

An aerial photograph of the Brame Energy Center in Lena, Louisiana. The image shows a large industrial complex with various structures, including a tall smokestack, several large cylindrical tanks, and a complex network of pipes and scaffolding. The facility is situated on a riverbank, with a large body of water in the foreground and a forested area in the background. The sky is clear and blue.

**BRAME ENERGY CENTER  
LENA, LOUISIANA**

**MONITORING WELL  
NETWORK CERTIFICATION**

## **MONITORING WELL NETWORK**

### **1.0 Introduction**

The U.S (United States). Environmental Protection Agency (EPA) published a final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA). The rule applies to the Cleco Power LLC Brame Energy Center (BEC). A site location map is provided in Figure 1. BEC has three permitted facilities that accept CCR: the Bottom Ash Pond, the Fly Ash Pond, and Cell 4 of the Ash Management Area, as shown in Figure 2.

The CCR Rule, 40 CFR Subpart D-Standards for the Disposal of CCRs, Section §257.91 requires a groundwater monitoring system that consists of sufficient number of wells at appropriate locations and depths based on site-specific technical information, to yield groundwater samples from the uppermost aquifer that:

- Accurately represent the quality of both background groundwater, and groundwater passing the boundary of the CCR unit; and
- Monitor potential contaminant pathways.

The groundwater monitoring system at BEC meets those requirements, as described below.

### **2.0 Site Hydrogeology Summary**

The Bottom Ash Pond, Fly Ash Pond, and Cell 4 of the Ash Management Area are situated on the aquifer recharge area for the Red River natural levee and/or Alluvial Aquifer, as well as Lake Rodemacher. Since these units are located in the Red River Alluvium, all upgradient and downgradient monitoring wells for these CCR facilities have been installed in these deposits.

Review of geological reports indicates that Red River Alluvial Aquifer groundwater quality is reported by the USGS to be primarily limited to use for industrial and agricultural purposes. This is due to excessive concentrations of dissolved solids, hardness, iron, or localized salinity. The natural groundwater quality of these aquifer systems is generally considered not suitable for drinking water supply purposes without first undergoing appropriate water treatment. The Louisiana Department of Natural Resources (LDNR) issued an advisory in 2009 addressing the recommended uses of these alluvial aquifers. Furthermore, it is reported that dissolved metals, namely arsenic, have been, and are expected to be, detected in groundwater in localized areas of these aquifers (LDNR, 2009).

Louisiana Department of Natural Resources, Office of Conservation, 2009. "General Water Quality Summary, Louisiana Groundwater - Alluvial Aquifer Systems," Louisiana Department of Natural Resources, Baton Rouge, LA, 1 sheet.

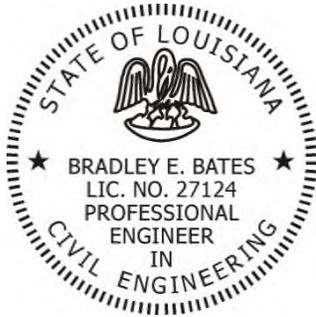
### **3.0 Groundwater Monitoring System**

Groundwater monitoring wells have been installed in the uppermost, laterally continuous water bearing zone present beneath the CCR facilities at BEC. Since the areas immediately upgradient of these units are situated on Terrace deposits, the background monitoring wells have been

installed in alternative locations, per §257.91.1. Thus, all background and compliance monitoring wells are screened in the Red River Alluvial deposits. Monitoring well information is included in Table 1, and the monitoring well locations are provided in Figure 2.

### **CERTIFICATION**

I hereby certify that the groundwater monitoring system described in this report for the Brame Energy Center, owned and operated by Cleco Power, LLC, has been designed and constructed to meet the requirements of the Coal Combustion Residual Rule 40 CFR §257.91. I am a duly licensed Professional Engineer under the laws of the State of Louisiana.

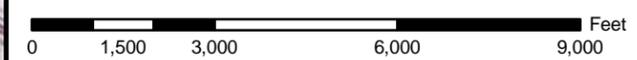
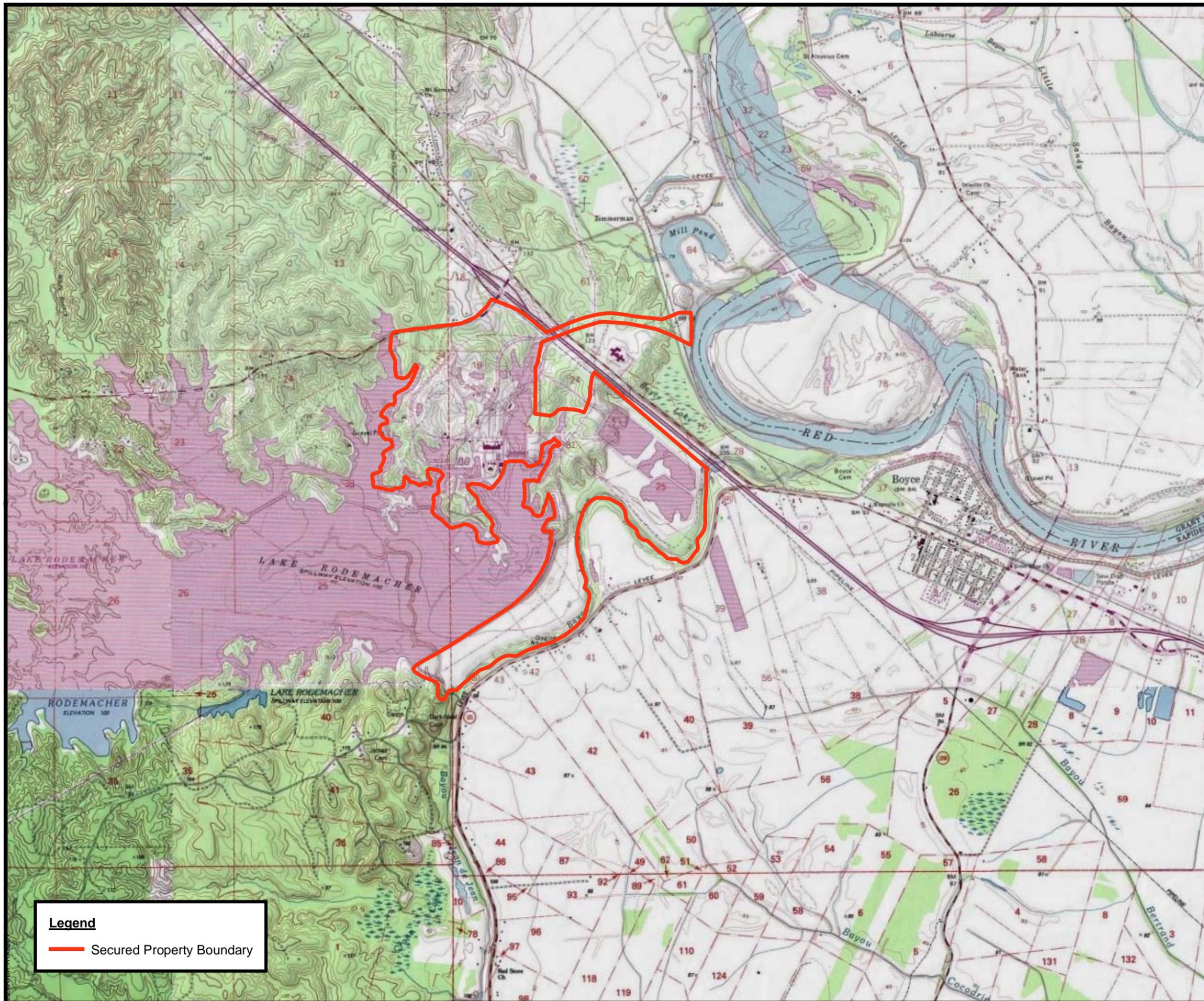


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Bradley E. Bates, P.E.

Date: 04/12/24

Louisiana Registration No.: 27124



**Reference**  
 U.S.G.S. TOPOGRAPHIC MAPS "LENA, LOUISIANA", "BOYCE, LOUISIANA",  
 "JERICO, LOUISIANA", AND "GARDNER, LOUISIANA."

**Legend**  
 — Secured Property Boundary



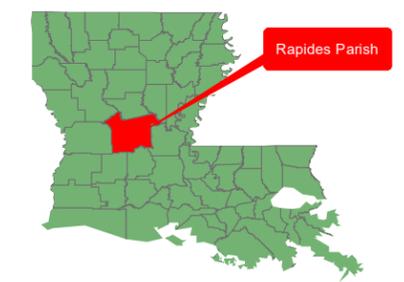
**Site Location Map**

Rapides Parish, Louisiana



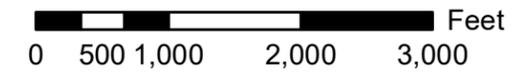
Drawn:	jbh
Checked:	JM
Approved:	RS
Date:	11/08/10
Dwg. No.:	01-10-0071-A003

**Figure 1**



**Legend**

-  CCR Rule Compliance Wells
-  CCR Rule Background Wells
-  Secured Property Boundary



**CLECO Power LLC**  
Brame Energy Center

**CCR Rule  
Monitoring Well Location Map**

Rapides Parish, Louisiana



Drawn:	JP
Checked:	RS
Approved:	JM
Date:	3/13/24
Dwg. No.:	01-24-0243-A001

**Figure 2**

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



**Table 1**  
**Monitoring Well Information**

Cleco Brame Energy Center  
Bottom Ash Pond, Fly Ash Pond, and  
Cell 4 of Ash Management Area

<b>Well Number</b>	<b>D-1</b>	<b>D-2</b>	<b>D-3</b>	<b>L-1</b>	<b>L-2</b>
Background (B) or Compliance (C)	B	B	B	B	B
Latitude (dd°mm'ss")	31°24'23.84"	31°24'23.41"	31°24'17.52"	31°22'47.68"	31°22'48.17"
Longitude (dd°mm'ss")	92°41' 53.62"	92°41'52.12"	92°41'52.95"	92°42'53.61"	92°42'55.01"
Casing Elevation (ft NGVD)	99.38	99.36	97.37	86.15	86.68
Concrete Pad Elevation (ft NGVD)	96.59	97.10	94.50	83.05	83.73
Well Depth (ft bgs)	40	46	35.5	36	40
Screen Length (ft)	10	10	10	10	10
Top of Screen (ft NGVD)	67.2	61.7	69.3	58.8	54.6
Bottom of Screen (ft NGVD)	57.2	51.7	59.3	48.8	44.6
Screen Slot Size (inches)	0.010	0.010	0.010	0.010	0.010
Casing Diameter (inches) & Material	2" PVC	2" PVC	2" PVC	2" PVC	2" PVC

<b>Well Number</b>	<b>W-3</b>	<b>W-19</b>	<b>W-21</b>	<b>W-24</b>
Background (B) or Compliance (C)	C	C	C	C
Latitude (dd°mm'ss")	31°23'37.79"	31°23'30.48"	31°23'49.57"	31°23'43.05"
Longitude (dd°mm'ss")	92°41'48.33"	92°41'50.26"	92°42'05.00"	92°41'55.61"
Casing Elevation (ft NGVD)	92.07	94.99	87.86	83.71
Concrete Pad Elevation (ft NGVD)	88.87	92.47	85.23	81.03
Well Depth (ft bgs)	77	55	54.5	55
Screen Length (ft)	10	10	10	10
Top of Screen (ft NGVD)	25.7	48.0	41.2	38.4
Bottom of Screen (ft NGVD)	15.7	38.0	31.2	28.4
Screen Slot Size (inches)	0.010	0.010	0.010	0.010
Casing Diameter (inches) & Material	2" PVC	2" PVC	2" PVC	2" PVC

Notes:

bgs = below ground surface

PVC = polyvinyl chloride