

*Prepared for*



**Louisiana Generating, LLC**  
10431 Cajun II Road, Highway 981  
New Roads, Louisiana 70760

**2017 ANNUAL GROUNDWATER  
MONITORING AND CORRECTIVE  
ACTION REPORT  
FEDERAL CCR RULE**

**Big Cajun II Power Plant  
New Roads, Pointe Coupee Parish, Louisiana**

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## **1. INTRODUCTION**

The Federal Coal Combustion Residuals (CCR) Rule (40 Code of Federal Regulations [CFR] Part 257.90(e)) (USEPA, 2015) requires owners and or operators of existing CCR landfills to prepare a Groundwater Monitoring and Corrective Action Report (Report) no later than 31 January 2018. Geosyntec Consultants (Geosyntec) has prepared this Report for the Fly and Bottom Ash Basins at the Louisiana Generating, LLC (LaGen), Big Cajun II Power Plant (Big Cajun II; the Site). This Report summarizes the groundwater monitoring activities conducted pursuant to the CCR Rule through December 31, 2017.

## **2. SITE DESCRIPTION**

### **2.1 Site Description**

Big Cajun II contains a coal and natural gas-fired steam turbine electric power generation facility located on 1,939 acres northeast of New Roads, Louisiana (Figure 1). Big Cajun II is currently owned and operated by LaGen and has been in operation for over 30 years. Five Louisiana Department of Environmental Quality (LDEQ) solid waste-permitted surface impoundments (Fly Ash Basin, Bottom Ash Basin, Rainfall Surge Pond, Primary Treatment Pond, and Secondary Treatment Pond) are utilized to manage CCR materials and other process wastewaters. The Fly Ash and Bottom Ash Basins occupy 240 acres and are designed to store/dispose these two types of CCR material. CCR materials from silos are transported by truck to the Fly Ash Basin (or off-site to a permitted landfill for disposal). Bottom ash from Unit 1 is sluiced to the Bottom Ash Basin. Unit 3 bottom ash is hauled to the basin in trucks. The storm water and process wastewater that accumulates within the two Ash Basins are routed to the Treatment Ponds prior to discharge to the Mississippi River via Louisiana Pollutant Discharge Elimination System (LPDES) Outfall 001. Features of the Site and their locations are presented on Figure 2.

Geosyntec understands that only the Fly Ash and Bottom Ash Basins have been designated as CCR Units because they were actively accepting CCR as of the effective date of the Rule (October 14, 2015). Accordingly, it is our understanding that the Groundwater Monitoring and Corrective Action requirements of the CCR Rule (40 CFR §§257.90-98) only apply to the Fly Ash and Bottom Ash Basins.

### **2.2 Regional Physiographic Setting**

The Site is located within the Mississippi River alluvial plain in a predominantly rural area. Land use within a 3-mile radius of the Site is dominated by cropland, pasture land, and deciduous forest land (M.S. Environmental Consultants, 2013). The subsurface alluvial sediments beneath the Site comprise a complex series of southerly dipping Holocene age clay, silt, sand, and gravel deposits that coarsen with depth. Braided outwash deposits of Pleistocene age are found below the Holocene age alluvium (Shaw, 2011).

### **3. GROUNDWATER MONITORING SYSTEM**

This section describes the groundwater monitoring well network for the CCR Rule. Groundwater quality is monitored around the impoundments by wells screened in the upper part of the Alluvial Aquifer, which is the upper water-bearing unit beneath the Site, between approximately 20 feet mean sea level (ft msl) and -20 ft msl. As described in the *Basis for Groundwater Monitoring System* (Geosyntec, 2017a), the groundwater monitoring network was designed to comply with 40 CFR Part 257.91.

A total of fifteen (15) monitoring wells (fourteen (14) downgradient compliance wells encircling the impoundments and one (1) background well) comprise the groundwater monitoring system. Table 1 provides a well construction summary. The groundwater monitoring network is currently approved by the LDEQ under the solid waste permit as essentially a multi-unit monitoring system. Monitoring well construction and soil boring logs were provided in *Basis for Groundwater Monitoring System* (Geosyntec, 2017a).

### **4. CCR RULE GROUNDWATER KEY ACTIVITIES COMPLETED (2015 – 2017)**

#### **4.1 Monitoring Well Plugging and Abandonment and Replacement**

Monitoring well MW-10C was noted as being damaged by grass mowing equipment during groundwater monitoring in September 2016. Monitoring well MW-10C was plugged and abandoned in accordance with the Louisiana Department of Transportation (LDOTD) and Louisiana Department of Environmental Quality (LDEQ) guidance (LDEQ/LDOTD, 2000).

The borehole for the replacement well (MW-10CR1) was constructed utilizing a hollow-stem auger rig operated by a driller licensed by the State of Louisiana. The replacement well consists of 2-inch diameter polyvinyl chloride riser with 10 feet of 0.01-inch slotted screen, a filter pack, a bentonite seal, and grout to the surface. The surface completion is above-grade with a lockable metal shroud, 3-foot by 3-foot concrete pad, and protective metal guard posts. Additional information on well construction and development is available in the replacement report (CB&I, 2016). The well top of casing and ground surface were surveyed by a Louisiana licensed surveyor. Construction details for the plugged and abandoned and replacement wells are provided in Table 1.

#### **4.2 Sampling and Analysis Plan**

A Sampling and Analysis Plan (SAP) was prepared in October 2017 for the Detection Monitoring Program prior to collection of any detection monitoring groundwater samples (Geosyntec, 2017b). The SAP was posted to the operating record. The SAP documents the monitoring locations, sample collection and analysis protocol, and the quality assurance protocol employed for detection monitoring.

### **4.3 Groundwater Monitoring**

Baseline groundwater monitoring was conducted on a roughly quarterly basis and Detection Monitoring has begun on a semi-annual basis at the Site using the monitoring well network described above. As shown in Table 2, there were eight baseline monitoring events (April 2016 through September 2017) and one detection monitoring event (October 2017).

#### **4.3.1 Groundwater Elevation**

Similar to previous monitoring, the groundwater flow direction (Figure 3) varied but was predominantly away from the River (east to west) with localized variability in the area of the Bottom Ash Basin and eastern portion of the Fly Ash Basin.

#### **4.3.2 Baseline Monitoring Program**

As shown in Table 2, baseline groundwater monitoring at the Site began in April 2016 and continued through September 2017. All monitoring wells were sampled eight times during the baseline monitoring period. In accordance with 40 CFR 257.94(b), groundwater samples collected during the baseline groundwater monitoring period were analyzed for 40 CFR 257 Appendix III and Appendix IV list parameters. Analytical results are presented in Tables 4 through 7.

Background groundwater samples collected during the baseline monitoring period were used to calculate statistical estimates of the range of background concentrations for Appendix III list constituents. The background concentration for each constituent was derived from the background dataset (MW-10BG). A parametric upper prediction limit (UPL) was calculated for normally distributed constituents (calcium, chloride, fluoride, pH, TDS) of the background dataset using 95% parametric prediction limit (EPA Unified Guidance, 2009, Equation 18.7). Per the Unified Guidance (USEPA, 2009; page 18.16), the maximum detected background value in each dataset was selected as the UPL for nonparametric datasets. The calculated background concentrations for Appendix III list constituents are presented in Table 8.

#### **4.3.3 Detection Monitoring Program**

In October 2017, the first detection monitoring program event was conducted. In accordance with 40 CFR 257.94(a) of the CCR Rule, samples were analyzed for Appendix III list parameters only. Prior to sampling, a synoptic round of groundwater measurements was collected from the compliance and background monitoring wells. Groundwater elevation data are presented in Table 3. Analytical results are summarized in Tables 9 and 10.

### **4.4 Selection of Background Statistical Methods**

The baseline monitoring data from the background well were used to select statistical methods for calculating the range of background concentrations for Appendix III parameters. The resulting background concentrations are summarized in Table 8 based upon upper prediction limit (UPL)

methods. The calculations are documented and certified by a P.E. as being appropriate for the background data set in Geosyntec (2017b).

## 5. DETECTION MONITORING STATISTICS

In accordance with 40 CFR 257.93(b)(2), detection monitoring statistics were not required to be evaluated until the first quarter of 2018 (i.e. within 90 days after completion of sampling and analysis) and therefore are not included in this report. Detection monitoring statistics will be calculated in the required timeframe and included in the next annual report.

## 6. ASSESSMENT MONITORING STATISTICS

The Site is not in Assessment Monitoring.

## 7. PROBLEMS ENCOUNTERED AND RESOLUTIONS

The following section discusses problems encountered during the baseline monitoring period and the first detection monitoring event. Additionally, this section discusses the resolutions to those problems encountered.

**Problem:** Surface casing for monitoring well MW-10C was noted as being damaged by grass mowing equipment in September 2016.

**Resolution:** Monitoring well MW-10C was plugged and abandoned and replaced with MW-10CR1 in October 2016.

## 8. STATUS OF MONITORING PROGRAM

In October 2017, the Site transitioned from baseline monitoring to detection monitoring. The Site was in the baseline monitoring program from April 2016 through September 2017.

## 9. PLANNED KEY ACTIVITIES FOR 2018

The following section outlines the activities planned for 2018.

**January 2018:** The 2017 Annual Groundwater Monitoring and Corrective Action Report will be entered into the facility's operating record.

**February 2018:** Testing of the October 2017 detection monitoring program sample results for a statistically significant increase (SSI) over background will be completed.

**February 2018:** The 2017 Annual Groundwater Monitoring and Corrective Action Report notification will be posted to the public internet site and a notice of availability will be sent to the Louisiana Department of Environmental Quality (LDEQ).

**April 2018:** The first 2018 semi-annual groundwater detection monitoring program event will be conducted.

**August 2018:** Testing of the April 2018 detection monitoring program sample results for a SSI over background will be completed.

**October 2018:** The second 2018 semi-annual groundwater detection monitoring program event will be conducted.

**December 2018:** Preparation of the 2018 Annual Groundwater Monitoring and Corrective Action Report will begin.

## **10. REFERENCES**

CB&I. 2016. Replacement Well (MW-10CR1) Report – NRG Energy, Inc. – Prepared for Louisiana Generating, LLC and dated 18 November 2016.

Geosyntec. 2017a. Basis for Groundwater Monitoring System Certification – Federal CCR Rule. Prepared for LaGen in October 2017.

Geosyntec. 2017b. Sampling and Analysis Plan – Federal CCR Rule. Prepared for LaGen in October 2017.

LDEQ & LDOTD. 2000. Construction of Geotechnical Boreholes and Groundwater Monitoring Systems Handbook. December 2000. Louisiana Department of Environmental Quality and Louisiana Department of Transportation and Development.

M.S. Environmental Consultants, Inc. 2013. Groundwater Assessment Monitoring Plan, Fly Ash Basin, Bottom Ash Basin, Rainfall Surge Pond, Primary Treatment Pond, Secondary Treatment Pond, Louisiana Generating, LLC. January 22, 2013.

Shaw. 2010. Final Copies of Permit Renewal and Modification Application. Louisiana Generating, LLC, Big Cajun II Power Plant. Submitted to the LDEQ on behalf of LaGen in November 2010.

Shaw. 2011. Completion Report – Monitoring Well Installation Solid Waste Impoundment Monitoring System. Louisiana Generating, LLC, Big Cajun II Power Plant. Prepared for LaGen in August 2011.

U.S. EPA, 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities - Unified Guidance. March.

U.S. EPA, 2015. Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities (Final Rule). Fed. Reg. 80 FR 21301, pp. 21301-21501, 40 CFR Parts 257 and 261, April.



# **TABLES**

**TABLE 1  
WELL CONSTRUCTION DETAILS  
Big Cajun II Power Station CCR Rule Monitoring System  
New Roads, Louisiana**

Well	Installation Date	Latitude <sup>[1]</sup> <i>degrees, minutes, seconds</i>	Longitude <sup>[1]</sup> <i>degrees, minutes, seconds</i>	Ground Surface Elevation <sup>[1]</sup> <i>ft NGVD</i>	Top of Inner PVC Casing Elevation <sup>[1]</sup> <i>ft NGVD</i>	Inner Casing Diameter <sup>[1]</sup> <i>inches</i>	Top of Sand Pack <sup>[1]</sup> <i>ft NDVD</i>	Screen Interval <sup>[1]</sup> <i>ft NGVD</i>		Screen Length <sup>[1]</sup> <i>feet</i>	Screen Slot Size <sup>[1]</sup> <i>inch</i>	Groundwater Elevation <sup>[2]</sup> <i>ft msl</i>	Use <sup>[1]</sup>	Permit Number <sup>[3]</sup>
MW-85A	6/18/1985	30° 43' 44"	-91° 23' 50"	33.17	34.82	2.0	2.2	-0.80	-20.80	20	0.010	27.82	downgradient	P-0108-R1
MW-85B	6/20/1985	30° 43' 47"	-91° 22' 37"	30.60	32.25	2.0	23.6	22.00	1.60	20	0.010	28.75	downgradient	P-0108-R1
MW-85C	6/20/1985	30° 43' 57"	-91° 22' 37"	33.46	35.05	2.0	18.5	15.61	-4.74	20	0.010	28.60	downgradient	P-0108-R1
MW-85D	6/20/1985	30° 43' 44"	-91° 22' 25"	34.20	35.71	2.0	19.2	16.20	-3.80	20	0.010	28.66	downgradient	P-0108-R1
MW-85E	6/19/1985	30° 43' 30"	-91° 23' 01"	32.07	33.52	2.0	25.1	23.37	3.07	20	0.010	28.72	downgradient	P-0108-R1
MW-10A	6/2/2011	30° 43' 36.9556"	-91° 23' 39.6380"	29.886	32.967	2.0	13	10.39	0.39	10	NA	27.567	downgradient	P-0108-R1
MW-10B	6/2/2011	30° 43' 39.4964"	-91° 23' 30.6463"	27.860	34.126	2.0	11	7.86	-2.14	10	NA	27.626	downgradient	P-0108-R1
MW-10C*	6/2/2011	30° 43' 50.4624"	-91° 22' 54.5531"	31.503	34.538	2.0	14.5	11.50	1.50	10	NA	NA	downgradient	P-0108-R1
MW-10CR1	10/7/2016	30° 43' 50"	-91° 22' 55"	32.425	35.475	2.0	16.0	13.00	3.00	10	0.010	29.375	downgradient	P-0108-R1
MW-10D	6/2/2011	30° 43' 48.3614"	-91° 22' 31.9818"	30.221	33.177	2.0	12.2	10.22	0.22	10	NA	28.727	downgradient	P-0108-R1
MW-10E	5/31/2011	30° 43' 23.1013"	-91° 23' 15.1555"	30.421	33.536	2.0	13	10.42	0.42	10	NA	28.636	downgradient	P-0108-R1
MW-10F	5/31/2011	30° 43' 32.0729"	-91° 22' 43.8773"	28.968	31.265	2.0	7	3.97	-6.03	10	NA	27.665	downgradient	P-0108-R1
MW-10G	6/1/2011	30° 43' 19.2468"	-91° 23' 28.4676"	29.298	32.167	2.0	3	0.30	-9.70	10	NA	27.567	downgradient	P-0108-R1
MW-10H	6/1/2011	30° 43' 16.6544"	-91° 23' 37.3344"	29.208	32.013	2.0	-7	-8.79	-18.79	10	NA	27.513	downgradient	P-0108-R1
MW-10I	6/1/2011	30° 43' 15.1068"	-91° 23' 47.8133"	30.060	33.124	2.0	2.5	0.06	-9.94	10	NA	26.721	downgradient	P-0108-R1
MW-10BG	6/3/2011	30° 43' 54.5174"	-91° 23' 23.0111"	30.788	33.740	2.0	13	10.29	0.29	10	NA	25.54	background	P-0108-R1

**Notes:**  
 ft msl feet above mean sea level  
 NGVD National Geodetic Vertical Datum  
 NA Information not available.  
 [1] Information obtained from Minor Permit Modification Application, Type 1 Solid Waste Facility, Groundwater Assessment Sampling and Analysis Plan, M.S. Environmental Consultants, January 25, 2016, with the exception of MW-10CR1. MW-10CR1 construction information obtained from Replacement Well (MW-10CR1) Report, CB&I, November 18, 2016.  
 [2] Groundwater elevations (water level measurement date of April 10, 2017) obtained from First Half, 2017 Semiannual Monitoring Report, M.S. Environmental Consultants, July 10, 2017.  
 [3] Louisiana Department of Environmental Quality Solid Waste Permit Number  
 \* Monitor well plugged and abandoned on 10/7/2016. Well was replaced with MW-10CR1.

**TABLE 2**  
**SUMMARY OF 2016 - 2017 MONITORING EVENTS**  
**Big Cajun II Power Station CCR Rule Monitoring System**  
**New Roads, Louisiana**

Monitoring Program: Monitoring Event: Sample Date: Well ID	Baseline Monitoring																			Total Samples Collected		
	1Q 2016			2Q 2016			3Q 2016			4Q 2016			1Q 2017			2Q 2017			3Q 2017			
	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17		Aug-17	Sep-17
<b>Background Wells</b>																						
MW-10BG				III,IV		III,IV			III,IV	III,IV					III,IV		III,IV		III,IV			8
<b>Compliance Wells</b>																						
MW-85A				III,IV		III,IV			III,IV	III,IV					III,IV		III,IV		III,IV			8
MW-85B				III,IV		III,IV			III,IV	III,IV					III,IV		III,IV		III,IV			8
MW-85C				III,IV		III,IV			III,IV	III,IV					III,IV		III,IV		III,IV			8
MW-85D				III,IV		III,IV			III,IV	III,IV					III,IV		III,IV		III,IV			8
MW-85E				III,IV		III,IV			III,IV	III,IV					III,IV		III,IV		III,IV			8
MW-10A				III,IV		III,IV			III,IV	III,IV					III,IV		III,IV		III,IV			8
MW-10B				III,IV		III,IV			III,IV	III,IV					III,IV		III,IV		III,IV			8
MW-10C/MW-10CR1				III,IV		III,IV			III,IV	III,IV					III,IV		III,IV		III,IV	III,IV		8
MW-10D				III,IV		III,IV			III,IV	III,IV					III,IV		III,IV		III,IV			8
MW-10E				III,IV		III,IV			III,IV	III,IV					III,IV		III,IV		III,IV			8
MW-10F				III,IV		III,IV			III,IV	III,IV					III,IV		III,IV		III,IV			8
MW-10G				III,IV		III,IV			III,IV	III,IV					III,IV		III,IV		III,IV			8
MW-10H				III,IV		III,IV			III,IV	III,IV					III,IV		III,IV		III,IV			8
MW-10I				III,IV		III,IV			III,IV	III,IV					III,IV		III,IV		III,IV			8

Monitoring Program: Monitoring Event: Sample Date: Well ID	Detection Monitoring				Total Samples Collected
	4Q 2017				
	Oct-17	Nov-17	Dec-17		
<b>Background Wells</b>					
MW-10BG	III			1	
<b>Compliance Wells</b>					
MW-85A	III			1	
MW-85B	III			1	
MW-85C	III			1	
MW-85D	III			1	
MW-85E	III			1	
MW-10A	III			1	
MW-10B	III			1	
MW-10C/MW-10CR1	III			1	
MW-10D	III			1	
MW-10E	III			1	
MW-10F	III			1	
MW-10G	III			1	
MW-10H	III			1	
MW-10I	III			1	

Notes:  
 III Groundwater samples collected for laboratory analysis of Appendix III parameters.  
 IV Groundwater samples collected for laboratory analysis of Appendix IV parameters.

**TABLE 3  
GROUNDWATER ELEVATION MEASUREMENTS  
Big Cajun II Power Station CCR Rule Monitoring System  
New Roads, Louisiana**

Well	Top of Inner PVC Casing Elevation <sup>[1]</sup> ft NGVD	11-Apr-16		27-Jun-16		17-Oct-16		16-Sep-16		13-Feb-17		10-Apr-17		19-Jun-17		21-Aug-17		5-Sep-17		17-Oct-17	
		Depth to Water FT below TOC	Water Level Elevation ft NGVD	Depth to Water FT below TOC	Water Level Elevation ft NGVD	Depth to Water FT below TOC	Water Level Elevation ft NGVD	Depth to Water FT below TOC	Water Level Elevation ft NGVD	Depth to Water FT below TOC	Water Level Elevation ft NGVD	Depth to Water FT below TOC	Water Level Elevation ft NGVD	Depth to Water FT below TOC	Water Level Elevation ft NGVD	Depth to Water FT below TOC	Water Level Elevation ft NGVD	Depth to Water FT below TOC	Water Level Elevation ft NGVD	Depth to Water FT below TOC	Water Level Elevation ft NGVD
MW-85A	34.82	4.2	30.62	8.60	26.22	13.00	21.82	10.90	23.92	7.10	27.72	7.00	27.82	3.60	31.22	9.30	25.52	NA	NA	15.9	18.92
MW-85B	32.25	1.1	31.15	5.00	27.25	9.60	22.65	7.50	24.75	3.55	28.70	3.50	28.75	0.60	31.65	5.82	26.43	NA	NA	12.6	19.65
MW-85C	35.05	5.6	29.45	6.40	28.65	6.40	28.65	6.20	28.85	6.40	28.65	6.45	28.60	5.85	29.20	6.65	28.40	NA	NA	8.86	26.19
MW-85D	35.71	6.4	29.31	7.10	28.61	7.40	28.31	6.70	29.01	3.10	32.61	7.05	28.66	6.25	29.46	7.60	28.11	NA	NA	10.66	25.05
MW-85E	33.52	2.4	31.12	6.10	27.42	10.70	22.82	8.50	25.02	4.95	28.57	4.80	28.72	6.70	26.82	6.90	26.62	NA	NA	13.41	20.11
MW-10A	32.967	3.4	29.57	6.00	26.97	9.5	23.47	7.50	25.47	4.80	28.17	5.40	27.57	3.50	29.47	5.70	27.27	NA	NA	10.85	22.12
MW-10B	34.126	1.5	32.63	4.70	29.43	9.45	24.68	7.10	27.03	3.45	30.68	3.50	30.63	1.15	32.98	5.15	28.98	NA	NA	11.9	22.23
MW-10C*	34.538	2.9	31.64	7.00	27.54	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-10CR1	35.475	NA	NA	NA	NA	12.10	23.38	NA	NA	6.10	29.38	6.10	29.38	2.90	32.58	8.40	27.08	8.45	27.03	15.03	20.45
MW-10D	33.177	3.2	29.98	5.00	28.18	6.10	27.08	5.10	28.08	4.40	28.78	4.45	28.73	3.05	30.13	5.50	27.68	NA	NA	10.5	22.68
MW-10E	33.536	3.1	30.44	4.80	28.74	9.80	23.74	7.60	25.94	4.70	28.84	4.90	28.64	2.70	30.84	5.60	27.94	NA	NA	11.65	21.89
MW-10F	31.265	1	30.27	5.00	26.27	9.50	21.77	7.30	23.97	3.70	27.57	3.60	27.67	0.57	30.70	5.65	25.62	NA	NA	12.21	19.06
MW-10G	32.167	2.15	30.02	6.00	26.17	10.30	21.87	8.20	23.97	4.70	27.47	4.60	27.57	1.55	30.62	6.50	25.67	NA	NA	12.84	19.33
MW-10H	32.013	2.15	29.86	5.70	26.31	9.90	22.11	7.60	24.41	4.50	27.51	4.50	27.51	1.55	30.46	6.12	25.89	NA	NA	12.1	19.91
MW-10I	33.124	4	29.12	7.90	25.22	11.90	21.22	9.70	23.42	6.40	26.72	6.40	26.72	3.93	29.19	8.20	24.92	NA	NA	13.75	19.37
MW-10BG	33.740	2.95	30.79	5.85	27.89	11.00	22.74	9.50	24.24	7.20	26.54	8.20	25.54	3.30	30.44	7.30	26.44	NA	NA	12.39	21.35

Notes:

[1] Information obtained from Minor Permit Modification Application, Type 1 Solid Waste Facility, Groundwater Assessment Sampling and Analysis Plan, M.S. Environmental Consultants, January 25, 2016, with the exception of MW-10CR1. MW-10CR1 construction information obtained from Replacement Well (MW-10CR1) Report, CB&I, November 18, 2016.

NGVD National Geodetic Vertical Datum

**TABLE 4**  
**BASELINE MONITORING PROGRAM APPENDIX III ANALYTICAL DATA - BACKGROUND WELL MW-10BG**  
**Big Cajun II Power Station CCR Rule Monitoring System**  
**New Roads, Louisiana**

Constituents	11-Apr-16	27-Jun-16	16-Sep-16	17-Oct-16	13-Feb-17	10-Apr-17	20-Jun-17	22-Aug-17
Boron	0.075	0.068	0.076	0.076	0.066	0.024	0.075	0.075
Calcium	74.6	73.2	70.1	72.4	74	21.1	63	66.6
Chloride	5.0	5.3	5.6	5.5	5.5	6	6.4	6.2
Fluoride	<0.5	0.35	<0.5	<0.5	0.26	0.34	0.32	0.45
Sulfate	<1.0	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
pH (std.)	6.67	6.28	6.81	6.70	6.99	6.93	7.62	7.17
TDS	345	385	410	345	355	100	395	390

Notes:

For September 2016 monitoring event, the highest value for the routine and duplicate sample from MW-10BG is provided in the table.

TDS - total dissolved solids

All units are in milligrams per liter (mg/L) unless otherwise noted.

std - standard units

< - concentration less than the method detection limit (MDL)

**TABLE 5**  
**BASELINE MONITORING PROGRAM APPENDIX III ANALYTICAL DATA - COMPLIANCE WELLS**  
**Big Cajun II Power Station CCR Rule Monitoring System**  
**New Roads, Louisiana**

Well ID	Constituents	11-Apr-16	27-Jun-16	16-Sep-16	17-Oct-16	13-Feb-17	10-Apr-17	June 21, 2017 July 18, 2017	22-Aug-17
		MW-85A	Boron	0.086	0.076	0.081	0.081	0.081	<0.0012
Calcium	70.5		69.9	67.5	72.1	74	<0.025	70.2	62
Chloride	11.0		11.3	12.3	19.8	12.1	12.7	14	13.7
Fluoride	<0.5		0.37	<0.12	<0.12	0.24	0.34	0.29	0.39
Sulfate	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
pH (std.)	6.47		6.48	6.52	6.42	6.75	6.87	7.15	6.67
TDS	310		360	475	345	390	325	380	370
MW-85B	Boron	0.062	0.054	0.060	0.060	0.061	<0.0012	0.062	0.068
	Calcium	95.1	97.6	86.8	94.4	95.3	<0.025	94.1	79.1
	Chloride	42.5	44.5	39.1	43.4	34.1	28.2	44.8	26.7
	Fluoride	<0.5	0.17	<0.12	<0.12	0.16	0.17	0.2	0.23
	Sulfate	130	154	135	111	92.5	78.2	182	94.9
	pH (std.)	6.43	7.32	6.76	6.98	6.8	6.81	7.18	6.76
	TDS	525	615	615	580	510	450	630	520
MW-85C	Boron	0.24	0.21	0.25	0.28	0.3	0.25	0.24	0.21
	Calcium	128	132	123	140	166	61	125	115
	Chloride	60.7	60.3	68.2	71.1	70.7	71.5	64.9	62.3
	Fluoride	<0.5	0.31	<0.12	<0.12	0.25	0.28	0.35	0.37
	Sulfate	256	272	353	324	196	283	293	254
	pH (std.)	6.78	7.28	6.85	6.69	6.91	6.88	7.18	7.00
	TDS	820	870	905	880	960	900	845	730
MW-85D	Boron	0.18	0.13	0.17	0.19	0.21	0.23	0.2	0.15
	Calcium	125	132	120	136	154	60.8	129	115
	Chloride	35.6	27.3	37.8	39.9	45.3	40.6	39.6	30.6
	Fluoride	<0.5	0.31	<0.12	<0.12	0.22	0.3	0.28	0.36
	Sulfate	137	90	165	169	168	203	185	117
	pH (std.)	6.51	7.10	6.65	6.64	6.73	6.70	7.03	6.92
	TDS	730	715	850	705	855	810	765	750
MW-85E	Boron	4.4	4.4	4.1	4.0	4.1	0.26	4	4.3
	Calcium	216	246	200	199	223	62.8	218	208
	Chloride	69.5	72.0	65.4	59.1	64.6	71.6	75.5	68.2
	Fluoride	<0.5	0.39	<0.12	<0.12	0.24	0.23	0.18	0.3
	Sulfate	957	945	1010	681	798	908	997	922
	pH (std.)	6.19	6.17	6.42	6.23	6.43	6.47	6.86	6.55
	TDS	1600	1780	1740	1400	1600	1630	1800	1820
MW-10A	Boron	0.77	0.69	0.71	0.71	0.71	<0.0012	0.73	0.68
	Calcium	115	118	110	124	128	<0.025	113	110
	Chloride	77.8	79.3	86.3	85.7	85.3	86.6	84	80.7
	Fluoride	<0.5	0.29	<0.12	<0.12	0.33	0.33	0.38	0.44
	Sulfate	314	319	383	293	271	378	305	270
	pH (std.)	6.70	7.15	6.89	6.87	7.0	6.96	7.22	6.98
	TDS	815	880	945	825	885	815	875	860
MW-10B	Boron	0.54	0.49	0.65	0.67	0.62	0.048	0.41	0.43
	Calcium	98.1	99.2	77.9	79.9	92.5	12.1	93.2	88.4
	Chloride	68.2	73.1	85.5	85.4	82.2	83.2	68.1	66.1
	Fluoride	<0.5	0.19	<0.12	<0.12	<0.025	0.22	0.21	0.21
	Sulfate	94.9	106	117	96.6	138	102	101	91.2
	pH (std.)	6.15	6.85	6.26	6.47	6.39	6.53	7.18	6.75
	TDS	595	710	655	595	625	535	605	595

**TABLE 5**  
**BASELINE MONITORING PROGRAM APPENDIX III ANALYTICAL DATA - COMPLIANCE WELLS**  
**Big Cajun II Power Station CCR Rule Monitoring System**  
**New Roads, Louisiana**

Well ID	Constituents	11-Apr-16	27-Jun-16	16-Sep-16	17-Oct-16	13-Feb-17	10-Apr-17	June 21, 2017 July 18, 2017	22-Aug-17
		MW-10CR1	Boron	0.25	0.24	0.28	0.30	0.28	0.019
Calcium	124		124	122	129	133	25.6	110	72.3
Chloride	51.4		53.0	49.7	57.3	54.3	52.9	50.9	49.8
Fluoride	<0.5		0.29	0.29	<0.12	0.24	0.29	0.29	0.25
Sulfate	129		152	187	160	156	201	167	164
pH (std.)	6.47		7.29	6.98	7.01	6.95	6.81	7.14	6.95
TDS	690		825	745	740	745	750	780	795
Boron	0.26		0.23	0.013	0.28	0.27	0.04	0.26	0.22
MW-10D	Calcium	172	177	<0.050	170	169	27.4	139	131
	Chloride	85.9	84.3	90.3	90.6	80.8	49.9	74.5	66.4
	Fluoride	<0.5	0.30	<0.12	<0.12	0.19	0.22	0.22	0.32
	Sulfate	400	496	591	417	353	282	366	303
	pH (std.)	6.68	7.31	6.87	7.04	6.93	6.97	7.61	7.06
	TDS	1100	1140	1160	1180	1090	715	1040	785
	Boron	0.22	0.20	0.22	0.23	0.22	0.054	0.22	0.23
	Calcium	92.6	89.6	88.1	92.1	88.4	6.6	83.8	77.2
MW-10E	Chloride	31.9	30.7	31.4	29.9	26.3	26.9	30.5	26.3
	Fluoride	<0.5	0.23	<0.12	<0.12	0.18	0.3	0.26	0.29
	Sulfate	153	167	187	162	149	120	170	138
	pH (std.)	6.56	6.33	6.82	6.68	7.08	6.65	6.96	6.92
	TDS	610	685	680	565	500	510	620	515
	Boron	2.2	1.9	3.8	3.7	2.6	0.22	2.2	1.8
	Calcium	200	191	366	347	281	61.9	185	148
	Chloride	37.0	36.5	50.4	50.7	44.1	36.3	37.2	35.2
MW-10F	Fluoride	<0.5	0.22	<0.12	<0.12	0.27	0.23	0.22	0.24
	Sulfate	563	574	1520	1120	741	281	685	4190
	pH (std.)	6.51	6.39	6.45	6.44	6.43	6.68	6.98	6.88
	TDS	1320	1240	2400	2120	1750	1020	1440	1040
	Boron	0.76	0.72	0.80	0.80	0.77	0.077	0.74	0.75
	Calcium	93.2	93.2	89.2	95.3	101	54.9	86.3	83.2
	Chloride	74.3	72.7	73.5	73.7	73.5	74.1	77	74.2
	Fluoride	<0.5	0.36	<0.12	<0.12	0.18	0.25	0.27	0.34
MW-10G	Sulfate	129	162	177	152	150	119	158	1310
	pH (std.)	6.37	6.62	6.76	6.81	6.81	6.97	7.28	6.96
	TDS	665	725	790	670	675	625	690	725
	Boron	0.17	0.14	0.16	0.14	0.13	0.034	0.16	0.13
	Calcium	144	142	136	139	155	16.1	121	123
	Chloride	54.0	54.7	55.9	55.6	55.5	56.3	56.2	50.6
	Fluoride	<0.5	0.23	<0.12	<0.12	0.24	0.25	0.28	0.34
	Sulfate	47.9	52.9	58.6	47.8	45.8	53.6	56.9	28.8
MW-10H	pH (std.)	6.51	6.70	6.74	6.68	7.01	6.79	7.20	6.88
	TDS	700	710	725	680	680	695	700	685
	Boron	0.16	0.13	0.14	0.15	0.2	0.031	0.15	0.13
	Calcium	97.9	92.1	90.0	109	121	30.6	90.2	85.1
	Chloride	32.1	28.7	25.4	44.1	56.1	37.6	29.7	24.6
	Fluoride	<0.5	0.20	<0.12	<0.12	0.17	0.33	0.28	0.3
	Sulfate	32.9	31.3	26.6	115	158	75.6	49.3	21.1
	pH (std.)	6.56	6.77	6.62	6.63	6.82	7.04	7.22	6.74
MW-10I	TDS	535	505	500	610	625	525	515	495

Notes:

TDS - total dissolved solids

All units are in milligrams per liter (mg/L) unless otherwise noted.

std - standard units

<sup>1</sup> Monitoring well MW-10C was damaged at time of 16 September 2016 sampling and replaced by MW-10CR1. Analytical results from 6 September 2017 sampling event posted on the 16 September 2016 date.

< - concentration less than the method detection limit (MDL)

**TABLE 6**  
**BASELINE MONITORING PROGRAM APPENDIX IV ANALYTICAL DATA - BACKGROUND WELL MW-10BG**  
**Big Cajun II Power Station CCR Rule Monitoring System**  
**New Roads, Louisiana**

Constituents	11-Apr-16	27-Jun-16	16-Sep-16	17-Oct-16	13-Feb-17	10-Apr-17	June 21, 2017 July 18, 2017	22-Aug-17
Antimony	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0033	<0.001
Arsenic	0.0032	0.0071	0.0052	0.010	0.0076	0.0012	0.0039	0.0068
Barium	0.23	0.23	0.23	0.23	0.24	0.072	0.18	0.24
Beryllium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	<0.001	<0.001	<0.001	<0.001	<0.001	0.0019	<0.001	<0.001
Cobalt	<0.001	<0.001	<0.001	<0.001	<0.001	0.0039	<0.001	<0.001
Fluoride	<0.5	0.35	<0.5	<0.5	0.26	0.34	0.32	0.45
Lead	<0.001	<0.001	<0.001	<0.001	<0.001	0.0027	<0.001	<0.001
Lithium	0.012	0.011	0.012	0.012	0.014	0.0066	0.012	0.012
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Radium 226 (pCi/L)	0.221	<0.899	1.600	0.532	0.063	0.348	0.339*	0.832
Radium 228 (pCi/L)	<0.701	0.654	0.504	0.385	0.386	0.488	0.466*	0.563
Radium 226 and 228 Combined (pCi/L)	<0.922	<1.553	2.104	0.917	0.449	0.836	0.805*	1.395
Selenium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Thallium	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

## Notes:

For September 2016 monitoring event, the highest value for the routine and duplicate sample from MW-10BG is provided in the table.

TDS - total dissolved solids

All units are in milligrams per liter (mg/L) unless otherwise noted.

std - standard units

\* Sampled on 7/18/2017

pCi/L - picocuries per liter

< - concentration less than the method detection limit (MDL)



**TABLE 7**  
**BASELINE MONITORING PROGRAM APPENDIX IV ANALYTICAL DATA - COMPLIANCE WELLS**  
**Big Cajun II Power Station CCR Rule Monitoring System**  
**New Roads, Louisiana**

Well ID	Constituents	11/12 April 2016	27-Jun-16	16-Sep-16	17-Oct-16	13-Feb-17	11-Apr-17	June 20, 2017 July 18, 2017	22-Aug-17
MW-10A	Antimony	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Arsenic	0.0019	0.0025	0.0023	0.0030	0.0031	<0.00025	0.0014	0.0024
	Barium	0.29	0.31	0.28	0.33	0.34	<0.00025	0.26	0.26
	Beryllium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Cadmium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Chromium	<0.0005	<0.0005	<0.0005	0.0029	<0.00025	<0.00025	<0.00025	<0.00025
	Cobalt	<0.0005	<0.0005	<0.0005	0.0027	<0.00025	<0.00025	<0.00025	<0.00025
	Fluoride	<0.50	0.29	<0.12	<0.12	0.33	0.33	0.38	0.44
	Lead	<0.0005	<0.0005	<0.0005	0.0025	<0.00025	<0.00025	<0.00025	<0.00025
	Lithium	0.013	0.012	0.011	0.015	0.014	<0.00025	0.012	0.011
	Mercury	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
	Molybdenum	<0.0015	<0.0015	<0.0015	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075
	Radium 226 (pCi/L)	0.359	0.539	0.549	0.392	0.402	0.508	0.402*	0.266
	Radium 228 (pCi/L)	0.802	0.759	0.603	0.839	0.528	0.454	0.375*	0.32
Selenium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	
Thallium	<0.00025	<0.00025	<0.00025	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	
MW-10B	Antimony	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Arsenic	0.0054	0.0061	0.010	0.011	0.01	<0.00025	0.0013	0.003
	Barium	0.47	0.46	0.45	0.47	0.5	0.0071	0.33	0.34
	Beryllium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Cadmium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Chromium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Cobalt	<0.0005	<0.0005	0.0011	0.0011	0.0013	<0.00025	<0.00025	<0.00025
	Fluoride	<0.50	0.19	<0.12	<0.12	<0.25	0.22	0.21	0.21
	Lead	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Lithium	0.015	0.014	0.011	0.012	0.014	0.0025	0.015	0.014
	Mercury	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
	Molybdenum	<0.0015	<0.0015	<0.0015	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075
	Radium 226 (pCi/L)	0.524	0.507	0.646	1.51	0.197	0.434	0.784*	0.0635
	Radium 228 (pCi/L)	0.668	0.687	0.602	1.15	0.425	0.951	0.688*	0.695
Selenium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	
Thallium	<0.00025	<0.00025	<0.00025	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	
MW-10CRI <sup>1</sup>	Antimony	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Arsenic	0.0077	0.0064	0.0055	0.0092	0.013	0.0011	0.0046	0.0025
	Barium	0.40	0.39	0.38	0.49	0.47	0.012	0.37	0.2
	Beryllium	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	0.0011	<0.00025	<0.00025
	Cadmium	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Chromium	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	0.013	<0.00025	<0.00025
	Cobalt	0.0014	0.0017	0.0016	0.0016	0.0014	0.0049	0.0012	<0.00025
	Fluoride	<0.5	0.29	0.29	<0.12	0.24	0.29	0.29	0.25
	Lead	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	0.0017	<0.00025	<0.00025
	Lithium	0.018	0.016	0.019	0.017	0.02	0.007	0.016	0.027
	Mercury	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
	Molybdenum	0.0036	0.0035	0.0041	0.0040	0.0045	<0.00075	0.0038	0.0048
	Radium 226 (pCi/L)	0.371	0.736	0.0951	0.381	0.942	-0.066	0.737*	0.743
	Radium 228 (pCi/L)	0.712	0.726	1.56	1.36	0.728	0.392	0.19*	1.09
Selenium	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	
Thallium	<0.00025	<0.00025	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	

**TABLE 7  
BASELINE MONITORING PROGRAM APPENDIX IV ANALYTICAL DATA - COMPLIANCE WELLS  
Big Cajun II Power Station CCR Rule Monitoring System  
New Roads, Louisiana**

Well ID	Constituents	11/12 April 2016	27-Jun-16	16-Sep-16	17-Oct-16	13-Feb-17	11-Apr-17	June 20, 2017 July 18, 2017	22-Aug-17
MW-10D	Antimony	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	0.02	<0.00025	<0.00025
	Arsenic	0.0031	0.0034	<0.0005	0.0046	0.0063	0.018	0.0027	0.0028
	Barium	0.27	0.25	<0.0005	0.25	0.24	0.032	0.18	0.18
	Beryllium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	0.021	<0.00025	<0.00025
	Cadmium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	0.02	<0.00025	<0.00025
	Chromium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	0.032	<0.00025	<0.00025
	Cobalt	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	0.024	<0.00025	<0.00025
	Fluoride	<0.5	0.30	<0.12	<0.12	0.19	0.22	0.22	0.32
	Lead	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	0.022	<0.00025	<0.00025
	Lithium	0.016	0.014	<0.0005	0.015	0.018	0.026	0.015	0.014
	Mercury	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	0.0041	<0.00005	<0.00005
	Molybdenum	<0.0015	<0.0015	<0.0015	<0.00075	<0.00075	0.018	<0.00075	<0.00075
	Radium 226 (pCi/L)	0.416	0.523	0.165	1.31	0.285	0.508	0.227*	0.409
	Radium 228 (pCi/L)	0.669	0.756	0.559	1.20	0.622	0.517	0.819*	0.217
Selenium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	0.018	<0.00025	<0.00025	
Thallium	<0.00025	<0.00025	<0.00025	<0.00012	<0.00012	0.02	<0.00012	<0.00012	
MW-10E	Antimony	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Arsenic	0.010	0.010	0.010	0.011	0.011	<0.00025	0.009	0.0089
	Barium	0.24	0.24	0.26	0.27	0.26	0.021	0.23	0.24
	Beryllium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Cadmium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Chromium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	0.0011	<0.00025	<0.00025
	Cobalt	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Fluoride	<0.5	0.23	<0.12	<0.12	0.18	0.3	0.26	0.29
	Lead	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	0.0011	<0.00025	<0.00025
	Lithium	0.014	0.014	0.014	0.015	0.016	<0.00025	0.013	0.013
	Mercury	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
	Molybdenum	<0.0015	<0.0015	<0.0015	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075
	Radium 226 (pCi/L)	0.525	1.41	0.641	1.51	-0.32	-0.307	0.208*	0.586
	Radium 228 (pCi/L)	0.847	0.707	0.746	1.44	1.07	0.75	0.547*	0.144
Selenium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	
Thallium	<0.00025	<0.00025	<0.00025	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	
MW-10F	Antimony	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Arsenic	0.0036	0.0037	0.0078	0.0091	0.011	<0.00025	0.004	0.0059
	Barium	0.11	0.13	0.069	0.066	0.059	0.013	0.073	0.072
	Beryllium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Cadmium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Chromium	<0.0005	0.0010	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Cobalt	<0.0005	<0.0005	0.0035	0.0036	0.0034	<0.00025	<0.00025	<0.00025
	Fluoride	<0.5	0.22	<0.12	<0.12	0.27	0.23	0.22	0.24
	Lead	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Lithium	0.021	0.018	0.027	0.028	0.03	0.014	0.019	0.017
	Mercury	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
	Molybdenum	<0.0015	<0.0015	<0.0015	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075
	Radium 226 (pCi/L)	0.330	0.507	0.587	0.929	0.576	0.13	0.393*	0.487
	Radium 228 (pCi/L)	0.732	0.696	0.825	1.11	0.253	0.691	1.06*	0.51
Selenium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	
Thallium	<0.00025	<0.00025	<0.00025	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	

**TABLE 7  
BASELINE MONITORING PROGRAM APPENDIX IV ANALYTICAL DATA - COMPLIANCE WELLS  
Big Cajun II Power Station CCR Rule Monitoring System  
New Roads, Louisiana**

Well ID	Constituents	11/12 April 2016	27-Jun-16	16-Sep-16	17-Oct-16	13-Feb-17	11-Apr-17	June 20, 2017 July 18, 2017	22-Aug-17
MW-10G	Antimony	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	0.0011	<0.00025	<0.00025
	Arsenic	0.0016	0.0015	0.0013	0.0012	0.0018	0.0019	0.0016	0.0022
	Barium	0.36	0.35	0.35	0.36	0.38	0.075	0.34	0.32
	Beryllium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Cadmium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Chromium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	0.0078	<0.00025	<0.00025
	Cobalt	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	0.0016	<0.00025	<0.00025
	Fluoride	<0.5	0.36	<0.12	<0.12	0.18	0.25	0.27	0.34
	Lead	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	0.0075	<0.00025	<0.00025
	Lithium	0.020	0.018	0.017	0.017	0.02	0.0076	0.018	0.017
	Mercury	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
	Molybdenum	<0.0015	<0.0015	<0.0015	<0.00075	<0.00075	0.0032	<0.00075	<0.00075
	Radium 226 (pCi/L)	0.486	1.34	0.627	1.52	0.133	0.357	0.595*	0.344
	Radium 228 (pCi/L)	0.686	0.836	1.50	1.18	0.683	0.289	0.438*	0.681
Selenium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	
Thallium	<0.00025	<0.00025	<0.00025	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	
MW-10H	Antimony	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Arsenic	0.0079	0.0080	0.0085	0.0087	0.0092	0.0011	0.0064	0.011
	Barium	0.46	0.44	0.44	0.44	0.5	0.069	0.36	0.37
	Beryllium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Cadmium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Chromium	<0.0005	0.0022	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Cobalt	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	0.0015	<0.00025	<0.00025
	Fluoride	<0.5	0.23	<0.12	<0.12	0.24	0.25	0.28	0.34
	Lead	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	0.0013	<0.00025	<0.00025
	Lithium	0.020	0.018	0.018	0.018	0.022	0.0081	0.018	0.017
	Mercury	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
	Molybdenum	<0.0015	<0.0015	<0.0015	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075
	Radium 226 (pCi/L)	0.394	0.516	0.568	1.01	0	0.201	0.296*	0.635
	Radium 228 (pCi/L)	0.607	0.581	0.808	1.31	0.229	0.936	1.18*	0.475
Selenium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	
Thallium	<0.00025	<0.00025	<0.00025	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	

**TABLE 7  
BASELINE MONITORING PROGRAM APPENDIX IV ANALYTICAL DATA - COMPLIANCE WELLS  
Big Cajun II Power Station CCR Rule Monitoring System  
New Roads, Louisiana**

Well ID	Constituents	11/12 April 2016	27-Jun-16	16-Sep-16	17-Oct-16	13-Feb-17	11-Apr-17	June 20, 2017 July 18, 2017	22-Aug-17
MW-101	Antimony	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	0.0012	<0.00025
	Arsenic	<0.0005	<0.0005	<0.0005	<0.00025	0.0012	<0.00025	<0.00025	<0.00025
	Barium	0.38	0.36	0.36	0.43	0.5	0.076	0.21	0.36
	Beryllium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Cadmium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
	Chromium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	0.0016	<0.00025	<0.00025
	Cobalt	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	0.0035	<0.00025	<0.00025
	Fluoride	<0.5	0.20	<0.12	<0.12	0.17	0.33	0.28	0.3
	Lead	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	0.0013	<0.00025	<0.00025
	Lithium	0.023	0.022	0.022	0.024	0.028	0.016	0.022	0.021
	Mercury	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
	Molybdenum	<0.0015	<0.0015	<0.0015	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075
	Radium 226 (pCi/L)	0.551	0.748	0.607	1.51	0.467	0.283	0.642*	0.908
	Radium 228 (pCi/L)	0.662	0.559	0.710	1.69	0.934	0.185	0.42*	1.3
	Selenium	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
Thallium	<0.00025	<0.00025	<0.00025	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	

Notes:

\* Sampled on 7/18/2017

All units are in milligrams per liter (mg/L) unless otherwise noted.

<sup>1</sup> Monitoring well MW-10C was damaged at time of 16 September 2016 sampling and replaced by MW-10CR1. Analytical results from 6 September 2017 sampling event posted on the 16 September 2016 date.

pCi/L - picocuries per liter

< - concentration less than the method detection limit (MDL)

**TABLE 8**  
**BACKGROUND CONCENTRATIONS FOR APPENDIX III CONSTITUENTS**  
**Big Cajun II Power Station CCR Rule Monitoring System**  
**New Roads, Louisiana**

Appendix III Parameter	Unit	UPL[1]
Boron	mg/L	0.076
Calcium	mg/L	164
Chloride	mg/L	8.3
Fluoride	mg/L	0.7
pH	S.U.	4.60 - 9.19[2]
Sulfate	mg/L	1.4
Total Dissolved Solids	mg/L	895

Notes:

UPL Upper Prediction Limit

µg/L micrograms per Liter

mg/L milligrams per Liter

S.U. Standard Units

[1] Subject to change as additional data are generated. Calculations provided in Sampling and Analysis Plan - Coal Combustion Rule - Big Cajun II Power Station (Geosyntec, 2017)

[2] Upper Prediction limit (UPL) for high pH range.

**TABLE 9**  
**DETECTION MONITORING PROGRAM APPENDIX III DATA - BACKGROUND WELL MW-10BG**  
**Big Cajun II Power Station CCR Rule Monitoring System**  
**New Roads, Louisiana**

Constituents	17-Oct-17
Boron	0.068
Calcium	71.4
Chloride	4.6
Fluoride	0.32
Sulfate	<1.0
pH (std.)	6.87
TDS	340

Notes:

TDS - total dissolved solids

All units are in milligrams per liter (mg/L) unless otherwise noted.

std - standard units

< - concentration less than the method detection limit (MDL)

**TABLE 10**  
**DETECTION MONITORING PROGRAM APPENDIX III DATA - COMPLIANCE WELLS**  
**Big Cajun II Power Station CCR Rule Monitoring System**  
**New Roads, Louisiana**

Constituents	MW-85A	MW-85B	MW-85C	MW-85D	MW-85E	MW-10A	MW-10B	MW-10CR1	MW-10D	MW-10E	MW-10F	MW-10G	MW-10H	MW-10I
Boron	0.080	0.06	0.3	0.19	3.7	0.66	0.62	0.28	0.26	0.21	2.5	0.77	0.11	0.15
Calcium	72.4	93	140	146	201	120	88.5	127	165	87	262	97.3	140	105
Chloride	20.8	39.6	70.5	42	57.4	82.8	80.5	49.7	78.7	27.5	42.2	72.9	52.5	42.1
Fluoride	0.32	0.2	0.36	0.29	0.14	0.43	0.13	0.4	0.24	0.24	0.12	0.24	0.19	0.45
Sulfate	1.8	225	476	338	890	453	244	289	1800	254	1000	391	39.8	112
pH (std.)	6.63	6.85	6.94	6.71	6.31	6.91	6.41	6.83	6.95	6.89	6.39	6.91	6.85	6.69
TDS	365	615	800	805	1560	855	640	805	1040	505	1570	635	735	630

## Notes:

TDS - total dissolved solids

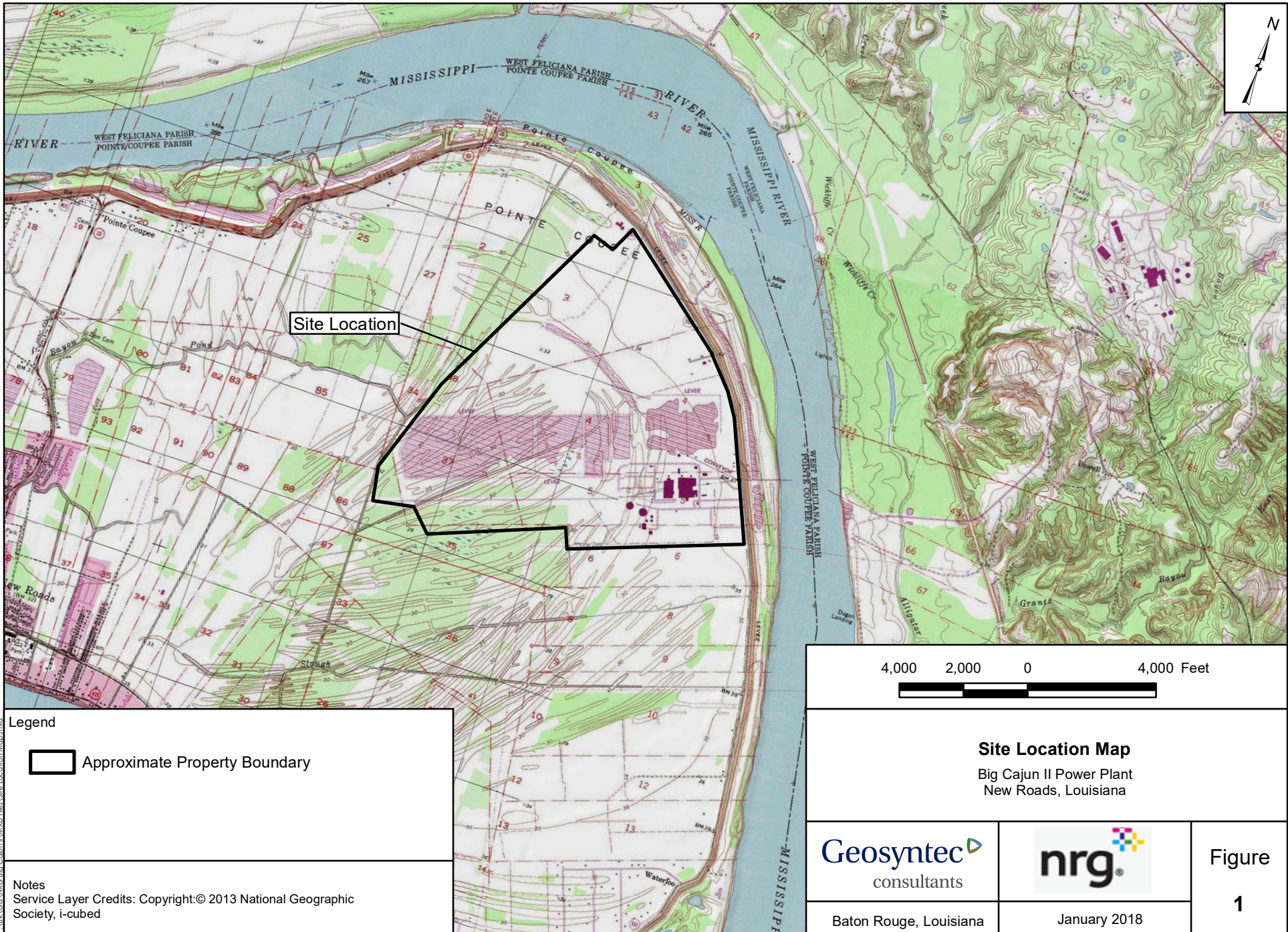
All units are in milligrams per liter (mg/L) unless otherwise noted.

std - standard units

Samples collected on 17 October 2017 and 18 October 2017

# **FIGURES**





Site Location

4,000 2,000 0 4,000 Feet



Legend

 Approximate Property Boundary

Site Location Map

Big Cajun II Power Plant  
New Roads, Louisiana

Geosyntec  
consultants



Figure

1

Notes  
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Baton Rouge, Louisiana

January 2018

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1,100 550 0 1,100 Feet



**CCR Rule Groundwater  
Monitoring Well Network**

Big Cajun II Power Plant  
New Roads, Louisiana

- Legend**
-  Monitor Well
  -  Monitor Well (Plugged and Abandoned)

**Notes**  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Figure

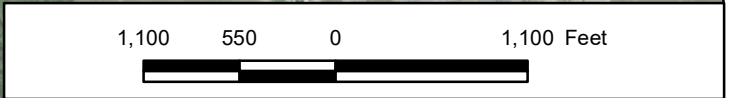
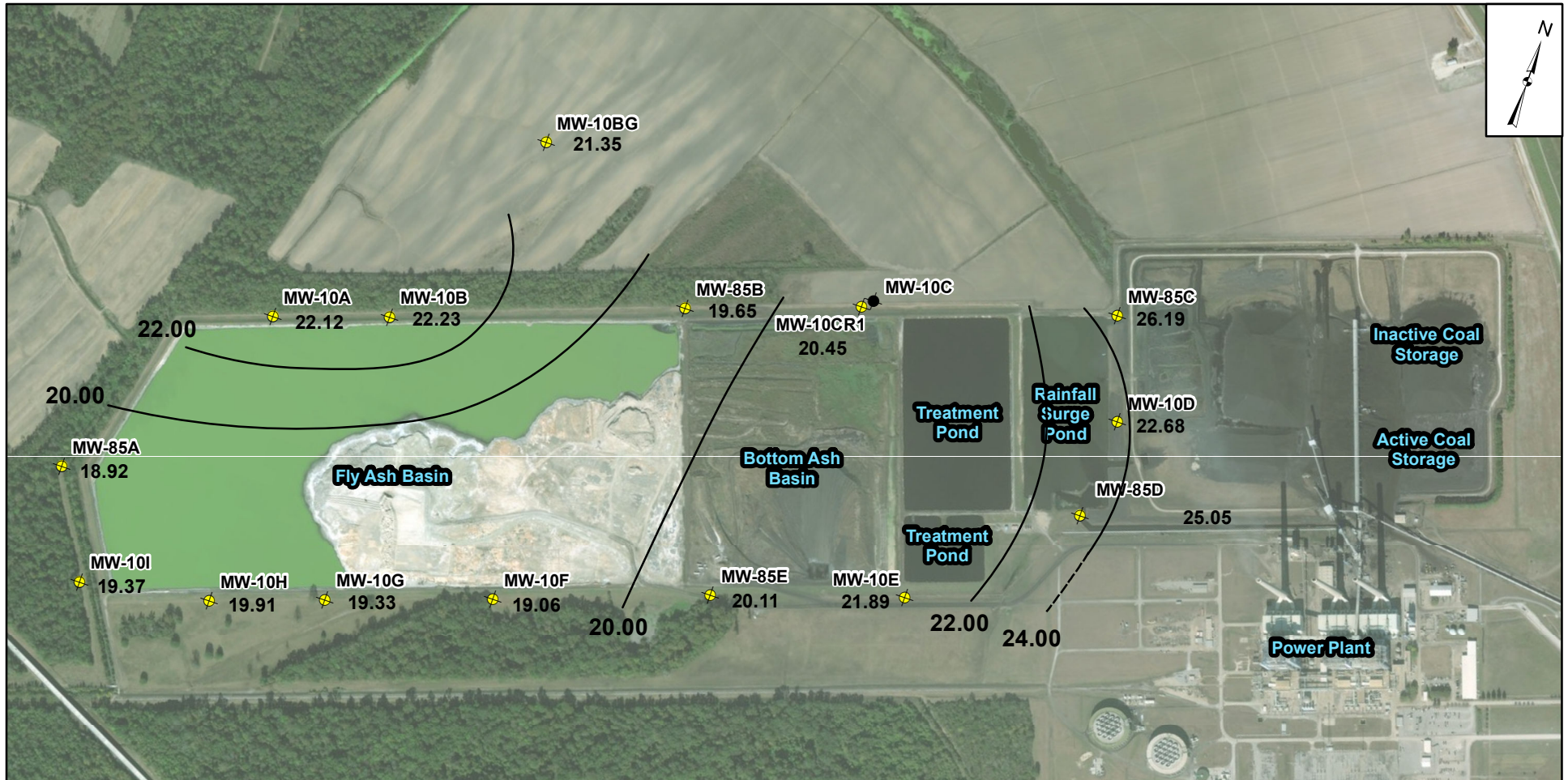
**2**

Baton Rouge, Louisiana

January 2018

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**Groundwater Potentiometric Surface  
17 October 2017**

Big Cajun II Power Plant  
New Roads, Louisiana

**Legend**

- Monitor Well
- Monitor Well (Plugged and Abandoned)

**19.37** Water Level Elevation (ft msl)

**Notes**

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community  
ft msl - feet above sea level (NGVD)

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Figure

**3**

Baton Rouge, Louisiana

January 2018

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