FIRST ANNUAL
COAL COMBUSTION RESIDUALS (CCR)
GROUNDWATER MONITORING AND
CORRECTIVE ACTION REPORT

LANDFILL AND SURFACE IMPOUNDMENTS

R.D. MORROW, SR. GENERATING STATION
304 OLD OKAHOLA SCHOOL ROAD
PURVIS, LAMAR COUNTY, MISSISSIPPI

Prepared For:

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January 31, 2018

FIRST ANNUAL COAL COMBUSTION RESIDUALS (CCR)
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ENGINEERING CERTIFICATION

This revised First Annual CCR Groundwater Monitoring and Corrective Action Report for the Cooperative Energy, R.D. Morrow, Sr. Generating Station located in Purvis, Mississippi, was prepared by Environmental Management Services, Inc. (EMS). This Statement of Professional Opinion is based on information available to EMS at the time of the well system construction and EMS's technical understanding of the United States Environmental Protection Agency's "Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments," published in the Federal Register on April 17, 2015 with an effective date of October 19, 2015 (CCR Rule).

On the basis of and subject to the foregoing it is my professional opinion as a Professional Engineer licensed in the State of Mississippi that this First Annual CCR Groundwater Monitoring and Corrective Action Report has been prepared in accordance with the CCR Rule. It is my professional opinion based on my understanding of the technical requirements of the CCR Rule and good and accepted engineering practices that this report and its contents meet the technical requirements and/or intent of the CCR Rule (40 CFR 257.90). This Statement of Professional Opinion is not and shall not be interpreted or construed as a guarantee, warranty or legal opinion.

Environmental Management Services, Inc.

Christopher T. Johnson, P.E., P.S.
Engineering Manager/Vice President
Mississippi Professional Engineer No. #15761

Date: March 1, 2018 Seal

1.0 INTRODUCTION

Cooperative Energy operates the R. D. Morrow, Sr. Generating Station in the community of Okahola, near Purvis, Mississippi. The facility uses coal as an energy source for two steam generating units with a net capacity of 195 megawatts each. By-products from the coal combustion process include coal combustion residuals (CCR) that are managed on-site within the regulated CCR landfill and CCR surface impoundments.

The U. S. Environmental Protection Agency published a final rule to regulate the disposal of CCR as a solid waste under subtitle D of the Resource Conservation and Recovery Act (***Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities*** (Federal Register Vol. 80, No. 74, April 17, 2015). The information contained herein presents the measures implemented to comply with groundwater monitoring and data analysis requirements outlined in 40 CFR 257.90 through 257.94.

In accordance with 257.90(e) an annual groundwater monitoring and corrective action report (the Annual Report) must be prepared for existing CCR landfills and existing CCR surface impoundments, no later than January 31, 2018, and annually thereafter. Section 257.90(e) outlines the contents of the Annual Report, which is provided herein:

(1) A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;

(2) Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;

(3) In addition to all the monitoring data obtained under §§257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;

(4) A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase (SSI) over background levels); and

(5) Other information required to be included in the annual report as specified in §§257.90 through 257.98.

2.0 SITE SETTING

The Site is located at 304 Old Okahola School Road in the community of Okahola, a rural area of Lamar County, approximately 4.5-miles north of the City of Purvis and 8 miles southwest of the City of Hattiesburg. The facility occupies portions of Sections 15, 21, and 22 of Township 3 North, Range 14 West, Lamar County, Mississippi. The approximate coordinates for the generating building are 31° 13' 04.87" North Latitude, 89° 23' 38.31" West Longitude. A Site Location Map derived from the USGS 1982 Purvis, MS 7.5 Minute Topographic Quadrangle Map is presented as Figure 1. The Old Okahola School Road bisects the property into a northern and southern parcel. The generating plant and CCR surface impoundments are located on the north parcel and the CCR landfill, stormwater treatment area, and cooling tower blowdown pond are located on the southern parcel.

The elevation north of Old Okahola School Road in the vicinity of the generating plant is typically 250 feet and greater. South of the road in the vicinity of the Landfill the elevation is 230 to 240 feet. The main drainage feature in the vicinity of the subject site is Black Creek, which is part of the Pascagoula River Basin. Black Creek traverses northwest to southeast across Lamar County and forms the southern property boundary of the subject property. Storm water drainage and NPDES discharge from the site are routed to Black Creek.

3.0 GROUNDWATER MONITORING PROGRAM

The information contained in this section summarizes measures implemented to comply with groundwater monitoring system requirements outlined in 40 CFR Part 257, 257.91 and groundwater sampling and analysis requirements in 257.93.

3.1 MONITORING SYSTEMS

The groundwater monitoring system performance standard outlined in 40 CFR Part 257.91 requires that systems consist of a sufficient number of wells, installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that accurately represent the background and quality of groundwater passing the waste boundary of the CCR unit. The construction of the landfill and surface impoundments monitoring systems were designed to ensure detection of groundwater contamination within the uppermost aquifer. The number of wells, spacing, and depths were determined based on site-specific technical information including aquifer thickness and lithology, groundwater flow rate and flow direction. The regulation includes the following minimum specifications:

1. A minimum of one upgradient and three downgradient monitoring wells;
2. Additional wells necessary to accurately represent groundwater conditions;
3. Monitoring wells must be cased in a manner that maintains the integrity of the monitoring wells borehole; screened and packed with gravel or sand; and the annular space above the sampling interval sealed; and
4. The design, installation and development of the system documented and certified by a qualified professional engineer that the system was designed and constructed to meet the requirements.

A summary of the groundwater monitoring system information for the CCR units is provided in the sections below. More detailed documentation is maintained in the facility operating record.

3.1.1 Landfill

Monitor Wells MW-2, MW-3, MW-4, MW-5 and MW-6 were installed February 1 – 6, 2005 at the locations shown on Figure 3 to satisfy requirements of the facility's Mississippi Department of Environmental Quality (MDEQ) Solid Waste Permit No. SW0370020308. MW-2 is located on the north side of the landfill and serves as the upgradient monitor well. Monitor Wells MW-3 through MW-6 are downgradient monitoring wells for the landfill. There is no monitor well numbered MW-1 at this time.

A monitoring system construction report containing well installation details, materials and procedures, boring logs, construction forms and slug test results for these wells is provided in the facility operating record. The ***Groundwater Monitoring System Certification Coal Combustion Residuals (CCR) Landfill*** is provided on the facility internet site.

3.1.2 Surface Impoundments

Monitor Well "Impoundment" (designated MWI-) wells were installed March 22-24, 2017 at the locations shown on Figure 3. MWI-1 is located on the north side of the CCR impoundments and serves as the upgradient monitor well. Monitor Wells MWI-2, MWI-3, and MWI-4 are downgradient monitoring wells for the CCR impoundments.

An monitoring system construction report containing well installation details, materials and procedures, boring logs, construction forms and slug test results for these wells is provided in the facility operating record. The ***Groundwater Monitoring System Certification Coal Combustion Residuals (CCR) Surface Impoundments*** is provided on the facility internet site.

3.2 GROUNDWATER SAMPLING PROGRAM

The groundwater sampling and analysis requirements outlined in 40 CFR Part 257.93 specifies that the program include consistent procedures that are designed to ensure monitoring results that provide an accurate representation of groundwater quality at the background and downgradient wells. Cooperative Energy developed and maintains in the operating record a ***Groundwater Sampling Plan*** that complies with the following regulatory requirements:

1. Includes procedures for sample collection, preservation and shipment, laboratory analysis, chain of custody control, and quality assurance and quality control;
2. Sampling and analytical methods appropriate for the accurate measurement of constituents listed in Appendix III and IV of Part 257;
3. The measurement of groundwater elevations prior to well purging to accurately determine the groundwater flow rate and direction; and
4. Establish baseline groundwater quality hydraulically upgradient (background) and downgradient of the CCR landfill and CCR surface impoundments by collecting the appropriate number of samples consistent with the statistical procedures employed to evaluate site groundwater data.

4.0 BASELINE DATA ANALYSIS

A total of nine sampling events were conducted between October 2015 and August 2017 at the CCR landfill and CCR surface impoundments monitoring systems to establish baseline conditions in the upgradient and downgradient wells. Although the monitoring requirements of 257.94 require a minimum of eight samples to establish baseline for statistical analysis, an additional set of samples was collected and analyzed at each CCR unit in the event any results were anomalous or otherwise unusable. Samples were collected and analyzed in accordance with the ***Groundwater Sampling Plan*** for the constituents listed in Appendix III and IV of Part 257.

The following sections provide the baseline results for Appendix III and IV constituents and the statistical evaluation of Appendix III constituents for the CCR landfill and CCR surface impoundments monitoring programs.

4.1 BASELINE DATA ANALYTICAL RESULTS

Tables 1 and 2 provide complete analytical summaries of all Appendix III constituents detected at the CCR landfill and CCR surface impoundments, respectively.

The concentration range of Appendix III constituents detected in the CCR landfill monitoring wells and further evaluated in Section 4.2.1 is summarized below:

Well	pH	Boron	Calcium	Chloride	Fluoride	Sulfate	TDS
	std units	mg/L					
MW-2	3.4 - 4.8	1.45 - 1.87	113 - 142	187 - 223	<0.22 - 0.57	389 – 672	862 – 1412
MW-3	3.4 - 4.6	8.66 - 10.7	272 - 482	261 - 399	0.31 - 0.98	754 - 3120	3248 - 4180
MW-4	3.3 - 4.6	13.8 - 19.8	323 - 501	203 - 364	0.30 - 1.14	1600 - 2910	3056 - 4108
MW-5	6.1 - 7.1	31.5 - 41.6	354 - 885	458 - 693	0.71 - 1.43	2290 - 3800	5208 - 7668
MW-6	3.5 - 5.0	0.077 - 8.86	1.63 - 59.7	6.85 - 142	<0.15 - 0.22	8.56 - 330	42 - 757

The concentration range of Appendix III constituents detected in the CCR surface impoundments monitoring wells and further evaluated in Section 4.2.2 is summarized in the following table:

Well	pH	Boron	Calcium	Chloride	Fluoride	Sulfate	TDS
	std units	mg/L					
MWI-1	6.3 - 11.7	0.098 - 0.139	27.3 - 32.6	31.2 - 38.8	0.18 - 0.30	17.4 - 35.6	252 - 353
MWI-2	5.8 - 10.2	0.070 - 0.131	6.24 - 10.8	12.2 - 13.2	0.15 - 0.24	5.64 - 11.5	143 - 196
MWI-3	5.8 - 12.4	0.066 - 0.109	4.21 - 9.65	4.09 - 10.7	0.17 - 0.24	2.32 - 21.6	149 - 199
MWI-4	5.8 - 9.3	0.058 - 0.105	9.32 - 14.0	7.97 - 12.2	0.16 - 0.33	7.81 - 13.9	62 - 183

Tables 3 and 4 provide analytical summaries for the CCR units Appendix IV baseline sampling results. Statistical analyses of Appendix IV constituents will be conducted upon completion of evaluation of Appendix III and the SSI determination, as applicable.

4.2 STATISTICAL ANALYSIS

The ***Statistical Methods Certification*** which outlines the procedures used to evaluate groundwater monitoring data is maintained in the facility operating record and internet site.

Prior to the selection of the appropriate method to determine if there is an SSI over background levels, the CCR rule provisions and Unified Guidance performance criteria require consideration of data patterns and usability, including the following:

- Handling of blind duplicate data collected as required by groundwater sampling protocol
- Distributional properties of data
- Identification of data that appear to be outside the range of expected values (outliers)
- Background stability (upward or downward trends)
- Data temporal independence (samples collected at sufficient intervals to provide independent values or samples exhibit any seasonal patterns)
- Spatial variation (no statistically significant variation between sampling points)
- Handling of non-detects or uncertain measurements.

The evaluation results for the presence of an SSI in CCR units baseline monitoring data are discussed in the following sections.

4.2.1 CCR Landfill

Although regulations and guidance specify a minimum of eight independent groundwater samples to establish baseline/background, an additional baseline sample was collected to account for the possibility that data may require removal from the data set. The SSI determination is being performed using an interwell comparison between the background baseline results from monitoring well MW-2 and the downgradient baseline results from wells MW-3, MW-4, MW-5 and MW-6. However, formal limits for some Appendix III constituents were also calculated and compared.

Due to the presence of statistically significant (generally decreasing) trends for boron, calcium, chloride, and fluoride in one or more landfill monitoring wells, the determination of an SSI was conducted using data for pH, sulfate and total dissolved solids, which exhibited no evidence of temporal trends using both formal tests.

Upper Tolerance Limits (UTL) were calculated for sulfate and total dissolved solids. The 95% one-sided UTL for 95% coverage represents the value below which 95% of the population values are expected to fall with 95% confidence. A two-sided 95% tolerance interval was used for pH. Tolerance limit and interval results for the CCR landfill baseline data are summarized on Table 5.

The initial calculation of UTLs from sulfate and total dissolved solids in in upgradient well MW-2 indicate downgradient concentrations in MW-3, MW-4 and MW-5 yield an unverified statistically significant increase (SSI) above upgradient levels. The measured pH values in well MW-5 are out of range of the tolerance interval calculated from upgradient well MW-2 measurements. Retesting or additional monitoring of these wells, in addition to an alternative source demonstration, will

occur in 2018 to verify whether there is a SSI. Therefore there has not been a transition from detection monitoring to assessment monitoring to be reported in accordance with 40 CFR 257.90(e)(4).

4.2.2 CCR Surface Impoundments

Although regulations and guidance specify a minimum of eight independent groundwater samples to establish baseline/background, an additional baseline sample was collected to account for the possibility that data may require removal from the data set. The SSI determination is being performed using an interwell comparison between the background baseline results from monitoring well MWI-1 and the downgradient baseline results from wells MWI-2, MWI-3 and MWI-4.

Upper Tolerance Limits (UTL) were calculated for calcium, chloride, fluoride and total dissolved solids. The 95% one-sided UTL for 95% coverage represents the value below which 95% of the population values are expected to fall with 95% confidence. A two-sided 95% tolerance interval was used for pH. Tolerance limit and interval results for the CCR surface impoundments baseline data are summarized on Table 6.

The upgradient UTL comparison to downgradient results for Appendix III constituents indicates no statistically significant increase above background for the surface impoundments based upon the baseline data. Parameters for which calculation of a parametric tolerance limit was not valid due to the presence of trends included boron and sulfate. These constituents were evaluated using graphical means (box plots), which visually demonstrate that the downgradient well concentrations are not likely to exceed formal upgradient concentration thresholds. Box plots for boron and sulfate concentrations in the surface impoundments wells are provided on Figures 4 and 5.

The CCR surface impoundments monitoring data evaluation indicates that no SSI over background for Appendix III constituents has been detected pursuant to 257.93(h); therefore, the CCR surface impoundments will be subject to detection monitoring.

5.0 CONCLUSIONS

The groundwater monitoring systems at the CCR surface impoundments and the CCR landfill have been installed and sampled for the baseline sampling period. The facility opted to perform nine baseline sampling events instead of the minimum eight required by the CCR Rule. The following sections provide a summary of the statistical evaluation results and a discussion of the required and proposed future actions at each CCR regulated unit.

5.1 CCR Landfill

A statistical evaluation of the CCR landfill monitoring well system Appendix III sampling results conducted using formal tolerance limit testing indicate there is an unverified SSI in certain constituent concentrations over background in the baseline data. The evaluation has indicated that pH, sulfate, and total dissolved solids concentrations detected in one or more downgradient wells exceed the background threshold values calculated from upgradient well data. Retesting or additional monitoring of those wells to verify the results and an alternative source demonstration will be performed and documented for the Appendix III constituents detected in the landfill monitoring system. If the SSI is verified and the evaluation does not successfully demonstrate that an alternative source caused the SSI, additional sampling and other activities required under the Assessment Monitoring program (257.95) and subsequent applicable requirements in 257.96 to 257.98 will be implemented.

5.2 CCR Surface Impoundments

A statistical evaluation of the CCR surface impoundments monitoring well system baseline Appendix III sampling results was conducted using both graphical and formal tolerance limit testing. The evaluation has determined that the upgradient well concentrations generally exceed levels detected in the downgradient wells. Formal tolerance limit testing has indicated that downgradient concentrations do not exceed the background threshold values calculated from upgradient well data. Therefore, the initial statistical analyses of CCR surface impoundments baseline groundwater monitoring data indicate there is no identified SSI at the regulated CCR surface impoundments. Detection monitoring will be implemented at the CCR surface impoundments in accordance with 257.93.

TABLES

Table 1
CCR Landfill Baseline Appendix III Analytical Summary
Cooperative Energy
R.D. Morrow, Sr. Generation Facility
Purvis, MS

Monitoring Well No.	Sampling Event No.	Sample Date	pH	Boron	Calcium	Chloride	Fluoride	Sulfate	TDS
			std units	mg/L					
MW-2 (upgradient)	1	10/29/2015	3.35	1.87	134	187	0.38	405	966
	2	4/27/2016	4.54	1.71	124	189	0.54	505	1412
	3	6/14/2016	4.27	1.86	138	201	0.57	483	1136
	4	8/24/2016	4.30	1.45	113	223	0.38	602	1264
	5	10/25/2016	4.21	1.75	128	206	0.47	643	1116
	6	12/12/2016	4.75	1.74	139	197	0.47	520	1084
	7	2/15/2017	4.60	1.86	134	199	0.50	672	862
	8	4/20/2017	3.79	1.70	141	212	0.42	642	1062
	9	8/22/2017	3.96	1.73	142	189	<0.22	389	1152
MW-3	1	10/29/2015	3.44	10.6	465	318	0.31	1660	3476
	2	4/27/2016	4.57	10.1	452	350	0.98	2250	4064
	3	6/14/2016	4.43	10.7	474	304	0.98	2020	3772
	4	8/24/2016	4.56	10.0	482	296	0.94	2190	4180
	5	10/25/2016	4.52	9.52	442	310	0.85	2870	3308
	6	12/12/2016	4.37	9.37	440	399	0.90	754	3248
	BD-1		--	9.29	447	313	0.90	2710	3360
	7	2/15/2017	4.26	9.26	400	285	0.93	2220	3316
	8	4/20/2017	4.01	9.25	272	282	0.85	3120	3488
	9	8/22/2017	4.63	8.66	411	261	0.63	1860	3792
MW-4	1	10/29/2015	3.33	19.8	403	294	0.70	2200	3688
	BD-1		--	19.3	407	296	1.13	2140	3368
	2	4/27/2016	3.98	19.0	408	348	1.01	2240	4108
	BD-1		--	19.0	413	364	1.14	2400	3936
	3	6/14/2016	4.11	19.1	402	346	0.87	1950	4028
	4	8/24/2016	4.39	17.8	416	286	0.89	2700	4004
	5	10/25/2016	4.12	16.2	397	266	0.92	2340	3204
	BD-1		--	16.2	379	264	0.98	2470	3320
	6	12/12/2016	4.06	15.8	393	282	0.89	2910	3056

Note:
BD-1 is a Blind Duplicate collected from the specified well.

Table 1
CCR Landfill Baseline Appendix III Analytical Summary
Cooperative Energy
R.D. Morrow, Sr. Generation Facility
Purvis, MS

Monitoring Well No.	Sampling Event No.	Sample Date	pH	Boron	Calcium	Chloride	Fluoride	Sulfate	TDS
			std units	mg/L					
MW-4	7	2/15/2017	4.11	15.2	445	275	0.91	2370	3256
	BD-1		--	16.1	501	251	0.82	2590	3058
	8	4/20/2017	3.55	15.6	323	254	0.80	1600	3360
	BD-1		--	14.8	382	274	0.82	2620	3276
	9	8/22/2017	4.61	13.8	420	203	0.30	1850	3576
MW-5	1	10/29/2015	6.17	39.2	625	590	0.71	2550	6232
	2	4/27/2016	6.41	37.8	614	647	1.43	2640	6656
	3	6/14/2016	6.61	40.3	657	693	1.32	2720	7668
	4	8/24/2016	6.66	40.5	619	637	1.40	2910	7120
	5	10/25/2016	6.71	36.1	560	559	1.30	2560	5208
	6	12/12/2016	7.11	35.7	586	628	1.26	3800	6420
	7	2/15/2017	6.50	41.6	885	628	1.29	3630	6670
	8	4/20/2017	6.12	34.2	354	623	1.13	2970	6712
	9	8/22/2017	6.73	31.5	581	458	1.05	2710	7028
	BD-1		--	32.5	582	472	1.13	2290	6180
MW-6	1	10/29/2015	3.51	8.86	59.7	142	<0.15	330	757
	2	4/27/2016	4.58	0.129	2.17	9.89	<0.15	9.23	82
	3	6/14/2016	4.69	0.223	2.41	11.4	<0.15	9.15	43
	4	8/24/2016	4.69	0.118	1.83	9.08	<0.16	8.56	42
	5	10/25/2016	4.57	0.181	2.29	19.3	<0.16	11.9	68
	6	12/12/2016	5.00	2.5	15.5	59.5	0.22	102	269
	7	2/15/2017	4.93	0.202	2.6	10.2	<0.16	12.1	109
	8	4/20/2017	4.17	0.087	2.37	9.19	<0.22	10.9	59
	9	8/22/2017	4.24	0.077	1.63	6.85	<0.22	8.7	80

Note:
BD-1 is a Blind Duplicate collected from the specified well.

Table 2
CCR Surface Impoundments Baseline Appendix III Analytical Summary
Cooperative Energy
R.D. Morrow, Sr. Generation Facility
Purvis, MS

Monitoring Well No.	Sampling Event No.	Sample Date	pH	Boron	Calcium	Chloride	Fluoride	Sulfate	TDS
			std units	mg/L					
MWI-1 (upgradient)	1	4/26/2016	6.91	0.098	29.4	31.2	0.18	18.6	270
	2	6/13/2016	6.71	0.098	29.5	32.7	0.18	18.8	270
	BD-1		--	0.099	29.1	33.4	<0.15	19.6	271
	3	8/23/2016	6.30	0.098	29.7	31.7	0.19	17.4	269
	BD-1		--	0.100	29.3	36.4	0.18	19.5	252
	4	10/24/2016	6.71	0.102	29.3	33.5	<0.16	17.5	264
	5	12/12/2016	6.32	0.102	29.5	38.8	0.19	31.4	268
	6	2/15/2017	11.74	0.122	27.3	34.3	0.30	29.5	353
	7	4/20/2017	6.65	0.101	30.1	37.5	0.23	23.0	292
	8	6/20/2017	6.42	0.109	31.0	37.2	0.26	35.6	315
	BD-1		--	0.123	31.3	36.3	0.26	33.3	314
	9	8/22/2017	6.53	0.139	32.6	35.6	<0.22	32.4	296
MWI-2	1	4/26/2016	6.39	0.079	10.8	13.1	0.20	11.5	196
	2	6/13/2016	6.03	0.077	8.54	12.9	0.15	8.26	165
	3	8/23/2016	6.36	0.071	7.72	12.7	0.24	6.87	143
	4	10/24/2016	6.09	0.075	7.19	12.5	<0.16	5.68	159
	5	12/12/2016	5.76	0.079	7.07	12.6	0.22	6.73	155
	6	2/15/2017	10.24	0.081	6.24	12.2	<0.16	6.73	164
	7	4/20/2017	6.23	0.070	6.71	13.2	<0.22	6.81	150
	8	6/20/2017	5.89	0.131	6.63	13.1	<0.22	6.81	156
	9	8/22/2017	5.81	0.076	6.99	12.4	<0.22	5.64	161
MWI-3	1	4/26/2016	6.50	0.066	9.65	10.7	<0.15	21.6	198
	2	6/13/2016	6.28	0.066	8.88	10.5	0.17	18.8	199
	3	8/23/2016	6.43	0.066	6.14	7.30	<0.16	6.53	175
	4	10/24/2016	6.19	0.066	4.85	7.03	<0.16	5.13	151
	5	12/12/2016	5.78	0.072	4.77	6.67	<0.16	5.15	163
	6	2/15/2017	12.38	0.075	4.40	5.06	<0.16	4.56	149
	7	4/20/2017	6.32	0.069	4.87	4.70	<0.22	2.53	162
	8	6/20/2017	6.15	0.109	4.21	4.51	0.24	2.32	174
	9	8/22/2017	6.30	0.076	4.26	4.09	<0.22	<1.99	159

Note:
BD-1 is a Blind Duplicate collected from the specified well.

Table 2
CCR Surface Impoundments Baseline Appendix III Analytical Summary
Cooperative Energy
R.D. Morrow, Sr. Generation Facility
Purvis, MS

Monitoring Well No.	Sampling Event No.	Sample Date	pH	Boron	Calcium	Chloride	Fluoride	Sulfate	TDS
			std units	mg/L					
MWI-4	1	4/26/2016	7.02	<0.050	9.32	7.97	0.16	12.2	62
	2	6/13/2016	6.32	0.058	12.2	8.47	0.17	13.9	117
	3	8/23/2016	6.50	0.066	14.0	9.62	0.23	11.5	164
	4	10/24/2016	6.61	0.071	10.0	9.90	0.24	7.81	169
	5	12/12/2016	6.28	0.077	10.6	9.53	0.17	9.39	172
	6	2/15/2017	9.29	0.084	11.5	9.15	0.33	8.27	164
	7	4/20/2017	6.58	0.076	13.0	10.5	<0.22	9.69	170
	8	6/20/2017	5.84	0.105	10.4	12.2	<0.22	12.4	179
	9	8/22/2017	6.49	0.093	9.70	11.3	<0.22	10.4	183

Note:
BD-1 is a Blind Duplicate collected from the specified well.

Table 3
CCR Landfill Baseline Appendix IV Analytical Summary
Cooperative Energy
R.D. Morrow, Sr. Generation Facility
Purvis, MS

Monitoring Well No.	Sampling Event No.	Sample Date	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt
			mg/L						
MW-2 (upgradient)	1	10/29/2015	<0.002	<0.002	0.023	0.006	<0.005	<0.010	0.115
	2	4/27/2016	<0.002	<0.002	0.023	0.007	<0.005	<0.010	0.124
	3	6/14/2016	<0.002	<0.002	0.022	0.007	<0.005	<0.010	0.154
	4	8/24/2016	<0.002	<0.002	0.022	0.006	<0.005	<0.010	0.123
	5	10/25/2016	<0.002	<0.002	0.025	0.007	<0.005	<0.010	0.141
	6	12/12/2016	<0.002	<0.002	0.025	0.007	<0.005	<0.010	0.146
	7	2/15/2017	<0.002	<0.002	0.025	0.007	<0.005	<0.010	0.149
	8	4/20/2017	<0.002	<0.002	0.023	0.007	<0.005	<0.010	0.142
	9	8/22/2017	<0.002	<0.002	0.022	0.007	<0.005	<0.010	0.141
MW-3	1	10/29/2015	<0.002	<0.002	0.033	<0.004	<0.005	<0.010	0.052
	2	4/27/2016	<0.002	<0.002	0.033	<0.004	<0.005	0.010	0.064
	3	6/14/2016	<0.002	<0.002	0.030	<0.004	<0.005	<0.010	0.077
	4	8/24/2016	<0.002	<0.002	0.032	<0.004	<0.005	<0.010	0.065
	5	10/25/2016	<0.002	<0.002	0.035	<0.004	<0.005	<0.010	0.064
	6	12/12/2016	<0.002	<0.002	0.035	<0.004	<0.005	<0.010	0.067
	BD-1	12/12/2016	<0.002	<0.002	0.035	<0.004	<0.005	<0.010	0.067
	7	2/15/2017	<0.002	<0.002	0.032	<0.004	<0.005	<0.010	0.068
	8	4/20/2017	<0.002	<0.002	0.031	<0.004	<0.005	<0.010	0.056
	9	8/22/2017	<0.002	<0.002	0.027	<0.004	<0.005	<0.010	0.057
MW-4	1	10/29/2015	<0.002	<0.002	0.034	<0.004	<0.005	<0.010	0.059
	BD-1		<0.002	<0.002	0.034	<0.004	<0.005	<0.010	0.061
	2	4/27/2016	<0.002	<0.002	0.040	<0.004	<0.005	<0.010	0.110
	BD-1		<0.002	<0.002	0.038	<0.004	<0.005	<0.010	0.107
	3	6/14/2016	<0.002	<0.002	0.032	<0.004	<0.005	<0.010	0.108
	4	8/24/2016	<0.002	<0.002	0.034	<0.004	<0.005	<0.010	0.083
	5	10/25/2016	<0.002	<0.002	0.035	<0.004	<0.005	<0.010	0.069
	BD-1		<0.002	<0.002	0.035	<0.004	<0.005	<0.010	0.068
	6	12/12/2016	<0.002	<0.002	0.034	<0.004	<0.005	<0.010	0.067
	7	2/15/2017	<0.002	<0.002	0.031	<0.004	<0.005	<0.010	0.078
	BD-1		<0.002	<0.002	0.033	<0.004	<0.005	<0.010	0.080
	8	4/20/2017	<0.002	<0.002	0.031	<0.004	<0.005	<0.010	0.075
	BD-1		<0.002	<0.002	0.031	<0.004	<0.005	<0.010	0.076
	9	8/22/2017	<0.002	<0.002	0.028	<0.004	<0.005	<0.010	0.067

Note:
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Table 3
CCR Landfill Baseline Appendix IV Analytical Summary
Cooperative Energy
R.D. Morrow, Sr. Generation Facility
Purvis, MS

Monitoring Well No.	Sampling Event No.	Sample Date	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt
			mg/L						
MW-5	1	10/29/2015	<0.002	<0.002	0.056	<0.004	<0.005	<0.010	0.012
	2	4/27/2016	<0.002	<0.002	0.062	<0.004	<0.005	0.011	0.010
	3	6/14/2016	<0.002	<0.002	0.060	<0.004	<0.005	<0.010	0.010
	4	8/24/2016	<0.002	<0.002	0.061	<0.004	<0.005	<0.010	0.009
	5	10/25/2016	<0.002	<0.002	0.054	<0.004	<0.005	<0.010	0.008
	6	12/12/2016	<0.002	<0.002	0.053	<0.004	<0.005	<0.010	0.010
	7	2/15/2017	<0.002	<0.002	0.049	<0.004	<0.005	<0.010	0.010
	8	4/20/2017	<0.002	<0.002	0.049	<0.004	<0.005	<0.010	0.008
	9	8/22/2017	<0.002	<0.002	0.042	<0.004	<0.005	<0.010	0.008
	BD-1		<0.002	<0.002	0.042	<0.004	<0.005	<0.010	0.008
MW-6	1	10/29/2015	<0.002	<0.002	0.233	<0.004	<0.005	0.014	0.032
	2	4/27/2016	<0.002	<0.002	0.128	<0.004	<0.005	<0.010	0.001
	3	6/14/2016	<0.002	<0.002	0.143	<0.004	<0.005	<0.010	0.001
	4	8/24/2016	<0.002	<0.002	0.118	<0.004	<0.005	<0.010	0.001
	5	10/25/2016	<0.002	<0.002	0.142	<0.004	<0.005	<0.010	0.001
	6	12/12/2016	<0.002	<0.002	0.427	<0.004	<0.005	<0.010	0.011
	7	2/15/2017	<0.002	<0.002	0.141	<0.004	<0.005	<0.010	0.002
	8	4/20/2017	<0.002	<0.002	0.125	<0.004	<0.005	<0.010	0.002
	9	8/22/2017	<0.002	<0.002	0.094	<0.004	<0.005	<0.010	0.001

Note:
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Table 3
CCR Landfill Baseline Appendix IV Analytical Summary
Cooperative Energy
R.D. Morrow, Sr. Generation Facility
Purvis, MS

Monitoring Well No.	Sampling Event No.	Sample Date	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Ra-226 + Ra-228
			mg/L						pC/L
MW-2 (upgradient)	1	10/29/2015	0.005	<0.050	<0.002	<0.001	<0.050	<0.001	0.293
	2	4/27/2016	0.003	<0.050	<0.002	<0.005	<0.050	<0.001	0.707
	3	6/14/2016	0.004	<0.050	<0.002	<0.005	<0.050	<0.001	0.985
	4	8/24/2016	0.003	<0.050	<0.002	<0.005	<0.050	<0.001	1.220
	5	10/25/2016	0.006	<0.050	<0.002	<0.005	<0.050	<0.001	1.699
	6	12/12/2016	0.006	<0.050	<0.002	<0.005	<0.050	<0.001	1.379
	7	2/15/2017	0.004	<0.050	<0.002	<0.005	<0.050	<0.001	1.270
	8	4/20/2017	0.003	<0.050	<0.002	<0.005	<0.050	<0.001	0.612
	9	8/22/2017	0.004	<0.050	<0.002	<0.005	<0.050	<0.001	1.240
MW-3	1	10/29/2015	0.037	0.907	<0.002	<0.001	<0.050	<0.001	3.823
	2	4/27/2016	0.056	0.897	<0.002	<0.005	<0.050	<0.001	2.744
	3	6/14/2016	0.013	0.785	<0.002	<0.005	<0.050	<0.001	4.286
	4	8/24/2016	0.016	0.816	<0.002	<0.005	<0.050	<0.001	**5.408**
	5	10/25/2016	0.012	0.794	<0.002	<0.005	<0.050	<0.001	**6.278**
	6	12/12/2016	0.024	0.834	<0.002	<0.005	<0.050	<0.001	**6.202**
	BD-1	12/12/2016	0.024	0.830	<0.002	<0.005	<0.050	<0.001	4.564
	7	2/15/2017	0.020	0.730	<0.002	<0.005	<0.050	<0.001	**5.216**
	8	4/20/2017	0.011	0.727	<0.002	<0.005	<0.050	<0.001	2.288
	9	8/22/2017	0.007	0.542	<0.002	<0.005	<0.050	<0.001	3.636
MW-4	1	10/29/2015	0.017	1.19	<0.002	<0.001	<0.050	<0.001	4.127
	BD-1		0.016	1.24	<0.002	<0.001	<0.050	<0.001	4.587
	2	4/27/2016	0.014	1.42	<0.002	<0.005	<0.050	<0.001	3.004
	BD-1		0.014	1.40	<0.002	<0.005	<0.050	<0.001	3.375
	3	6/14/2016	0.012	0.98	<0.002	<0.005	<0.050	<0.001	2.436
	4	8/24/2016	0.014	1.05	<0.002	0.009	<0.050	<0.001	3.165
	5	10/25/2016	0.015	1.07	<0.002	<0.005	<0.050	<0.001	3.591
	BD-1		0.014	1.01	<0.002	<0.005	<0.050	<0.001	3.332
	6	12/12/2016	0.013	0.933	<0.002	0.006	<0.050	<0.001	4.891
	7	2/15/2017	0.009	0.836	<0.002	<0.005	<0.050	<0.001	3.586
	BD-1		0.009	0.875	<0.002	<0.005	<0.050	<0.001	3.131
	8	4/20/2017	0.008	0.832	<0.002	<0.005	<0.050	<0.001	2.108
	BD-1		0.008	0.826	<0.002	<0.005	<0.050	<0.001	2.240
	9	8/22/2017	0.010	0.564	<0.002	<0.005	<0.050	<0.001	4.758

Note:
BD-1 is a Blind Duplicate collected from the specified well.

Table 3
CCR Landfill Baseline Appendix IV Analytical Summary
Cooperative Energy
R.D. Morrow, Sr. Generation Facility
Purvis, MS

Monitoring Well No.	Sampling Event No.	Sample Date	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Ra-226 + Ra-228
			mg/L						pC/L
MW-5	1	10/29/2015	<0.001	7.71	<0.002	5.28	<0.050	0.002	0.547
	2	4/27/2016	0.002	9.21	<0.002	7.83	<0.050	0.003	0.321
	3	6/14/2016	<0.001	7.45	<0.002	8.13	<0.050	0.002	1.617
	4	8/24/2016	<0.001	8.77	<0.002	6.95	<0.050	0.002	2.090
	5	10/25/2016	<0.001	7.89	<0.002	6.76	<0.050	0.003	1.447
	6	12/12/2016	<0.001	7.67	<0.002	6.63	<0.050	0.003	1.294
	7	2/15/2017	<0.001	7.25	<0.002	6.78	<0.050	0.003	1.085
	8	4/20/2017	<0.001	7.99	<0.002	6.46	<0.050	0.002	0.886
	9	8/22/2017	<0.001	5.61	<0.002	6.57	<0.050	0.003	1.920
	BD-1		<0.001	5.49	<0.002	6.65	<0.050	0.003	1.342
MW-6	1	10/29/2015	0.002	<0.050	0.0028	<0.001	<0.050	<0.001	2.365
	2	4/27/2016	<0.001	<0.050	<0.002	<0.005	<0.050	<0.001	0.693
	3	6/14/2016	<0.001	<0.050	<0.002	<0.005	<0.050	<0.001	0.943
	4	8/24/2016	<0.001	<0.050	<0.002	<0.005	<0.050	<0.001	1.276
	5	10/25/2016	<0.001	<0.050	<0.002	<0.005	<0.050	<0.001	2.826
	6	12/12/2016	0.001	<0.05	<0.002	<0.005	<0.050	<0.001	4.800
	7	2/15/2017	<0.001	<0.05	<0.002	0.005	<0.050	<0.001	1.289
	8	4/20/2017	<0.001	<0.05	<0.002	<0.005	<0.050	<0.001	0.879
	9	8/22/2017	<0.001	<0.05	<0.002	<0.005	<0.050	<0.001	1.491

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Table 4
CCR Surface Impoundments Baseline Appendix IV Analytical Summary
Cooperative Energy
R.D. Morrow, Sr. Generation Facility
Purvis, MS

Monitoring Well No.	Sampling Event No.	Date	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt
			mg/L						
MWI-1 (upgradient)	1	4/26/2016	<0.002	0.017	0.165	<0.004	<0.005	0.018	0.006
	2	6/13/2016	<0.002	0.019	0.176	<0.004	<0.005	<0.010	0.003
	BD-1		<0.002	0.017	0.176	<0.004	<0.005	<0.010	0.003
	3	8/23/2016	<0.002	0.029	0.180	<0.004	<0.005	<0.010	0.003
	BD-1		<0.002	0.028	0.178	<0.004	<0.005	<0.010	0.003
	4	10/24/2016	<0.002	0.025	0.180	<0.004	<0.005	<0.010	0.002
	5	12/12/2016	<0.002	0.002	0.191	<0.004	<0.005	<0.010	0.003
	6	2/15/2017	<0.002	0.020	0.174	<0.004	<0.005	<0.010	0.003
	7	4/20/2017	<0.002	0.020	0.175	<0.004	<0.005	<0.010	0.003
	8	6/20/2017	<0.002	0.021	0.187	<0.004	<0.005	<0.010	0.003
	BD-1		<0.002	0.021	0.191	<0.004	<0.005	<0.010	0.003
	9	8/22/2017	<0.002	0.018	0.172	<0.004	<0.005	<0.010	0.003
MWI-2	1	4/26/2016	<0.002	0.034	0.182	<0.004	<0.005	0.018	0.006
	2	6/13/2016	<0.002	0.033	0.186	<0.004	<0.005	<0.010	0.002
	3	8/23/2016	<0.002	0.037	0.180	<0.004	<0.005	<0.010	0.002
	4	10/24/2016	<0.002	0.038	0.169	<0.004	<0.005	<0.010	<0.001
	5	12/12/2016	<0.002	0.033	0.179	<0.004	<0.005	<0.010	0.002
	6	2/15/2017	<0.002	0.025	0.176	<0.004	<0.005	<0.010	0.002
	7	4/20/2017	<0.002	0.025	0.183	<0.004	<0.005	<0.010	0.001
	8	6/20/2017	<0.002	0.025	0.184	<0.004	<0.005	<0.010	0.002
	9	8/22/2017	<0.002	0.023	0.172	<0.004	<0.005	<0.010	0.001
MWI-3	1	4/26/2016	<0.002	0.003	0.180	<0.004	<0.005	0.139	0.009
	2	6/13/2016	<0.002	0.005	0.120	<0.004	<0.005	<0.010	0.002
	3	8/23/2016	<0.002	0.022	0.096	<0.004	<0.005	<0.010	0.001
	4	10/24/2016	<0.002	0.025	0.091	<0.004	<0.005	<0.010	0.001
	5	12/12/2016	<0.002	0.024	0.103	<0.004	<0.005	<0.010	0.001
	6	2/15/2017	<0.002	0.023	0.101	<0.004	<0.005	<0.010	<0.001
	7	4/20/2017	<0.002	0.022	0.109	<0.004	<0.005	<0.010	<0.001
	8	6/20/2017	<0.002	0.019	0.107	<0.004	<0.005	<0.010	<0.001
	9	8/22/2017	<0.002	0.017	0.095	<0.004	<0.005	<0.010	<0.001

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BD-1 is a Blind Duplicate collected from the specified well.

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Cooperative Energy
R.D. Morrow, Sr. Generation Facility
Purvis, MS

Monitoring Well No.	Sampling Event No.	Date	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt
			mg/L						
MWI-4	1	4/26/2016	<0.002	0.002	0.178	<0.004	<0.005	0.063	0.003
	2	6/13/2016	<0.002	0.002	0.210	<0.004	<0.005	<0.010	<0.001
	3	8/23/2016	<0.002	0.002	0.271	<0.004	<0.005	<0.010	<0.001
	4	10/24/2016	<0.002	0.003	0.203	<0.004	<0.005	<0.010	<0.001
	5	12/12/2016	<0.002	0.003	0.219	<0.004	<0.005	<0.010	<0.001
	6	2/15/2017	<0.002	0.002	0.243	<0.004	<0.005	<0.010	<0.001
	7	4/20/2017	<0.002	0.002	0.256	<0.004	<0.005	<0.010	<0.001
	8	6/20/2017	<0.002	0.003	0.227	<0.004	<0.005	<0.010	<0.001
	9	8/22/2017	<0.002	0.003	0.218	<0.004	<0.005	<0.010	<0.001

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Table 4
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Purvis, MS

Monitoring Well No.	Sampling Event No.	Date	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Ra-226 + Ra-228
			mg/L						pC/L
MWI-1 (upgradient)	1	4/26/2016	0.001	0.096	<0.002	<0.005	<0.050	<0.001	1.929
	2	6/13/2016	<0.001	0.101	<0.002	<0.005	<0.050	<0.001	1.092
	BD-1		<0.001	0.099	<0.002	<0.005	<0.050	<0.001	2.03
	3	8/23/2016	<0.001	0.104	<0.002	<0.005	<0.050	<0.001	0.526
	BD-1		<0.001	0.103	<0.002	<0.005	<0.050	<0.001	1.118
	4	10/24/2016	<0.001	0.100	<0.002	<0.005	<0.050	<0.001	0.8
	5	12/12/2016	<0.001	0.106	<0.002	<0.005	<0.050	<0.001	1.817
	6	2/15/2017	<0.001	0.108	<0.002	<0.005	<0.050	<0.001	1.178
	7	4/20/2017	<0.001	0.112	<0.002	<0.005	<0.050	<0.001	0.785
	8	6/20/2017	<0.001	0.108	<0.002	<0.005	<0.050	<0.001	1.68
	BD-1		<0.001	0.110	<0.002	<0.005	<0.050	<0.001	2.141
	9	8/22/2017	<0.001	0.110	<0.002	<0.005	<0.050	<0.001	1.051
MWI-2	1	4/26/2016	0.003	0.051	<0.002	<0.005	<0.050	<0.001	1.053
	2	6/13/2016	<0.001	0.050	<0.002	<0.005	<0.050	<0.001	0.289
	3	8/23/2016	<0.001	0.051	<0.002	<0.005	<0.050	<0.001	0.0875
	4	10/24/2016	<0.001	<0.050	<0.002	<0.005	<0.050	<0.001	1.824
	5	12/12/2016	<0.001	0.051	<0.002	<0.005	<0.050	<0.001	0.415
	6	2/15/2017	<0.001	0.053	<0.002	<0.005	<0.050	<0.001	0.667
	7	4/20/2017	<0.001	0.053	<0.002	<0.005	<0.050	<0.001	0.738
	8	6/20/2017	<0.001	0.050	<0.002	<0.005	<0.050	<0.001	1.567
	9	8/22/2017	<0.001	0.050	<0.002	<0.005	<0.050	<0.001	0.598
MWI-3	1	4/26/2016	0.006	<0.050	<0.002	<0.005	<0.050	<0.001	0.747
	2	6/13/2016	<0.001	<0.050	<0.002	<0.005	<0.050	<0.001	0.348
	3	8/23/2016	<0.001	<0.050	<0.002	<0.005	<0.050	<0.001	0.714
	4	10/24/2016	<0.001	<0.050	<0.002	<0.005	<0.050	<0.001	1.164
	5	12/12/2016	<0.001	<0.050	<0.002	<0.005	<0.050	<0.001	0.919
	6	2/15/2017	<0.001	<0.050	<0.002	<0.005	<0.050	<0.001	0.494
	7	4/20/2017	<0.001	<0.050	<0.002	<0.005	<0.050	<0.001	-0.108
	8	6/20/2017	<0.001	<0.050	<0.002	<0.005	<0.050	<0.001	0.842
	9	8/22/2017	<0.001	<0.050	<0.002	<0.005	<0.050	<0.001	-0.025

Note:
BD-1 is a Blind Duplicate collected from the specified well.

Table 4
CCR Surface Impoundments Baseline Appendix IV Analytical Summary
Cooperative Energy
R.D. Morrow, Sr. Generation Facility
Purvis, MS

Monitoring Well No.	Sampling Event No.	Date	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Ra-226 + Ra-228
			mg/L						pC/L
MWI-4	1	4/26/2016	0.002	<0.050	<0.002	<0.005	<0.050	<0.001	1.474
	2	6/13/2016	<0.001	<0.050	<0.002	<0.005	<0.050	<0.001	0.796
	3	8/23/2016	<0.001	<0.050	<0.002	<0.005	<0.050	<0.001	1.796
	4	10/24/2016	<0.001	0.051	<0.002	<0.005	<0.050	<0.001	1.366
	5	12/12/2016	<0.001	0.059	<0.002	<0.005	<0.050	<0.001	1.584
	6	2/15/2017	<0.001	0.066	<0.002	<0.005	<0.050	<0.001	0.391
	7	4/20/2017	<0.001	0.070	<0.002	<0.005	<0.050	<0.001	0.859
	8	6/20/2017	<0.001	0.063	<0.002	<0.005	<0.050	<0.001	1.337
	9	8/22/2017	<0.001	0.060	<0.002	<0.005	<0.050	<0.001	0.799

Note:
BD-1 is a Blind Duplicate collected from the specified well.

Table 5
CCR Landfill Baseline Statistical Analysis Results Summary
Cooperative Energy
R.D. Morrow, Sr. Generation Facility
Purvis, MS

Parameter	Upgradient (Range of Values) Upper Tolerance Limit/Interval	Downgradient Well Range of Values			
	MW-2	MW-3	MW-4	MW-5	MW-6
Sulfate (mg/L)	(389 – 672) 858.3	***754 - 3120 Exceeds***	***1600 - 2910 Exceeds***	***2290 - 3800 Exceeds***	8.56 - 330 Does not Exceed
Total Dissolved Solids (mg/L)	(862 – 1412) 1598.94	***3248 - 4180 Exceeds***	***3056 - 4108 Exceeds***	***5208 - 7668 Exceeds***	42 - 737 Does not Exceed
pH (s.u.)	(3.4 – 4.8) 2.7 - 5.7	3.4 - 4.6 Within Range	3.3 - 4.6 Within Range	***6.1 - 7.1 Out of Range***	3.5 - 5.0 Within Range

Notes:

1 Temporal trends for boron, calcium, chloride, and fluoride were present in one or more landfill monitoring wells. The SSI evaluation was conducted using data for the remaining three parameters (shown above), which exhibited no evidence of temporal trends using Mann-Kendall and Theil-Sen line tests.

2 No outlier values were removed from the data set.

3 In accordance with the recommendation in the Unified Guidance, one replicate was randomly selected to be included in the analysis data set from each sample/blind duplicate pair collected as required by groundwater monitoring protocols. A random number generator was used to select values between 1 and 2 to determine which replicate was used.

Table 6
CCR Surface Impoundments Baseline Statistical Analysis Results Summary
Cooperative Energy
R.D. Morrow, Sr. Generation Facility
Purvis, MS

Parameter	Upgradient (Range of Values) Upper Tolerance Limit/Interval	Downgradient Well Range of Values		
	MWI-1	MWI-2	MWI-3	MWI-4
Calcium (mg/L)	(27.3 – 32.6)	6.24 – 10.8	4.21 – 9.65 Does not Exceed	9.32 – 14.0
	34.14	Does not Exceed		Does not Exceed
Chloride (mg/L)	(31.2 – 38.8)	12.2 – 13.1	4.09 – 10.7	7.97 – 12.2
	42.92	Does not Exceed	Does not Exceed	Does not Exceed
Fluoride non-detects at reporting limit (mg/L)	(<0.16 – 0.30)	0.15 – 0.22	<0.15 – 0.24	0.16 – 0.33
	0.3484	Does not Exceed	Does not Exceed	Does not Exceed
Fluoride using imputed values	0.357			
Total Dissolved Solids (mg/L)	(252 – 353)	143 – 196	149 – 199	62 - 183
	378.3	Does not Exceed	Does not Exceed	Does not Exceed
pH (s.u.)*	(6.3 – 6.9)	5.8 – 6.4 Within Range	5.8 – 6.5	5.8 – 7.0
	5.7 – 7.4		Within Range	Within Range

Notes:

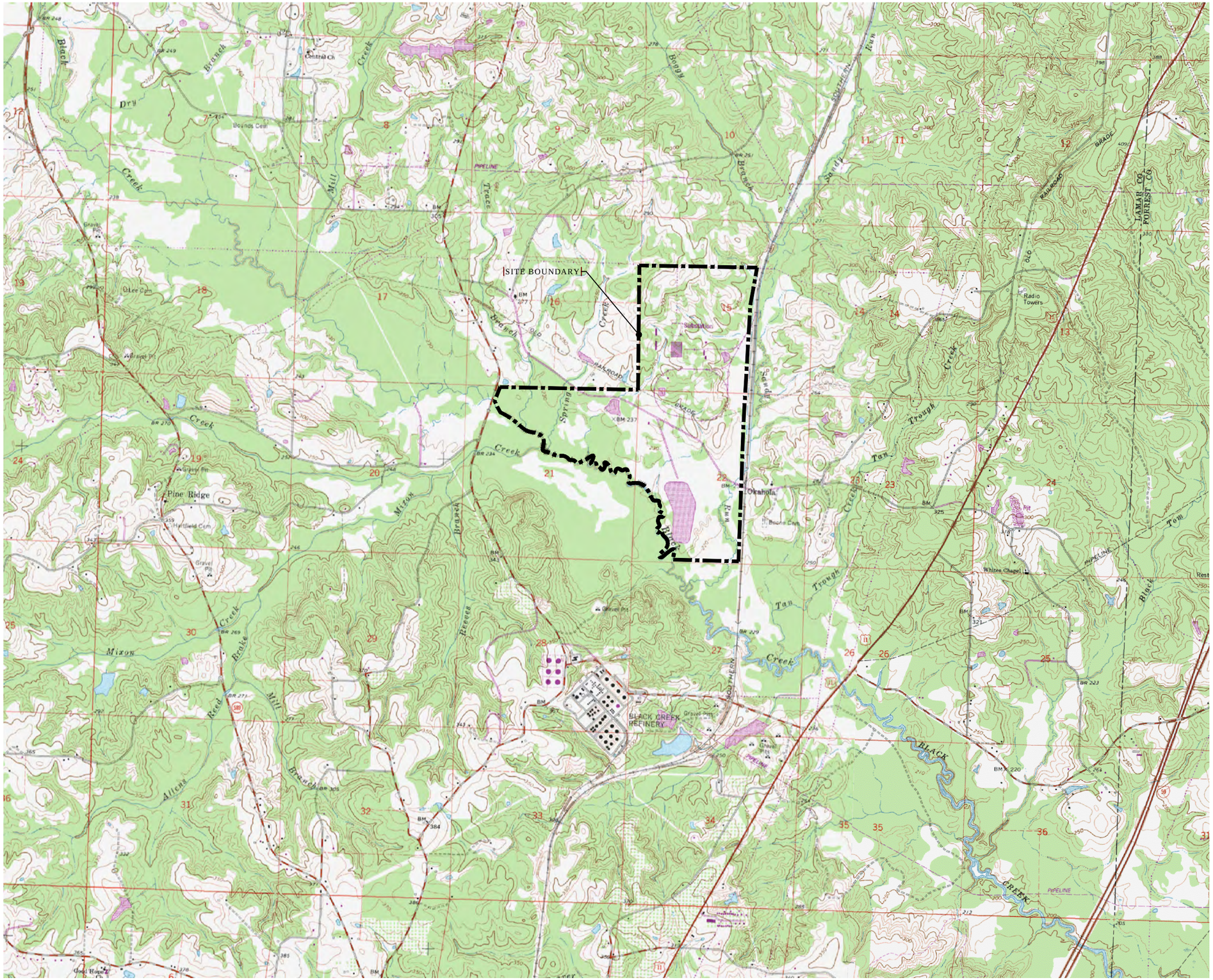
1 Temporal trends for boron and sulfate were present in one or more surface impoundment monitoring wells. The SSI evaluation was conducted using data for the five remaining parameters (shown above), which exhibited no evidence of temporal trends using Mann-Kendall and Theil-Sen line tests.

2 The February 2017 pH results were flagged as outliers and removed from the data set. These measurements occurred during a single sampling event (February 2017), all show a similar increase in value, and were collected using a field pH meter that is inherently susceptible to malfunction, Therefore the outlier pH values from the February 2017 sampling event were removed from the data set. Dixon's test was used to evaluate the pH data for each well after outliers removed and showed a

3 The Unified Guidance outlines the general strategies to account for and utilize non-detects. Fluoride had several non-detected values across all wells. Imputed regression on order statistics (ROS) values were calculated for fluoride results with multiple non-detects.

4 In accordance with the recommendation in the Unified Guidance, one replicate was randomly selected to be included in the analysis data set from each sample/blind duplicate pair collected as required by groundwater monitoring protocols. A random number generator was used to select values 1 or 2 to determine which replicate was used.

FIGURES



LEGEND

— - — COOPERATIVE ENERGY PROPERTY BOUNDARY

REFERENCE: 7.5 MIN. SERIES TOPOGRAPHIC MAP
PURVIS, MISSISSIPPI
DIXIE, MISSISSIPPI

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PREPARED FOR

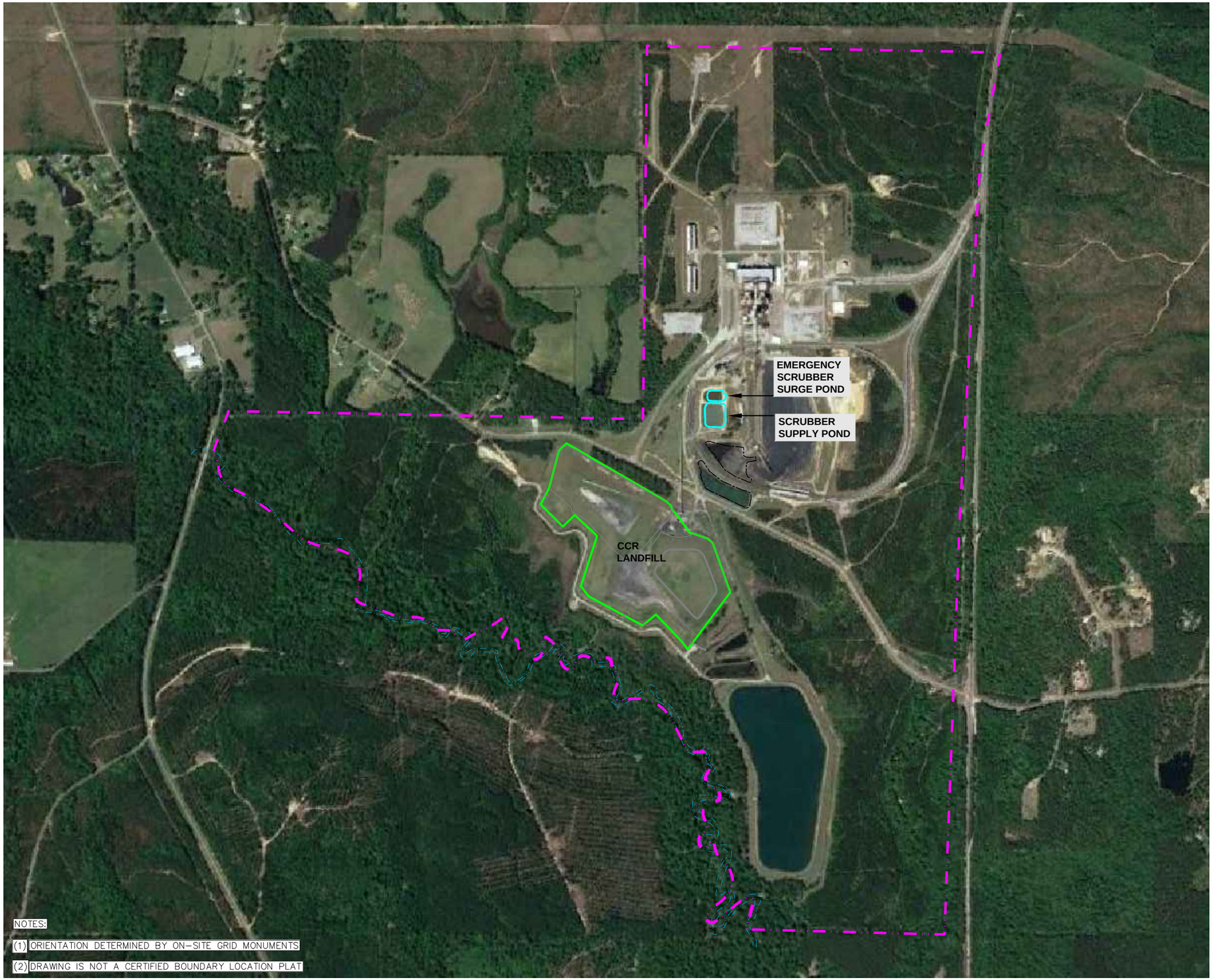
Cooperative ENERGY.
P.O. BOX 15849
HATTIESBURG, MS 39404-5849

SHEET TITLE

SITE LOCATION TOPOGRAPHIC MAP

COOPERATIVE ENERGY
R.D. MORROW SR. GENERATING STATION
PURVIS, MISSISSIPPI

DATE	01/16/2018
SCALE	1" = 3000'
DRAWN BY	PDM
PROJECT NO.	SOU2-16-002
SHEET NO.	1



NOTES:

(1) ORIENTATION DETERMINED BY ON-SITE GRID MONUMENTS

(2) DRAWING IS NOT A CERTIFIED BOUNDARY LOCATION PLAT

N

250 500 1000

0 250 500 1000 2000

LEGEND

- CCR LANDFILL
- CCR SURFACE IMPOUNDMENTS
- COOPERATIVE ENERGY PROPERTY BOUNDARY

REFERENCE: GOOGLE EARTH IMAGERY
DATE: 4/8/2017

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SHEET TITLE

SITE AERIAL PHOTOGRAPH

COOPERATIVE ENERGY
R.D. MORROW SR. GENERATING STATION
PURVIS, MISSISSIPPI

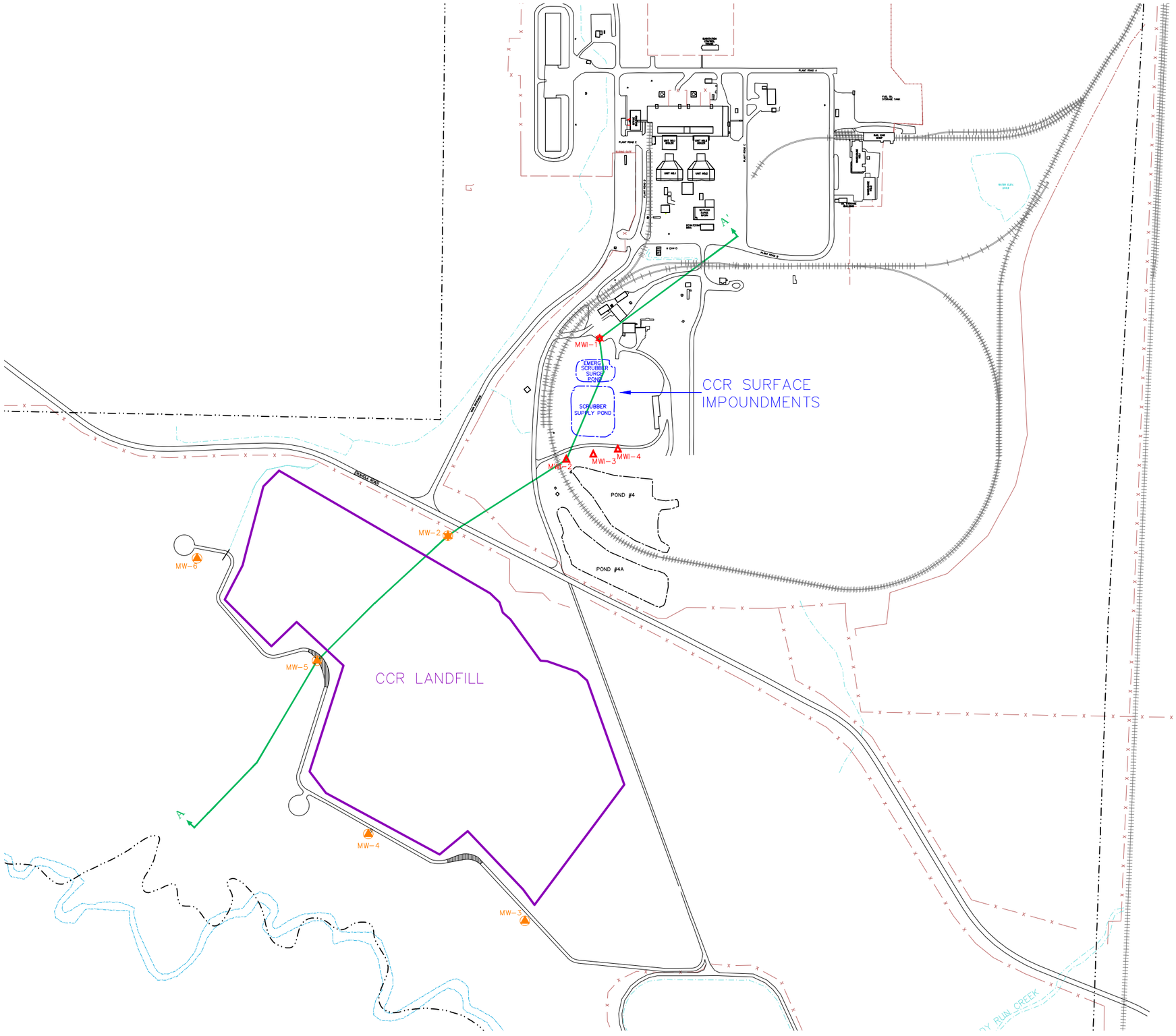
DATE 01/16/2018

SCALE 1" = 1000'

DRAWN BY PDM/rev LMM

PROJECT NO. SOU2-16-002

SHEET NO. 2



N

125 250 500

0 125 250 500 1000

LEGEND

- LANDFILL UPGRADIENT WELL
- LANDFILL DOWNGRADIENT WELLS
- IMPOUNDMENT UPGRADIENT WELL
- IMPOUNDMENT DOWNGRADIENT WELLS
- CHAIN LINK FENCE
- CREEK/DITCH
- CCR LANDFILL BOUNDARY
- CCR SURFACE IMPOUNDMENTS
- COOPERATIVE ENERGY PROPERTY BOUNDARY
- CROSS SECTION PROFILE LOCATION

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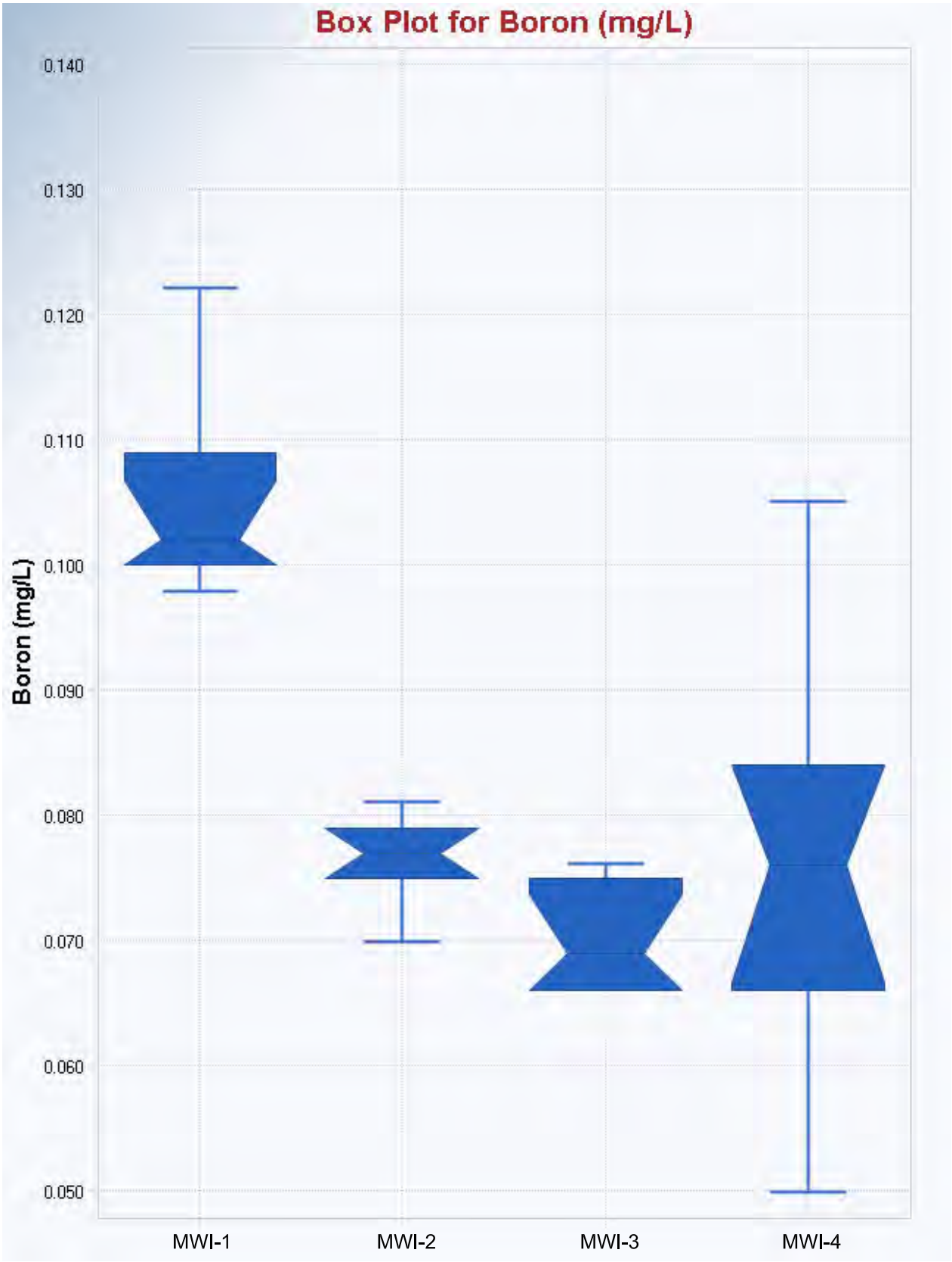
SHEET TITLE

SITE LAYOUT

COOPERATIVE ENERGY
R.D. MORROW SR. GENERATING STATION
PURVIS, MISSISSIPPI

DATE	01/16/2018
SCALE	1" = 500'
DRAWN BY	PDM/LMM
PROJECT NO.	SOU2-16-002
SHEET NO.	3



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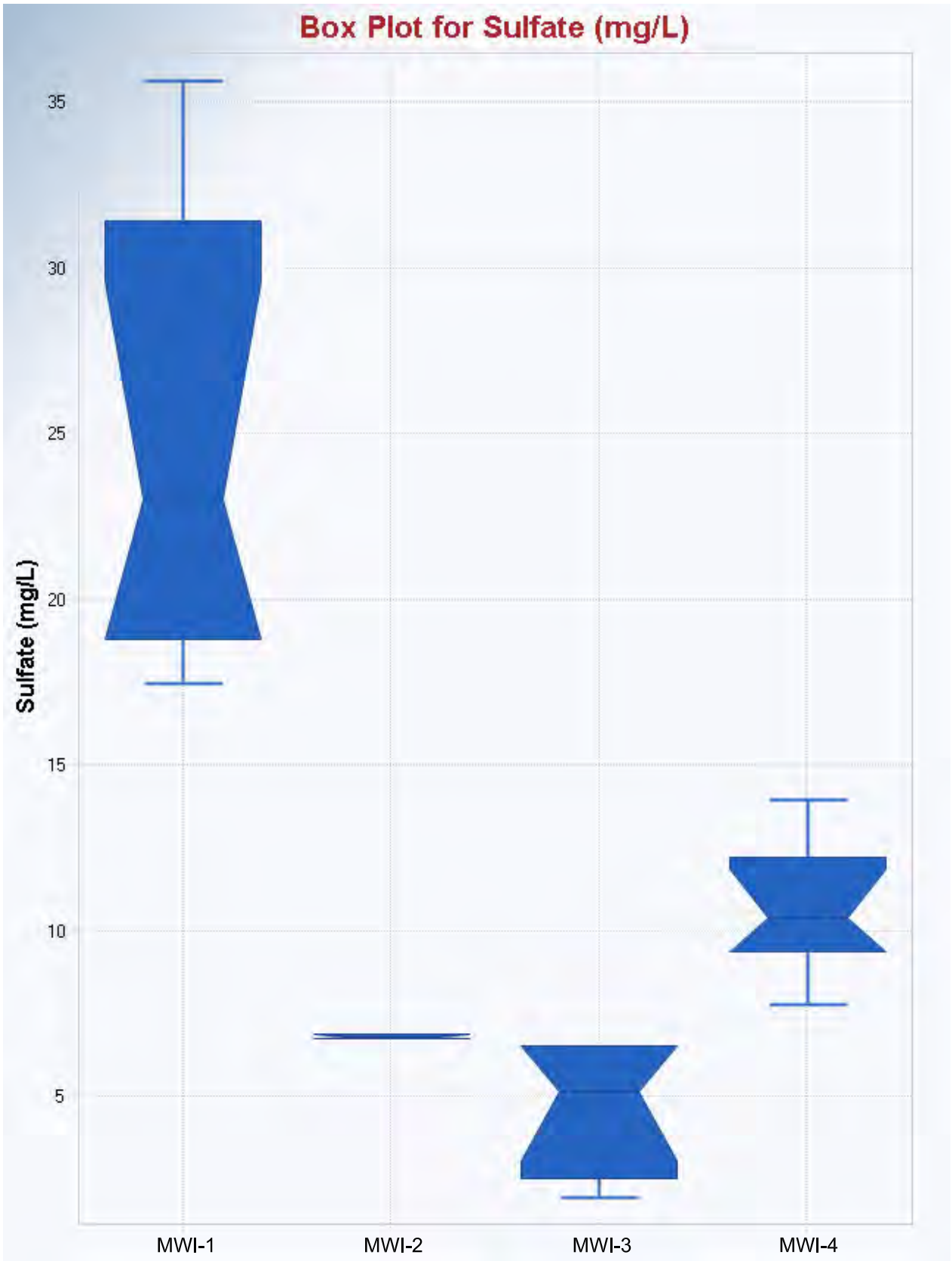
SHEET TITLE

SURFACE IMPOUNDMENTS
BOX PLOT - BORON
COOPERATIVE ENERGY
R.D. MORROW SR. GENERATING STATION
PURVIS, MISSISSIPPI

DATE	01/16/2018
SCALE	Not Applicable
DRAWN BY	LMM
PROJECT NO.	SOU2-16-002
SHEET NO.	4



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SHEET TITLE

SURFACE IMPOUNDMENTS
BOX PLOT - SULFATE
COOPERATIVE ENERGY
R.D. MORROW SR. GENERATING STATION
PURVIS, MISSISSIPPI

DATE	01/16/2018
SCALE	Not Applicable
DRAWN BY	LMM
PROJECT NO.	SOU2-16-002
SHEET NO.	5