

**CLECO POWER LLC**  
**BRAME ENERGY CENTER**  
**LENA, RAPIDES PARISH, LOUISIANA**



**CCR COMPLIANT**  
**DESCRIPTION OF LEACHATE**  
**COLLECTION SYSTEM**

**ASH MANAGEMENT LANDFILL**  
**CELL 4**

**AGENCY INTEREST NO. 2922**

**D-079-0390/P-0379-R1-M3**

**DECEMBER 2023**

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Providence Project No: 002-322



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## 1.0 INTRODUCTION

On April 17, 2015, the United States Environmental Protection Agency (EPA) issued the final version of the federal coal combustion residuals rule (CCR Rule) to regulate the disposal of CCR materials generated at coal-fired units. The rule is being administered as part of the Resource Conservation and Recovery Act (RCRA, 42 U.S.C. §6901 et seq.), using the Subtitle D approach.

Cleco Power LLC (Cleco) operates an existing coal combustion residuals (CCR) landfill referred to as the Ash Management Landfill at the Brame Energy Center (BEC) located near Boyce, Rapides Parish, Louisiana. (**Figure 1**) The landfill is considered a Type I Industrial Facility by the Louisiana Department of Environmental Quality and operates under solid waste permit P-0379-R1-M3. Cells 1-3 of the Ash Management Landfill were active prior to the effective date of the CCR Rule. On October 11, 2021, the Louisiana Department of Environmental Quality (LDEQ) approved a minor modification for design changes to Cell 4 to comply with CCR design requirements. These changes included raising the excavation grades in Cell 4, changes to final waste grades, raising the perimeter levee elevations, and reorientation of the leachate collection trenches. Cleco contracted and completed the design and construction of the lateral expansion for Cell 4 (**Figure 2**) of the Ash Management Landfill. This report is to certify that Cell 4 of the Ash Management Landfill was designed, operates and meets the criteria outlined in 40 CFR 257.61(a).

Per 40 CFR §257.61(b), Cleco must obtain certification from a qualified professional engineer that the leachate collection system meets the requirements of 40 CFR 257.61(a) and is included in **Appendix A**.

## 2.0 DESCRIPTION OF LEACHATE COLLECTION SYSTEM

The leachate collection and removal system within the landfill is comprised of the following components: a protective cover layer (12 inches of sand), perforated High-Density Polyethylene (HDPE) collection lines, side slope extraction riser, and force mains. See **Figure 3** for the components of the leachate collection system. **Figures 4a-4e** depict the leachate collection system design details.

Leachate collection and removal will be accomplished through positive gravity and pumping to direct leachate to the Leachate Collection/Runoff Pond and for ultimate discharge through Outfall 401, reused in the ash hydration process, or used for dust control in the landfill. The pumps will be controlled by automatic liquid level switches to maintain the leachate level less than 30-centimeters over the alternate composite liner.

The protective cover layer of this system will consist of a minimum of 12 inches of select aggregate fill (sand) and have a permeability of approximately  $1 \times 10^{-2}$  cm<sup>2</sup>/s. Ash material will be used for protective cover on the side slopes of the landfill. The overall slope of the perforated leachate lines is at a minimum 1% to the north. The bottom grading also has cross slopes of 2%, giving this layer and the underlying liner a slope saw-tooth pattern. The saw-tooth configuration allows the flow path of the leachate along the liner to maintain no more than 100 feet.

The leachate collection lines will be a minimum 6-inches in diameter, perforated HDPE pipes and will be in the valley of the saw-tooth configuration formed by the protective cover layer. These pipes are spaced no more than 200 feet apart which limits the leachate flow distance to a maximum of

100-feet across the composite liner. The slope of the leachate collection lines varies but are a minimum of than 1%. The standard dimension ratio (SDR) of the collection pipes, which is the ratio of the outer diameter to the wall thickness, will be no greater than 17.

The collection lines join a force main that leads to the leachate pond by means of an HDPE leachate side slope extraction riser. The riser at each of these junctures facilitates pipe clean-out should any sediment build up. Clean-out will be accomplished by inserting a hose adapted with a jet nozzle which will force water under high pressure to scour the pipe's interior. This type of jet cleaning is commonly used to clean sanitary sewer lines. The collection lines are continuous from one side of the facility to the other.

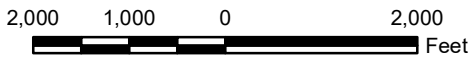
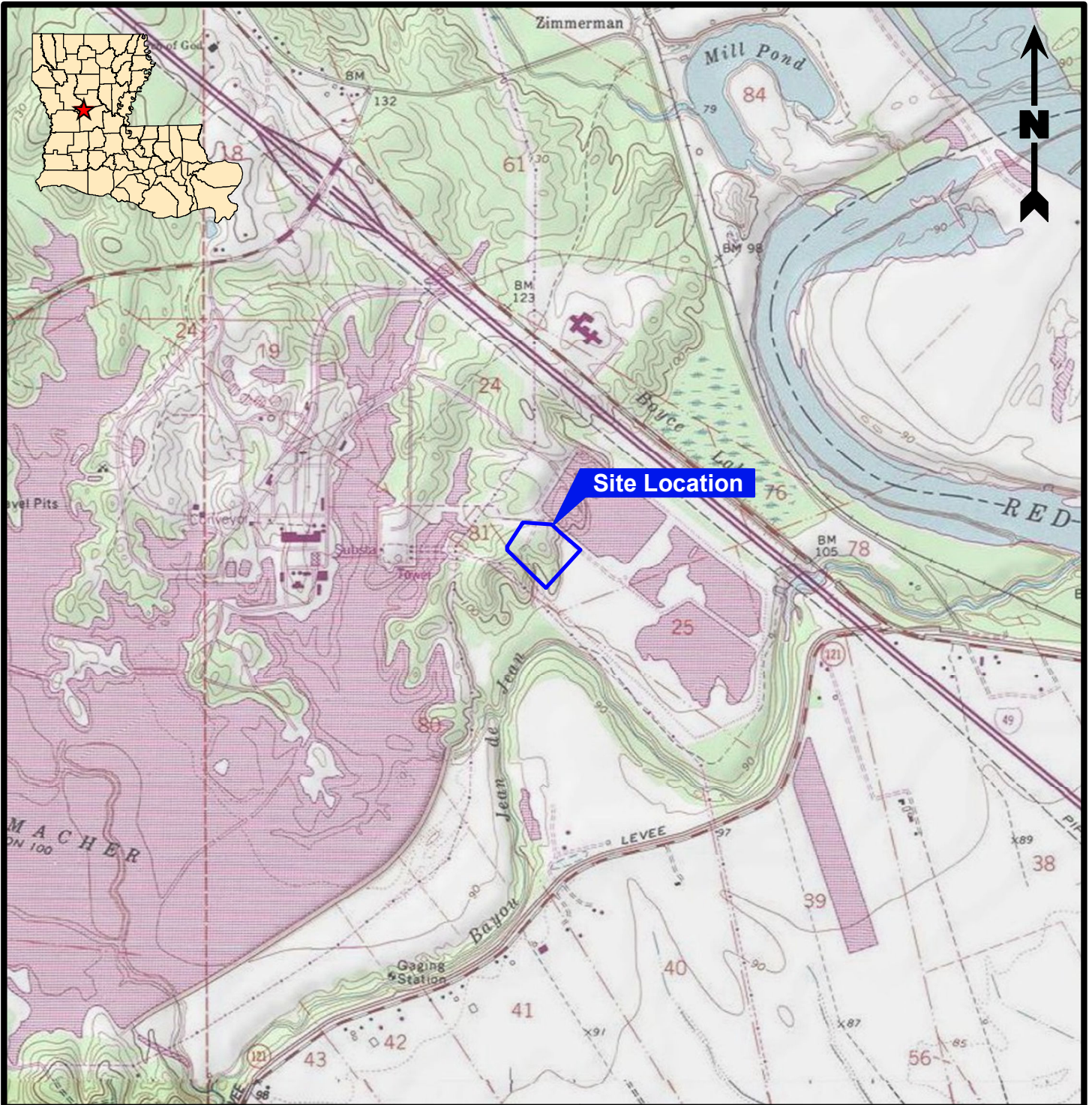
The leachate collection lines will be placed in a trench with minimum dimensions of approximately 3-feet-wide and 1-foot-deep with 2 (horizontal):1 (vertical) side slopes. A minimum of 6 inches of select aggregate fill will surround the pipe on all sides except the bottom. A minimum of 12 inches of select graded aggregate fill is mounded on top of the pipe.

Each side slope extraction riser will be equipped with an electric, submersible, corrosion resistant, leachate extraction pump. These leachate pumps will extract the leachate from the sumps along the north side of the landfill and transfer the leachate to the force main that leads to the leachate pond for ultimate discharge through Outfall 401 or reused in the ash hydration process or used for dust control in the landfill.

### **3.0 CONCLUSION**

Based on the review of the leachate collection system design, Cleco has determined that Cell 4 of the Ash Management Landfill was designed with a leachate collection system that meets the criteria outlined in 40 CFR 257.70(d). This report will be placed in the facility's operating record in accordance with 40 CFR 257.107(f) and must be made available on the facility's publicly accessible internet site in accordance with 40 CFR 257.107(f) prior to construction of the surface impoundment.

**FIGURE 1**  
**SITE LOCATION MAP**



**Legend**

 Cell 4 Boundary

**Reference**

Base map comprised of United States Geological Survey 7.5-minute topographic maps, "Boyce, LA" and "Gardner, LA".

**Site Location Map**

Cell 4  
Description of the Leachate Collection System  
Boyce, Rapides Parish, Louisiana

**Cleco Power LLC**  
Brame Energy Center



**PROVIDENCE**

Drawn By	LMM	11/21/23
Checked By	LMH	11/21/23
Approved By	ARC	11/21/23

Project Number	<b>1</b> Figure
002-322	
Drawing Number	
002-322-A004	

**FIGURE 2**  
**SITE PLAN**

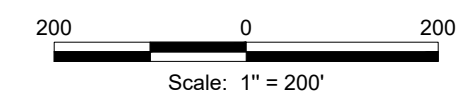


**Legend**

Cell 4 Boundary

**Reference**

Base map comprised of Bing Maps aerial imagery from (c) 2023 Microsoft Corporation and its data suppliers, exported 11/14/23.



**Site Plan**  
**Cell 4**  
**Description of the Leachate Collection System**  
 Boyce, Rapides Parish, Louisiana

**Cleco Power LLC**  
 Brame Energy Center



Drawn By	LMM	11/21/23
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**FIGURE 3**  
**LEACHATE COLLECTION PLAN**

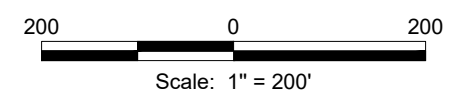


**Legend**

- Existing Major Contour (10' Interval)
- - - Existing Minor Contour (2' Interval)
- · - · - Existing Gas Line (Approximate Location)
- - - Existing Overhead Electric
- Cell Separation
- Leachate Riser Pipe
- - - Leachate Collection Pipe
- - - Contact Water Collection Pipe
- - - Force Main
- · - · - Cleanout Riser

**Reference**

Base map comprised of Bing Maps aerial imagery from (c) 2023 Microsoft Corporation and its data suppliers, exported 11/14/23.



**Leachate Collection Plan**

**Cell 4**  
Description of the Leachate Collection System  
Boyce, Rapides Parish, Louisiana

**Cleco Power LLC**  
Brame Energy Center

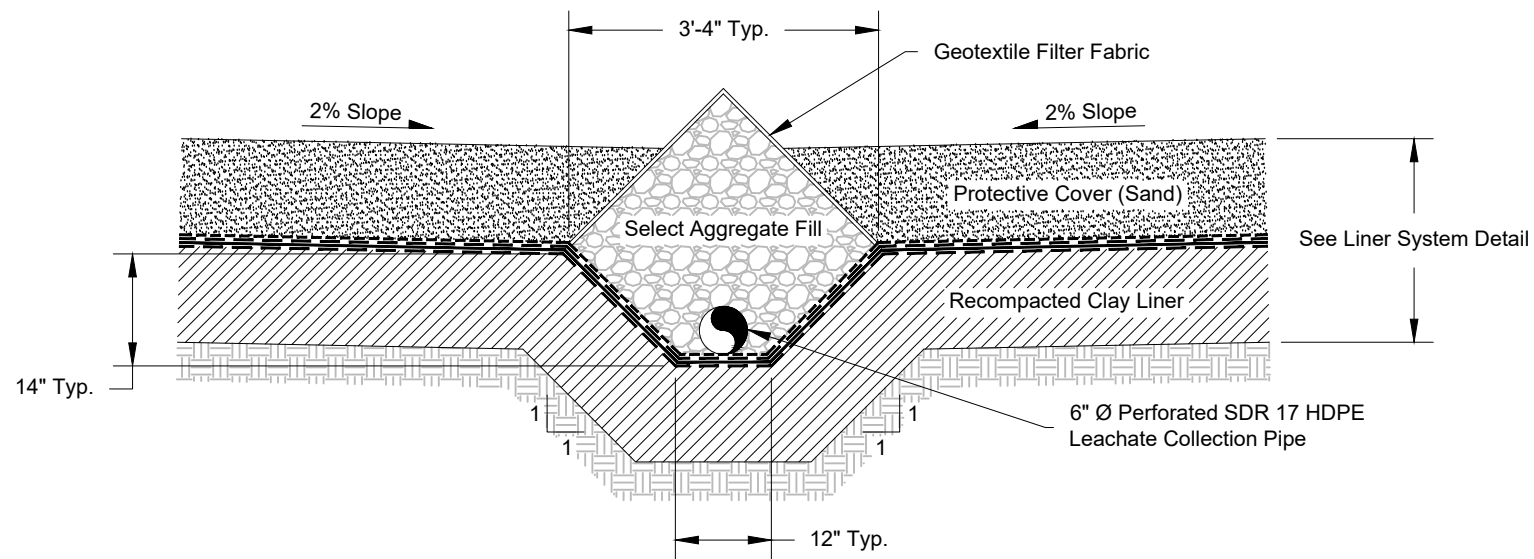


Drawn By	LMH	06/07/22
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Project Number	002-322
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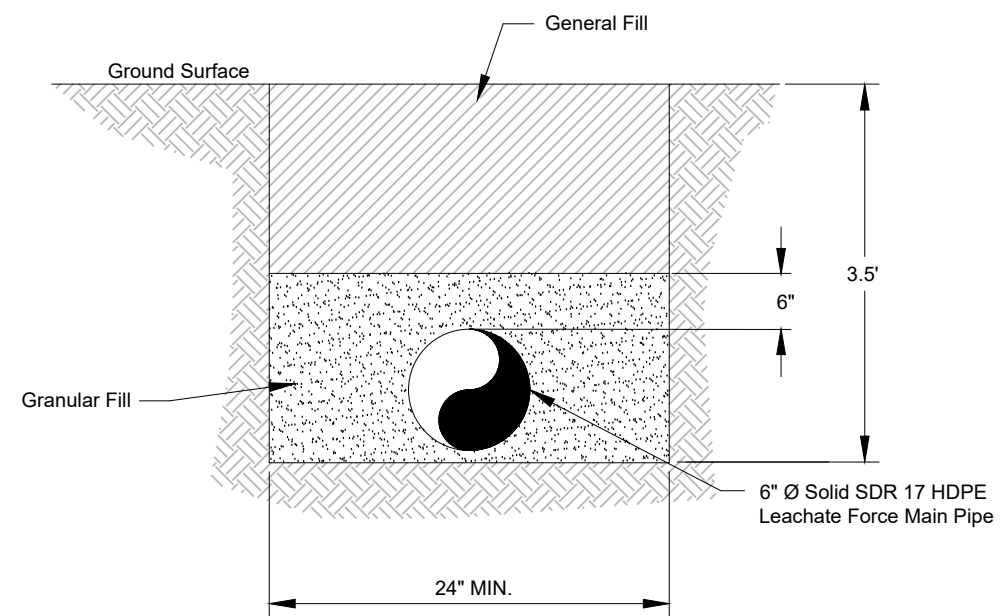
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**FIGURE 4A**  
**LEACHATE COLLECTION DESIGN DETAILS**



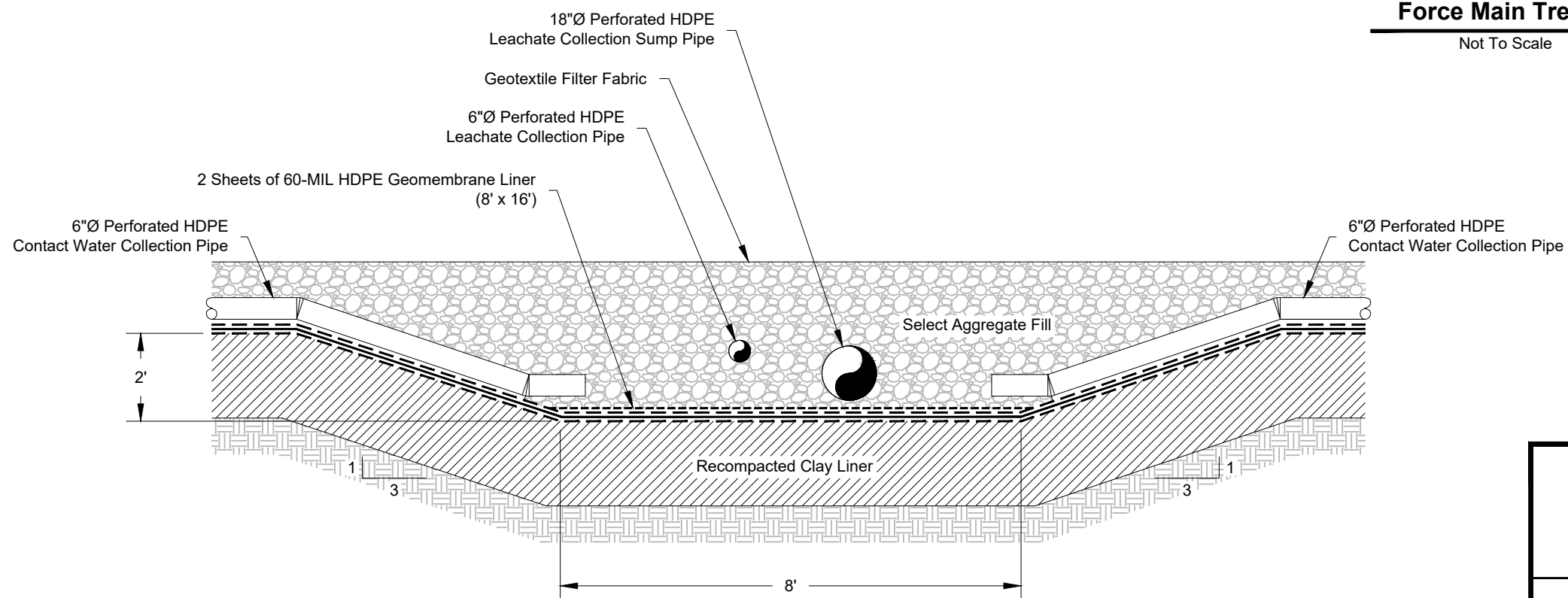
**Leachate Collection Trench Detail**

Not To Scale




**Force Main Trench**

Not To Scale

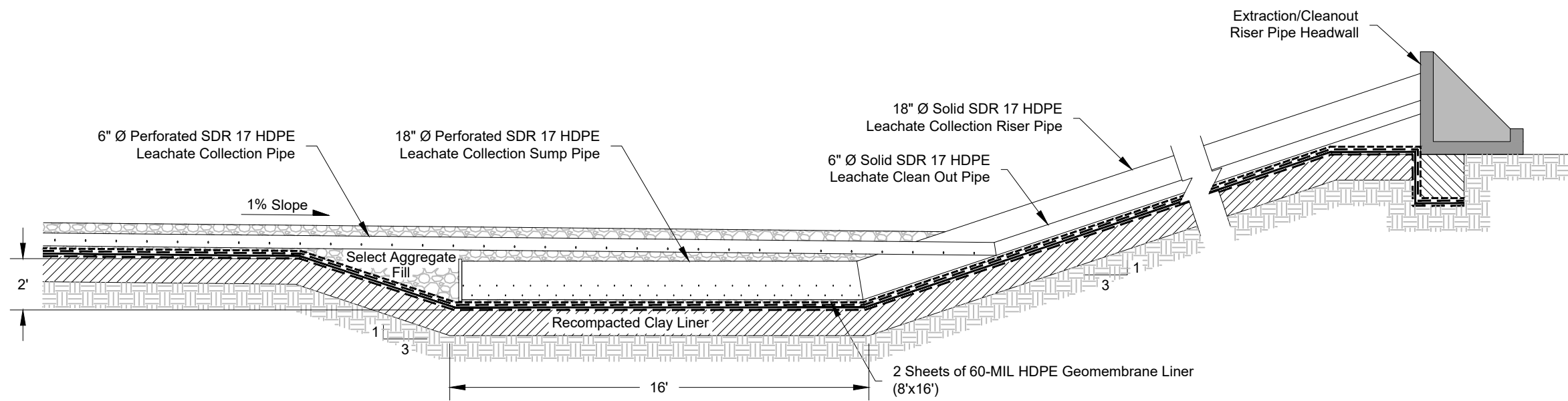


**Leachate Collection Sump**

Not to Scale

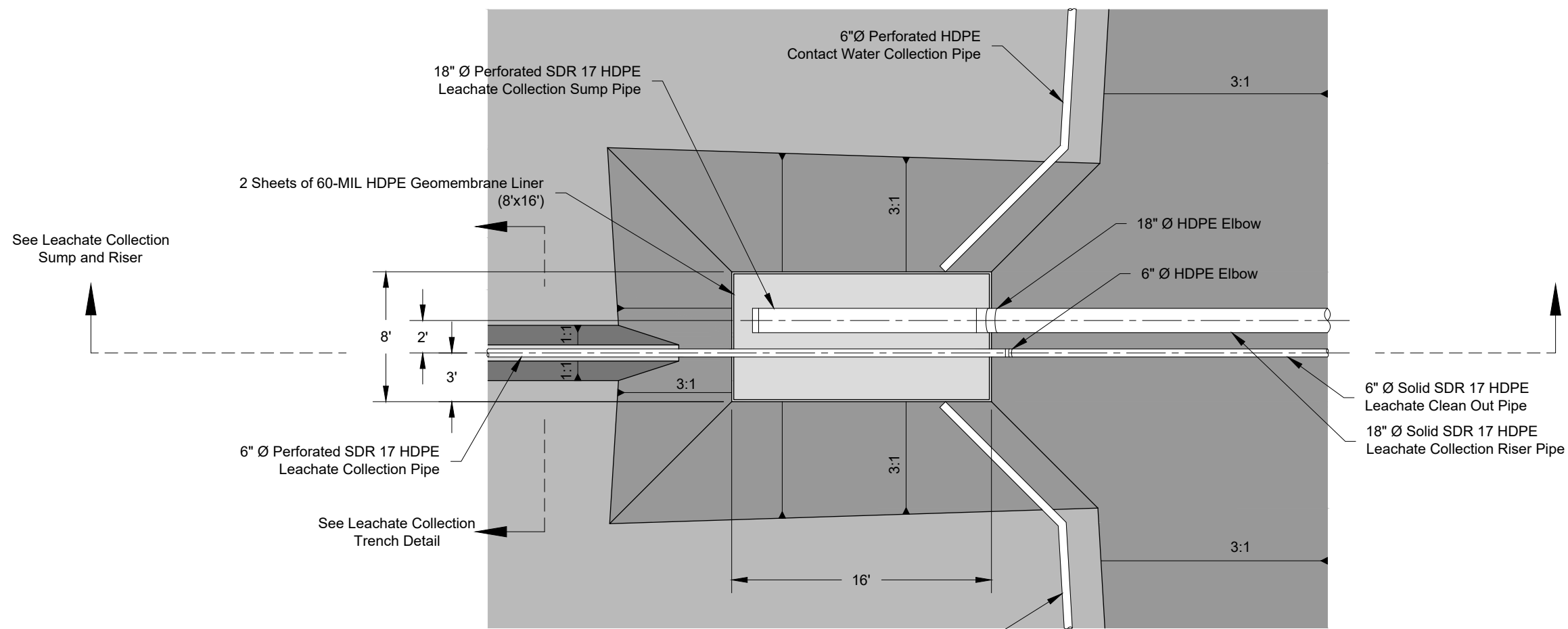
<b>Details</b>			
<b>Cell 4</b> Description of the Leachate Collection System Boyce, Rapides Parish, Louisiana			
<b>Cleco Power LLC</b> Brame Energy Center			
	Drawn By	LMH	06/07/22
	Checked By	LMH	06/07/22
	Approved By	GJL	06/07/22
Project Number		002-322	
Drawing Number		002-322-B007	
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			Sheet

**FIGURE 4B**  
**LEACHATE COLLECTION DESIGN DETAILS**



**Leachate Collection Sump and Riser**

Not To Scale

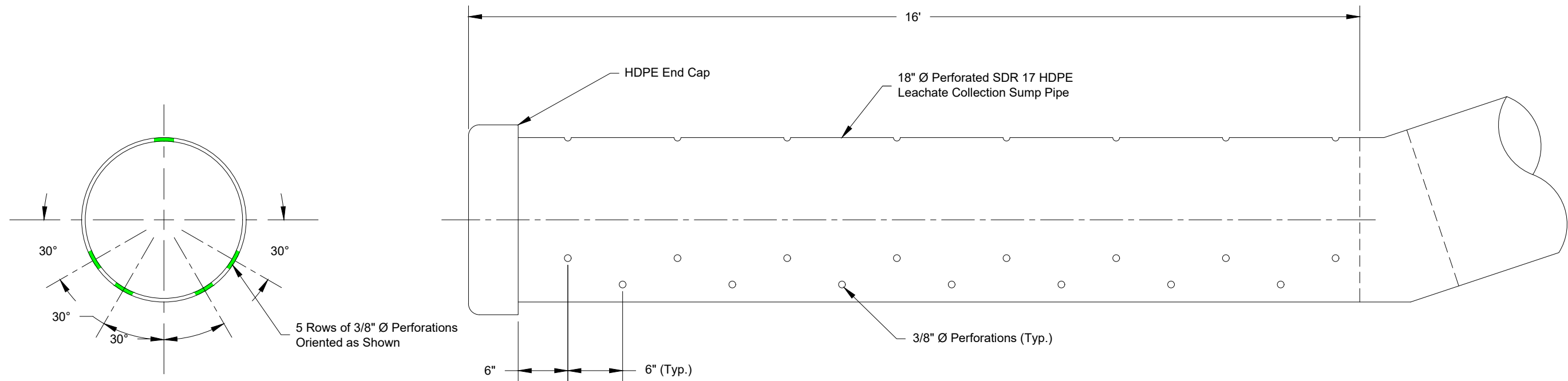


**Leachate Collection Sump Detail (Plan View)**

Not to Scale

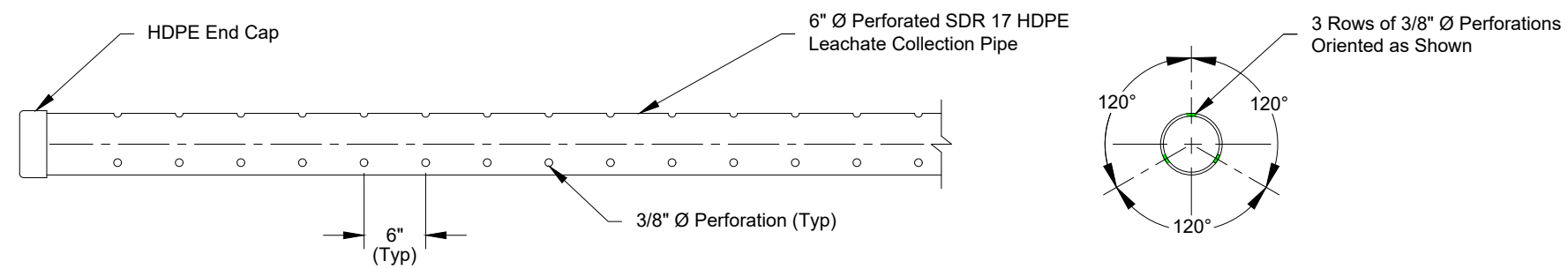
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Cell 4 Description of the Leachate Collection System Boyce, Rapides Parish, Louisiana		
<b>Cleco Power LLC</b> Brame Energy Center		
	Drawn By	LMH 06/07/22
	Checked By	LMH 06/07/22
	Approved By	GJL 06/07/22
	Project Number	002-322
	Drawing Number	002-322-B008
	<b>4b</b>	Sheet

**FIGURE 4C**  
**LEACHATE COLLECTION DESIGN DETAILS**



**Leachate Collection Sump Pipe**

Not to Scale



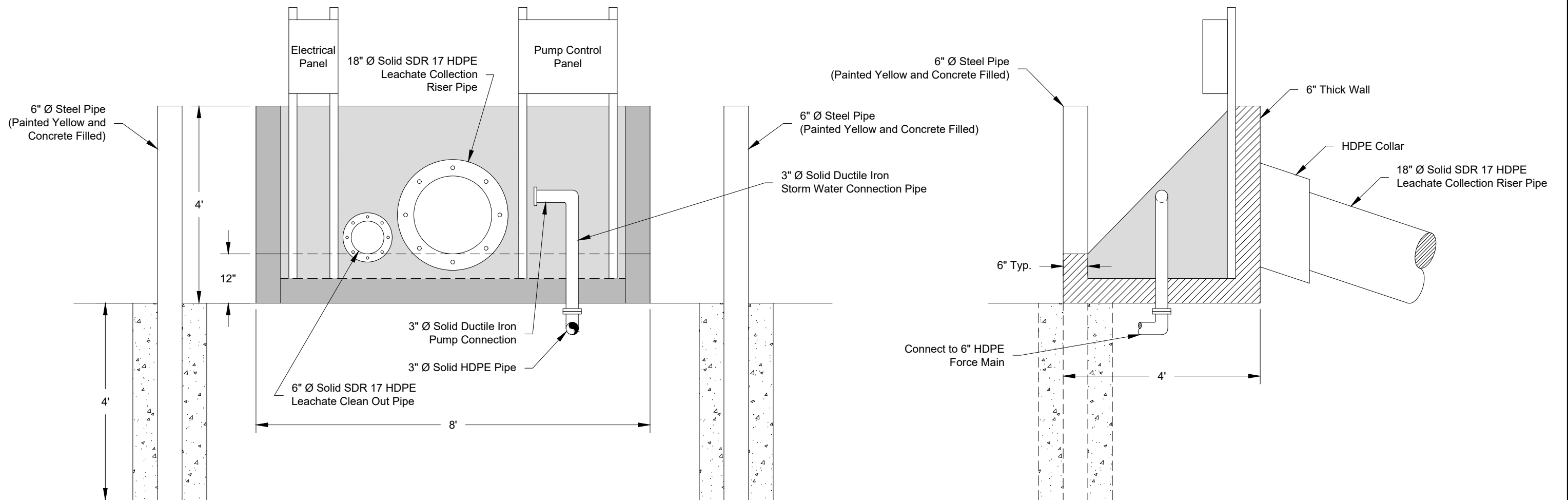
**Leachate Collection Pipe**

Not to Scale

<b>Details</b>		
Cell 4 Description of the Leachate Collection System Boyce, Rapides Parish, Louisiana		
<b>Cleco Power LLC</b> Brame Energy Center		
	Drawn By	LMH 06/07/22
	Checked By	LMH 06/07/22
	Approved By	GJL 06/07/22
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Drawing Number	002-322-B009	<b>4c</b> Sheet



**FIGURE 4D**  
**LEACHATE COLLECTION DESIGN DETAILS**



**Cell 4 Headwall #1 and #4  
Extraction/Cleanout Riser Pipe Headwall**

Not to Scale


<b>Details</b>			
<b>Cell 4</b> Description of the Leachate Collection System Boyce, Rapides Parish, Louisiana			
<b>Cleco Power LLC</b> Brame Energy Center			
	Drawn By	LMH	06/07/22
	Checked By	LMH	06/07/22
	Approved By	GJL	06/07/22
Project Number		002-322	
Drawing Number		002-322-B012	
			<b>4d</b> Sheet

FIGURE 4E  
LEACHATE COLLECTION DESIGN DETAILS



**APPENDIX A**  
**CERTIFICATION**

APPENDIX A  
CERTIFICATION

**Professional Engineer Certification Statement [40 CFR 257.70(c)]**

I certify that, having reviewed the attached documentation and being familiar with the provisions of Title 40 of the Code of Federal Regulations Section 257.70 (40 CFR Part 257.70), I attest that the Cell 4 leachate collection system was designed and constructed in accordance with recognized and generally accepted good engineering practices, including the consideration of applicable industry standards, and with the requirements of 40 CFR Part 257.70(d).

**Gary J. Leonards, P.E.**

Name

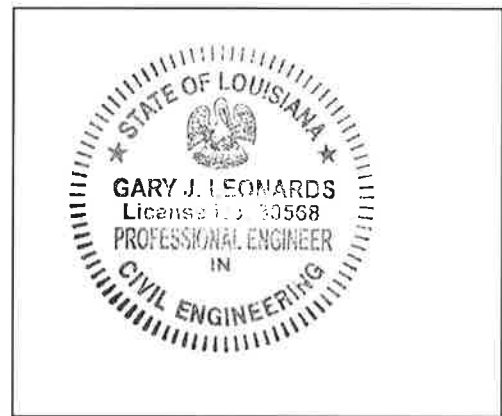
**30568** Registration No. **Louisiana** State

State

Signature

Date

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*12/29/23*



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