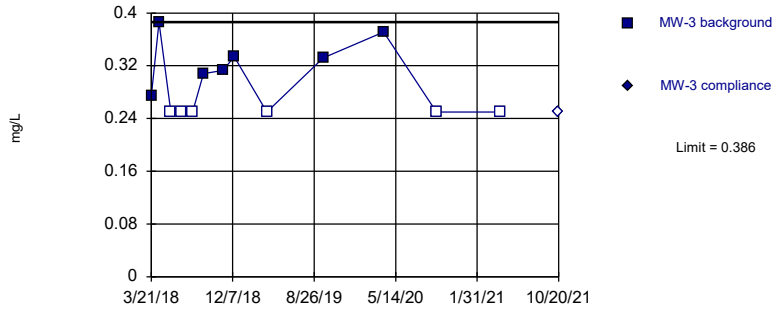
Hollow symbols indicate censored values.

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 0.05 alpha level. Limit is highest of 13 background values. 46.15% NDs. Well-constituent pair annual alpha = 0.01929. Individual comparison alpha = 0.009692 (1 of 2).

Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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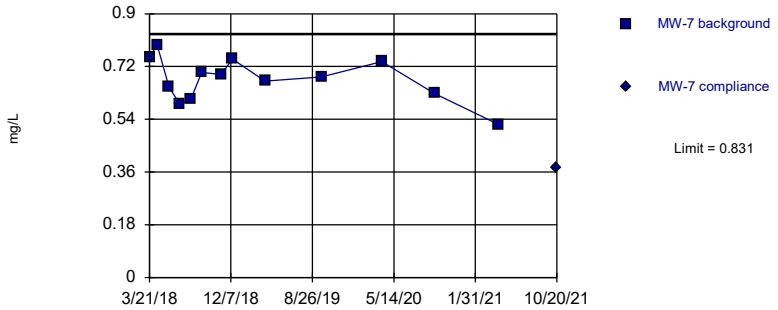
Within Limit

Fluoride

Intrawell Parametric



Background Data Summary: Mean=0.6751, Std. Dev.=0.07508, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9808, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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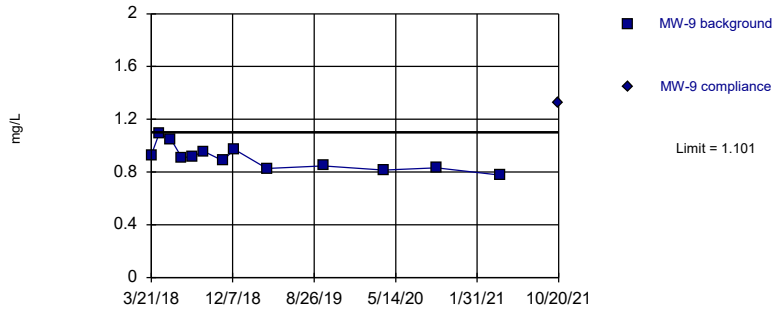
Exceeds Limit

Fluoride

Intrawell Parametric



Background Data Summary: Mean=0.9082, Std. Dev.=0.09266, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9545, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

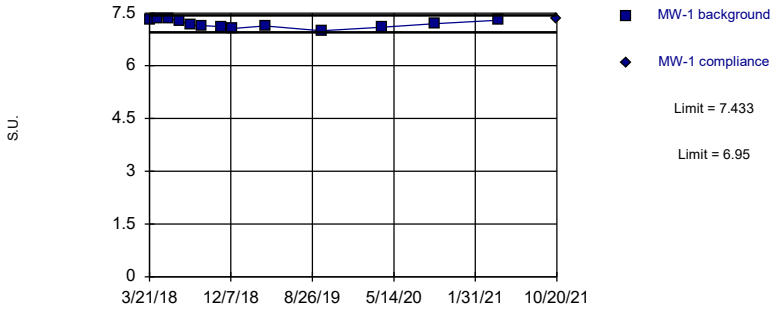
Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Within Limits

pH

Intrawell Parametric



Background Data Summary: Mean=7.192, Std. Dev.=0.1162, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9441, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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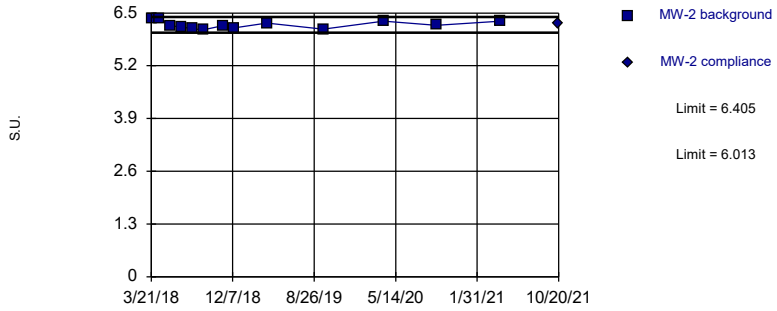
Within Limits

pH

Intrawell Parametric



Background Data Summary: Mean=6.209, Std. Dev.=0.09429, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.922, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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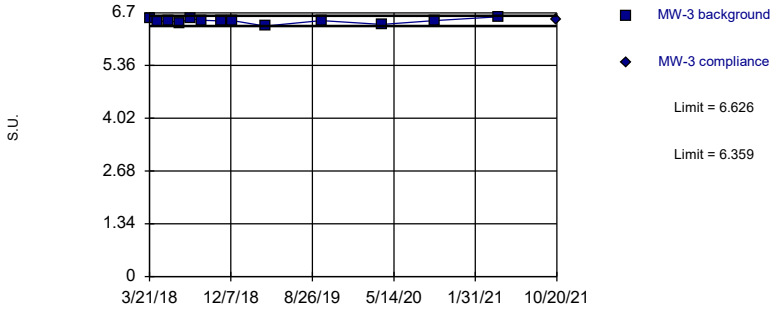
Within Limits

pH

Intrawell Parametric



Background Data Summary: Mean=6.492, Std. Dev.=0.06418, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.944, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

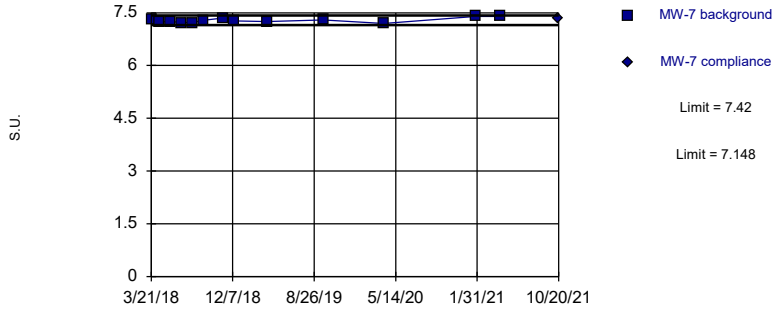
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Sanitas™ v.9.6.34 Software licensed to GREDELL Engineering. UG

Within Limits

pH

Intrawell Parametric



Background Data Summary: Mean=7.284, Std. Dev.=0.06552, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9081, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

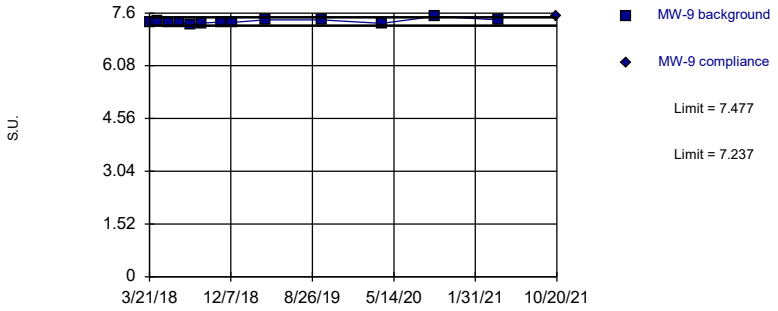
Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Exceeds Limits

pH

Intrawell Parametric



Background Data Summary: Mean=7.357, Std. Dev.=0.05793, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.91, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

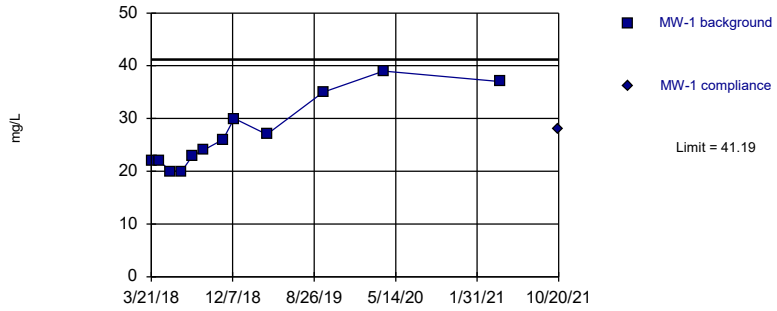
Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Within Limit

Sulfate

Intrawell Parametric



Background Data Summary: Mean=27.08, Std. Dev.=6.68, n=12. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8817, critical = 0.859. Kappa = 2.112 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

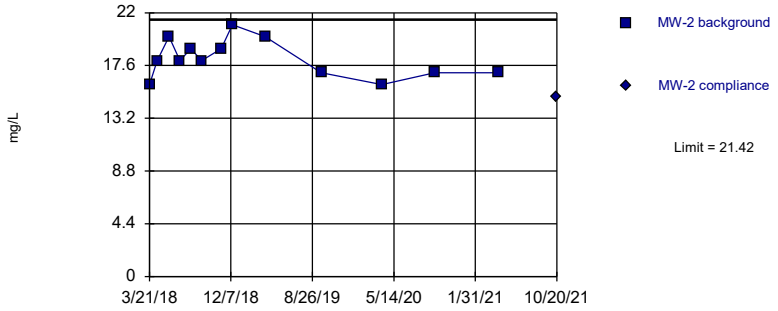
Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Within Limit

Sulfate

Intrawell Parametric



Background Data Summary: Mean=18.15, Std. Dev.=1.573, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.944, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

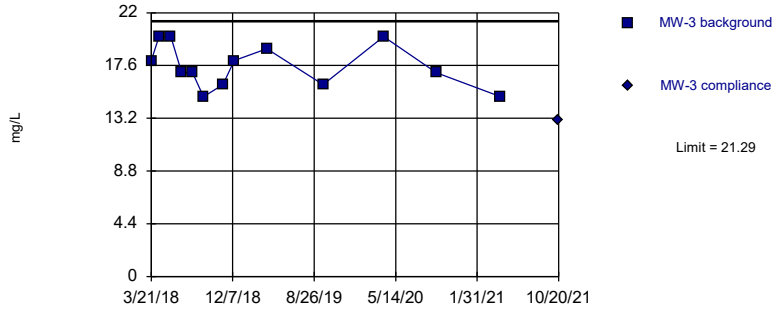
Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Within Limit

Sulfate

Intrawell Parametric



Background Data Summary: Mean=17.54, Std. Dev.=1.808, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9124, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

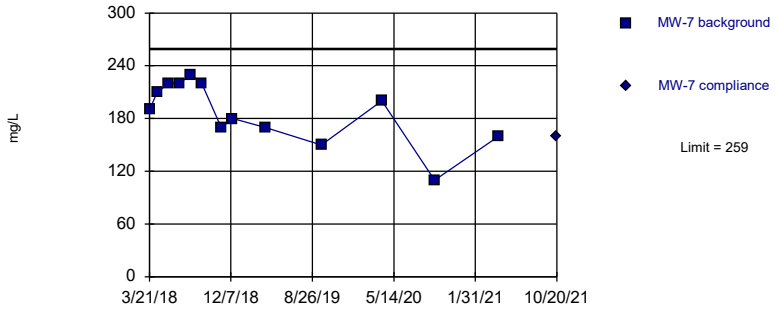
Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Within Limit

Sulfate

Intrawell Parametric



Background Data Summary: Mean=186.9, Std. Dev.=34.73, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9305, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

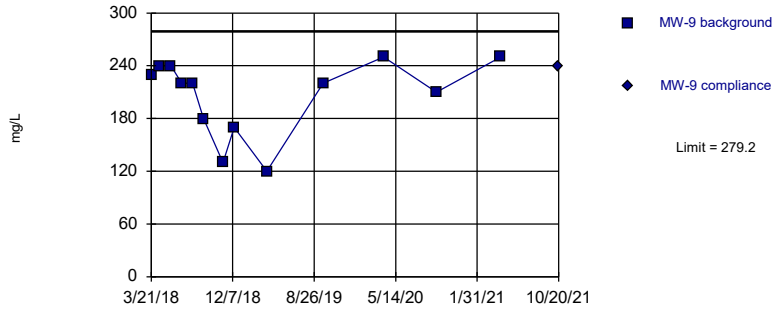
Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Within Limit

Sulfate

Intrawell Parametric



Background Data Summary (based on square transformation): Mean=44231, Std. Dev.=16238, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8921, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

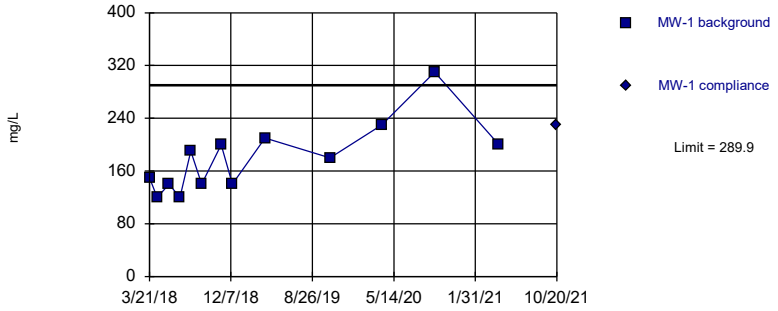
Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Within Limit

Total Dissolved Solids

Intrawell Parametric



Background Data Summary: Mean=179.2, Std. Dev.=53.3, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8908, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

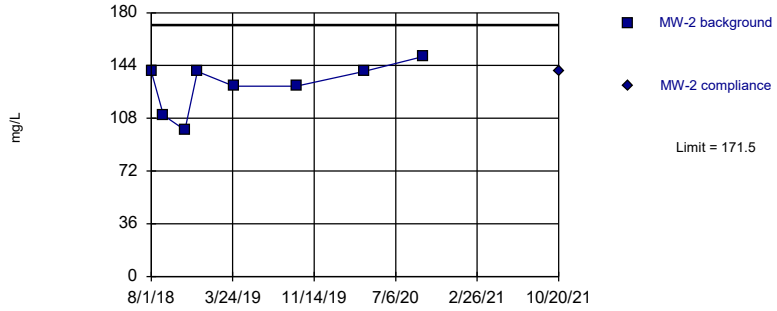
Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Within Limit

Total Dissolved Solids

Intrawell Parametric



Background Data Summary: Mean=130, Std. Dev.=16.9, n=8. Normality test: Shapiro Wilk @alpha = 0.1, calculated = 0.8844, critical = 0.851. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

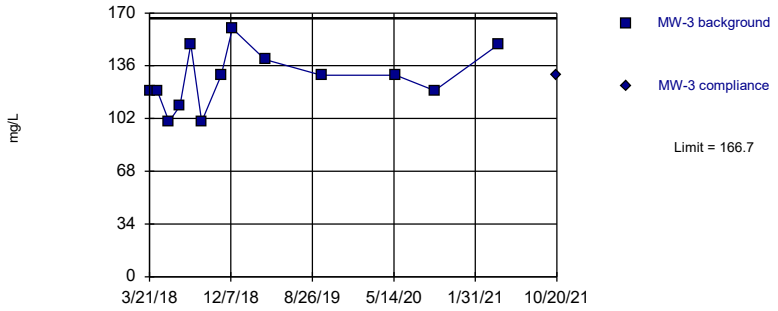
Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Within Limit

Total Dissolved Solids

Intrawell Parametric



Background Data Summary: Mean=127.7, Std. Dev.=18.78, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9524, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

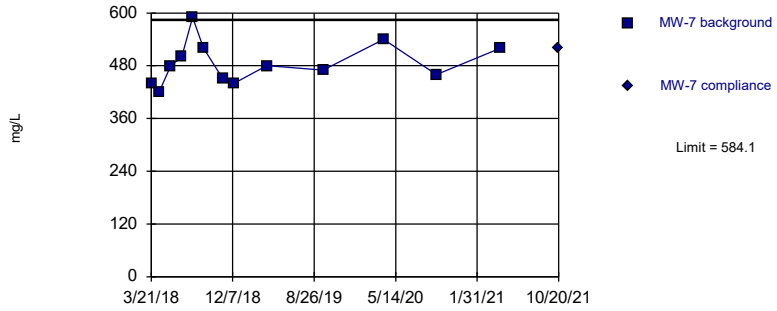
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Sanitas™ v.9.6.34 Software licensed to GREDELL Engineering. UG

Within Limit

Total Dissolved Solids

Intrawell Parametric



Background Data Summary: Mean=485.4, Std. Dev.=47.54, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9501, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

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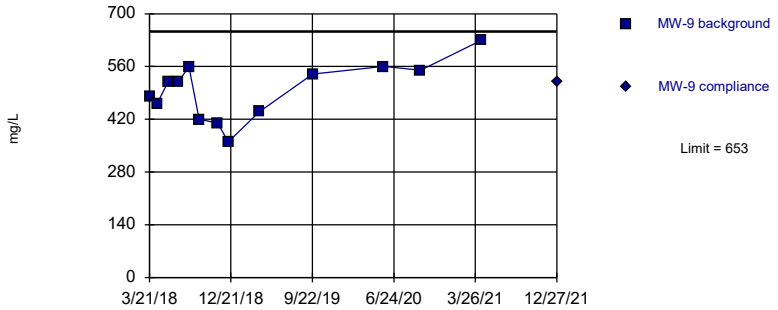
Within Limit

Total Dissolved Solids

Intrawell Parametric



Background Data Summary: Mean=496.2, Std. Dev.=75.56, n=13. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9721, critical = 0.866. Kappa = 2.077 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 7/6/2022 11:26 AM View: Confirmed Results Outliers Removed - 3-16-2022

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SikestonFAP Background

Appendix 9

Alternate Source Demonstrations

Appendix 9

Alternate Source Demonstration
October 14, 2021
MW-1

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
Fly Ash Pond – Calcium and Sulfate in MW-1
Alternate Source Demonstration

Prepared for:

BMU Sikeston
Board of Municipal Utilities

Sikeston Power Station
1551 West Wakefield Avenue
Sikeston, MO 63801

October 2021

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, Fly Ash Pond CCR unit. The report demonstrates that the statistically significant increases of sulfate and calcium in MW-1 resulted from a source other than the CCR unit. 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 generally accepted methods.

Name: Thomas R. Gredell, P.E.

Signature: _____

Date: 10-15-21

Registration Number: PE-021137
State of Registration: Missouri

Sikeston Board of Municipal Utilities
Sikeston Power Station
Detection Monitoring Program for
Fly Ash Pond – Calcium and Sulfate
in MW-1
Alternate Source Demonstration

October 2021

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1.0 INTRODUCTION

This Alternate Source Demonstration (ASD) Report has been prepared to address the results of the fifth semi-annual sampling event initiated on April 17, 2021 at the Sikeston Board of Municipal Utilities (SBMU) Sikeston Power Station's (SPS) Fly Ash Pond, a coal combustion residual (CCR) surface impoundment. Following receipt of final revised data on June 11, 2021, statistical analysis was performed by GREDELL Engineering Resources, Inc. (Gredell Engineering) for the parameters listed in Appendix III to Part 257 – Constituents for Detection Monitoring. Following this analysis, it was determined that the reported concentrations of Calcium and Sulfate in sample MW-1 exceeded their respective prediction limits and the reported concentration of TDS in sample MW-2 was qualified due to hold time exceedance. As a consequence, resampling for Calcium and Sulfate in MW-1 and for TDS in MW-2 was conducted on June 15, 2021. Following receipt of final analytical data from the resampling event on July 16, 2021, it was confirmed that Calcium and Sulfate concentrations in sample MW-1, and TDS in sample MW-2, represent statistically significant increases (SSIs). As a consequence, SBMU-SPS requested that Gredell Engineering conduct an evaluation of the results and develop ASDs, if warranted, for Calcium and Sulfate in MW-1. The apparent SSI for TDS in MW-2 is the subject of a separate ASD report.

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 levels for a constituent. The owner or operator must complete the written demonstration within 90 days of detecting an apparent SSI over background levels 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 and corrective action report required by §257.90(e).

Gredell Engineering has completed an evaluation of the groundwater sampling event, the associated data, and other potential factors, for the SBMU SPS Fly Ash Pond groundwater monitoring well system to determine if an alternate source is the cause of the apparent SSIs of Calcium and Sulfate in MW-1. This report presents the results of that evaluation and includes supporting documentation.

2.0 OBSERVATIONS AND DATA COLLECTION

The Fly Ash Pond groundwater monitoring well system consists of five wells, designated MW-1, MW-2, MW-3, MW-7, and MW-9 (Figure 1). Monitoring wells MW-1, MW-2, and MW-3 were installed in April 2016. Monitoring well MW-7 was installed in April 2017. Monitoring well MW-9 was installed in November 2017. All five monitoring wells were sampled on an approximate monthly basis beginning in March 2018 and ending in December 2018 to establish a background data base. Additional information regarding these wells is available in the Groundwater Monitoring, Sampling and Analysis Plan for the site (Gredell Engineering, 2018).

The results of the eight independent background sampling events were evaluated in accordance with §257.93, and intra-well analysis using prediction limits was selected as the statistical analysis approach for detection monitoring (Gredell Engineering, 2018). Following receipt of final analytical data reports from the contract laboratory, the reported result for each detection monitoring constituent from each well is compared to its respective prediction limit. If a result exceeds the respective prediction limit for a particular constituent well pair, or is outside the predicted range (in the case of pH), an SSI over background is suspected.

Monitoring well MW-1 is located west of the Fly Ash Pond and within the containment area of the coal storage area (Figure 1). Groundwater elevation monitoring since 2016 has consistently demonstrated that flow direction is to the west-southwest, as indicated on Figure 1.

The April 17, 2021 detection monitoring event was preceded by heavy seasonal precipitation. Heavy precipitation results in elevated water table conditions due to infiltration, as discussed in previous reports (Gredell Engineering, 2020), and promotes increased surface runoff from the coal storage area. During abnormally heavy rainfall events, infiltration rates increase and groundwater mounding may result. Rainfall that exceeds the infiltration capacity becomes surface runoff. Within the coal storage area, this surface runoff moves toward the unlined perimeter diversion ditch (Figure 1). Runoff concentrates in this unlined diversion and flows counterclockwise around the coal storage area within close proximity to MW-1. Because the diversion is unlined, additional infiltration and aquifer recharge may occur. The excessive runoff is illustrated by the photographs presented as Figure 2 and Figure 3 taken in September 2021. They show considerable coal sediment in the diversion ditch, which is not apparent in a photograph from November 2017 (Figure 4).

Increased infiltration and recharge to a shallow, unconfined aquifer will cause a rise in water table elevation. As a consequence, formerly unsaturated alluvium becomes saturated and additional geochemical interactions will occur between pore waters and the newly saturated materials. These additional interactions have the potential to affect groundwater geochemistry and result in observations not previously documented for the chronically saturated (and deeper) alluvium.

The analytical data for Calcium and Sulfate in MW-1 for the April 2021 sampling event, and subsequent resampling data, are summarized in Table 1.

Table 1 - MW-1 Detection Monitoring Results and Prediction Limits

	Calcium (mg/L)	Sulfate (mg/L)
Detection Sampling April 17, 2021	53	37
Resample June 15, 2021	48	38
Prediction Limit	45.18	31.57

Calcium and Sulfate concentrations in the MW-1 sample from the April sampling event exceeded their respective prediction limits. Consequently, a resampling event was conducted in June 2021. Following receipt of final analytical data on July 16, 2021, the apparent SSIs for Calcium and Sulfate in the MW-1 sample were confirmed.

During the preparation of a previous ASD for MW-1 (Gredell Engineering, 2020), additional sampling was conducted in February 2020 (Figure 5). Two temporary borings (ASD-1 and ASD-2) were advanced along the margin of the existing coal pile to allow sampling of the shallow groundwater between the coal pile and MW-1. Groundwater was also sampled at MW-1, along with a surface water sample collected from the Fly Ash Pond (FAP-SW). Each sample was analyzed for major anions and cations to conduct geochemical analysis. A Piper Trilinear Plot (Piper, 1944) was developed with Sanitas™ Water (Version 9.6.24; 2019) to identify similarities/variations in hydrochemical facies (Freeze and Cherry, 1979). These data were used to evaluate geochemical relationships between the samples with the objective of identifying the most plausible source for the apparent SSIs at MW-1.

The geochemical data collected in 2020 were reviewed and additional groundwater sampling was conducted in September 2021. The locations of sample points are depicted in Figure 6. Three temporary piezometers (21-ASD-FAP1, 21-ASD-FAP2, and 21-ASD-FAP3) were installed along the western edge of the Fly Ash Pond to collect samples of fly ash pore water. Piezometer 21-ASD-FAP3 was dry and therefore was not sampled. Three other piezometers (21-ASD1, 21-ASD2, and 21-ASD-3) were installed east, southeast, and south of MW-1 to collect samples from the aquifer at points surrounding the well location. Additionally, piezometer 21-ASD-3 was advanced through the coal pile to investigate possible impacts to the aquifer from that potential source. Groundwater samples were obtained from each of the five temporary piezometers, as well as from MW-1, and analyzed for the major anions and cations for geochemical analysis.

Data obtained from these analyses are presented in Table 2.

Table 2 - Alternate Source Demonstration Sampling Results Summary September 2021

	21- ASD-1	21-ASD-2	21-ASD-3	MW-1	21-ASD-FAP-1	21-ASD-FAP-2
Calcium (mg/L)	61.4	38.7	113	54.6	992	581
Sulfate (mg/L)	117	76	231	50	453	647
TDS (mg/L)	326	220	704	232	990	2140
Magnesium (mg/L)	24.6	4.79	26.9	11.9	27.3	102
Potassium (mg/L)	3.78	4.39	13.4	2.62	96.3	126
Sodium (mg/L)	18.2	25.8	52.1	9.86	301	686
Bicarbonate (mg/L)	185	90	343	153	0	0
Carbonate (mg/L)	0	0	0	0	243	1040
Chloride (mg/L)	10	6	22	4	35	36

3.0 SUMMARY OF DATA ANALYSIS AND FINDINGS

The U.S. Environmental Protection Agency (USEPA) provides Unified Guidance for statistical analysis of groundwater monitoring data (USEPA, 2009). This Unified Guidance was reviewed to assess the validity of the apparent SSIs. 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*". Several of these considerations are pertinent to the data associated with the apparent SSIs of Calcium and Sulfate in MW-1 of the Fly Ash Pond groundwater monitoring well system and for that reason are listed below.

1. Chapter 4, page 4-8: *Is the result a false positive? That is, were the data tested simply an unusual sample of the underlying population triggering an SSI? Generally, this can be evaluated with repeat sampling.*

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? Seasonal or other cyclical patterns should be observable in upgradient wells. Is this change occurring in both upgradient and downgradient wells? Depending on the statistical test and frequency of sampling involved, an observed SSI may be entirely due to temporal variation not accounted for in the sampling scheme.*

3. Chapter 4, page 4-9: *Is there hydrologic evidence of any migration of contaminants from off-site sources or from other non-regulated units? Are any of these contaminants observed upgradient of the regulated units?*

Each of these considerations were used to evaluate the background data and the validity of the apparent SSIs of Calcium and Sulfate in MW-1. The results of this evaluation are discussed below.

Unified Guidance Consideration 1

As suggested by Unified Guidance, repeat sampling was conducted to evaluate and verify the April 17, 2021 result, or determine if it represents a false positive. In this case, re-sampling was conducted at MW-1 on June 15, 2021 to assess the validity of the apparent SSIs. The results of the primary sampling and re-sampling event are presented in Table 1. These data suggest that the primary sampling event data were confirmed. However, the following questions remain: *were the data tested simply an unusual sample of the underlying population triggering an SSI,* or could other causative factors be present that result in unusual or elevated concentrations of Calcium and Sulfate, that trigger false positive SSIs?

Unified Guidance Consideration 2

The background sampling period for well MW-1 spans a timeframe of less than nine months. A short background sampling period may not be representative of longer-term natural variations in groundwater quality. Natural seasonal and multi-year (temporal) variations are apparent in this unconfined alluvial aquifer. These natural variations may result in changes in concentrations of detection monitoring parameters that appear to be SSIs. However, these SSIs may be *due to longer-term (i.e., seasonal or multi-year) variation* that is *not accounted for in the sampling scheme* that was intended to represent natural variations in the aquifer.

Seasonal variation characterized by higher groundwater elevations beginning in the spring followed by lower elevations beginning in the fall have been evident during each year since monitoring for Part 257 began for the Fly Ash Pond (Figure 7). The background monitoring period of the Fly Ash Pond monitoring system spanned March 2018 to December 2018, which did not include a complete cycle of seasonal variations.

An increasing trend in minimum and maximum annual groundwater elevations is also evident on Figure 7. This figure is a hydrograph of groundwater elevations in all Fly Ash Pond monitoring wells. Note that Figure 7 also summarizes the range in groundwater elevations during the background sampling period and each year since background sampling was completed. This multi-year increase in groundwater elevations is the aquifer's natural response to increased recharge. Because these groundwater elevation increases are observed in all wells, including those located hydraulically upgradient of the pond, they are not attributed to changes in site conditions, but rather larger-scale natural changes in the aquifer. As a result, formerly unsaturated alluvium becomes saturated and additional geochemical interactions will occur between pore waters and the newly saturated materials. These additional interactions have the potential to affect groundwater geochemistry and result in observations not previously documented for the chronically saturated (and deeper) alluvium.

In summary, there are natural seasonal and multi-year variations in the alluvial aquifer at the site that were not observed during the background monitoring period. The apparent SSIs of Calcium and Sulfate in MW-1 may be due to temporal variation in the aquifer not accounted for in the background sampling period, which lead to overly-restrictive prediction limits.

Unified Guidance Consideration 3

A release from a plausible source will contribute water with elevated concentrations of indicator constituents to the aquifer. This water with elevated concentrations mixes with, and is diluted by, the natural (un-impacted) groundwater, which is characterized by relatively low (background) concentrations of these indicator constituents. The data summarized in Table 2 demonstrate that the concentrations of Calcium and Sulfate in pore water samples collected from 21-ASD-FAP1 and 21-ASD-FAP2 are approximately an order of magnitude higher than concentrations reported from the

MW-1 sample. Concentrations reported from groundwater beneath the coal pile (21-ASD-3) are two to three times greater than concentrations reported from either MW-1 or 21-ASD-1, suggesting some influence from coal pile infiltration. In addition, the concentrations reported from 21-ASD-2 are the lowest of all groundwater sample results although it is located nearest to the Fly Ash Pond.

Geochemical evaluations were performed using both Piper Trilinear and Stiff Diagrams. The Piper Diagram results (Figure 8) were inconclusive, but the Stiff Diagrams (Figure 9) indicate pore water samples from the Fly Ash Pond are dissimilar to those collected from the aquifer west of the pond. Fly Ash Pond Stiff Diagrams are generally similar in shape although higher concentrations of Calcium in 21-ASD-FAP1 and higher concentrations of Sodium plus Potassium in 21-ASD-FAP2 account for the variation in shape on the left side of these diagrams.

The Stiff Diagrams of MW-1 and coal storage area temporary piezometer data are all similar in shape. Although similar, the magnitude in concentrations are greater in the sample from 21-ASD-3 collected from beneath the coal pile. This suggests the chemical composition of these waters is affected by infiltration from the coal pile into the aquifer.

4.0 CONCLUSIONS AND RECOMMENDATIONS

On the basis of the data presented in this demonstration, Gredell Engineering concludes that the apparent SSIs of Calcium and Sulfate in MW-1, detected following the April 17, 2021 sampling event, are attributable to false positive prediction limit exceedances resulting from naturally occurring variation and an alternate source originating in the coal storage area. None of these causes are attributed to or result from a release from the Fly Ash Pond. The following supports this conclusion:

- The background sampling period was completed in less than 9 months and therefore does not encompass natural seasonal or multi-year variations in groundwater chemistry.
- Natural seasonal and multi-year variation in the aquifer is demonstrated on hydrographs for each well, including wells upgradient of the ash pond. This variation leads to geochemical interactions between groundwater and previously unsaturated alluvium that did not occur during background data acquisition.
- The groundwater sample collected beneath the coal has elevated concentrations of Calcium and Sulfate relative to MW-1 and the alluvial piezometers.
- Stiff Diagram analyses demonstrates that groundwater from MW-1 is geochemically more similar to groundwater under the coal storage area than water in the Fly Ash Pond.
- Higher than normal precipitation preceding the groundwater monitoring event resulted in excessive runoff from the coal storage area that was conveyed as surface runoff into the unlined diversion ditch that lies in close proximity to MW-1. This excessive runoff and coal sedimentation increases the likelihood that coal-impacted surface water infiltrating into the groundwater environment had a deleterious effect on the sample results from MW-1.

Based on these conclusions, Gredell Engineering recommends that semi-annual detection monitoring continue in accordance with §257.94. Gredell Engineering also recommends the following:

- Periodic inspection and maintenance of the diversion ditch enclosing the coal storage area would ensure excess sediment from the coal stockpiles is removed.
- Update background data sets for the Fly Ash Pond groundwater monitoring system wells to included data representative of the effects resulting from multi-year variation in groundwater elevation.
- As part of the field work conducted in September 2021 a new monitoring well (MW-1R) was installed closer to the Fly Ash Pond and away from the coal pile (Figure 10). Background sampling and analysis should be completed approximately six months after completion of the well in accordance with § 257.94(b) and semi-annual detection monitoring of this new well in accordance with § 257.94(a) is anticipated to begin in 2022.

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

N

SCALE: 1" = 400'

0 200 400

LEGEND

PROPERTY LINE	—PL—
GROUNDWATER CONTOUR (DASHED WHERE INFERRED)	———
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 APRIL 17, 2021.
4. MAP DEVELOPMENT BASED ON CONTOURS GENERATED BY SURFER® SOFTWARE.
5. RANGE OF GROUNDWATER FLOW GRADIENT AS DETERMINED BY SURFER® SOFTWARE 0.0001 FT./FT. TO 0.001 FT./FT.

MONITORING WELL ID	GROUNDWATER ELEVATION (FEET)	CASING ELEVATION (FEET)	NORTHING	EASTING
MW-1	297.32	312.77	383119.51	1078467.90
MW-2	298.49	308.01	383207.42	1079751.30
MW-3	298.05	308.55	381130.00	1079946.62
MW-7	297.08	315.03	381584.50	1078847.00
MW-9	297.48	314.68	382429.94	1078825.60

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
APRIL 17, 2021

SIKESTON POWER STATION
FLY ASH POND
ALTERNATE SOURCE DEMONSTRATION

SURVEYED	DESIGNED	DRAWN	CHECKED	APPROVED	DATE	SCALE	PROJECT NAME	FILE NAME	SHEET #
NA	NA	CP	KE	MCC	8/2021	AS NOTED	SIKESTON/GWMAP/FAP	GWCONT FAP 2021	1 OF 1

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

Figure 2
Diversion Ditch Photo September 2021 - Looking West

Prepared by: GREDELL Engineering Resources, Inc.

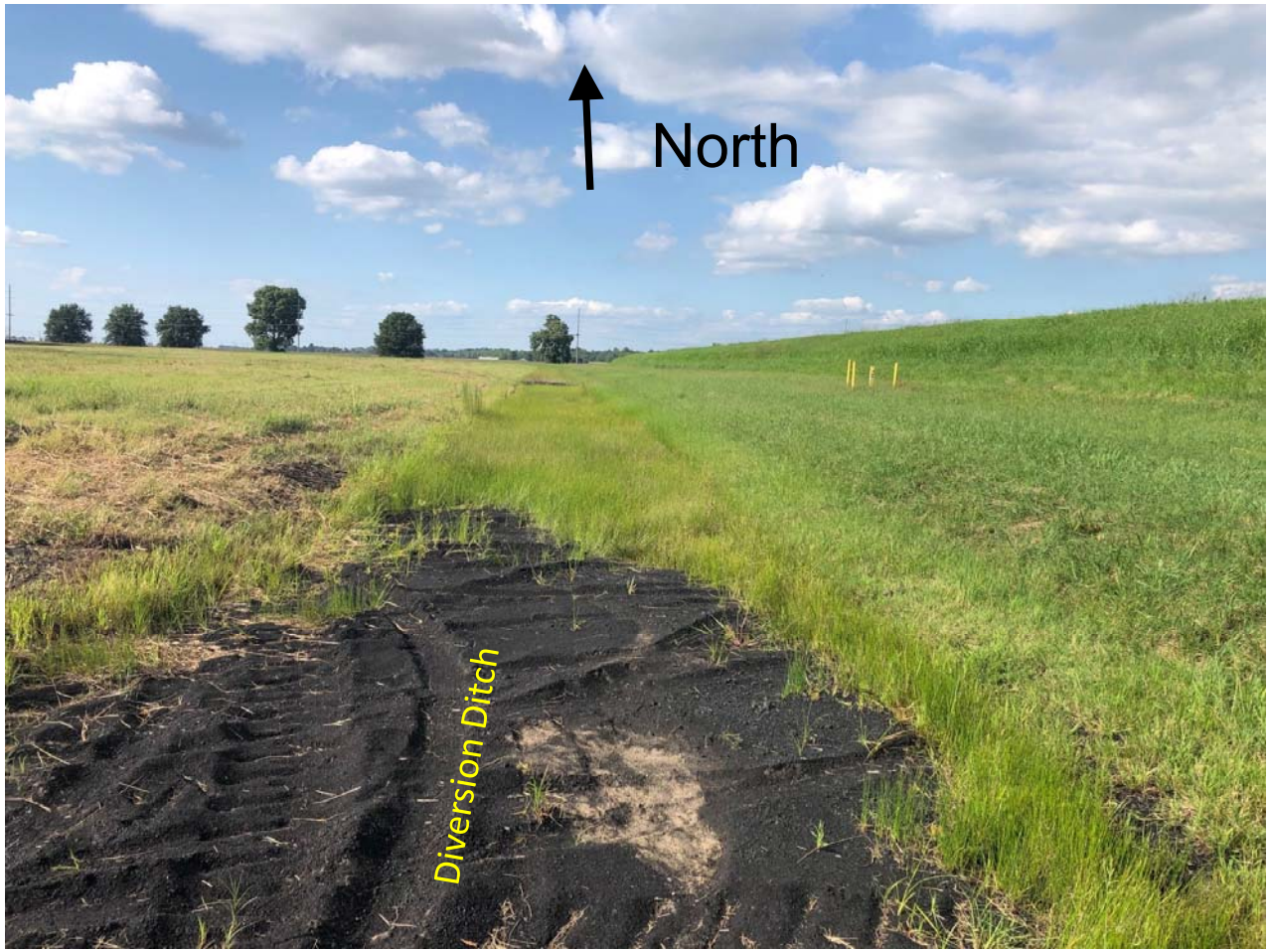
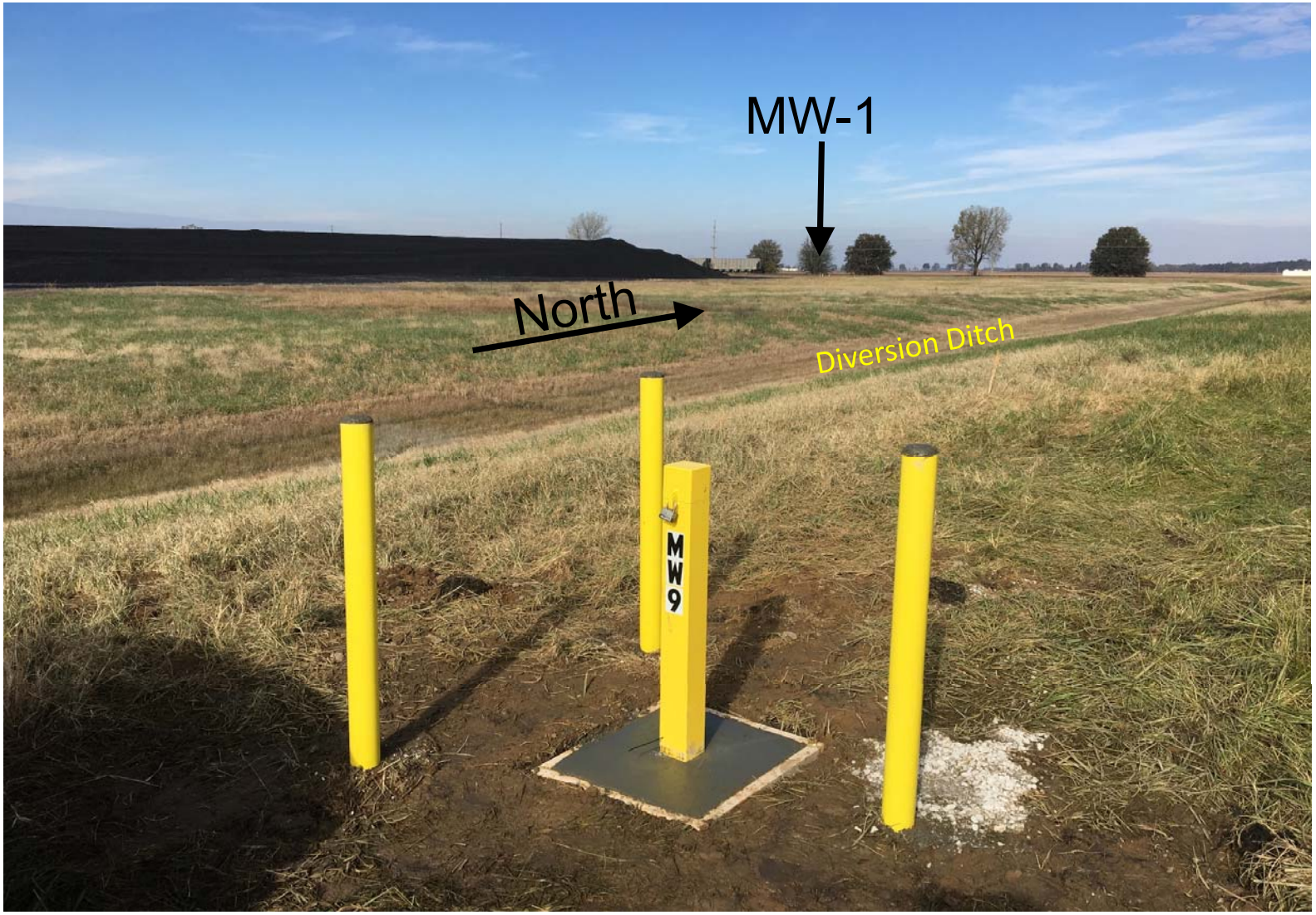


Figure 3
Diversion Ditch Photo September 2021 - Looking North

Prepared by: GREDELL Engineering Resources, Inc.



11-13-2017

Figure 4
Diversion Ditch Photo November 2017 - Looking Northwest

Prepared by: GREDELL Engineering Resources, Inc.

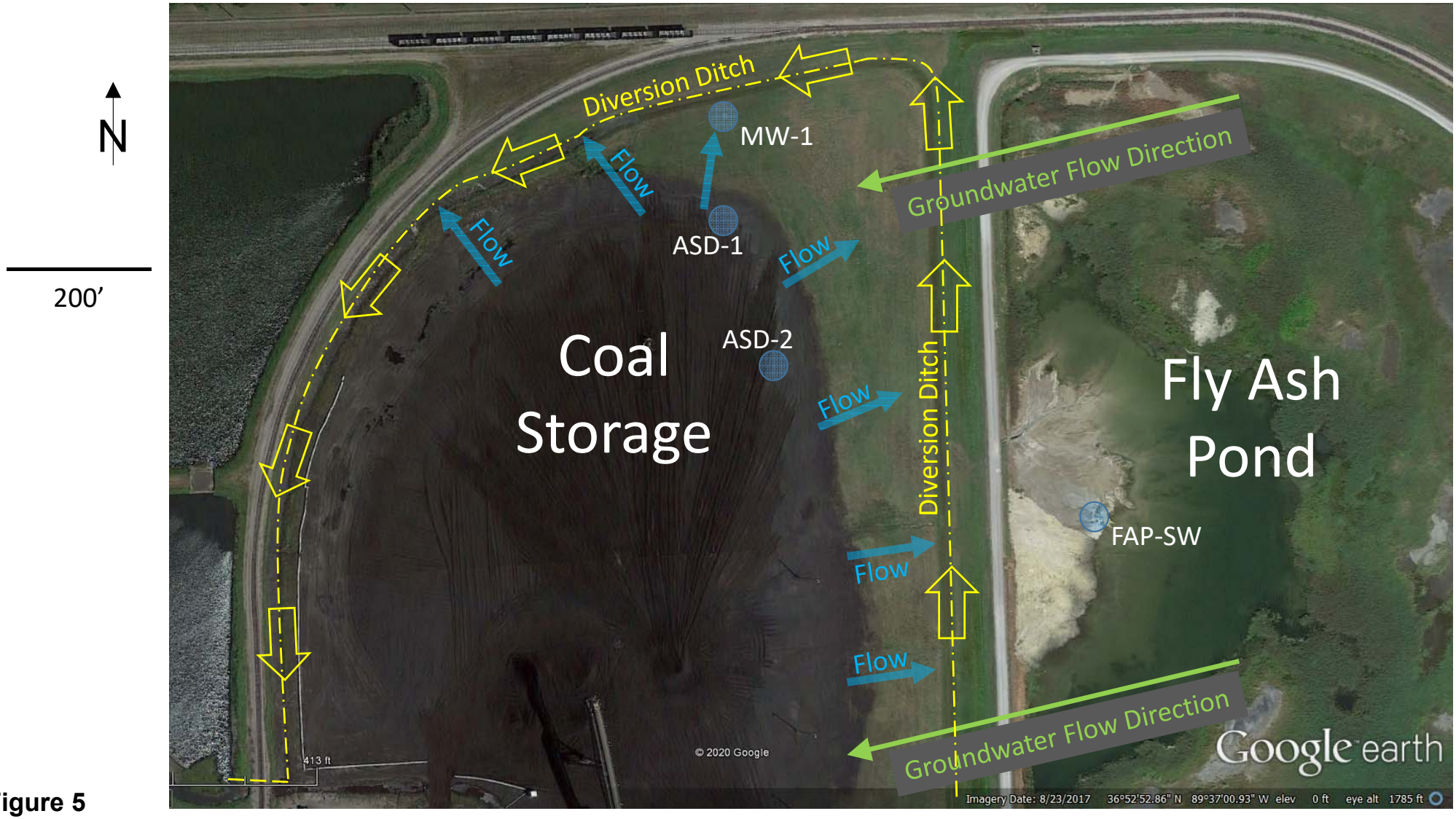


Figure 5
Site Map and Sampling Locations (Gredell Engineering, 2020)

Prepared by: GREDELL Engineering Resources, Inc.

Figure 6
Sampling Locations September 2021

Prepared by: GREDELL Engineering Resources, Inc.

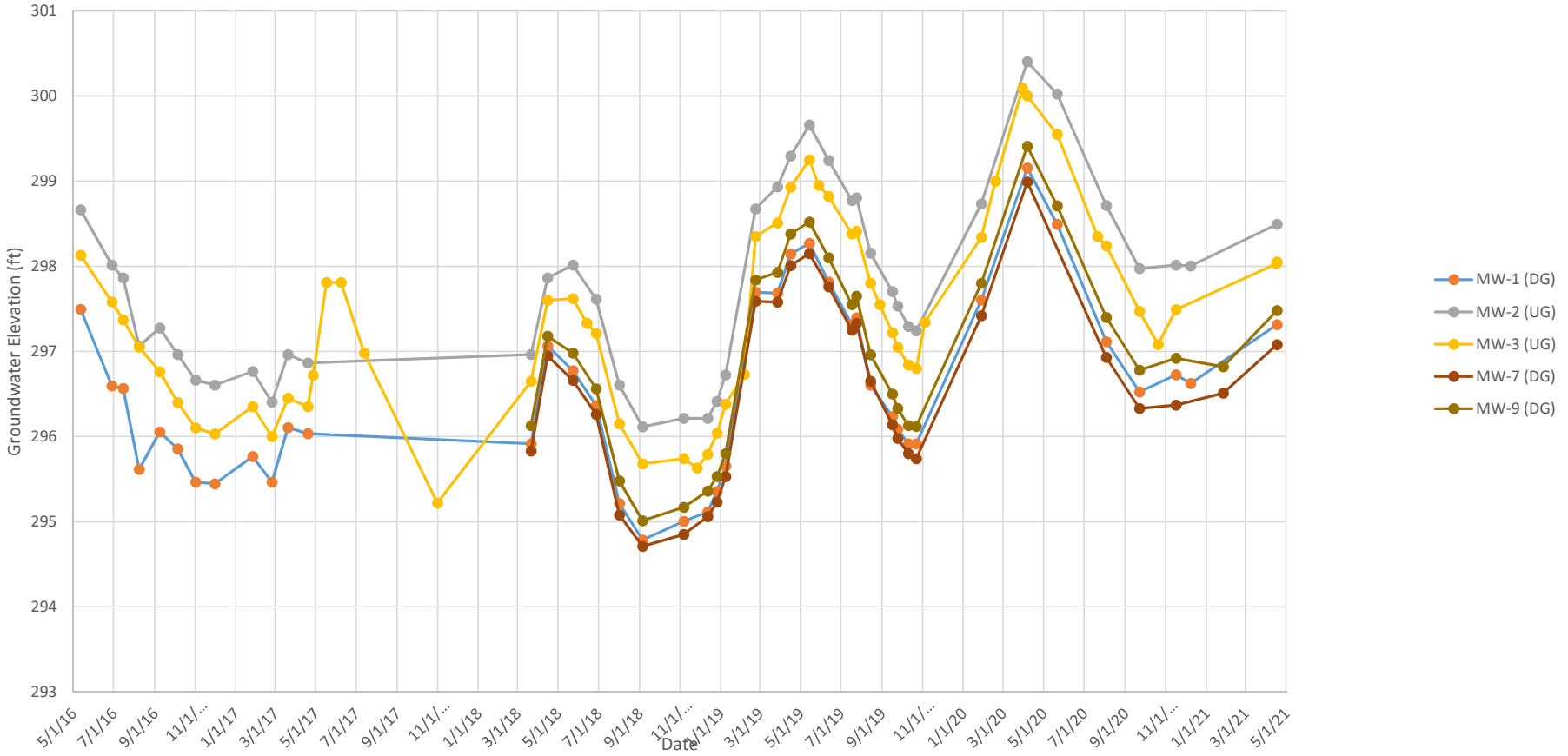


Figure 7
Fly Ash Pond Monitoring Well Hydrographs

Prepared by: GREDELL Engineering Resources, Inc.

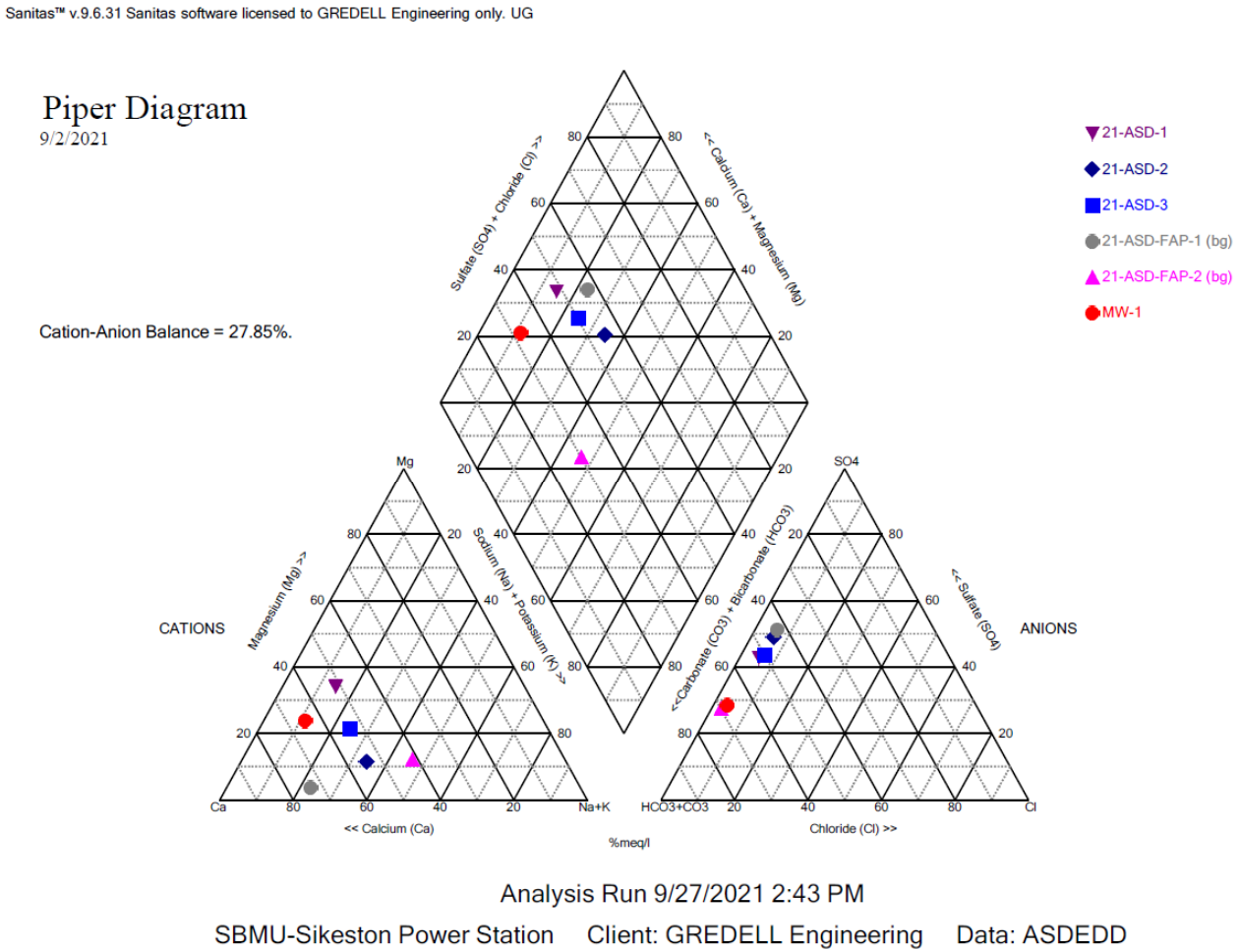
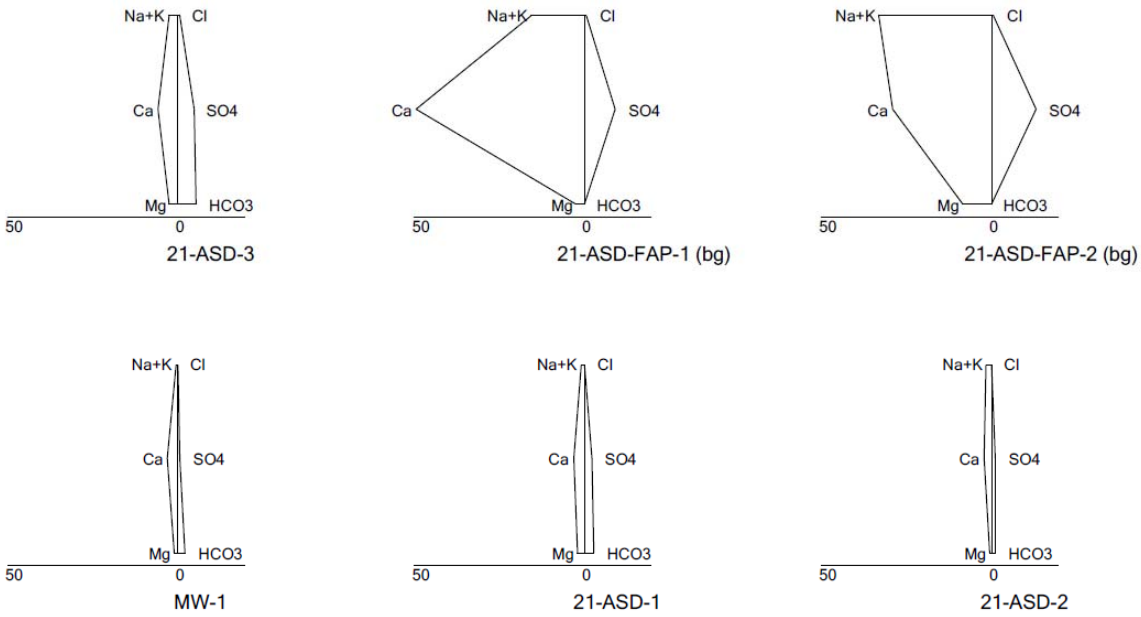


Figure 8
Piper Trilinear Diagram

Prepared by: GREDELL Engineering Resources, Inc.



Stiff Diagram - 9/2/2021 Analysis Run 9/27/2021 2:49 PM

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: ASDEDD

Figure 9
Stiff Diagrams

N

SCALE: 1" = 400'

0 200 400

LEGEND

PROPERTY LINE	PL
GROUNDWATER CONTOUR (DASHED WHERE INFERRED)	
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 APRIL 17, 2021.
4. MAP DEVELOPMENT BASED ON CONTOURS GENERATED BY SURFER® SOFTWARE.
5. RANGE OF GROUNDWATER FLOW GRADIENT AS DETERMINED BY SURFER® SOFTWARE 0.0001 FT./FT. TO 0.001 FT./FT.

MONITORING WELL ID	GROUNDWATER ELEVATION (FEET)	CASING ELEVATION (FEET)	NORTHING	EASTING
MW-1	297.32	312.77	383119.51	1078467.90
MW-2	298.49	308.01	383207.42	1079751.30
MW-3	298.05	308.55	381130.00	1079946.62
MW-7	297.08	315.03	381584.50	1078847.00
MW-9	297.48	314.68	382429.94	1078825.60

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 10
SITE MAP AND MW-1R LOCATION

SIKESTON POWER STATION
FLY ASH POND
ALTERNATE SOURCE DEMONSTRATION
MW-2-TDS

SURVEYED	DESIGNED	DRAWN	CHECKED	APPROVED	DATE	SCALE	PROJECT NAME	FILE NAME	SHEET #
NA	NA	CP	KE	MCC	9/2021	AS NOTED	SIKESTON/GWMAP/FAP	GWCONT FAP 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

Appendix 9

Alternate Source Demonstration
October 14, 2021
MW-2

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
Fly Ash Pond – TDS in MW-2
Alternate Source Demonstration

Prepared for:

BMU Sikeston
Board of Municipal Utilities

Sikeston Power Station
1551 West Wakefield Avenue
Sikeston, MO 63801

October 2021

PROFESSIONAL ENGINEER'S CERTIFICATION

40 CFR 257.94(e)(2) Alternate Source Demonstration

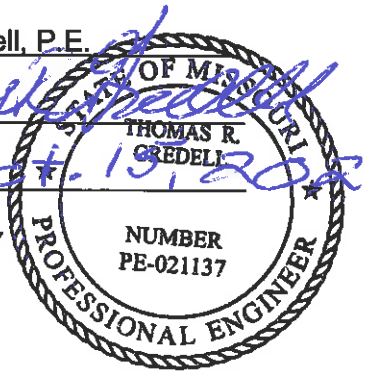
I, Thomas R. Gredell, P.E., a professional engineer licensed in the State of Missouri, hereby certify in accordance with 40 CFR 257.94(e)(2) to the accuracy of the alternate source demonstration described in the following report for the Sikeston Board of Municipal Utilities, Sikeston Power Station, Fly Ash Pond CCR unit. The report demonstrates that the statistically significant increase of TDS in MW-2 resulted from a source other than the CCR unit. 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: _____

Date: Oct. 19, 2021

Registration Number: PE-021137
State of Registration: Missouri



Sikeston Board of Municipal Utilities
Sikeston Power Station
Detection Monitoring Program for
Fly Ash Pond - Total Dissolved Solids in MW-2
Alternate Source Demonstration

October 2021

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1.0 INTRODUCTION

This Alternate Source Demonstration (ASD) Report has been prepared to address the results of the fifth semi-annual sampling event initiated on April 17, 2021 at the Sikeston Board of Municipal Utilities (SBMU) Sikeston Power Station's (SPS) Fly Ash Pond, a coal combustion residual (CCR) surface impoundment. Following receipt of final revised analytical data on June 11, 2021, statistical analysis was performed by GREDELL Engineering Resources, Inc. (Gredell Engineering) for the parameters listed in Appendix III to Part 257 – Constituents for Detection Monitoring. Following this analysis, it was determined that the reported concentrations of Calcium and Sulfate in sample MW-1 exceeded their respective prediction limits and the reported concentration of TDS in sample MW-2 was qualified due to hold time exceedance. As a consequence, resampling for Calcium and Sulfate in MW-1 and for TDS in MW-2 was conducted on June 15, 2021. Following receipt of final analytical data from the resampling event on July 16, 2021, it was confirmed that Calcium and Sulfate concentrations in sample MW-1, and TDS in sample MW-2, represent statistically significant increases (SSIs). Because MW-2 is upgradient of the Fly Ash Pond, SBMU-SPS requested that Gredell Engineering conduct an evaluation of the analytical results and develop an ASD if warranted. The apparent SSIs for Calcium and Sulfate in MW-1 are the subject of a separate ASD report.

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 levels for a constituent. The owner or operator must complete the written demonstration within 90 days of detecting an apparent SSI over background levels 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 and corrective action 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 Fly Ash Pond groundwater monitoring well system to determine if an alternate source is the cause of the apparent SSI in MW-2. This report presents the results of that evaluation and includes supporting documentation.

2.0 OBSERVATIONS AND DATA COLLECTION

The Fly Ash Pond groundwater monitoring well system consists of five wells, designated MW-1, MW-2, MW-3, MW-7, and MW-9 (Figure 1). Monitoring wells MW-1, MW-2, and MW-3 were installed in April 2016. Monitoring well MW-7 was installed in April 2017. Monitoring well MW-9 was installed in November 2017. All five monitoring wells were sampled on an approximate monthly basis beginning in March 2018 and ending in December 2018 to establish a background data base. Additional information regarding these wells is available in the Groundwater Monitoring, Sampling and Analysis Plan for the site (Gredell Engineering, 2018).

The results of the eight independent background sampling events were evaluated in accordance with §257.93, and intra-well analysis using prediction limits was selected as the statistical analysis approach for detection monitoring (Gredell Engineering, 2018). 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 concentration exceeds the respective prediction limit for a particular constituent well pair, or is outside the predicted range (in the case of pH), an SSI over background is suspected.

The SPS initiated its fifth semi-annual detection groundwater sampling event for the Fly Ash Pond on April 17, 2021. Final revised analytical results were received from the contract laboratory on June 11, 2021 (Appendix 1a). However, the result for TDS in sample MW-2 was qualified with a hold-time flag to indicate the sample was analyzed after the method hold time had expired. Consequently, this constituent well pair was resampled on June 15, 2021. Final analytical results for the resample were received from the contract laboratory on July 16, 2021 and were within acceptable hold times (Appendix 1b).

The following table summarizes the primary and duplicate sample TDS results for MW-2 during the April 17th sampling event and the June 15th resampling event. Duplicate samples were not collected from MW-2 during either event.

Table 1 – MW-2 TDS Results - 2021

	MW-2 TDS (mg/L)
April 17, 2021	150 H
June 15, 2021	350

MW-2 TDS Prediction Limit = 169.4 mg/L

Table 1 indicates that the original result for TDS in MW-2 did not exceed the 169.4 mg/L prediction limit, but the value was qualified by the analytical laboratory due to hold time exceedance. The resample result collected in June exceeded the prediction limit. Although the statistical method used to assess groundwater data for the Fly Ash Pond recognizes TDS as an SSI in MW-2, groundwater elevation data measured since May 2016 (Table 2) document that MW-2 is an upgradient well with respect to the Fly Ash Pond. Therefore, the source of the TDS is attributable to a source upgradient of both MW-2 and the Fly Ash Pond.

3.0 SUMMARY OF DATA ANALYSIS AND FINDINGS

The U.S. Environmental Protection Agency (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. 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*". Two of these considerations are pertinent to the TDS data associated with MW-2 of the Fly Ash Pond groundwater monitoring well 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 4-9: *Are any of these contaminants observed upgradient of the regulated units?*

Both of these Unified Guidance considerations were used to evaluate the background data and the validity of the apparent SSI for TDS in MW-2. The results of this evaluation are discussed below.

Unified Guidance Consideration 1

Monitoring well MW-2 was designed and located, and is monitored as an upgradient well in fulfillment of the requirement in §257.91(c)(1). Determination that MW-2 is a suitable location for monitoring upgradient groundwater in the "uppermost aquifer… passing the waste boundary of the CCR unit" was established following the completion of a year-long hydrogeologic characterization of the SPS site (Gredell Engineering, 2017). 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 direction of flow showing minimal variation in hydraulic gradient over the 12 month time period extending from May 2016 to April 2017. Groundwater flow direction and gradient developed from the April 17, 2021 sampling event are virtually unchanged from these previous observations and are presented for reference on Figure 1.

Since completion of the Gredell Engineering (2017) report, the piezometers installed for the hydrogeologic characterization were converted to monitoring wells MW-1 through MW-6 and have been routinely monitored since 2016. Moreover, additional monitoring wells (MW-7 through MW-9) were installed to ensure sufficient downgradient monitoring of the ash ponds at the SPS. In the six years of monitoring, the groundwater elevation data demonstrate that MW-2 is consistently upgradient of the Fly Ash Pond (Table 2).

Based on the historical record of evidence that MW-2 was placed hydraulically upgradient from the Fly Ash Pond, the well is not positioned to detect a release from the pond. Therefore, it is

clear that the analytical results for MW-2 could not have identified an actual release of TDS from the Fly Ash Pond. Therefore, the conclusion to Unified Guidance Consideration 1 is negative.

Unified Guidance Consideration 2

Relatively high concentrations of TDS have been documented from the public drinking water supply wells located east (upgradient) of the "regulated unit" (Fly Ash Pond). Data published by the Missouri Department of Natural Resources in their 2020 Annual Water Quality Reports for the Sikeston Public Water System show TDS concentrations ranging from 174 to 290 mg/L (Appendix 2) and suggests that the source are "natural deposits". Similar concentrations were reported in historical Annual Water Quality Reports.

The TDS data pertains to the eight supply wells currently operated by the City of Sikeston. Three of these wells (W7, W8/W13, and W9) are located within one-half mile of the Fly Ash Pond (Appendices 3a and 3b). Wells W7 and W8 were drilled in 1976, whereas Well W9 was drilled in 1959. Well W8 may have been replaced by Well W13, which was drilled in 2013 (Appendices 3a and 3b). The drill data indicate that wells W7, W8/W13, and W9 all have total depths of less than 160 feet and yield water from alluvium. The alluvium is the same hydrologic unit monitored by the groundwater monitoring well system at the SPS, including MW-2.

Calculated groundwater velocities reported by Gredell Engineering (2017) for the uppermost (alluvial) aquifer at SPS range in value from 4.00 feet per day (ft/day) to 0.06 ft/day. The velocity data from that report are reproduced for reference as Table 3. When converted to feet per year and multiplied by the difference between the years 2021 and 1976, it is readily apparent that all but the lowest calculated groundwater velocities are sufficient to allow for relatively high concentrations of TDS to move approximately one-half mile downgradient and potentially influence the concentration of TDS reported at MW-2.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Gredell Engineering concludes that the apparent SSI of TDS in MW-2 is not the result of a release from the Fly Ash Pond and is attributable to an alternate source. The following supports this conclusion:

- Since inception of groundwater monitoring at the SPS, groundwater elevations measured in MW-2 have consistently demonstrated that it is an upgradient well with respect to the Fly Ash Pond (Table 2).
- Groundwater flow direction is from the east-northeast to the west-southwest along a hydraulic gradient typically 0.001 to 0.0001 ft/ft, as documented during every monitoring event at the SPS (Figure 1).
- TDS is present in concentrations ranging from 174 to 290 mg/L in public water supply wells currently used by the City of Sikeston (Appendix 2). Three of these public wells are within one-half mile of the Fly Ash Pond and produce groundwater from the same alluvial aquifer that is monitored by MW-2 (Appendices 3a and 3b). Groundwater velocity data (Table 3) clearly indicate that travel times are sufficient to allow elevated concentrations of TDS to migrate and be detected in MW-2.

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

Freeze, R.A. and Cherry J.A., 1979, *Groundwater*: Prentice-Hall, Inc. Englewood Cliffs, New Jersey, 604 p.

GREDELL Engineering Resources, Inc., 2017, Sikeston Power Station Site Characterization for Compliance with Missouri State Operating Permit #MO-0095575. Prepared for Sikeston Board of Municipal Utilities, May 31, 2017.

GREDELL Engineering Resources, Inc., 2018, Sikeston Power Station Groundwater Monitoring Sampling and Analysis Plan. Prepared for Sikeston Board of Municipal Utilities, October 1, 2018.

GREDELL Engineering Resources, Inc., 2020, Sikeston Power Station 2020 Annual Groundwater Monitoring Report for Fly Ash Pond for Compliance with USEPA 40 CFR 257.90(e). Prepared for Sikeston Board of Municipal Utilities, August 2020.

GREDELL Engineering Resources, Inc., 2021, Sikeston Power Station 2021 Annual Groundwater Monitoring Report for Fly Ash Pond for Compliance with USEPA 40 CFR 257.90(e). Prepared for Sikeston Board of Municipal Utilities, August 2021.

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

O:\CADDFiles\SIKESTON\GROUNDWATER MAP\FAP\2020\GW CONT MAP FAP APR 20.dwg, 8/17/2021 4:18:01 PM, AutoCAD PDF (High Quality Print).pc3

MONITORING WELL ID	GROUNDWATER ELEVATION (FEET)	CASING ELEVATION (FEET)	NORTHING	EASTING
MW-1	297.32	312.77	383119.51	1078467.90
MW-2	298.49	308.01	383207.42	1079751.30
MW-3	298.05	308.55	381130.00	1079946.62
MW-7	297.08	315.03	381584.50	1078847.00
MW-9	297.48	314.68	382429.94	1078825.60

NOTES:
1. IMAGE PROVIDED BY BING MAPS.
2. MONITORING WELL LOCATIONS, CASING ELEVATIONS & UNDERGROUND CULVERT ELEVATIONS SURVEYED BY WALKER ENGINEERING, INC.
3. GROUNDWATER ELEVATIONS MEASURED BY SIKESTON POWER STATION STAFF ON APRIL 17, 2021.
4. MAP DEVELOPMENT BASED ON CONTOURS GENERATED BY SURFER® SOFTWARE.
5. DETERMINED BY SURFER® SOFTWARE 0.0001 FT./FT. TO 0.001 FT./FT.

LEGEND
PROPERTY LINE — PL
GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
MONITORING WELL
UP GRADIENT MONITORING LOCATION — UG
DOWN GRADIENT MONITORING LOCATION — DG
GENERAL FLOW DIRECTION

SCALE: 1" = 400'
0 200 400
N

GREDELL Engineering Resources, Inc.	SIKESTON POWER STATION FLY ASH POND ALTERNATE SOURCE DEMONSTRATION MW-2-TDS	FIGURE 1 SITE MAP AND SAMPLING LOCATIONS APRIL 17, 2021

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

SURVEYED	DESIGNED	DRAWN	CHECKED	APPROVED	DATE	SCALE	PROJECT NAME	FILE NAME	SHEET #
NA	NA	CP	KE	MCC	8/2021	AS NOTED	SIKESTON/GWMAP/FAP	GWCONT FAP 2021	1 OF 1

TABLES

Sikeston Board of Municipal Utilities
Sikeston Power Station
Detection Monitoring Program for
Fly Ash Pond - TDS in MW-2
Alternate Source Demonstration

Table 2
Historical Groundwater Elevation Summary

Well ID	MW-1	MW-2	MW-3	MW-7	MW-9
Date	Groundwater Elevation (feet MSL)				
05/12/16	297.50	298.66	298.13	NM	NM
06/28/16	296.60	298.01	297.58	NM	NM
07/15/16	296.57	297.86	297.37	NM	NM
08/08/16	295.62	297.06	297.05	NM	NM
09/08/16	296.06	297.27	296.76	NM	NM
10/05/16	295.86	296.96	296.40	NM	NM
11/01/16	295.47	296.66	296.10	NM	NM
11/30/16	295.45	296.60	296.03	NM	NM
01/26/17	295.77	296.76	296.35	NM	NM
02/24/17	295.47	296.40	296.00	NM	NM
03/20/17	296.11	296.96	296.45	NM	NM
04/19/17	296.04	296.86	296.35	NM	NM
03/21/18	295.92	296.96	296.65	295.83	296.13
04/15/18	297.07	297.86	297.60	296.95	297.18
05/23/18	296.78	298.01	297.62	296.66	296.98
06/27/18	296.37	297.61	297.21	296.26	296.56
08/01/18	295.22	296.60	296.15	295.08	295.48
09/05/18	294.79	296.11	295.68	294.71	295.01
11/06/18	295.01	296.21	295.74	294.85	295.17
12/12/18	295.12	296.21	295.79	295.06	295.36
01/08/19	295.66	296.72	296.38	295.53	295.80
02/22/19	297.70	298.67	298.35	297.59	297.84
03/27/19	297.69	298.93	298.51	297.58	297.93
04/16/19	298.15	299.29	298.93	298.01	298.38
05/14/19	298.27	299.66	299.25	298.15	298.52
06/12/19	297.82	299.24	298.82	297.76	298.10
07/17/19	297.32	298.77	298.38	297.25	297.55
07/24/19	297.40	298.80	298.41	297.33	297.65
08/14/19	296.61	298.15	297.80	296.65	296.96
09/16/19	296.24	297.70	297.22	296.14	296.50
09/24/19	296.09	297.53	297.05	295.98	296.33
10/10/19	295.92	297.29	296.84	295.80	296.13
10/22/19	295.92	297.24	296.80	295.74	296.12
01/28/20	297.61	298.73	298.34	297.42	297.80
04/06/20	299.16	300.40	300.00	298.99	299.41
05/21/20	298.50	300.02	299.55	NM	298.71
09/22/20	296.53	297.97	297.47	296.33	296.78
04/17/21	297.32	298.49	298.05	297.08	297.48

NOTES:

Maximum groundwater elevation.

Minimum groundwater elevation.

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.

Prepared by: GREDELL Engineering Resources, Inc.

Prepared by: KAE
Checked by: MCC

Sikeston Board of Municipal Utilities
Sikeston Power Station
Detection Monitoring Program for
Fly Ash Pond - TDS in MW-2
Alternate Source Demonstration

Table 3
Calculated Groundwater Velocity for Alluvial Aquifer

Location	**Sikeston Pond Area**					
Hydraulic Conductivity (K)	K_{min} = 112 ft/day					
Hydraulic Gradient (*i*)	i_{min} = 0.000172 ft/ft			i_{max} = 0.00136 ft/ft		
Effective Porosity (n)	0.10	0.20	0.30	0.10	0.20	0.30
Velocity (=Ki/n) (ft/day)	0.19	0.10	0.06	1.52	0.76	0.51
Velocity (=Ki/n) (ft/year)	70	35	23	556	278	185
Travel Distance (1976-2020) (ft)	3,094	1,547	1,031	24,463	12,231	8,154

Location	**Sikeston Pond Area**					
Hydraulic Conductivity (K)	K_{max} = 294 ft/day					
Hydraulic Gradient (*i*)	i_{min} = 0.000172 ft/ft			i_{max} = 0.00136 ft/ft		
Effective Porosity (n)	0.10	0.20	0.30	0.10	0.20	0.30
Velocity (=Ki/n) (ft/day)	0.51	0.25	0.17	4.00	2.00	1.33
Velocity (=Ki/n) (ft/year)	185	92	62	1459	730	486
Travel Distance (1976-2020) (ft)	8,121	4,061	2,707	64,214	32,107	21,405

NOTES:

1. Hydraulic conductivity based on slug test results.
2. Hydraulic gradients based on calculated maximum and minimum values as determined by Surfer© Software.
3. Effective Porosity values represent estimated range. USEPA (2009) Unified Guidance indicates 0.20 is appropriate for sandy/gravelly granular material.

APPENDICES

APPENDIX 1a

Laboratory Analytical Results
and Quality Control Report,
April 17, 2021 Sample Event

June 11, 2021

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

Dear Luke St Mary:

Please find enclosed the **revised** 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, Inc.

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, Inc. 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,

David J 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 ED03824

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: ED03824-01
Name: MW-1
Matrix: Ground Water - Grab

Sampled: 04/17/21 10:48
Received: 04/20/21 09:40
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	3.5	mg/L	Q3	04/26/21 10:46	1	1.0	04/26/21 10:46	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		04/26/21 10:46	1	0.250	04/26/21 10:46	CRD	EPA 300.0 REV 2.1
Sulfate	37	mg/L	Q4	04/26/21 11:40	10	10	04/26/21 11:40	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	200	mg/L		04/21/21 13:06	1	26	04/21/21 16:42	BMA	SM 2540C
Total Metals - PIA									
Boron	500	ug/L		04/26/21 14:13	5	10	04/29/21 09:14	JMW	EPA 6020A
Calcium	53000	ug/L		04/26/21 14:13	5	200	04/29/21 09:14	JMW	EPA 6020A

Sample: ED03824-02
Name: MW-2
Matrix: Ground Water - Grab

Sampled: 04/17/21 08:42
Received: 04/20/21 09:40
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	3.8	mg/L		04/28/21 01:37	1	1.0	04/28/21 01:37	EJO	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		04/28/21 01:37	1	0.250	04/28/21 01:37	EJO	EPA 300.0 REV 2.1
Sulfate	17	mg/L		04/28/21 14:23	5	5.0	04/28/21 14:23	EJO	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	150	mg/L	H	05/11/21 08:51	1	26	05/11/21 12:23	BCR	SM 2540C
Total Metals - PIA									
Boron	41	ug/L		04/26/21 14:13	5	10	04/29/21 09:18	JMW	EPA 6020A
Calcium	19000	ug/L		04/26/21 14:13	5	200	04/29/21 09:18	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: ED03824-03
Name: MW-3
Matrix: Ground Water - Grab

Sampled: 04/17/21 07:37
Received: 04/20/21 09:40
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	< 1.0	mg/L	Q3	04/26/21 11:58	1	1.0	04/26/21 11:58	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		04/26/21 11:58	1	0.250	04/26/21 11:58	CRD	EPA 300.0 REV 2.1
Sulfate	15	mg/L	Q4	04/26/21 12:52	10	10	04/26/21 12:52	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	150	mg/L		04/21/21 13:06	1	26	04/21/21 16:42	BMA	SM 2540C
Total Metals - PIA									
Boron	16	ug/L		04/26/21 14:13	5	10	04/29/21 09:21	JMW	EPA 6020A
Calcium	17000	ug/L		04/26/21 14:13	5	200	04/29/21 09:21	JMW	EPA 6020A

Sample: ED03824-04
Name: MW-7
Matrix: Ground Water - Grab

Sampled: 04/17/21 12:28
Received: 04/20/21 09:40
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	1.8	mg/L		04/26/21 13:10	1	1.0	04/26/21 13:10	CRD	EPA 300.0 REV 2.1
Fluoride	0.522	mg/L		04/26/21 13:10	1	0.250	04/26/21 13:10	CRD	EPA 300.0 REV 2.1
Sulfate	160	mg/L		04/26/21 14:23	25	25	04/26/21 14:23	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	520	mg/L		04/21/21 13:06	1	26	04/21/21 16:42	BMA	SM 2540C
Total Metals - PIA									
Boron	2200	ug/L		04/26/21 14:13	5	10	05/11/21 10:02	JMW	EPA 6020A
Calcium	120000	ug/L		04/26/21 14:13	5	200	04/29/21 09:25	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: ED03824-05
Name: MW-9
Matrix: Ground Water - Grab

Sampled: 04/17/21 13:26
Received: 04/20/21 09:40
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	21	mg/L		04/23/21 15:04	10	10	04/23/21 15:04	CRD	EPA 300.0 REV 2.1
Fluoride	0.775	mg/L		05/11/21 21:30	1	0.250	05/11/21 21:30	CRD	EPA 300.0 REV 2.1
Sulfate	250	mg/L		04/23/21 15:23	50	50	04/23/21 15:23	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	630	mg/L		04/21/21 13:10	1	26	04/21/21 14:48	BMA	SM 2540C
Total Metals - PIA									
Boron	6200	ug/L		04/26/21 14:13	5	10	04/29/21 10:05	JMW	EPA 6020A
Calcium	57000	ug/L		04/26/21 14:13	5	200	04/29/21 10:05	JMW	EPA 6020A

Sample: ED03824-06
Name: DUPLICATE WELL
Matrix: Ground Water - Field Duplicate

Sampled: 04/17/21 00:00
Received: 04/20/21 09:40
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	4.1	mg/L		04/23/21 16:17	1	1.0	04/23/21 16:17	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		04/23/21 16:17	1	0.250	04/23/21 16:17	CRD	EPA 300.0 REV 2.1
Sulfate	38	mg/L		04/23/21 16:35	5	5.0	04/23/21 16:35	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	210	mg/L		04/21/21 13:10	1	26	04/21/21 14:48	BMA	SM 2540C
Total Metals - PIA									
Boron	550	ug/L		04/26/21 14:13	5	10	04/29/21 10:09	JMW	EPA 6020A
Calcium	52000	ug/L		04/26/21 14:13	5	200	04/29/21 10:09	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: ED03824-07
Name: FIELD BLANK
Matrix: Ground Water - Field Blank

Sampled: 04/17/21 12:28
Received: 04/20/21 09:40
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	< 1.0	mg/L		04/28/21 00:04	1	1.0	04/28/21 00:04	EJO	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		04/28/21 00:04	1	0.250	04/28/21 00:04	EJO	EPA 300.0 REV 2.1
Sulfate	< 1.0	mg/L		04/28/21 00:04	1	1.0	04/28/21 00:04	EJO	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	< 17	mg/L	H	05/11/21 08:55	1	17	05/11/21 12:23	BCR	SM 2540C
Total Metals - PIA									
Boron	10	ug/L		04/26/21 14:13	5	10	05/12/21 12:46	JMW	EPA 6020A
Calcium	< 200	ug/L		04/26/21 14:13	5	200	04/29/21 10:12	JMW	EPA 6020A

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B128301 - No Prep - SM 2540C									
Blank (B128301-BLK1)				Prepared & Analyzed: 04/21/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B128301-BS1)				Prepared & Analyzed: 04/21/21					
Solids - total dissolved solids (TDS)	967	mg/L		1000		97	84.9-109		
Batch B128302 - No Prep - SM 2540C									
Blank (B128302-BLK1)				Prepared & Analyzed: 04/21/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B128302-BS1)				Prepared & Analyzed: 04/21/21					
Solids - total dissolved solids (TDS)	933	mg/L		1000		93	84.9-109		
Batch B128517 - No Prep - SM 2540C									
Blank (B128517-BLK1)				Prepared & Analyzed: 04/23/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B128517-BS1)				Prepared & Analyzed: 04/23/21					
Solids - total dissolved solids (TDS)	1040	mg/L		1000		104	84.9-109		
Duplicate (B128517-DUP1)	**Sample: ED03824-02**			Prepared & Analyzed: 04/23/21					
Solids - total dissolved solids (TDS)	240	mg/L	M		200			18	5
Batch B128694 - SW 3015 - EPA 6020A									
Blank (B128694-BLK1)				Prepared: 04/26/21 Analyzed: 04/29/21					
Boron	< 10	ug/L							
Calcium	< 200	ug/L							
LCS (B128694-BS1)				Prepared: 04/26/21 Analyzed: 04/29/21					
Boron	486	ug/L		555.6		88	80-120		
Calcium	5720	ug/L		5556		103	80-120		
Batch B128758 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B128758-CCB1)				Prepared & Analyzed: 04/23/21					
Sulfate	0.00	mg/L							
Fluoride	0.00	mg/L							
Chloride	0.698	mg/L							
Calibration Check (B128758-CCV1)				Prepared & Analyzed: 04/23/21					
Chloride	5.14	mg/L		5.000		103	90-110		
Fluoride	4.97	mg/L		5.000		99	90-110		
Sulfate	4.99	mg/L		5.000		100	90-110		
Batch B128788 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B128788-CCB1)				Prepared & Analyzed: 04/26/21					
Chloride	0.00	mg/L							
Fluoride	0.00	mg/L							
Sulfate	0.00	mg/L							
Calibration Check (B128788-CCV1)				Prepared & Analyzed: 04/26/21					

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B128788 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Check (B128788-CCV1)				Prepared & Analyzed: 04/26/21					
Fluoride	4.87	mg/L		5.000		97	90-110		
Chloride	4.72	mg/L		5.000		94	90-110		
Sulfate	4.88	mg/L		5.000		98	90-110		
Matrix Spike (B128788-MS1)	**Sample: ED03824-01**			Prepared & Analyzed: 04/26/21					
Fluoride	1.74	mg/L		1.500	0.167	105	80-120		
Sulfate	1.00E9	mg/L	Q4	1.500	37.5	NR	80-120		
Chloride	5.4	mg/L	Q1	1.500	3.5	130	80-120		
Matrix Spike (B128788-MS2)	**Sample: ED03824-03**			Prepared & Analyzed: 04/26/21					
Sulfate	1.00E9	mg/L	Q4	1.500	15.4	NR	80-120		
Chloride	2.4	mg/L	Q1	1.500	ND	158	80-120		
Fluoride	1.79	mg/L		1.500	0.219	105	80-120		
Matrix Spike Dup (B128788-MSD1)	**Sample: ED03824-01**			Prepared & Analyzed: 04/26/21					
Fluoride	1.75	mg/L		1.500	0.167	105	80-120	0.1	20
Sulfate	1.00E9	mg/L	Q4	1.500	37.5	NR	80-120	0	20
Chloride	5.4	mg/L	Q2	1.500	3.5	128	80-120	0.6	20
Matrix Spike Dup (B128788-MSD2)	**Sample: ED03824-03**			Prepared & Analyzed: 04/26/21					
Fluoride	1.77	mg/L		1.500	0.219	103	80-120	1	20
Sulfate	1.00E9	mg/L	Q4	1.500	15.4	NR	80-120	0	20
Chloride	2.3	mg/L	Q2	1.500	ND	157	80-120	1	20
Batch B128930 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B128930-CCB1)				Prepared & Analyzed: 04/27/21					
Chloride	0.207	mg/L							
Sulfate	0.0604	mg/L							
Fluoride	0.00	mg/L							
Calibration Check (B128930-CCV1)				Prepared & Analyzed: 04/27/21					
Sulfate	5.05	mg/L		5.000		101	90-110		
Chloride	5.00	mg/L		5.000		100	90-110		
Fluoride	4.66	mg/L		5.000		93	90-110		
Batch B128934 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B128934-CCB1)				Prepared & Analyzed: 04/27/21					
Fluoride	0.00	mg/L							
Chloride	0.943	mg/L							
Calibration Check (B128934-CCV1)				Prepared & Analyzed: 04/27/21					
Fluoride	5.07	mg/L		5.000		101	90-110		
Chloride	5.05	mg/L		5.000		101	90-110		
Batch B129075 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B129075-CCB1)				Prepared & Analyzed: 04/28/21					
Sulfate	0.00	mg/L							
Calibration Check (B129075-CCV1)				Prepared & Analyzed: 04/28/21					
Sulfate	5.01	mg/L		5.000		100	90-110		
Batch B130177 - No Prep - SM 2540C									

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B130177 - No Prep - SM 2540C									
Blank (B130177-BLK1)				Prepared & Analyzed: 05/11/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B130177-BS1)				Prepared & Analyzed: 05/11/21					
Solids - total dissolved solids (TDS)	960	mg/L		1000		96	84.9-109		
Batch B130353 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B130353-CCB1)				Prepared & Analyzed: 05/11/21					
Fluoride	0.00	mg/L							
Calibration Check (B130353-CCV1)				Prepared & Analyzed: 05/11/21					
Fluoride	4.95	mg/L		5.000		99	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

Memos

Revised report - included reanalysis results

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.
Q1	Matrix Spike failed % recovery acceptance limits. The associated blank spike recovery was acceptable.
Q2	Matrix Spike Duplicate failed % recovery acceptance limits. The associated blank spike recovery was acceptable.
Q3	Matrix Spike/Matrix Spike Duplicate both failed % recovery acceptance limits. The associated blank spike recovery was acceptable.
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 J 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	PROJECT NUMBER	PROJECT LOCATION	PURCHASE ORDER #
SIKESTON BMU POWER STATION		FLY ASH APP III	
ADDRESS: 1551 W WAKEFIELD	PHONE NUMBER: 573-475-3131	E-MAIL	DATE SHIPPED
CITY / STAT / ZIP: SIKESTON, MO 63801	SAMPLER (PLEASE PRINT): Daniel Dillingham		
CONTACT PERSON: MR LUKE ST MARY	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 # EDO3824
LOGGED BY:
CLIENT: SIKESTON BMU, SIKESTON POWER STATION
PROJECT: SIKESTON FLY 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-1	4-17-21	1048	X		GW	2	3,6	X	X	
MW-2	4-17-21	0842	X		GW	2	3,6	X	X	
MW-3	4-17-21	0737	X		GW	2	3,6	X	X	
MW-7	4-17-21	1228	X		GW	2	3,6	X	X	
MW-9	4-17-21	1326	X		GW	2	3,6	X	X	
DUPLICATE	4-17-21		X		GW	2	3,6	X	X	
FIELD BLANK	4-17-21	1228	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
Ashish Patel	4-19-21	0730			
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE 4/20/21	TIME 940

(8) COMMENTS: (FOR LAB USE ONLY)

SAMPLE TEMPERATURE UPON RECEIPT 3.6 °C
CHILL PROCESS STARTED PRIOR TO RECEIPT Y OR N
SAMPLE(S) RECEIVED ON ICE Y OR N
SAMPLE ACCEPTANCE NONCONFORMANT Y OR N
REPORT IS NEEDED
DATE AND TIME TAKEN FROM SAMPLE BOTTLE _____

APPENDIX 1b

Laboratory Analytical Results
and Quality Control Report,
June 15, 2021 Resample Event

July 16, 2021

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

RE: Sikeston Bottom Ash App III and App IV 2019

Dear Luke St Mary:

Please find enclosed the analytical results for the **4** sample(s) the laboratory received on **6/17/21 10:10 am** and logged in under work order **EF03688**. 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, Inc.

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, Inc. 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 J Schindler

Gail 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 EF03688

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: EF03688-01
Name: MW-1
Matrix: Ground Water - Grab

Sampled: 06/15/21 11:42
Received: 06/17/21 10:10
PO #: 25814

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Sulfate	38	mg/L		06/21/21 19:02	10	10	06/21/21 19:02	CRD	EPA 300.0 REV 2.1
Total Metals - PIA									
Calcium	48	mg/L		06/24/21 14:31	5	0.20	06/25/21 14:31	JMW	EPA 6020A

Sample: EF03688-02
Name: DUPLICATE
Matrix: Ground Water - Grab

Sampled: 06/15/21 11:42
Received: 06/17/21 10:10
PO #: 25814

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Sulfate	37	mg/L		06/21/21 19:56	10	10	06/21/21 19:56	CRD	EPA 300.0 REV 2.1
Total Metals - PIA									
Calcium	47	mg/L		06/24/21 14:31	5	0.20	06/25/21 14:35	JMW	EPA 6020A

Sample: EF03688-03
Name: MW-2
Matrix: Ground Water - Grab

Sampled: 06/15/21 10:19
Received: 06/17/21 10:10
PO #: 25814

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	350	mg/L		06/18/21 08:08	1	26	06/18/21 11:20	BCR	SM 2540C

ANALYTICAL RESULTS

Sample: EF03688-04
Name: FIELD BLANK
Matrix: Ground Water - Field Blank

Sampled: 06/15/21 10:19
Received: 06/17/21 10:10
PO #: 25814

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Sulfate	< 1.0	mg/L		06/21/21 20:14	1	1.0	06/21/21 20:14	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	< 17	mg/L		06/18/21 08:08	1	17	06/18/21 11:20	BCR	SM 2540C
Total Metals - PIA									
Calcium	0.20	mg/L		06/24/21 14:31	5	0.20	06/25/21 14:39	JMW	EPA 6020A

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B134021 - No Prep - SM 2540C									
Blank (B134021-BLK1)				Prepared & Analyzed: 06/18/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B134021-BS1)				Prepared & Analyzed: 06/18/21					
Solids - total dissolved solids (TDS)	940	mg/L		1000		94	84.9-109		
Batch B134342 - No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B134342-CCB1)				Prepared & Analyzed: 06/21/21					
Sulfate	0.00	mg/L							
Calibration Check (B134342-CCV1)				Prepared & Analyzed: 06/21/21					
Sulfate	5.07	mg/L		5.000		101	90-110		
Batch B134677 - SW 3015 - EPA 6020A									
Blank (B134677-BLK1)				Prepared: 06/24/21 Analyzed: 06/25/21					
Calcium	< 0.20	mg/L							
LCS (B134677-BS1)				Prepared: 06/24/21 Analyzed: 06/25/21					
Calcium	5.64	mg/L		5.556		102	80-120		

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

Gail J Schindler

Certified by: Gail Schindler, Project Manager

PDC LABORATORIES, INC.
WWW.PDCLAB.COM

REGULATORY PROGRAM (Check one:)		NPDES	
MORBCA	☐	RCRA	☐
CCDD	☐	TACO: RES OR IND/COMM	☐

CHAIN OF CUSTODY RECORD

STATE WHERE SAMPLE COLLECTED: MO

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

1 CLIENT	PROJECT NUMBER	PROJECT LOCATION	PURCHASE ORDER #
SIKESTON BMU POWER STATION		FLYASH RESAMPLES	
ADDRESS	**PHONE NUMBER**	**E-MAIL**	**DATE SHIPPED**
1551 W WAKEFIELD	573.475.3131	LSTMARY@SBMU.NET	
CITY STATE ZIP	**SAMPLER (PLEASE PRINT)**	**MATRIX TYPES:**	
SIKESTON, MO 63801	Daniel Dillingham	WW- WASTEWATER DW- DRINKING WATER GW- GROUND WATER WWSL- SLUDGE NAS- NON AQUEOUS SOLID LCHT-LEACHATE OIL-OIL SO-SOIL SOL-SOLID	
CONTACT PERSON	**SAMPLER'S SIGNATURE**		
LUKE ST MARY	Daniel a. Dillingham		

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	3 ANALYSIS REQUESTED + SO4	+ CA	+ TDS	REMARKS
MW-1	6-15-21	1142	X		GW	2		X	X		
DUPLICATE	6-15-21		X		GW	2		X	X		
MW-2	6-15-21	1019	X		GW	1				X	
FIELD BLANK	6-15-21	1019	X		GW	2		X	X	X	

4 (FOR LAB USE ONLY)	
LOGIN #	EF03688-04
LOGGED BY:	KEG
CLIENT:	SIKESTON BMU
PROJECT:	Sikeston RESAMPLES JUNE 2021
PROJ. MGR.:	GAIL
CUSTODY SEAL #:	

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

5 TURNAROUND TIME REQUESTED (PLEASE CHECK) (RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE) ☒ NORMAL ☐ RUSH — 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
	Ashish Patel	6-16-21	0730			
	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
				Kathryn Gray	06/17/21	1010

8 COMMENTS: (FOR LAB USE ONLY)

SAMPLE TEMPERATURE UPON RECEIPT 2.2 °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

2020 Annual Water Quality Report
for Sikeston Public Water System

SIKESTON PWS

Public Water System ID Number: MO4010743

2020 Annual Water Quality Report

(Consumer Confidence Report)

This report is intended to provide you with important information about your drinking water and the efforts made to provide safe drinking water.

Attencion!

Este informe contiene información muy importante. Tradúscalo o prequntele a alguien que lo entienda bien.
[Translated: This report contains very important information. Translate or ask someone who understands this very well.]

What is the source of my water?

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and groundwater wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Our water comes from the following source(s):

Source Name	Type
W13 - PLANT#3	GROUND WATER
W1 - PLANT #2	GROUND WATER
W11 - PLANT #1	GROUND WATER
WL 12 - PLANT #2	GROUND WATER
# 6 - PLANT #2	GROUND WATER
W7 - PLANT #2	GROUND WATER
W8 - PLANT #3	GROUND WATER
W9 - PLANT #3	GROUND WATER

Source Water Assessment

The Department of Natural Resources conducted a source water assessment to determine the susceptibility of our water source to potential contaminants. This process involved the establishment of source water area delineations for each well or surface water intake and then a contaminant inventory was performed within those delineated areas to assess potential threats to each source. Assessment maps and summary information sheets are available on the internet at http://drinkingwater.missouri.edu/swip/swipmaps/pwssid.htm. To access the maps for your water system you will need the State-assigned identification code, which is printed at the top of this report. The Source Water Inventory Project maps and information sheets provide a foundation upon which a more comprehensive source water protection plan can be developed.

Why are there contaminants in my water?

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791).

Contaminants that may be present in source water include:
A. Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
B. Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, or farming.
C. Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
D. Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.
E. Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.
In order to ensure that tap water is safe to drink, the Department of Natural Resources prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Department of Health regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Is our water system meeting other rules that govern our operations?

The Missouri Department of Natural Resources regulates our water system and requires us to test our water on a regular basis to ensure its safety. Our system has been assigned the identification number MO4010743 for the purposes of tracking our test results. Last year, we tested for a variety of contaminants. The detectable results of these tests are on the following pages of this report. Any violations of state requirements or standards will be further explained later in this report.

How might I become actively involved?

If you would like to observe the decision-making process that affect drinking water quality or if you have any further questions about your drinking water report, please call us at **573-380-3996** to inquire about scheduled meetings or contact persons.

Do I need to take any special precautions?

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

Terms and Abbreviations

Population: 16393. This is the equivalent residential population served including non-bill paying customers.
90th percentile: For Lead and Copper testing, 10% of test results are above this level and 90% are below this level.
AL: Action Level, or the concentration of a contaminant which, when exceeded, triggers treatment or other requirements which a water system must follow.
HAA5: Haloacetic Acids (mono-, di- and tri-chloracetic acid, and mono- and di-bromoacetic acid) as a group.
LRAA: Locational Running Annual Average, or the locational average of sample analytical results for samples taken during the previous four calendar quarters.
MCLG: Maximum Contaminant Level Goal, or the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
MCL: Maximum Contaminant Level, or the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
n/a: not applicable.
nd: not detectable at testing limits.
NTU: Nephelometric Turbidity Unit, used to measure cloudiness in drinking water.
ppb: parts per billion or micrograms per liter.
ppm: parts per million or milligrams per liter.
RAA: Running Annual Average, or the average of sample analytical results for samples taken during the previous four calendar quarters.
Range of Results: Shows the lowest and highest levels found during a testing period, if only one sample was taken, then this number equals the Highest Test Result or Highest Value.
SMCL: Secondary Maximum Contaminant Level, or the secondary standards that are non-enforceable guidelines for contaminants and may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor or color) in drinking water. EPA recommends these standards but does not require water systems to comply
TT: Treatment Technique, or a required process intended to reduce the level of a contaminant in drinking water.
TTHM: Total Trihalomethanes (chloroform, bromodichloromethane, dibromochloromethane, and bromoform) as a group.

March 25, 2021

SIKESTON PWS

Public Water System ID Number: MO4010743

2020 Annual Water Quality Report

(Consumer Confidence Report)

Contaminants Report

SIKESTON PWS will provide a printed hard copy of the CCR upon request. To request a copy of this report to be mailed, please call us at **573-380-3996**. The CCR can also be found on the internet at www.dnr.mo.gov/ccr/MO4010743.pdf.

The state has reduced monitoring requirements for certain contaminants to less often than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. Records with a sample year more than one year old are still considered representative. No data older than 5 years need be included. If more than one sample is collected during the monitoring period, the Range of Sampled Results will show the lowest and highest tested results. The Highest Test Result, Highest LRAA, or Highest Value must be below the maximum contamir ant level (MCL) or the contaminant has exceeded the level of health based standards and a violation is issued to the water system.

Regulated Contaminants

Regulated Contaminants	Collection Date	Highest Test Result	Range of Sampled Result(s) (low – high)	Unit	MCL	MCLG	Typical Source
BARIUM	5/29/2018	0.42	0.149 - 0.42	ppm	2	2	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
FLUORIDE	5/29/2018	0.86	0.61 - 0.86	ppm	4	4	Natural deposits; Water additive which promotes strong teeth
NITRATE-NITRITE	4/19/2020	0.015	0 - 0.015	ppm	10	10	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits

Disinfection Byproducts	Sample Point	Monitoring Period	Highest LRAA	Range of Sampled Result(s) (low – high)	Unit	MCL	MCLG	Typical Source
(HAA5)	DBPDUAL-01	2020	8	8 - 8	ppb	60	0	Byproduct of drinking water disinfection
(HAA5)	DBPDUAL-03	2020	21	20.9 - 20.9	ppb	60	0	Byproduct of drinking water disinfection
TTHM	DBPDUAL-01	2020	13	13.2 - 13.2	ppb	80	0	Byproduct of drinking water disinfection
TTHM	DBPDUAL-03	2020	47	46.9 - 46.9	ppb	80	0	Byproduct of drinking water disinfection

Lead and Copper	Date	90th Percentile: 90% of your water utility levels were less than	Range of Sampled Results (low – high)	Unit	AL	Sites Over AL	Typical Source
COPPER	2017 - 2019	0.113	0.0197 - 0.138	ppm	1.3	0	Corrosion of household plumbing systems

Microbiological	Result	MCL	MCLG	Typical Source
COLIFORM (TCR)	In the month of October, 1 sample(s) returned as positive	Treatment Technique Trigger	0	Naturally present in the environment

Unregulated Contaminant Monitoring Rule (UCMR)	Collection Date of HV	Highest Value (HV)	Range of Sampled Result(s)	Unit
Bromide	04/15/19	36.3	28.3 - 36.3	ppb
HAA5	10/14/19	7.7	3.55 - 7.7	ppb
HAA6Br	10/14/19	6.95	4.02 - 6.95	ppb
HAA9	10/14/19	13.25	7.22 - 13.25	ppb
Manganese	10/14/19	2.9	1.5 - 2.9	ppb
Total Organic Carbon	04/15/19	1290	1020 - 1290	ppb

Violations and Health Effects Information

During the 2020 calendar year, we had the below noted violation(s) of drinking water regulations.

Compliance Period	Analyte	Type
No Violations Occurred in the Calendar Year of 2020		

Special Lead and Copper Notice:

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. SIKESTON PWS is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline (800-426-4791) or at http://water.epa.gov/drink/info/lead/index.cfm.

All contaminant sample results from past and present compliance monitoring are available online at the Missouri DNR Drinking Water Watch website at www.dnr.mo.gov/DWW/. To see the Lead and Copper results, enter your water system's name in the box titled Water System Name, then select Find Water Systems at the bottom of the page. On the next screen, click on the Water System Number. At the top of the next page, under the Help column, click on Other Chemical Results by Analyte. Scroll down to Lead and click the blue Analyte Code (1030). A Sample Col ection Date range may need to be entered. The Lead and Copper locations will be displayed under the heading Sample Comments. Scroll to find your location and click on the Sample No. for results. If you assisted the water system in taking a Lead and Copper sample but cannot find your location on the list, please contact SIKESTON PWS for your results.

March 25, 2021

SIKESTON PWS

Public Water System ID Number: MO4010743

2020 Annual Water Quality Report

(Consumer Confidence Report)

Optional Monitoring (not required by EPA)

Optional Contaminants

Monitoring is not required for optional contaminants.

Secondary Contaminants	Collection Date	Your Water System Highest Sampled Result	Range of Sampled Result(s) (low - high)	Unit	SMCL
ALKALINITY, CACO3 STABILITY	5/29/2018	224	196 - 224	MG/L	
BROMIDE	4/15/2019	0.0363	0 - 0.0363	MG/L	0.05
CALCIUM	5/29/2018	63	39.8 - 63	MG/L	
CHLORIDE	5/29/2018	21	10.1 - 21	MG/L	250
HARDNESS, CARBONATE	5/29/2018	207	133 - 207	MG/L	
IRON	5/29/2018	0.0116	0 - 0.0116	MG/L	0.3
MAGNESIUM	5/29/2018	12	8.14 - 12	MG/L	
MANGANESE	10/14/2019	0.0029	0.0015 - 0.0029	MG/L	0.05
PH	5/29/2018	7.55	7.5 - 7.55	PH	8.5
POTASSIUM	5/29/2018	2.08	1.54 - 2.08	MG/L	
SODIUM	5/29/2018	8.77	8.17 - 8.77	MG/L	
SULFATE	5/29/2018	32	14.5 - 32	MG/L	250
TDS	5/29/2018	290	174 - 290	MG/L	500
ZINC	5/29/2018	0.0252	0.0124 - 0.0252	MG/L	5

Secondary standards are non-enforceable guidelines for contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor or color) in drinking water. EPA recommends these standards but does not require water systems to comply.

March 25, 2021

APPENDIX 3a

2020 Sikeston Public Well Assessment Reports (CARES)

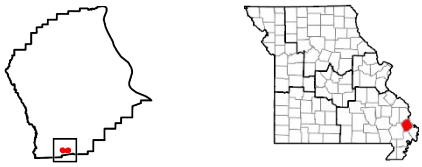
Sikeston

General System Information

PWSS No. 4010743

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Prepared by CARES, University of Missouri Extension

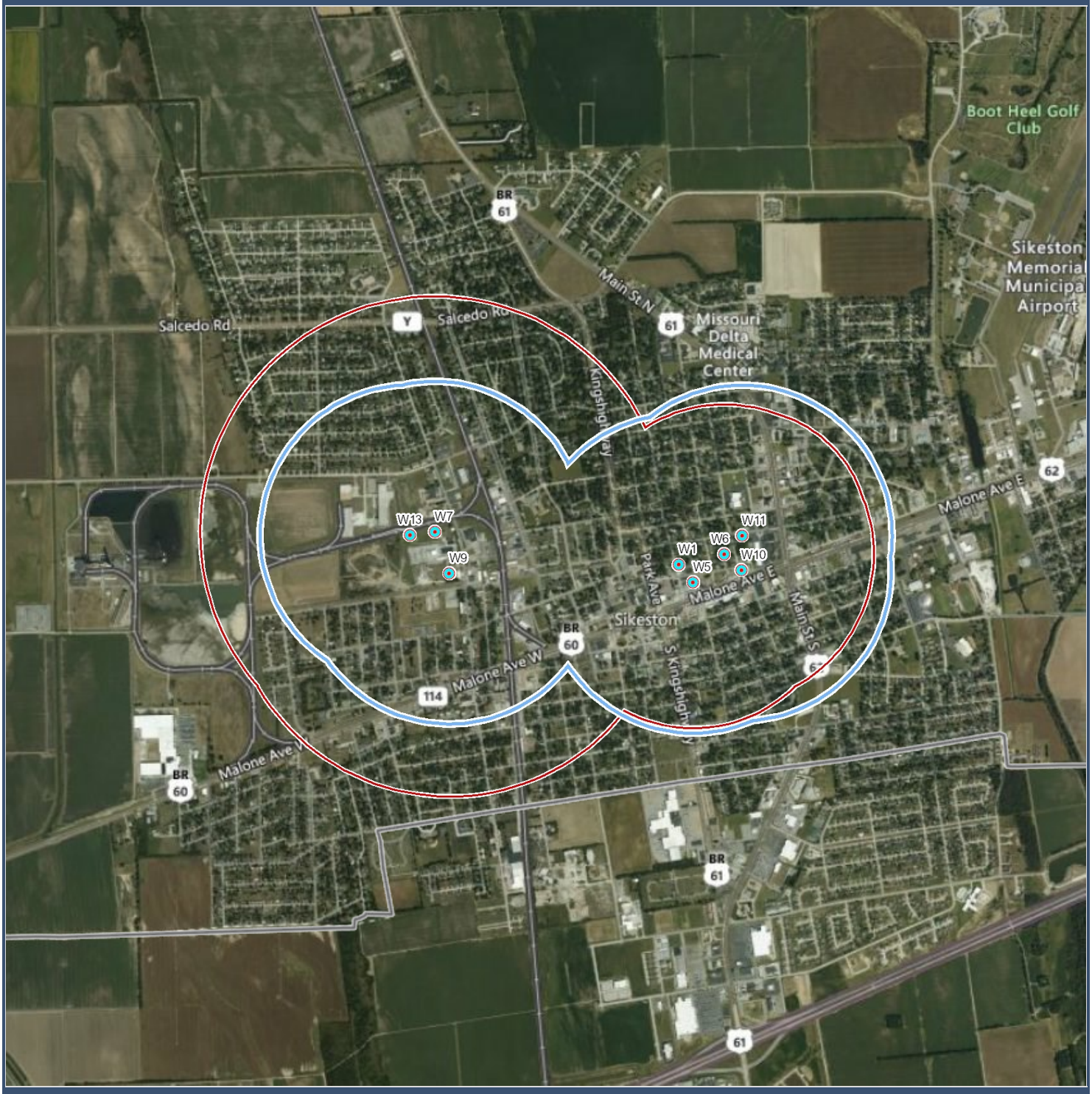
Name	Sikeston
PWSSID	MO4010743
Population Served	16,393
Primary County Served	Scott
Service Connections	7,908
Source(s) of Water	Southeast Missouri Lowlands Groundwater Province
System Classification	Community (C)
Primary Source Type	Groundwater (GW)
System Type	Municipality
System Treatment	4-log Treatment 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

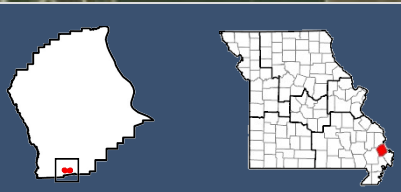
Map Prepared: Jun 11, 2020
Data Release: May 4, 2020

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



0 0.5 1
Miles

SWAP - Source Water Assessment Plan - http://drinkingwater.missouri.edu/swap
Aerial Photos: Bing Maps, Microsoft. Jun 11, 2020.

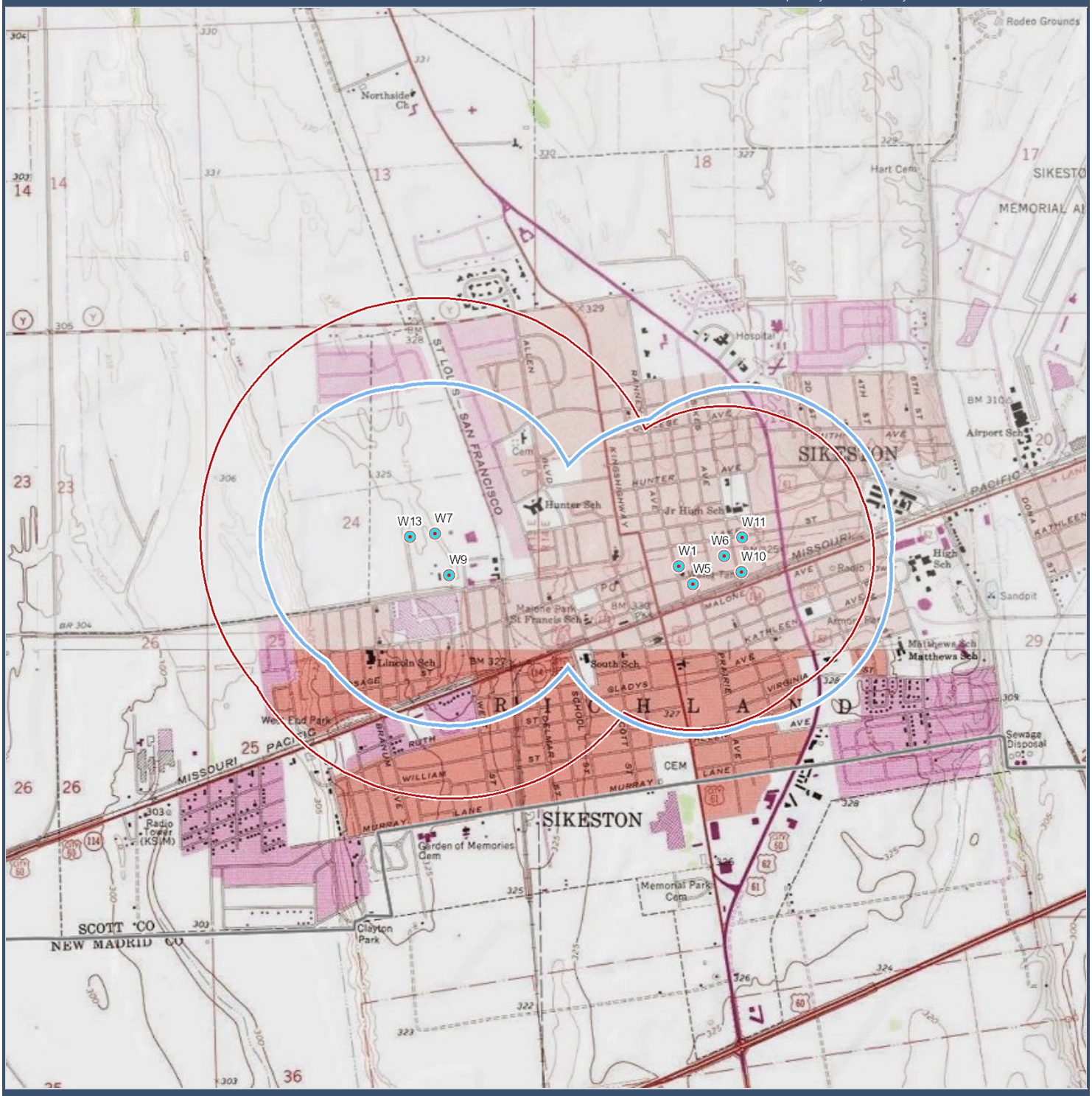
Sikeston

Overview Map (Topo)
PWSS No. 4010743 - 8 Wells, Scott County

Map Prepared: Jun 11, 2020
Data Release: May 4, 2020

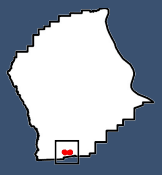
MISSOURI DEPARTMENT OF NATURAL RESOURCES

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.

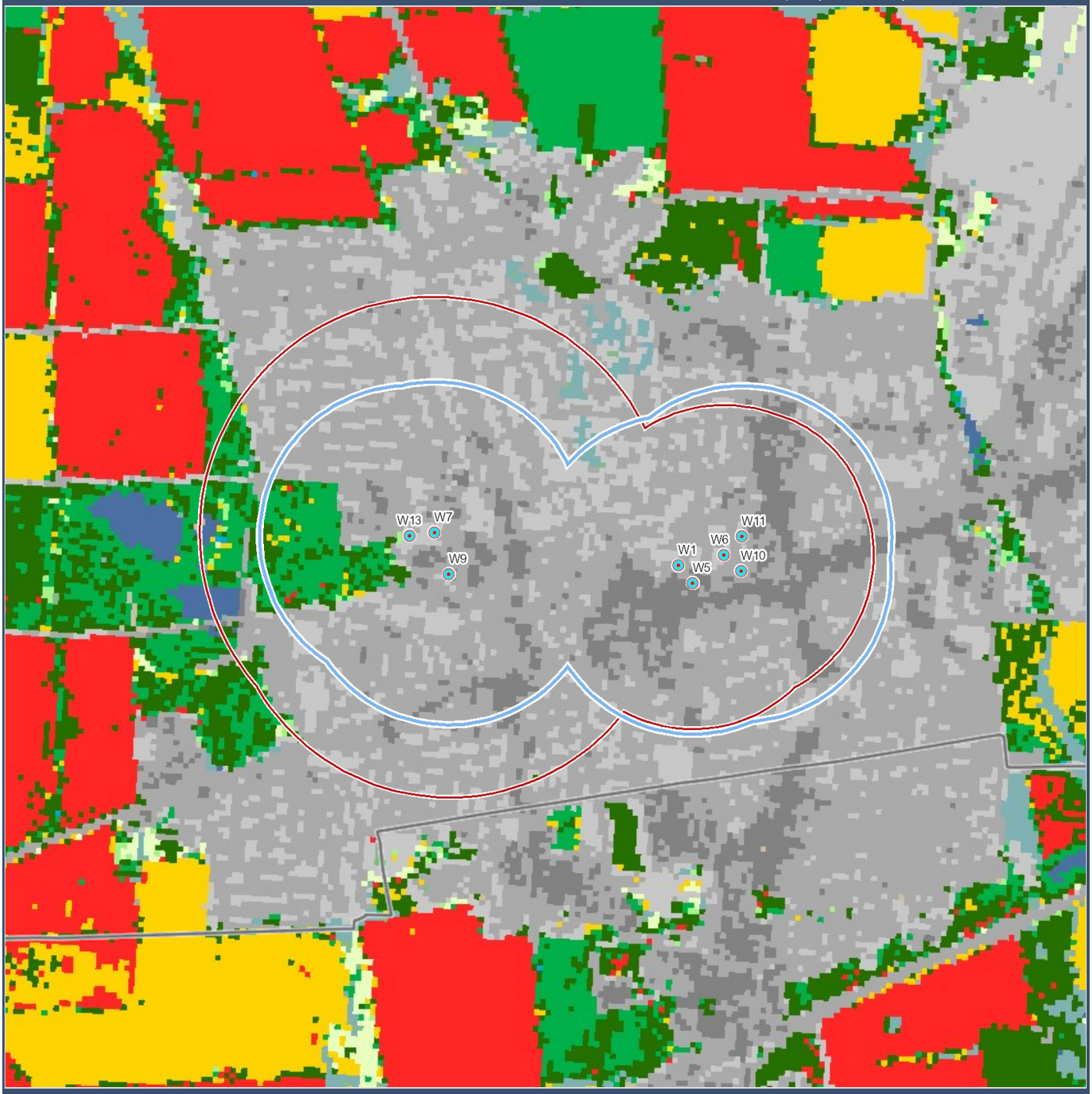
Sikeston

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



Groundwater System
System Well

Source Water Protection Boundary
20-Year Time of Travel
Half-Mile Buffer

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

N

0 0.5 1

Miles

SWAP - Source Water Assessment Plan - http://drinkingwater.missouri.edu/swap
Aerial Photos: Bing Maps, Microsoft. Jun 11, 2020.

Sikeston

Land Use Statistics
PWSS No. 4010743

Map Prepared: Jun 11, 2020
Data Release: May 4, 2020

MISSOURI DEPARTMENT OF NATURAL RESOURCES
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
Scott County, Sheet 2 of 2

Sheet Prepared: Aug 12, 2020

MISSOURI DEPARTMENT OF NATURAL RESOURCES

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
✔	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)

	Database
	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)

Count	Site Type
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.

	Minimally Susceptible	Moderately Susceptible	Highly Susceptible	Undetermined
GROUND WATER				
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

MISSOURI DEPARTMENT OF NATURAL RESOURCES
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

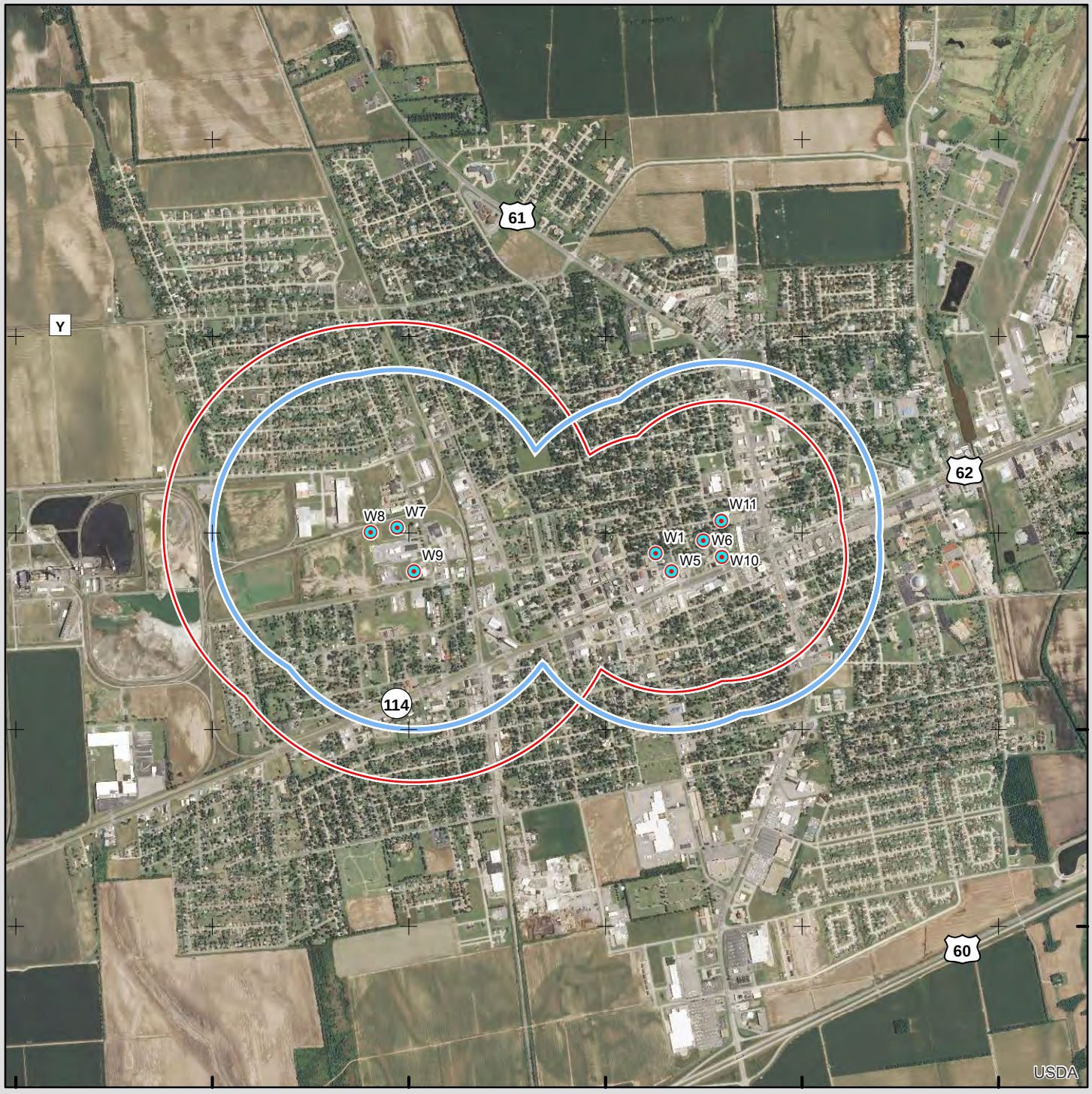
8 Wells, Scott County

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS
UNIVERSITY OF MISSOURI

Missouri Department of Natural Resources

Map Update: Jun 06, 2014

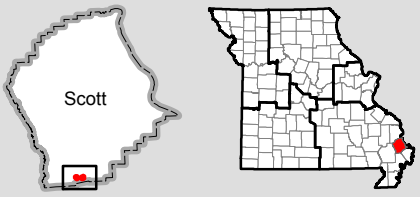


Well System

- 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/
Aerial photos: USDA National Agriculture Inventory Program (NAIP), 2012.

Sikeston

PWSS No. 4010743

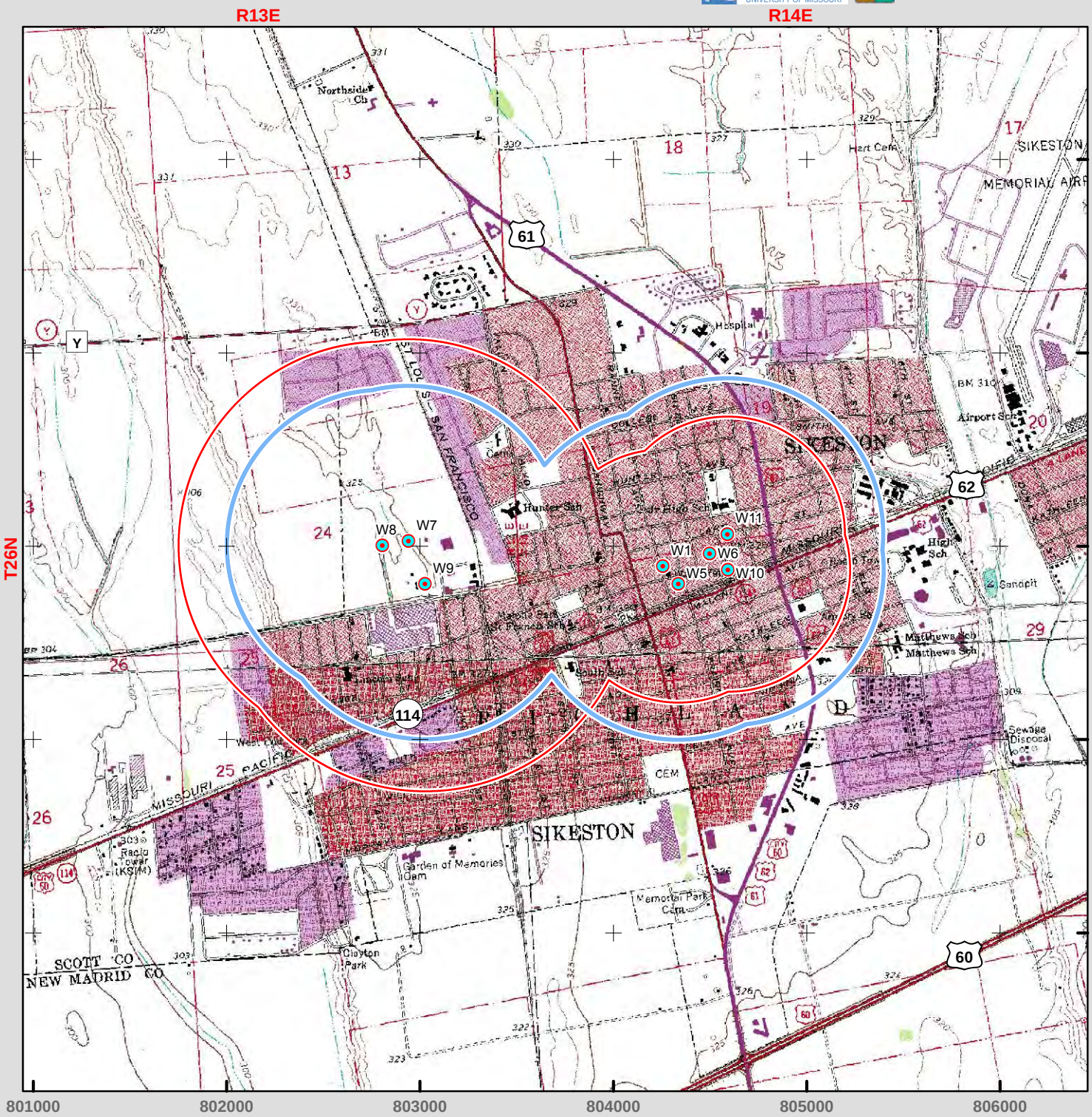
8 Wells, Scott County

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS
UNIVERSITY OF MISSOURI

Missouri Department of Natural Resources

Map Update: Jun 06, 2014

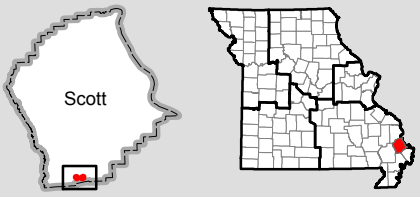


Well System

- 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

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS UNIVERSITY OF MISSOURI

Missouri Department of Natural Resources

Sheet Update: Jun 09, 2014

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

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS UNIVERSITY OF MISSOURI

Missouri Department of Natural Resources

Sheet Update: Jun 09, 2014

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

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS UNIVERSITY OF MISSOURI

Missouri Department of Natural Resources

Sheet Update: Jun 09, 2014

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

Code	Metric
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

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS UNIVERSITY OF MISSOURI

Missouri Department of Natural Resources

Sheet Update: Jun 09, 2014

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

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Sikeston

PWSS No. 4010743

Scott County, sheet 3 of 4

162 potential contaminant sources

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS UNIVERSITY OF MISSOURI

Missouri Department of Natural Resources

Sheet Update: Jun 09, 2014

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

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Sikeston

PWSS No. 4010743

Scott County, sheet 4 of 4

162 potential contaminant sources

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS UNIVERSITY OF MISSOURI

Missouri Department of Natural Resources

Sheet Update: Jun 09, 2014

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

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Sikeston

PWSS No. 4010743

Contaminant Summary Sheet

162 potential contaminant sources

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS UNIVERSITY OF MISSOURI

Missouri Department of Natural Resources

Sheet Update: Jun 09, 2014

162 Potential Contaminant Sources in the Listed Databases:

	AFS (EPA AIRS Facility Sites)		Perchlo (MoDNR Perchlorate Sites in Missouri)
16	APCP (MoDNR Air Pollution Control Program Sites)		Pest Ap (MDA Licensed Pesticide Applicators)
	APF (MoDNR Active Permitted Landfills & Transfer Stations)		RCRIS (EPA Resource Conservation and Recovery Information System)
2	CERCLIS (EPA CERCLIS)		Silos (USGS Minuteman II Missile Silos)
3	Chemcov (VA Selected Chemical Sites)	1	SMARS (MoDNR Superfund Management and Registry System)
1	Dealcov (MDA Pesticide Dealer Locations)	48	Tanks (MoDNR Petroleum Tank Database)
	Dioxin (MoDNR Confirmed Dioxin List)		Tier 2 (MERC Tier II Reports)
	Grain B (USDA Former Grain Bin Sites)		Tire D (MoDNR Resolved and Unresolved Waste Tire Dumps)
31	HW Gen (MoDNR Hazardous Waste Generators)		TRI (EPA Toxic Release Inventory)
	HW Tran (MoDNR Hazardous Waste Transporters)		VCP (MoDNR Voluntary Cleanup Program Sites)
	LUST (MoDNR Leaking Underground Storage Tanks)		WQIS (MoDNR Water Quality Information System)
	MoDOT (MoDOT Highway Maintenance Facilities)		
	PADS (EPA PCB Activity Data Base System)	60	SWIP Field Inventory (see below)

60 Potential Contaminant Sources in the SWIP Field Inventory:

0	Airport or abandoned airfield	0	Machine or metalworking shop
0	Animal feedlot	2	Manufacturing (general)
0	Apartments and condominiums	0	Material stockpile (industrial)
0	Asphalt plant	0	Medical institution
6	Auto repair shop	0	Metal production facility
8	Automotive dealership	0	Mining operation
0	Barber and beauty shop	7	Other
0	Boat yard and marina	1	Paint store
0	CAFO	0	Park land
0	Campground	0	Parking lot
2	Car wash	1	Petroleum production or storage
0	Cement Plant	0	Pharmacies
0	Cemetery	0	Photography shop or processing lab
0	Communication equipment mfg	0	Pit toilet
0	Country club	0	Plastic material and synthetic mfg
3	Dry cleaner	1	Print shop
1	Dumping and/or burning site	0	Railroad yard
0	Electric equipment mfg or storage	0	Recycling/reduction facility
0	Electric substation	0	Research lab
0	Farm machinery storage	0	Restaurant
3	Feed/Fertilizer/Co-op	1	Sawdust pile
2	Fire station	0	School
2	Funeral service and crematory	0	Sports and hobby shop
1	Furniture manufacturer	0	Swimming pool
0	Furniture repair or finishing shop	0	Tailing pond
0	Garden and/or nursery	5	Tank (above-ground fuel)
0	Garden, nursery, and/or florist	0	Tank (other)
0	Gasoline service station	0	Tank (pesticide)
0	Golf courses	6	Tank (underground fuel)
0	Government office	0	Trucking terminal
0	Grain bin	1	Veterinary service
3	Hardware and lumber store	0	Wastewater treatment facility
0	Hazardous waste (Federal facility)	2	Well (abandoned)
1	Highway maintenance facility	1	Well (domestic)
0	Jewelry or metal plating shop	0	Well (irrigation)
0	Junk yard or salvage yard	0	Well (livestock)
0	Lagoon (commercial)	0	Well (monitoring)
0	Lagoon (industrial)	0	Well (public water supply)
0	Lagoon (municipal)	0	Well (unknown)
0	Lagoon (residential)		
0	Landfill (municipal)		
0	Laundromat		
0	Livestock auction		

Sikeston

PWSS No. 4010743

Susceptibility Determination Sheet

8 wells

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS UNIVERSITY OF MISSOURI

Missouri Department of Natural Resources

Sheet Update: Mar 14, 2014

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 9

Alternate Source Demonstration
April 5, 2022
MW-9

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
Fly Ash Pond – pH and Fluoride in MW-9
Alternate Source Demonstration

Prepared for:

BMU Sikeston
Board of Municipal Utilities

Sikeston Power Station
1551 West Wakefield Avenue
Sikeston, MO 63801

STATE OF MISSOURI
THOMAS R. GREDELL
04-04-88
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

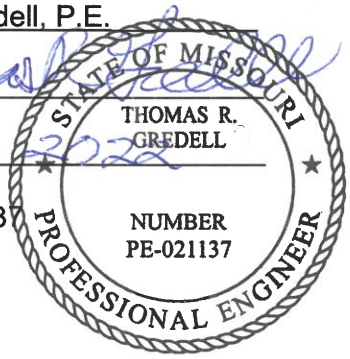
I, Thomas R. Gredell, P.E., a professional engineer licensed in the State of Missouri, hereby certify in accordance with 40 CFR 257.94(e)(2) to the accuracy of the alternate source demonstration described in the following report for the Sikeston Board of Municipal Utilities, Sikeston Power Station, Fly Ash Pond CCR unit. The report demonstrates that the statistically significant increases of Fluoride and pH in MW-9 are not the result of a release from the Fly Ash Pond and are 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: _____

Date: April 4, 2022

Registration Number: PE-02113
State of Registration: Missouri



Sikeston Board of Municipal Utilities
Sikeston Power Station
Detection Monitoring Program for
Fly Ash Pond – pH and Fluoride in MW-9
Alternate Source Demonstration
April 2022

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1.0 INTRODUCTION

This Alternate Source Demonstration (ASD) Report has been prepared to address the results of the semi-annual sampling event initiated on October 20, 2021, at the Sikeston Board of Municipal Utilities (SBMU) Sikeston Power Station's (SPS) Fly Ash Pond, a coal combustion residual (CCR) surface impoundment. Following receipt of final analytical data, statistical analysis was performed by GREDELL Engineering Resources, Inc. (Gredell Engineering) for the parameters listed in Appendix III to Part 257 – Constituents for Detection Monitoring. Following analysis, it was determined that an error resulted due to delayed analysis and consequent hold time exceedance for Total Dissolved Solids (TDS) in sample MW-9. In addition, reported concentrations exceeded their respective prediction limits for several well constituent pairs. These well constituent pairs were Boron (64 ug/L) in sample MW-2; and pH (7.52 S.U.) and Fluoride (1.33 mg/L) in sample MW-9. Prediction limits for these well constituent pairs are 59.94 ug/L Boron in MW-2; and 7.5 S.U. pH (upper limit) and 1.101 mg/L Fluoride in MW-9. Consequently, resampling of these well constituent pairs was initiated on December 27, 2021. Following receipt of final analytical data for the resampling event, it was confirmed that pH (7.58 S.U.) and Fluoride (1.79 mg/L) concentrations in sample MW-9 represent statistically significant increases (SSIs) over background for this well. The resample of MW-9 resulted in an unqualified TDS concentration that did not exceed the predicted limit value. Similarly, the resample of MW-2 resulted in a Boron concentration (43 ug/L) that did not confirm the initial elevated result. As a result of the apparent SSIs, SBMU-SPS requested that Gredell Engineering conduct an evaluation of the groundwater sampling events and develop an ASD for pH and Fluoride in MW-9, if warranted.

Table 1 – Well Constituent Pairs with Concentrations Exceeding Prediction Limits

Date	Monitoring Well	Constituent	Concentration	Prediction Limit	SSI Suspected or Confirmed?
October 20, 2021	MW-2	Boron	64 ug/L	59.94 ug/L	Suspected
	MW-9	pH	7.52 S.U.	7.5 S.U.	Suspected
		Fluoride	1.33 mg/L	1.01 mg/L	Suspected
		TDS	490 mg/L	653 mg/L	No
December 27, 2021	MW-2	Boron	43 ug/L	59.94 ug/L	No
	MW-9	pH	7.58 S.U.	7.5 S.U.	Confirmed
		Fluoride	1.79 mg/L	1.01 mg/L	Confirmed
		TDS	520 mg/L	653 mg/L	No

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 Fly Ash Pond groundwater monitoring system to determine if an alternate source is the cause of the apparent SSIs of pH and Fluoride in MW-9. This report presents the results of that evaluation and includes supporting documentation.

2.0 OBSERVATIONS AND DATA COLLECTION

The Fly Ash Pond groundwater monitoring system consists of five wells, designated MW-1, MW-2, MW-3, MW-7, and MW-9 (Figure 1). Monitoring wells MW-1, MW-2, and MW-3 were installed in April 2016. Monitoring well MW-7 was installed in April 2017. Monitoring well MW-9 was installed in November 2017. All five monitoring wells were sampled on an approximate monthly basis beginning in March 2018 and ending in December 2018 to establish an initial background data base. Additional information regarding these wells is available in the Groundwater Monitoring, Sampling and Analysis Plan for the site.

The background data base for the Fly 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 five additional sampling events included as updates to the background data base were evaluated in accordance with §257.93. Based on this evaluation of the updated database, intra-well analysis using prediction limits was confirmed as 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), an SSI over background is suspected.

The SPS initiated its semi-annual detection groundwater sampling event for the Fly Ash Pond on October 20, 2021. Field Instrument Calibration Logs and field notes summarizing field measured data for this sampling event are provided in Appendix 1a. Final analytical results were received from the contract laboratory on December 10, 2021 (Appendix 2a). However, some results appeared elevated relative to their respective prediction limits (Boron in MW-2; pH and Fluoride in MW-9). Consequently, each constituent well pair with apparently elevated results was resampled on December 27, 2021. Field Instrument Calibration Logs and field notes summarizing field measured data for the resampling event are provided in Appendix 1b. Final analytical results for these resamples were received from the contract laboratory on January 7, 2022 and are provided in Appendix 2b. Boron was not confirmed as an SSI at MW-2. However, pH and Fluoride resample results suggest apparent SSIs and are therefore the focus of this ASD.

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 SSIs of pH and Fluoride at MW-9. 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 pH and Fluoride testing, monitoring well MW-9 sampling, and the Fly Ash Pond groundwater monitoring system, and for that reason are listed below.

1. Chapter 4, page 4-11: *Were there calibration problems, e.g. drift in instrumentation?*
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 SSIs of pH and Fluoride in MW-9. The results of this evaluation are discussed below.

Unified Guidance Consideration 1

The following table summarizes the field instrument calibration and post-sampling pH checks from the October 20, 2021 sampling event, and the December 27, 2021 resampling event. Three pH calibration standards (4.00, 7.00, and 10.00 S.U.) are used for calibration prior to sampling and to assess instrumentation drift after each day of sampling.

Table 2 –pH Calibration and Data Summary

In-Situ SmarTROLL (S/N# 474247) Calibration Date & Time	pH Calibration Standard (S.U.)	Instrument Reading After Calibration (S.U.)	Field Measured pH at MW-9 (S.U.)	MW-9 Upper Prediction Limit for pH (S.U.)	Instrument Reading After Sampling (S.U.)
10/20/2021 6:25 A.M.	4.00	4.00	7.52	7.5	4.07
	7.00	7.00			7.09
	10.00	10.00			10.02
12/27/2021 6:30 A.M.	4.00	4.00	7.58	7.5	4.10
	7.00	7.00			7.10
	10.00	10.00			10.05

Table 1 presents data that demonstrate that the instrument used for monitoring pH in the field during both the sampling and resampling events over-reported pH values across the entire calibration range.

Most notably, the post-sampling checks of the 7.00 S.U. pH standard document instrumentation drift of +0.09 to +0.10 S.U., resulting in elevated pH reporting errors.

Therefore, the pH values recorded in MW-9 are higher than the actual pH of the groundwater due to instrument drift and the response to the first consideration question from Unified Guidance listed above is affirmative. Calibration errors in the form of instrument drift existed during sampling for pH in MW-9.

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 groundwater in the alluvium may contain appreciable quantities of Fluoride ranging from 0.0 to 0.8 mg/L owing to chemical dissolution of soil and rocks. Such concentrations suggest that the level of Fluoride in MW-9 may be naturally occurring. Combined with the increased demand on groundwater in 2021, the current increase in Fluoride 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 response to the second consideration question from Unified Guidance listed above is affirmative.

Unified Guidance Consideration 3

Available hydrologic literature was reviewed for geochemical data related to Fluoride concentrations in groundwater and surface water upgradient of the regulated units. Numerous technical references were identified and are described below.

Luckey (1985) notes that the Southeast Lowlands were “once commonly referred to as “Swampeast Missouri” prior to construction of the surface-water system that transformed the area from swamp to cropland. This system consists primarily of manmade ditches, including Richland Drainage Ditch #4 (Figure 1), which is located along the western margin of the SPS facility. Because this ditch was constructed to drain the surrounding area, it is believed that the west-southwesterly movement of groundwater at the SPS flows toward, and possibly discharges into the ditch, as suggested in the hydrogeologic characterization report (Gredell Engineering, 2017). Additionally, regional potentiometric surface maps developed by Luckey (1985) confirm the west-southwesterly groundwater flow direction in both the alluvium and the underlying Wilcox Aquifer in the Sikeston area.

Monitoring wells MW-2 and MW-3, which are located upgradient of the Fly Ash Pond, contain reportable levels of Fluoride. In April 2020, relatively high concentrations (0.336 mg/L to 0.371 mg/L, respectively) were documented in both wells (Gredell Engineering, 2020). Calculated groundwater velocities reported by Gredell Engineering (2017) for the uppermost (alluvial) aquifer at SPS range from 0.25 to 2 feet per day, suggesting that groundwater could travel the 1,000 feet from the upgradient to the downgradient side of the Fly Ash Pond during the 562-day timeframe between the April 2020 and December 2021 sampling events. Thus, it is possible that the source of Fluoride responsible for the April 2020 increases in upgradient wells MW-2 and MW-3 is also responsible for the current increase of Fluoride in downgradient well MW-9. Since April 2020, Fluoride concentrations at MW-2 and MW-3 have decreased below reportable levels. Therefore, it is anticipated that Fluoride concentrations at MW-9 will diminish to baseline levels during future sampling events.

Boswell et al. (1968) reports relatively high Fluoride concentrations (0.8 mg/L) in the alluvial aquifer in the Mississippi Embayment. 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 and documented Fluoride concentrations between 0.1 and 1.1 mg/L. Among the wells sampled by Brahana et al. (1985) was a Sikeston Municipal Well (Missouri Well ID #5941) that pumps from the Wilcox Aquifer and has a 375-foot total depth. The location of this well is shown on Figure 2 and is approximately 8,000 feet east (upgradient) of the Fly Ash Pond.

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. Luckey and Fuller reported Fluoride concentrations up to 0.6 mg/L in the alluvial aquifer in Scott County and Fluoride concentrations ranging from 0.1 to 0.6 mg/L in surface water less than five miles east (upgradient) of the Fly Ash Pond.

The National Water Summary (USGS, 1986) provides summary of groundwater quality for all major aquifers in the United States. This report includes a graphic summary of groundwater quality specific to the alluvial aquifer in southeast Missouri, and the Wilcox Aquifer compiled from the U.S. Geological Survey's National Water Data Storage and Retrieval System (WATSTORE). This graphic depicts a summary of Fluoride concentrations in 31 groundwater samples from the alluvial aquifer (0 to 0.3 mg/L), and 12 samples from the Wilcox Aquifer (0 to 1.3 mg/L) collected from 1930 to 1986.

Therefore, the response to the third consideration question from Unified Guidance listed above is affirmative. Fluoride has been documented upgradient of the regulated units.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Gredell Engineering concludes that the apparent SSIs of pH and Fluoride in MW-9 are not the result of a release from the Fly Ash Pond and are attributable to alternate sources. The following supports this conclusion:

- Instrumentation drift resulted in measurement error of pH during sampling of MW-9.
- Groundwater flow direction is consistently from the east-northeast to the west-southwest as documented during every monitoring event at the SPS.
- The reported Fluoride concentrations in MW-9 are naturally occurring and are attributable to temporal variations related to the chemical dissolution of soil or rocks, the variable degree of upward groundwater movement from the underlying Wilcox Aquifer, and the geochemical interaction of groundwater from the Wilcox Aquifer with groundwater in the alluvial aquifer.
- Fluoride is present in groundwater upgradient of the regulated units. Fluoride concentrations ranging from 0.1 to 1.3 mg/L in the alluvial aquifer and the underlying Wilcox Aquifer are documented in the technical literature discussed in Section 3.0 and cited in Section 6.0 of this report.

Based on these conclusions, Gredell Engineering recommends:

- Repair or replacement of the probe used for monitoring pH during field sampling, and
- 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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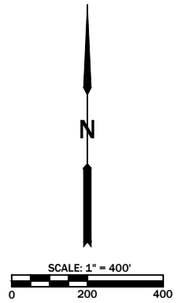
Figures



LEGEND

PROPERTY LINE	PL
GROUNDWATER CONTOUR (DASHED WHERE INFERRED)	
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 OCTOBER 20, 2021.
4. MAP DEVELOPMENT BASED ON CONTOURS GENERATED BY SURFER® SOFTWARE.
5. RANGE OF GROUNDWATER FLOW GRADIENT AS DETERMINED BY SURFER® SOFTWARE 0.0001 FT./FT. TO 0.001 FT./FT.

MONITORING WELL ID	GROUNDWATER ELEVATION (FEET)	CASING ELEVATION (FEET)	NORTHING	EASTING
MW-1	295.36	312.77	383119.51	1078467.90
MW-2	296.55	308.01	383207.42	1079751.30
MW-3	296.04	308.55	381130.00	1079946.62
MW-7	295.08	315.03	381584.50	1078847.00
MW-9	295.53	314.68	382429.94	1078825.60
MW-1R	295.69	314.34	382926.45	1078801.61

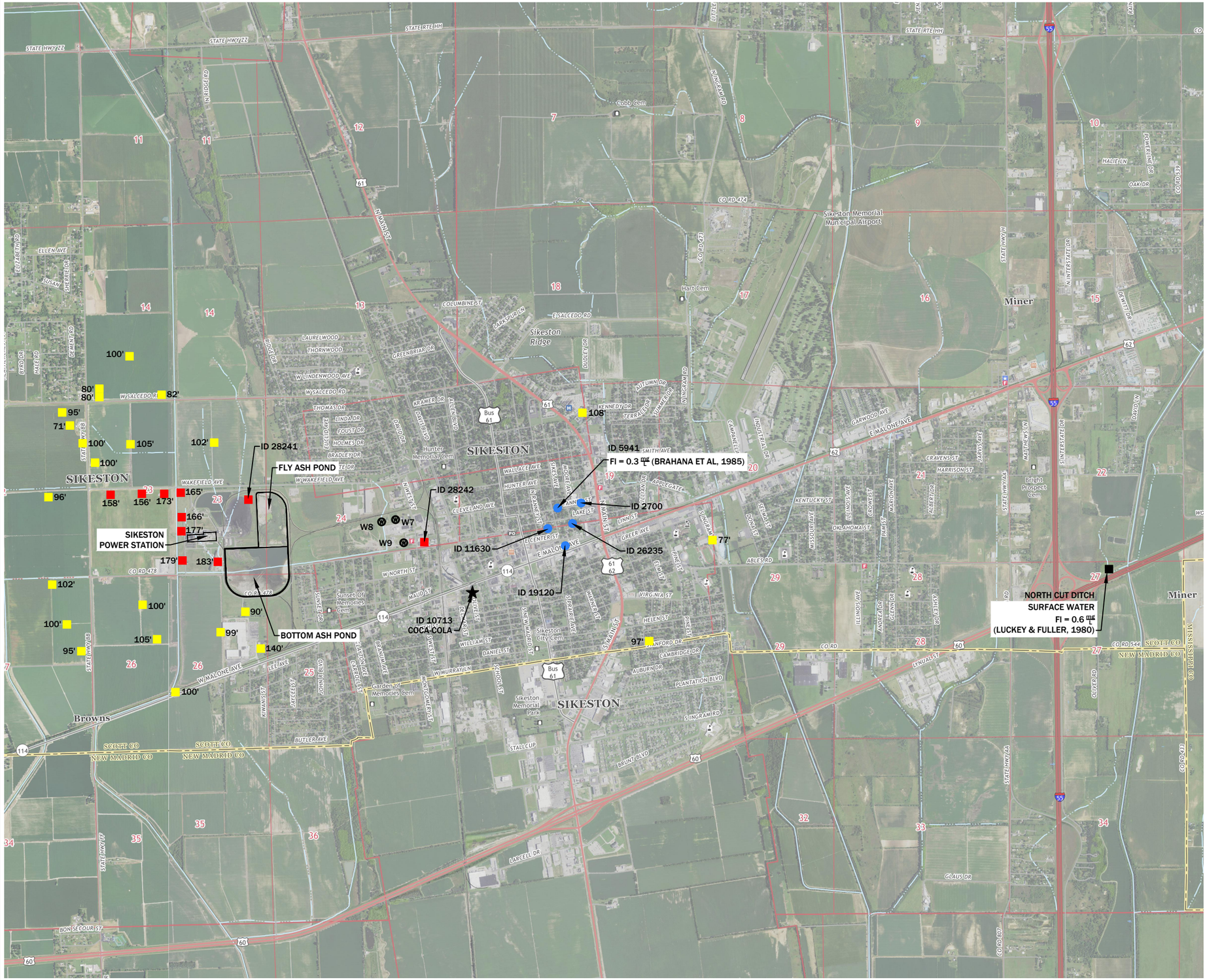
THE GEOLOGIST WHO REVIEWED AND APPROVED THIS REPORT ASSUMES RESPONSIBILITY ONLY FOR GEOLOGIC INTERPRETATIONS OF DATA APPEARING ON THE PAGE AND DISCLAIMS PURSUANT TO SECTION 256.456 RSMO ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS OR OTHER DOCUMENTS OR INSTRUMENTS NOT PREPARED 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
OCTOBER 20, 2021

SIKESTON POWER STATION
FLY ASH POND
ALTERNATE SOURCE DEMONSTRATION

SURVEYED	DESIGNED	DRAWN	CHECKED	APPROVED	DATE	SCALE	PROJECT NAME	FILE NAME	SHEET #
NA	NA	CM	KE	MCC	02/2022	AS NOTED	SIKESTON/GWMAP/FAP	GW CONT MAP FAP OCT 21 (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



LEGEND:

CITY OF SIKESTON MUNICIPAL SUPPLY WELL MDNR WELL REFERENCE ID UNKNOWN SOURCE: CARES REPORT (APP 4)	(W)
CITY OF SIKESTON MUNICIPAL SUPPLY WELL ID NUMBER FLUORIDE CONCENTRATION	28242 FI = 0.3 mg/L
INDUSTRIAL HIGH-YIELD WELL ID NUMBER WELL OWNER	★ 10713 COCA-COLA
IRRIGATION WELLS WELL DEPTH	108'
SIKESTON POWER STATION WELLS WELL DEPTH	179'
SURFACE WATER SAMPLE LOCATION (LUCKEY & FULLER, 1980)	FI = 0.6 mg/L

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 4).

#	DATE	REVISION DESCRIPTION	BY

FIGURE 2
SITE LOCATION MAP WITH HIGH-YIELD WELL LOCATIONS AND FLUORIDE DATA

PROJECT NAME: SIKESTON | FILE NAME: FAP DEMONONSTRATION | SHEET # 1 OF 1

FLY ASH POND ALTERNATE SOURCE DEMONSTRATION
SIKESTON POWER STATION

SCALE: 1" = 3000' | DATE: 3/2022

SURVEYED	DESIGNED	DRAWN	CHECKED	APPROVED
N/A	KE	CM	KE	MCC

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FILE PATH AND FILENAME: O:\CADDFiles\SIKESTON\GROUNDWATER MAP\FAP DEMONONSTRATION.dwg
PRINTED ON: 3/28/22 BY: cm

Appendices

Appendix 1a

Field Notes
October 20, 2021 Sample 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 #: 20160736

	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	10-20-2021	0625	4.00	=	4.00	1413	=	1414.2	Temperature (°C)	=	18.47	= 229.3	Temperature (°C)	=	17.12	0.02	=	0.02
			7.00	=	7.00								Tap Water Source	=	Sikeston City	10.0	=	10.0
			10.00	=	10.00			~~1419.2~~ AP	Standard (mV)	=	229.0		Barometric Pressure (mm/Hg)	=	1009.2	1000	=	1000.0
													Measurement	=	100.11			
End of Day Check	10-20-2021		4.00	=	4.07	1413	=	1421.3	Temperature (°C)	=	18.34	= 219.5	Temperature (°C)	=	19.19	0.02	=	0.01
			7.00	=	7.09								Tap Water Source	=	Sikeston City	10.0	=	9.93
			10.00	=	10.02				Standard (mV)	=	229.0		Barometric Pressure (mm/Hg)	=	1,005.6	1000	=	996.1
													Measurement	=	100.34			

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: 10-20-2021 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: 10-20-2021

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 (Signed) Lab Tech (Title) 10-20-21 (Date)

Field Sampling Log

Monitoring Well ID: MW3 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 12.51 Date: 10-20-2021

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 10-20-2021

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? (Y) / N

Time Purging Initiated: 0738 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 12.51 Total Volume Purged (mL): 4040

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 36.98 Water Level after Sampling (feet btoc): 12.51 (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 0822

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)
0740		260	13.95	201.74	16.69	6.99	33.4	9.55	12.51	Yellow, NO odor flake
0742	210	680	13.49	200.82	13.78	6.64	45.9	7.44	12.51	" "
0744	210	1100	13.21	198.29	12.43	6.50	50.3	5.89	12.51	" "
0746	240	1580	13.10	197.28	11.92	6.47	49.7	2.63	12.51	" "
0748	240	2060	13.04	193.22	11.25	6.48	47.0	3.00	12.51	Clear, NO odor
0750	260	2580	12.99	190.93	10.85	6.50	45.6	0.53	12.51	" "
0752	240	3060	12.95	190.55	10.73	6.50	41.3	1.24	12.51	" "
0754	250	3560	12.90	188.25	10.17	6.52	36.8	1.78	12.51	" "
0756	240	4040	12.85	188.97	10.32	6.52	33.6	1.35	12.51	" "

btoc - below top of casing

Prepared by: GREDELL Engineering Resources, Inc.

January 2017

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): 12.51

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)
10-20-21 0756	240	12.85	188.97	10.32	6.52	33.6	1.35

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 48°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: 10-20-21 By: [signature] Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 2
Name (Field Staff): A Patel D Dillingham
Date: 10-20-2021

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 A Patel Lab Tech 10-20-21
Signed Title Date

Field Sampling Log

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

Initial Water Level (feet btoc): 11.46 Date: 10-20-21

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 10-20-21

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? (Y) / N

Time Purging Initiated: 0846 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 11.46 Total Volume Purged (mL): 2900

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 37.08 Water Level after Sampling (feet btoc): 11.46 (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)
0848		400	15.34	184.93	10.77	6.30	8.1	8.34	11.46	Clear, no odor
0850	270	940	14.96	182.92	9.42	6.27	10.9	5.73	11.46	" "
0852	240	1420	14.78	182.81	8.62	6.26	13.1	3.24	11.46	" "
0854	240	1900	14.72	187.95	7.15	6.25	14.3	1.75	11.46	" "
0856	250	2400	14.76	186.00	8.56	6.25	16.3	1.81	11.46	" "
0858	250	2900	14.85	188.00	5.97	6.25	19.6	1.36	11.46	" "

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): 11.46

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)
10-20-21 0858	250	14.85	188.00	5.97	6.25	19.6	1.36

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 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: 10-20-21 By: [signature] Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 1
Name (Field Staff): A Patel D Dillingham
Date: 10-20-21

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 (Signed) Lab Tech (Title) 10-20-21 (Date)

Field Sampling Log

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

Initial Water Level (feet btoc): 17.41 Date: 10-20-21

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 10-20-21

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? (Y) / N

Time Purging Initiated: 1021 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 17.41 Total Volume Purged (mL): 4420

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 37.63 Water Level after Sampling (feet btoc): 17.41 (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1110

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)
1023		360	16.30	328.06	10.72	7.18	-62.5	5.32	17.41	Clear, no odor
1025	260	880	15.01	336.13	7.30	7.29	-69.8	2.57	17.41	" "
1027	260	1400	14.58	342.41	6.50	7.31	-75.8	1.47	17.41	" "
1029	250	1900	14.45	349.97	5.96	7.31	-79.5	1.07	17.41	" "
1031	270	2440	14.36	352.96	5.20	7.32	-82.9	1.77	17.41	" "
1033	260	2960	14.39	355.69	4.93	7.34	-86.4	5.02	17.41	" "
1035	240	3440	14.35	357.56	4.79	7.33	-89.0	1.33	17.41	" "
1037	220	3820	14.36	359.65	4.54	7.32	-90.0	1.56	17.41	" "
1039	270	4420	14.43	362.84	4.51	7.33	-91.5	1.31	17.41	" "

btoc - below top of casing

Field Sampling Log

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

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing Dedicated: (Y) / N

Water Level @ Sampling (feet btoc): 17.41

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)
10-20-21 1039	270	14.43	362.84	4.51	7.33	-91.5	1.31

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 63°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: 10-20-21 By: Abish Patel Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 7
Name (Field Staff): A Patel D Dillingham
Date: 10-20-21

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 [signature] Russell Crew Leader 10-20-21
Signed Title Date

Field Sampling Log

Monitoring Well ID: MW7 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 19.95 Date: 10-20-21

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 10-20-21

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? (Y) / N

Time Purging Initiated: 1131 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 19.95 Total Volume Purged (mL): 2760

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 37.21 Water Level after Sampling (feet btoc): 19.95 (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1212

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)
1133		380	17.37	809.94	8.31	7.28	-44.4	2.42	19.95	Clear, no odor
1135	240	860	15.57	841.48	5.28	7.34	-46.1	0.87	19.95	" "
1137	230	1320	14.99	850.05	5.09	7.35	-44.3	0.96	19.95	" "
1139	240	1800	14.77	853.82	4.91	7.34	-45.4	0.85	19.95	" "
1141	250	2300	14.67	852.85	3.79	7.35	-44.9	0.95	19.95	" "
1143	230	2760	14.58	855.28	3.75	7.35	-44.0	0.75	19.95	" "

btoc - below top of casing

Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring Monitoring Well ID: MW 7

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing Dedicated: (Y) / N

Water Level @ Sampling (feet btoc): 19.95

Monitoring Event: Annual ( ) Semi-Annual (Y) 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)
10-20-21 1143	230	14.58	855.28	3.75	7.35	-44.0	0.75

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

AP 72 °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: 10-20-21 By: [signature] Title: Lead Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 9
Name (Field Staff): A Patel O Dillingham
Date: 10-20-21

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 (Signed) | Lab Tech (Title) | 10-20-21 (Date)

Field Sampling Log

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

Initial Water Level (feet btoc): 19.15 Date: 10-20-21

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 10-20-21

Name (Sample Collector): A Patel

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? (Y) / N

Time Purging Initiated: 1305 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 19.15 Total Volume Purged (mL): 2820

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 37.12 Water Level after Sampling (feet btoc): 19.15 (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1343

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)
1307		360	18.22	1,013.7	11.15	7.52	12.6	7.64	19.15	clear, no odor
1309	250	860	16.52	1052.9	8.84	7.52	14.8	1.12	19.15	" "
1311	240	1340	15.85	1057.0	7.18	7.52	14.5	0.79	19.15	" "
1313	240	1820	15.57	1041.9	6.88	7.53	14.2	0.92	19.15	" "
1315	260	2340	15.57	1032.9	6.31	7.52	14.4	0.69	19.15	" "
1317	240	2820	15.70	1020.5	6.16	7.52	13.1	0.87	19.15	" "

btoc - below top of casing

Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring Monitoring Well ID: MW9

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing Dedicated: (Y) / N

Water Level @ Sampling (feet btoc): 19.15

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)
10-20-21 1317	240	15.70	1025	6.16	7.52	131	0.83

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 73°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: 10-20-21 By: [signature] Title: Lead Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 1-R
Name (Field Staff): A Patel D Dillingham
Date: 10-20-21

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 Abhishek Patel (Signed) Lab Tech (Title) 10-20-21 (Date)

Prepared by: GREDELL Engineering Resources, Inc. January 2017

Field Sampling Log

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

Initial Water Level (feet btoc): 18.65 Date: 10-20-21

Initial Groundwater Elevation (NAVD88): _____ Air Pressure in Well? Y / (N)

PURGE INFORMATION

Date: 10-20-21

Name (Sample Collector): D Dillingham

Method of Well Purge: Low Flow Perstaltic Pump Dedicated Tubing? (Y) / N

Time Purging Initiated: 1410 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 18.65 Total Volume Purged (mL): 4680

Beginning Groundwater Elevation (NAVD88): _____ Well Purged To Dryness? Y / (N)

Well Total Depth (feet btoc): 38.05 Water Level after Sampling (feet btoc): 18.65 (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1517

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)
1412		300	17.26	491.85	8.84	6.68	30.2	6.12	18.65	clear, no odor
1414	210	720	16.48	495.48	9.23	6.66	30.6	6.59	18.65	" "
1416	230	1180	15.51	507.29	8.37	6.63	31.3	3.04	18.65	" "
1418	240	1660	15.24	515.42	7.41	6.61	31.9	2.31	18.65	" "
1420	260	2180	15.17	517.87	8.10	6.59	33.3	2.01	18.65	" "
1422	250	2680	15.28	519.61	8.18	6.57	32.6	1.81	18.65	" "
1424	240	3160	15.13	518.84	7.36	6.56	32.3	2.78	18.65	" "
1426	250	3660	15.22	520.75	6.92	6.56	31.8	4.40	18.65	" "
1428	270	4200	15.21	515.54	6.35	6.55	31.4	4.33	18.65	" "
1430	240	4680	15.25	511.27	6.41	6.55	32.2	4.62	18.65	" "

btoc - below top of casing

Field Sampling Log

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

Sampling Information:

Method of Sampling: Low Flow - Perstaltic Pump & Tubing Dedicated: (Y) / N

Water Level @ Sampling (feet btoc): 18-65

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)
10-20-21 1430	240	15.25	511.27	6.41	6.55	32.2	4.62

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 75 °F

Sample Characteristics: Clear, Colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:

Collected Field ~~Blank~~ AP Duplicate

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

Date: 10-20-21 By: Ashish Patel Title: Lab Tech

Appendix 1b

Field Notes
December 27, 2021 Resample 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 #: 20160736 6

	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)	=	13.34	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)	=	994.35	1000	=	1000.0
														Measurement	=	99.93			
End of Day Check	12-27-2021	1330	4.00	=	4.10	1413	=	1374.2	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	=	Silkeston City	10.0	=	9.94
			10.00	=	10.05									Barometric Pressure (mm/Hg)	=	994.37	1000	=	994.9
														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 2
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 [signature] Signed — Lab Tech Title — 12-27-21 Date

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 Dillingham

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 (1) ✓

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	~~300~~ 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 cloudy a little bit

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: [signature] Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 9
Name (Field Staff): A Patel O 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 [signature] Lab Tech 12-27-21
Signed Title Date

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 Dillingham

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	8.88	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

Appendix 2a

Laboratory Analytical Results and
Quality Control Reports
October 20, 2021 Sample Event

December 10, 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,

David 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 EJ04453

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
YES	Case narrative provided

Case Narrative

Due to a lab accident, we do not have Field Blank sample to complete analysis for Cl, F, SO4 or TDS.

ANALYTICAL RESULTS

Sample: EJ04453-01
Name: MW-1
Matrix: Ground Water - Grab

Sampled: 10/20/21 10:39
Received: 10/22/21 10:30
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	3.1	mg/L		11/01/21 16:26	1	1.0	11/01/21 19:45	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		11/01/21 19:45	1	0.250	11/01/21 19:45	CRD	EPA 300.0 REV 2.1
Sulfate	28	mg/L		11/01/21 20:03	10	10	11/01/21 20:03	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	230	mg/L		10/26/21 09:49	1	26	10/26/21 13:28	JAA	SM 2540C
Total Metals - PIA									
Boron	410	ug/L		11/01/21 15:59	5	10	11/03/21 09:53	JMW	EPA 6020A
Calcium	41000	ug/L		11/01/21 15:59	5	200	11/03/21 09:53	JMW	EPA 6020A

Sample: EJ04453-02
Name: MW-2
Matrix: Ground Water - Grab

Sampled: 10/20/21 08:58
Received: 10/22/21 10:30
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	4.2	mg/L		11/01/21 20:21	1	1.0	11/01/21 20:21	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		11/01/21 20:21	1	0.250	11/01/21 20:21	CRD	EPA 300.0 REV 2.1
Sulfate	15	mg/L	Q4	11/01/21 21:15	10	10	11/01/21 21:15	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	140	mg/L		10/26/21 09:49	1	26	10/26/21 13:28	JAA	SM 2540C
Total Metals - PIA									
Boron	64	ug/L		11/01/21 15:59	5	10	11/03/21 09:57	JMW	EPA 6020A
Calcium	19000	ug/L		11/01/21 15:59	5	200	11/03/21 09:57	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ04453-03
Name: MW-3
Matrix: Ground Water - Grab

Sampled: 10/20/21 07:56
Received: 10/22/21 10:30
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	< 1.0	mg/L	Q3	11/01/21 21:33	1	1.0	11/01/21 21:33	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		11/01/21 21:33	1	0.250	11/01/21 21:33	CRD	EPA 300.0 REV 2.1
Sulfate	13	mg/L	Q4	11/01/21 23:04	5	5.0	11/01/21 23:04	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	130	mg/L		10/26/21 09:49	1	26	10/26/21 13:28	JAA	SM 2540C
Total Metals - PIA									
Boron	30	ug/L		11/01/21 15:59	5	10	11/03/21 10:00	JMW	EPA 6020A
Calcium	14000	ug/L		11/01/21 15:59	5	200	11/03/21 10:00	JMW	EPA 6020A

Sample: EJ04453-04
Name: MW-7
Matrix: Ground Water - Grab

Sampled: 10/20/21 11:43
Received: 10/22/21 10:30
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	3.7	mg/L		11/01/21 23:22	1	1.0	11/01/21 23:22	CRD	EPA 300.0 REV 2.1
Fluoride	0.375	mg/L		11/01/21 23:22	1	0.250	11/01/21 23:22	CRD	EPA 300.0 REV 2.1
Sulfate	160	mg/L		11/01/21 23:40	25	25	11/01/21 23:40	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	520	mg/L		10/26/21 09:49	1	26	10/26/21 13:28	JAA	SM 2540C
Total Metals - PIA									
Boron	1900	ug/L		11/01/21 15:59	5	10	11/03/21 10:04	JMW	EPA 6020A
Calcium	120000	ug/L		11/01/21 15:59	5	200	11/03/21 10:04	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ04453-05
Name: MW-9
Matrix: Ground Water - Grab

Sampled: 10/20/21 13:17
Received: 10/22/21 10:30
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	18	mg/L		11/02/21 00:16	5	5.0	11/02/21 00:16	CRD	EPA 300.0 REV 2.1
Fluoride	1.33	mg/L		11/01/21 23:58	1	0.250	11/01/21 23:58	CRD	EPA 300.0 REV 2.1
Sulfate	240	mg/L		11/02/21 11:45	50	50	11/02/21 11:45	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	490	mg/L	H, M	12/08/21 14:07	1	26	12/08/21 16:35	JAA	SM 2540C
Total Metals - PIA									
Boron	5500	ug/L		11/01/21 15:59	5	10	11/03/21 10:08	JMW	EPA 6020A
Calcium	57000	ug/L		11/01/21 15:59	5	200	11/03/21 10:08	JMW	EPA 6020A

Sample: EJ04453-06
Name: DUPLICATE WELL
Matrix: Ground Water - Grab

Sampled: 10/20/21 00:00
Received: 10/22/21 10:30
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	3.1	mg/L		11/02/21 00:52	1	1.0	11/02/21 00:52	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		11/02/21 00:52	1	0.250	11/02/21 00:52	CRD	EPA 300.0 REV 2.1
Sulfate	30	mg/L		11/02/21 01:10	5	5.0	11/02/21 01:10	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	210	mg/L		10/27/21 11:09	1	26	10/27/21 12:40	ADM	SM 2540C
Total Metals - PIA									
Boron	470	ug/L		11/01/21 15:59	5	10	11/03/21 10:11	JMW	EPA 6020A
Calcium	42000	ug/L		11/01/21 15:59	5	200	11/03/21 10:11	JMW	EPA 6020A

Sample: EJ04453-07
Name: FIELD BLANK
Matrix: Ground Water - Field Blank

Sampled: 10/20/21 13:17
Received: 10/22/21 10:30
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Total Metals - PIA									
Boron	35	ug/L		11/01/21 15:59	5	10	11/03/21 10:15	JMW	EPA 6020A
Calcium	< 200	ug/L		11/01/21 15:59	5	200	11/03/21 10:15	JMW	EPA 6020A

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B146423 - No Prep - SM 2540C									
Blank (B146423-BLK1)				Prepared & Analyzed: 10/26/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B146423-BS1)				Prepared & Analyzed: 10/26/21					
Solids - total dissolved solids (TDS)	973	mg/L		1000		97	84.9-109		
Duplicate (B146423-DUP2)	**Sample: EJ04453-01**			Prepared & Analyzed: 10/26/21					
Solids - total dissolved solids (TDS)	230	mg/L			230			0	5
Batch B146583 - No Prep - SM 2540C									
Blank (B146583-BLK1)				Prepared & Analyzed: 10/27/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B146583-BS1)				Prepared & Analyzed: 10/27/21					
Solids - total dissolved solids (TDS)	1020	mg/L		1000		102	84.9-109		
Batch B147059 - SW 3015 - EPA 6020A									
Blank (B147059-BLK1)				Prepared: 11/01/21 Analyzed: 11/03/21					
Boron	< 10	ug/L							
Calcium	< 200	ug/L							
LCS (B147059-BS1)				Prepared: 11/01/21 Analyzed: 11/03/21					
Boron	507	ug/L		555.6		91	80-120		
Calcium	5400	ug/L		5556		97	80-120		
Batch B147152 - IC No Prep - EPA 300.0 REV 2.1									
Blank (B147152-BLK1)				Prepared & Analyzed: 11/01/21					
Fluoride	< 0.250	mg/L							
Sulfate	< 1.0	mg/L							
Chloride	< 1.0	mg/L							
Blank (B147152-BLK2)				Prepared & Analyzed: 11/01/21					
Chloride	< 1.0	mg/L							
Fluoride	< 0.250	mg/L							
Sulfate	< 1.0	mg/L							
Calibration Blank (B147152-CCB1)				Prepared & Analyzed: 11/01/21					
Chloride	0.172	mg/L							
Sulfate	0.00	mg/L							
Fluoride	0.0981	mg/L							
Calibration Blank (B147152-CCB2)				Prepared & Analyzed: 11/01/21					
Chloride	0.174	mg/L							
Fluoride	0.104	mg/L							
Sulfate	0.00	mg/L							
Calibration Check (B147152-CCV1)				Prepared & Analyzed: 11/01/21					
Fluoride	5.12	mg/L		5.000		102	90-110		
Sulfate	5.15	mg/L		5.000		103	90-110		
Chloride	5.04	mg/L		5.000		101	90-110		
Calibration Check (B147152-CCV2)				Prepared & Analyzed: 11/01/21					

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B147152 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Check (B147152-CCV2)				Prepared & Analyzed: 11/01/21					
Fluoride	4.89	mg/L		5.000		98	90-110		
Sulfate	4.87	mg/L		5.000		97	90-110		
Chloride	4.84	mg/L		5.000		97	90-110		
MRL Check (B147152-MRL1)				Prepared & Analyzed: 11/01/21					
Chloride	< 1.0	mg/L		0.5000			0-200		
Fluoride	0.258	mg/L		0.5000		52	0-200		
Sulfate	0.278	mg/L		0.5000		56	0-200		
MRL Check (B147152-MRL2)				Prepared & Analyzed: 11/01/21					
Sulfate	0.277	mg/L		0.5000		55	0-200		
Chloride	< 1.0	mg/L		0.5000			0-200		
Fluoride	0.281	mg/L		0.5000		56	0-200		
Matrix Spike (B147152-MS2)	**Sample: EJ04453-02**			Prepared & Analyzed: 11/01/21					
Fluoride	1.54	mg/L		1.500	0.160	92	80-120		
Chloride	5.8	mg/L		1.500	4.2	102	80-120		
Sulfate	1.00E9	mg/L	Q4	1.500	15.3	NR	80-120		
Matrix Spike (B147152-MS3)	**Sample: EJ04453-03**			Prepared & Analyzed: 11/01/21					
Chloride	2.2	mg/L	Q1	1.500	ND	145	80-120		
Fluoride	1.70	mg/L		1.500	0.190	100	80-120		
Sulfate	1.00E9	mg/L	Q4	1.500	13.3	NR	80-120		
Matrix Spike Dup (B147152-MSD2)	**Sample: EJ04453-02**			Prepared & Analyzed: 11/01/21					
Sulfate	1.00E9	mg/L	Q4	1.500	15.3	NR	80-120	0	20
Fluoride	1.59	mg/L		1.500	0.160	95	80-120	3	20
Chloride	5.9	mg/L		1.500	4.2	114	80-120	3	20
Matrix Spike Dup (B147152-MSD3)	**Sample: EJ04453-03**			Prepared & Analyzed: 11/01/21					
Fluoride	1.66	mg/L		1.500	0.190	98	80-120	2	20
Chloride	2.1	mg/L	Q2	1.500	ND	139	80-120	4	20
Sulfate	1.00E9	mg/L	Q4	1.500	13.3	NR	80-120	0	20
Batch B147361 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B147361-CCB1)				Prepared & Analyzed: 11/02/21					
Sulfate	0.00	mg/L							
Calibration Check (B147361-CCV1)				Prepared & Analyzed: 11/02/21					
Sulfate	4.86	mg/L					90-110		
Batch B150295 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B150295-CCB1)				Prepared & Analyzed: 12/06/21					
Sulfate	0.00	mg/L							
Calibration Check (B150295-CCV1)				Prepared & Analyzed: 12/06/21					
Sulfate	5.18	mg/L		5.000		104	90-110		
Batch B150388 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B150388-CCB1)				Prepared & Analyzed: 12/07/21					
Fluoride	0.00	mg/L							
Calibration Check (B150388-CCV1)				Prepared & Analyzed: 12/07/21					
Fluoride	5.03	mg/L		5.000		101	90-110		

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B150448 - No Prep - SM 2540C									
Blank (B150448-BLK1)				Prepared & Analyzed: 12/08/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B150448-BS1)				Prepared & Analyzed: 12/08/21					
Solids - total dissolved solids (TDS)	987	mg/L		1000		99	84.9-109		
Duplicate (B150448-DUP1)	**Sample: EJ04453-05RE1**			Prepared & Analyzed: 12/08/21					
Solids - total dissolved solids (TDS)	620	mg/L	H, M		490			23	5

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.
Q1	Matrix Spike failed % recovery acceptance limits. The associated blank spike recovery was acceptable.
Q2	Matrix Spike Duplicate failed % recovery acceptance limits. The associated blank spike recovery was acceptable.
Q3	Matrix Spike/Matrix Spike Duplicate both failed % recovery acceptance limits. The associated blank spike recovery was acceptable.
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 J 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	PROJECT NUMBER	PROJECT LOCATION	PURCHASE ORDER #
SIKESTON BMU POWER STATION		FLY ASH APP III	
ADDRESS: 1551 W WAKEFIELD	PHONE NUMBER: 573-475-3131	E-MAIL	DATE SHIPPED
CITY STAT ZIP: SIKESTON, MO 63801	SAMPLER (PLEASE PRINT): Daniel Dillingham		
CONTACT PERSON: MR LUKE ST MARY	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 # EJ04453-07

LOGGED BY: KEZ

CLIENT: SIKESTON BMU, SIKESTON POWER STATION

PROJECT: SIKESTON FLY 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-1	10-20-21	1039	X		GW	2	3,6	X	X						
MW-2	10-20-21	0858	X		GW	2	3,6	X	X						
MW-3	10-20-21	0756	X		GW	2	3,6	X	X						
MW-7	10-20-21	1143	X		GW	2	3,6	X	X						
MW-9	10-20-21	1317	X		GW	2	3,6	X	X						
DUPLICATE	10-20-21		X		GW	2	3,6	X	X						
FIELD BLANK	10-20-21	1317	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
Ashish Patel	10-21-21 / 0700		
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	DATE / TIME
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE) Kathryn Gray	DATE 10/22/21 / TIME 1030

(8) COMMENTS: (FOR LAB USE ONLY)

SAMPLE TEMPERATURE UPON RECEIPT 2.1 °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 Control Reports
December 27, 2021 Resample Event

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,

David J 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 EL04894

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: EL04894-01
Name: MW-2
Matrix: Ground Water - Regular Sample

Sampled: 12/27/21 10:07
Received: 12/29/21 11:40
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Total Metals - PIA									
Boron	43	ug/L		01/04/22 07:53	5	10	01/05/22 10:38	JMW	EPA 6020A

Sample: EL04894-02
Name: MW-9
Matrix: Ground Water - Regular Sample

Sampled: 12/27/21 11:20
Received: 12/29/21 11:40
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Fluoride	1.79	mg/L		01/03/22 15:51	1	0.250	01/03/22 15:51	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	520	mg/L	M	01/03/22 09:57	1	26	01/03/22 11:18	JAA	SM 2540C

Sample: EL04894-03
Name: DUPLICATE
Matrix: Ground Water - Regular Sample

Sampled: 12/27/21 00:00
Received: 12/29/21 11:40
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Fluoride	1.80	mg/L		01/03/22 17:21	1	0.250	01/03/22 17:21	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	570	mg/L		01/03/22 09:57	1	26	01/03/22 11:18	JAA	SM 2540C

ANALYTICAL RESULTS

Sample: EL04894-04
Name: FIELD BLANK
Matrix: Ground Water - Regular Sample

Sampled: 12/27/21 10:07
Received: 12/29/21 11:40
PO #: 25815

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Fluoride	< 0.250	mg/L		01/03/22 17:40	1	0.250	01/03/22 17:40	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Solids - total dissolved solids (TDS)	< 17	mg/L		01/03/22 09:57	1	17	01/03/22 11:18	JAA	SM 2540C
Total Metals - PIA									
Boron	< 10	ug/L		01/04/22 07:53	5	10	01/05/22 10:42	JMW	EPA 6020A

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					
Fluoride	0.00	mg/L							
Calibration Check (B220859-CCV1)				Prepared & Analyzed: 01/03/22					
Fluoride	5.19	mg/L		5.000		104	90-110		
Matrix Spike (B220859-MS1)	**Sample: EL04894-02**			Prepared & Analyzed: 01/03/22					
Fluoride	3.28	mg/L		1.500	1.79	99	80-120		
Matrix Spike Dup (B220859-MSD1)	**Sample: EL04894-02**			Prepared & Analyzed: 01/03/22					
Fluoride	3.26	mg/L		1.500	1.79	98	80-120	0.7	20
Batch B220860 - SW 3015 - EPA 6020A									
Blank (B220860-BLK1)				Prepared: 01/04/22 Analyzed: 01/05/22					
Boron	< 10	ug/L							
LCS (B220860-BS1)				Prepared: 01/04/22 Analyzed: 01/05/22					
Boron	556	ug/L		555.6		100	80-120		
Matrix Spike (B220860-MS1)	**Sample: EL04894-01**			Prepared: 01/04/22 Analyzed: 01/05/22					
Boron	616	ug/L		555.6	43.3	103	75-125		
Matrix Spike Dup (B220860-MSD1)	**Sample: EL04894-01**			Prepared: 01/04/22 Analyzed: 01/05/22					
Boron	572	ug/L		555.6	43.3	95	75-125	7	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

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

Gail J 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	PROJECT NUMBER	PROJECT LOCATION	PURCHASE ORDER #
SIKESTON BMU POWER STATION		FLY ASH APP III	
ADDRESS: 1551 W WAKEFIELD	PHONE NUMBER: 573-475-3131	E-MAIL	DATE SHIPPED
CITY / STAT / ZIP: SIKESTON, MO 63801	SAMPLER (PLEASE PRINT): Daniel 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
CONTACT PERSON: MR LUKE ST MARY	SAMPLER'S SIGNATURE: Daniel Dillingham		

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	3 ANALYSIS REQUESTED F	B	TDS					REMARKS
MW-2	12-27-21	1007	X		GW	1			X						
MW-9	12-27-21	1120	X		GW	1		X		X					
DUPLICATE	12-27-21		X		GW	1		X		X					
FIELD BLANK	12-27-21	1007	X		GW	2		X	X	X					

4 (FOR LAB USE ONLY)
LOGIN # EL04814-04
LOGGED BY: DCW
CLIENT: SIKESTON BMU, SIKESTON POWER STATION
PROJECT: SIKESTON FLY ASH APP III RESAMPLES
PROJ. MGR.: GJ SCHINDLER

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

8 COMMENTS: (FOR LAB USE ONLY)

SAMPLE TEMPERATURE UPON RECEIPT 1.02 °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

Geologic Drilling Logs for
High-Yield Wells Near SPS

16L

WL-81-Spls

STATE OF MISSOURI
DIVISION OF
GEOLOGICAL SURVEY AND WATER RESOURCES

LOG NO.	OWNER	
19120	City of Sikeston	
COUNTY	**FARM**	**WELL NO.**
Scott		6
T 26 / **R** ~~25E~~	**DRILLER** Layne-Arkansas Co.	
	DATE 8-10-60	
	ELEV Brownings 330 / **LOGGED BY** J Wells 8-26-60	**PROD.** 1641 GPM.

INDEX SHEET NO. 1

REMARKS 307' of 18" csg.
34" hole @ bottom.

SWL. 66'

	SD. BRN, MED-CRSE
	c/o
	c/o SS
	c/o
	c/o w/occ GRAN.
	SD. MED-V/CRSE w/GRAN.
	c/o
	c/o PDWP #
	c/o 4010743
	c/o
	c/o
	c/o
	SD BRN, MED to GRAN.
	c/o
	c/o
	c/o
	c/o
	c/o
	c/o
100	SD-CRSE to GRAN
	c/o
	c/o
	c/o
	c/o
	c/o
	c/o
	c/o w/occ GRAVEL
200	yellow fn to v/crse
	c/o highly polished
	c/o w/GRAVEL
	c/o
	c/o
	c/o
	c/o
	c/o
	c/o
	c/o
	SD. v/fn to occ crse.
	silty-
300	SD v/fn to mod. silty - gray.
	c/o
	c/o
	"
	"
	SD-gray v/fn to crse - silty -
	SD gray v/fn to crse
	SD - mod to crse.
	SD. v/fn to occ v/crse. silty
400	c/o increasing amts of v/crse to gravel
	c/o incr
	Rel Top Portion Cherty
	TD 409'

W. Cox

wi-79-5p15

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. Spb Rec: 23-6-69	
	ELEV: 327	PROD. ~~test~~ 1500 gpm 44 ft dd
	LOGGED BY WELLS July 1-69	

REMARKS

SWL 68.1

Alluvium

Wilcox

Cretaceous Clerk

100

200

300

400

CLAY & SOIL - BRN w/SNT
SAND - BRN - v/fn - fn - w/CLAY &
" " " " 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 Gravel.
Do.
Do.
Do.
- FN - crse
Do w/ occ v/crse.
Do & Gravel.
FN - v/crse w/Gravel.
Do
Do w/ Pea Gravel.
Do - Basically crse.
CRSE - w/ occ Gravel & P.G.
Crse - v/crse - w/ Gravel & Pea Gravel.
Crse - v/crse
DO
Do - w/Gravel
Do
DO
Do
MED - crse w/ v/crse & Gravel
Do
SAND - MED. w/Gravel & Pea Gravel.
Do
SAND - crse w/Gravel.
do.
crse - v/crse w/Gravel & Pea Gravel.
MED - crse w/ Gravel & Pea Gravel.
" - " w/PG.
med - v/crse w/P.G.
do
fn - crse w/PG & Pebbles Dirty
CLAY - SAN 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
SAND - CLEAN - fn - med.
do
Do - w/ Some crse.
DO
SAND - TAN - fn - crse.
Do
Do.
SAND - TAN - fn - v/crse
DO
SAND - Reddish Brn - fn - crse
Do.

PDWP # 4010743

Drillers Logs "Blue clay 399 - 410' "

MISSOURI BUREAU OF GEOLOGY & MINES, ROLLA, MO.

MO SURVEY Nº	OWNER	
2700	City of Sikeston (Sikeston Water Commissioner)	
COUNTY	FARM	WELL Nº
Scott	Municipal Plant of Sikeston	3

T 26N R 14E — Section 19

DRILLER Corless well supply Co.

DATE Dec. 1932

ELEVATION 327

PRODUCTION

SAMPLES STUDIED 12-15-38 Hundhausen

REMARKS

S.W.L. = 27'

0 sand, sub-ang. arkosic - magnetite

do

do

do + garnet

PDWP # 4010743

do

do

do + garnet magnetite

do

pebbles. igneous pebbles

50 do ... do

8/23/62
Temp 59°
Cond. 220 micromhos
pH 7.2
from USGS

do crinoid stem

100 do ... do

150 do

do silicified fossils

do ... do

200 1 sample 194' to 218'
Tan-grey clay - Lignite

1 sample 218' - to 250'
medium coarse ang. sand

250

1 sample 260' to 320'
do

300

1 sample 320' - 350'

350

400 T.D. = 405'

Alluvium; Pliocene? - Alluvium?; Tertiary - Wilcox Group.

450 Midway 150'

500

550

600 Est. Top Ripley

625
325
300

650

700 Est. Top Paleozoic.

750

800

850

MISSOURI BUREAU OF GEOLOGY & MINES, ROLLA, MO.

MO SURVEY Nº	OWNER	
2700	City of Sikeston	
COUNTY	FARM	WELL Nº
Scott	@ Municipal Plant	3

T 26N R 14E — Section 19

DRILLER Corliss Well Co.

DATE Dec. 1932

ELEVATION 327

PRODUCTION 750 G.P.M.

SAMPLES STUDIED Farrar

REMARKS From sples. submitted.

Elev. 300
27-11A

0 Sand, polished in the larger grains some rounded fragments of granite with a small amt of green & dark colored igneous rock

PDWP # 7010743

50 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

100

ANAL. NO. 2091
T.D.S. 153.0
CL. 6.3
SO_4 1.4

150

194 Polished clear qtz grains in small amt
200 Chiefly drab brownish grey clay which is somewhat micaceous.
218

Clear angular qtz sand some of the larger grains are polished.
250 250

one sple

300

327
218
+ 109

320

One sple.

350 350

no sples.

400 -405 T.D.

450

500

800 GPM - No decrease
SWL - 27 No change
P. Setting 100 4 132
[illegible] 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.

550

600

650

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

700

750

Letter 9-34 Bosch.

800

850

MISSOURI BUREAU OF GEOLOGY & MINES, ROLLA, MO.

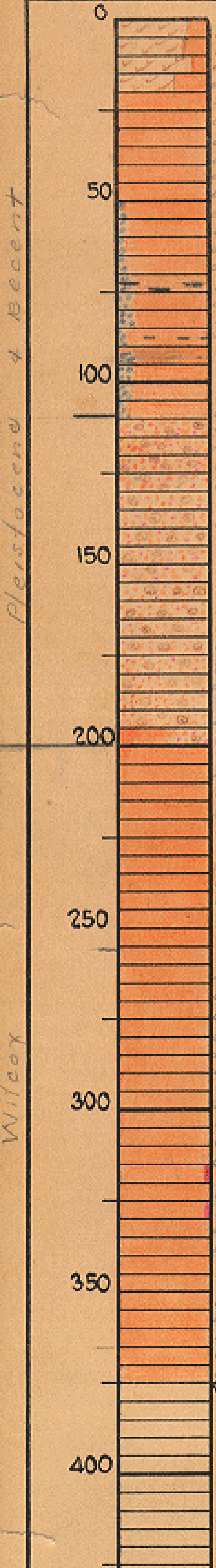
W.L. 3.

MO SURVEY №	OWNER		
5941	City of Sikeston		
COUNTY: Scott	FARM: Well located on NW corner of the Waterworks property		WELL №: 4
T: 26 N	R: 4 E	DRILLER: Carless Well Co.	
Section: 19	DATE: 2-1-40 to 3-28-1940		
	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 # 40I0743



brn-silt-clay-arkosic sand magnetite
do.
do
do
sand-ang-arkosic-some chert. hav(?)
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
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
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

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	R	DRILLER	
26	~~14~~ E	Layne Arkansas	
		DATE 7-6-51 – 8-15-51	
		ELEV. 330 Breaking 330 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.f
30'o.f 32" & 330'o.f 17" hole
At Water tank

SWL ~~52~~ 55'

	soil and sand
	rounded sand, igneous frags
	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
100	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
200	gravel
	do
	do
	do
	do, sand
	do
	do
	do
	do
	do
	do
	do
	do, clay
	do
	clay, gravel, sand
	do
	do
	do
300	do
	clay, fine sand, gravel
	do
	do
	do
	do
	fine clean sand, ang. to rounded
	do
	do
	do
	do
	do
	do
	do
	do
	do
	coarse rounded pol. sand
400	do
	do
2'	do
	Gumbo according to drillers Log
	T. D. ~~415~~ ft. 421' 7"
500	
	Screen
	80' of 8" shutter type #8 slot. Layne Co. screen
	Air line 120'
	Pump setting 100' column 4' pump bowls 20' suction pipe
600	
	Est. Top Paleozoic from log # 2122
700	
800	
900	

Plei sto cene & Recent

Wilcox

Porter's Creek

Sheet #1

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	
23	ELEV. 305 Fan 7.50 / LOGGED BY Wells.	PROD.

REMARKS
80' W, 15' N of Well #2 location

PDWP#
4010743

Alluvium

100

oxidized, hematite stained

"

?

200

yell sd.

Wilcox?

80

STATE OF MISSOURI
DIVISION OF
GEOLOGICAL SURVEY AND WATER RESOURCES

LOG NO.	OWNER	
28242	Sikeston Power Plant	
COUNTY: Scott	FARM	WELL NO. 4-79
T 26 R 13E	DRILLER Layne-Western	
	DATE	
	ELEV. 328 Fanz 80	PROD.
	LOGGED BY WELLS	

24 ⊙

REMARKS

Poor Spls -

PDWP#
4010743

Alluvium

100

200

fn white well sand.

Wilcox

300

fn - mfn white sd.

PC ?

400

WL 71 S

STATE OF MISSOURI
DIVISION OF
GEOLOGICAL SURVEY AND WATER RESOURCES

LOG NO.	OWNER	
10713	Coca-Cola Bottling Co.	
COUNTY	FARM	WELL NO.
Scott	111-113 Concord St.	
T 26 / R 14E	DRILLER Carloss Well Co. Memphis, Tenn.	
	DATE Mar. 1949	
19	ELEV. 328	PROD.
	LOGGED BY McNeal 5/11/49	

REMARKS

med to crs ang to rounded frosty to polished sd some igneous

SS

100

do trace lignite
gravel polished chts qtz igneous

Alluvium

200

do med to crs polished sd
trace med ang pyritic sst

do FeS_2

Wilcox

300

f to med ang sst FeS_2

do gry mica sh

T 360'

400

Appendix 4a

2020 Sikeston Public Well
Assessment Reports (CARES)

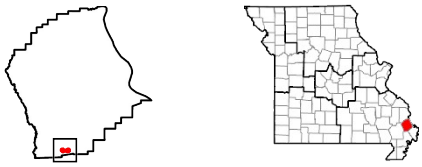
Sikeston

General System Information

PWSS No. 4010743

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Prepared by CARES, University of Missouri Extension

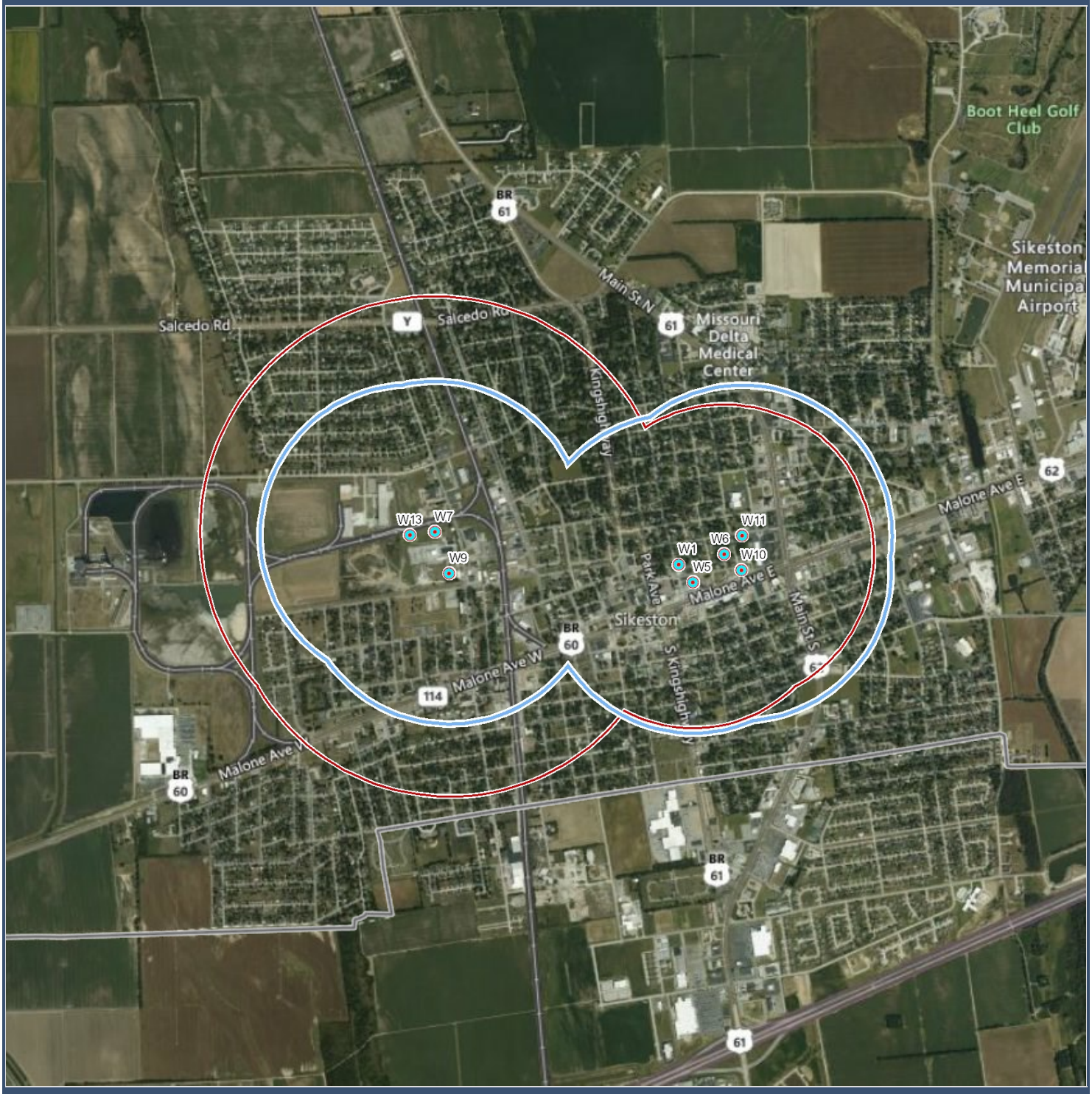
Name	Sikeston
PWSSID	MO4010743
Population Served	16,393
Primary County Served	Scott
Service Connections	7,908
Source(s) of Water	Southeast Missouri Lowlands Groundwater Province
System Classification	Community (C)
Primary Source Type	Groundwater (GW)
System Type	Municipality
System Treatment	4-log Treatment 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

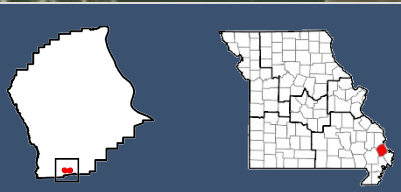
Map Prepared: Jun 11, 2020
Data Release: May 4, 2020

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



0 0.5 1
Miles

SWAP - Source Water Assessment Plan - http://drinkingwater.missouri.edu/swap
Aerial Photos: Bing Maps, Microsoft. Jun 11, 2020.

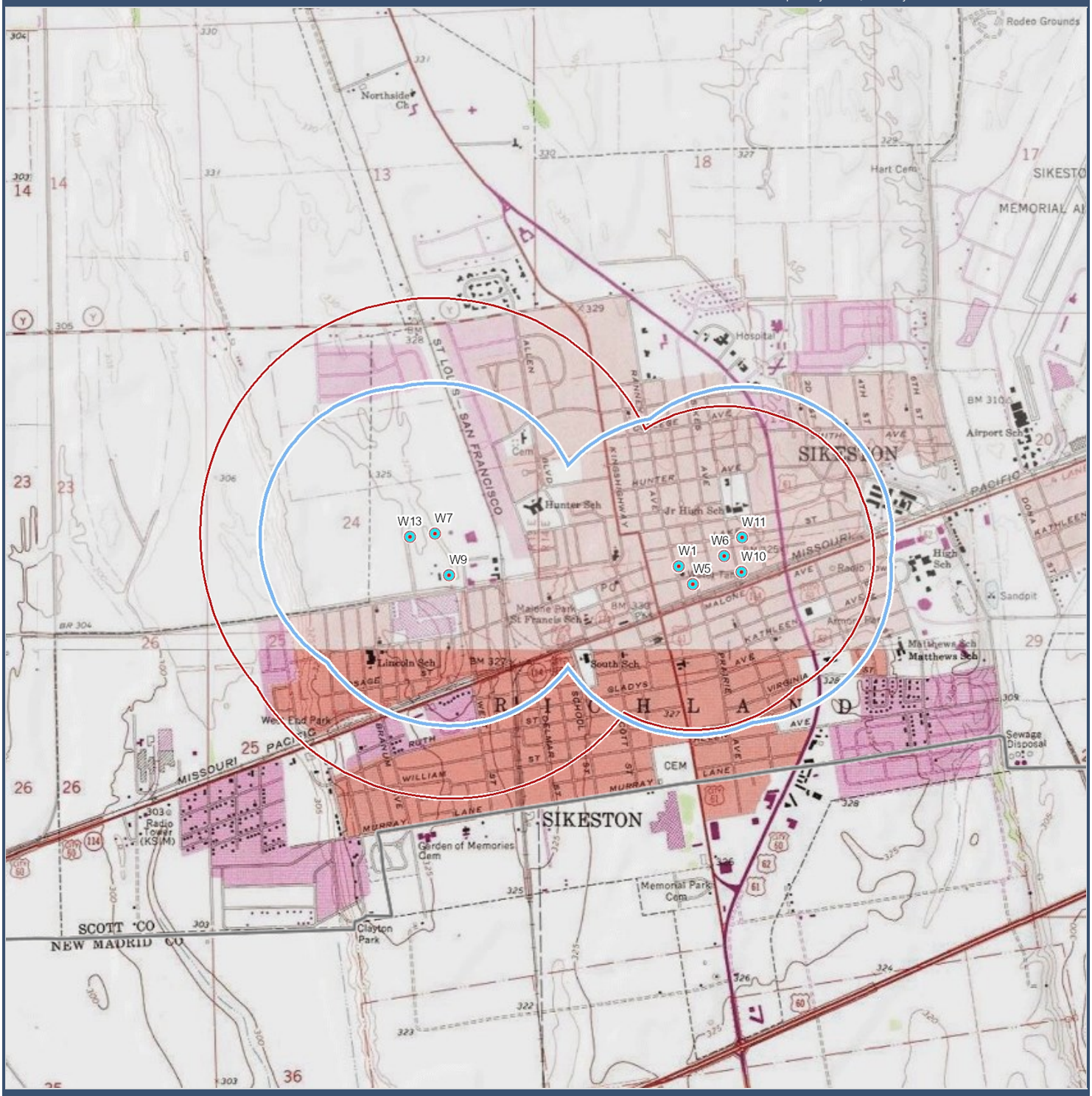
Sikeston

Overview Map (Topo)
PWSS No. 4010743 - 8 Wells, Scott County

Map Prepared: Jun 11, 2020
Data Release: May 4, 2020

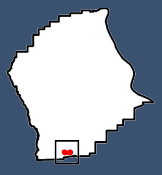
MISSOURI DEPARTMENT OF NATURAL RESOURCES

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.

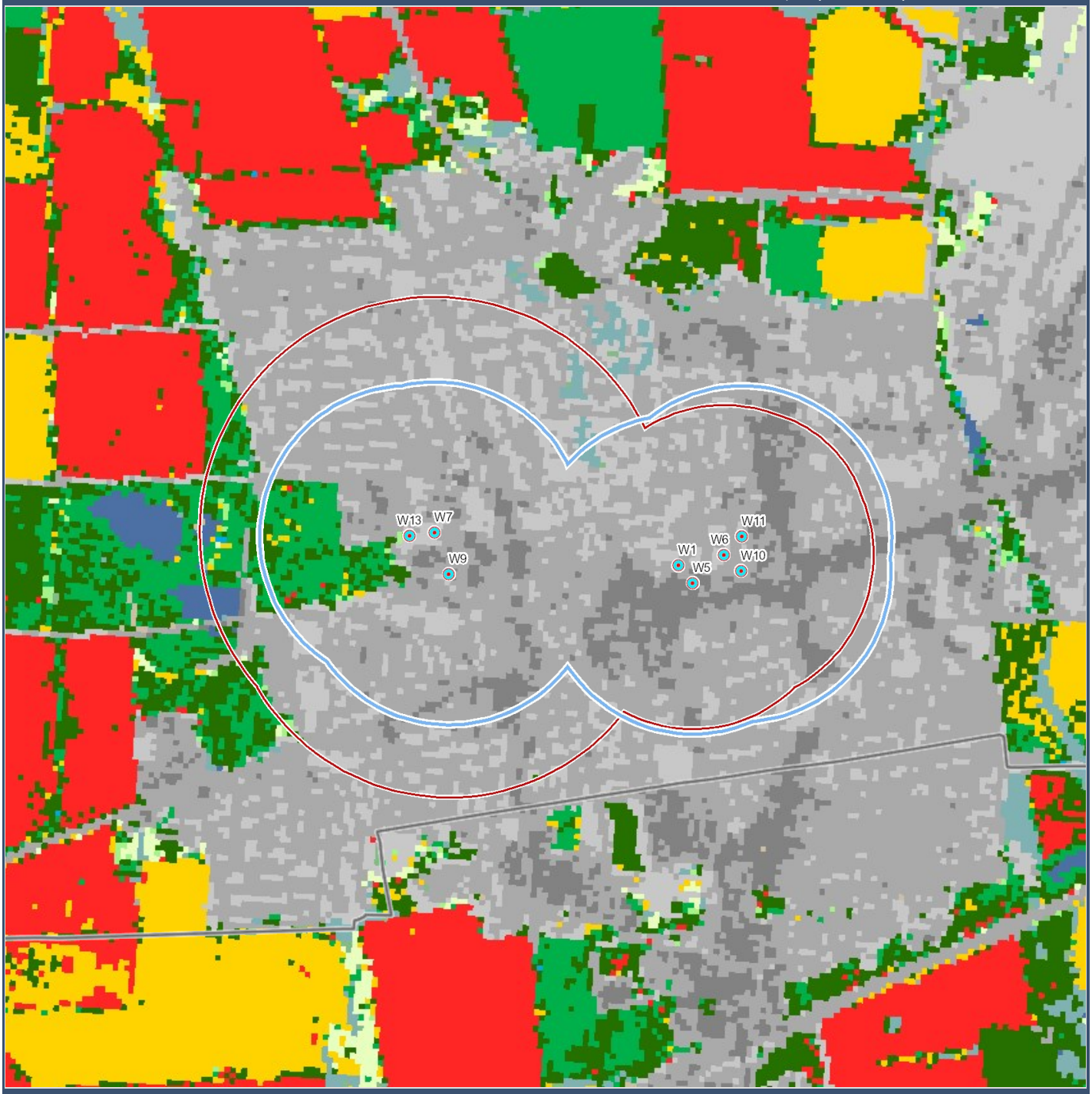
Sikeston

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



Groundwater System
System Well

Source Water Protection Boundary
20-Year Time of Travel
Half-Mile Buffer

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

N

0 0.5 1

Miles

SWAP - Source Water Assessment Plan - http://drinkingwater.missouri.edu/swap
Aerial Photos: Bing Maps, Microsoft. Jun 11, 2020.

Sikeston

Land Use Statistics
PWSS No. 4010743

Map Prepared: Jun 11, 2020
Data Release: May 4, 2020

MISSOURI DEPARTMENT OF NATURAL RESOURCES
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
Scott County, Sheet 2 of 2

Sheet Prepared: Aug 12, 2020

MISSOURI DEPARTMENT OF NATURAL RESOURCES

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
✔	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)

	Database
	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)

Count	Site Type
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.

	Minimally Susceptible	Moderately Susceptible	Highly Susceptible	Undetermined
GROUND WATER				
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

MISSOURI DEPARTMENT OF NATURAL RESOURCES
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 4b

2014 Sikeston Public Well
Assessment Reports (CARES)

Sikeston

PWSS No. 4010743

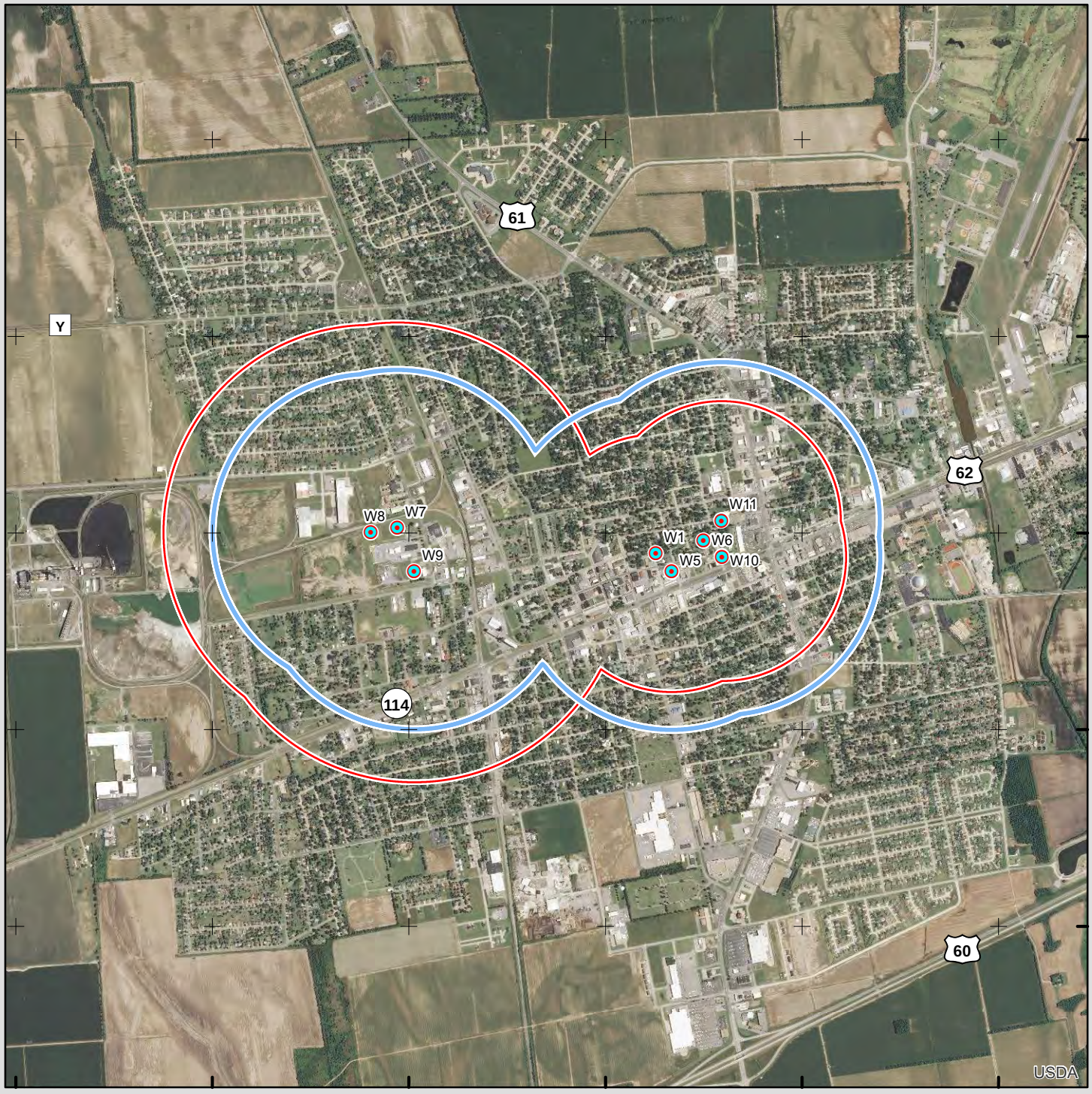
8 Wells, Scott County

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS
UNIVERSITY OF MISSOURI

Missouri Department of Natural Resources

Map Update: Jun 06, 2014

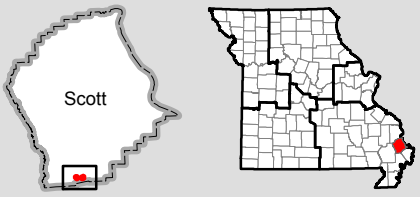


Well System

- 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/
Aerial photos: USDA National Agriculture Inventory Program (NAIP), 2012.

Sikeston

PWSS No. 4010743

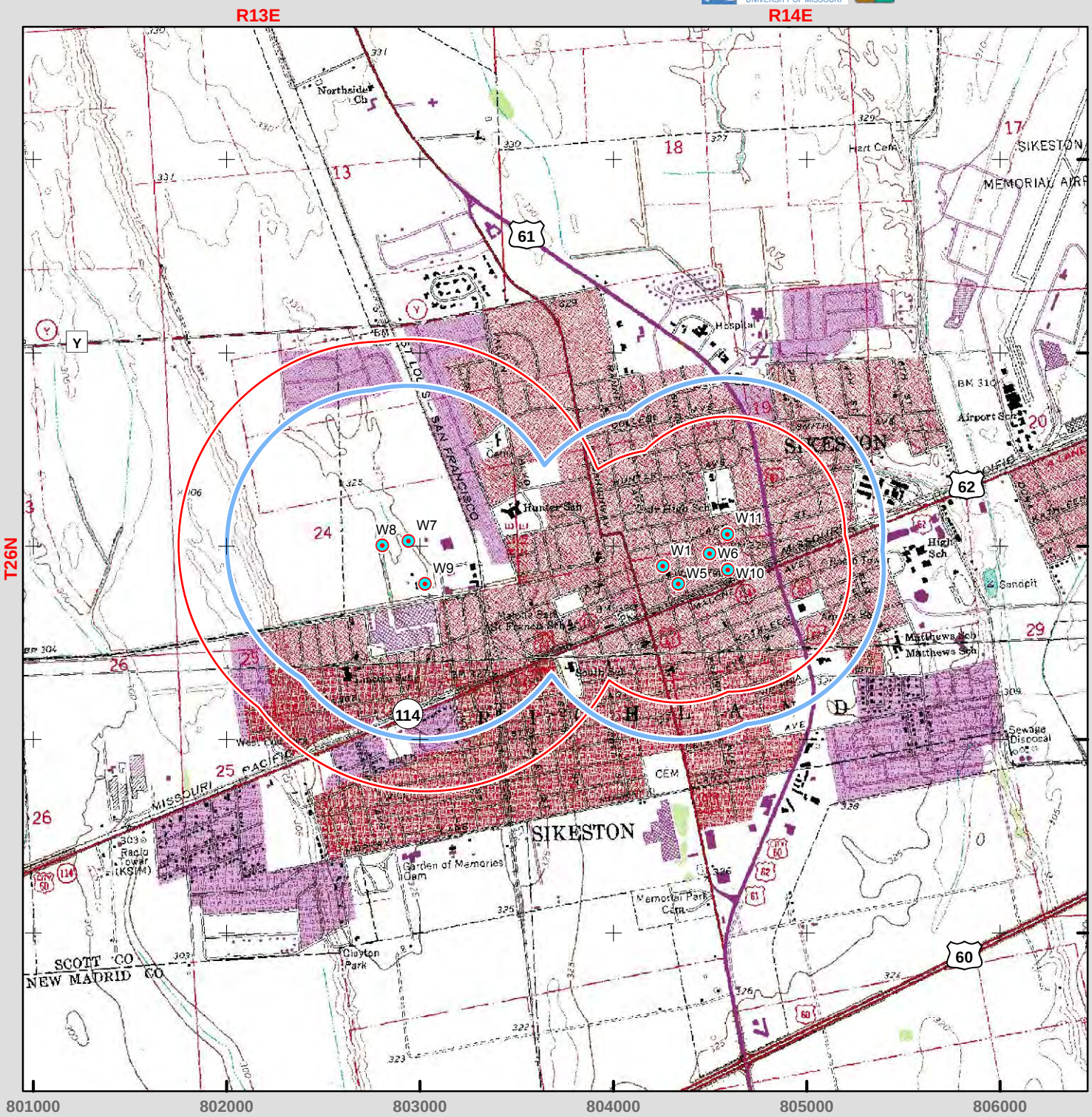
8 Wells, Scott County

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS
UNIVERSITY OF MISSOURI

Missouri Department of Natural Resources

Map Update: Jun 06, 2014

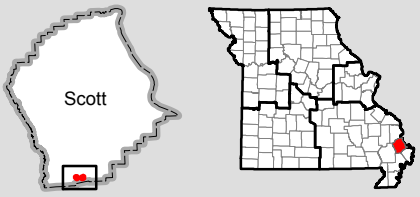


Well System

- 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

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Missouri Department of Natural Resources

Sheet Update: Jun 09, 2014

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

Sheet Update: Jun 09, 2014

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

Prepared by:

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Missouri Department of Natural Resources

Sheet Update: Jun 09, 2014

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

Code	Metric
m	Meters
km	Kilometers
	English
ft	Feet
yd	Yards
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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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Sheet Update: Jun 09, 2014

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

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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
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Sikeston

PWSS No. 4010743

Scott County, sheet 3 of 4

162 potential contaminant sources

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Missouri Department of Natural Resources

Sheet Update: Jun 09, 2014

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

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Sikeston

PWSS No. 4010743

Scott County, sheet 4 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
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
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
NF	Site not found at database position
NV	Site position not verified

Sikeston

PWSS No. 4010743

Contaminant Summary Sheet

162 potential contaminant sources

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS UNIVERSITY OF MISSOURI

Missouri Department of Natural Resources

Sheet Update: Jun 09, 2014

162 Potential Contaminant Sources in the Listed Databases:

	AFS (EPA AIRS Facility Sites)		Perchlo (MoDNR Perchlorate Sites in Missouri)
16	APCP (MoDNR Air Pollution Control Program Sites)		Pest Ap (MDA Licensed Pesticide Applicators)
	APF (MoDNR Active Permitted Landfills & Transfer Stations)		RCRIS (EPA Resource Conservation and Recovery Information System)
2	CERCLIS (EPA CERCLIS)		Silos (USGS Minuteman II Missile Silos)
3	Chemcov (VA Selected Chemical Sites)	1	SMARS (MoDNR Superfund Management and Registry System)
1	Dealcov (MDA Pesticide Dealer Locations)	48	Tanks (MoDNR Petroleum Tank Database)
	Dioxin (MoDNR Confirmed Dioxin List)		Tier 2 (MERC Tier II Reports)
	Grain B (USDA Former Grain Bin Sites)		Tire D (MoDNR Resolved and Unresolved Waste Tire Dumps)
31	HW Gen (MoDNR Hazardous Waste Generators)		TRI (EPA Toxic Release Inventory)
	HW Tran (MoDNR Hazardous Waste Transporters)		VCP (MoDNR Voluntary Cleanup Program Sites)
	LUST (MoDNR Leaking Underground Storage Tanks)		WQIS (MoDNR Water Quality Information System)
	MoDOT (MoDOT Highway Maintenance Facilities)		
	PADS (EPA PCB Activity Data Base System)	60	SWIP Field Inventory (see below)

60 Potential Contaminant Sources in the SWIP Field Inventory:

0	Airport or abandoned airfield	0	Machine or metalworking shop
0	Animal feedlot	2	Manufacturing (general)
0	Apartments and condominiums	0	Material stockpile (industrial)
0	Asphalt plant	0	Medical institution
6	Auto repair shop	0	Metal production facility
8	Automotive dealership	0	Mining operation
0	Barber and beauty shop	7	Other
0	Boat yard and marina	1	Paint store
0	CAFO	0	Park land
0	Campground	0	Parking lot
2	Car wash	1	Petroleum production or storage
0	Cement Plant	0	Pharmacies
0	Cemetery	0	Photography shop or processing lab
0	Communication equipment mfg	0	Pit toilet
0	Country club	0	Plastic material and synthetic mfg
3	Dry cleaner	1	Print shop
1	Dumping and/or burning site	0	Railroad yard
0	Electric equipment mfg or storage	0	Recycling/reduction facility
0	Electric substation	0	Research lab
0	Farm machinery storage	0	Restaurant
3	Feed/Fertilizer/Co-op	1	Sawdust pile
2	Fire station	0	School
2	Funeral service and crematory	0	Sports and hobby shop
1	Furniture manufacturer	0	Swimming pool
0	Furniture repair or finishing shop	0	Tailing pond
0	Garden and/or nursery	5	Tank (above-ground fuel)
0	Garden, nursery, and/or florist	0	Tank (other)
0	Gasoline service station	0	Tank (pesticide)
0	Golf courses	6	Tank (underground fuel)
0	Government office	0	Trucking terminal
0	Grain bin	1	Veterinary service
3	Hardware and lumber store	0	Wastewater treatment facility
0	Hazardous waste (Federal facility)	2	Well (abandoned)
1	Highway maintenance facility	1	Well (domestic)
0	Jewelry or metal plating shop	0	Well (irrigation)
0	Junk yard or salvage yard	0	Well (livestock)
0	Lagoon (commercial)	0	Well (monitoring)
0	Lagoon (industrial)	0	Well (public water supply)
0	Lagoon (municipal)	0	Well (unknown)
0	Lagoon (residential)		
0	Landfill (municipal)		
0	Laundromat		
0	Livestock auction		

Sikeston

PWSS No. 4010743

Susceptibility Determination Sheet

8 wells

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS UNIVERSITY OF MISSOURI

Missouri Department of Natural Resources

Sheet Update: Mar 14, 2014

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 10

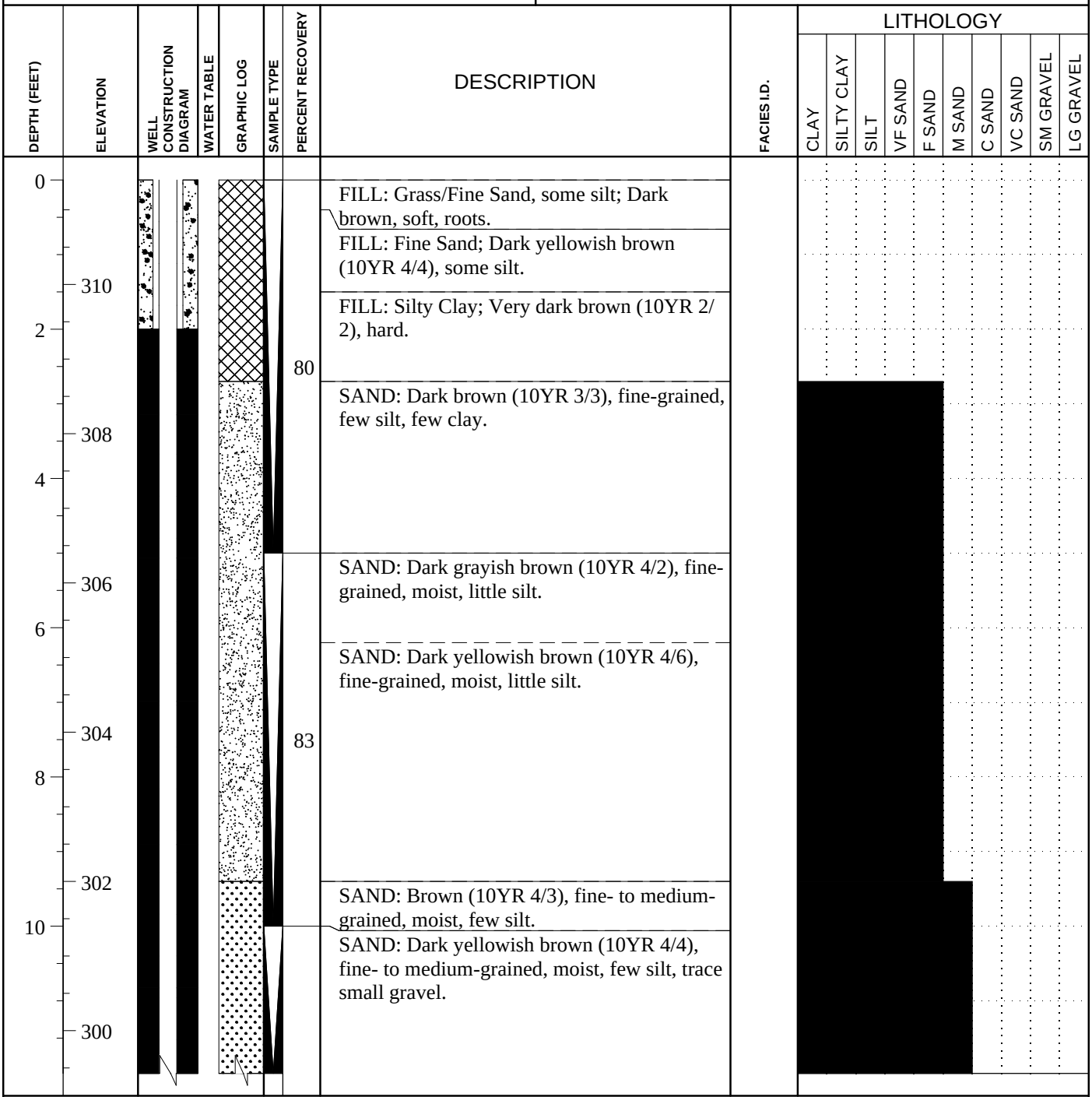
Monitoring Well MW-1R Installation Records

GREDELL Engineering Resources, Inc.

BORING LOG MW-1R

Groundwater Monitoring and Sampling
1551 W. Wakefield Ave., Sikeston, MO
CLIENT: SBMU Sikeston Power Station

LOCATION: See Plan of Boring Locations
G.S. ELEVATION: 311.4 **T.O.C. ELEVATION:** 314.34
NORTHING: 382926.45 **EASTING:** 1078801.61



DRILLING CO.: Bulldog Drilling, Inc.
DRILLER: Rob Scharringhausen
LOGGED BY: Ken Ewers
DATE DRILLED: 9-2-2021
START TIME: 13:50
END TIME: 15:26
BOREHOLE DIA.: 8.25"

STRATIFICATION LINES ARE APPROXIMATE LITHOLOGIC BOUNDARIES ONLY.

NOTES:

WATER LEVELS: DURING DRILLING 12.0 FEET
AFTER DRILLING: 15.9 FEET
DATE: 9-2-2021
PIEZOMETER: INSTALLED AT +/- See Log FEET
VERTICAL DATUM: NAVD 1988
HORIZONTAL DATUM: NAD 1983
WEATHER: Warm, approximately 85°F, Partly Cloudy, Wind NNW 6 MPH

Date Printed: 10/18/2021

GREDELL Engineering Resources, Inc.

BORING LOG MW-1R

Groundwater Monitoring and Sampling
1551 W. Wakefield Ave., Sikeston, MO
CLIENT: SBMU Sikeston Power Station

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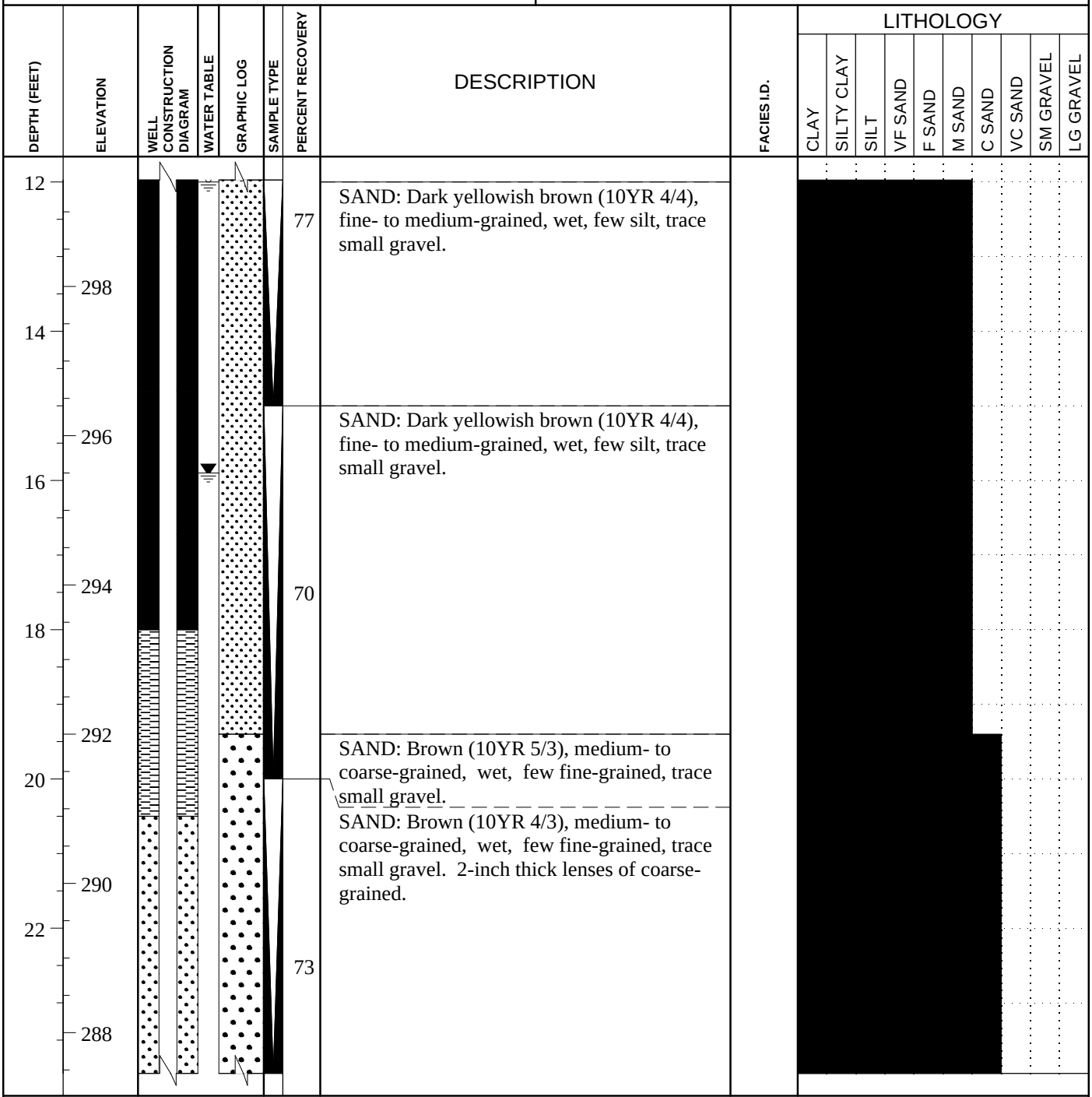

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WEATHER: Warm, approximately 85°F, Partly Cloudy, Wind NNW 6 MPH

Date Printed: 10/18/2021

GREDELL Engineering Resources, Inc.

BORING LOG MW-1R

Groundwater Monitoring and Sampling
1551 W. Wakefield Ave., Sikeston, MO
CLIENT: SBMU Sikeston Power Station

LOCATION: See Plan of Boring Locations
G.S. ELEVATION: 311.4 **T.O.C. ELEVATION:** 314.34
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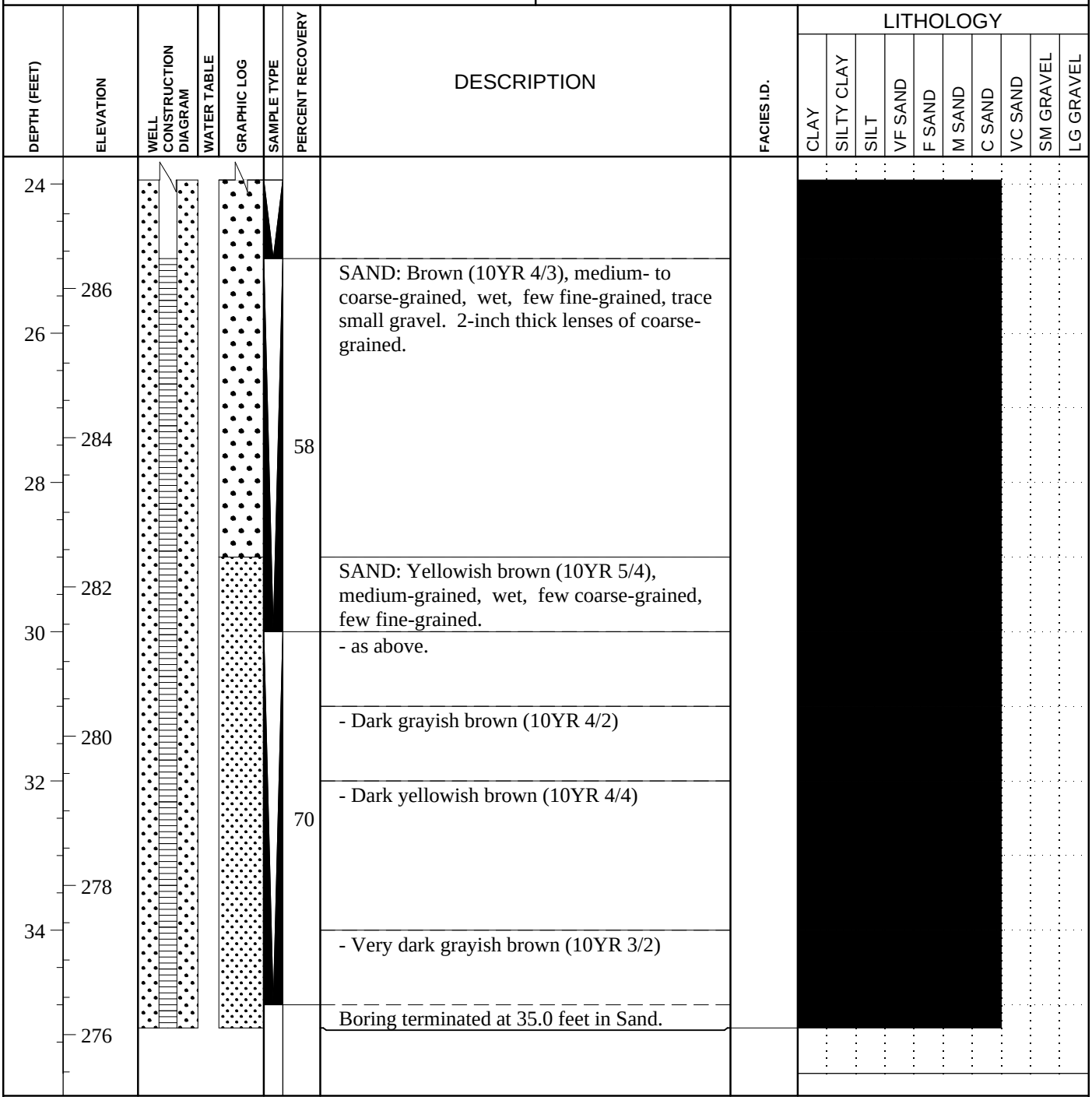

DRILLING CO.: Bulldog Drilling, Inc.
DRILLER: Rob Scharringhausen
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AFTER DRILLING: 15.9 FEET
DATE: 9-2-2021
PIEZOMETER: INSTALLED AT +/- See Log FEET
VERTICAL DATUM: NAVD 1988
HORIZONTAL DATUM: NAD 1983
WEATHER: Warm, approximately 85°F, Partly Cloudy, Wind NNW 6 MPH

Date Printed: 10/18/2021

KEY TO SYMBOLS

Groundwater Monitoring and Sampling

Symbol	Description
	Fill: As described
	Very Fine to Fine Sand
	Medium Sand
	Coarse to Very Coarse Sand

Misc. Symbols

	Boring continues
	Water table during drilling/excavation
	Water table at boring/test pit completion

Soil Samplers

	Continuous Sampler

Monitor Well Details

	Protective casing set in concrete
	Bentonite slurry

Symbol	Description
	Bentonite pellets or chips
	Silica sand, blank PVC
	Slotted pipe w/ sand

Description Line Types

____	Abrupt boundary
_ _ _	Gradual boundary

Notes:

mm millimeters

Trace	< 5%
Few	6 - 15%
Little	16 - 30%
Some	31 - 49%

Large Gravel size	19 - 75 mm
Small Gravel size	4.8 - 19 mm
Coarse Sand size	2.0 - 4.8 mm
Medium Sand size	0.43 - 2.0 mm
Fine Sand size	0.08 - 0.43 mm

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
(573) 368-2165

MONITORING WELL CERTIFICATION RECORD

REF NO: 00558349	DATE RECEIVED: 09/27/2021
CR NO:	CHECK NO.: 2370
STATE WELL NO: A238309 09/29/2021	REVENUE NO.: 092721
ENTERED NRLEWIJ PH1 PH2 PH3 09/28/2021 09/28/2021 09/28/2021	APPROVED BY:	ROUTE:

INFORMATION SUPPLIED BY PRIMARY CONTRACTOR OR DRILLING CONTRACTOR

NOTE: THIS FORM IS NOT TO BE USED FOR NESTED WELLS

OWNER NAME SIKESTON BOARD OF MUNICIPAL UTILITIES	CONTACT NAME SIKESTON BOARD OF MUNICIPAL UTILITIES			VARIANCE GRANTED BY DNR NUMBER
OWNER ADDRESS 1551 WEST WAKEFIELD AVE	CITY SIKESTON	STATE MO	ZIP 63801	
SITE NAME SIKESTON POWER STATION		WELL NUMBER MW-1R		COUNTY SCOTT
SITE ADDRESS 1551 WEST WAKEFIELD AVE		CITY SIKESTON		STATIC WATER LEVEL 12.0 FT

SURFACE COMPLETION

TYPE	LENGTH AND DIAMETER OF SURFACE COMPLETION	DIAMETER AND DEPTH OF THE HOLE SURFACE COMPLETION WAS PLACED	SURFACE COMPLETION GROUT
[X] ABOVE GROUND	LENGTH 4.0 FT.	DIAMETER 16.0 IN.	[X] CONCRETE
[ ] FLUSH MOUNT	DIAMETER 5.0 IN.	LENGTH 1.0 FT.	[ ] OTHER

LOCATION OF WELL

LAT. 36 ° 52' 56.15"
LONG. 89 ° 36' 56.85"

SMALLEST LARGEST
_____ 1/4 _____ 1/4 _____ 1/4

SEC. 23 TWN. 26 NORTH
RANGE 13 Direction E

MONITORING FOR:
[ ] RADIONUCLIDES [ ] PETROLEUM PRODUCTS ONLY
[ ] EXPLOSIVES [ ] METALS [ ] VOC
[ ] SVOCS [ ] PESTICIDES/HERBICIDESS

PROPOSED USE OF WELL
[ ] GAS MIGRATION WELL [X] OBSERVATION
[ ] EXTRACTION WELL [ ] OPEN HOLE
[ ] PIEZOMETERS
[ ] DIRECT PUSH

[ ] LOCKING CAP
[ ] WEEP HOLE

ELEVATION _____FT.

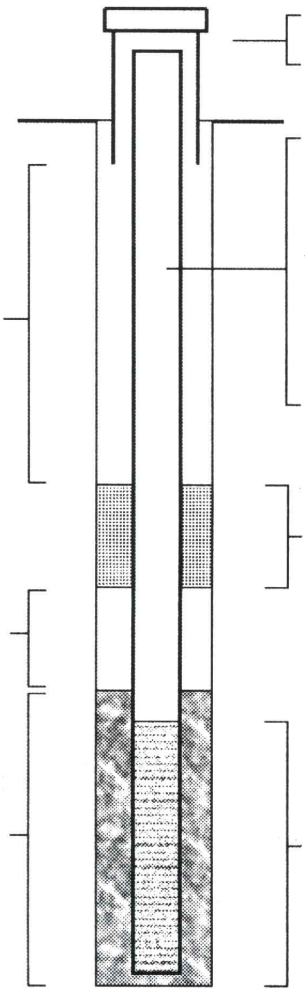
ANNULAR SEAL
LENGTH 16.0FT.
[ ] SLURRY [ ] CHIPS
[ ] PELLETS [ ] GRANULAR
[ ] CEMENT/SLURRY

IF CEMENT/BENTONITE MIX:
BAGS OF CEMENT USED:
%OF BENTONITE USED:
WATER USED/BAG: GAL.

SECONDARY FILTER PACK
LENGTH: 0.0FT.

DEPTH TO TOP OF PRIMARY
FILTER PACK: 21.5FT.

LENGTH OF PRIMARY FILTER PACK: 13.5FT.



SURFACE COMPLETTION
[X] STEEL [ ] ALUMINUM [ ] PLASTIC

RISER
RISER PIPE DIAMETER 2.0IN.
RISER PIPE LENGTH 27.5FT.
HOLE DIAMETER 8.0IN.
WEIGHT OR SDR# SCH40

MATERIAL
[ ] STEEL [X] THERMOPLASTIC (PVC)
[ ] OTHER

BENTONITE SEAL
LENGTH: 3.5
[ ] CHIPS [ ] PELLETS [ ] GRANULAR
[ ] SLURRY
[ ] SATURATED ZONE [ ] HYDRATED

SCREEN
SCREEN DIAMETER: 2.0IN.
SCREEN LENGTH: 10.0FT.
DIAMETER OF DRILL HOLE: 8.0IN.
DEPTH TO TOP 25.0FT.

SCREEN MATERIAL
[ ] STEEL [X] THERMOPLASTIC (PVC)
[ ] OTHER

DEPTH FROM	DEPTH TO	FORMATION DESCRIPTION
0.0	1.5	SDY SILT
1.5	2.7	STY CLY
2.7	35.0	FN SND
		TOTAL DEPTH: 35.0 FEET

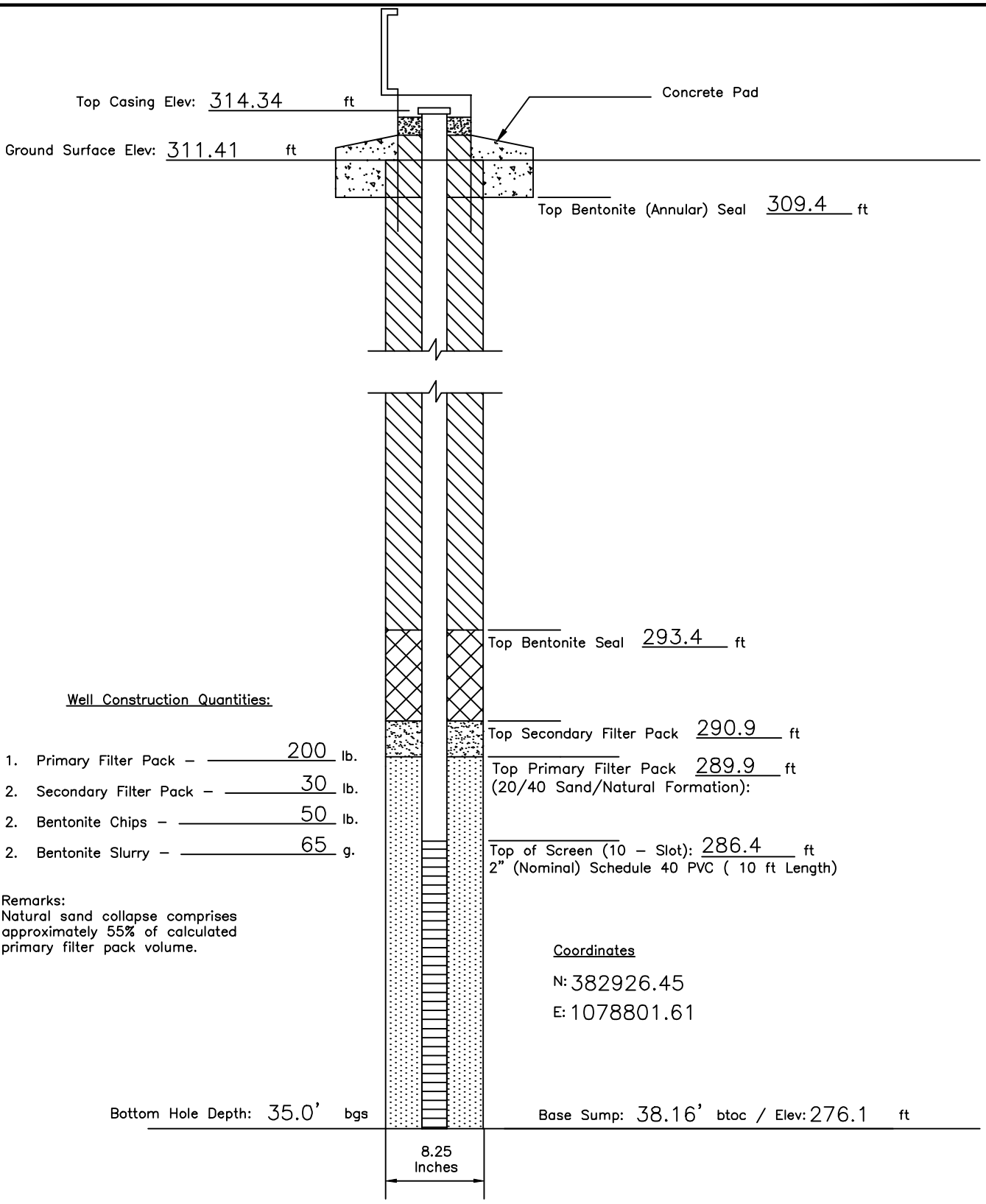
FOR CASED WELLS, SUBMIT ADDITIONAL AS BUILT DIAGRAMS SHOWING WELL CONSTRUCTION DETAILS INCLUDING TYPE AND SIZE OF ALL CASING, HOLE DIAMETER AND GROUT USED.

SIGNATURE (PRIMARY CONTRACTOR) x KEN EWERS	PERMIT NUMBER 006218	DATE WELL DRILLING WAS COMPLETED 09/03/2021

I HEREBY CERTIFY THAT THE MONITORING WELL HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH MISSOURI DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF MONITORING WELLS

[ ] PUMP INSTALLED

SIGNATURE (WELL DRILLER) x JOSHUA EDWARDS	PERMIT NUMBER 006329	SIGNATURE (APPRENTICE) x _____	APPRENTICE PERMIT NUMBER _____



Well Construction Quantities:

1. Primary Filter Pack – 200 lb.
2. Secondary Filter Pack – 30 lb.
2. Bentonite Chips – 50 lb.
2. Bentonite Slurry – 65 g.

Remarks:
Natural sand collapse comprises approximately 55% of calculated primary filter pack volume.

Coordinates

N: 382926.45
E: 1078801.61

MW-1R	MONITORING WELL CONSTRUCTION DIAGRAM	GREDELL Engineering Resources, Inc. ENVIRONMENTAL ENGINEERING LAND AIR WATER
Date Well Completed: 09-03-21	SBMU - Sikeston Power Station	1505 East High Street, Jefferson City, Missouri 65101 Telephone: (573) 659-9078 Facsimile: (573) 659-9079
	Groundwater Monitoring & Sampling Plan	DATE 10/2021 | SCALE N.T.S. | DRAWN BY: AMM | APPROVED BY: KE

O:\CADDFiles\SIKESTON\DS\GROUNDWATER MONITORING WELL CONSTRUCTION DIAGRAM.dwg, 10/18/2021 10:35:28 AM, AutoCAD PDF (General Documentation).pc3

Well Development Record

Location:	*Sikeston Power Station CCR Well*	*Date:*	*9-3-2021*
Well:	*MW-1R*	*Initial Depth to Groundwater (ft, btoc):*	18.39 ft.
Borehole Diameter:	*8.25 "*	*Base of Well (ft, btoc):*	38.16 ft.
Casing Diameter:	*2 "*	*Filter Pack Hgt (ft):*	13.6 ft.
Development method:	*Bailer/ Submersible Pump*	*Screened Interval Lithology:*	*Alluvium*

Date/Time		*Purge Volume (cummulative)* *(gallons)*	*Notes*	*Turbidity* *(NTU)*	*pH* *(s.u.)*	*Specific Conductance* *(umhos/cm)*	*Temperature* *(^{o}C)*	*Initial Water Level* *(ft., btoc)*	*Ending Water Level* *(ft., btoc)*
9/3	8:47	7	Bailer					18.39	18.44
	9:19		Begin Submersible Pump					18.44	
	9:24	10	Blown Fuse on Pump						
	0:35		Resume Pumping						
	9:47	22		164.5	7.35	493.37	18.5		
	9:51	25	Rest Pump						18.43
	9:56		Resume pumping					18.61	
	10:12	29	Switch pumps					18.63	
	10:18		Resume pumping					18.40	
	10:31	50			6.85	682.04	23.6	18.76	
	10:34	52	Rest Pump						18.67
	10:39	52	Resume pumping					18.64	
	10:47	68		314.6	6.85	733.48	19.4	18.69	
	10:54	75	Rest Pump						18.43
	10:59	75	Resume pumping					18.67	
	11:05	80		166.9	6.61	712.45	18.7	18.69	
	11:14	86	Rest Pump	56.06	6.62	630.85	16.9		18.41
	11:23	86	Resume pumping (peristaltic)					18.42	
	11:37	87.5		144.3				18.41	
	11:46	88		145.9	6.60	633.4	17.4	18.41	
	11:51	88.5		146.3	6.57	646.15	17.5	18.41	18.41

Comments: Well volume calculation based on minimum initial depth to groundwater.

Developed via bailer, geosquirt pump, and peristaltic pump — One Well Volume = 13.8 gallons

Name: *Ken Ewers* — *Company:* GREDELL Engineering Resources, Inc.