1505 East High Street
Jefferson City, Missouri 65101
Telephone (573) 659-9078
Facsimile (573) 659-9079

GREDELL Engineering Resources, Inc.

Sikeston Power Station

2017 Annual Groundwater Monitoring and Corrective Action Report for Bottom Ash Pond For Compliance with USEPA 40 CFR 257.90(e)

Prepared for:

BMU Sikeston
Board of Municipal Utilities

Mr. Mark McGill
Sikeston Power Station
1551 West Wakefield Avenue
Sikeston, Missouri 63801

January 26, 2018

Sikeston Power Station

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www.ger-inc.biz

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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. Coal combustion residuals (approximately 10,000 tons per annum) are currently sold or placed in the facility's two coal ash surface impoundments located immediately east of the power station. Both impoundments are on properties owned and controlled by SBMU. One coal ash impoundment measuring approximately 61 acres in size is actively used for bottom ash disposal. The second coal ash impoundment measuring approximately 30 acres in size was primarily used for fly ash disposal, but is currently inactive due to reuse and recycling efforts.

Pursuant to the United States Environmental Protection Agency (USEPA) 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 accurately 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) (Gredell Engineering, 2017b). Analytical data also are subjected to statistical analysis in accordance with §257.93(f), with the results included in an Annual Groundwater Monitoring and Corrective Action 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 an ash pond release or to other causative factors. If a successful demonstration is not made, an assessment monitoring program must be initiated as required under §257.95.

This report describes the results of the initial semi-annual detection groundwater sampling event conducted at the Sikeston Power Station in October 2017. It is specific to the active bottom ash pond. Included is a description of the sampling event, groundwater elevations, water table surface, summary of field activities, analytical results, and statistical analysis results. Field sampling and reporting activities were conducted in accordance with the site-specific GMSAP (Gredell Engineering, 2017b). Statistical analysis was performed in accordance with §257.93(f) using the appropriate statistical analysis method as filed in the SBMU-SPS operating record on October 17, 2017.

A similar report will be prepared for the fly ash pond, which is subject to the alternative compliance timeframes specified in §257.100(e)(5), and will be placed in the facility's operating record no later than August 1, 2019.

2.0 GROUNDWATER MONITORING SYSTEM

The SBMU-SPS bottom ash pond groundwater monitoring system consists of five monitoring wells that yield water from the uppermost aquifer. The five wells are designated MW-3, MW-4, MW-5, MW-6, and MW-8. MW-3 through MW-6 were installed during characterization of the site. MW-8 was installed in April 2017 to serve as an additional downgradient monitoring well as discussed in the Site Characterization Report (Gredell Engineering, 2017a). The Site Characterization Report also concluded that MW-4, MW-5 and MW-8 are hydraulically downgradient of the bottom ash pond. MW-3 and MW-6 are hydraulically upgradient of the bottom ash pond. The bottom ash pond monitoring system is described in more detail in the site-specific GMSAP for this facility (Gredell Engineering, 2017b).

Table 1 presents a construction summary of the wells comprising the bottom ash pond groundwater monitoring system. Figure 1 depicts well locations and a groundwater contour map of the uppermost aquifer. This map documents that water in the uppermost aquifer moves in a west-southwesterly direction, consistent with the conclusions of the Site Characterization Report (Gredell Engineering, 2017a). All groundwater wells are equipped with dedicated tubing for use with a peristaltic pump. This system has been used for chemical sampling since inception of groundwater sampling.

3.0 FIELD SAMPLING SUMMARY

SPS environmental staff performed groundwater sampling on October 31, 2017. Groundwater samples were collected from all five monitoring wells using low-flow sampling techniques and dedicated sampling equipment. Field tests of indicator parameters were performed using an In-Situ, Inc. SmarTROLL ™ MP flow cell unit and HF Scientific MicroTPI field portable turbidimeter. Each groundwater sample was subsequently analyzed for the constituents listed in §257 Appendix III. All five monitoring wells produced sufficient volumes of groundwater for full analysis.

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 and field measurement of pH was collected. 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 monitored for general stability prior to groundwater sample collection. The pumping rate of the peristaltic pump during purging and sampling was limited to less than 500 mL/min.

Field notes documenting the sampling event and a copy of the chain-of-custody form are presented in Appendix 1. Field sampling notes are summarized in Table 3, including initial and final water level measurements, purge volumes, and pH. Raw analytical laboratory data sheets for each sample, including the field blank and sample replicate, 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 and field parameters is presented in Appendix 6

3.1 Field Quality Assurance/Quality Control

Field QA/QC during the October 2017 sampling event included the collection of one field replicate sample from MW-3 (identified as DUP in Table 5) and a field blank. Rinsate blanks were not collected because dedicated sampling equipment was used. Samples were immediately shipped to PDC Laboratories' primary facility located in Peoria, Illinois using standard chain-of-custody documentation/ procedures. Samples were received by the primary facility on November 3, 2017 and subsequently analyzed for the six detection monitoring constituents listed in §257 Appendix III and required under §257.94(b) (Table 4). Preliminary results were received on November 14, 2017. Final hard copy analytical results were received from PDC Laboratories on November 29, 2017.

4.0 ANALYTICAL SUMMARY

Hard copy analytical data for each monitoring well sampled during the October 2017 detection monitoring event is provided as Appendix 2. The data pertains to water quality results from the uppermost aquifer in the area bordering the bottom ash pond, along with sample replicate, and field blank results.

4.1 Laboratory Quality Control

Laboratory analytical data for the October 2017 sampling event was completed by PDC Laboratories, Inc., of Peoria, Illinois, and 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*. 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 were performed within appropriate hold times and both initial and continuing calibrations met acceptance criteria for all analyses. Similarly, method blanks and LCS analyses met acceptance criteria. The case narrative indicates that all quality controls met acceptance criteria except MS/MSD results for Sulfate, Boron, and Calcium for the batch quality control samples. These samples were derived from another project and their values exceeded four times the spike level.

Additional QA/QC comments include the following:

- *Field Replicates:* Analyses of replicate samples are used to define the total variability of the sampling/analytical system as a whole. One field replicate from MW-3 was collected during this sampling event. The Relative Percent Difference (RPD) was calculated for detected chemical parameters, which consisted of Boron, Calcium, Chloride, Fluoride, Sulfate, and TDS. A summary table showing the results of the RPD calculations is included as Table 5. Using a tolerance level of $\pm$20 percent, calculated RPDs were within acceptable ranges for each parameter.
- *Field Blank:* One field blank was incorporated into the data set for this sampling event. Results for the field blank showed that it contained a reportable concentration of Sulfate (4.2 mg/L). All other parameters were below detection limits.

- *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 replicate samples and reviewing the results of field blanks.

Approved sampling procedures are described in the GMSAP (Gredell Engineering, 2017b). Procedures specified in that plan have been followed. Approved sampling procedures should be reviewed annually. Groundwater monitoring data is evaluated using an intrawell statistical analysis methodology and is conducted separately for each constituent in each monitoring well using prediction limits in accordance with §257.93(f)(3) and the performance standards in §257.93(g). The stated statistical approach, along with supporting documentation and engineering certification, are available in the SBMU-SPS On-Site Operating Record.

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 approach used to evaluate groundwater within the uppermost aquifer for the bottom ash pond monitoring well network at SBMU-SPS consists of intra-well analysis using prediction limits. The analysis is conducted separately for each constituent in each of the five monitoring wells 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 bottom ash pond at the SPS. The background data used to evaluate current groundwater quality is based on eight rounds of groundwater sampling of MW-3, MW-4, MW-5, and MW-6 spanning November 2016 to July 2017 and MW-8 spanning May 2017 to September 2017. The background may be updated every two years but any 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 9.5.32; 2017). Intra-well prediction intervals were compared at the 99 percent confidence level for each constituent. The groundwater results from the October 2017 detection monitoring event were then compared to the prediction limits (Table 6) to determine if statistically significant increases (SSIs) over background exist in the data set.

If the number of reportable concentrations of a given constituent in a given well is not sufficient to permit parametric analysis, non-parametric prediction interval analysis is conducted. Both parametric and non-parametric prediction limit analysis were performed for the bottom ash pond groundwater monitoring well network data. Prediction intervals are based on the background monitoring data sets (Appendix 6), including concentrations reported as below detection limits. Initially, outlier analysis was performed for the background data set using Exploratory Data Analysis (EDA) with Sanitas™, time-series plots, and box and whiskers plots. However, because the background 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 have been 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 results of the statistical analysis for the October 2017 sampling event are described below. A statistical power curve, based on the background data, is provided in Appendix 4. Trend analysis (time-series) plots for all detection monitoring constituents are presented in Appendix 5. A complete database summarizing the sample results, dates of sampling, and the purpose of sampling event, as per §257.90(e)(3), is provided in Appendix 6. Box and whiskers plots are presented in Appendix 7. Prediction limit charts are provided in Appendix 8.

5.1 Statistical Results

The results of the statistical analysis for the bottom ash pond groundwater monitoring system do not suggest the presence of apparent SSIs in the October 2017 data set. Therefore detection monitoring in accordance with §257.94 should continue on a semi-annual basis as specified in §257.94(b).

6.0 SUMMARY

The statistical analysis results for samples obtained during the initial groundwater detection monitoring event conducted October 2017 do not indicate the presence of apparent SSIs associated with the bottom ash pond groundwater monitoring system. Therefore it is recommended that detection monitoring of the bottom ash pond continue on a semi-annual basis in accordance with §257.94.

7.0 REFERENCES

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

GREDELL Engineering Resources, Inc., 2017b, *Sikeston Power Station Groundwater Monitoring and Sampling Plan for Compliance with Missouri State Operating Permit #MO-0095575*, dated September 2017.

Sanitas Statistical Software, © 1992-2017 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.

TABLES

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

Table 1
Groundwater Monitoring Network Summary - Bottom 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-3	381130.00	1079946.62	306.11	308.55	37.21	271.34	10	281.5
MW-4	380804.62	1077766.95	303.26	305.61	37.55	268.06	10	278.3
MW-5	379858.94	1078477.85	303.57	305.91	37.17	268.74	10	278.9
MW-6	379874.77	1079384.36	305.37	307.72	38.03	269.69	10	279.9
MW-8	380311.20	1077940.08	302.37	304.77	37.41	267.36	10	277.6

NOTES:

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

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Table 2
Historical Groundwater Level Summary

Well ID	MW-3	MW-4	MW-5	MW-6	MW-8
Date	Groundwater Elevation (feet MSL)				
05/12/16	298.13	296.01	296.68	297.41	NM
06/28/16	297.58	294.75	295.51	296.57	NM
07/15/16	297.37	294.77	295.53	296.44	NM
08/08/16	297.05	294.66	294.87	295.77	NM
09/08/16	296.76	294.40	294.96	295.84	NM
10/05/16	296.40	294.02	294.70	295.57	NM
11/01/16	296.10	293.99	294.49	295.24	NM
11/30/16	296.03	294.26	294.80	295.37	NM
01/24/17	296.35	294.73	295.19	295.77	NM
01/26/17	296.35	294.73	295.19	295.77	NM
02/22/17	296.00	294.40	294.81	295.41	NM
02/24/17	296.00	294.40	294.81	295.41	NM
03/20/17	296.45	295.10	295.46	295.97	NM
04/19/17	296.35	294.73	295.19	295.81	NM
04/27/17	296.72	295.41	295.78	296.20	NM
05/17/17	297.81	295.76	296.31	297.11	NM
05/18/17	NM	NM	NM	NM	295.67
06/08/17	297.81	295.64	296.17	296.96	NM
06/09/17	NM	NM	NM	NM	295.57
07/13/17	296.98	294.60	295.22	296.06	294.70
08/03/17	NM	NM	NM	NM	294.12
08/15/17	NM	NM	NM	NM	294.02
08/30/17	NM	NM	NM	NM	293.72
09/14/17	NM	NM	NM	NM	293.57
09/27/17	NM	NM	NM	NM	293.26
10/31/17	295.22	293.11	293.65	294.41	293.20

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

Monitoring Well I.D.	Hydraulic Position	Initial Water Level (ft, BTOC[2])	Final Water Level (ft, BTOC[2])	Minimum[3] Purge Vol. (ml[4])	Actual Purge Vol. (ml[4])	pH (S.U.[5])
MW-3	Upgradient	13.33	13.33	300	2460	6.64
MW-4	Downgradient	12.50	12.50	300	1960	7.31
MW-5	Downgradient	12.26	12.26	300	1420	6.89
MW-6	Upgradient	13.31	13.31	300	3400	6.72
MW-8	Downgradient	11.57	11.57	300	1700	7.09

NOTES:

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

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Table 4
Groundwater Monitoring Constituents

USEPA 40 CFR 257			
Appendix III - Constituents for Detection Monitoring		**Appendix IV - Monitoring 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 -
Detected Parameters in MW-3 and Replicate

Chemical Parameter	Units	MW-3	DUP	Relative Percent Difference
pH	S.U.	6.64	6.64	0.00
Boron	µg/L	27	24	11.76
Calcium	µg/L	19	19	0.00
Chloride	mg/L	2.0	1.9	5.13
Fluoride	mg/L	0.331	0.328	0.91
Sulfate	mg/L	20	20	0.00
Total Dissolved Solids	mg/L	140	120	15.38

NOTES:

1. S.U. = Statdard Unit.
2. µg/L = micrograms per liter.
3. mg/L = milligrams per liter.
4. Relative Percent Difference tolerance = 20%.

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Table 6
Intra-Well Prediction Limit Summary

Chemical Parameter	Units	MW-3	MW-4	MW-5	MW-6	MW-8
40 CFR 257 Appendix III Constituents for Detection Monitoring						
pH Upper	S.U.	7.189	7.529	7.078	7.075	7.285
pH Lower	S.U.	6.363	7.291	6.697	6.575	7.018
Boron	µg/L	57.21	1734	5700	60.62	596.7
Calcium	mg/L	25.46	95.25	240	49.29	101.7
Chloride	mg/L	2.565	18.69	17.45	3.083	58.72
Fluoride	mg/L	0.4819	0.259	0.255	0.331	0.25
Sulfate	mg/L	33.73	147.6	484.6	44.8	131.1
Total Dissolved Solids	mg/L	191.6	407.2	577.5	250.2	448

NOTES:
1. Prediction limits for MW-3 through MW-6 based on background data set spanning November 2016 to July 2017. Prediction limits for MW-8 calculated using background data set spanning May 2017 to September 2017.

FIGURES

M:\Shire\CADDFiles\SIKESTON\GROUNDWATER MAP\BAP\GW CONT MAP BAP 10-2017.dwg, GW CONT MAP BAP, 1/2/2018 11:30:16 AM

WELL ID	GROUNDWATER ELEVATION	CASING ELEVATION	NORTHING	EASTING
MW-3	295.22	308.55	381130.00	1079946.62
MW-4	293.11	305.61	380804.62	1077766.95
MW-5	293.65	305.91	379858.94	1078471.85
MW-6	294.41	307.72	379874.77	1079384.36
MW-8	293.20	304.77	380311.20	1077940.08

NOTES:
1. IMAGE PROVIDED BY BING MAPS.
2. MONITORING WELL LOCATIONS, CASING ELEVATIONS & UNDERGROUND CULVERT ELEVATIONS SURVEYED BY POWER STATION STAFF ON OCTOBER 31, 2017.
3. GROUNDWATER ELEVATIONS MEASURED BY SIKESTON POWER STATION STAFF ON OCTOBER 31, 2017.
4. MAP DEVELOPMENT BASED ON CONTOURS GENERATED BY SURFER® SOFTWARE.
5. RANGE OF GROUNDWATER FLOW GRADIENT AS DETERMINED BY SURFER® SOFTWARE 0.00003 FT./FT. TO 0.001 FT./FT.

LEGEND
- PROPERTY LINE
- GROUNDWATER CONTOUR
- PROPOSED MONITORING WELL
- UP GRADIENT MONITORING LOCATION
- DOWN GRADIENT MONITORING LOCATION
- GENERAL FLOW DIRECTION

SCALE: 1" = 400'
0 200 400
N

GREDELL Engineering Resources, Inc.	SIKESTON POWER STATION BOTTOM ASH POND 2017 ANNUAL GROUNDWATER MONITORING & CORRECTIVE ACTION REPORT	FIGURE 1 GROUNDWATER CONTOUR MAP OCTOBER 31, 2017	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.

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-2001030166

SURVEYED	DESIGNED	DRAWN	CHECKED	APPROVED	DATE	SCALE	PROJECT NAME	FILE NAME	SHEET #
NA	NA	AJK	KE	MCC	11/2017	AS NOTED	SIKESTON/GWMAP/BAP	GWCONT BAP 10-2017	1 OF 1

APPENDICES

Appendix 1
Field Sampling Notes

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW3
Name (Field Staff): A. Patel H. McGill
Date: 10-31-17

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 H. McGill (Signed) Lab tech (Title) 10-31-17 (Date)

Field Sampling Log

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

Initial Water Level (feet btoc): 13.33' Date: 10-31-17

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

PURGE INFORMATION

Date: 10-31-17

Name (Sample Collector): A. Patel

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): 13.33' Total Volume Purged (mL): 2460

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

Well Total Depth (feet btoc): 37.01 Water Level after Sampling (feet btoc): 13.33' (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1025

PURGE STABILIZATION DATA 1

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)
0952		260	18.02	265.9	1.70	6.69	14.4	10.09	13.33'	—
0954	210	680	17.11	258.7	1.46	6.60	13.6	16.04	"	—
0956	200	1040	16.94	252.0	1.39	6.60	13.0	11.74	"	—
0958	220	1520	16.87	247.8	1.20	6.62	12.5	7.90	"	—
1000	240	2000	16.77	244.4	1.16	6.64	12.2	8.46	"	—
1002	230	2460	16.74	246.2	0.65	6.64	12.4	7.47	"	—

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: MW3

Sampling Information:

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

Water Level @ Sampling (feet btoc): 13.33'

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

Final Purge Stablization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
10-31-17 1002	230	16.74	246.2	0.65	6.64	12.4	7.47

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: Cold, windy, partly cloudy

Sample Characteristics: Clear, colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:

Duplicate taken

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

Date: 10-31-17 By: [signature] Title: Lab Tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 4
Name (Field Staff): A. Patel H McGill
Date: 10-31-17

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 10-31-17
Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc. January 2017

Field Sampling Log

Monitoring Well ID: MW4 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 12.50' Date: 10-31-17

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

PURGE INFORMATION

Date: 10-31-17

Name (Sample Collector): A. Patel

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

Time Purging Initiated: 1325 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 12.50' Total Volume Purged (mL): 1960

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

Well Total Depth (feet btoc): 37.25' Water Level after Sampling (feet btoc): 12.50' (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1345

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)
1327		360	19.40	520.4	1.54	7.31	-121.1	10.39	12.50'	—
1329	250	860	18.57	524.7	0.92	7.31	-119.4	0.17	"	—
1331	250	1380	18.40	525.2	0.81	"	-118.5	0.86	"	—
1333	260	1900	18.35	525.8	0.63	"	-118.1	1.07	"	—

btoc - below top of casing

Field Sampling Log

Facility: SBMU Sikeston Power Station - CCR Groundwater Monitoring Monitoring Well ID: MW4

Sampling Information:

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

Water Level @ Sampling (feet btoc): 12.50'

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

Final Purge Stablization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
10-31-17 1333	260	18.35	525.8	0.63	7.31	-118.1	1.07

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: Cool, Sunny

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: 10-31-17 By: [signature] Title: Lab tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW 5
Name (Field Staff): A. Patel H McGill
Date: 10-31-17

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 10-31-17
Signed Title Date

Prepared by: GREDELL Engineering Resources, Inc. January 2017

Field Sampling Log

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

Initial Water Level (feet btoc): 12.26' Date: 10-31-17

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

PURGE INFORMATION

Date: 10-31-17

Name (Sample Collector): A. Patel

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

Time Purging Initiated: 1116 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 12.26' Total Volume Purged (mL): 1420

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

Well Total Depth (feet btoc): 37.15' Water Level after Sampling (feet btoc): 12.26' (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1140

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)
1118		420	17.84	590.9	1.15	6.84	-80.9	3.81	12.26'	—
1120	240	900	17.47	592.2	0.98	6.88	-80.1	3.21	"	—
1122	260	1420	17.45	591.8	0.85	6.89	-77.6	3.17	"	—

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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: MW5

Sampling Information:

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

Water Level @ Sampling (feet btoc): 12.26'

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

Final Purge Stablization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
10-31-17 1122	200	17.45	591.8	0.85	6.89	-77.6	3.17

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, cool

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: 10-31-17 By: [signature] Title: Lab tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW6
Name (Field Staff): A. Patel H. McGill
Date: 10-31-17

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 H. McGill (Signed) Lab Tech (Title) 10-31-17 (Date)

Prepared by: GREDELL Engineering Resources, Inc. January 2017

Field Sampling Log

Monitoring Well ID: MW6 Facility: SBMU Sikeston Power Station - Groundwater Monitoring

Initial Water Level (feet btoc): 13.31' Date: 10-31-17

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

PURGE INFORMATION

Date: 10-31-17

Name (Sample Collector): A. Patel

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

Time Purging Initiated: 1035 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 13.31' Total Volume Purged (mL): 3400

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

Well Total Depth (feet btoc): 37.71' Water Level after Sampling (feet btoc): 13.31' (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1054

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)
1037		420	17.50	446.0	1.40	6.83	-77.6	1.30	13.33'	—
1039	240	900	17.54	431.7	1.27	6.83	-73.9	0.75	"	—
1041	250	1400	17.54	419.9	0.83	6.81	-71.7	1.23	"	—
1043	255	1920	17.61	376.6	0.79	6.78	-68.2	1.60	"	—
1045	230	2380	17.56	359.9	0.78	6.76	-60.2	1.66	"	—
1047	260	2900	17.58	359.0	0.77	6.73	-58.2	1.53	"	—
1049	250	3400	17.57	359.6	0.71	6.72	-57.9	1.48	"	—

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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: MW6

Sampling Information:

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

Water Level @ Sampling (feet btoc): 13.31'

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

Final Purge Stablization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
10-31-17 1049	250	17.57	359.6	0.71	6.72	-57.9	1.48

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: Cold, Sunny, Slight breeze

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: 10-31-17 By: [signature] Title: Lab tech

Monitoring Well Field Inspection

Facility: SBMU SPS – CCR Groundwater Monitoring
Monitoring Well ID: MW8
Name (Field Staff): A. Patel H. McGill
Date: 10-31-17

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 10-31-17
Signed Title Date

Field Sampling Log

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

Initial Water Level (feet btoc): 11.57' Date: 10-31-17

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

PURGE INFORMATION

Date: 10-31-17

Name (Sample Collector): A. Patel

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

Time Purging Initiated: 1256 One (1) Well Volume (mL): NA

Beginning Water Level (feet btoc): 11.57' Total Volume Purged (mL): 1700

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

Well Total Depth (feet btoc): 37.05' Water Level after Sampling (feet btoc): 11.57' (i.e., pump is off)

Casing Diameter (feet): 2" Sch 40 PVC Time Sampling Completed: 1309

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)
1258		300	20.25	673.3	1.23	7.06	-104.9	1.43	11.57'	—
1300	230	760	18.46	687.9	0.56	7.07	-96.8	1.47	"	—
1302	220	1200	18.08	702.6	0.45	7.07	-95.8	0.83	"	—
1304	250	1700	17.99	698.1	0.38	7.09	-96.3	0.94	"	—

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: MW8

Sampling Information:

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

Water Level @ Sampling (feet btoc): 11.57'

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

Final Purge Stablization Sampling Data:

Date Sample Time	Sample Rate (mL/min)	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
10-31-17 1304	250	17.99	698.1	0.38	7.09	-96.3	0.94

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, pleasant, slight breeze

Sample Characteristics: clear, colorless, odorless

Sample Collection Order: Per SAP

Comments and Observations:

Field blank taken

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

Date: 10-31-17 By: [signature] Title: Lab tech

Field Instrumentation Calibration Log

Facility: SBMU SPS CCR Groundwater Sampling

Calibrated by: [signature]

Field Instruments: In-Situ smarTROLL Field Meter

S/N #: 474347

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	10-31-2017	0815	4.00	=	4.00	1413	=	1411.9	Temperature (°C)	=	22.25	=	229.9	Temperature (°C)	=	22.42	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)	=	1013.0	1000	=	1000
														Measurement	=	110.0%			
End of Day Check	10-31-2017	1443	4.00	=	4.14	1413	=	1526.8	Temperature (°C)	=	20.21	=	225.9	Temperature (°C)	=	17.59	0.02	=	0.00
			7.00	=	7.16				Standard (mV)	=	229			Tap Water Source	=	Sikeston City	10.0	=	10.03
			10.00	=	10.11									Barometric Pressure (mm/Hg)	=	1009.3	1000	=	995.4
														Measurement	=	107.7%			

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: 10-31-17 By: [signature]

Appendix 2

Laboratory Analytical Results

PDC Laboratories, Inc.

PROFESSIONAL • DEPENDABLE • COMMITTED

November 29, 2017

Mark E. McGill
Sikeston BMU, Sikeston Power Station
1551 W Wakefield
Sikeston, MO 63801

Dear Mark E. McGill:

Please find enclosed the **revised** analytical results for the sample(s) the laboratory received on **11/3/17 9:50 am** and logged in under work order **7110582**. All testing is performed according to our current TNI certifications 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 Vice President, John LaPayne with any feedback you have about your experience with our laboratory.

Sincerely,

Senior Project Manager
(309) 692-9688 x1719
kstepping@pdclab.com

PDC Laboratories, Inc.
2231 West Altorfer Drive
Peoria, IL 61615
(800) 752-6651

REVISED ANALYTICAL RESULTS

Sample: 7110582-01 **Sampled:** 10/31/17 00:00
Name: MW-3 **Received:** 11/03/17 09:50
Matrix: Ground Water - Grab

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA							
Chloride	2.0	mg/L		11/06/17 15:38	11/06/17 15:38	LAM	EPA 300.0
Fluoride	0.331	mg/L		11/06/17 15:38	11/06/17 15:38	LAM	EPA 300.0
Sulfate	20	mg/L		11/06/17 15:57	11/06/17 15:57	LAM	EPA 300.0
General Chemistry - PIA							
Solids - total dissolved solids (TDS)	140	mg/L		11/06/17 14:55	11/06/17 15:33	CJP	SM 2540C
Total Metals - PIA							
Boron	27	ug/L		11/10/17 12:32	11/14/17 10:05	JMW	SW 6020
Calcium	19000	ug/L		11/10/17 12:32	11/14/17 10:05	JMW	SW 6020

Sample: 7110582-02 **Sampled:** 10/31/17 00:00
Name: MW-4 **Received:** 11/03/17 09:50
Matrix: Ground Water - Grab

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA							
Chloride	17	mg/L		11/06/17 17:10	11/06/17 17:10	LAM	EPA 300.0
Fluoride	< 0.250	mg/L		11/06/17 16:52	11/06/17 16:52	LAM	EPA 300.0
Sulfate	83	mg/L		11/06/17 17:10	11/06/17 17:10	LAM	EPA 300.0
General Chemistry - PIA							
Solids - total dissolved solids (TDS)	290	mg/L		11/06/17 14:55	11/06/17 15:33	CJP	SM 2540C
Total Metals - PIA							
Boron	1400	ug/L		11/10/17 12:32	11/14/17 10:08	JMW	SW 6020
Calcium	67000	ug/L		11/10/17 12:32	11/14/17 10:08	JMW	SW 6020

PDC Laboratories, Inc.
2231 West Altorfer Drive
Peoria, IL 61615
(800) 752-6651

REVISED ANALYTICAL RESULTS

Sample: 7110582-03 **Sampled:** 10/31/17 00:00
Name: MW-5 **Received:** 11/03/17 09:50
Matrix: Ground Water - Grab

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA							
Fluoride	< 0.250	mg/L		11/06/17 17:29	11/06/17 17:29	LAM	EPA 300.0
Sulfate	88	mg/L		11/06/17 17:47	11/06/17 17:47	LAM	EPA 300.0
General Chemistry - PIA							
Solids - total dissolved solids (TDS)	310	mg/L		11/06/17 14:55	11/06/17 15:33	CJP	SM 2540C
Total Metals - PIA							
Boron	280	ug/L		11/10/17 12:32	11/14/17 10:11	JMW	SW 6020
Calcium	72000	ug/L		11/10/17 12:32	11/14/17 10:11	JMW	SW 6020

Sample: 7110582-03RE1 **Sampled:** 10/31/17 00:00
Name: MW-5 **Received:** 11/03/17 09:50
Matrix: Ground Water - Grab

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA							
Chloride	13	mg/L		11/27/17 16:37	11/27/17 16:37	arl	EPA 300.0

Sample: 7110582-04 **Sampled:** 10/31/17 00:00
Name: MW-6 **Received:** 11/03/17 09:50
Matrix: Ground Water - Grab

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA							
Chloride	1.7	mg/L		11/06/17 18:06	11/06/17 18:06	LAM	EPA 300.0
Fluoride	0.303	mg/L		11/06/17 18:06	11/06/17 18:06	LAM	EPA 300.0
Sulfate	29	mg/L		11/06/17 18:24	11/06/17 18:24	LAM	EPA 300.0
General Chemistry - PIA							
Solids - total dissolved solids (TDS)	170	mg/L		11/06/17 14:55	11/06/17 15:33	CJP	SM 2540C
Total Metals - PIA							
Boron	41	ug/L		11/10/17 12:32	11/14/17 10:15	JMW	SW 6020
Calcium	38000	ug/L		11/10/17 12:32	11/14/17 10:15	JMW	SW 6020

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REVISED ANALYTICAL RESULTS

Sample: 7110582-05
Name: MW-8
Matrix: Ground Water - Grab

Sampled: 10/31/17 00:00
Received: 11/03/17 09:50

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA							
Chloride	45	mg/L		11/06/17 19:01	11/06/17 19:01	LAM	EPA 300.0
Fluoride	< 0.250	mg/L		11/06/17 18:42	11/06/17 18:42	LAM	EPA 300.0
Sulfate	110	mg/L		11/07/17 15:01	11/07/17 15:01	LAM	EPA 300.0
General Chemistry - PIA							
Solids - total dissolved solids (TDS)	380	mg/L		11/06/17 14:55	11/06/17 15:33	CJP	SM 2540C
Total Metals - PIA							
Boron	540	ug/L		11/10/17 12:32	11/14/17 10:18	JMW	SW 6020
Calcium	86000	ug/L		11/10/17 12:32	11/14/17 10:18	JMW	SW 6020

Sample: 7110582-06
Name: FIELD BLANK
Matrix: Ground Water - Grab

Sampled: 10/31/17 00:00
Received: 11/03/17 09:50

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA							
Chloride	< 1.0	mg/L		11/06/17 19:19	11/06/17 19:19	LAM	EPA 300.0
Fluoride	< 0.250	mg/L		11/06/17 19:19	11/06/17 19:19	LAM	EPA 300.0
Sulfate	4.2	mg/L		11/06/17 19:19	11/06/17 19:19	LAM	EPA 300.0
General Chemistry - PIA							
Solids - total dissolved solids (TDS)	< 17	mg/L		11/06/17 14:55	11/06/17 15:33	CJP	SM 2540C
Total Metals - PIA							
Boron	< 10	ug/L		11/10/17 12:32	11/14/17 10:29	JMW	SW 6020
Calcium	< 100	ug/L		11/10/17 12:32	11/14/17 10:29	JMW	SW 6020

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REVISED ANALYTICAL RESULTS

Sample: 7110582-07
Name: FIELD DUPLICATE
Matrix: Ground Water - Grab

Sampled: 10/31/17 00:00
Received: 11/03/17 09:50

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA							
Chloride	1.9	mg/L		11/06/17 19:38	11/06/17 19:38	LAM	EPA 300.0
Fluoride	0.328	mg/L		11/06/17 19:38	11/06/17 19:38	LAM	EPA 300.0
Sulfate	20	mg/L		11/06/17 20:33	11/06/17 20:33	LAM	EPA 300.0
General Chemistry - PIA							
Solids - total dissolved solids (TDS)	120	mg/L		11/06/17 14:55	11/06/17 15:33	CJP	SM 2540C
Total Metals - PIA							
Boron	24	ug/L		11/10/17 12:32	11/14/17 10:32	JMW	SW 6020
Calcium	19000	ug/L		11/10/17 12:32	11/14/17 10:32	JMW	SW 6020

Appendix 3

Laboratory Quality Assurance/Quality Control Data

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Peoria, IL 61615
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QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B720246 - No Prep - SM 2540C									
Blank (B720246-BLK1)				Prepared & Analyzed: 11/06/17					
Solids - total dissolved solids (TDS)	< 17	mg/L							
Duplicate (B720246-DUP1)	**Sample: 7110514-02**			Prepared & Analyzed: 11/06/17					
Solids - total dissolved solids (TDS)	615	mg/L			635			3	5
Duplicate (B720246-DUP2)	**Sample: 7110515-04**			Prepared & Analyzed: 11/06/17					
Solids - total dissolved solids (TDS)	1080	mg/L			1030			5	5
Batch B720270 - IC No Prep - EPA 300.0									
Calibration Blank (B720270-CCB1)				Prepared & Analyzed: 11/06/17					
Fluoride	0.00	mg/L							
Chloride	0.00	mg/L							
Sulfate	0.00	mg/L							
Calibration Check (B720270-CCV1)				Prepared & Analyzed: 11/06/17					
Chloride	5.06	mg/L		5.000		101	90-110		
Fluoride	5.23	mg/L		5.000		105	90-110		
Sulfate	5.11	mg/L		5.000		102	90-110		
Matrix Spike (B720270-MS1)	**Sample: 7110383-02**			Prepared & Analyzed: 11/06/17					
Chloride	1.8	mg/L		1.500	0.28	98	80-120		
Sulfate	1.71	mg/L		1.500	ND	114	80-120		
Matrix Spike (B720270-MS2)	**Sample: 7110383-03**			Prepared & Analyzed: 11/06/17					
Chloride	1.7	mg/L		1.500	ND	115	80-120		
Sulfate	1.60	mg/L		1.500	ND	107	80-120		
Matrix Spike (B720270-MS3)	**Sample: 7110383-04**			Prepared & Analyzed: 11/06/17					
Chloride	1.8	mg/L		1.500	ND	117	80-120		
Sulfate	1.60	mg/L		1.500	ND	107	80-120		
Matrix Spike Dup (B720270-MSD1)	**Sample: 7110383-02**			Prepared & Analyzed: 11/06/17					
Sulfate	1.66	mg/L		1.500	ND	111	80-120	3	20
Chloride	1.8	mg/L		1.500	0.28	103	80-120	4	20
Matrix Spike Dup (B720270-MSD2)	**Sample: 7110383-03**			Prepared & Analyzed: 11/06/17					
Chloride	1.7	mg/L		1.500	ND	116	80-120	0.6	20
Sulfate	1.65	mg/L		1.500	ND	110	80-120	3	20
Matrix Spike Dup (B720270-MSD3)	**Sample: 7110383-04**			Prepared & Analyzed: 11/06/17					
Chloride	1.8	mg/L		1.500	ND	120	80-120	2	20
Sulfate	1.67	mg/L		1.500	ND	112	80-120	4	20
Batch B720377 - IC No Prep - EPA 300.0									
Calibration Blank (B720377-CCB1)				Prepared & Analyzed: 11/07/17					
Sulfate	0.00	mg/L							
Calibration Check (B720377-CCV1)				Prepared & Analyzed: 11/07/17					
Sulfate	4.93	mg/L		5.000		99	90-110		
Matrix Spike (B720377-MS1)	**Sample: 7110088-01**			Prepared & Analyzed: 11/07/17					
Sulfate	1.00E9	mg/L	Q4	1.500	42.6	NR	80-120		
Matrix Spike (B720377-MS2)	**Sample: 7110729-01**			Prepared & Analyzed: 11/07/17					
Sulfate	1.00E9	mg/L	Q4	1.500	356	NR	80-120		
Matrix Spike Dup (B720377-MSD1)	**Sample: 7110088-01**			Prepared & Analyzed: 11/07/17					
Sulfate	1.00E9	mg/L	Q4	1.500	42.6	NR	80-120	0	20

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QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B720377 - IC No Prep - EPA 300.0									
Matrix Spike Dup (B720377-MSD2)	**Sample: 7110729-01**			Prepared & Analyzed: 11/07/17					
Sulfate	1.00E9	mg/L	Q4	1.500	356	NR	80-120	0	20
Batch B720617 - SW 3015 - SW 6020									
Blank (B720617-BLK1)				Prepared: 11/10/17 Analyzed: 11/14/17					
Boron	< 10	ug/L							
Calcium	< 100	ug/L							
LCS (B720617-BS1)				Prepared: 11/10/17 Analyzed: 11/14/17					
Boron	593	ug/L		555.6		107	80-120		
Calcium	5870	ug/L		5556		106	80-120		
Matrix Spike (B720617-MS1)	**Sample: 7110513-01**			Prepared: 11/10/17 Analyzed: 11/14/17					
Boron	7900	ug/L	Q4	555.6	7550	62	75-125		
Calcium	254000	ug/L	Q4	5556	258000	NR	75-125		
Matrix Spike Dup (B720617-MSD1)	**Sample: 7110513-01**			Prepared: 11/10/17 Analyzed: 11/14/17					
Boron	8190	ug/L	Q4	555.6	7550	115	75-125	4	20
Calcium	262000	ug/L	Q4	5556	258000	73	75-125	3	20
Batch B721672 - IC No Prep - EPA 300.0									
Calibration Blank (B721672-CCB1)				Prepared & Analyzed: 11/27/17					
Chloride	0.00	mg/L							
Calibration Check (B721672-CCV1)				Prepared & Analyzed: 11/27/17					
Chloride	4.55	mg/L		5.000		91	90-110		

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NOTES

Specific method revisions used for analysis are available upon request.

Memos

Revised report, Chloride re-analyzed on -03 sample.

Certifications

CHI - McHenry, IL
TNI Accreditation for Drinking Water, Wastewater, Hazardous and Solid Wastes Fields of Testing through IL EPA Lab No. 100279
Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 17556

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

SPMO - Springfield, MO
USEPA DMR-QA Program

STL - St. Louis, MO
TNI Accreditation for Wastewater, Hazardous and Solid Wastes Fields of Testing through KS Lab No. E-10389
Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 171050
Drinking Water Certifications: Missouri (1050)
Missouri Department of Natural Resources

* Not a TNI accredited analyte

Qualifiers

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.

Certified by: Kurt Stepping, Senior Project Manager

PDC Laboratories, Inc.
P.O. Box 9071 • Peoria, IL 61612-9071
(309) 692-9688 • (800) 752-6651 • FAX (309) 692-9689

DATA PACKAGE

CLIENT; Sikeston BMU

PROJECT: Sikeston Power Station

PDC LAB WORKORDER: 7110582

DATE ISSUED: November 14, 2017

CASE NARRATIVE –

PDC Work Order 7110582

PDC Laboratories, Inc. received 7 water samples on November 3, 2017 in good condition at our Peoria, IL facility. This sample set was designated as work order 7110582.

Sample ID's		Date	
Field	**Lab ID**	**Collected**	**Received**
SPS-TPZ-3	7110582-01	10/31/17	11/3/17
SPS-TPZ-4	7110582-02	10/31/17	11/3/17
SPS-TPZ-5	7110582-03	10/31/17	11/3/17
SPS-TPZ-6	7110582-04	10/31/17	11/3/17
SPS-MW-8	7110582-05	10/31/17	11/3/17
SPS-Field Blank	7110582-06	10/31/17	11/3/17
SPS-Duplicate	7110582-07	10/31/17	11/3/17

QC Summary:

All items met acceptance criteria with the following noted exceptions:

MS/MSD for batch QC sample flagged Q4 for SO4, B, and Ca, sample concentration exceeded four times the spike amount.

Certification

Signature: Kurt Stepping Name: Kurt Stepping

Date: November 14, 2017 Title: Senior Project Manager

PDC LABORATORIES, INC.
2231 WEST ALTORFER DRIVE
PEORIA, IL 61615

PHONE # 800-752-6651
FAX # 309-692-9689

CHAIN OF CUSTODY RECORD

State where samples collected: Mo

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT) - (SAMPLE ACCEPTANCE POLICY ON REVERSE)

1				3 ANALYSIS REQUESTED	4 (FOR LAB USE ONLY)
CLIENT: Sikeston BMU	PROJECT NUMBER	P.O. NUMBER	MEANS SHIPPED	CL, F, SO4, TDS / CA, B	LOGIN # 7110582-7
ADDRESS: 1551 West Wakefield	PHONE NUMBER	FAX NUMBER	DATE SHIPPED		LOGGED BY: AM
CITY STATE ZIP: Sikeston Mo 63801	SAMPLER (PLEASE PRINT): Bob Patel		MATRIX TYPES: WW-WASTEWATER DW-DRINKING WATER GW-GROUND WATER WWSL-SLUDGE NAS-SOLID LCHT-LEACHATE OTHER:		LAB PROJ. #
CONTACT PERSON: Ken Ewers or Hall Mann	SAMPLER'S SIGNATURE: [signature]				TEMPLATE:
					PROJ. MGR.:

2 SAMPLE DESCRIPTION AS YOU WANT ON REPORT	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE GRAB	SAMPLE TYPE COMP	MATRIX TYPE	BOTTLE COUNT	CL, F, SO4, TDS	CA, B	REMARKS
MW 3	10-31-17		X		GW	2	X	X	
MW 4	10-31-17		X		GW	2	X	X	
MW 5	10-31-17		X		GW	2	X	X	
MW 6	10-31-17		X		GW	2	X	X	
MW 8	10-31-17		X		GW	2	X	X	
Field blank	10-31-17		X		GW	2	X	X	
Duplicate	10-31-17		X		GW	2	X	X	

5 TURNAROUND TIME REQUESTED (PLEASE CIRCLE) NORMAL RUSH — DATE RESULTS NEEDED
(RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE)
RUSH RESULTS VIA (PLEASE CIRCLE) FAX PHONE E-MAIL
FAX # PHONE # EMAIL ADDRESS

6 *The sample temperature will be measured upon receipt at the lab. By initialing this area you request that the lab notify you, before proceeding with analysis, if the sample temperature is outside of the range of 0.1-6.0°C. By not initialing this area you allow the lab to proceed with analytical testing regardless of the sample temperature.* _____

7				8 COMMENTS: (FOR LAB USE ONLY)
RELINQUISHED BY: (SIGNATURE) [signature]	DATE 11-1-17 TIME 0830	RECEIVED BY: (SIGNATURE)	DATE TIME	
RELINQUISHED BY: (SIGNATURE)	DATE TIME	RECEIVED BY: (SIGNATURE)	DATE TIME	SAMPLE TEMPERATURE UPON RECEIPT 6 °C CHILL PROCESS STARTED PRIOR TO RECEIPT Y OR N 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(S) Y OR N (EXCLUDES TYPICAL FIELD PARAMETERS) DATE AND TIME TAKEN FROM SAMPLE BOTTLE _____
RELINQUISHED BY: (SIGNATURE)	DATE TIME	RECEIVED AT LAB BY: (SIGNATURE) [signature]	DATE 11/3/17 TIME 950	

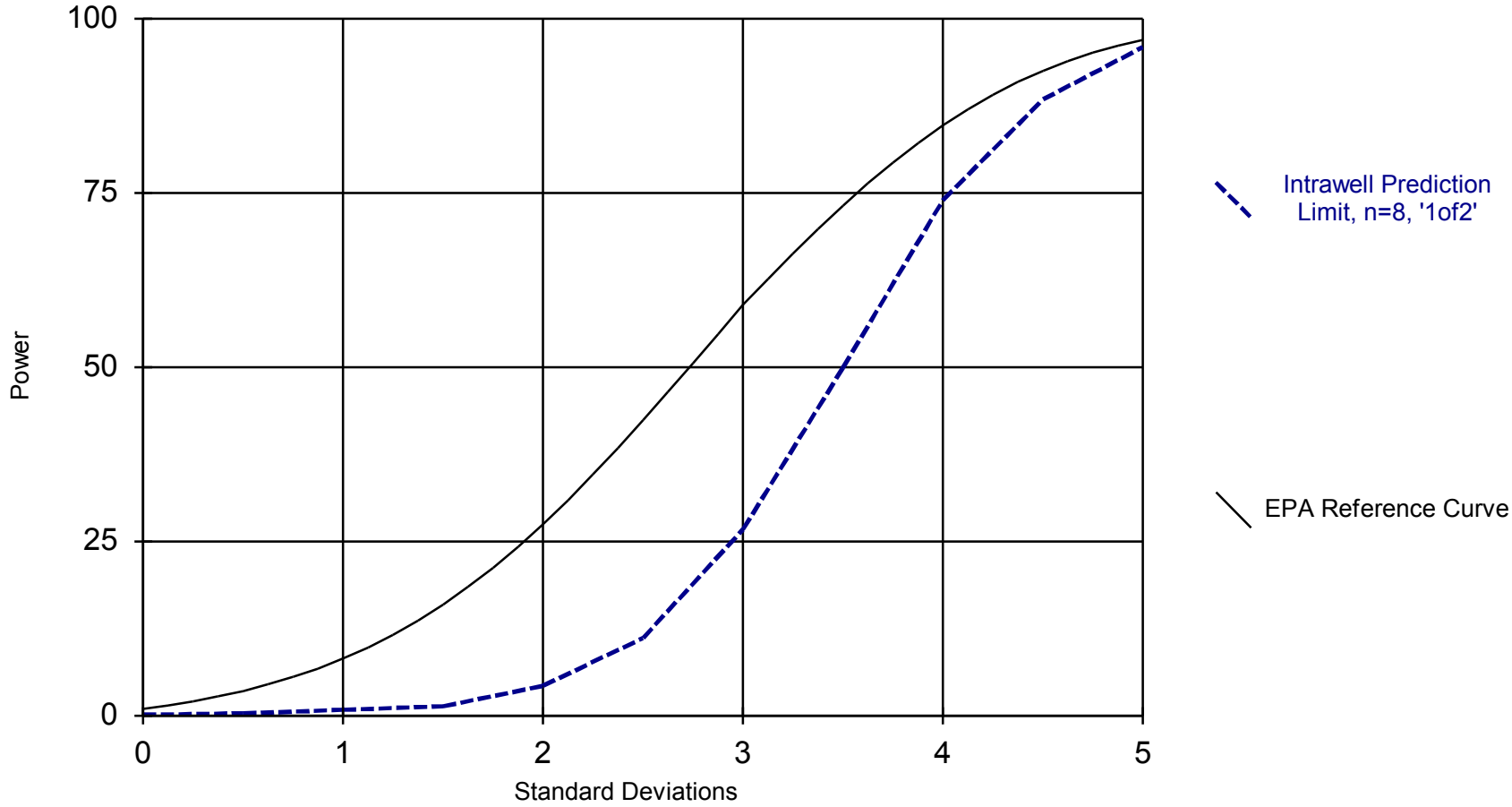
Copies: white should accompany samples to PDC Labs. **Yellow copy to be retained by the client.**

PAGE _____ OF _____

Appendix 4

Statistical Power Curve

Power Curve MW-3 through MW-8



Kappa = 3.403, based on 3 compliance wells and 35 constituents, evaluated semi-annually (this report reflects annual total).

Analysis Run 11/28/2017 4:57 PM View: SBMU-SPS Appendix III

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

Appendix 5

Time Series Plots

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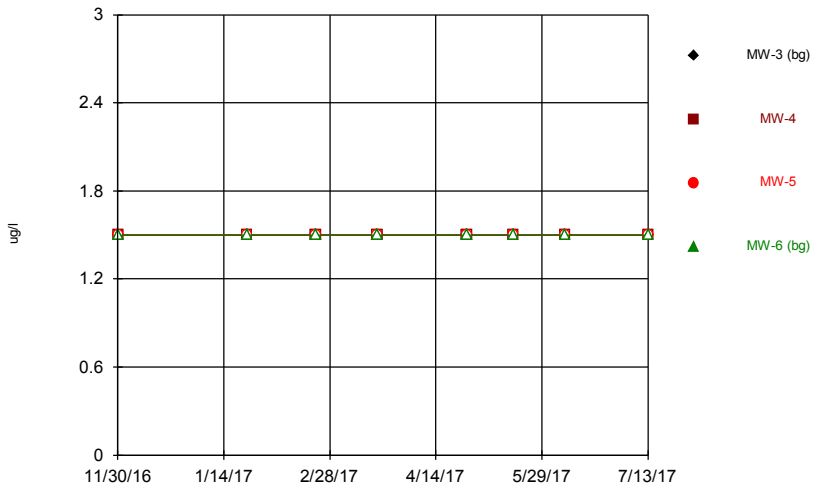
Hollow symbols indicate censored values.

Antimony



Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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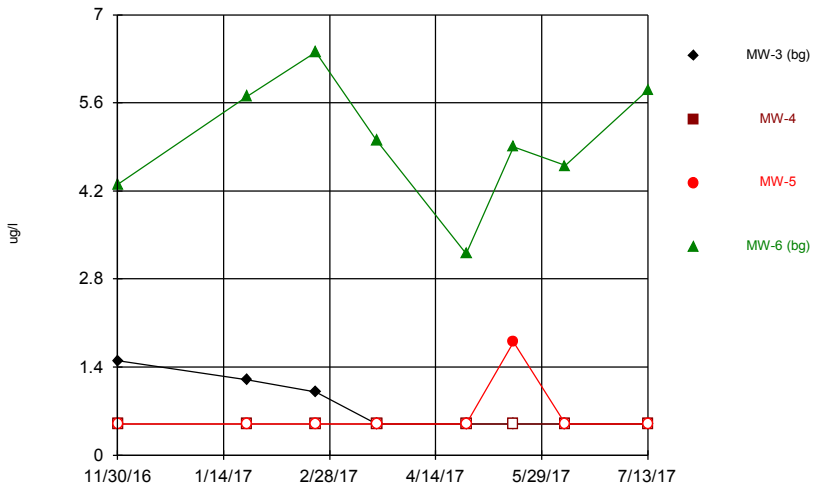
Hollow symbols indicate censored values.

Arsenic



Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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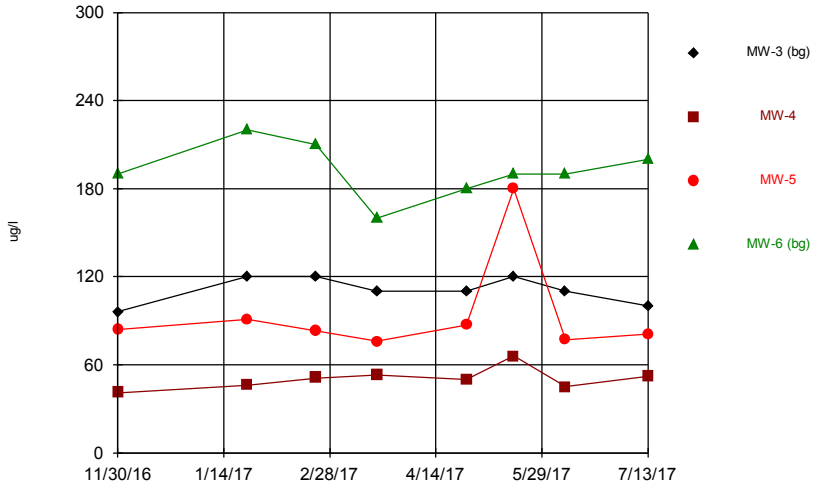
Barium



Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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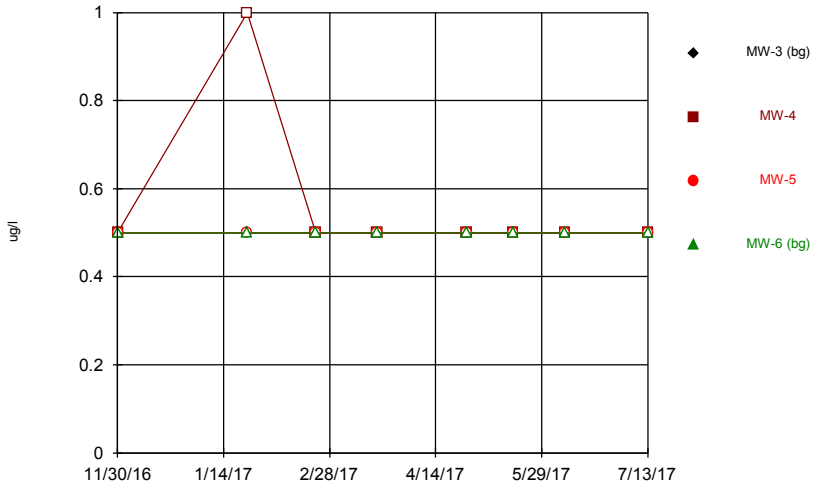
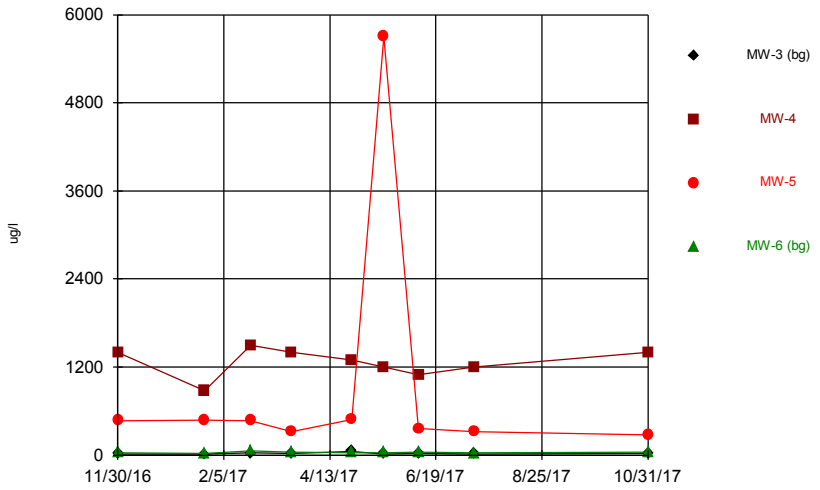
Hollow symbols indicate censored values.

Beryllium



Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Boron

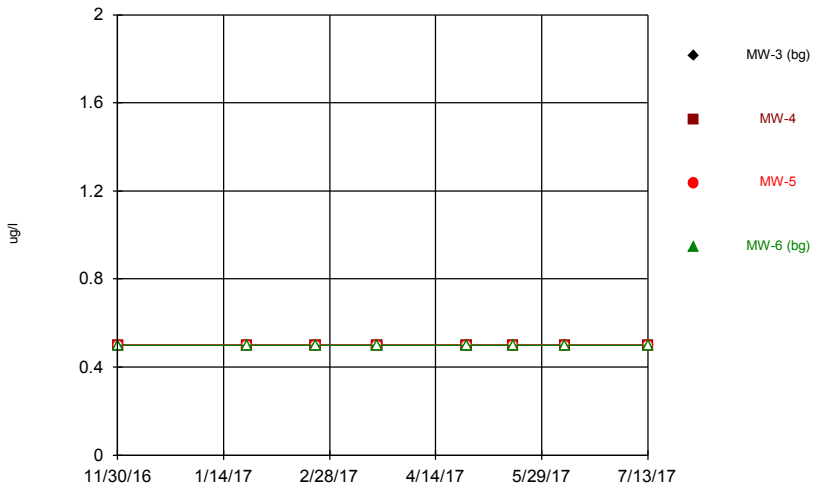


Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III

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

Hollow symbols indicate censored values.

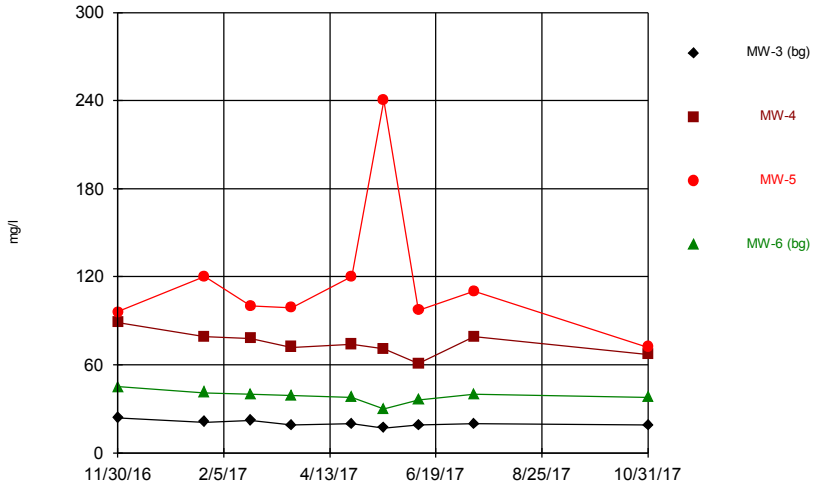
Cadmium



Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III

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

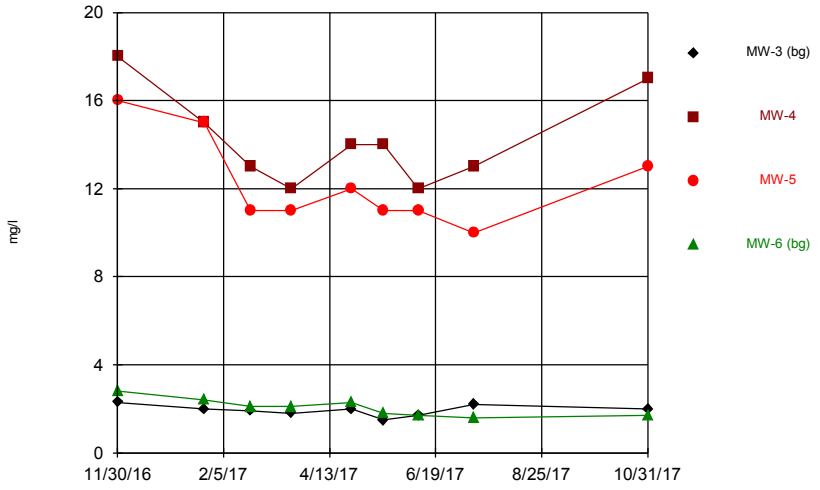
Calcium



Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III

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

Chloride

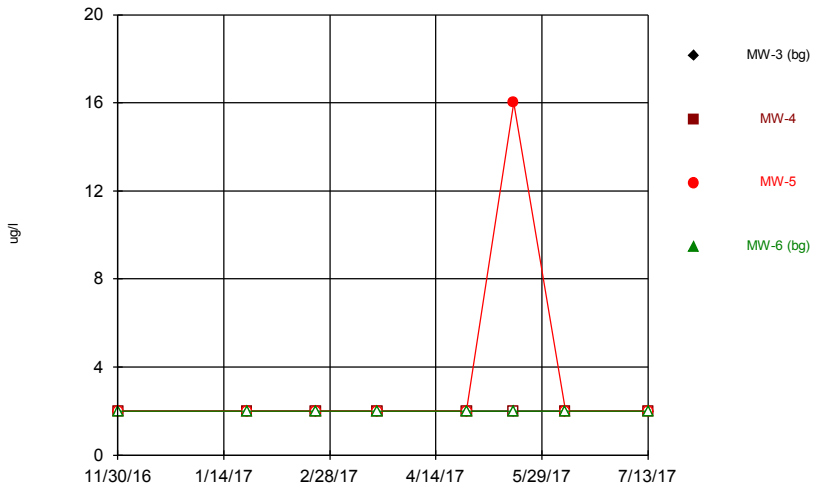


Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III

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

Hollow symbols indicate censored values.

Chromium



Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III

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

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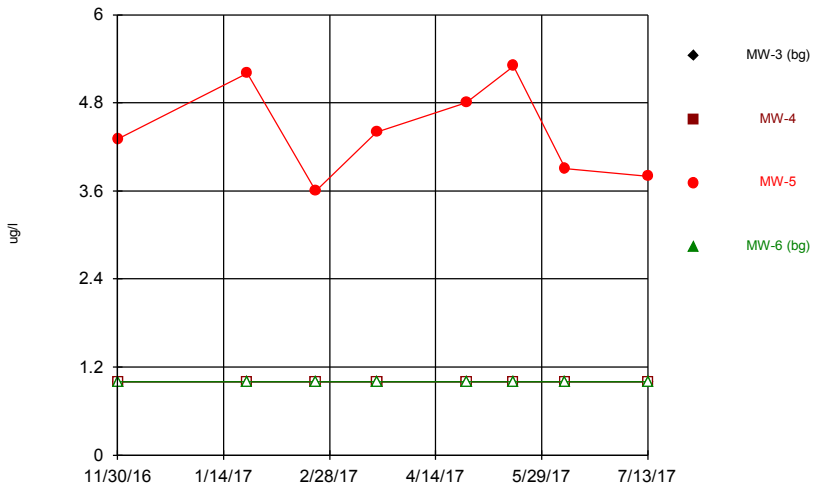
Hollow symbols indicate censored values.

Cobalt



Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III

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

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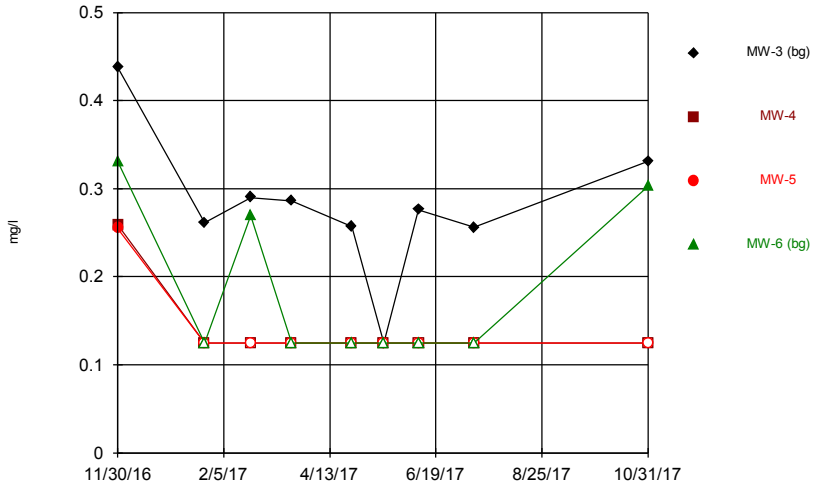
Hollow symbols indicate censored values.

Fluoride



Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III

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

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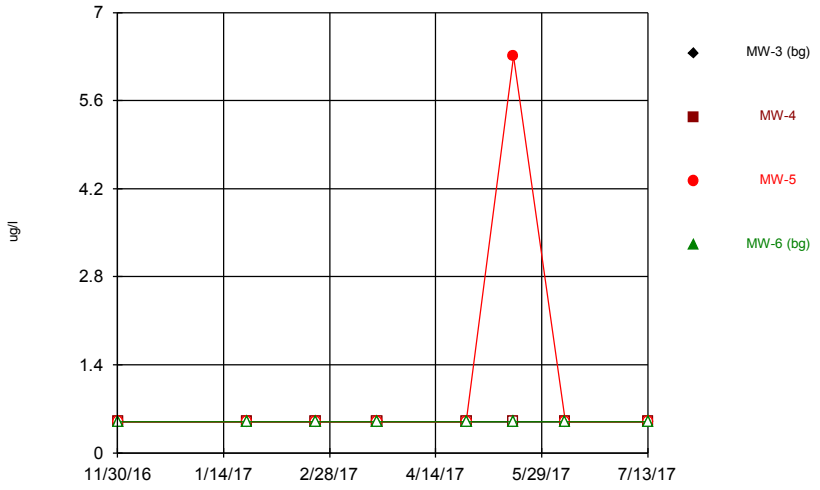
Hollow symbols indicate censored values.

Lead

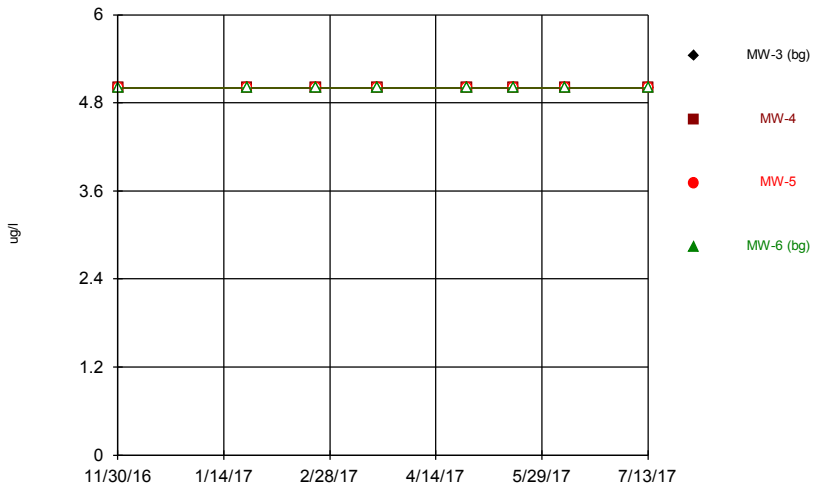


Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III

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

Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG
Hollow symbols indicate censored values.

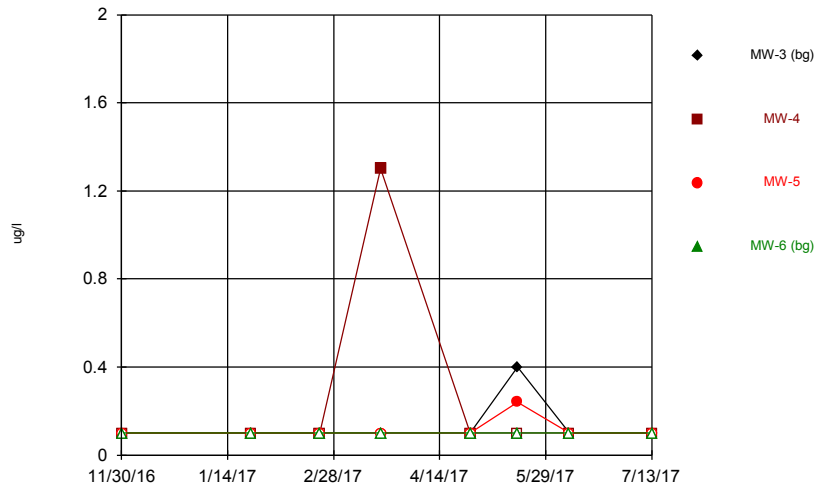
Lithium



Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG
Hollow symbols indicate censored values.

Mercury



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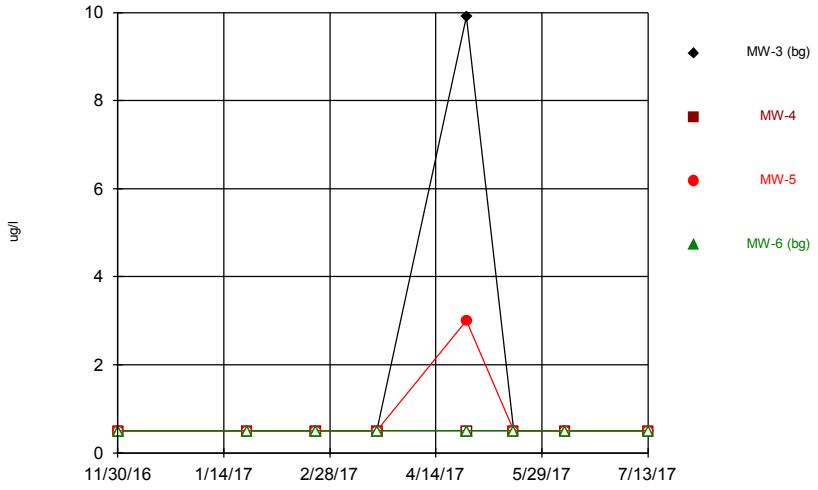
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG
Hollow symbols indicate censored values.

Molybdenum



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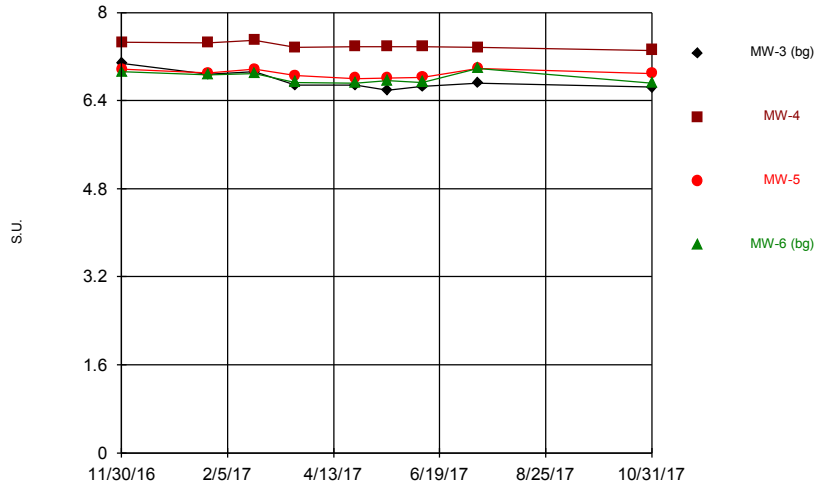
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG

pH



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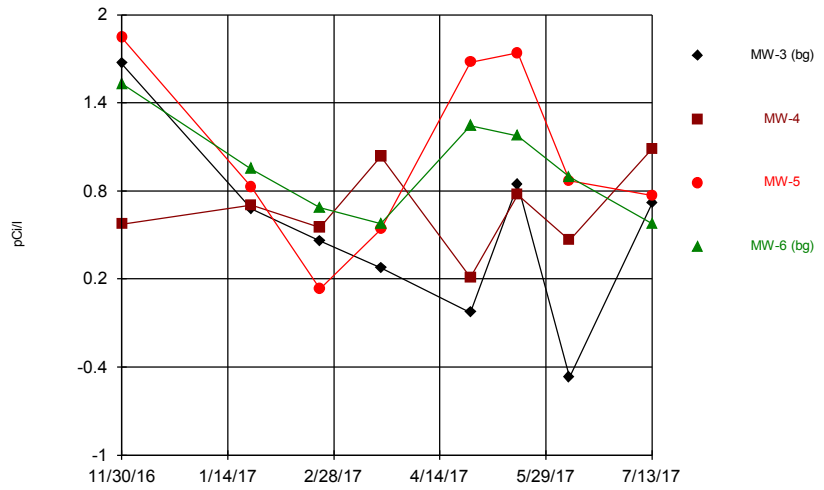
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Radium



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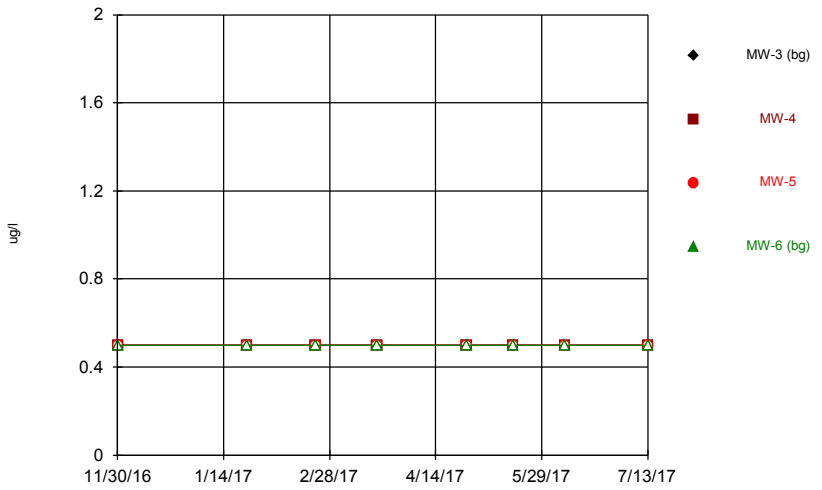
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Hollow symbols indicate censored values.

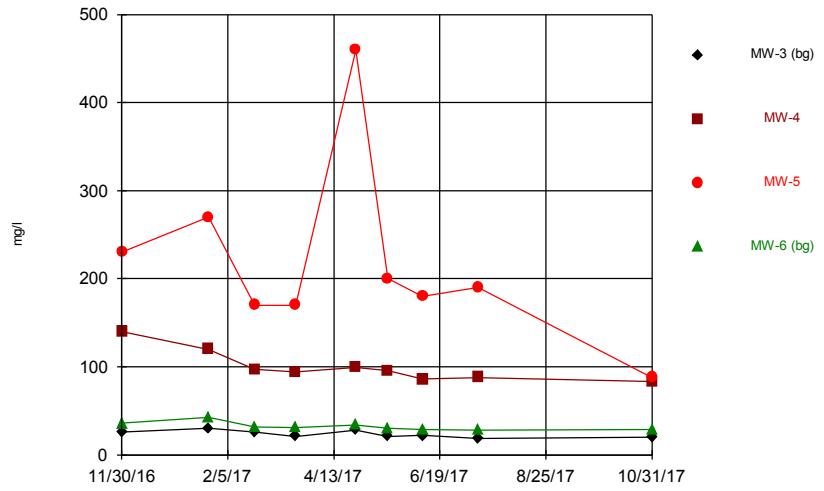
Selenium



Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III

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

Sulfate

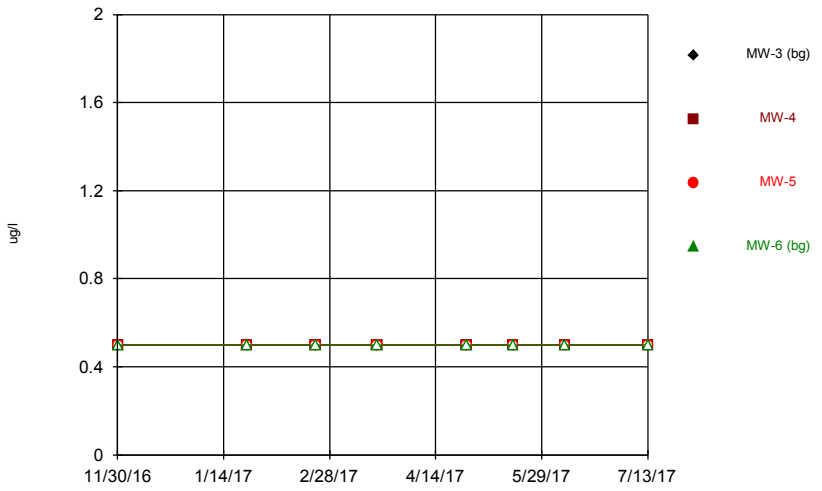


Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III

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

Hollow symbols indicate censored values.

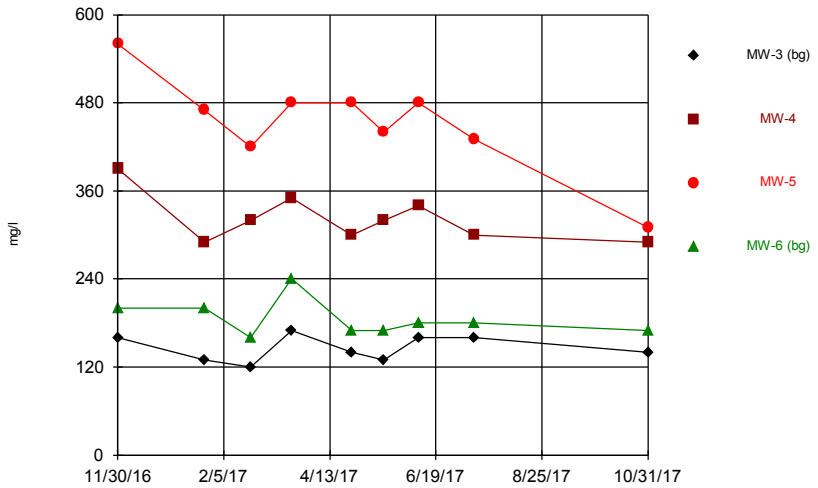
Thallium



Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III

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

Total Dissolved Solids

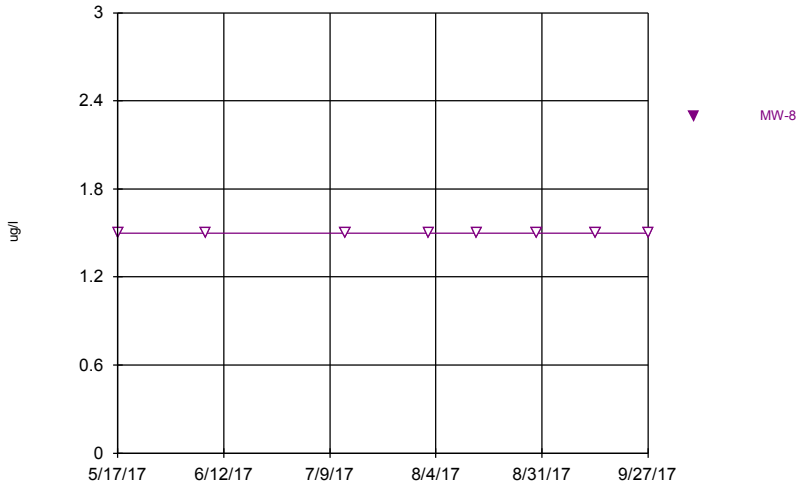


Time Series Analysis Run 11/29/2017 3:15 PM View: SBMU-SPS Appendix III

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

Hollow symbols indicate censored values.

Antimony

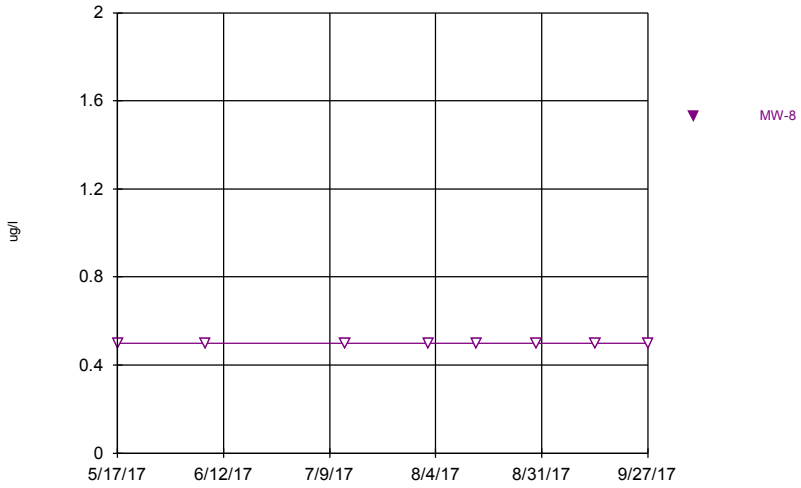


Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III

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

Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG
Hollow symbols indicate censored values.

Arsenic

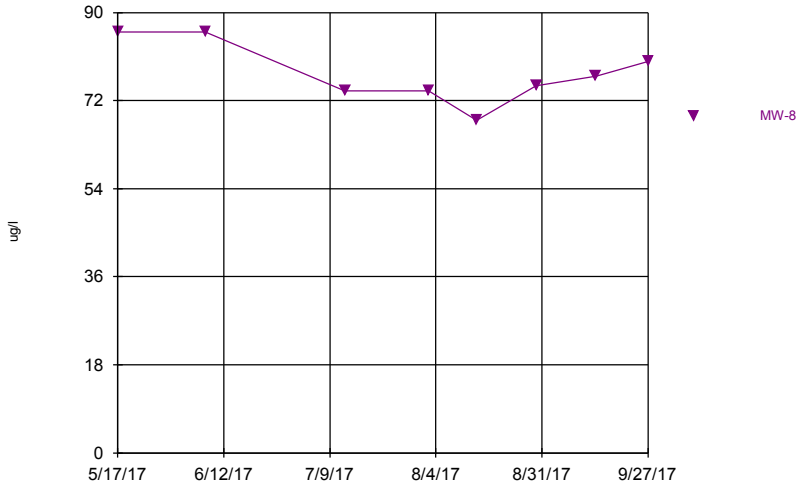


Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III

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

Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG

Barium

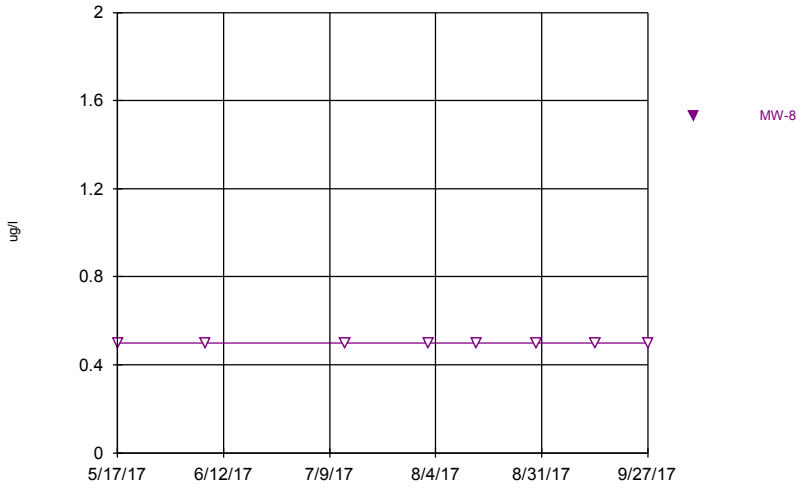


Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III

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

Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG
Hollow symbols indicate censored values.

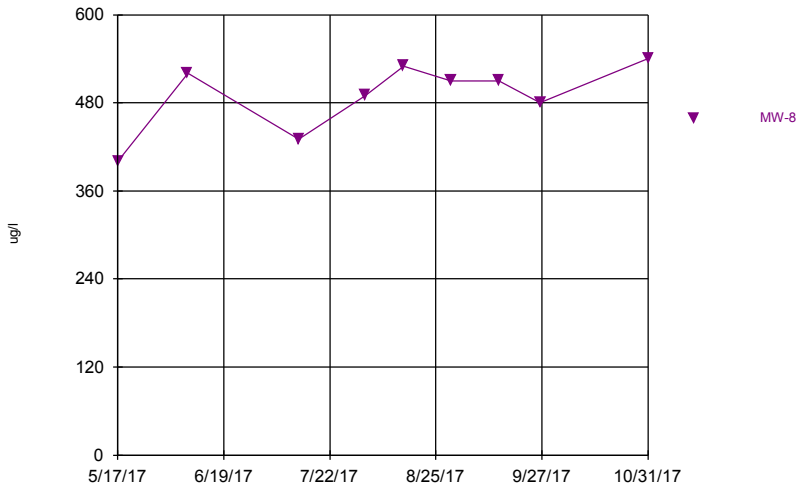
Beryllium



Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III

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

Boron

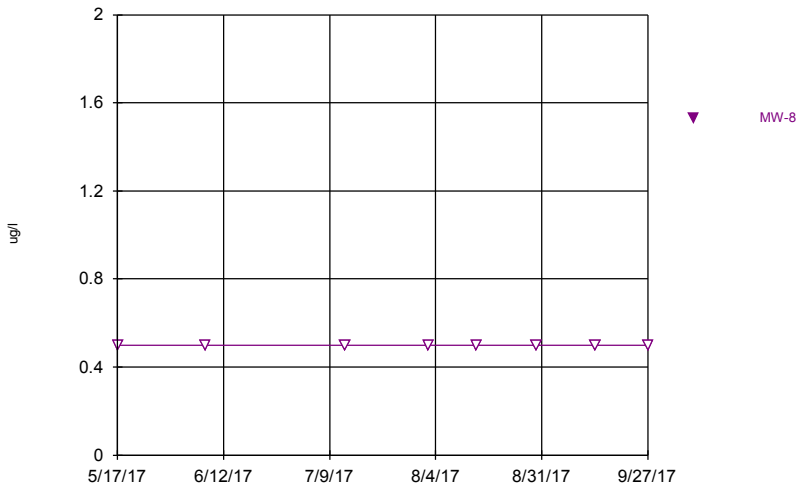


Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III

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

Hollow symbols indicate censored values.

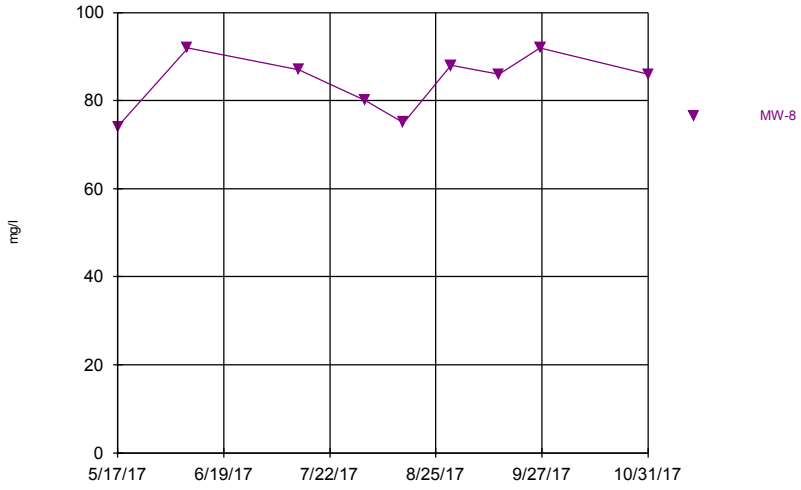
Cadmium



Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III

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

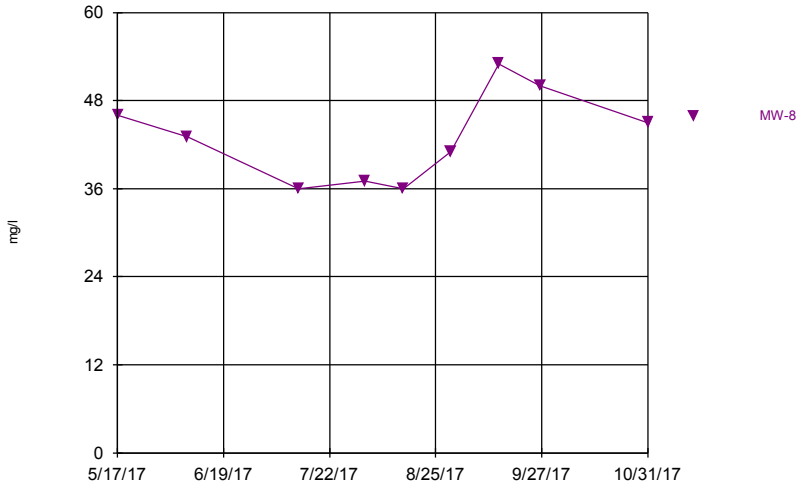
Calcium



Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III

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

Chloride

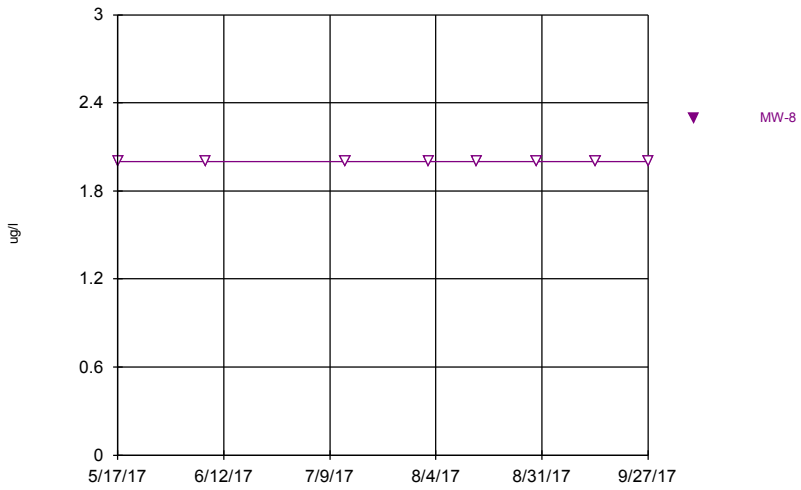


Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III

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

Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG
Hollow symbols indicate censored values.

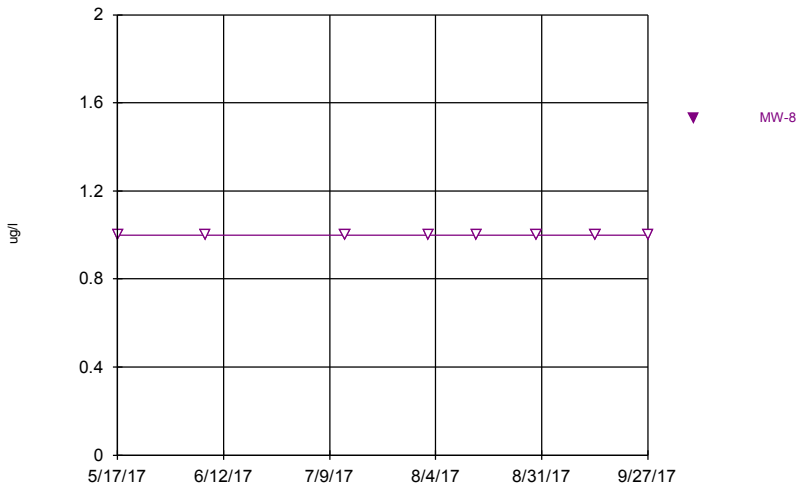
Chromium



Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG
Hollow symbols indicate censored values.

Cobalt



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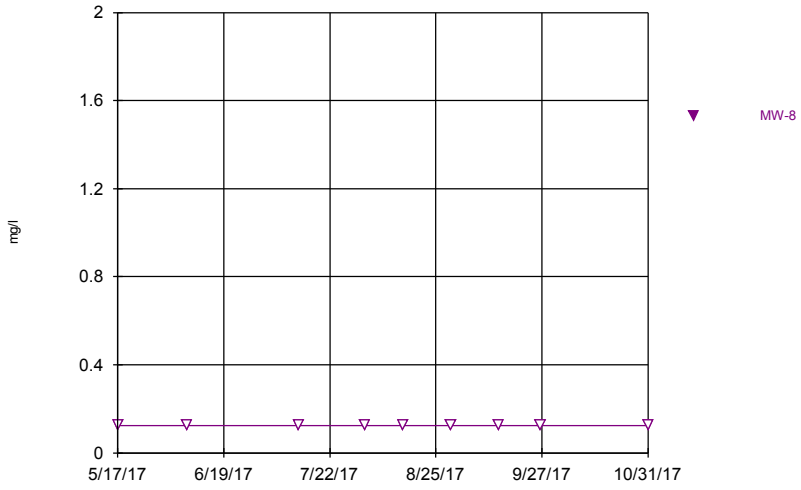
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG
Hollow symbols indicate censored values.

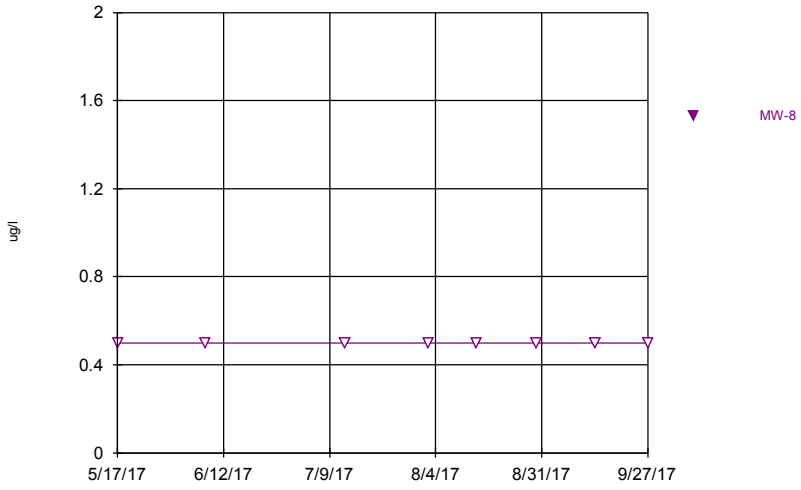
Fluoride



Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sanitas™ v.9.5.32 Sanitas software licensed to GREDELL Engineering only. UG
Hollow symbols indicate censored values.

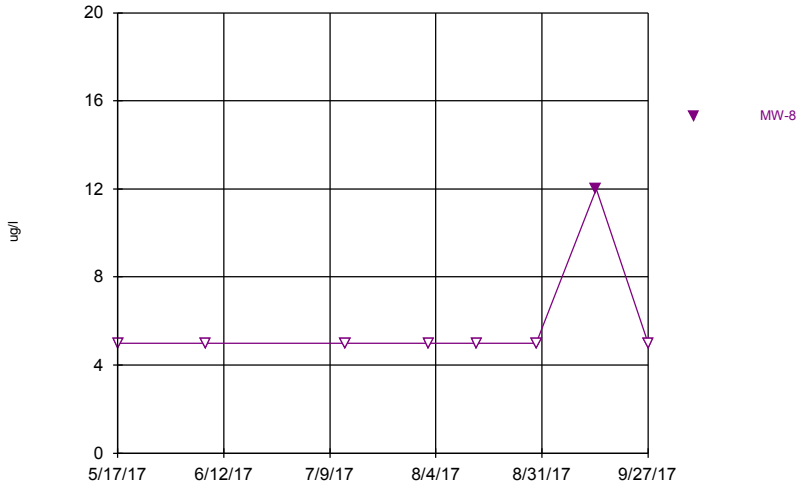
Lead



Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Hollow symbols indicate censored values.

Lithium

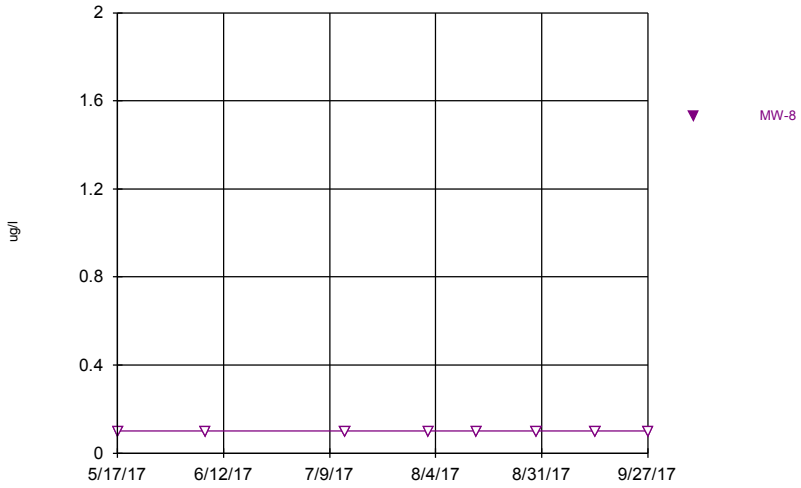


Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III

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

Hollow symbols indicate censored values.

Mercury



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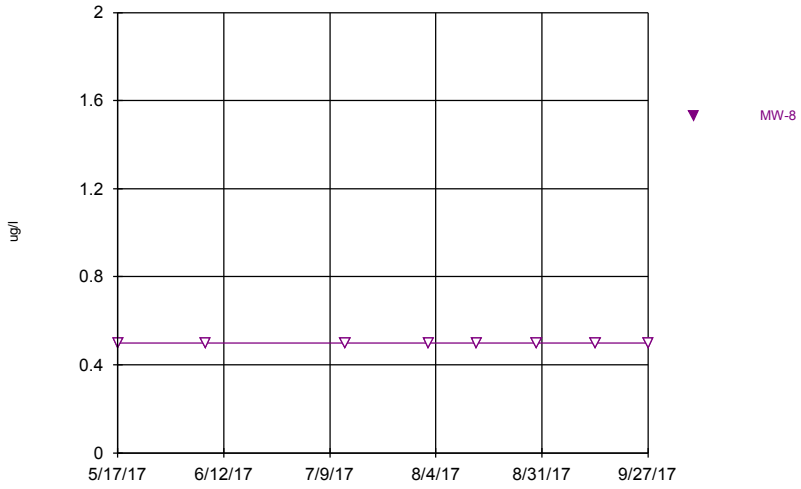
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Hollow symbols indicate censored values.

Molybdenum



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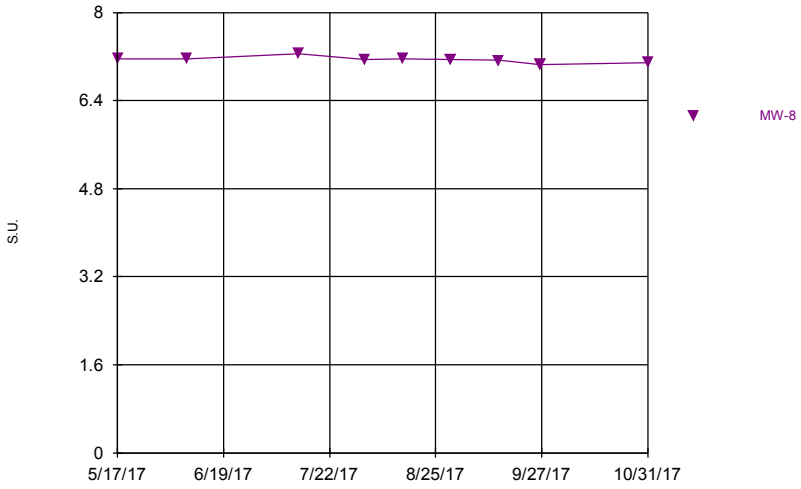
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

pH



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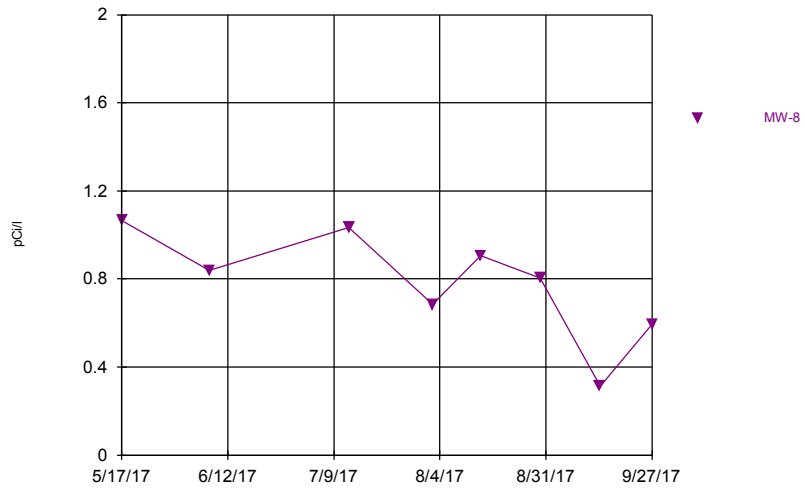
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Radium



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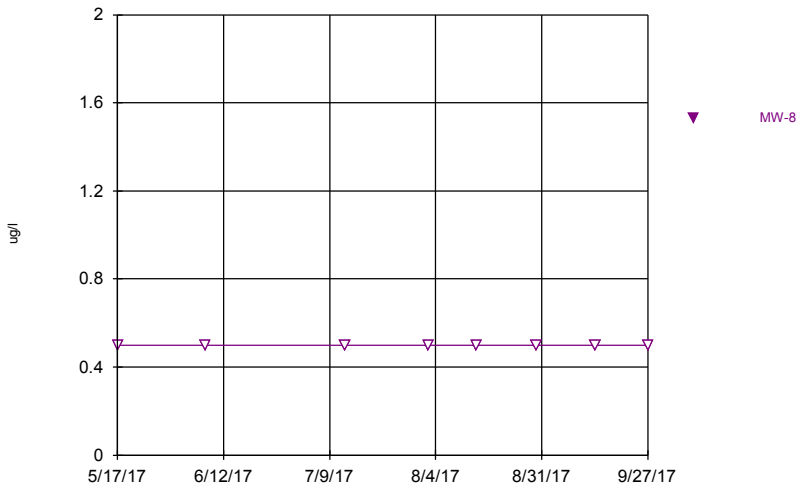
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

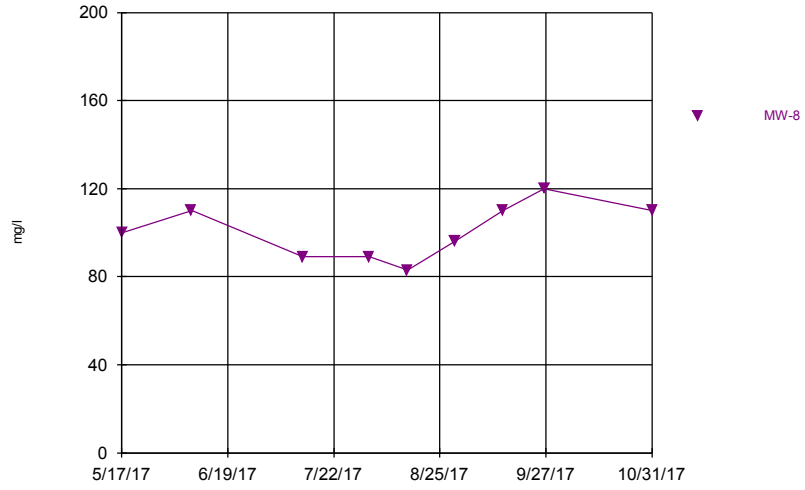
Hollow symbols indicate censored values.

Selenium



Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sulfate



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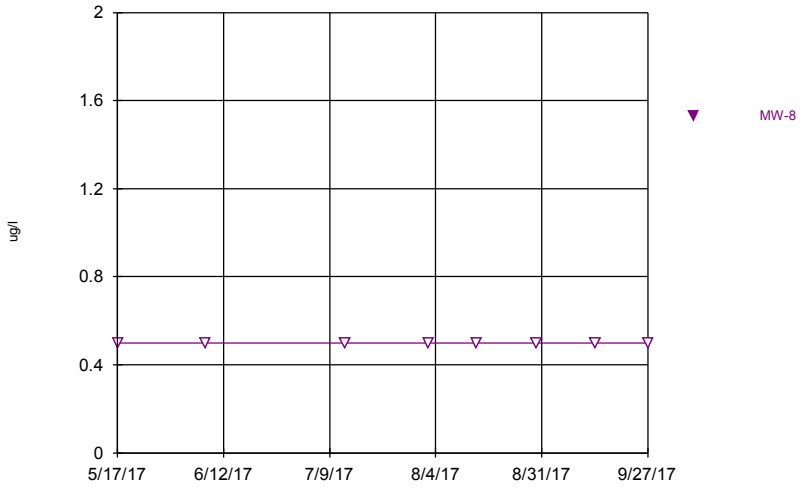
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

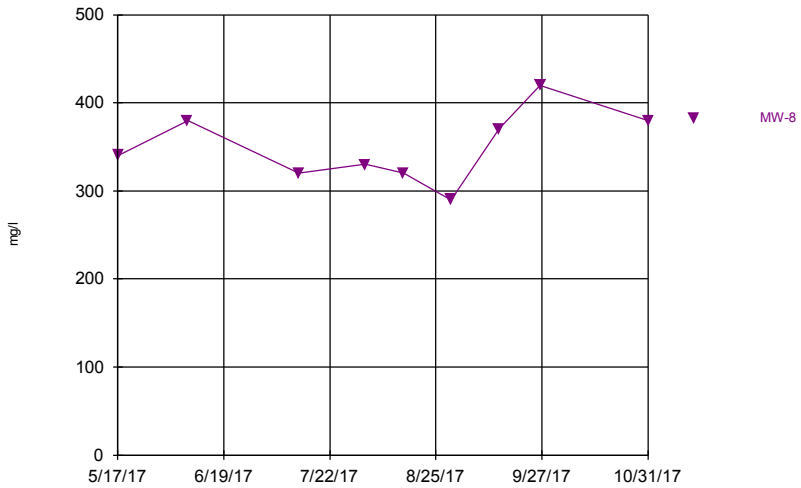
Hollow symbols indicate censored values.

Thallium



Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Total Dissolved Solids



Time Series Analysis Run 11/29/2017 9:30 AM View: SBMU-SPS Appendix III

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

Appendix 6

Data Base

Sikeston Board of Municipal Utilities
Sikeston Power Station
Bottom Ash Pond Scott County, Missouri

Data Base

								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 III ug/L	Cobalt ug/L	Lead ug/L	Lithium ug/L	Mercury ug/L	Molybdenum ug/L	Selenium ug/L	Thallium ug/L	Radium 226 and 228 (Combined) pCi/L
MW-3 (UG)	11/30/2016	Background	254.0	15.75	-27.1	0.41	37.28	7.08	2.3	0.438	26	160	18	24	<3.0	1.5	96	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.668
	1/24/2017	Background	226.4	16.52	-8.4	0.39	4.46	6.88	2.0	0.261	30	130	12	21	<3.0	1.2	120	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.677(ND)
	2/22/2017	Background	226.6	16.47	9.7	0.36	3.56	6.93	1.9	0.290	26	120	33	22	<3.0	1.0	120	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.460(ND)
	3/20/2017	Background	212.1	17.07	33.7	0.43	6.61	6.68	1.8	0.286	21	170	22	19	<3.0	<1.0	110	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.277(ND)
	4/27/2017	Background	223.2	15.35	9.2	0.57	2.69	6.68	2.0	0.257	28 "Q4"	140	54	20	<3.0	<1.0	110	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	9.9	<1.0	<1.0	-0.030(ND)
	5/17/2017	Background	224.9	17.68	26.8	0.45	12.59	6.59	1.5	<0.250	21	130	19	17	<3.0	<1.0	120	<1.0	<1.0	<4.0	<2.0	<1.0	<10	0.40	<1.0	<1.0	<1.0	0.844(ND)
	6/8/2017	Background	217.9	16.73	18.2	0.49	2.61	6.66	1.7	0.276	22	160	20	19	<3.0	<1.0	110	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	-0.469(ND)
	7/13/2017	Background	243.8	19.02	5.5	0.39	4.79	6.71	2.2	0.256	19	160	18	20	<3.0	<1.0	100	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.715(ND)
	10/31/2017	Detection	246.2	16.74	12.4	0.65	7.47	6.64	2.0	0.331	20	140	27	19	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
MW-4 (DG)	11/30/2016	Background	575.6	17.51	-108.3	0.48	0.61	7.46	18	0.259	140	390	1400	89	<3.0	<1.0	41	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.572(ND)
	1/24/2017	Background	543.7	17.00	-105.2	0.50	0.48	7.45	15	<0.250	120	290	880	79	<3.0	<1.0	46	<2.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.7031(ND)
	2/22/2017	Background	554.0	17.95	-115.3	0.51	1.19	7.49	13	<0.250	97	320	1500	78	<3.0	<1.0	51	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.550(ND)
	3/20/2017	Background	562.8	18.58	-108.8	0.69	1.70	7.37	12	<0.250	94	350	1400	72	<3.0	<1.0	53	<1.0	<1.0	<4.0	<2.0	<1.0	<10	1.3	<1.0	<1.0	<1.0	1.036
	4/27/2017	Background	536.9	17.25	-129.6	0.91	2.38	7.38	14	<0.250	99	300	1300	74	<3.0	<1.0	50	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.210(ND)
	5/17/2017	Background	554.9	17.90	-115.5	0.63	3.02	7.38	14	<0.250	96	320	1200	71	<3.0	<1.0	66	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.774(ND)
	6/8/2017	Background	509.7	18.24	-122.9	0.86	0.84	7.38	12	<0.250	86	340	1100	61	<3.0	<1.0	45	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.464(ND)
	7/13/2017	Background	575.5	19.46	-115.2	0.52	1.43	7.37	13	<0.250	88	300	1200	79	<3.0	<1.0	52	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.086(ND)
	10/31/2017	Detection	525.8	18.35	-118.1	0.63	1.07	7.31	17	<0.250	83	290	1400	67	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
MW-5 (DG)	11/30/2016	Background	808.3	16.20	-48.7	0.50	1.24	6.97	16	0.255	230	560	470	96	<3.0	<1.0	84	<1.0	<1.0	<4.0	4.3	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.844
	1/24/2017	Background	745.3	16.24	-37.6	0.58	0.72	6.90	15	<0.250	270	470	480	120	<3.0	<1.0	91	<1.0	<1.0	<4.0	5.2	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.827(ND)
	2/22/2017	Background	717.8	17.75	-50.5	0.36	3.43	6.97	11	<0.250	170	420	470	100	<3.0	<1.0	83	<1.0	<1.0	<4.0	3.6	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.130(ND)
	3/20/2017	Background	737.9	17.78	-36.5	0.72	2.16	6.85	11	<0.250	170	480	320	99	<3.0	<1.0	76	<1.0	<1.0	<4.0	4.4	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.538(ND)
	4/27/2017	Background	777.3	16.07	-58.8	0.69	5.20	6.80	12	<0.250	460	480	490	120	<3.0	<1.0	87	<1.0	<1.0	<4.0	4.8	<1.0	<10	<0.20	3.0	<1.0	<1.0	1.676
	5/17/2017	Background	760.1	17.81	-56.0	0.46	5.35	6.81	11	<0.250	200	440	5700	240	<3.0	1.8	180	<1.0	<1.0	16	5.3	6.3	<10	0.24	<1.0	<1.0	<1.0	1.739
	6/8/2017	Background	678.3	17.72	-58.6	0.69	1.89	6.82	11	<0.250	180	480	360	97	<3.0	<1.0	77	<1.0	<1.0	<4.0	3.9	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.869(ND)
	7/13/2017	Background	799.0	19.19	-82.0	1.08	17.49	6.98	10	<0.250	190	430	320	110	<3.0	<1.0	81	<1.0	<1.0	<4.0	3.8	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.767(ND)
	10/31/2017	Detection	591.8	17.45	-77.6	0.85	3.17	6.89	18	<0.250	88	310	280	72	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
MW-6 (UG)	11/30/2016	Background	369.0	16.39	-49.4	0.85	0.84	6.92	2.8	0.331	36	200	36	45	<3.0	4.3	190	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.532
	1/24/2017	Background	358.9	16.29	-44.8	0.66	0.26	6.87	2.4	<0.250	43	200	27	41	<3.0	5.7	220	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.948(ND)
	2/22/2017	Background	352.5	17.20	-42.2	0.81	15.27	6.89	2.1	0.269	32	160	59	40	<3.0	6.4	210	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.685(ND)
	3/20/2017	Background	360.8	16.90	24.9	0.36	9.70	6.73	2.1	<0.250	31	240	37	39	<3.0	5	160	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.577(ND)
	4/27/2017	Background	331.5	15.71	-50.9	0.39	8.35	6.72	2.3	<0.250	34	170	36	38	<3.0	3.2	180	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.243(ND)
	5/17/2017	Background	323.2	17.65	-71.5	0.45	7.13	6.76	1.8	<0.250	30	170	35	30	<3.0	4.9	190	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.173(ND)
	6/8/2017	Background	326.7	17.50	-53.0	0.33	3.86	6.73	1.7	<0.250	29	180	38	36	<3.0	4.6	190	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.893(ND)
	7/13/2017	Background	396.8	19.68	-84.0	0.72	2.17	6.98	1.6	<0.250	28	180	31	40	<3.0	5.8	200	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.575(ND)
	10/31/2017	Detection	359.6	17.57	-57.9	0.71	1.48	6.72	1.7	0.303	29	170	41	38	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
MW-8 (DG)	5/18/2017	Background	662.5	17.58	-89.4	0.29	2.39	7.16	46	<0.250	100	340	400	74	<3.0	<1.0	86	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.067
	6/9/2017	Background	678.2	17.90	-108.5	0.31	0.47	7.16	43	<0.250	110	380	520	92	<3.0	<1.0	86	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.839(ND)
	7/13/2017	Background	661.5	18.57	-107.1	0.23	1.20	7.25	36	<0.250	89	320	430	87	<3.0	<1.0	74	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	1.034(ND)
	8/3/2017	Background	665.7	19.06	-108.4	0.24	0.98	7.15	37	<0.250	89	330	490	80	<3.0	<1.0	74	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.681(ND)
	8/15/2017	Background	594.9	18.56	-88.7	0.38	0.99	7.16	36	<0.250	83	320	530	75	<3.0	<1.0	68	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.906(ND)
	8/30/2017	Background	644.2	18.62	-91.3	0.29	1.18	7.15	41	<0.250	96	290	510	88	<3.0	<1.0	75	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.805(ND)
	9/14/2017	Background	707.9	18.52	-90.1	0.48	0.67	7.13	53	<0.250 H	110	370	510	86	<3.0	<1.0	77	<1.0	<1.0	<4.0	<2.0	<1.0	12	<0.20	<1.0	<1.0	<1.0	0.314(ND)
	9/27/2017	Background	764.0	19.11	-89.6	0.30	0.58	7.05	50	<0.250	120	420	480	92	<3.0	<1.0	80	<1.0	<1.0	<4.0	<2.0	<1.0	<10	<0.20	<1.0	<1.0	<1.0	0.594(ND)
	10/31/2017	Detection	698.1	17.99	-96.3	0.38	0.94	7.09	45	<0.250	110	380	540	86	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)

Notes:
1. All data transcribed from analytical lab data sheets or field notes.
2. Less than (<) symbol denotes concentration not detected at or above reportable limits.
3. (ND) denotes Radium 226 and 228 (combined) concentration not detected above minimum detectable concentration.
4. (NA) denotes analysis not conducted.
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.

Appendix 7

Box and Whiskers Plots

Box & Whiskers Plot MW-3 through MW-6

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Printed 11/29/2017, 3:18 PM

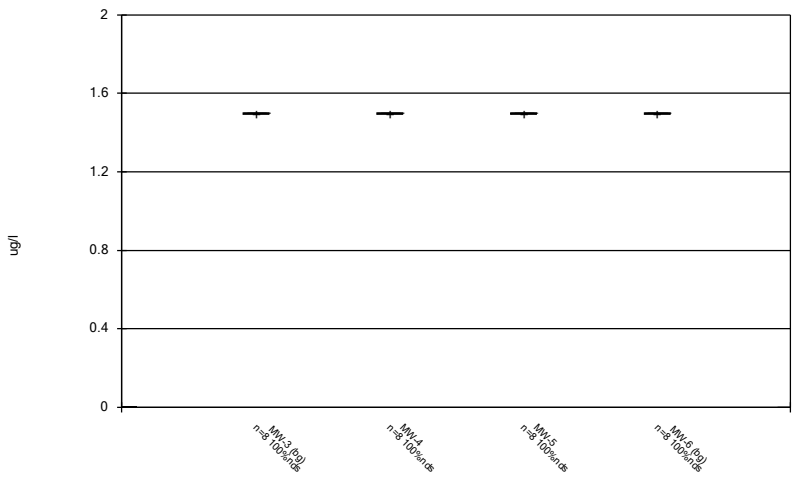
Constituent	Well	N	Mean	Median	Lower Q.	Upper Q.	Min.	Max.	%NDs
Antimony (ug/l)	MW-3 (bg)	8	1.5	1.5	1.5	1.5	1.5	1.5	100
Antimony (ug/l)	MW-4	8	1.5	1.5	1.5	1.5	1.5	1.5	100
Antimony (ug/l)	MW-5	8	1.5	1.5	1.5	1.5	1.5	1.5	100
Antimony (ug/l)	MW-6 (bg)	8	1.5	1.5	1.5	1.5	1.5	1.5	100
Arsenic (ug/l)	MW-3 (bg)	8	0.775	0.5	0.5	1.1	0.5	1.5	62.5
Arsenic (ug/l)	MW-4	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Arsenic (ug/l)	MW-5	8	0.6625	0.5	0.5	0.5	0.5	1.8	87.5
Arsenic (ug/l)	MW-6 (bg)	8	4.988	4.95	4.45	5.75	3.2	6.4	0
Barium (ug/l)	MW-3 (bg)	8	110.8	110	105	120	96	120	0
Barium (ug/l)	MW-4	8	50.5	50.5	45.5	52.5	41	66	0
Barium (ug/l)	MW-5	8	94.88	83.5	79	89	76	180	0
Barium (ug/l)	MW-6 (bg)	8	192.5	190	185	205	160	220	0
Beryllium (ug/l)	MW-3 (bg)	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Beryllium (ug/l)	MW-4	8	0.5625	0.5	0.5	0.5	0.5	1	100
Beryllium (ug/l)	MW-5	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Beryllium (ug/l)	MW-6 (bg)	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Boron (ug/l)	MW-3 (bg)	9	24.78	20	18	30	12	54	0
Boron (ug/l)	MW-4	9	1264	1300	1150	1400	880	1500	0
Boron (ug/l)	MW-5	9	987.8	470	320	485	280	5700	0
Boron (ug/l)	MW-6 (bg)	9	37.78	36	33	39.5	27	59	0
Cadmium (ug/l)	MW-3 (bg)	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Cadmium (ug/l)	MW-4	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Cadmium (ug/l)	MW-5	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Cadmium (ug/l)	MW-6 (bg)	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Calcium (mg/l)	MW-3 (bg)	9	20.11	20	19	21.5	17	24	0
Calcium (mg/l)	MW-4	9	74.44	74	69	79	61	89	0
Calcium (mg/l)	MW-5	9	117.1	100	96.5	120	72	240	0
Calcium (mg/l)	MW-6 (bg)	9	38.56	39	37	40.5	30	45	0
Chloride (mg/l)	MW-3 (bg)	9	1.933	2	1.75	2.1	1.5	2.3	0
Chloride (mg/l)	MW-4	9	14.22	14	12.5	16	12	18	0
Chloride (mg/l)	MW-5	9	12.22	11	11	14	10	16	0
Chloride (mg/l)	MW-6 (bg)	9	2.056	2.1	1.7	2.35	1.6	2.8	0
Chromium (ug/l)	MW-3 (bg)	8	2	2	2	2	2	2	100
Chromium (ug/l)	MW-4	8	2	2	2	2	2	2	100
Chromium (ug/l)	MW-5	8	3.75	2	2	2	2	16	87.5
Chromium (ug/l)	MW-6 (bg)	8	2	2	2	2	2	2	100
Cobalt (ug/l)	MW-3 (bg)	8	1	1	1	1	1	1	100
Cobalt (ug/l)	MW-4	8	1	1	1	1	1	1	100
Cobalt (ug/l)	MW-5	8	4.413	4.35	3.85	5	3.6	5.3	0
Cobalt (ug/l)	MW-6 (bg)	8	1	1	1	1	1	1	100
Fluoride (mg/l)	MW-3 (bg)	9	0.28	0.276	0.2565	0.3105	0.125	0.438	11.11
Fluoride (mg/l)	MW-4	9	0.1399	0.125	0.125	0.125	0.125	0.259	88.89
Fluoride (mg/l)	MW-5	9	0.1394	0.125	0.125	0.125	0.125	0.255	88.89
Fluoride (mg/l)	MW-6 (bg)	9	0.1837	0.125	0.125	0.286	0.125	0.331	66.67
Lead (ug/l)	MW-3 (bg)	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Lead (ug/l)	MW-4	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Lead (ug/l)	MW-5	8	1.225	0.5	0.5	0.5	0.5	6.3	87.5
Lead (ug/l)	MW-6 (bg)	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Lithium (ug/l)	MW-3 (bg)	8	5	5	5	5	5	5	100
Lithium (ug/l)	MW-4	8	5	5	5	5	5	5	100

Box & Whiskers Plot MW-3 through MW-6

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Printed 11/29/2017, 3:18 PM

Constituent	Well	N	Mean	Median	Lower Q.	Upper Q.	Min.	Max.	%NDs
Lithium (ug/l)	MW-5	8	5	5	5	5	5	5	100
Lithium (ug/l)	MW-6 (bg)	8	5	5	5	5	5	5	100
Mercury (ug/l)	MW-3 (bg)	8	0.1375	0.1	0.1	0.1	0.1	0.4	87.5
Mercury (ug/l)	MW-4	8	0.25	0.1	0.1	0.1	0.1	1.3	87.5
Mercury (ug/l)	MW-5	8	0.1175	0.1	0.1	0.1	0.1	0.24	87.5
Mercury (ug/l)	MW-6 (bg)	8	0.1	0.1	0.1	0.1	0.1	0.1	100
Molybdenum (ug/l)	MW-3 (bg)	8	1.675	0.5	0.5	0.5	0.5	9.9	87.5
Molybdenum (ug/l)	MW-4	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Molybdenum (ug/l)	MW-5	8	0.8125	0.5	0.5	0.5	0.5	3	87.5
Molybdenum (ug/l)	MW-6 (bg)	8	0.5	0.5	0.5	0.5	0.5	0.5	100
pH (S.U.)	MW-3 (bg)	9	6.761	6.68	6.65	6.905	6.59	7.08	0
pH (S.U.)	MW-4	9	7.399	7.38	7.37	7.455	7.31	7.49	0
pH (S.U.)	MW-5	9	6.888	6.89	6.815	6.97	6.8	6.98	0
pH (S.U.)	MW-6 (bg)	9	6.813	6.76	6.725	6.905	6.72	6.98	0
Radium (pCi/l)	MW-3 (bg)	8	0.5178	0.5685	0.1235	0.7795	-0.469	1.668	0
Radium (pCi/l)	MW-4	8	0.6744	0.6375	0.507	0.905	0.21	1.086	0
Radium (pCi/l)	MW-5	8	1.049	0.848	0.6525	1.708	0.13	1.844	0
Radium (pCi/l)	MW-6 (bg)	8	0.9533	0.9205	0.631	1.208	0.575	1.532	0
Selenium (ug/l)	MW-3 (bg)	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Selenium (ug/l)	MW-4	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Selenium (ug/l)	MW-5	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Selenium (ug/l)	MW-6 (bg)	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Sulfate (mg/l)	MW-3 (bg)	9	23.67	22	20.5	27	19	30	0
Sulfate (mg/l)	MW-4	9	100.3	96	87	109.5	83	140	0
Sulfate (mg/l)	MW-5	9	217.6	190	170	250	88	460	0
Sulfate (mg/l)	MW-6 (bg)	9	32.44	31	29	35	28	43	0
Thallium (ug/l)	MW-3 (bg)	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Thallium (ug/l)	MW-4	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Thallium (ug/l)	MW-5	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Thallium (ug/l)	MW-6 (bg)	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Total Dissolved Solids (mg/l)	MW-3 (bg)	9	145.6	140	130	160	120	170	0
Total Dissolved Solids (mg/l)	MW-4	9	322.2	320	295	345	290	390	0
Total Dissolved Solids (mg/l)	MW-5	9	452.2	470	425	480	310	560	0
Total Dissolved Solids (mg/l)	MW-6 (bg)	9	185.6	180	170	200	160	240	0

Antimony



Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
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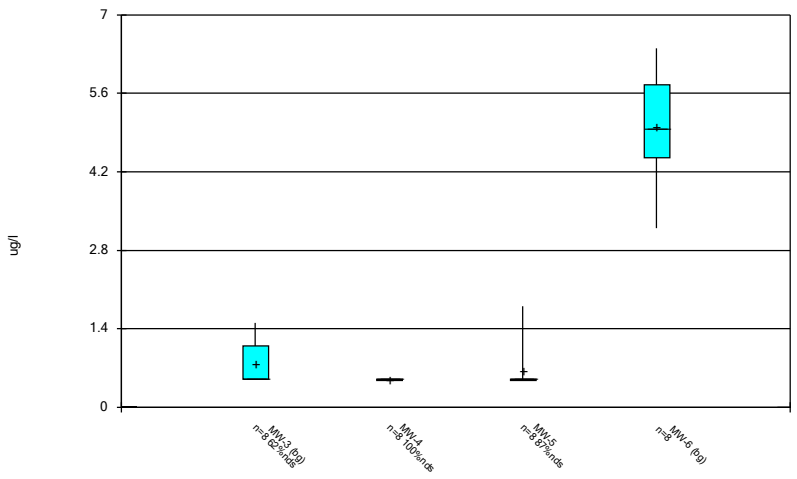
Arsenic



Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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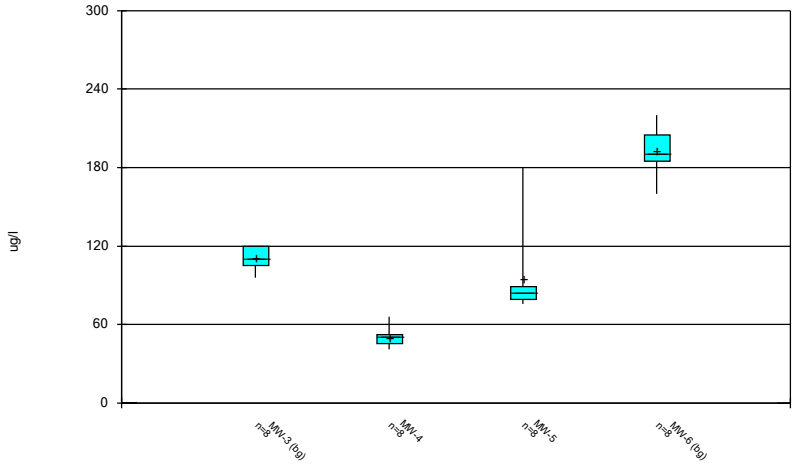
Barium



Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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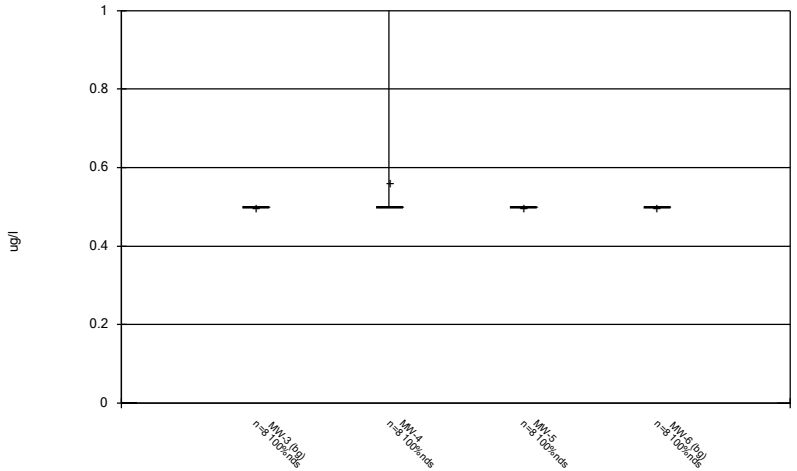
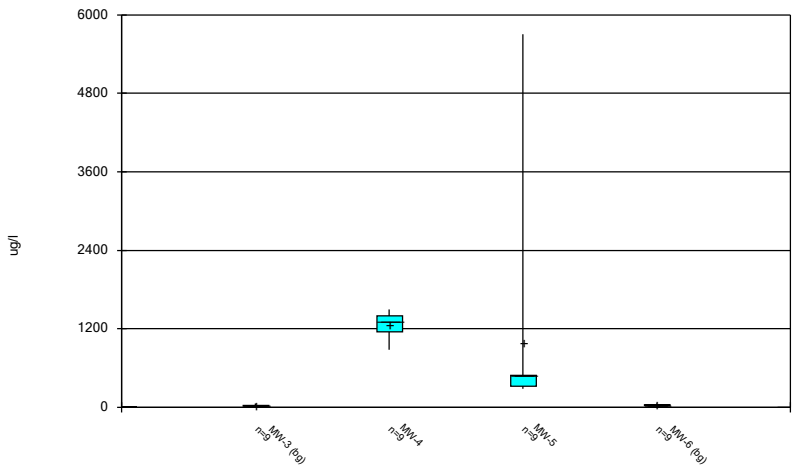
Beryllium



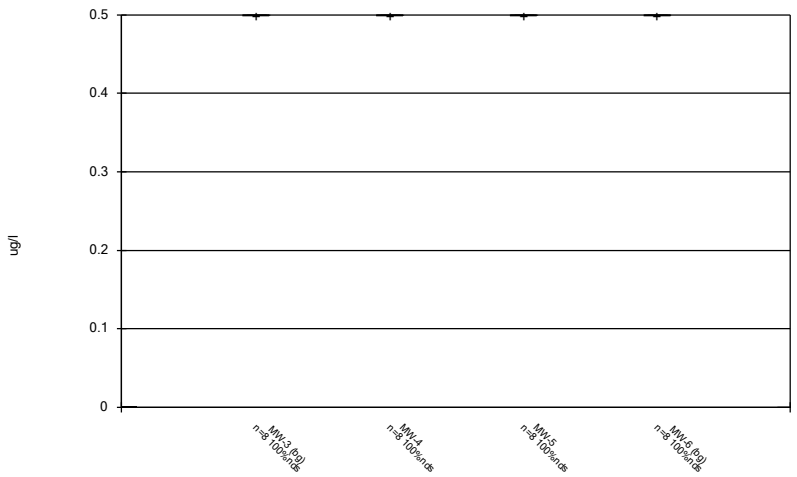
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Boron



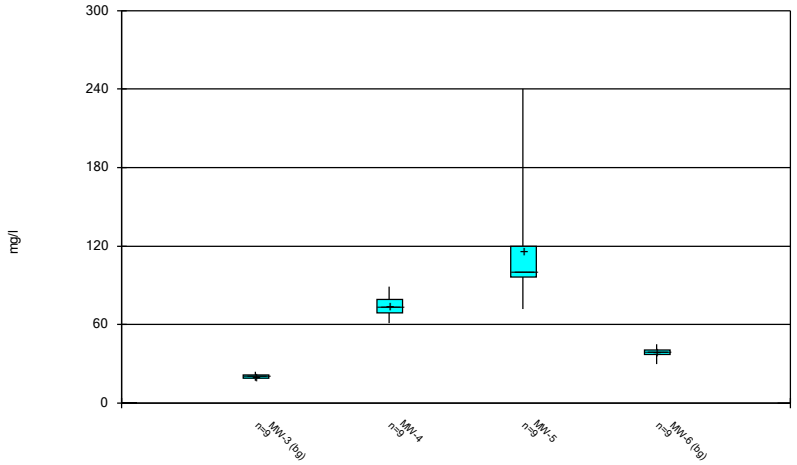
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Cadmium



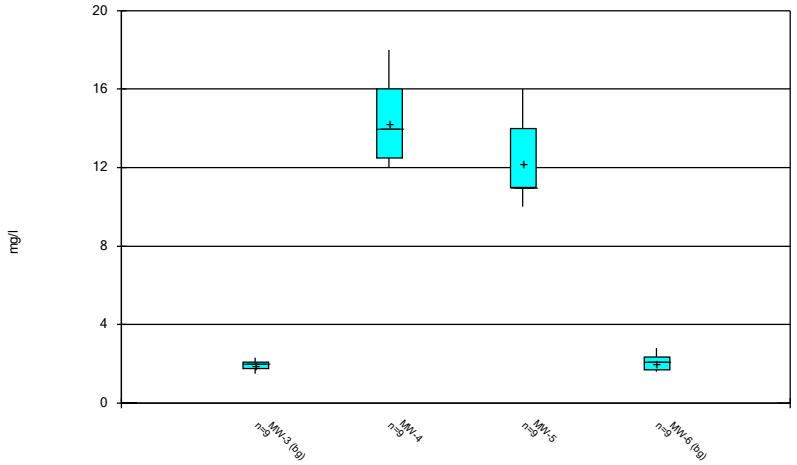
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Calcium



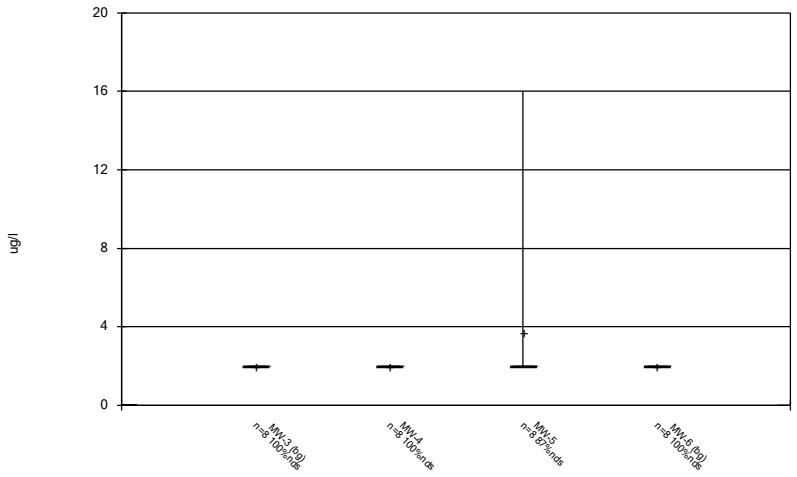
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Chloride



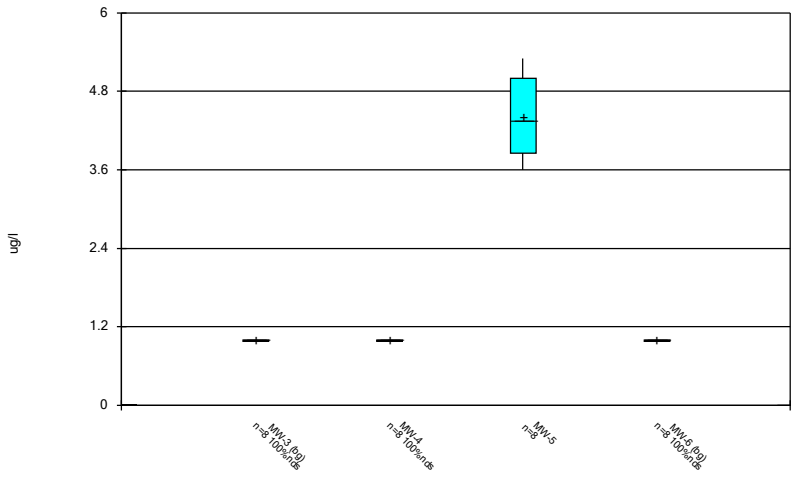
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Chromium



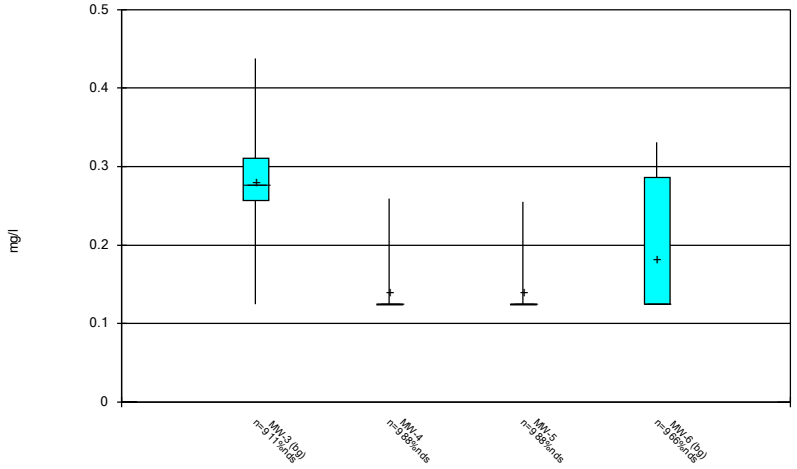
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Cobalt



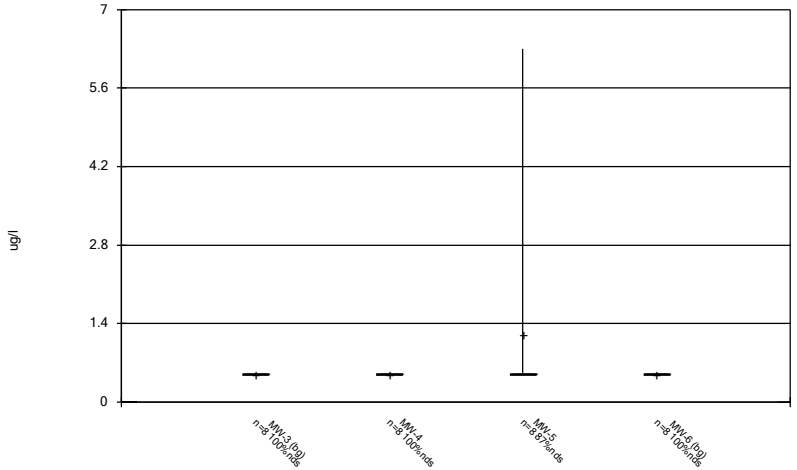
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Fluoride



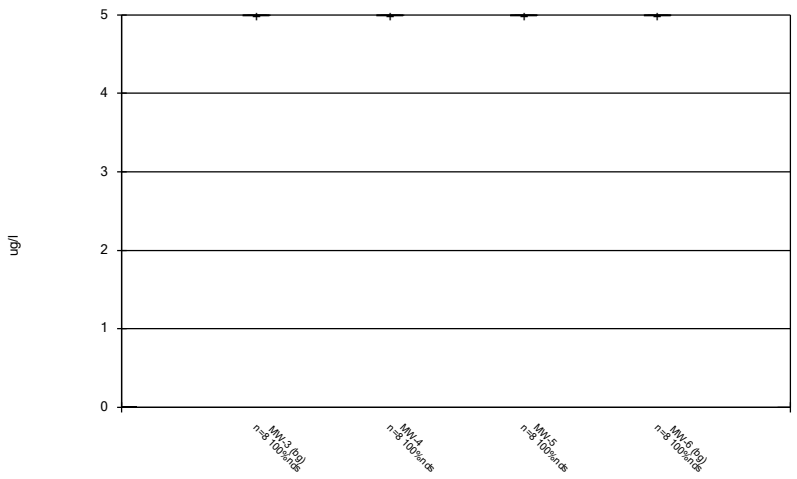
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Lead



Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Lithium



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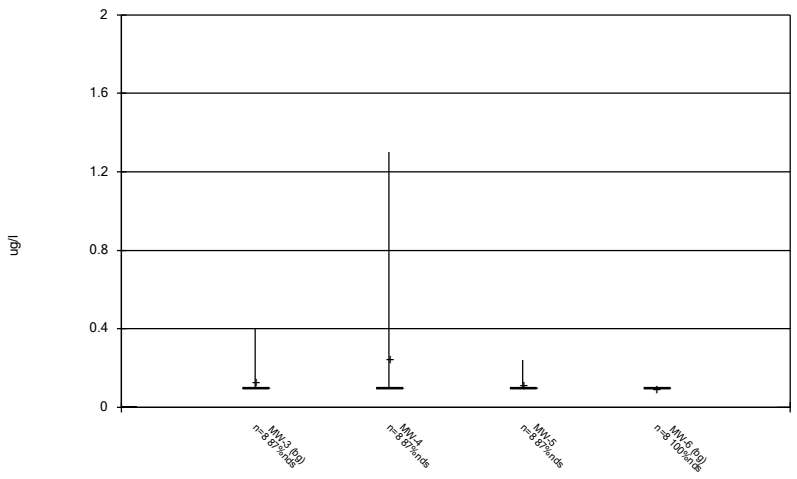
Mercury



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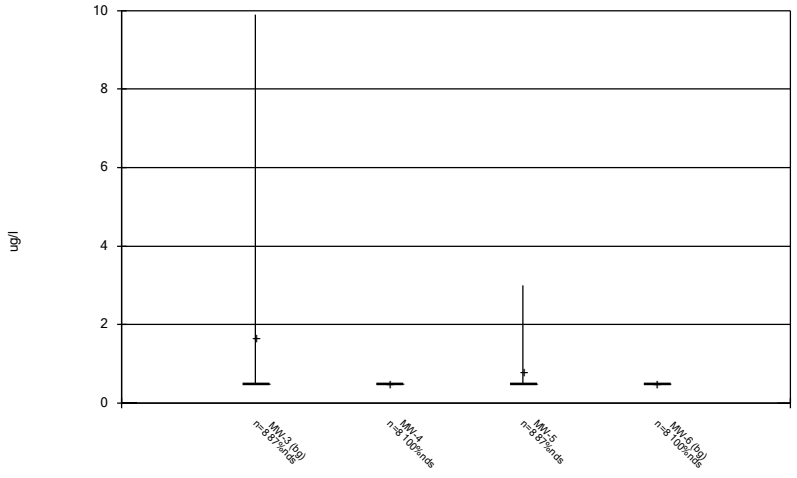
Molybdenum



Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
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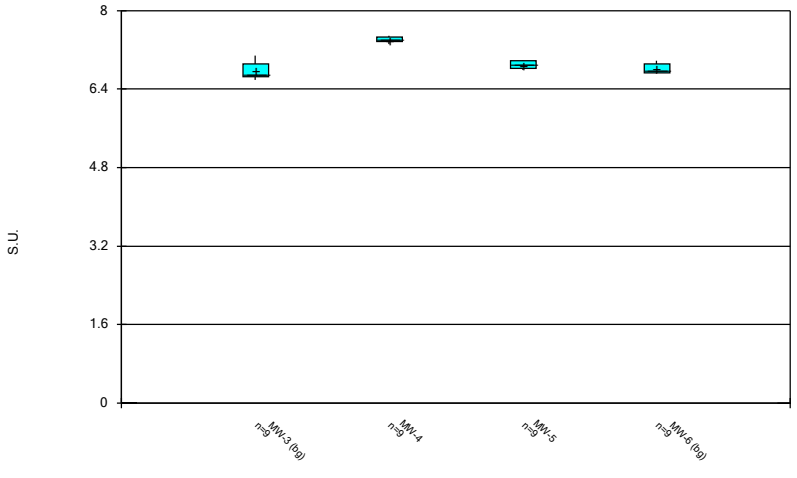
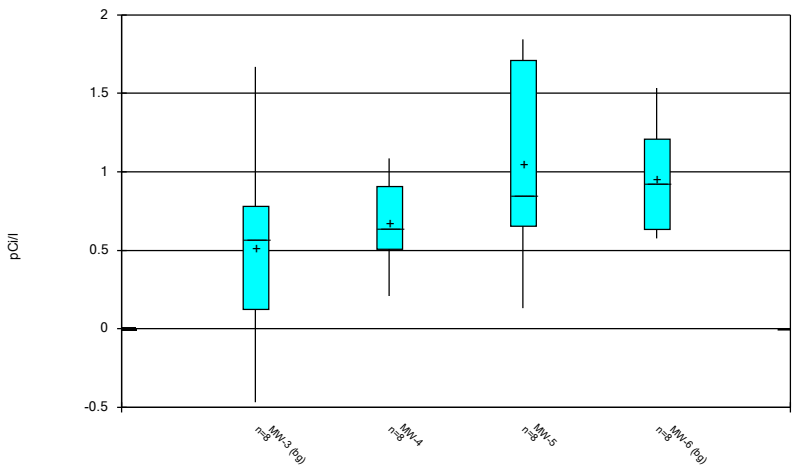
pH



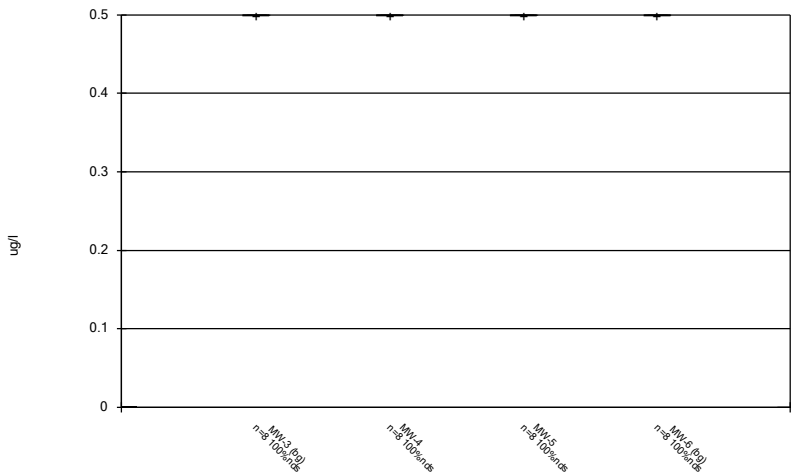
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Radium



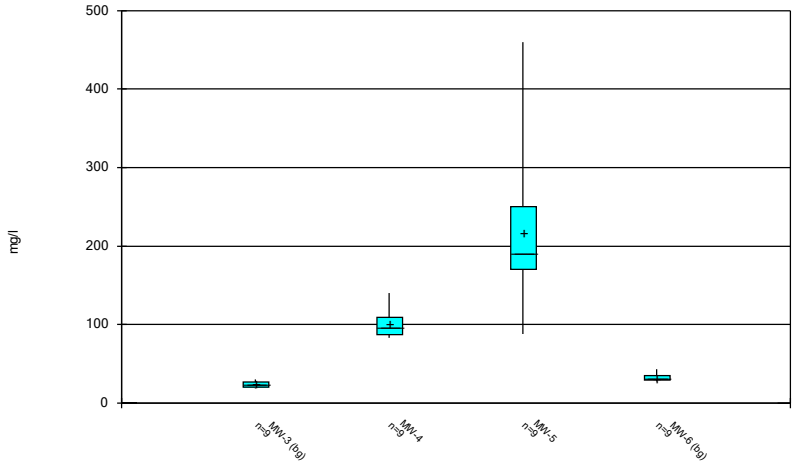
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Selenium



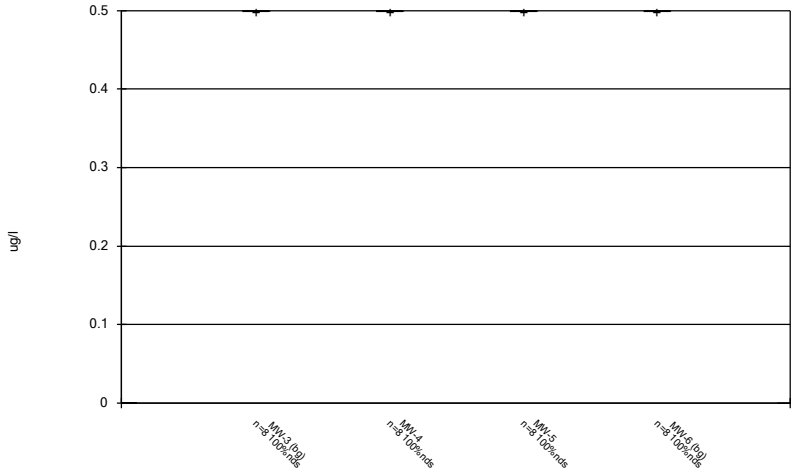
Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Sulfate

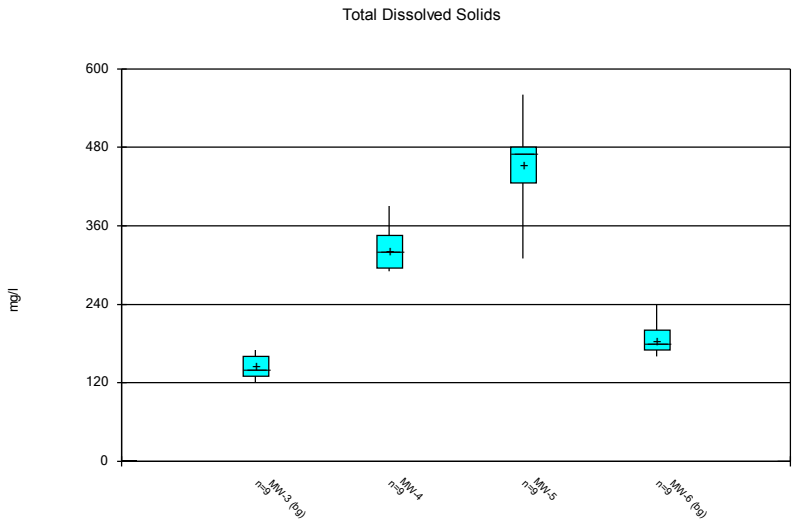


Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Thallium



Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



Box & Whiskers Plot Analysis Run 11/29/2017 3:17 PM View: SBMU-SPS Appendix III

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

Box & Whiskers Plot MW-8

SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Printed 11/29/2017, 9:37 AM

Constituent	Well	N	Mean	Median	Lower Q.	Upper Q.	Min.	Max.	%NDs
Antimony (ug/l)	MW-8	8	1.5	1.5	1.5	1.5	1.5	1.5	100
Arsenic (ug/l)	MW-8	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Barium (ug/l)	MW-8	8	77.5	76	74	83	68	86	0
Beryllium (ug/l)	MW-8	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Boron (ug/l)	MW-8	9	490	510	455	525	400	540	0
Cadmium (ug/l)	MW-8	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Calcium (mg/l)	MW-8	9	84.44	86	77.5	90	74	92	0
Chloride (mg/l)	MW-8	9	43	43	36.5	48	36	53	0
Chromium (ug/l)	MW-8	8	2	2	2	2	2	2	100
Cobalt (ug/l)	MW-8	8	1	1	1	1	1	1	100
Fluoride (mg/l)	MW-8	9	0.125	0.125	0.125	0.125	0.125	0.125	100
Lead (ug/l)	MW-8	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Lithium (ug/l)	MW-8	8	5.875	5	5	5	5	12	87.5
Mercury (ug/l)	MW-8	8	0.1	0.1	0.1	0.1	0.1	0.1	100
Molybdenum (ug/l)	MW-8	8	0.5	0.5	0.5	0.5	0.5	0.5	100
pH (S.U.)	MW-8	9	7.144	7.15	7.11	7.16	7.05	7.25	0
Radium (pCi/l)	MW-8	8	0.7804	0.822	0.639	0.97	0.314	1.067	0
Selenium (ug/l)	MW-8	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Sulfate (mg/l)	MW-8	9	100.8	100	89	110	83	120	0
Thallium (ug/l)	MW-8	8	0.5	0.5	0.5	0.5	0.5	0.5	100
Total Dissolved Solids (mg/l)	MW-8	9	350	340	320	380	290	420	0

Antimony

Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
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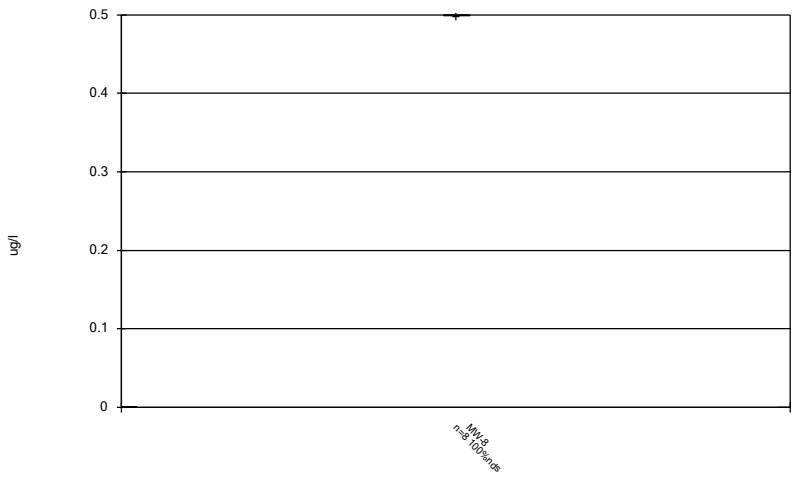
Arsenic



Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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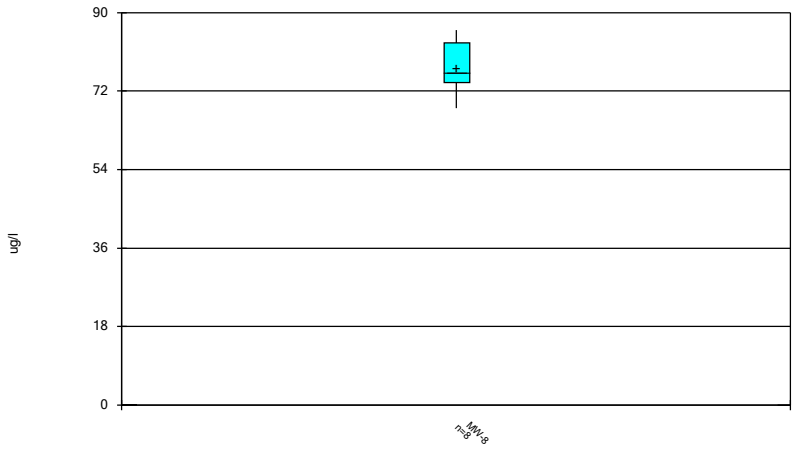
Barium



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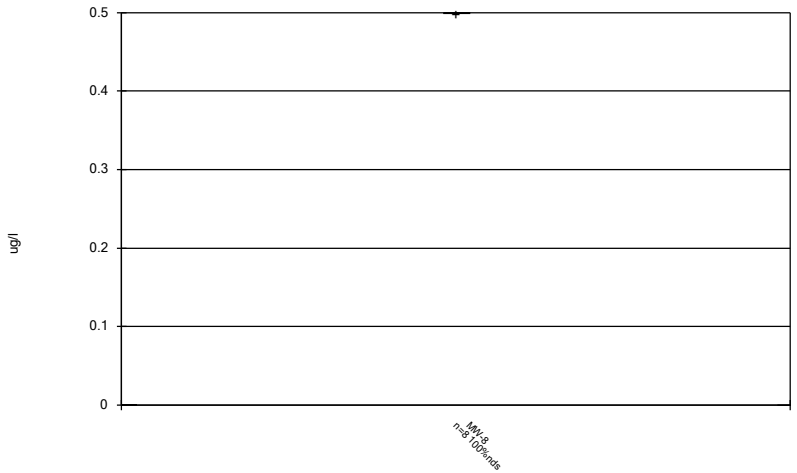
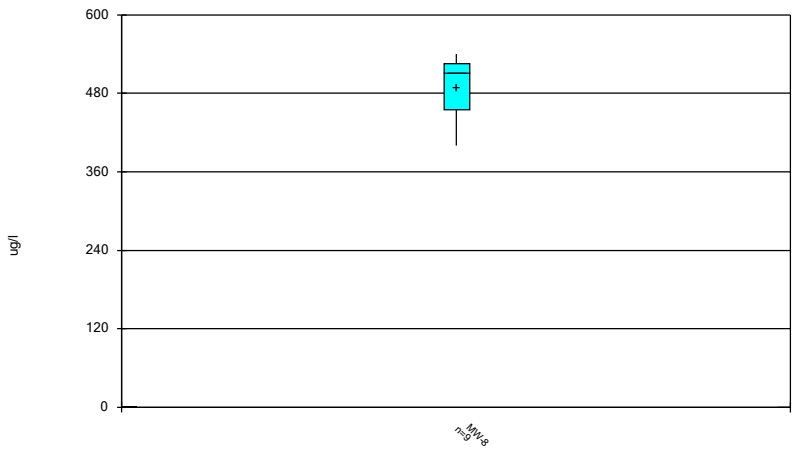
Beryllium



Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Boron



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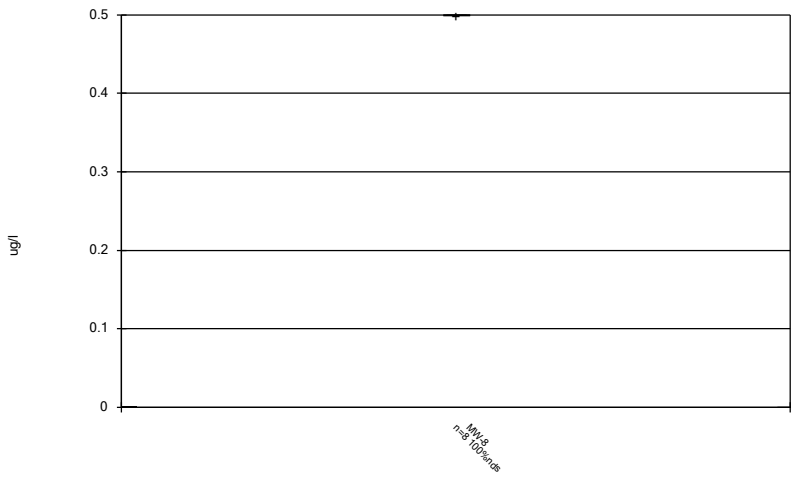
Cadmium



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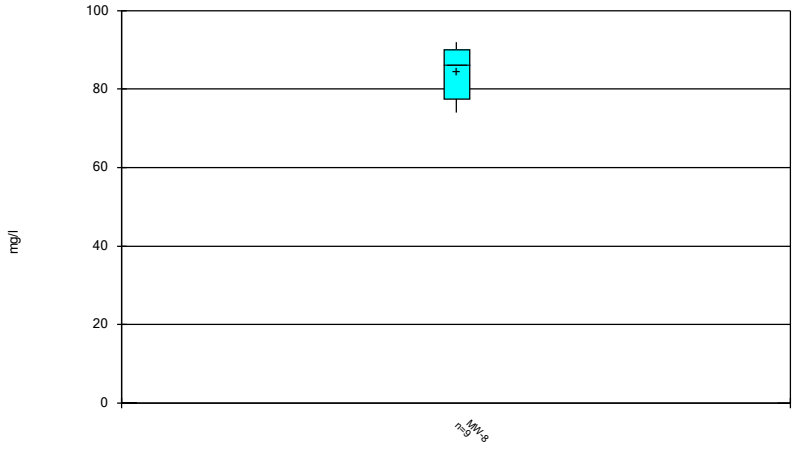
Calcium



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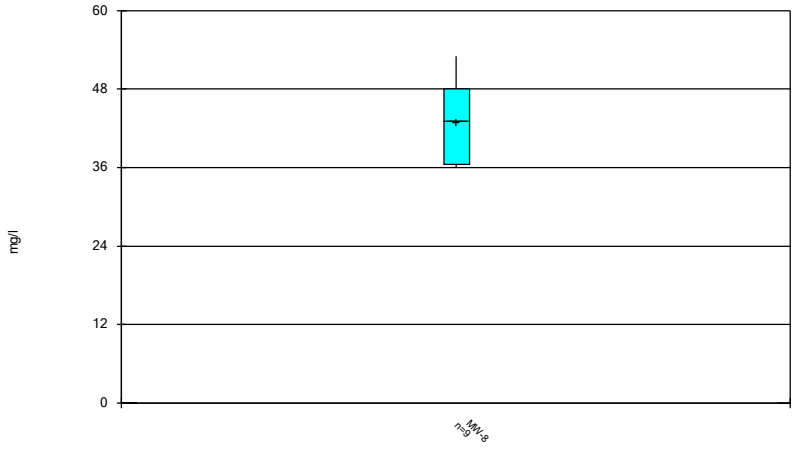
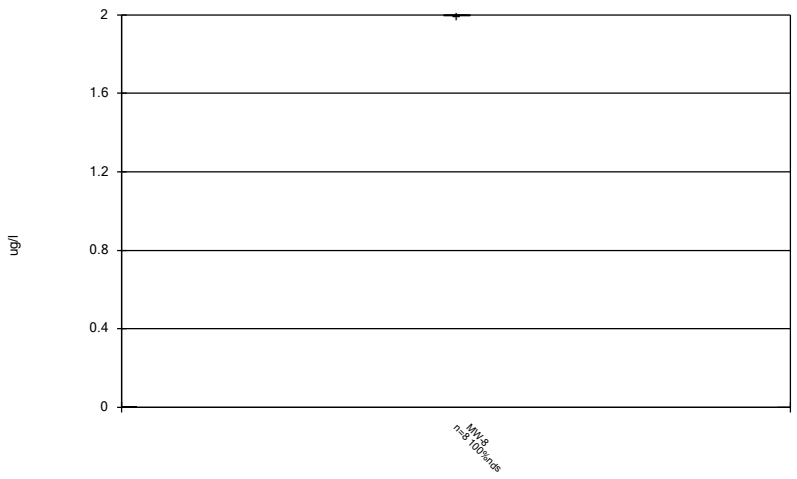
Chloride



Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Chromium



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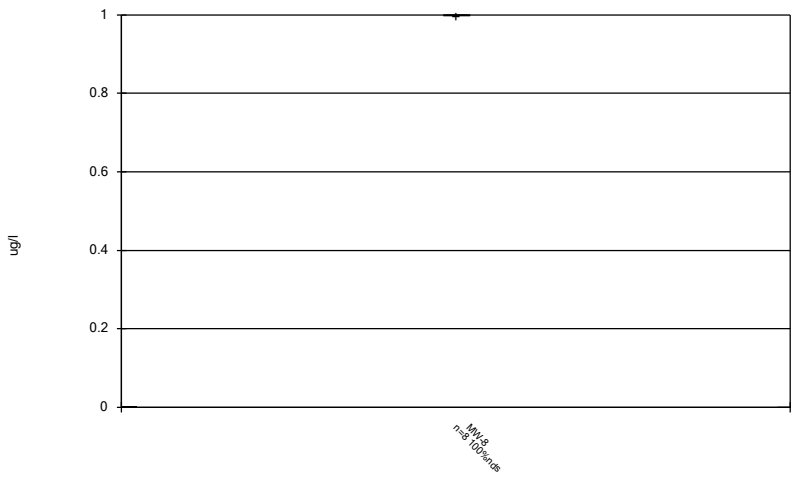
Cobalt



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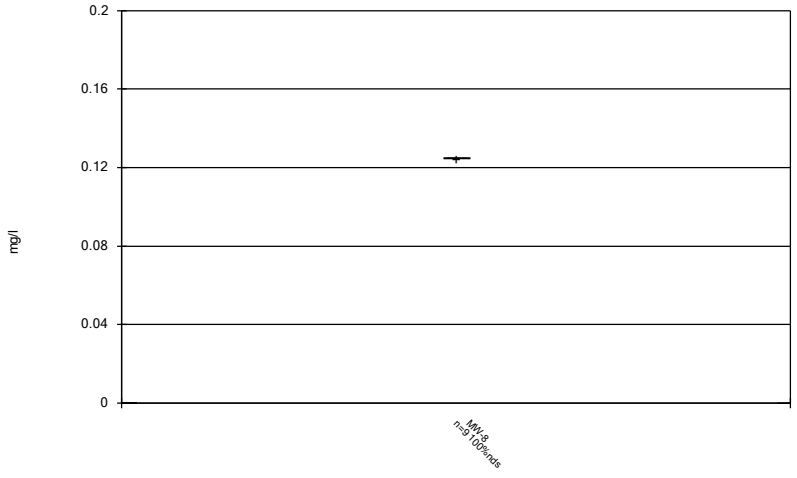
Fluoride



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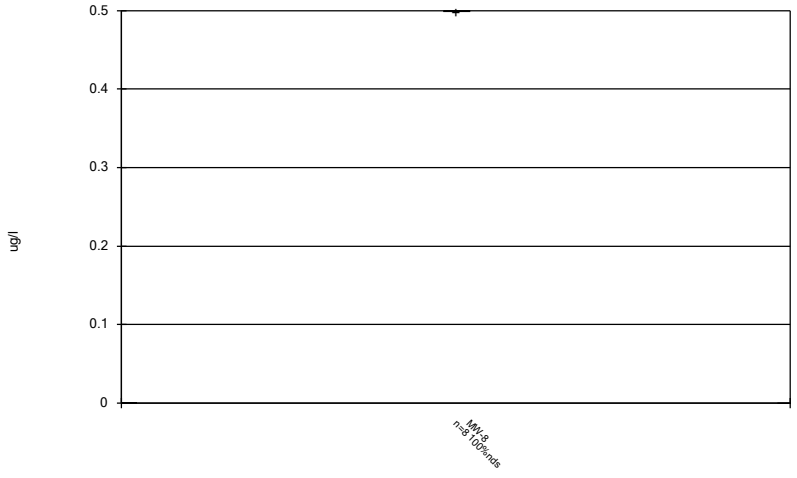
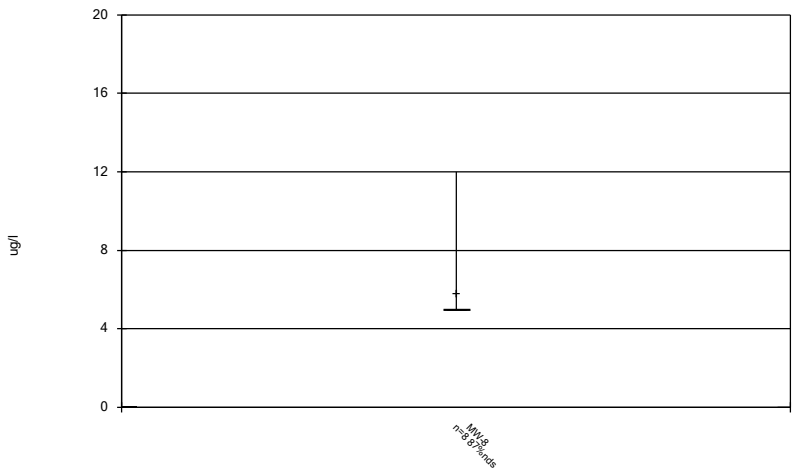
Lead



Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

Lithium



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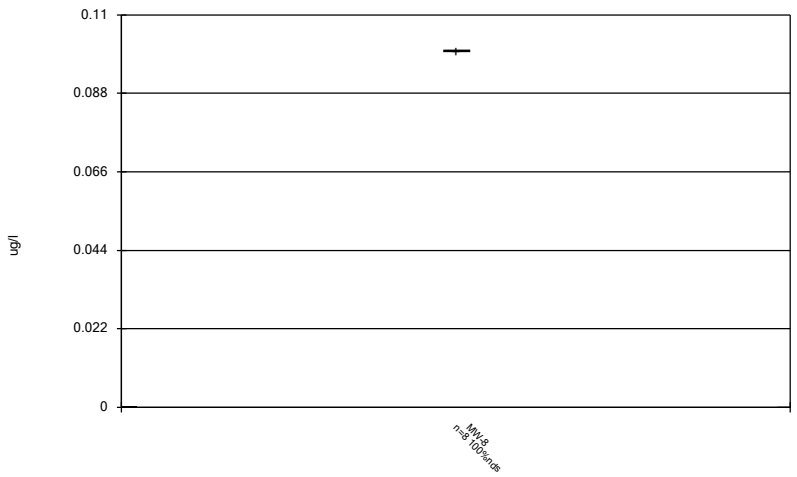
Mercury



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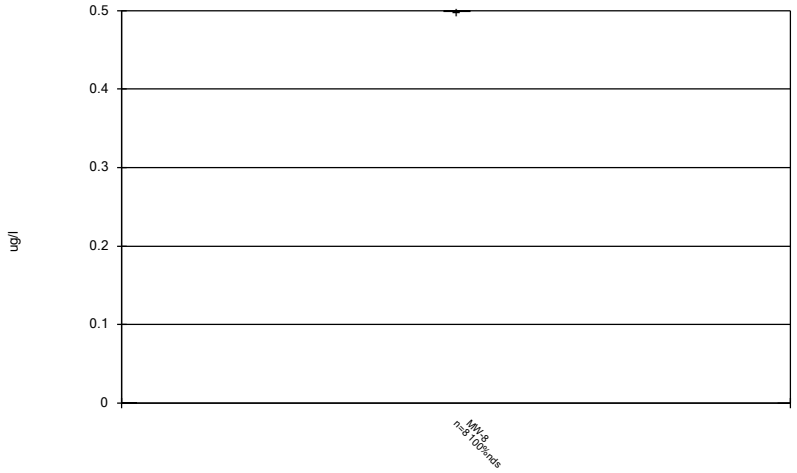
Molybdenum



Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
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pH

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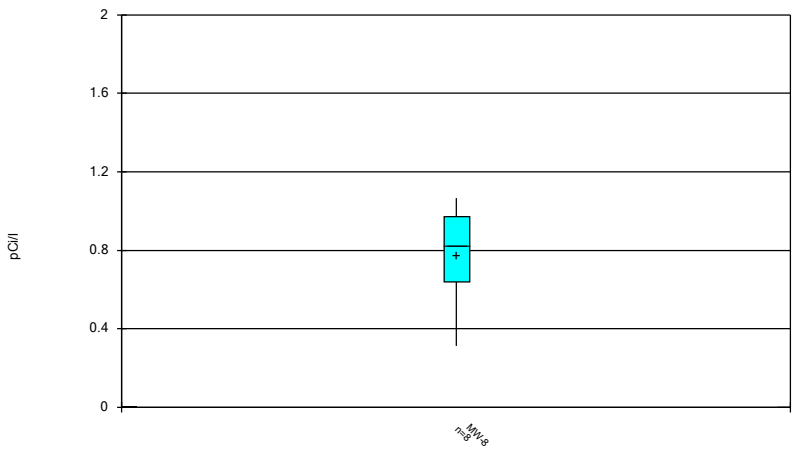
Radium



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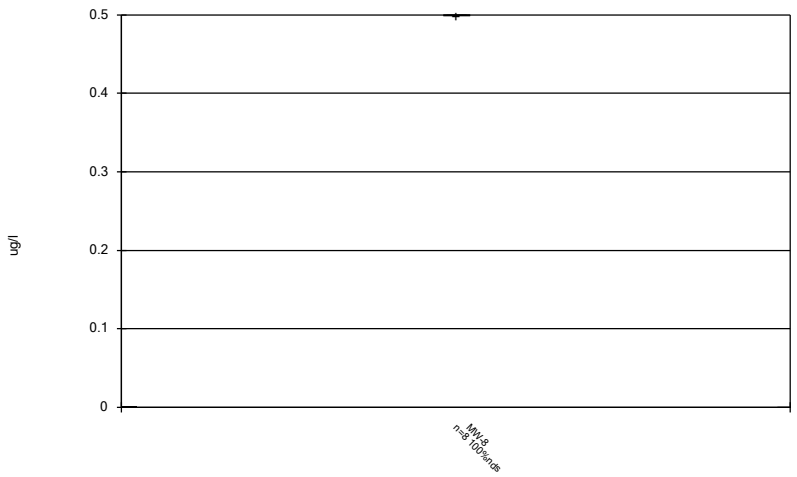
Selenium



Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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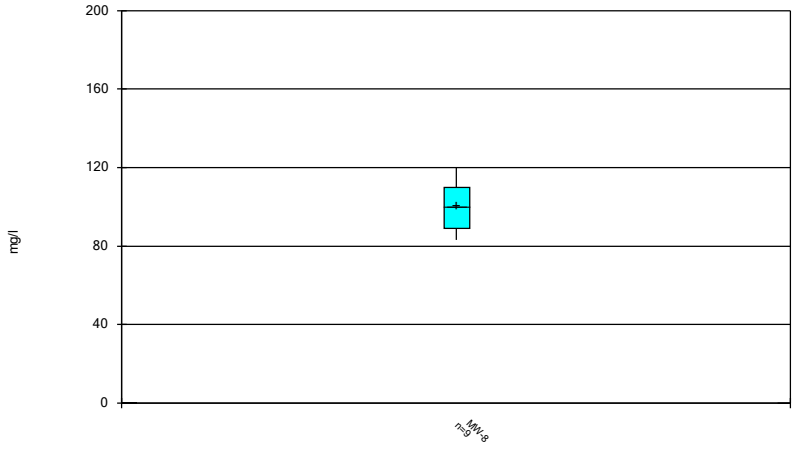
Sulfate



Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17

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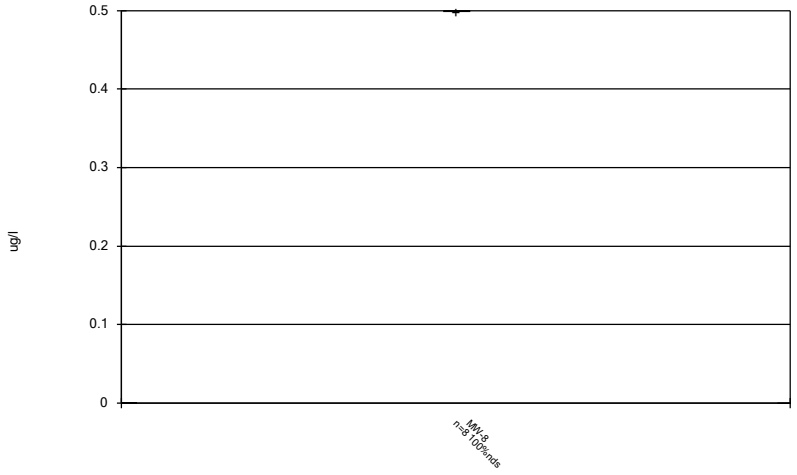
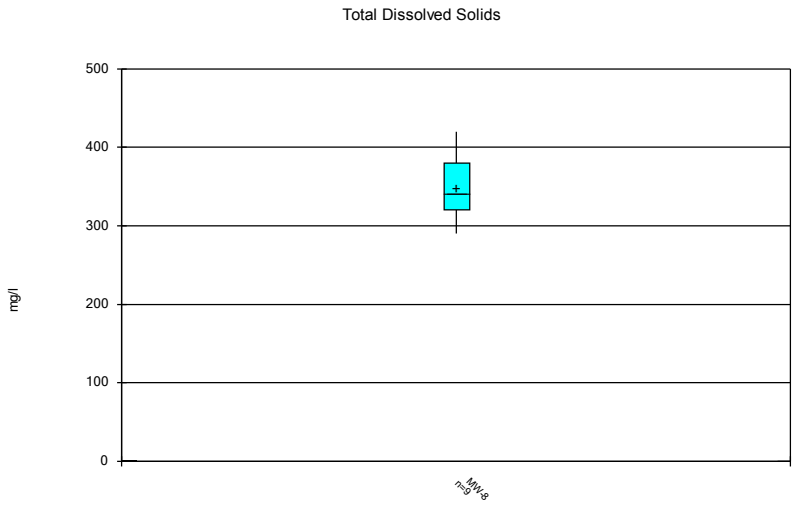
Thallium



Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17



Box & Whiskers Plot Analysis Run 11/29/2017 9:36 AM View: SBMU-SPS Appendix III

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

Appendix 8

Prediction Limit Charts

Prediction Limit MW-3 through MW-6

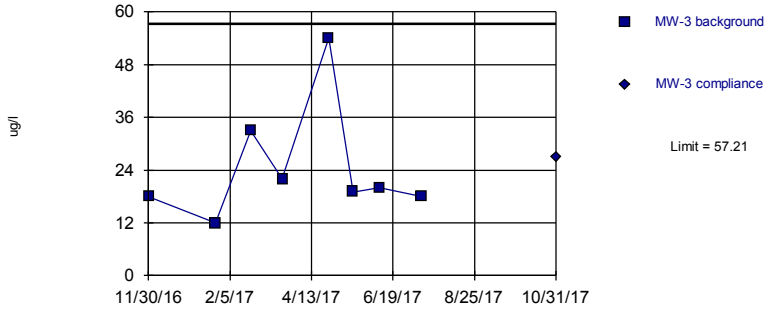
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Printed 12/5/2017, 2:08 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Boron (ug/l)	MW-3	57.21	n/a	10/31/2017	27	No	8	0	No	0.002505	Param Intra 1 of 2
Boron (ug/l)	MW-4	1734	n/a	10/31/2017	1400	No	8	0	No	0.002505	Param Intra 1 of 2
Boron (ug/l)	MW-5	626.5	n/a	10/31/2017	280	No	7	0	No	0.002505	Param Intra 1 of 2
Boron (ug/l)	MW-6	44.77	n/a	10/31/2017	41	No	7	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/l)	MW-3	25.46	n/a	10/31/2017	19	No	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/l)	MW-4	95.25	n/a	10/31/2017	67	No	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/l)	MW-5	134.5	n/a	10/31/2017	72	No	7	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/l)	MW-6	49.29	n/a	10/31/2017	38	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-3	2.565	n/a	10/31/2017	2	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-4	18.69	n/a	10/31/2017	17	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-5	17.45	n/a	10/31/2017	13	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-6	3.083	n/a	10/31/2017	1.7	No	8	0	No	0.002505	Param Intra 1 of 2
Fluoride (mg/l)	MW-3	0.4819	n/a	10/31/2017	0.331	No	8	12.5	No	0.002505	Param Intra 1 of 2
Fluoride (mg/l)	MW-4	0.259	n/a	10/31/2017	0.125ND	No	8	87.5	n/a	0.02144	NP Intra (NDs) 1 of 2
Fluoride (mg/l)	MW-5	0.255	n/a	10/31/2017	0.125ND	No	8	87.5	n/a	0.02144	NP Intra (NDs) 1 of 2
Fluoride (mg/l)	MW-6	0.331	n/a	10/31/2017	0.303	No	8	75	n/a	0.02144	NP Intra (NDs) 1 of 2
pH (S.U.)	MW-3	7.189	6.363	10/31/2017	6.64	No	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-4	7.529	7.291	10/31/2017	7.31	No	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-5	7.078	6.697	10/31/2017	6.89	No	8	0	No	0.001253	Param Intra 1 of 2
pH (S.U.)	MW-6	7.075	6.575	10/31/2017	6.72	No	8	0	No	0.001253	Param Intra 1 of 2
Sulfate (mg/l)	MW-3	33.73	n/a	10/31/2017	20	No	8	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/l)	MW-4	147.6	n/a	10/31/2017	83	No	8	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/l)	MW-5	300	n/a	10/31/2017	88	No	7	0	No	0.002505	Param Intra 1 of 2
Sulfate (mg/l)	MW-6	44.8	n/a	10/31/2017	29	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-3	191.6	n/a	10/31/2017	140	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-4	407.2	n/a	10/31/2017	290	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-5	577.5	n/a	10/31/2017	310	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-6	250.2	n/a	10/31/2017	170	No	8	0	No	0.002505	Param Intra 1 of 2

Within Limit

Boron

Intrawell Parametric



Background Data Summary: Mean=24.5, Std. Dev.=13.31, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7709, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/5/2017 2:07 PM View: SBMU-SPS Appendix III

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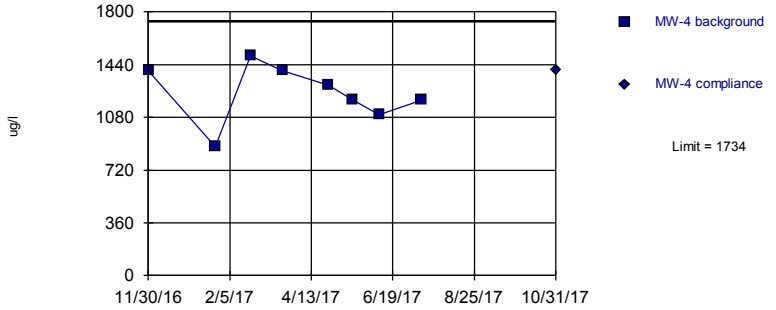
Within Limit

Boron

Intrawell Parametric



Background Data Summary: Mean=1248, Std. Dev.=198, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9503, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/5/2017 2:07 PM View: SBMU-SPS Appendix III

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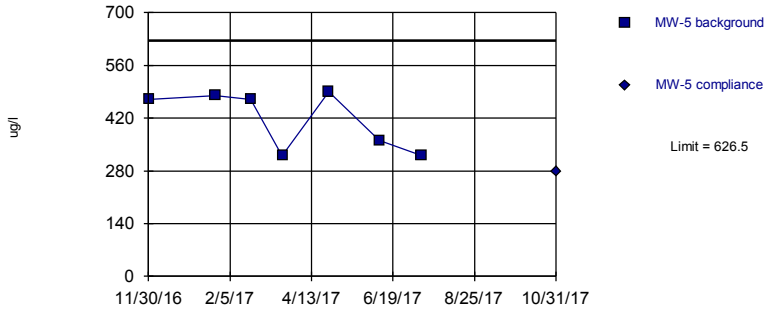
Within Limit

Boron

Intrawell Parametric



Background Data Summary: Mean=415.7, Std. Dev.=78.5, n=7. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7805, critical = 0.73. Kappa = 2.685 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/5/2017 2:07 PM View: SBMU-SPS Appendix III

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

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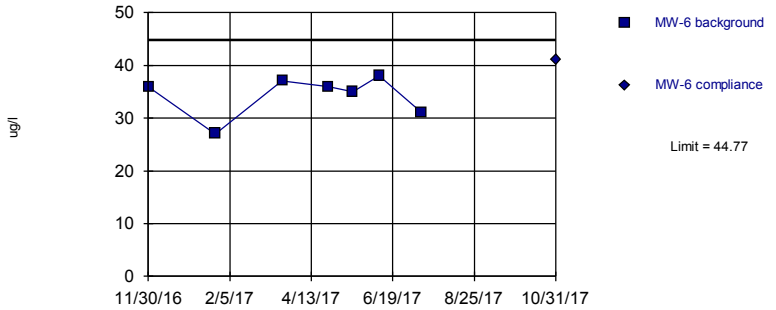
Within Limit

Boron

Intrawell Parametric



Background Data Summary: Mean=34.29, Std. Dev.=3.904, n=7. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8499, critical = 0.73. Kappa = 2.685 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

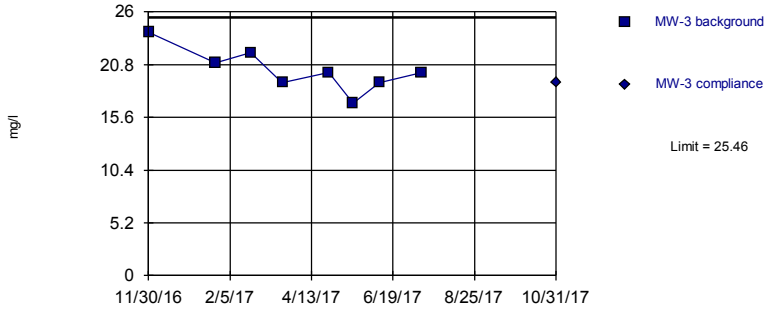
Prediction Limit Analysis Run 12/5/2017 2:07 PM View: SBMU-SPS Appendix III

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

Within Limit

Calcium

Intrawell Parametric



Background Data Summary: Mean=20.25, Std. Dev.=2.121, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9723, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/5/2017 2:07 PM View: SBMU-SPS Appendix III

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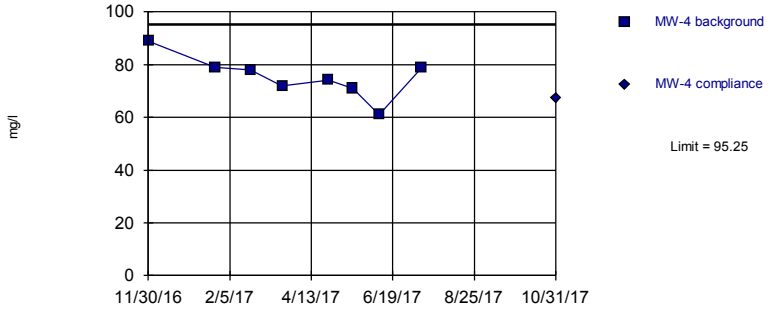
Within Limit

Calcium

Intrawell Parametric



Background Data Summary: Mean=75.38, Std. Dev.=8.088, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9559, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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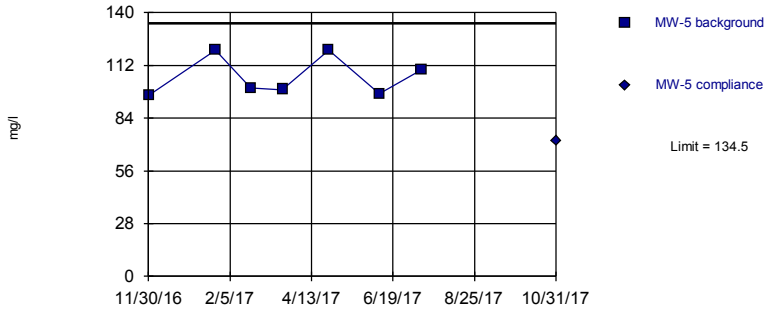
Within Limit

Calcium

Intrawell Parametric



Background Data Summary: Mean=106, Std. Dev.=10.6, n=7. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8174, critical = 0.73. Kappa = 2.685 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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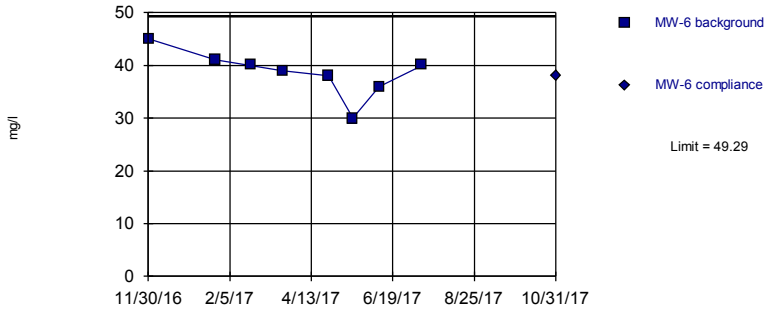
Within Limit

Calcium

Intrawell Parametric



Background Data Summary: Mean=38.63, Std. Dev.=4.34, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9284, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

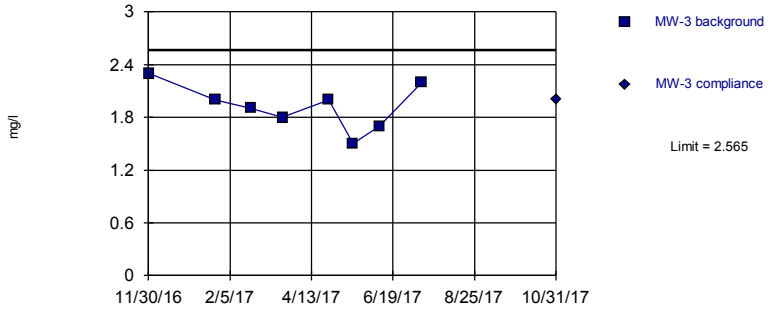
Prediction Limit Analysis Run 12/5/2017 2:07 PM View: SBMU-SPS Appendix III

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

Within Limit

Chloride

Intrawell Parametric



Background Data Summary: Mean=1.925, Std. Dev.=0.2605, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9816, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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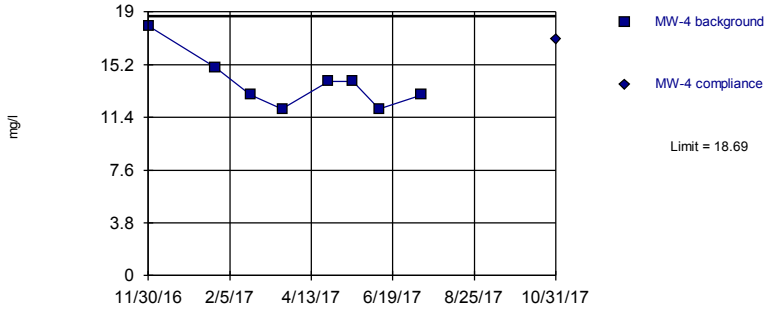
Within Limit

Chloride

Intrawell Parametric



Background Data Summary: Mean=13.88, Std. Dev.=1.959, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8612, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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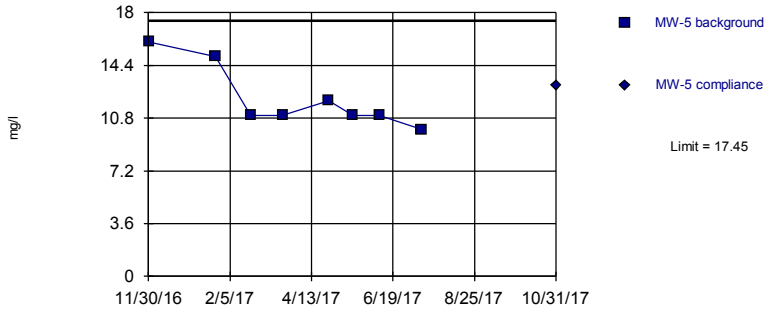
Within Limit

Chloride

Intrawell Parametric



Background Data Summary: Mean=12.13, Std. Dev.=2.167, n=8. 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.

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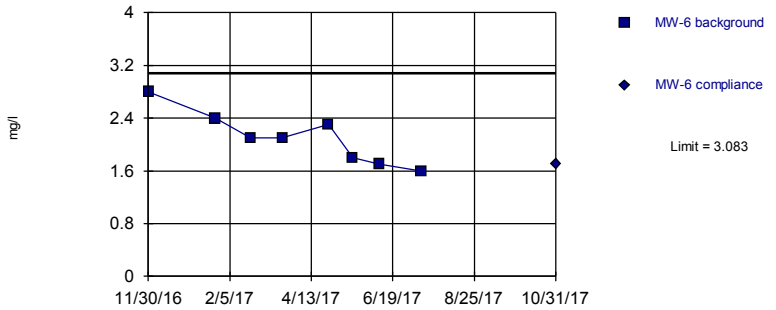
Within Limit

Chloride

Intrawell Parametric



Background Data Summary: Mean=2.1, Std. Dev.=0.4, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9562, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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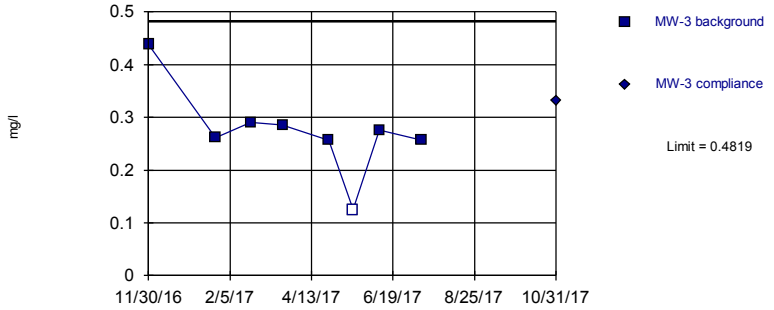
Hollow symbols indicate censored values.

Within Limit

Fluoride

Intrawell Parametric



Background Data Summary: Mean=0.2736, Std. Dev.=0.08475, n=8, 12.5% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8446, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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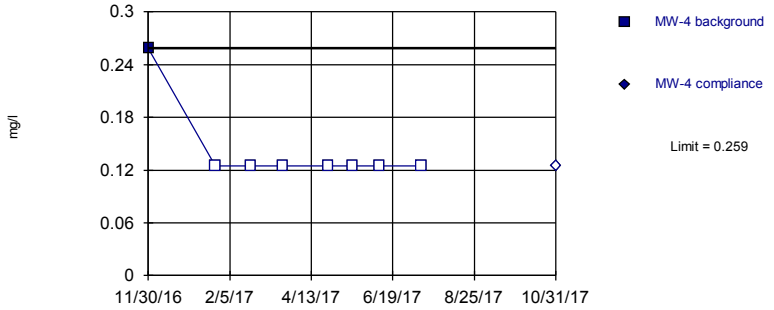
Hollow symbols indicate censored values.

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 8 background values. 87.5% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.

Prediction Limit Analysis Run 12/5/2017 2:07 PM View: SBMU-SPS Appendix III

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

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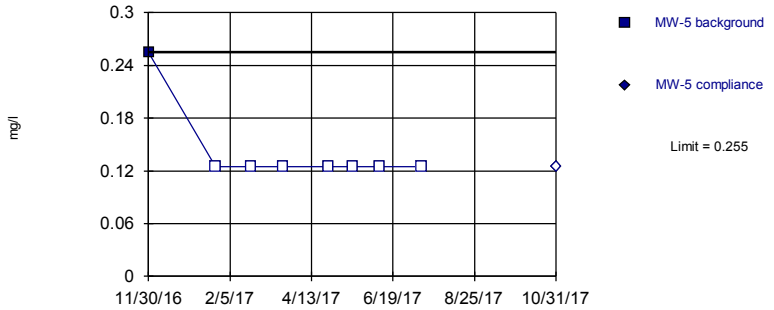
Hollow symbols indicate censored values.

Within Limit

Fluoride

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 87.5% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.

Prediction Limit Analysis Run 12/5/2017 2:07 PM View: SBMU-SPS Appendix III

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

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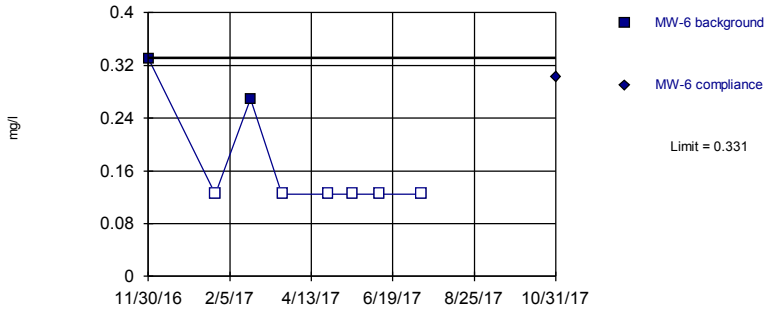
Hollow symbols indicate censored values.

Within Limit

Fluoride

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 75% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.

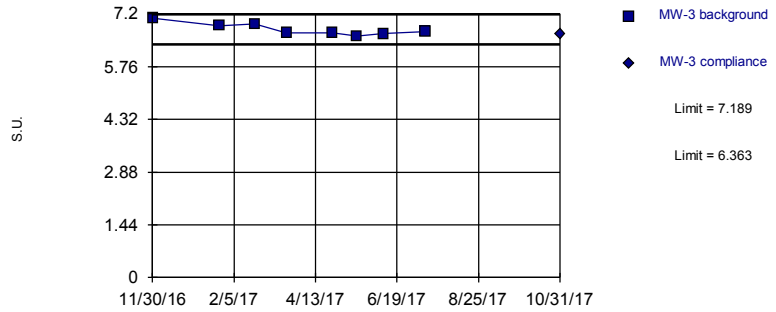
Prediction Limit Analysis Run 12/5/2017 2:07 PM View: SBMU-SPS Appendix III

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

Within Limits

pH

Intrawell Parametric



Background Data Summary: Mean=6.776, Std. Dev.=0.1681, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8856, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/5/2017 2:07 PM View: SBMU-SPS Appendix III

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

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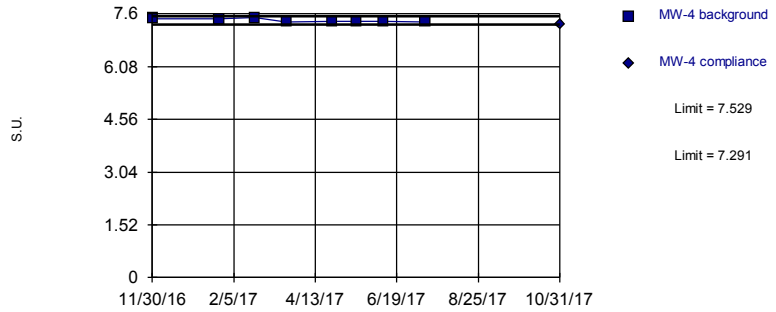
Within Limits

pH

Intrawell Parametric



Background Data Summary: Mean=7.41, Std. Dev.=0.0484, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7828, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/5/2017 2:07 PM View: SBMU-SPS Appendix III

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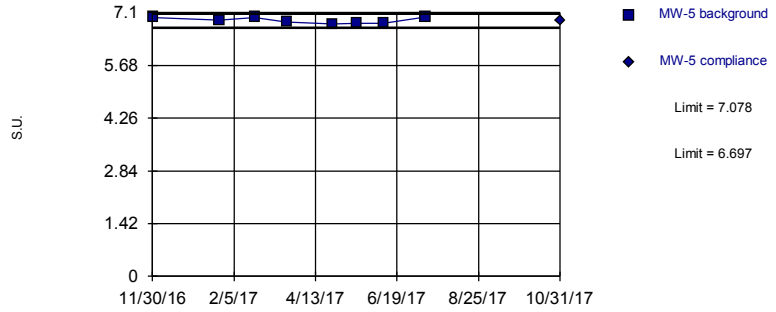
Within Limits

pH

Intrawell Parametric



Background Data Summary: Mean=6.888, Std. Dev.=0.07741, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8471, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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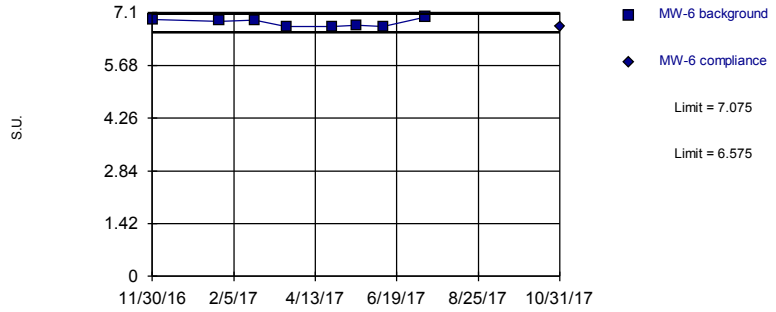
Within Limits

pH

Intrawell Parametric



Background Data Summary: Mean=6.825, Std. Dev.=0.1018, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8714, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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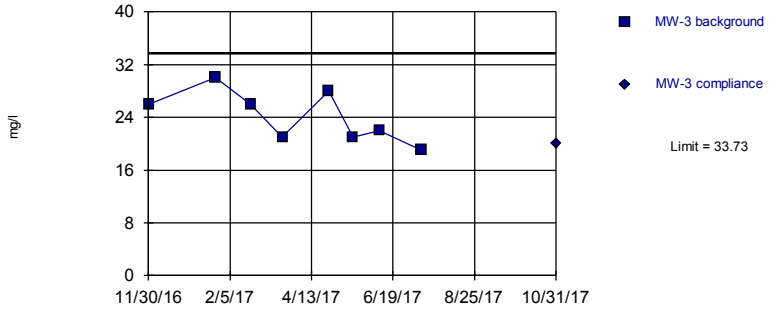
Within Limit

Sulfate

Intrawell Parametric



Background Data Summary: Mean=24.13, Std. Dev.=3.907, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9297, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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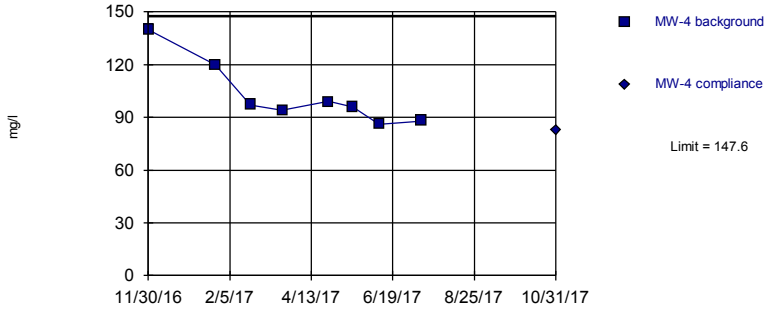
Within Limit

Sulfate

Intrawell Parametric



Background Data Summary: Mean=102.5, Std. Dev.=18.33, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8132, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/5/2017 2:07 PM View: SBMU-SPS Appendix III

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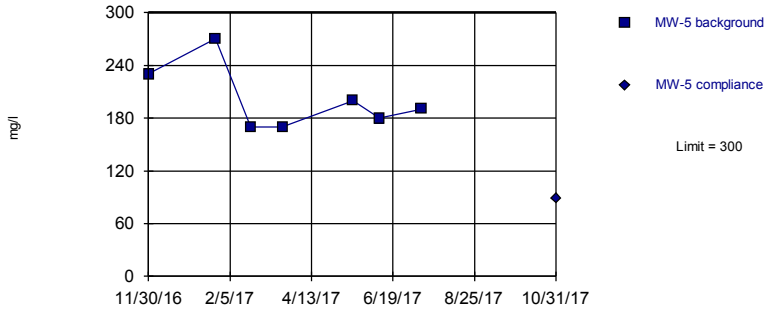
Within Limit

Sulfate

Intrawell Parametric



Background Data Summary: Mean=201.4, Std. Dev.=36.71, n=7. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8585, critical = 0.73. Kappa = 2.685 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/5/2017 2:07 PM View: SBMU-SPS Appendix III

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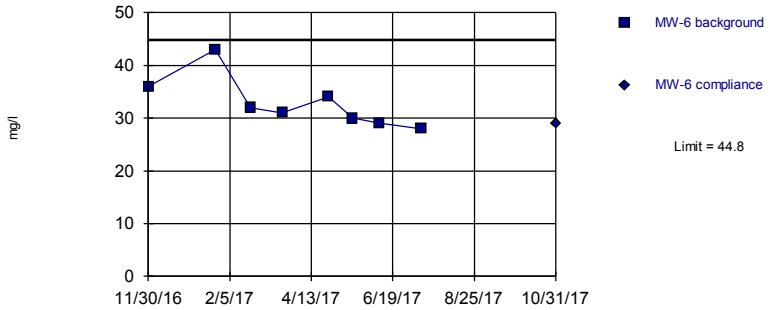
Within Limit

Sulfate

Intrawell Parametric



Background Data Summary: Mean=32.88, Std. Dev.=4.853, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8801, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

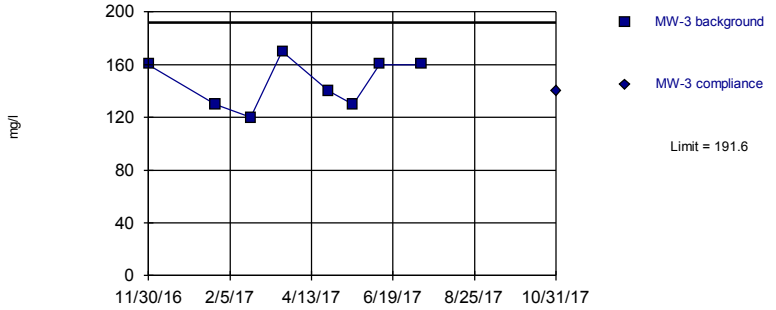
Prediction Limit Analysis Run 12/5/2017 2:07 PM View: SBMU-SPS Appendix III

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

Within Limit

Total Dissolved Solids

Intrawell Parametric



Background Data Summary: Mean=146.3, Std. Dev.=18.47, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8903, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/5/2017 2:07 PM View: SBMU-SPS Appendix III

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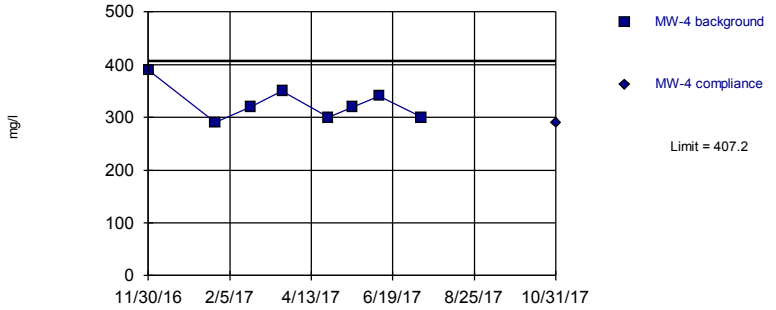
Within Limit

Total Dissolved Solids

Intrawell Parametric



Background Data Summary: Mean=326.3, Std. Dev.=32.92, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9148, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/5/2017 2:07 PM View: SBMU-SPS Appendix III

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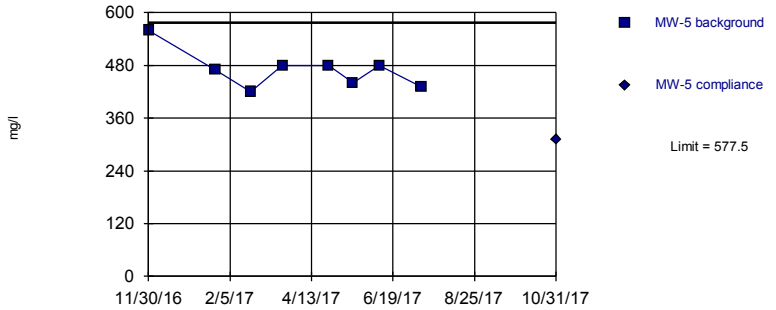
Within Limit

Total Dissolved Solids

Intrawell Parametric



Background Data Summary: Mean=470, Std. Dev.=43.75, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8718, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/5/2017 2:07 PM View: SBMU-SPS Appendix III

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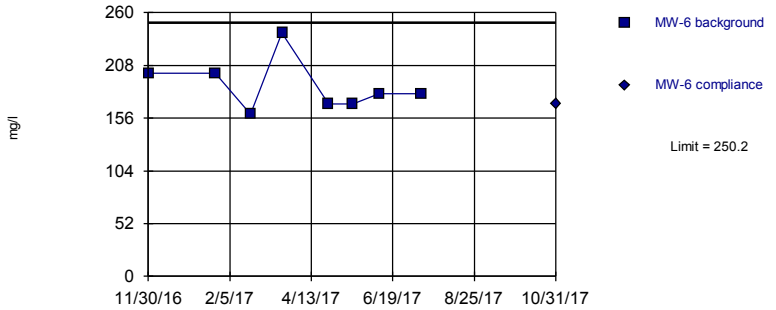
Within Limit

Total Dissolved Solids

Intrawell Parametric



Background Data Summary: Mean=187.5, Std. Dev.=25.5, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8761, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/5/2017 2:07 PM View: SBMU-SPS Appendix III

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

Prediction Limits MW-8

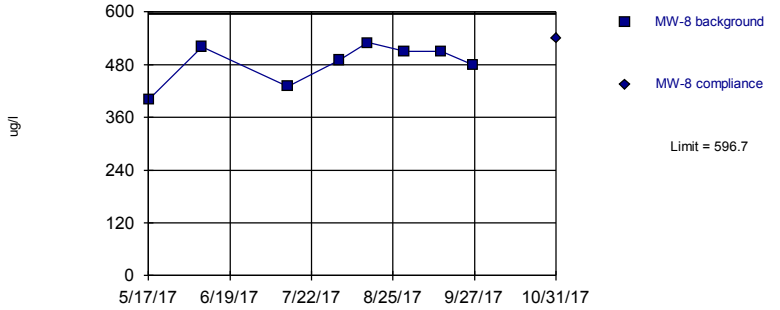
SBMU-Sikeston Power Station Client: GREDELL Engineering Data: SBMU-SPS EDD File 09-28-17 Printed 12/5/2017, 2:05 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Boron (ug/l)	MW-8	596.7	n/a	10/31/2017	540	No	8	0	No	0.002505	Param Intra 1 of 2
Calcium (mg/l)	MW-8	101.7	n/a	10/31/2017	86	No	8	0	No	0.002505	Param Intra 1 of 2
Chloride (mg/l)	MW-8	58.72	n/a	10/31/2017	45	No	8	0	No	0.002505	Param Intra 1 of 2
Fluoride (mg/l)	MW-8	0.25	n/a	10/31/2017	0.125ND	No	8	100	n/a	0.02144	NP Intra (NDs) 1 of 2
pH (S.U.)	MW-8	7.285	7.018	10/31/2017	7.09	No	8	0	No	0.001253	Param Intra 1 of 2
Sulfate (mg/l)	MW-8	131.1	n/a	10/31/2017	110	No	8	0	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/l)	MW-8	448	n/a	10/31/2017	380	No	8	0	No	0.002505	Param Intra 1 of 2

Within Limit

Boron

Intrawell Parametric



Background Data Summary: Mean=483.8, Std. Dev.=45.96, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8712, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/5/2017 2:04 PM View: SBMU-SPS Appendix III

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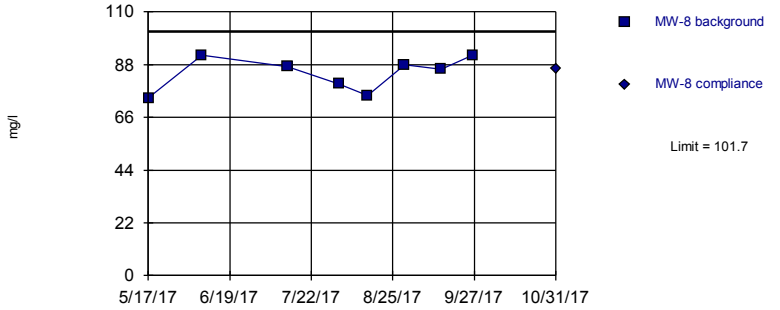
Within Limit

Calcium

Intrawell Parametric



Background Data Summary: Mean=84.25, Std. Dev.=7.106, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8885, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/5/2017 2:04 PM View: SBMU-SPS Appendix III

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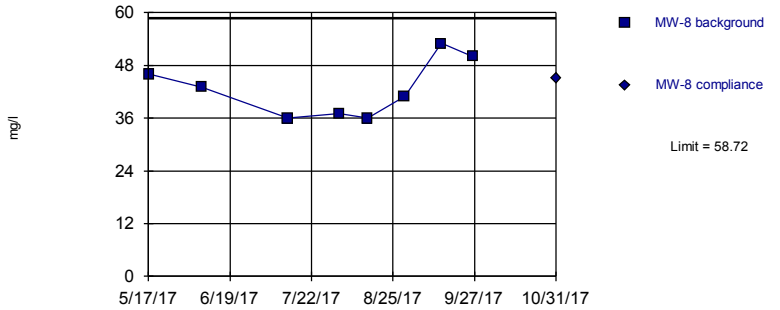
Within Limit

Chloride

Intrawell Parametric



Background Data Summary: Mean=42.75, Std. Dev.=6.497, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9101, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/5/2017 2:04 PM View: SBMU-SPS Appendix III

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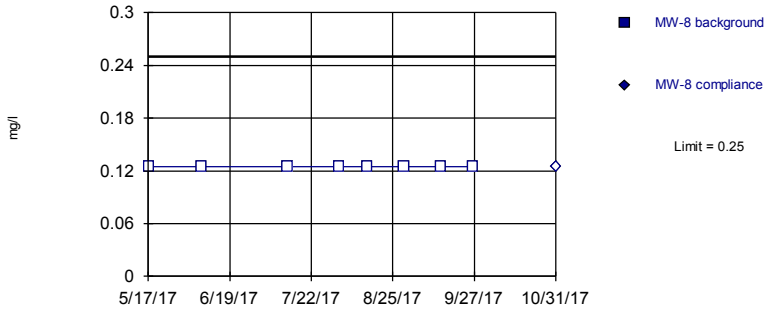
Hollow symbols indicate censored values.

Within Limit

Fluoride

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 8) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2). Insufficient data to test for seasonality: data were not deseasonalized.

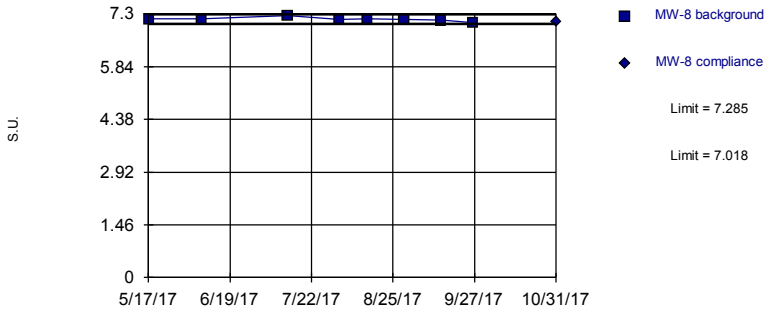
Prediction Limit Analysis Run 12/5/2017 2:04 PM View: SBMU-SPS Appendix III

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

Within Limits

pH

Intrawell Parametric



Background Data Summary: Mean=7.151, Std. Dev.=0.05436, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8529, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/5/2017 2:04 PM View: SBMU-SPS Appendix III

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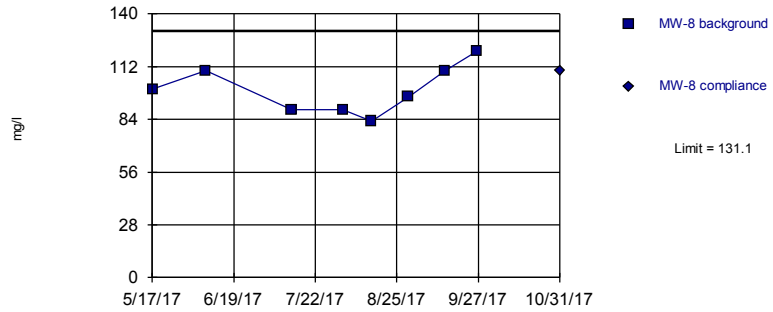
Within Limit

Sulfate

Intrawell Parametric



Background Data Summary: Mean=99.63, Std. Dev.=12.79, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9458, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

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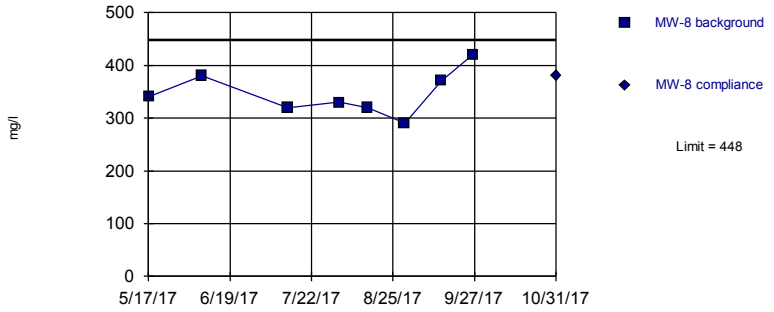
Within Limit

Total Dissolved Solids

Intrawell Parametric



Background Data Summary: Mean=346.3, Std. Dev.=41.38, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9539, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 12/5/2017 2:04 PM View: SBMU-SPS Appendix III

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