Texas Commission on Environmental Quality

Waste Permits Division Correspondence Cover Sheet

Date: 5/20/2022
Facility Name: CCR111-Sandow Steam Electric Station
Permit or Registration No.: 88209

Nature of Correspondence:
☐ Initial/New
☒ Response/Revision to TCEQ Tracking No.: 27247239 (from subject line of TCEQ letter regarding initial submission)

Affix this cover sheet to the front of your submission to the Waste Permits Division. Check appropriate box for type of correspondence. Contact WPD at (512) 239-2335 if you have questions regarding this form.

Table 1 - Municipal Solid Waste Correspondence

Applications	Reports and Notifications
☐ New Notice of Intent	☐ Alternative Daily Cover Report
☐ Notice of Intent Revision	☐ Closure Report
☐ New Permit (including Subchapter T)	☐ Compost Report
☐ New Registration (including Subchapter T)	☐ Groundwater Alternate Source Demonstration
☐ Major Amendment	☐ Groundwater Corrective Action
☐ Minor Amendment	☐ Groundwater Monitoring Report
☐ Limited Scope Major Amendment	☐ Groundwater Background Evaluation
☐ Notice Modification	☐ Landfill Gas Corrective Action
☐ Non-Notice Modification	☐ Landfill Gas Monitoring
☐ Transfer/Name Change Modification	☐ Liner Evaluation Report
☐ Temporary Authorization	☐ Soil Boring Plan
☐ Voluntary Revocation	☐ Special Waste Request
☐ Subchapter T Disturbance Non-Enclosed Structure	☐ Other:
☐ Other:	

Table 2 - Industrial & Hazardous Waste Correspondence

Applications	Reports and Responses
☐ New	☐ Annual/Biennial Site Activity Report
☐ Renewal	☐ CPT Plan/Result
☐ Post-Closure Order	☐ Closure Certification/Report
☐ Major Amendment	☐ Construction Certification/Report
☐ Minor Amendment	☐ CPT Plan/Result
☒ CCR Registration	☐ Extension Request
☐ CCR Registration Major Amendment	☐ Groundwater Monitoring Report
☐ CCR Registration Minor Amendment	☐ Interim Status Change
☐ Class 3 Modification	☐ Interim Status Closure Plan
☐ Class 2 Modification	☐ Soil Core Monitoring Report
☐ Class 1 ED Modification	☐ Treatability Study
☐ Class 1 Modification	☐ Trial Burn Plan/Result
☐ Endorsement	☐ Unsaturated Zone Monitoring Report
☐ Temporary Authorization	☐ Waste Minimization Report
☐ Voluntary Revocation	☐ Other:
☐ 335.6 Notification	
☐ Other:	

Renee Collins
Sr. Director
Environmental Services
Renee.collins@luminant.com

Luminant
6555 Sierra Drive.
Irving, TX 75039

T 214.875.8383
C 214.406.2452
F 214.875.8699

Delivered Electronically via IHWPER@tceq.texas.gov

May 20, 2022

Texas Commission on Environmental Quality
Industrial and Hazardous Waste Permits Section - MC-130
12100 Park 35 Circle
Austin, TX 78753

RE: Response to TECHNICAL NOD 1 New Registration No. CCR111
Luminant Generation Company LLC – Rockdale, Milam County
Industrial Solid Waste Registration No. 88209
EPA Identification No. TXR000078075
Tracking No. 27247239; RN102147881/CN603256413

Luminant Generation Company LLC has prepared written responses for the deficiencies identified in the "Email Technical NOD 1 - New Registration No. CCR111" received via email from TCEQ on April 22, 2022. The written responses are in Table 1. Updated application and appendix revisions are attached for review.

If you have any questions or require any additional information, please contact Eric Chavers at 903-389-6062 or by e-mail at eric.chavers@luminant.com.

Sincerely,

Renee Collins

Attachments: CCR111 Application-Revision 1
CCR111 Application Revision 1 REDLINE
APPENDIX A-Revision 1
APPENDIX B-Revision 1

cc with attachments:

Alex Oliveira (alexander.oliveira@tceq.texas.gov)
Daniella Ortiz de Montellano (daniela.ortiz-demontellano@tceq.texas.gov)

Table 1
Registration No. CCR111 - Luminant Generation Company LLC
Application Deficiencies - Technical NOD 1

ID[1]	App. Section	App. Sub Section	Location[2]	Citation	Deficiency Description/Resolution	Response[3]
1			Application Cover Sheet	Application Instructions	Proposed CCR Registration No. CCR111 was assigned to Sandow Steam Electric Station. Future correspondence should reflect CCR111 registration number.	Future correspondence will reflect CCR111 registration number.
2	I	I.5	TCEQ-20870	Application Instructions	Correct the name of the facility owner from "Facility Landowner" to Luminant Generation Company LLC to match our Central Registry database.	Owner updated to "LUMINANT GENERATION COMPANY LLC" under Item 5 on page 2.
3	I	I.6	Table I.6.A	Form TCEQ-20870	Provide a footnote to define or cite a reference for "de minimus."	Removed term de minimus in Table I.6.A located on page 21 and replaced with approximate amount of each material placed in AX Landfill in 2021 as reflected by footnote 2. Removed waste inactivated related to discussion on NOD ID# 5.
4	I	I.6	Table I.6	Application Instructions	Revise the format of the table to clearly identify the CCR Unit and NOR Nos that correspond to Cells 1, 2, and 2A.	Table I.6 accurately identifies AX Landfill as waste management unit (wmu) 008. Cells 1, 2, and 2A are management areas within AX Landfill and are not identified on the notice of registration as individual CCR units.
5	I	i.6	Tables I.6.A and I.6.B.		Describe the chemical composition of waste No. 4, "Class 2 Chemical Solids", waste No. 5, "Class 2 Non-Hazardous Sandblast waste", and waste No. 8, "Boiler Debris".	As discussed in meeting on May 3, 2022, these wastes are no longer generated at the facility since the facility has been retired. As agreed upon, Luminant has inacativated these waste codes on the facility NOR and removed them from Tables I.6.A and I.6.B. found on pages 21 and 22.
6	I	I.6	Table I.6.C	Application Instructions	Complete the information in the table in the event waste is required to be resampled, retested, and reclassified when there is a change in the process. You may use "change in the process" as frequency for sampling of waste.	Sampling frequency has been updated in Table I.6.C. found on page 23.
7	I	I.6	Table I.6.C. – Sampling & Analytical Methods	Application Instructions	Provide desired Accuracy Level, this can vary by test method (provided) and by lab.	Footnote 2 listed on Table I.6.C was deemed adequate during discussion with TCEQ staff on May 3, 2022.
8	I	I.6	Table I.6.C.		Explain why "NA" was used in all fields for Waste Nos. 4, 7, and 9 (classified as 319, 310, and 409 respectively).	As previously mention in NOD ID# 5, these waste codes have been inactivated and on the facility NOR. These wastes have been removed from Table I.6.C. found on page 23.
9	I	I.11	Application Item I.11; page 3 of 40	Application Instructions 30 TAC 352.431, 39.411(b), and 39.503(c)	Confirm a copy of the application has been placed at the public location listed. The Rockdale Public Librarian confirmed via an email on 4/6/22 that the application has not been received.	As requested by the TCEQ, a copy will be placed in the location listed on the application no later than May 25, 2022.
10	I	I.13	[App. A]	30 TAC 352.231(g)	Provide the property owner affidavit. Although this affidavit is not specifically listed in the Registration form or instructions, it is prescribed information. We have attached for your assistance a sample affidavit for your use.	Property owner affidavit completed and added to Appendix A. Comment indicating affidavit added to Appendix A inserted on pg 4 under Item 13. Attachment and Tables list updated on page 18 to reflect addition to Appendix A.
11	I	I.13	[App. A]	30 TAC 352.231(g)	Provide the metes and bounds description signed and sealed by a registered professional land surveyor.	Original copy of metes and bounds description containing signature and seal was obtained from RPLS. Signed and sealed pages have been inserted into file in Appendix A.

12	I	I.18	Core Data Form	Application Instructions	a) Items 23: Correct zip code to match our Central Registry database. b) Item 39: Provide the correct TCEQ programs and permit/registration ID numbers.	TCEQ Core Data Form updated and replaced in Appendix A.
13	I	I.20	[App. A]	Application Instructions 30 TAC 352.231(e), 330.59(c)(3) 352.101(c)	a) Provide a map and mailing list of all mineral interest ownership under the facility. b) Provide a drawing that depicts all the CCR units in one contiguous registration boundary.	a) As discussed in meeting on May 3, 2022, mineral interest ownership under the CCR unit cannot be derived from real property appraisal records as suggested under 30 TAC 330.59(c)(3). Therefore this information cannot be provided. b) The CCR unit registration boundary is depicted as the "Facility Registration Boundary" as shown on the Facility Layout Map. The Facility Layout Map is Figure 3 in the Attachments (Item 20) located in Appendix A.
14	I	I.20	[Att. 1 CCR Units Maps and Information, p. 63]	Application Instructions 30 TAC 352.431, and 352.461(a)	Provide pre-printed or electronic mailing labels.	Electronic mailing labels previously submitted and located by TCEQ during meeting/call on 5/3/2022.
15	I	I.21		Application Instructions 30 TAC 352.2, 352.4, 40 CFR 257.52; 40 CFR 257.3-1; 40 CFR 257.3 2; and 257.3-3	Provide verification of compliance supporting documentation for floodplains, endangered species, and surface water protection requirements.	Brief memorandum provided by Qualified Proffessional Engineer indicating compliance added to Appendix A. Comment indicating addition of memo inserted on page 6 under Item 21. Attachments and Tables list updated on page 18 to reflect addition to Appendix A.
16	II	II.22	[App. B]	Application Instructions 30 TAC 352.641, 40 CFR 257.64, 30 TAC 352.4	Submit a complete technical report that demonstrates compliance with unstable areas.	Included "CCR Rule Location Restriction Evaluation" technical memorandum by Golder (2018) in Appendix B. Comment indicating memo addition on page 6 under Item 22. Attachments and Tables list updated on page 18 to reflect addition to Appendix B.

[1] Deficiency ID – Key: Use this number to identify the NOD response .
[2] Location of deficiency in submittal/application. Items in square brackets [ ] refer to applicant's supplemental information submitted as attachments/appendices to the application form.
[3] All application form pages have been replaced to indicate CCR111 registration. Will include Revision 1 in footer as well as Revision Date.

CCR111 Application -Revision 1 May 20, 2022

Texas Commission on Environmental Quality

Registration Application for Coal Combustion Residuals (CCR) Waste Management

I. General Information

1. Reason for Submittal

Type of Registration Application

☐ New ☐ Major Amendment ☐ Minor Amendment

☒ Notice of Deficiency (NOD) Response ☐ Transfer ☐ Name Change

☐ Other

2. Application Fees

☒ $150 Application Fee

Payment Method

☐ Check ☒ Online through ePay portal <www3.tceq.texas.gov/epay/>

If paid online, enter ePay Trace Number: 582EA000467498

3. Facility Information

Facility information must match regulated entity information on the Core Data Form.

Applicant: ☐ Owner ☐ Operator ☒ Owner/Operator

Facility TCEQ Solid Waste Registration No: 88209

Facility EPA ID: TXR000078075

Regulated Entity Reference No. (if issued): RN102147881

Facility Name: SANDOW STEAM ELECTRIC STATION

Facility (Area Code) Telephone Number: 214-875-8338

Facility physical street address (city, state, zip code, county): 3708A CHARLES MARTIN HALL ROAD, ROCKDALE, TX, 76577, MILAM

Facility mailing address (city, state, zip code, county): 6555 SIERRA DR, IRVING, TX 75039, DALLAS

Latitude (Degrees, Minutes Seconds): 30° 33′ 51″

Longitude (Degrees, Minutes Seconds): 97° 03′ 50″

4. Publicly Accessible Website

Provide the URL address of a publicly accessible website where the owner or operator of a CCR unit will post information.
https://www.luminant.com/ccr/

5. Facility Landowner(s) Information

Facility landowner(s) name: LUMINANT GENERATION COMPANY LLC

Facility landowner mailing address: 6555 SIERRA DR

City: IRVING State: TX Zip Code: 75039

(Area Code) Telephone Number: 214-875-8338

Email Address (optional):

6. CCR Waste Management Unit(s)

☒ Landfill Unit(s) ☐ Surface Impoundment(s)

For each existing landfill, new landfill and lateral expansion, existing surface impoundment, and new surface impoundment and lateral expansion(s) provide information on type of waste, the registered unit(s) in which they are managed, and sampling and analytical methods.

Submit the following tables:

Table I.6. – CCR Waste Management Units;

Table I.6.A. – Waste Management Information;

Table I.6.B. – Waste Managed in Registered Units; and

Table I.6.C. – Sampling and Analytical Methods.

7. Description of Proposed Activities or Changes to Existing Facility

Provide a brief description of the proposed activities if application is for a new facility, or the proposed changes to an existing facility or registration conditions, if the application is for an amendment.

Luminant Generation Company LLC formerly operated the Sandow Steam Electric Station (SASES) located approximately 7 miles southwest of Rockdale in Milam County, Texas. SASES was a lignite-fired electric generation facility retired in 2018. Coal Combustion Residuals (CCR) including fly ash and bed ash were generated as part of the unit's operation.

AX Landfill is the primary disposal facility for CCR generated at SASES and is located approximately 7,500 feet south of SASES. AX Landfill is listed on the Notice of Registration (SWR 88209) for SASES as Waste Management Unit 008 and is regulated as a Class 2 non-hazardous industrial solid waste landfill under 30 TAC §335.

8. Primary Contact Information

Contact Name: Renee Collins Title: Sr. Director, Environmental Services

Contact mailing address: 6555 Sierra Drive
City: Irving County: Dallas State: Texas Zip Code: 75039
(Area Code) Telephone Number: 214-875-8338

Email Address (optional): renee.collins@luminant.com

9. Notice Publishing

Party responsible for publishing notice:
☒ Applicant ☐ Consultant ☐ Agent in Service

Contact Name: Renee Collins Title: Sr. Director, Environmental Services

Contact mailing address: 6555 Sierra Drive
City: Irving County: Dallas State: Texas Zip Code: 75039
(Area Code) Telephone Number: 214-875-8338

10. Alternative Language Notice

Is an alternative language notice required for this application? For determination, refer to Alternative Language Checklist on the Public Notice Verification Form (TCEQ-20244-Waste-NORI).

☐ Yes ☒ No

11. Public Place Location of Application

Name of the Public Place: Lucy Hill Patterson Memorial Library
Physical Address: 201 Ackerman St
City: Rockdale County: MILAM State: TX Zip Code: 76567
(Area code) Telephone Number: 512-446-3410

12. Ownership Status of the Facility

☐ Corporation ☐ Limited Partnership
☐ Sole Proprietorship ☐ General Partnership ☒ Other (specify): Limited Liability Company

Does the Site Owner (Permittee/Registrant) own all the CCR units and all the facility property?

☒ Yes ☐ No

13. Property / Legal Description Information

Provide a legal description and supporting documents of the property where the management of CCR waste will occur; including a survey plat and a boundary metes and bounds description (30 TAC §352.231(g)).

Submit the following documents:

a. Property Legal Description
b. Property Metes and Bounds Description
c. Metes and Bounds Drawings
d. On-Site Easements Drawings

See APPENDIX A for Property/Legal Description Information and Property Owner Affidavit.

14. Operator Information

Identify the entity who will conduct facility operations, if the owner and operator are not the same.

Operator Name: LUMINANT GENERATION COMPANY LLC

Operator mailing address: 6555 Sierra Drive

City: Irving State: TX Zip Code: 75039

(Area Code) Telephone Number: 214-875-8338

Email Address (optional):

15. Confidential Documents

Does the application contain confidential documents?

☐ Yes ☒ No

If "Yes", cross-reference the confidential documents throughout the application and submit as a separate attachment in a binder clearly marked "CONFIDENTIAL."

16. Permits and Construction Approvals

Permit or Approval	Received	Pending	Not Applicable
Hazardous Waste Management Program under the Texas Solid Waste Disposal Act	☒	☐	☐
Underground Injection Control Program under the Texas Injection Well Act	☐	☐	☒
National Pollutant Discharge Elimination System Program under the Clean Water Act and Waste Discharge Program under Texas Water Code, Chapter 26	☐	☐	☒
Prevention of Significant Deterioration Program under the Federal Clean Air Act (FCAA).	☐	☐	☒
National Emission Standards for Hazardous Air Pollutants Preconstruction Approval under the FCAA	☐	☐	☒
Other (describe):	☐	☐	☐

17. Legal Authority

The owner and operator of the facility shall submit verification of their legal status with the application. This shall be a one-page certificate of incorporation issued by the secretary of state. The owner or operator shall list all persons having over a 20% ownership in the facility.

See APPENDIX A for Certificate of Authority.

18. TCEQ Core Data Form

The TCEQ requires that a Core Data Form (TCEQ-10400) be submitted on all incoming applications, unless a Regulated Entity and Customer Reference Number has been issued by the TCEQ and no core data information has changed. For more information regarding the Core Data Form, call (512) 239-5175 or visit the TCEQ Website.

See APPENDIX A for TCEQ Core Data Form.

19. Other Governmental Entities Information

Coastal Management Program

Is the facility within the Coastal Management Program boundary?

☐ Yes ☒ No

Local Government Jurisdiction (If Applicable)
Within City Limits of: N/A
Within Extraterritorial Jurisdiction of: N/A

Is the facility located in an area in which the governing body of the municipality or county has prohibited the storage, processing or disposal of municipal or industrial solid waste?

☐ Yes ☒ No If "Yes", provide a copy of the ordinance or order as an attachment.

20. Attachments

Does the application include the following?

General Maps	☒ Yes	☐ No
General Topographic Map	☒ Yes	☐ No
Facility Layout Map	☒ Yes	☐ No
Surrounding Features Map	☒ Yes	☐ No
Process Flow Diagram	☒ Yes	☐ No
Land Ownership Map	☒ Yes	☐ No
Land Ownership List	☒ Yes	☐ No
Pre-printed Mailing Labels	☒ Yes	☐ No

Maps and drawings shall be legible and easily readable by eye without magnification. Scales and paper size shall be chosen based on the type of map submitted, the land area covered, and the amount of detail to be shown. See instructions for details regarding maps and drawings to be submitted in application.

See APPENDIX A for Attachments detailed in Item 20.

21. Verification of Compliance

Does the owner and operator verify that the design, construction, and operation of CCR landfill(s) and surface impoundment(s) meets the requirements of 30 TAC §352.231(f) (30 TAC §352.2; 40 CFR §257.52, and 40 CFR §§257.3-1 – 257.3-3).

☒ Yes ☐ No

As requested by TCEQ, please see the "Response to TCEQ CCR Unit Registration Comments" memorandum for AX Landfill provided by Golder in APPENDIX A.

II. Location Restrictions and Geology

See Instructions and Technical Guidance

22. Location Restrictions

Submit certifications and technical reports demonstrating compliance of CCR unit(s) with applicable location restrictions (30 TAC 352, Subchapter E) and comply with 30 TAC §352.231(d) and 30 TAC §352.4 for submission of engineering and geoscientific information.

A. **Placement above the uppermost aquifer** (30 TAC §352.601) (40 CFR §257.60). For those CCR units whose base is less than five feet above the upper limit of the uppermost aquifer, please submit a copy of the demonstration showing evidence of compliance with 40 CFR §257.60(a) – (c).

B. **Wetlands** (30 TAC §352.611) (40 CFR §257.61). For CCR units located in wetlands, please submit a copy of the demonstration showing evidence of compliance with 40 CFR §257.61(a) – (c).

C. **Fault areas** (30 TAC §352.621) (40 CFR §257.62). For CCR units located within 200 feet of the outermost damage zone of a fault, please submit a copy of the demonstration showing evidence of compliance with 40 CFR §257.62(a) – (c).

D. **Seismic impact zones** (30 TAC §352.631) (40 CFR §257.63). For CCR units located in a seismic impact zone, please submit a copy of the demonstration showing evidence of compliance with 40 CFR §257.63(a) – (c).

E. **Unstable areas** (30 TAC §352.641) (40 CFR §257.64). For CCR units located in unstable areas, please submit a copy of the demonstration showing evidence of compliance with 40 CFR §257.64(a) – (d).

Location Restriction Demonstration and Location Restriction Evaluation for AX Landfill located in APPENDIX B.

23. Geology Summary Report

Submit a summary of the geologic conditions at the facility, including the relation of the geologic condition to each CCR unit. The summary must include enough information and data and include sources and references for the information. Include all groundwater monitoring data required by 40 CFR Part 257, Subpart D, (30 TAC §352.241, §352.601, §352.621, §352.631, and §352.641) and submitted in accordance of 30 TAC §352.4.

Note: Previously prepared documents may be submitted but must be supplemented or updated as necessary to provide the requested information (30 TAC §352.241(b)).

For Geology Summary, please refer to "Groundwater Monitoring System Certification" report for AX Landfill located in APPENDIX E. The Local Geology and Hydrogeology summary is located in Section 2.2 of the report.

All groundwater monitoring data is summarized in the "2020 Annual Groundwater Monitoring and Corrective Action Report" for AX Landfill located in APPENDIX E.

III. Fugitive Dust Control Plan

24. Fugitive Dust Control Plan

A. **Submit a copy of the CCR Fugitive Dust Control Plan** (30 TAC §352.801) (40 CFR §257.80(b)), or the most recently amended plan. The initial plan or subsequent amended plan must be certified by a qualified Texas licensed professional engineer (Texas P.E.) that the plan meets the requirements of 30 TAC Chapter 352.

B. **Submit the most recent Annual CCR Fugitive Dust Control Report** (30 TAC §352.801) (40 CFR §257.80(c)) and include the report information.

CCR Fugitive Dust Control Plan and the 2021 Annual CCR Fugitive Dust Control Report located in APPENDIX C.

IV. Landfill Criteria

See Instructions and Technical Guidance – No. 30 Coal Combustion Residuals Landfill

25. Landfill(s) for CCR Waste

Provide the following information below if there is a landfill; if there is more than one landfill, separate information is required for each landfill.

A. **Landfill Characteristics**

Describe the design, installation, construction, and operation of the landfill and submit a completed Table IV.A. – Landfill Characteristics.

AX Landfill Cells 1, 2 and 2A are lined landfill cells. Construction of Cell 1 was completed in July 2013 and construction of Cells 2 and 2A was initiated in May 2015. Cell 2 was completed in October 2015 and Cell 2A was completed in July 2016. Placement of CCR began in Cell 1 in May 2015 and Cell 2 in September 2016. CCRs have not been placed to date in Cell 2A.

The AX Landfill is constructed partially above and partially below grade and are surrounded by engineered earthen embankments that extend approximately 10 to 15 feet above surrounding grade. Smaller interior earthen embankments separate Cells 1, 2 and 2A from each other. A geosynthetic liner system, consisting of a 30-mil thick Geomembrane Supported Geosynthetic Clay Liner (GSGCL) installed on top of 2 feet of soil exhibiting a minimum hydraulic conductivity of 5×10^{-5} cm/sec, has been installed in the landfill cells. The liner system is installed across the bottom of each cell, extends across the interior embankments, and extends up the inside sides of the perimeter embankments. The liner system is covered with an approximately 18-inch thick layer of protective soil to prevent damage to the liner during landfill operations. The base of each landfill cell is sloped toward a collection area for runoff from active landfill areas at the downgradient edge of the cell.

B. Liner Design

1. For existing landfills, provide attachments describing how the facility will comply with 30 TAC 352, Subchapter F (Design Criteria).

   AX Landfill is an Existing CCR Landfill under the CCR rule. There are no design criteria for Existing CCR Landfills in either the state or federal CCR rule. 30 TAC 352, Subchapter F or 40 CFR 257.70

2. For new landfills or lateral expansions of existing landfills, submit pages describing how the facility will comply with 30 TAC §352.261 and 30 TAC §352.701. N/A

3. Complete Table IV.B. - Landfill Liner System and specify the type of liner used for the landfill.

4. Provide attachments describing the design, installation, and operation of the liner and leak detection system. The description must demonstrate that the liner and leak detection system will prevent discharge to the land, groundwater, and surface water. Submit a quality assurance project plan (QAPP) to ensure that each analysis is performed appropriately.

   Construction Completion Reports are located in APPENDIX D for the construction of cells 1, 2, and 2A for A-X Landfill.

C. Leachate Collection and Removal

Submit design information and description of leachate collection and removal system in accordance with 30 TAC §352.701. N/A

Complete Table IV.C. - Landfill Leachate Collection System. N/A

D. Design of Liner and Leachate Collection and Removal System.

For a new landfill or lateral expansion of a CCR landfill, provide a qualified Texas P.E. certification and technical report that the design of the liner and the leachate collection and removal system meets the requirements of 30 TAC §352.711. N/A

E. Run-on and Run-off Controls

At time of application, attach pages describing how the facility will comply with the run-on and run-off system plan for an existing, new, or lateral expansion of a CCR landfill information. Provide a qualified Texas P.E. certification and technical report that the run-on and run-off control system plans meet the requirements of 30 TAC §352.811.

"Run-on and Run-off Control System Plan" for AX Landfill is located in APPENDIX D.

F. Inspection for Landfills

At time of application, attach pages describing how the facility will comply 30 TAC §352.841 and complete Table IV.D. – Inspection Schedule for Landfills. For existing CCR landfills, provide the most recent inspection report. All CCR landfills and any lateral expansions of a CCR landfill must be inspected for any structural weakness, malfunction, deterioration conditions which are disrupting or have the potential to disrupt the operation or safety of the CCR unit, or any other conditions which may cause harm to human health and environment at a frequency specified in 40 CFR §257.84(a) and (b).

The 2021 Annual CCR Landfill inspection report is located in APPENDIX D.

V. Surface Impoundment Criteria

See Instructions and Technical Guidance – No. 31 Coal Combustion Residuals Surface Impoundment

N/A

26. Surface Impoundment(s) for CCR Waste

Provide the following information below if there is a surface impoundment; if there is more than one surface impoundment, separate information is required for each surface impoundment.

A. General Surface Impoundment(s) Characteristics

Provide information about the characteristics of the surface impoundment(s): incised, surface area (acres), storage volume (acres-feet), and depth (feet).

For all surface impoundment(s), include the following information:

1. Complete Table V.A. - Surface Impoundments Characteristics. List the surface impoundment(s) to be registered as a CCR unit(s), the wastes managed in each unit, and the rated capacity or size of each unit.
2. Describe the surface impoundment(s) and provide a plan view drawing with cross-sections, if available.

   Specify the minimum freeboard to be maintained and the basis of the design to prevent overtopping resulting from normal or abnormal operation; overfilling; wind and wave action; rainfall; run-on; malfunctions of level controllers, alarms, and other equipment; and human error. Show that adequate freeboard will be available to prevent overtopping from a 100-year, 24-hour storm.
3. Waste Flow
   Describe the means that will be used to immediately shut off the flow of waste to the impoundment in the event of liner failure or to prevent overtopping.
4. Dike Construction ☐ Yes ☐ No

   If Yes, submit the dike certification (located at the end of the application).

   The structural integrity of the dike system must be certified by a qualified Texas P.E. before the registration is issued. If the impoundment is not being used, the dike system must be certified before it can be put into use. The certification must be sealed by a qualified Texas P.E., along with the engineering firm's name and registration number (30 TAC §352.4).

A report shall accompany the dike certification which summarizes the activities, calculations, and laboratory and field analyses performed in support of the dike certification. Describe the design basis used in construction of the dikes. A QAPP should be included in the report to ensure that each analysis is performed appropriately and include:

(1) Slope Stability Analysis

(2) Hydrostatic and Hydrodynamic Analysis

(3) Storm Loading

(4) Rapid Drawdown

Earthen dikes should have a protective cover to minimize wind and water erosion and to preserve the structural integrity of the dike. Describe the protective cover used and describe its installation and maintenance procedures.

B. Liner Design

For surface impoundment(s), provide information about how the facility will comply with 30 TAC §352.711 for existing CCR surface impoundments. For new and lateral expansion of CCR surface impoundments provide information on how the facility will comply with 30 TAC §352.261, and 30 TAC §352.721, see Instructions and Technical Guidance No. 31 Coal Combustion Residuals Surface Impoundment. The qualified Texas P.E. must certify that the design of the liner complies with the requirements of 30 TAC Chapter 352 and 40 CFR Part 257, Subpart D, where required.

Is the CCR surface impoundment unlined? ☐ Yes ☐ No

If "Yes", the CCR unit is subject to the closure requirements under 30 TAC Chapter 352 and 40 CFR §257.101(a) to retrofit or close. A notification must be prepared stating that an assessment of corrective measures has been initiated.

1. Complete Table V.B. - Surface Impoundment Liner System for each surface impoundment to be registered.
2. Describe the design, installation and operation of liner and leak detection components. The description must demonstrate that the liner and leak detection system will prevent discharge to the land and surface water. Submit a QAPP report to ensure that each analysis is performed appropriately.
3. For new or laterally expansions of existing surface impoundments, provide a subsurface soil investigation report that must include:
   a. A description of all borings drilled, at the unit location, to test soils and characterize groundwater;
   b. A unit map drawn to scale showing the surveyed locations and elevations of the borings, including location of permanent identification markers ((30 TAC §352.731) and (40 CFR §257.73(a)(1));
   c. Cross-sections prepared from the borings depicting the generalized strata at the unit;
   d. Boring logs, including a description of materials encountered, and any discontinuities such as fractures, fissures, slickensides, lenses or seams;
   e. A description of the geotechnical data and the geotechnical properties of the subsurface soil materials, including the suitability of the soils and strata for the intended uses; and
   f. A demonstration that all geotechnical tests were performed in accordance with industry practices and recognized procedures.

C. Hazard Potential Classification

Provide the current hazard potential classification assessment and associated documentation, as required by 30 TAC §352.731 or §352.741 and 40 CFR §257.73(a)(2) or §257.74(a)(2). The qualified Texas P.E. must certify that the initial hazard potential classification and any subsequent periodic classification was conducted in accordance with the requirements of 30 TAC Chapter 352, where required.

Hazard Potential Classification: **LOW**

D. Emergency Action Plan for High or Significantly High Hazard Potential

Provide the current Emergency Action Plan that has been certified by a qualified Texas P.E. and includes the following requirements from 30 TAC 352, Subchapter F and 40 CFR §257.73(a)(3)(i)(A) - (E) or 40 CFR §257.74 (a)(3)(i)(A) - (E). The qualified Texas P.E. must certify that the written Emergency Action Plan and any subsequent amendment of the plan complies with the requirements of 30 TAC 352, Subchapter F, where required.

Complete Table V.J. - Inspection of Surface Impoundments

E. Inflow Design Flood Control System Plan

Describe how the surface impoundment(s) system will manage stormwater run-on away from the surface impoundment(s) (30 TAC §352.821 and 40 CFR §257.82(a) and (c)). Stormwater run-on must be diverted away from a surface impoundment, based on the hazard potential. Where dikes are used to divert run-on, they must be protected from erosion. Include all analyses used to calculate run-on volumes. Provide the inflow design flood control system plan. Provide qualified Texas P.E. certification that the initial and periodic inflow design flood control system plans meet the requirements of 30 TAC §352.821, where required.

F. History of Construction for Existing CCR Surface Impoundment(s), or the Design and Construction Plans for New and Lateral Expansions

Provide information on the history of construction for each existing CCR surface impoundment (30 TAC §352.731 and 40 CFR §257.73(c)) or the design and construction plans for new and lateral expansions of each CCR surface impoundment (30 TAC §352.741) and (40 CFR §257.74(c)).

G. Structural Stability Assessment

Provide the most recent structural stability assessment of the surface impoundments. Include the combined capacity of all surface impoundment spillways with calculations; the peak discharge the unit must meet for all combined spillways; probable maximum flood-high hazard, 1,000-yr-significant high hazard, 100-yr-low hazard; identify if there were any structural stability deficiencies in last assessment; identify how these deficiencies were managed and corrected; and qualified Texas P.E. certification. The structural stability assessment must include all information required in 30 TAC §352.731 for existing surface impoundments or 30 TAC §352.741 for new or laterally expanding surface impoundments.

H. Safety Factor Assessment

The current safety factor assessment must be submitted with the application. It must include documentation that demonstrates whether the calculated factors of safety for each CCR surface impoundment achieve the minimum safety factors specified in 30 TAC 352, Subchapter F and 40 CFR §257.73(e)(1)(i) - (iv) and 40 CFR §257.74(e)(1)(i) - (iv) for the critical cross-section of the embankment. The critical cross-section is the cross-section anticipated to be the most susceptible to structural failure based on appropriate engineering considerations, including loading conditions. The safety factor assessments must be supported by appropriate engineering calculations and certified by a qualified Texas P.E.

VI. Groundwater Monitoring and Corrective Action (30 TAC 352, Subchapter H)

See Instructions and Technical Guidance – No. 32 Coal Combustion Residuals Groundwater Monitoring and Corrective Action

27. Groundwater Monitoring System

A. Complete Table VI.A. - Unit Groundwater Detection Monitoring System.

B. Provide a map showing location of wells, groundwater elevations, and groundwater flow direction.

See Groundwater Potentiometric Surface Maps in Appendix C of the "Groundwater Monitoring System Certification" report for AX Landfill located in APPENDIX E.

C. Provide attachments describing how the facility will comply with the requirements in 30 TAC §352.911 and provide a certification by a qualified Texas P.E or qualified Texas P.G. that the groundwater monitoring system design and construction meet the requirements of 30 TAC Chapter 352.

See "Groundwater Monitoring System Certification" report for AX Landfill located in APPENDIX E. The certification statement can be found on the second page of the document.

D. Provide a figure showing the geologic units and fill materials overlying the uppermost aquifer, materials comprising the uppermost aquifer, and materials comprising the confining unit defining the lower boundary of the uppermost aquifer, including, but not limited to, thicknesses, stratigraphy, lithology, hydraulic conductivities, porosities and effective porosities.

See Figures 3, 4, 5, 6 in the "Groundwater Monitoring System Certification" report for AX Landfill located in APPENDIX E.

E. For a multiunit groundwater monitoring system, demonstrate that the groundwater monitoring system will be equally as capable of detecting monitored constituents at the waste boundary of the CCR unit as the individual groundwater monitoring system for each CCR unit by providing at minimum the following information:

1. Number, spacing, and orientation of each CCR unit;
2. Hydrogeologic setting; and
3. Site history.

F. Has there been any sampling concentrations of one or more constituents listed in Appendix IV detected at statistically significant levels above the groundwater protection standard (GWPS)? ☐ Yes ☒ No

G. Provide information on how monitoring wells have been constructed and cased in a manner that maintains the integrity of the monitoring well borehole and to prevent contamination of samples and the groundwater.

See Appendix A in the "Groundwater Monitoring System Certification" report for AX Landfill located in APPENDIX E

28. Groundwater Monitoring Sampling and Analysis Program

Provide a sampling and analysis plan that includes procedures and techniques; sampling and analytical methods that are appropriate for groundwater sampling; and that address the requirements of 30 TAC §352.931 and 40 CFR §257.93. Provide a P.E or P.G. certification that describes the statistical method selected to evaluate the groundwater monitoring data and certifies that the selected statistical method is appropriate for evaluating the groundwater monitoring data for the CCR management area. Refer to TG-32 for information and guidance.

See "Groundwater Monitoring Plan" and "Statistical Analysis Plan" for AX Landfill located in APPENDIX E

29. CCR Unit(s) in a Detection Monitoring Program

Does the facility have CCR unit(s) in a Detection Monitoring Program?

☒ Yes ☐ No

AX Landfill

If "Yes", Submit the following information:

A. Submit Table VI.C. – Facility CCR Units Under Detection Monitoring.

B. Provide a Background Evaluation Report.

Background data was derived from the eight independent sampling events required under 40 CFR 257.94(b). A summary of the background monitoring program can be found in Section 3.0 of the "2017 Annual Groundwater Monitoring Report". Background water quality data is summarized in Tables 3 and 4 and laboratory analytical reports are located in Appendix A of the 2017 report.

The "2017 Annual Groundwater Monitoring Report" is in APPENDIX E.

C. Provide a report with the results of semiannual monitoring events.

See the "2020 Annual Groundwater Monitoring Report" for AX Landfill in APPENDIX E.

1. Has a statistically significant increase (SSI) been detected for one or more of the constituents listed in Appendix III at any monitoring well?

   ☒ Yes ☐ No

2. Has a notification to the executive director been sent within 14 days?

   ☒ Yes ☐ No

3. Date assessment monitoring program will start: N/A Due to successful ASDs

4. Do you plan to provide an alternative source demonstration (ASD)?

   ☒ Yes ☐ No

30. CCR Unit(s) in an Assessment Monitoring Program

Does the facility have CCR unit(s) in an Assessment Monitoring Program?

☐ Yes ☒ No

If "Yes", Submit information related for units.

A. Complete Table VI.D. – CCR Units Under Assessment Monitoring.

B. Provide, for each well in assessment monitoring status, the recorded concentrations lab sheets and results in a tabulated form.

C. Have the concentrations of all constituents listed in Appendices III and IV been at or below background values, using the statistical procedures in 30 TAC §352.931 and 40 CFR §257.93(g), for two consecutive sampling events for the CCR unit(s)? ☐ Yes ☐ No

If answer to above is yes, detection monitoring may resume. The owner or operator must prepare a notification stating that detection monitoring is resuming for the CCR unit and obtain written approval from the executive director.

D. Are there any concentrations of any constituent in Appendices III and IV above background values? ☐ Yes ☐ No

1. Has a notification to the executive director been sent within 14 days?

   ☐ Yes ☐ No

E. Date assessment of corrective measures will be initiated (must be within **90 days** of finding a statistically significant level above the GWPS) for the CCR unit(s):

F. Will you provide an ASD (see TG-32 for an acceptable submittal)? ☐ Yes ☐ No

G. Date assessment of corrective measures will be initiated if ASD is not accepted?

H. Complete Table VI.D-2. - Groundwater Detection Monitoring Parameters

Note: Refer to TG-32 regarding establishing a GWPS for each constituent in Appendix IV detected in the groundwater and attach as table.

I. Have you completed the assessment of corrective measures? ☐ Yes ☐ No
If "Yes", date assessment of corrective measures was completed: September 5, 2019
If "No", date assessment of corrective measures will be completed:
Expected date of submittal of amendment (see note below):
Provide completed assessment of corrected measures materials.

Note: Within **30 days** of completing the assessment of corrective measures, and before remedy implementation, the owner or operator shall submit an application for amendment to the registration. In some circumstances, the assessment of corrective measures and selected remedy may be approved as part of the initial application for the CCR unit registration.

J. Have you selected a remedy? ☐ Yes ☐ No

Provide public meeting documentation under 30 TAC §352.961 and a report under 30 TAC §352.971 and 40 CFR §257.97.

VII. Closure and Post-Closure Care

See Instructions and Technical Guidance

Submit a full closure plan and post-closure plan and all information describing how the owner or operator will comply with 30 TAC 352, Subchapter J and 40 CFR §§257.100 - 257.104. The owner of property on which an existing disposal facility is located, following the closure of a unit, must also submit documentation that a notation has been placed in the deed to the facility that will in perpetuity notify any potential purchasers of the property that the land has been used to manage CCR wastes and its use is restricted (30 TAC §352.1221 and 40 CFR §257.102(i)). For CCR units, closed after October 19, 2015, that were closed before submission of the application, the applicant

should submit documentation to show that notices required under 30 TAC 352, Subchapter K and 40 CFR §257.105 or §257.106 have been filed.

31. Closure Plan

This section applies to the owners and operators of all CCR units required to be registered. The applicant must close the facility in a manner that minimizes need for further maintenance and controls, or eliminates, to the extent necessary to protect human health and the environment, the post-closure release of CCR waste, chemical constituents of concern, leachate, contaminated rainfall, or waste decomposition products to the groundwater, surface waters, or to the atmosphere.

The type of unit to be closed can determine the level of detail sufficient for a closure plan. CCR units which have been certified closed after October 19, 2015, must provide documentation to demonstrate compliance with state and federal regulations.

For each unit to be registered, complete Table VII.A.1. - Unit Closure and list the CCR Unit components to be decontaminated, possible methods of decontamination, and possible methods of disposal of wastes and waste residues generated during unit closure. All ancillary components must be decontaminated, and the generated waste disposed of appropriately.

See "Closure Plan" for AX Landfill in APPENDIX F

Information about CCR units closed or to be closed under alternative closure requirements must be provided in Table VII.A.2. - CCR Units Under Alternative Closure Notification.

Guidance on design of a closure cap and final cover for non-hazardous industrial solid wastes landfills is provided in EPA publication 530-SW-85-014, TCEQ Technical Guidance No. 3 and TCEQ publication, RG-534, "Guidance for Liner Construction and Testing for a Municipal Solid Waste Landfill".

32. Post-Closure Care Plan

Provide a post-closure care plan that complies with the requirements of 30 TAC §352.1241.

See "Post-Closure Plan" for AX Landfill in APPENDIX F.

Post-closure care of each CCR unit must continue for at least 30 years after the date of completing closure of the unit and must consist of monitoring and reporting of the groundwater monitoring systems, in addition to the maintenance and monitoring of CCR unit. Continuation of certain security requirements may be necessary after the date of closure. Post-closure use of property on or in which waste remains after closure must never be allowed to disrupt the integrity of the containment system. In addition, submit the following information:

- The name, address, and phone number of the person or office to contact about the CCR unit during the post-closure period; and

  Luminant-Environmental Services
  Renee Collins-Senior Environmental Director
  6555 Sierra Drive
  Irving, TX 75039
  214-875-8338
  CCRPostClosurePlan@Luminant.com

- A discussion of the future use of the land associated with each unit.

  See section 5.0 of the "Post-Closure Plan" for the AX Landfill in APPENDIX F.

Landfills and surface impoundments which have been certified closed after October 19, 2015, must be included in post-closure care plans, unless they have been determined to have been closed by waste removal equivalent to the closure standards in 30 TAC §352.1221 and 40 CFR §257.102 or 30 TAC §352.1231 and 40 CFR §257.103. If such a demonstration has been made pursuant to 40 CFR §257.102 or §257.103, but an equivalency determination has not been made, please submit a copy of the demonstration documentation. If an equivalency determination has been made, applicant should submit a copy of this determination.

VIII. Financial Assurance

33. Post-Closure Care Cost Estimate

Financial assurance for post-closure care (30 TAC §352.1101) applies to owners or operators of all CCR units, except CCR units from which the owner or operator intends to remove wastes and perform clean closure. Provide a written cost estimate in current dollars of the total cost of the 30-year (or longer, if applicable under 30 TAC §352.1101(d)) post-closure care period to perform post-closure care requirements as prescribed in 30 TAC §352.1241. The cost estimate must be based on the costs of hiring a third party to conduct post-closure care maintenance.

Complete Table VIII.A.1 – Post-Closure Cost Summary for Existing Registered Units

See Post-Closure Care Estimate Memo from Golder in APPENDIX G. Sandow AX Landfill cost estimates are summarized in Table 6.

Complete Table VIII.A.2. - Post-Closure Cost Summary for Proposed Registered Units

34. Financial Assurance Mechanism

The financial assurance for post-closure care is required in accordance with 30 TAC §352.1101. The applicant shall demonstrate the financial assurance within 90 days after approval of the registration with a financial mechanism acceptable to TCEQ in compliance with 30 TAC §352.1101(c) and 30 TAC §37, Subchapters A through D, except as indicated in 30 TAC §352.1111, in an amount no less than the amount specified in the approved Post-Closure Care Cost Summary. Provide a description of the proposed financial assurance mechanism.

Vistra Corporation currently uses AEGIS Insurance Services Endorsement No. 60 (TCEQ Endorsement for Closure, Post-Closure or Corrective Action) as an approved financial assurance mechanism at other Vistra owned facilities. Applicant intends to add post-closure coverage amounts detailed in Table VIII.A.1. to current policy.

Complete Table VIII.B. - Post-Closure Period, for the authorized post-closure period, to meet the requirements of 30 TAC §352.1241(a) through (c).

Signature Page

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Applicant Signature: _____ Date: _____

Name and Official Title (type or print): _____

Owner or Operator Signature: _____ Date: _____

Name and Official Title (type or print): _____

To be completed by the owner or operator if the application is signed by an authorized representative for the operator

I, _____ hereby designate _____
(operator) (authorized representative)

as my representative and hereby authorize said representative to sign any application, submit additional information as may be requested by the Commission; and/or appear for me at any hearing or before the Texas Commission on Environmental Quality in conjunction with this request for a CCR waste management registration. I further understand that I am responsible for the contents of this application, for oral statements given by my authorized representative in support of the application, and for compliance with the terms and conditions of any registration which might be issued based upon this application.

_____
Printed or Typed Name of Applicant or Principal Executive Officer

_____
Signature

(Note: Application Must Bear Signature & Seal of Notary Public)

Subscribed and sworn to before me by the said _____ on this

_____ day of _____, _____.

My commission expires on the _____ day of _____, _____

(Seal) Notary Public in and for _____ County, Texas

Registration Application for Coal Combustion Residuals Waste Management

(See instructions for P.E/P.G. seal requirements.)

Attachments and Tables	**Attachment No.**
General Information	Appendix A
Property/Legal Description	
Property Owner Affidavit	
Legal Authority	
Delegation of Signature Authority	
TCEQ Core Data Form	
Attachments	
Response to TCEQ CCR Unit Registration Comments (Item 21)	
Location Restrictions & Geology	Appendix B
Location Restriction Demonstration	
Location Restriction Evaluation	
Fugitive Dust Control Plan	Appendix C
CCR Fugitive Dust Control Plan	
2021 Annual CCR Fugitive Dust Control Report	
Landfill Criteria	Appendix D
Construction Completion Reports	
Run-on and Run-off Control System Plan	
2021 Annual CCR Unit Inspection Report	
Groundwater Monitoring and Corrective Action	Appendix E
Groundwater Monitoring System Certification	
Groundwater Monitoring Plan	
Statistical Analysis Plan	
2017 Annual Groundwater Monitoring Report	
2020 Groundwater Monitoring and Corrective Action Report	
Closure and Post-Closure Care	Appendix F
Closure Plan	
Post-Closure Plan	
Financial Assurance	Appendix G
Post-Closure Care Estimate Memo	

Tables

Tables	Submitted	Not Applicable
Table I.6. - CCR Waste Management Units	☒	☐
Table I.6.A. - Waste Management Information	☒	☐
Table I.6.B. - Wastes Managed in Registered Units	☒	☐
Table I.6.C. - Sampling and Analytical Methods	☒	☐
Table IV.A. - Landfill Characteristics	☒	☐
Table IV.B. - Landfill Liner System	☒	☐
Table IV.C. - Landfill Leachate Collection System	☐	☒
Table IV.D. - Inspection Schedule of Landfills	☒	☐
Table V.A. - Surface Impoundments Characteristics	☐	☒
Table V.B. - Surface Impoundment Liner System	☐	☒
Table V.J. - Inspection of Surface Impoundments	☐	☒
Table VI.A. - Unit Groundwater Detection Monitoring System	☒	☐
Table VI.C. - CCR Units Under Detection Monitoring	☒	☐
Table VI.D. - CCR Units Under Assessment Monitoring	☐	☒
Table VI.D-2. - Groundwater Detection Monitoring Parameters	☒	☐
Table VII.A.1. - Unit Closure	☒	☐
Table VII.A.2. - CCR Units Under Alternative Closure Notification	☐	☒
Table VIII.A.1. - Post-Closure Cost Summary for Existing Registered Units	☒	☐
Table VIII.A.2. - Post-Closure Cost Summary for Proposed Registered Units	☐	☒
Table VIII.B. - Post-Closure Period	☐	☒

Additional Attachments as Applicable - Select all those apply and add as necessary

☒ TCEQ Core Data Form(s) Appendix A
☒ Signatory Authority Delegation Appendix A
☐ Fee Payment Receipt
☐ Confidential Documents
☒ Certificate of Fact (Certificate of Incorporation) Appendix A
☐ Assumed Name Certificate

Table I.6. – CCR Waste Management Units

CCR Unit No.[1]	Unit Name	N.O.R. No.[1]	Unit Description[3]	Capacity	Unit Status[2]
008	AX Landfill	008	Landfill	15.29 million cubic yards	Active

1 Registered Unit No. and N.O.R. No. cannot be reassigned to new units or used more than once.
2 Unit Status options: Active, Closed, Inactive (built but not managing waste), Proposed (not yet built), Never Built, Transferred, Post-Closure.
3 If a unit has been transferred, the applicant should indicate which facility/permit it has been transferred to in the Unit Description column.

Table I.6.A. – Waste Management Information

Waste No.[1]	Waste Type(s)	Source	Volume (tons/year)[2]
1	Fly Ash	Coal Combustion Byproduct	0
2	Waste Lignite	Misc. Maintenance Activities	56 tons
3	Bed Ash	Coal Combustion Byproduct	0
4	Construction Debris	Misc. Maintenance Activities	0

1 Assign waste number sequentially. Do not remove waste number wastes which are no longer generated

2 Reflects 2021 records

Table I.6.B. – Wastes Managed in Registered Units

Waste No.[1]	Waste	TCEQ Waste Form Codes and Classification Codes
1	Fly Ash	TWC-30023042, TX Form Code-304, Class 2
2	Waste Lignite	TWC-30044092, TX Form Code-409, Class 2
3	Bed Ash	TWC-30053042, TX Form Code-304, Class 2
4	Construction Debris	TWC-37043902, TX Form Code-390, Class 2

1 from Table I.6.A., first column

Table I.6.C – Sampling and Analytical Methods

Waste No.[1]	Sampling Location	Sampling Method	Frequency	Parameter	Test Method	Desired Accuracy Level
1-Flyash	Landfill/flyash silos/electrostatic precipitator	Grab	<5 years or change in waste generation process	TCLP Metals pH	SW1311/7470A SW1311/6020B SW9045C	See below [2]
2-Waste lignite	Drainage ditches around coal piles	Grab	<5 years or change in waste generation process	TCLP Metals	SW1311/7470A SW1311/6020B	See below [2]
3-Bottomash	Landfill	Grab	<5 years or change in waste generation process	TCLP Metals	SW1311/7470A SW1311/6020B	See below [2]
4-Construction Debris	Varies by project	Composite	As needed	TCLP metals, TPH	SW1311/7470A SW1311/6020B TX1005	See below [2]

1 from Table I.6.A., first column

2 Analytical protocol will meet EPA quality control and accuracy specifications as published in the SW-846 Methods. The laboratory will be TCEQ accredited.

Table IV.A. – Landfills Characteristics

Registered Unit No.	Landfill	N.O.R. No.	Waste Nos.[1]	Rated Capacity	Dimensions[2]	Distance from lowest liner to groundwater	Action Leakage Rate (if required)	Unit will manage CCR Waste and non-CCR Waste (state all that apply)
008	AX Landfill	008	1 thru 9	15.29 million cubic yards	4100 ft L x 2000 ft W x 90 ft H (height @ max design) 179 acres	N/A	N/A	Waste numbers 1-9 as described in Table I.6.A.

1 From Table I.6.A., first column
2 Dimensions should be provided as average length, width and depth, also include the surface acreage for the unit.

Table IV.B. – Landfill Liner System

Registered Unit No.*	Landfill	Geomembrane Liner Material	Geomembrane Liner Permeability (cm/sec)	Geomembrane Liner Thickness	Soil Liner Material	Soil Liner Permeability (cm/sec)	Soil Liner Thickness
008	AX Landfill	GCL with 30-mil HDPE geomembrane	$<1.00 \times 10^{-7}$	30 mil	Compacted clay	$<5 \times 10^{-5}$ cm/sec	Minimum 2 ft

* This number should match the Registration Unit No. given on Table IV.A.

Table IV.C. – Landfill Leachate Collection System

Registered Unit No.	Landfill Name	Drainage Media	Collection Pipes (including risers)	Filter Fabric	Geofabric	Sump Material
N/A						

Table IV.D. – Inspection Schedule of Landfills

Facility Unit(s) and Basic Elements	Possible Error, Malfunction, or Deterioration	Frequency of Inspection
008-AX Landfill	Inspect for any appearances of actual or potential structural weakness and other conditions which are disrupting of have the potential to disrupt the operation and safety of the CCR unit	Weekly Inspection per 40 CFR 257.84(a)
Embankments	Surface cracking, animal burrows, misalignments, slides, vegetative cover, rutting, erosion, seepage, slope protection/chutes	Weekly Inspection
Capped Areas	Animal burrows, vegetative cover, rutting, surface cracking	Weekly Inspection
Active Work Area	Contact water, dusting	Weekly Inspection
Groundwater Monitoring Wells	Deterioration of pads, bollards, missing locks, compromise of casing integrity	Semi-Annual Inspection
008-AX Landfill		Annually per 40 CFR 257.84(b)
	Inspect for any changed in geometry of the structure since the previous annual inspection.	Annual Inspection
	Estimate the approximate volume of CCR contained in the unit at the time of the inspection.	Annual Inspection
	Inspect for any appearance of actual or potential structural weakness of the CCR unit, and any conditions that are disrupting or have the potential to disrupt the operation and safety of the unit.	Annual Inspection
	Inspect for any other change(s) which have affected the stability or operation of the CCR unit since the previous inspection	Annual Inspection

Table V.A. – Surface Impoundment Characteristics

Registered Unit No.	Surface Impoundment Name	N.O.R. No.	Waste Nos.[1]	Rated Capacity	Dimensions[2]	Distance from lowest liner to groundwater	Action Leakage Rate (if required)	Unit will manage CCR Waste and non-CCR Waste (state all that apply)
N/A								

1 From Table I.6.A., first column
2 Dimensions should be provided as average length, width and depth, also include the surface acreage for the unit.

Table V.B. – Surface Impoundment Liner System

Registered Unit No.*	Surface Impoundment Name	Geomembrane Liner Material	Geomembrane Liner Permeability (cm/sec)	Geomembrane Liner Thickness	Soil Liner Material	Soil Liner Permeability (cm/sec)	Soil Liner Thickness
N/A							

* This number should match the Registration Unit No. given on Table V.A.

Table V.J. – Inspection Schedule of Surface Impoundments

Facility Unit(s) and Basic Elements	Possible Error, Malfunction, or Deterioration	Frequency of Inspection
N/A		

Registration No. XXXXX
Registrant: Sandow Power Company LLC

Table VI.A. - Unit Groundwater Detection Monitoring Systems

Waste Management Unit/Area Name[1]	**WMU 008 - AX Landfill**									
Well Number(s):	AXMW-1	AXMW-2	AX-23	AX-24	AX-25*	AX-25R	AX-26	AX-27	AX-28	AX-29
Hydrogeologic Unit Monitored	Wilcox Group	Wilcox Group	Wilcox Group	Wilcox Group	Wilcox Group	Wilcox Group	Wilcox Group	Wilcox Group	Wilcox Group	Wilcox Group
Type (e.g., point of compliance, background, observation, etc.)	POC	POC	POC	POC	POC	POC	POC	POC	POC	POC
Up or Down Gradient	Up	Up	Up	Down	Down	Down	Down	Down	Down	Up
Casing Diameter and Material	2 " PVC	2 " PVC	4" PVC	2 " PVC	2 " PVC	2 " PVC	2 " PVC	4" pvc	2 " PVC	2 " PVC
Screen Diameter and Material	2 " PVC	2 " PVC	4" PVC	2 " PVC	2 " PVC	2 " PVC	2 " PVC	4" PVC	2 " PVC	2 " PVC
Screen Slot Size (in.)	0.010"	0.010"	0.010"	0.010"	0.010"	0.010"	0.010"	0.010"	0.010"	0.010"
Top of Casing Elevation (Ft, Mean Sea Level *[MSL]*)	473.65	482.25	482.26	468.74	443.62	442.9	458.6	479.47	463.26	487.73
Grade or Surface Elevation (Ft, MSL)	471.88	480.54	479.78	466.48	441.11	440.4	456.34	476.82	460.75	484.96
Well Depth (Ft, Below Grade Surface *[BGS]*)	53	63	85	81	75	73	75	98	45	65
Well Depth (Ft, Below Top of Casing *[BTOC]*)	54.77	64.71	87.48	83.26	77.51	75.5	77.26	100.65	47.51	67.77
Screen Interval										
From (Ft, BGS)	33	43	65	61	65	63	55	78	25	45
To (Ft, BGS)	53	63	85	81	75	73	75	98	45	65
Screen Interval										
From (Ft, BTOC)	34.77	44.71	67.48	63.26	67.51	65.5	57.26	80.65	27.51	47.77
To (Ft, BTOC)	54.77	64.71	87.48	83.26	77.51	75.5	77.26	100.65	47.51	67.77

1 From Tables in Section I.; *MSL* : Mean Sea Level; *BGS* : Below Grade Surface; *BTOC* : Below Top of Casing

*Well AX-25 was damaged and subsequently pluggedon May 6, 2020. Well AX-25R was installed and completed on May 7, 2020, as a replacement for AX-25.

Table VI.C. – CCR Units Under Detection Monitoring

N.O.R. Unit No.	Unit Description[1,2]	Well(s)	Constituent(s)	Date of SSI Determination	Date of Assessment Monitoring Notification[3]
008	AX Landfill	AX-25, AX-27, AX-28	Ca (25, 27, 28) SO4 (27)	1/16/18	N/A-ASD successful (4/15/18)
008	AX Landfill	AX-23, AX-24, AX-25, AX-26, AX-27, AX-28, AX-29	Ca (25, 27) SO4 (26, 27) F (23, 24, 25, 28, 29)	1/15/19	N/A-ASD successful (4/10/19)
008	AX Landfill	AX-24, AX-25, AX-27	Ca (24, 25, 27) SO4 (27) F (25)	1/8/20	N/A-ASD successful (4/7/20)
008	AX Landfill	AX-24, AX-25R, AX-26, AX-27	B (27) Ca (24, 25R, 26, 27) SO4 (26, 27)	12/7/20	N/A-ASD successful (3/5/21)

1 Indicates a unit for which a 30 TAC Chapter 352/40 CFR Part 257, Subpart D alternative closure determination has been requested pursuant to 40 CFR §257.103.
2 Indicates a unit for which a 30 TAC Chapter 352/40 CFR Part 257, Subpart D alternative closure determination has been made pursuant to 40 CFR §257.103.
3 Enter month, day, and year.

Table VI.D. – CCR Units Under Assessment Monitoring

N.O.R. Unit No.	Unit Description[1,2]	Well(s)	Constituent(s)	Date of SSI Determination	Date of Assessment Monitoring Notification[3]
N/A					

1 Indicates a unit for which a 30 TAC Chapter 352/40 CFR Part 257, Subpart D alternative closure determination has been requested pursuant to 40 CFR §257.103.
2 Indicates a unit for which a 30 TAC Chapter 352/40 CFR Part 257, Subpart D alternative closure determination has been made pursuant to 40 CFR §257.103.
3 Enter month, day, and year

Table VI.D-2. – Groundwater Detection Monitoring Parameters

Parameter	Sampling Frequency	Analytical Method	Practical Quantification Limit (units)	Concentration Limit[1]
AX Landfill				
AXMW-1 Boron	Semi-Annual	SW6020A	0.6 mg/L	0.681
AXMW-1 Calcium	Semi-Annual	SW6020A	6.0 mg/L	569
AXMW-1 Chloride	Semi-Annual	E300	100 mg/L	491
AXMW-1 Fluoride	Semi-Annual	E300	0.4 mg/L	0.4
AXMW-1 Field pH	Semi-Annual	Field Measured	s.u.	5.49 7.09
AXMW-1 Sulfate	Semi-Annual	E300	300 mg/L	2,660
AXMW-1 TDS	Semi-Annual	M2540C	50.0 mg/L	5,820
AXMW-2 Boron	Semi-Annual	SW6020A	0.03 mg/L	3.62
AXMW-2 Calcium	Semi-Annual	SW6020A	15.0 mg/L	943
AXMW-2 Chloride	Semi-Annual	E300	100 mg/L	391
AXMW-2 Fluoride	Semi-Annual	E300	0.4 mg/L	1.88
AXMW-2 Field pH	Semi-Annual	Field Measured	s.u.	4.6 7.63
AXMW-2 Sulfate	Semi-Annual	E300	300 mg/L	3,040
AXMW-2 TDS	Semi-Annual	M2540C	50.0 mg/L	4,940
AX-23 Boron	Semi-Annual	SW6020A	0.03 mg/L	1.1
AX-23 Calcium	Semi-Annual	SW6020A	15.0 mg/L	475
AX-23 Chloride	Semi-Annual	E300	10.0 mg/L	313
AX-23 Fluoride	Semi-Annual	E300	0.4 mg/L	0.4
AX-23 Field pH	Semi-Annual	Field Measured	s.u.	3.24 7.95
AX-23 Sulfate	Semi-Annual	E300	30.0 mg/L	1,030
AX-23 TDS	Semi-Annual	M2540C	50.0 mg/L	3,090
AX-24 Boron	Semi-Annual	SW6020A	0.03 mg/L	0.311
AX-24 Calcium	Semi-Annual	SW6020A	15.0 mg/L	273
AX-24 Chloride	Semi-Annual	E300	100 mg/L	580
AX-24 Fluoride	Semi-Annual	E300	0.4 mg/L	0.4
AX-24 Field pH	Semi-Annual	Field Measured	s.u.	3.89 9.38
AX-24 Sulfate	Semi-Annual	E300	300 mg/L	1,010
AX-24 TDS	Semi-Annual	M2540C	50.0 mg/L	2,520

AX-25(R) Boron	Semi-Annual	SW6020A	0.03 mg/L	0.298
AX-25(R) Calcium	Semi-Annual	SW6020A	6.0 mg/L	262
AX-25(R) Chloride	Semi-Annual	E300	100 mg/L	1,140
AX-25(R) Fluoride	Semi-Annual	E300	0.4 mg/L	0.507
AX-25(R) Field pH	Semi-Annual	Field Measured	s.u.	4.69 9.2
AX-25(R) Sulfate	Semi-Annual	E300	300 mg/L	795
AX-25(R) TDS	Semi-Annual	M2540C	50.0 mg/L	3,980
AX-26 Boron	Semi-Annual	SW6020A	0.03 mg/L	0.446
AX-26 Calcium	Semi-Annual	SW6020A	15.0 mg/L	915
AX-26 Chloride	Semi-Annual	E300	100 mg/L	3,040
AX-26 Fluoride	Semi-Annual	E300	0.4 mg/L	0.4
AX-26 Field pH	Semi-Annual	Field Measured	s.u.	5.07 8.14
AX-26 Sulfate	Semi-Annual	E300	300 mg/L	1,200
AX-26 TDS	Semi-Annual	M2540C	50.0 mg/L	8,300
AX-27 Boron	Semi-Annual	SW6020A	0.03 mg/L	0.28
AX-27 Calcium	Semi-Annual	SW6020A	15.0 mg/L	366
AX-27 Chloride	Semi-Annual	E300	100 mg/L	1,020
AX-27 Fluoride	Semi-Annual	E300	0.4 mg/L	0.4
AX-27 Field pH	Semi-Annual	Field Measured	s.u.	6.08 7.3
AX-27 Sulfate	Semi-Annual	E300	300 mg/L	478
AX-27 TDS	Semi-Annual	M2540C	50.0 mg/L	3,620
AX-28 Boron	Semi-Annual	SW6020A	0.03 mg/L	0.393
AX-28 Calcium	Semi-Annual	SW6020A	15.0 mg/L	633
AX-28 Chloride	Semi-Annual	E300	100 mg/L	756
AX-28 Fluoride	Semi-Annual	E300	0.4 mg/L	.04
AX-28 Field pH	Semi-Annual	Field Measured	s.u.	4.67 8.55
AX-28 Sulfate	Semi-Annual	E300	300 mg/L	2,280
AX-28 TDS	Semi-Annual	M2540C	50.0 mg/L	3,790
AX-29 Boron	Semi-Annual	SW6020A	0.03 mg/L	0.432
AX-29 Calcium	Semi-Annual	SW6020A	15.0 mg/L	791
AX-29 Chloride	Semi-Annual	E300	100 mg/L	306
AX-29 Fluoride	Semi-Annual	E300	0.4 mg/L	0.4

AX-29 Field pH	Semi-Annual	Field Measured	s.u.	2.73 7.01
AX-29 Sulfate	Semi-Annual	E300	300 mg/L	1,440
AX-29 TDS	Semi-Annual	M2540C	50.0 mg/L	3,370

1 The concentration limit is the basis for determining whether a release has occurred from the CCR unit/area.

Table VII.A.1. – Unit Closure

For each unit to be registered, list the unit components to be decontaminated, the possible methods of decontamination, and the possible methods of disposal of wastes and waste residues generated during unit closure.

Equipment or CCR Unit	Possible Methods of Decontamination[1]	Possible Methods of Disposal[1]
008-AX Landfill	Close in Place	No disposal

1 Applicants may list more than one appropriate method.

Table VII.A.2. – CCR Units Under Alternative Closure Notification

Registered Unit No.	N.O.R. Unit No.	Unit Description[1,2]	Date of Receipt of Last Waste[3]	Date of Closure Notification[3]
N/A				

1 Indicates a unit for which a 30 TAC Chapter 352/40 CFR Part 257, Subpart D alternative closure determination has been requested pursuant to 40 CFR §257.103.
2 Indicates a unit for which a 30 TAC Chapter 352/40 CFR Part 257, Subpart D alternative closure determination has been made pursuant to 40 CFR §257.103.
3 Enter month, day, and year.

Table VIII.A.1. – Post-Closure Cost Summary for Existing Registered Units

Unit	Cost
008-AX Landfill	$2,591,600
Total Existing Unit Post-Closure Cost Estimate	$2,591,600 (in 2021 Dollars)[1]

Table VIII.A.2. - Post-Closure Cost Summary for Proposed Registered Units

Unit	Cost
N/A	

1 As units are added or deleted from these tables through future registration amendments, the remaining itemized unit costs should be updated for inflation when re-calculating the revised total cost in current dollars.

Table VIII.B. – Post-Closure Period

Unit Name	Date Certified Closed	Authorized Post-Closure Period (Yrs.)	Earliest Date Post-Closure Ends (See Note 1)
[Unit Example 1]	**[1/1/1995]**	30 years	**[1/1/2025]**
[Unit Example 2]	**[1/1/1990]**	30 years	**[1/1/2020]**
[Unit Example 3]	**[1/1/1984]**	30 years	**[1/1/2014]**

Note 1 – Post-Closure Care shall continue beyond the specified date until the Executive Director has approved the applicant's request to reduce or terminate the post-closure period, consistent with 30 TAC §352.1241 – Post-Closure Care Requirements.

N/A

CCR111 Application-Revision 1 REDLINE

Texas Commission on Environmental Quality

Registration Application for Coal Combustion Residuals (CCR) Waste Management

I. General Information

1. Reason for Submittal

Type of Registration Application

☒ New ☐ Major Amendment ☐ Minor Amendment

☒ Notice of Deficiency (NOD) Response ☐ Transfer ☐ Name Change

☐ Other

2. Application Fees

☒ $150 Application Fee

Payment Method

☐ Check ☒ Online through ePay portal <www3.tceq.texas.gov/epay/>

If paid online, enter ePay Trace Number: 582EA000467498

3. Facility Information

Facility information must match regulated entity information on the Core Data Form.

Applicant: ☐ Owner ☐ Operator ☒ Owner/Operator

Facility TCEQ Solid Waste Registration No: 88209

Facility EPA ID: TXR000078075

Regulated Entity Reference No. (if issued): RN102147881

Facility Name: SANDOW STEAM ELECTRIC STATION

Facility (Area Code) Telephone Number: 214-875-8338

Facility physical street address (city, state, zip code, county): 3708A CHARLES MARTIN HALL ROAD, ROCKDALE, TX, 76577, MILAM

Facility mailing address (city, state, zip code, county): 6555 SIERRA DR, IRVING, TX 75039, DALLAS

Latitude (Degrees, Minutes Seconds): 30° 33′ 51″

Longitude (Degrees, Minutes Seconds): 97° 03′ 50″

4. Publicly Accessible Website

Provide the URL address of a publicly accessible website where the owner or operator of a CCR unit will post information.
https://www.luminant.com/ccr/

5. Facility Landowner(s) Information

Facility landowner(s) name: ~~SANDOW POWER COMPANY LLC~~LUMINANT GENERATION COMPANY LLC

Facility landowner mailing address: 6555 SIERRA DR

City: IRVING State: TX Zip Code: 75039

(Area Code) Telephone Number: 214-875-8338

Email Address (optional):

6. CCR Waste Management Unit(s)

☒ Landfill Unit(s) ☐ Surface Impoundment(s)

For each existing landfill, new landfill and lateral expansion, existing surface impoundment, and new surface impoundment and lateral expansion(s) provide information on type of waste, the registered unit(s) in which they are managed, and sampling and analytical methods.

Submit the following tables:

Table I.6. – CCR Waste Management Units;

Table I.6.A. – Waste Management Information;

Table I.6.B. – Waste Managed in Registered Units; and

Table I.6.C. – Sampling and Analytical Methods.

7. Description of Proposed Activities or Changes to Existing Facility

Provide a brief description of the proposed activities if application is for a new facility, or the proposed changes to an existing facility or registration conditions, if the application is for an amendment.

Luminant Generation Company LLC formerly operated the Sandow Steam Electric Station (SASES) located approximately 7 miles southwest of Rockdale in Milam County, Texas. SASES was a lignite-fired electric generation facility retired in 2018. Coal Combustion Residuals (CCR) including fly ash and bed ash were generated as part of the unit's operation.

AX Landfill is the primary disposal facility for CCR generated at SASES and is located approximately 7,500 feet south of SASES. AX Landfill is listed on the Notice of Registration (SWR 88209) for SASES as Waste Management Unit 008 and is regulated as a Class 2 non-hazardous industrial solid waste landfill under 30 TAC §335.

8. Primary Contact Information

Contact Name: Renee Collins Title: Sr. Director, Environmental Services

Contact mailing address: 6555 Sierra Drive
City: Irving County: Dallas State: Texas Zip Code: 75039
(Area Code) Telephone Number: 214-875-8338

Email Address (optional): renee.collins@luminant.com

9. Notice Publishing

Party responsible for publishing notice:
☒ Applicant ☐ Consultant ☐ Agent in Service

Contact Name: Renee Collins Title: Sr. Director, Environmental Services

Contact mailing address: 6555 Sierra Drive
City: Irving County: Dallas State: Texas Zip Code: 75039
(Area Code) Telephone Number: 214-875-8338

10. Alternative Language Notice

Is an alternative language notice required for this application? For determination, refer to Alternative Language Checklist on the Public Notice Verification Form (TCEQ-20244-Waste-NORI).

☐ Yes ☒ No

11. Public Place Location of Application

Name of the Public Place: Lucy Hill Patterson Memorial Library
Physical Address: 201 Ackerman St
City: Rockdale County: MILAM State: TX Zip Code: 76567
(Area code) Telephone Number: 512-446-3410

12. Ownership Status of the Facility

☐ Corporation ☐ Limited Partnership
☐ Sole Proprietorship ☐ General Partnership ☒ Other (specify): Limited Liability Company

Does the Site Owner (Permittee/Registrant) own all the CCR units and all the facility property?

☒ Yes ☐ No

13. Property / Legal Description Information

Provide a legal description and supporting documents of the property where the management of CCR waste will occur; including a survey plat and a boundary metes and bounds description (30 TAC §352.231(g)).

Submit the following documents:

a. Property Legal Description
b. Property Metes and Bounds Description
c. Metes and Bounds Drawings
d. On-Site Easements Drawings

See APPENDIX A for Property/Legal Description Information and Property Owner Affidavit.

14. Operator Information

Identify the entity who will conduct facility operations, if the owner and operator are not the same.

Operator Name: LUMINANT GENERATION COMPANY LLC

Operator mailing address: 6555 Sierra Drive

City: Irving State: TX Zip Code: 75039

(Area Code) Telephone Number: 214-875-8338

Email Address (optional):

15. Confidential Documents

Does the application contain confidential documents?

☐ Yes ☒ No

If "Yes", cross-reference the confidential documents throughout the application and submit as a separate attachment in a binder clearly marked "CONFIDENTIAL."

16. Permits and Construction Approvals

Permit or Approval	Received	Pending	Not Applicable
Hazardous Waste Management Program under the Texas Solid Waste Disposal Act	☒	☐	☐
Underground Injection Control Program under the Texas Injection Well Act	☐	☐	☒
National Pollutant Discharge Elimination System Program under the Clean Water Act and Waste Discharge Program under Texas Water Code, Chapter 26	☐	☐	☒
Prevention of Significant Deterioration Program under the Federal Clean Air Act (FCAA).	☐	☐	☒
National Emission Standards for Hazardous Air Pollutants Preconstruction Approval under the FCAA	☐	☐	☒
Other (describe):	☐	☐	☐

17. Legal Authority

The owner and operator of the facility shall submit verification of their legal status with the application. This shall be a one-page certificate of incorporation issued by the secretary of state. The owner or operator shall list all persons having over a 20% ownership in the facility.

See APPENDIX A for Certificate of Authority.

18. TCEQ Core Data Form

The TCEQ requires that a Core Data Form (TCEQ-10400) be submitted on all incoming applications, unless a Regulated Entity and Customer Reference Number has been issued by the TCEQ and no core data information has changed. For more information regarding the Core Data Form, call (512) 239-5175 or visit the TCEQ Website.

See APPENDIX A for TCEQ Core Data Form.

19. Other Governmental Entities Information

Coastal Management Program

Is the facility within the Coastal Management Program boundary?

☐ Yes ☒ No

Local Government Jurisdiction (If Applicable)
Within City Limits of: N/A
Within Extraterritorial Jurisdiction of: N/A

Is the facility located in an area in which the governing body of the municipality or county has prohibited the storage, processing or disposal of municipal or industrial solid waste?

☐ Yes ☒ No If "Yes", provide a copy of the ordinance or order as an attachment.

20. Attachments

Does the application include the following?

General Maps	☒ Yes	☐ No
General Topographic Map	☒ Yes	☐ No
Facility Layout Map	☒ Yes	☐ No
Surrounding Features Map	☒ Yes	☐ No
Process Flow Diagram	☒ Yes	☐ No
Land Ownership Map	☒ Yes	☐ No
Land Ownership List	☒ Yes	☐ No
Pre-printed Mailing Labels	☒ Yes	☐ No

Maps and drawings shall be legible and easily readable by eye without magnification. Scales and paper size shall be chosen based on the type of map submitted, the land area covered, and the amount of detail to be shown. See instructions for details regarding maps and drawings to be submitted in application.

See APPENDIX A for Attachments detailed in Item 20.

21. Verification of Compliance

Does the owner and operator verify that the design, construction, and operation of CCR landfill(s) and surface impoundment(s) meets the requirements of 30 TAC §352.231(f) (30 TAC §352.2; 40 CFR §257.52, and 40 CFR §§257.3-1 – 257.3-3).

☒ Yes ☐ No

As requested by TCEQ, please see the "Response to TCEQ CCR Unit Registration Comments" memorandum for AX Landfill provided by Golder in APPENDIX A.

II. Location Restrictions and Geology

See Instructions and Technical Guidance

22. Location Restrictions

Submit certifications and technical reports demonstrating compliance of CCR unit(s) with applicable location restrictions (30 TAC 352, Subchapter E) and comply with 30 TAC §352.231(d) and 30 TAC §352.4 for submission of engineering and geoscientific information.

A. **Placement above the uppermost aquifer** (30 TAC §352.601) (40 CFR §257.60). For those CCR units whose base is less than five feet above the upper limit of the uppermost aquifer, please submit a copy of the demonstration showing evidence of compliance with 40 CFR §257.60(a) – (c).

B. **Wetlands** (30 TAC §352.611) (40 CFR §257.61). For CCR units located in wetlands, please submit a copy of the demonstration showing evidence of compliance with 40 CFR §257.61(a) – (c).

C. **Fault areas** (30 TAC §352.621) (40 CFR §257.62). For CCR units located within 200 feet of the outermost damage zone of a fault, please submit a copy of the demonstration showing evidence of compliance with 40 CFR §257.62(a) – (c).

D. **Seismic impact zones** (30 TAC §352.631) (40 CFR §257.63). For CCR units located in a seismic impact zone, please submit a copy of the demonstration showing evidence of compliance with 40 CFR §257.63(a) – (c).

E. **Unstable areas** (30 TAC §352.641) (40 CFR §257.64). For CCR units located in unstable areas, please submit a copy of the demonstration showing evidence of compliance with 40 CFR §257.64(a) – (d).

Location Restriction Demonstration ~~report~~ and Location Restriction Evaluation for AX Landfill located in APPENDIX B.

23. Geology Summary Report

Submit a summary of the geologic conditions at the facility, including the relation of the geologic condition to each CCR unit. The summary must include enough information and data and include sources and references for the information. Include all groundwater monitoring data required by 40 CFR Part 257, Subpart D, (30 TAC §352.241, §352.601, §352.621, §352.631, and §352.641) and submitted in accordance of 30 TAC §352.4.

Note: Previously prepared documents may be submitted but must be supplemented or updated as necessary to provide the requested information (30 TAC §352.241(b)).

For Geology Summary, please refer to "Groundwater Monitoring System Certification" report for AX Landfill located in APPENDIX E. The Local Geology and Hydrogeology summary is located in Section 2.2 of the report.

All groundwater monitoring data is summarized in the "2020 Annual Groundwater Monitoring and Corrective Action Report" for AX Landfill located in APPENDIX E.

III. Fugitive Dust Control Plan

24. Fugitive Dust Control Plan

A. **Submit a copy of the CCR Fugitive Dust Control Plan** (30 TAC §352.801) (40 CFR §257.80(b)), or the most recently amended plan. The initial plan or subsequent amended plan must be certified by a qualified Texas licensed professional engineer (Texas P.E.) that the plan meets the requirements of 30 TAC Chapter 352.

B. **Submit the most recent Annual CCR Fugitive Dust Control Report** (30 TAC §352.801) (40 CFR §257.80(c)) and include the report information.

CCR Fugitive Dust Control Plan and the 2021 Annual CCR Fugitive Dust Control Report located in APPENDIX C.

IV. Landfill Criteria

See Instructions and Technical Guidance – No. 30 Coal Combustion Residuals Landfill

25. Landfill(s) for CCR Waste

Provide the following information below if there is a landfill; if there is more than one landfill, separate information is required for each landfill.

A. **Landfill Characteristics**

Describe the design, installation, construction, and operation of the landfill and submit a completed Table IV.A. – Landfill Characteristics.

AX Landfill Cells 1, 2 and 2A are lined landfill cells. Construction of Cell 1 was completed in July 2013 and construction of Cells 2 and 2A was initiated in May 2015. Cell 2 was completed in October 2015 and Cell 2A was completed in July 2016. Placement of CCR began in Cell 1 in May 2015 and Cell 2 in September 2016. CCRs have not been placed to date in Cell 2A.

The AX Landfill is constructed partially above and partially below grade and are surrounded by engineered earthen embankments that extend approximately 10 to 15 feet above surrounding grade. Smaller interior earthen embankments separate Cells 1, 2 and 2A from each other. A geosynthetic liner system, consisting of a 30-mil thick Geomembrane Supported Geosynthetic Clay Liner (GSGCL) installed on top of 2 feet of soil exhibiting a minimum hydraulic conductivity of 5×10^{-5} cm/sec, has been installed in the landfill cells. The liner system is installed across the bottom of each cell, extends across the interior embankments, and extends up the inside sides of the perimeter embankments. The liner system is covered with an approximately 18-inch thick layer of protective soil to prevent damage to the liner during landfill operations. The base of each landfill cell is sloped toward a collection area for runoff from active landfill areas at the downgradient edge of the cell.

B. Liner Design

1. For existing landfills, provide attachments describing how the facility will comply with 30 TAC 352, Subchapter F (Design Criteria).

   AX Landfill is an Existing CCR Landfill under the CCR rule. There are no design criteria for Existing CCR Landfills in either the state or federal CCR rule. 30 TAC 352, Subchapter F or 40 CFR 257.70

2. For new landfills or lateral expansions of existing landfills, submit pages describing how the facility will comply with 30 TAC §352.261 and 30 TAC §352.701. N/A

3. Complete Table IV.B. - Landfill Liner System and specify the type of liner used for the landfill.

4. Provide attachments describing the design, installation, and operation of the liner and leak detection system. The description must demonstrate that the liner and leak detection system will prevent discharge to the land, groundwater, and surface water. Submit a quality assurance project plan (QAPP) to ensure that each analysis is performed appropriately.

   Construction Completion Reports are located in APPENDIX D for the construction of cells 1, 2, and 2A for A-X Landfill.

C. Leachate Collection and Removal

Submit design information and description of leachate collection and removal system in accordance with 30 TAC §352.701. N/A

Complete Table IV.C. - Landfill Leachate Collection System. N/A

D. Design of Liner and Leachate Collection and Removal System.

For a new landfill or lateral expansion of a CCR landfill, provide a qualified Texas P.E. certification and technical report that the design of the liner and the leachate collection and removal system meets the requirements of 30 TAC §352.711. N/A

E. Run-on and Run-off Controls

At time of application, attach pages describing how the facility will comply with the run-on and run-off system plan for an existing, new, or lateral expansion of a CCR landfill information. Provide a qualified Texas P.E. certification and technical report that the run-on and run-off control system plans meet the requirements of 30 TAC §352.811.

"Run-on and Run-off Control System Plan" for AX Landfill is located in APPENDIX D.

F. Inspection for Landfills

At time of application, attach pages describing how the facility will comply 30 TAC §352.841 and complete Table IV.D. – Inspection Schedule for Landfills. For existing CCR landfills, provide the most recent inspection report. All CCR landfills and any lateral expansions of a CCR landfill must be inspected for any structural weakness, malfunction, deterioration conditions which are disrupting or have the potential to disrupt the operation or safety of the CCR unit, or any other conditions which may cause harm to human health and environment at a frequency specified in 40 CFR §257.84(a) and (b).

The 2021 Annual CCR Landfill inspection report is located in APPENDIX D.

V. Surface Impoundment Criteria

See Instructions and Technical Guidance – No. 31 Coal Combustion Residuals Surface Impoundment

N/A

26. Surface Impoundment(s) for CCR Waste

Provide the following information below if there is a surface impoundment; if there is more than one surface impoundment, separate information is required for each surface impoundment.

A. General Surface Impoundment(s) Characteristics

Provide information about the characteristics of the surface impoundment(s): incised, surface area (acres), storage volume (acres-feet), and depth (feet).

For all surface impoundment(s), include the following information:

1. Complete Table V.A. - Surface Impoundments Characteristics. List the surface impoundment(s) to be registered as a CCR unit(s), the wastes managed in each unit, and the rated capacity or size of each unit.
2. Describe the surface impoundment(s) and provide a plan view drawing with cross-sections, if available.

   Specify the minimum freeboard to be maintained and the basis of the design to prevent overtopping resulting from normal or abnormal operation; overfilling; wind and wave action; rainfall; run-on; malfunctions of level controllers, alarms, and other equipment; and human error. Show that adequate freeboard will be available to prevent overtopping from a 100-year, 24-hour storm.
3. Waste Flow
   Describe the means that will be used to immediately shut off the flow of waste to the impoundment in the event of liner failure or to prevent overtopping.
4. Dike Construction ☐ Yes ☐ No

   If Yes, submit the dike certification (located at the end of the application).

   The structural integrity of the dike system must be certified by a qualified Texas P.E. before the registration is issued. If the impoundment is not being used, the dike system must be certified before it can be put into use. The certification must be sealed by a qualified Texas P.E., along with the engineering firm's name and registration number (30 TAC §352.4).

A report shall accompany the dike certification which summarizes the activities, calculations, and laboratory and field analyses performed in support of the dike certification. Describe the design basis used in construction of the dikes. A QAPP should be included in the report to ensure that each analysis is performed appropriately and include:

(1) Slope Stability Analysis

(2) Hydrostatic and Hydrodynamic Analysis

(3) Storm Loading

(4) Rapid Drawdown

Earthen dikes should have a protective cover to minimize wind and water erosion and to preserve the structural integrity of the dike. Describe the protective cover used and describe its installation and maintenance procedures.

B. Liner Design

For surface impoundment(s), provide information about how the facility will comply with 30 TAC §352.711 for existing CCR surface impoundments. For new and lateral expansion of CCR surface impoundments provide information on how the facility will comply with 30 TAC §352.261, and 30 TAC §352.721, see Instructions and Technical Guidance No. 31 Coal Combustion Residuals Surface Impoundment. The qualified Texas P.E. must certify that the design of the liner complies with the requirements of 30 TAC Chapter 352 and 40 CFR Part 257, Subpart D, where required.

Is the CCR surface impoundment unlined? ☐ Yes ☐ No

If "Yes", the CCR unit is subject to the closure requirements under 30 TAC Chapter 352 and 40 CFR §257.101(a) to retrofit or close. A notification must be prepared stating that an assessment of corrective measures has been initiated.

1. Complete Table V.B. - Surface Impoundment Liner System for each surface impoundment to be registered.
2. Describe the design, installation and operation of liner and leak detection components. The description must demonstrate that the liner and leak detection system will prevent discharge to the land and surface water. Submit a QAPP report to ensure that each analysis is performed appropriately.
3. For new or laterally expansions of existing surface impoundments, provide a subsurface soil investigation report that must include:
   a. A description of all borings drilled, at the unit location, to test soils and characterize groundwater;
   b. A unit map drawn to scale showing the surveyed locations and elevations of the borings, including location of permanent identification markers ((30 TAC §352.731) and (40 CFR §257.73(a)(1));
   c. Cross-sections prepared from the borings depicting the generalized strata at the unit;
   d. Boring logs, including a description of materials encountered, and any discontinuities such as fractures, fissures, slickensides, lenses or seams;
   e. A description of the geotechnical data and the geotechnical properties of the subsurface soil materials, including the suitability of the soils and strata for the intended uses; and
   f. A demonstration that all geotechnical tests were performed in accordance with industry practices and recognized procedures.

C. Hazard Potential Classification

Provide the current hazard potential classification assessment and associated documentation, as required by 30 TAC §352.731 or §352.741 and 40 CFR §257.73(a)(2) or §257.74(a)(2). The qualified Texas P.E. must certify that the initial hazard potential classification and any subsequent periodic classification was conducted in accordance with the requirements of 30 TAC Chapter 352, where required.

Hazard Potential Classification: **LOW**

D. Emergency Action Plan for High or Significantly High Hazard Potential

Provide the current Emergency Action Plan that has been certified by a qualified Texas P.E. and includes the following requirements from 30 TAC 352, Subchapter F and 40 CFR §257.73(a)(3)(i)(A) - (E) or 40 CFR §257.74 (a)(3)(i)(A) - (E). The qualified Texas P.E. must certify that the written Emergency Action Plan and any subsequent amendment of the plan complies with the requirements of 30 TAC 352, Subchapter F, where required.

Complete Table V.J. - Inspection of Surface Impoundments

E. Inflow Design Flood Control System Plan

Describe how the surface impoundment(s) system will manage stormwater run-on away from the surface impoundment(s) (30 TAC §352.821 and 40 CFR §257.82(a) and (c)). Stormwater run-on must be diverted away from a surface impoundment, based on the hazard potential. Where dikes are used to divert run-on, they must be protected from erosion. Include all analyses used to calculate run-on volumes. Provide the inflow design flood control system plan. Provide qualified Texas P.E. certification that the initial and periodic inflow design flood control system plans meet the requirements of 30 TAC §352.821, where required.

F. History of Construction for Existing CCR Surface Impoundment(s), or the Design and Construction Plans for New and Lateral Expansions

Provide information on the history of construction for each existing CCR surface impoundment (30 TAC §352.731 and 40 CFR §257.73(c)) or the design and construction plans for new and lateral expansions of each CCR surface impoundment (30 TAC §352.741) and (40 CFR §257.74(c)).

G. Structural Stability Assessment

Provide the most recent structural stability assessment of the surface impoundments. Include the combined capacity of all surface impoundment spillways with calculations; the peak discharge the unit must meet for all combined spillways; probable maximum flood-high hazard, 1,000-yr-significant high hazard, 100-yr-low hazard; identify if there were any structural stability deficiencies in last assessment; identify how these deficiencies were managed and corrected; and qualified Texas P.E. certification. The structural stability assessment must include all information required in 30 TAC §352.731 for existing surface impoundments or 30 TAC §352.741 for new or laterally expanding surface impoundments.

H. Safety Factor Assessment

The current safety factor assessment must be submitted with the application. It must include documentation that demonstrates whether the calculated factors of safety for each CCR surface impoundment achieve the minimum safety factors specified in 30 TAC 352, Subchapter F and 40 CFR §257.73(e)(1)(i) - (iv) and 40 CFR §257.74(e)(1)(i) - (iv) for the critical cross-section of the embankment. The critical cross-section is the cross-section anticipated to be the most susceptible to structural failure based on appropriate engineering considerations, including loading conditions. The safety factor assessments must be supported by appropriate engineering calculations and certified by a qualified Texas P.E.

VI. Groundwater Monitoring and Corrective Action (30 TAC 352, Subchapter H)

See Instructions and Technical Guidance – No. 32 Coal Combustion Residuals Groundwater Monitoring and Corrective Action

27. Groundwater Monitoring System

A. Complete Table VI.A. - Unit Groundwater Detection Monitoring System.

B. Provide a map showing location of wells, groundwater elevations, and groundwater flow direction.

See Groundwater Potentiometric Surface Maps in Appendix C of the "Groundwater Monitoring System Certification" report for AX Landfill located in APPENDIX E.

C. Provide attachments describing how the facility will comply with the requirements in 30 TAC §352.911 and provide a certification by a qualified Texas P.E or qualified Texas P.G. that the groundwater monitoring system design and construction meet the requirements of 30 TAC Chapter 352.

See "Groundwater Monitoring System Certification" report for AX Landfill located in APPENDIX E. The certification statement can be found on the second page of the document.

D. Provide a figure showing the geologic units and fill materials overlying the uppermost aquifer, materials comprising the uppermost aquifer, and materials comprising the confining unit defining the lower boundary of the uppermost aquifer, including, but not limited to, thicknesses, stratigraphy, lithology, hydraulic conductivities, porosities and effective porosities.

See Figures 3, 4, 5, 6 in the "Groundwater Monitoring System Certification" report for AX Landfill located in APPENDIX E.

E. For a multiunit groundwater monitoring system, demonstrate that the groundwater monitoring system will be equally as capable of detecting monitored constituents at the waste boundary of the CCR unit as the individual groundwater monitoring system for each CCR unit by providing at minimum the following information:

1. Number, spacing, and orientation of each CCR unit;
2. Hydrogeologic setting; and
3. Site history.

F. Has there been any sampling concentrations of one or more constituents listed in Appendix IV detected at statistically significant levels above the groundwater protection standard (GWPS)? ☐ Yes ☒ No

G. Provide information on how monitoring wells have been constructed and cased in a manner that maintains the integrity of the monitoring well borehole and to prevent contamination of samples and the groundwater.

See Appendix A in the "Groundwater Monitoring System Certification" report for AX Landfill located in APPENDIX E

28. Groundwater Monitoring Sampling and Analysis Program

Provide a sampling and analysis plan that includes procedures and techniques; sampling and analytical methods that are appropriate for groundwater sampling; and that address the requirements of 30 TAC §352.931 and 40 CFR §257.93. Provide a P.E or P.G. certification that describes the statistical method selected to evaluate the groundwater monitoring data and certifies that the selected statistical method is appropriate for evaluating the groundwater monitoring data for the CCR management area. Refer to TG-32 for information and guidance.

See "Groundwater Monitoring Plan" and "Statistical Analysis Plan" for AX Landfill located in APPENDIX E

29. CCR Unit(s) in a Detection Monitoring Program

Does the facility have CCR unit(s) in a Detection Monitoring Program?

☒ Yes ☐ No

AX Landfill

If "Yes", Submit the following information:

A. Submit Table VI.C. – Facility CCR Units Under Detection Monitoring.

B. Provide a Background Evaluation Report.

Background data was derived from the eight independent sampling events required under 40 CFR 257.94(b). A summary of the background monitoring program can be found in Section 3.0 of the "2017 Annual Groundwater Monitoring Report". Background water quality data is summarized in Tables 3 and 4 and laboratory analytical reports are located in Appendix A of the 2017 report.

The "2017 Annual Groundwater Monitoring Report" is in APPENDIX E.

C. Provide a report with the results of semiannual monitoring events.

See the "2020 Annual Groundwater Monitoring Report" for AX Landfill in APPENDIX E.

1. Has a statistically significant increase (SSI) been detected for one or more of the constituents listed in Appendix III at any monitoring well?

   ☒ Yes ☐ No

2. Has a notification to the executive director been sent within 14 days?

   ☒ Yes ☐ No

3. Date assessment monitoring program will start: N/A Due to successful ASDs

4. Do you plan to provide an alternative source demonstration (ASD)?

   ☒ Yes ☐ No

30. CCR Unit(s) in an Assessment Monitoring Program

Does the facility have CCR unit(s) in an Assessment Monitoring Program?

☐ Yes ☒ No

If "Yes", Submit information related for units.

A. Complete Table VI.D. – CCR Units Under Assessment Monitoring.

B. Provide, for each well in assessment monitoring status, the recorded concentrations lab sheets and results in a tabulated form.

C. Have the concentrations of all constituents listed in Appendices III and IV been at or below background values, using the statistical procedures in 30 TAC §352.931 and 40 CFR §257.93(g), for two consecutive sampling events for the CCR unit(s)? ☐ Yes ☐ No

If answer to above is yes, detection monitoring may resume. The owner or operator must prepare a notification stating that detection monitoring is resuming for the CCR unit and obtain written approval from the executive director.

D. Are there any concentrations of any constituent in Appendices III and IV above background values? ☐ Yes ☐ No

1. Has a notification to the executive director been sent within 14 days?

   ☐ Yes ☐ No

E. Date assessment of corrective measures will be initiated (must be within **90 days** of finding a statistically significant level above the GWPS) for the CCR unit(s):

F. Will you provide an ASD (see TG-32 for an acceptable submittal)? ☐ Yes ☐ No

G. Date assessment of corrective measures will be initiated if ASD is not accepted?

H. Complete Table VI.D-2. - Groundwater Detection Monitoring Parameters

Note: Refer to TG-32 regarding establishing a GWPS for each constituent in Appendix IV detected in the groundwater and attach as table.

I. Have you completed the assessment of corrective measures? ☐ Yes ☐ No
If "Yes", date assessment of corrective measures was completed: September 5, 2019
If "No", date assessment of corrective measures will be completed:
Expected date of submittal of amendment (see note below):
Provide completed assessment of corrected measures materials.

Note: Within **30 days** of completing the assessment of corrective measures, and before remedy implementation, the owner or operator shall submit an application for amendment to the registration. In some circumstances, the assessment of corrective measures and selected remedy may be approved as part of the initial application for the CCR unit registration.

J. Have you selected a remedy? ☐ Yes ☐ No

Provide public meeting documentation under 30 TAC §352.961 and a report under 30 TAC §352.971 and 40 CFR §257.97.

VII. Closure and Post-Closure Care

See Instructions and Technical Guidance

Submit a full closure plan and post-closure plan and all information describing how the owner or operator will comply with 30 TAC 352, Subchapter J and 40 CFR §§257.100 - 257.104. The owner of property on which an existing disposal facility is located, following the closure of a unit, must also submit documentation that a notation has been placed in the deed to the facility that will in perpetuity notify any potential purchasers of the property that the land has been used to manage CCR wastes and its use is restricted (30 TAC §352.1221 and 40 CFR §257.102(i)). For CCR units, closed after October 19, 2015, that were closed before submission of the application, the applicant

should submit documentation to show that notices required under 30 TAC 352, Subchapter K and 40 CFR §257.105 or §257.106 have been filed.

31. Closure Plan

This section applies to the owners and operators of all CCR units required to be registered. The applicant must close the facility in a manner that minimizes need for further maintenance and controls, or eliminates, to the extent necessary to protect human health and the environment, the post-closure release of CCR waste, chemical constituents of concern, leachate, contaminated rainfall, or waste decomposition products to the groundwater, surface waters, or to the atmosphere.

The type of unit to be closed can determine the level of detail sufficient for a closure plan. CCR units which have been certified closed after October 19, 2015, must provide documentation to demonstrate compliance with state and federal regulations.

For each unit to be registered, complete Table VII.A.1. - Unit Closure and list the CCR Unit components to be decontaminated, possible methods of decontamination, and possible methods of disposal of wastes and waste residues generated during unit closure. All ancillary components must be decontaminated, and the generated waste disposed of appropriately.

See "Closure Plan" for AX Landfill in APPENDIX F

Information about CCR units closed or to be closed under alternative closure requirements must be provided in Table VII.A.2. - CCR Units Under Alternative Closure Notification.

Guidance on design of a closure cap and final cover for non-hazardous industrial solid wastes landfills is provided in EPA publication 530-SW-85-014, TCEQ Technical Guidance No. 3 and TCEQ publication, RG-534, "Guidance for Liner Construction and Testing for a Municipal Solid Waste Landfill".

32. Post-Closure Care Plan

Provide a post-closure care plan that complies with the requirements of 30 TAC §352.1241.

See "Post-Closure Plan" for AX Landfill in APPENDIX F.

Post-closure care of each CCR unit must continue for at least 30 years after the date of completing closure of the unit and must consist of monitoring and reporting of the groundwater monitoring systems, in addition to the maintenance and monitoring of CCR unit. Continuation of certain security requirements may be necessary after the date of closure. Post-closure use of property on or in which waste remains after closure must never be allowed to disrupt the integrity of the containment system. In addition, submit the following information:

- The name, address, and phone number of the person or office to contact about the CCR unit during the post-closure period; and

  Luminant-Environmental Services
  Renee Collins-Senior Environmental Director
  6555 Sierra Drive
  Irving, TX 75039
  214-875-8338
  CCRPostClosurePlan@Luminant.com

- A discussion of the future use of the land associated with each unit.

  See section 5.0 of the "Post-Closure Plan" for the AX Landfill in APPENDIX F.

Landfills and surface impoundments which have been certified closed after October 19, 2015, must be included in post-closure care plans, unless they have been determined to have been closed by waste removal equivalent to the closure standards in 30 TAC §352.1221 and 40 CFR §257.102 or 30 TAC §352.1231 and 40 CFR §257.103. If such a demonstration has been made pursuant to 40 CFR §257.102 or §257.103, but an equivalency determination has not been made, please submit a copy of the demonstration documentation. If an equivalency determination has been made, applicant should submit a copy of this determination.

VIII. Financial Assurance

33. Post-Closure Care Cost Estimate

Financial assurance for post-closure care (30 TAC §352.1101) applies to owners or operators of all CCR units, except CCR units from which the owner or operator intends to remove wastes and perform clean closure. Provide a written cost estimate in current dollars of the total cost of the 30-year (or longer, if applicable under 30 TAC §352.1101(d)) post-closure care period to perform post-closure care requirements as prescribed in 30 TAC §352.1241. The cost estimate must be based on the costs of hiring a third party to conduct post-closure care maintenance.

Complete Table VIII.A.1 – Post-Closure Cost Summary for Existing Registered Units

See Post-Closure Care Estimate Memo from Golder in APPENDIX G. Sandow AX Landfill cost estimates are summarized in Table 6.

Complete Table VIII.A.2. - Post-Closure Cost Summary for Proposed Registered Units

34. Financial Assurance Mechanism

The financial assurance for post-closure care is required in accordance with 30 TAC §352.1101. The applicant shall demonstrate the financial assurance within 90 days after approval of the registration with a financial mechanism acceptable to TCEQ in compliance with 30 TAC §352.1101(c) and 30 TAC §37, Subchapters A through D, except as indicated in 30 TAC §352.1111, in an amount no less than the amount specified in the approved Post-Closure Care Cost Summary. Provide a description of the proposed financial assurance mechanism.

Vistra Corporation currently uses AEGIS Insurance Services Endorsement No. 60 (TCEQ Endorsement for Closure, Post-Closure or Corrective Action) as an approved financial assurance mechanism at other Vistra owned facilities. Applicant intends to add post-closure coverage amounts detailed in Table VIII.A.1. to current policy.

Complete Table VIII.B. - Post-Closure Period, for the authorized post-closure period, to meet the requirements of 30 TAC §352.1241(a) through (c).

Signature Page

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Applicant Signature: _____ Date: _____

Name and Official Title (type or print): _____

Owner or Operator Signature: _____ Date: _____

Name and Official Title (type or print): _____

To be completed by the owner or operator if the application is signed by an authorized representative for the operator

I, _____ hereby designate _____
(operator) (authorized representative)

as my representative and hereby authorize said representative to sign any application, submit additional information as may be requested by the Commission; and/or appear for me at any hearing or before the Texas Commission on Environmental Quality in conjunction with this request for a CCR waste management registration. I further understand that I am responsible for the contents of this application, for oral statements given by my authorized representative in support of the application, and for compliance with the terms and conditions of any registration which might be issued based upon this application.

_____
Printed or Typed Name of Applicant or Principal Executive Officer

_____
Signature

(Note: Application Must Bear Signature & Seal of Notary Public)

Subscribed and sworn to before me by the said _____ on this

_____ day of _____, _____.

My commission expires on the _____ day of _____, _____

(Seal) Notary Public in and for _____ County, Texas

Registration Application for Coal Combustion Residuals Waste Management

(See instructions for P.E/P.G. seal requirements.)

Attachments and Tables	**Attachment No.**
General Information	Appendix A
Property/Legal Description	
Property Owner Affidavit	
Legal Authority	
Delegation of Signature Authority	
TCEQ Core Data Form	
Attachments	
Response to TCEQ CCR Unit Registration Comments (Item 21)	
Location Restrictions & Geology	Appendix B
Location Restriction Demonstration	
Location Restriction Evaluation	
Fugitive Dust Control Plan	Appendix C
CCR Fugitive Dust Control Plan	
2021 Annual CCR Fugitive Dust Control Report	
Landfill Criteria	Appendix D
Construction Completion Reports	
Run-on and Run-off Control System Plan	
2021 Annual CCR Unit Inspection Report	
Groundwater Monitoring and Corrective Action	Appendix E
Groundwater Monitoring System Certification	
Groundwater Monitoring Plan	
Statistical Analysis Plan	
2017 Annual Groundwater Monitoring Report	
2020 Groundwater Monitoring and Corrective Action Report	
Closure and Post-Closure Care	Appendix F
Closure Plan	
Post-Closure Plan	
Financial Assurance	Appendix G
Post-Closure Care Estimate Memo	

Tables

Tables	Submitted	Not Applicable
Table I.6. - CCR Waste Management Units	☒	☐
Table I.6.A. - Waste Management Information	☒	☐
Table I.6.B. - Wastes Managed in Registered Units	☒	☐
Table I.6.C. - Sampling and Analytical Methods	☒	☐
Table IV.A. - Landfill Characteristics	☒	☐
Table IV.B. - Landfill Liner System	☒	☐
Table IV.C. - Landfill Leachate Collection System	☐	☒
Table IV.D. - Inspection Schedule of Landfills	☒	☐
Table V.A. - Surface Impoundments Characteristics	☐	☒
Table V.B. - Surface Impoundment Liner System	☐	☒
Table V.J. - Inspection of Surface Impoundments	☐	☒
Table VI.A. - Unit Groundwater Detection Monitoring System	☒	☐
Table VI.C. - CCR Units Under Detection Monitoring	☒	☐
Table VI.D. - CCR Units Under Assessment Monitoring	☐	☒
Table VI.D-2. - Groundwater Detection Monitoring Parameters	☒	☐
Table VII.A.1. - Unit Closure	☒	☐
Table VII.A.2. - CCR Units Under Alternative Closure Notification	☐	☒
Table VIII.A.1. - Post-Closure Cost Summary for Existing Registered Units	☒	☐
Table VIII.A.2. - Post-Closure Cost Summary for Proposed Registered Units	☐	☒
Table VIII.B. - Post-Closure Period	☐	☒

Additional Attachments as Applicable - Select all those apply and add as necessary

☒ TCEQ Core Data Form(s) Appendix A
☒ Signatory Authority Delegation Appendix A
☐ Fee Payment Receipt
☐ Confidential Documents
☒ Certificate of Fact (Certificate of Incorporation) Appendix A
☐ Assumed Name Certificate

Table I.6. – CCR Waste Management Units

CCR Unit No.[1]	Unit Name	N.O.R. No.[1]	Unit Description[3]	Capacity	Unit Status[2]
008	AX Landfill	008	Landfill	15.29 million cubic yards	Active

1 Registered Unit No. and N.O.R. No. cannot be reassigned to new units or used more than once.
2 Unit Status options: Active, Closed, Inactive (built but not managing waste), Proposed (not yet built), Never Built, Transferred, Post-Closure.
3 If a unit has been transferred, the applicant should indicate which facility/permit it has been transferred to in the Unit Description column.

Table I.6.A. – Waste Management Information

Waste No.[1]	Waste Type(s)	Source	Volume (tons/year)[2]
1	Fly Ash	Coal Combustion Byproduct	~~De minimis~~0
2	Waste Lignite	Misc. Maintenance Activities	~~De minimis~~56 tons
3	Bed Ash	Coal Combustion Byproduct	~~De minimis~~0
~~4~~	~~Class 2 Chemical Solids~~	~~Misc. Maintenance Activities~~	~~De minimis~~
~~5~~	~~Class 2 Non-Hazardous Sandblast Waste~~	~~Misc. Maintenance Activities~~	~~De minimis~~
~~6~~4	Construction Debris	Misc. Maintenance Activities	~~De minimis~~0
~~7~~	~~Filters~~	~~Misc. Maintenance Activities~~	~~De minimis~~
~~8~~	~~Boiler Debris~~	~~Boiler Maintenance~~	~~De minimis~~
~~9~~	~~Activated Carbon Waste~~	~~Unused material for Flue Gas Treatment~~	~~De minimis~~

1 Assign waste number sequentially. Do not remove waste number wastes which are no longer generated

2 Reflects ~~2020~~ 2021 records

Table I.6.B. – Wastes Managed in Registered Units

Waste No.[1]	Waste	TCEQ Waste Form Codes and Classification Codes
1	Fly Ash	TWC-30023042, TX Form Code-304, Class 2
2	Waste Lignite	TWC-30044092, TX Form Code-409, Class 2
3	Bed Ash	TWC-30053042, TX Form Code-304, Class 2
~~4~~	~~Class 2 Chemical Solids~~	~~TWC-32033192, TX Form Code-319, Class 2~~
~~5~~	~~Class 2 Non- Hazardous Sandblast Waste~~	~~TWC-37013892, TX Form Code-389, Class 2~~
~~6~~4	Construction Debris	TWC-37043902, TX Form Code-390, Class 2
~~7~~	~~Filters~~	~~TWC-37063102, TX Form Code-310, Class 2~~
~~8~~	~~Boiler Debris~~	~~TWC-37363192, TX Form Code-319, Class 2~~
~~9~~	~~Activated Carbon Waste~~	~~TWC-37524092 TX Form Code-409, Class 2~~

1 from Table I.6.A., first column

Table I.6.C – Sampling and Analytical Methods

Waste No.[1]	Sampling Location	Sampling Method	Frequency	Parameter	Test Method	Desired Accuracy Level
1-Flyash	Landfill/flyash silos/electrostatic precipitator	Grab	<5 years or change in waste generation process	TCLP Metals pH	SW1311/7470A SW1311/6020B SW9045C	See below [2]
2-Waste lignite	Drainage ditches around coal piles	Grab	<5 years or change in waste generation process	TCLP Metals	SW1311/7470A SW1311/6020B	See below [2]
3-Bottomash	Landfill	Grab	<5 years or change in waste generation process	TCLP Metals	SW1311/7470A SW1311/6020B	See below [2]
~~4~~	~~None-process knowledge~~	~~NA~~	~~NA~~	~~SDS and process knowledge~~	~~NA~~	~~NA~~
~~5~~	~~Varies by project~~	~~Composite~~	~~Each project~~	~~TCLP Metals~~	~~SW1311/7470A SW1311/6020B~~	~~See below [2]~~
~~6~~4	Varies by project	Composite	As needed	TCLP metals, TPH	SW1311/7470A SW1311/6020B TX1005	See below [2]
~~7~~	~~None-process knowledge~~	~~NA~~	~~NA~~	~~SDS and flyash analysis (Waste no.1)~~	~~NA~~	~~NA~~
~~8~~	~~Boiler~~	~~Composite~~	~~Each project~~	~~TCLP Metals~~	~~SW1311/7470A SW1311/6020B~~	~~See below [2]~~
~~9~~	~~None-process knowledge~~	~~NA~~	~~NA~~	~~SDS and process knowledge~~	~~NA~~	~~NA~~

1 from Table I.6.A., first column

2 Analytical protocol will meet EPA quality control and accuracy specifications as published in the SW-846 Methods. The laboratory will be TCEQ accredited.

Table IV.A. – Landfills Characteristics

Registered Unit No.	Landfill	N.O.R. No.	Waste Nos.[1]	Rated Capacity	Dimensions[2]	Distance from lowest liner to groundwater	Action Leakage Rate (if required)	Unit will manage CCR Waste and non-CCR Waste (state all that apply)
008	AX Landfill	008	1 thru 9	15.29 million cubic yards	4100 ft L x 2000 ft W x 90 ft H (height @ max design) 179 acres	N/A	N/A	Waste numbers 1-9 as described in Table I.6.A.

1 From Table I.6.A., first column
2 Dimensions should be provided as average length, width and depth, also include the surface acreage for the unit.

Table IV.B. – Landfill Liner System

Registered Unit No.*	Landfill	Geomembrane Liner Material	Geomembrane Liner Permeability (cm/sec)	Geomembrane Liner Thickness	Soil Liner Material	Soil Liner Permeability (cm/sec)	Soil Liner Thickness
008	AX Landfill	GCL with 30-mil HDPE geomembrane	$<1.00 \times 10^{-7}$	30 mil	Compacted clay	$<5 \times 10^{-5}$ cm/sec	Minimum 2 ft

* This number should match the Registration Unit No. given on Table IV.A.

Table IV.C. – Landfill Leachate Collection System

Registered Unit No.	Landfill Name	Drainage Media	Collection Pipes (including risers)	Filter Fabric	Geofabric	Sump Material
N/A						

Table IV.D. – Inspection Schedule of Landfills

Facility Unit(s) and Basic Elements	Possible Error, Malfunction, or Deterioration	Frequency of Inspection
008-AX Landfill	Inspect for any appearances of actual or potential structural weakness and other conditions which are disrupting of have the potential to disrupt the operation and safety of the CCR unit	Weekly Inspection per 40 CFR 257.84(a)
Embankments	Surface cracking, animal burrows, misalignments, slides, vegetative cover, rutting, erosion, seepage, slope protection/chutes	Weekly Inspection
Capped Areas	Animal burrows, vegetative cover, rutting, surface cracking	Weekly Inspection
Active Work Area	Contact water, dusting	Weekly Inspection
Groundwater Monitoring Wells	Deterioration of pads, bollards, missing locks, compromise of casing integrity	Semi-Annual Inspection
008-AX Landfill		Annually per 40 CFR 257.84(b)
	Inspect for any changed in geometry of the structure since the previous annual inspection.	Annual Inspection
	Estimate the approximate volume of CCR contained in the unit at the time of the inspection.	Annual Inspection
	Inspect for any appearance of actual or potential structural weakness of the CCR unit, and any conditions that are disrupting or have the potential to disrupt the operation and safety of the unit.	Annual Inspection
	Inspect for any other change(s) which have affected the stability or operation of the CCR unit since the previous inspection	Annual Inspection

Table V.A. – Surface Impoundment Characteristics

Registered Unit No.	Surface Impoundment Name	N.O.R. No.	Waste Nos.[1]	Rated Capacity	Dimensions[2]	Distance from lowest liner to groundwater	Action Leakage Rate (if required)	Unit will manage CCR Waste and non-CCR Waste (state all that apply)
N/A								

1 From Table I.6.A., first column
2 Dimensions should be provided as average length, width and depth, also include the surface acreage for the unit.

Table V.B. – Surface Impoundment Liner System

Registered Unit No.*	Surface Impoundment Name	Geomembrane Liner Material	Geomembrane Liner Permeability (cm/sec)	Geomembrane Liner Thickness	Soil Liner Material	Soil Liner Permeability (cm/sec)	Soil Liner Thickness
N/A							

* This number should match the Registration Unit No. given on Table V.A.

Table V.J. – Inspection Schedule of Surface Impoundments

Facility Unit(s) and Basic Elements	Possible Error, Malfunction, or Deterioration	Frequency of Inspection
N/A		

Table VI.A. – Unit Groundwater Detection Monitoring Systems

Waste Management Unit/Area Name[1]						
Well Number(s):						
Hydrogeologic Unit Monitored						
Type (e.g., point of compliance, background, observation, etc.)						
Up or Down Gradient						
Casing Diameter and Material						
Screen Diameter and Material						
Screen Slot Size (in.)						
Top of Casing Elevation (Ft, Mean Sea Level *[MSL]*)						
Grade or Surface Elevation (Ft, MSL)						
Well Depth (Ft, Below Grade Surface *[BGS]*)						
Well Depth (Ft, Below Top of Casing *[BTOC]*)						
Screen Interval From (Ft, BGS) To (Ft, BGS)						
Screen Interval From (Ft, BTOC) To (Ft, BTOC)						

1 From Tables in Section I.; *MSL*: Mean Sea Level; *BGS*: Below Grade Surface; *BTOC*: Below Top of Casing

Table VI.C. – CCR Units Under Detection Monitoring

N.O.R. Unit No.	Unit Description[1,2]	Well(s)	Constituent(s)	Date of SSI Determination	Date of Assessment Monitoring Notification[3]
008	AX Landfill	AX-25, AX-27, AX-28	Ca (25, 27, 28) SO4 (27)	1/16/18	N/A-ASD successful (4/15/18)
008	AX Landfill	AX-23, AX-24, AX-25, AX-26, AX-27, AX-28, AX-29	Ca (25, 27) SO4 (26, 27) F (23, 24, 25, 28, 29)	1/15/19	N/A-ASD successful (4/10/19)
008	AX Landfill	AX-24, AX-25, AX-27	Ca (24, 25, 27) SO4 (27) F (25)	1/8/20	N/A-ASD successful (4/7/20)
008	AX Landfill	AX-24, AX-25R, AX-26, AX-27	B (27) Ca (24, 25R, 26, 27) SO4 (26, 27)	12/7/20	N/A-ASD successful (3/5/21)

1 Indicates a unit for which a 30 TAC Chapter 352/40 CFR Part 257, Subpart D alternative closure determination has been requested pursuant to 40 CFR §257.103.
2 Indicates a unit for which a 30 TAC Chapter 352/40 CFR Part 257, Subpart D alternative closure determination has been made pursuant to 40 CFR §257.103.
3 Enter month, day, and year.

Table VI.D. – CCR Units Under Assessment Monitoring

N.O.R. Unit No.	Unit Description[1,2]	Well(s)	Constituent(s)	Date of SSI Determination	Date of Assessment Monitoring Notification[3]
N/A					

1 Indicates a unit for which a 30 TAC Chapter 352/40 CFR Part 257, Subpart D alternative closure determination has been requested pursuant to 40 CFR §257.103.
2 Indicates a unit for which a 30 TAC Chapter 352/40 CFR Part 257, Subpart D alternative closure determination has been made pursuant to 40 CFR §257.103.
3 Enter month, day, and year

Table VI.D-2. – Groundwater Detection Monitoring Parameters

Parameter	Sampling Frequency	Analytical Method	Practical Quantification Limit (units)	Concentration Limit[1]
AX Landfill				
AXMW-1 Boron	Semi-Annual	SW6020A	0.6 mg/L	0.681
AXMW-1 Calcium	Semi-Annual	SW6020A	6.0 mg/L	569
AXMW-1 Chloride	Semi-Annual	E300	100 mg/L	491
AXMW-1 Fluoride	Semi-Annual	E300	0.4 mg/L	0.4
AXMW-1 Field pH	Semi-Annual	Field Measured	s.u.	5.49 7.09
AXMW-1 Sulfate	Semi-Annual	E300	300 mg/L	2,660
AXMW-1 TDS	Semi-Annual	M2540C	50.0 mg/L	5,820
AXMW-2 Boron	Semi-Annual	SW6020A	0.03 mg/L	3.62
AXMW-2 Calcium	Semi-Annual	SW6020A	15.0 mg/L	943
AXMW-2 Chloride	Semi-Annual	E300	100 mg/L	391
AXMW-2 Fluoride	Semi-Annual	E300	0.4 mg/L	1.88
AXMW-2 Field pH	Semi-Annual	Field Measured	s.u.	4.6 7.63
AXMW-2 Sulfate	Semi-Annual	E300	300 mg/L	3,040
AXMW-2 TDS	Semi-Annual	M2540C	50.0 mg/L	4,940
AX-23 Boron	Semi-Annual	SW6020A	0.03 mg/L	1.1
AX-23 Calcium	Semi-Annual	SW6020A	15.0 mg/L	475
AX-23 Chloride	Semi-Annual	E300	10.0 mg/L	313
AX-23 Fluoride	Semi-Annual	E300	0.4 mg/L	0.4
AX-23 Field pH	Semi-Annual	Field Measured	s.u.	3.24 7.95
AX-23 Sulfate	Semi-Annual	E300	30.0 mg/L	1,030
AX-23 TDS	Semi-Annual	M2540C	50.0 mg/L	3,090
AX-24 Boron	Semi-Annual	SW6020A	0.03 mg/L	0.311
AX-24 Calcium	Semi-Annual	SW6020A	15.0 mg/L	273
AX-24 Chloride	Semi-Annual	E300	100 mg/L	580
AX-24 Fluoride	Semi-Annual	E300	0.4 mg/L	0.4
AX-24 Field pH	Semi-Annual	Field Measured	s.u.	3.89 9.38
AX-24 Sulfate	Semi-Annual	E300	300 mg/L	1,010
AX-24 TDS	Semi-Annual	M2540C	50.0 mg/L	2,520

AX-25(R) Boron	Semi-Annual	SW6020A	0.03 mg/L	0.298
AX-25(R) Calcium	Semi-Annual	SW6020A	6.0 mg/L	262
AX-25(R) Chloride	Semi-Annual	E300	100 mg/L	1,140
AX-25(R) Fluoride	Semi-Annual	E300	0.4 mg/L	0.507
AX-25(R) Field pH	Semi-Annual	Field Measured	s.u.	4.69 9.2
AX-25(R) Sulfate	Semi-Annual	E300	300 mg/L	795
AX-25(R) TDS	Semi-Annual	M2540C	50.0 mg/L	3,980
AX-26 Boron	Semi-Annual	SW6020A	0.03 mg/L	0.446
AX-26 Calcium	Semi-Annual	SW6020A	15.0 mg/L	915
AX-26 Chloride	Semi-Annual	E300	100 mg/L	3,040
AX-26 Fluoride	Semi-Annual	E300	0.4 mg/L	0.4
AX-26 Field pH	Semi-Annual	Field Measured	s.u.	5.07 8.14
AX-26 Sulfate	Semi-Annual	E300	300 mg/L	1,200
AX-26 TDS	Semi-Annual	M2540C	50.0 mg/L	8,300
AX-27 Boron	Semi-Annual	SW6020A	0.03 mg/L	0.28
AX-27 Calcium	Semi-Annual	SW6020A	15.0 mg/L	366
AX-27 Chloride	Semi-Annual	E300	100 mg/L	1,020
AX-27 Fluoride	Semi-Annual	E300	0.4 mg/L	0.4
AX-27 Field pH	Semi-Annual	Field Measured	s.u.	6.08 7.3
AX-27 Sulfate	Semi-Annual	E300	300 mg/L	478
AX-27 TDS	Semi-Annual	M2540C	50.0 mg/L	3,620
AX-28 Boron	Semi-Annual	SW6020A	0.03 mg/L	0.393
AX-28 Calcium	Semi-Annual	SW6020A	15.0 mg/L	633
AX-28 Chloride	Semi-Annual	E300	100 mg/L	756
AX-28 Fluoride	Semi-Annual	E300	0.4 mg/L	.04
AX-28 Field pH	Semi-Annual	Field Measured	s.u.	4.67 8.55
AX-28 Sulfate	Semi-Annual	E300	300 mg/L	2,280
AX-28 TDS	Semi-Annual	M2540C	50.0 mg/L	3,790
AX-29 Boron	Semi-Annual	SW6020A	0.03 mg/L	0.432
AX-29 Calcium	Semi-Annual	SW6020A	15.0 mg/L	791
AX-29 Chloride	Semi-Annual	E300	100 mg/L	306
AX-29 Fluoride	Semi-Annual	E300	0.4 mg/L	0.4

AX-29 Field pH	Semi-Annual	Field Measured	s.u.	2.73 7.01
AX-29 Sulfate	Semi-Annual	E300	300 mg/L	1,440
AX-29 TDS	Semi-Annual	M2540C	50.0 mg/L	3,370

1 The concentration limit is the basis for determining whether a release has occurred from the CCR unit/area.

Table VII.A.1. – Unit Closure

For each unit to be registered, list the unit components to be decontaminated, the possible methods of decontamination, and the possible methods of disposal of wastes and waste residues generated during unit closure.

Equipment or CCR Unit	Possible Methods of Decontamination[1]	Possible Methods of Disposal[1]
008-AX Landfill	Close in Place	No disposal

1 Applicants may list more than one appropriate method.

Table VII.A.2. – CCR Units Under Alternative Closure Notification

Registered Unit No.	N.O.R. Unit No.	Unit Description[1,2]	Date of Receipt of Last Waste[3]	Date of Closure Notification[3]
N/A				

1 Indicates a unit for which a 30 TAC Chapter 352/40 CFR Part 257, Subpart D alternative closure determination has been requested pursuant to 40 CFR §257.103.
2 Indicates a unit for which a 30 TAC Chapter 352/40 CFR Part 257, Subpart D alternative closure determination has been made pursuant to 40 CFR §257.103.
3 Enter month, day, and year.

Table VIII.A.1. – Post-Closure Cost Summary for Existing Registered Units

Unit	Cost
008-AX Landfill	$2,591,600
Total Existing Unit Post-Closure Cost Estimate	$2,591,600 (in 2021 Dollars)[1]

Table VIII.A.2. - Post-Closure Cost Summary for Proposed Registered Units

Unit	Cost
N/A	

1 As units are added or deleted from these tables through future registration amendments, the remaining itemized unit costs should be updated for inflation when re-calculating the revised total cost in current dollars.

Table VIII.B. – Post-Closure Period

Unit Name	Date Certified Closed	Authorized Post-Closure Period (Yrs.)	Earliest Date Post-Closure Ends (See Note 1)
[Unit Example 1]	**[1/1/1995]**	30 years	**[1/1/2025]**
[Unit Example 2]	**[1/1/1990]**	30 years	**[1/1/2020]**
[Unit Example 3]	**[1/1/1984]**	30 years	**[1/1/2014]**

Note 1 – Post-Closure Care shall continue beyond the specified date until the Executive Director has approved the applicant's request to reduce or terminate the post-closure period, consistent with 30 TAC §352.1241 – Post-Closure Care Requirements.

N/A

APPENDIX A – GENERAL INFORMATION

Property/Legal Description
Property Owner Affidavit
Legal Authority
Delegation of Signature Authority
TCEQ Core Data Form
Attachments
Response to TCEQ CCR Unit Registration Comments (Item 21)

VG-186-2021-3917

Milam County
Jodi Morgan
Milam County Clerk

Instrument Number: 3917

Real Property Recordings

DEED

Recorded On: August 27, 2021 04:07 PM

Number of Pages: 15

" Examined and Charged as Follows: "

Total Recording: $78.00

********** **THIS PAGE IS PART OF THE INSTRUMENT** **********
Any provision herein which restricts the Sale, Rental or use of the described REAL PROPERTY because of color or race is invalid and unenforceable under federal law.

File Information:

Document Number:	3917
Receipt Number:	20210827000017
Recorded Date/Time:	August 27, 2021 04:07 PM
User:	Annisha W
Station:	Clerk Station

Record and Return To:

LUMINANT MINING COMPNAY LLC
100 N KEECHI ST

FAIRFIELD TX 75840

STATE OF TEXAS
COUNTY OF MILAM

I hereby certify that this Instrument was FILED In the File Number sequence on the date/time printed hereon, and was duly RECORDED in the Official Records of Milam County, Texas.

Jodi Morgan
Milam County Clerk
Milam County, TX

Jodi Morgan

INDUSTRIAL SOLID WASTE

CLASS II DISPOSAL SITE DEED RECORDATION

STATE OF TEXAS §
§
COUNTY OF MILAM § KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, specifically 30 TAC § 335.5, this document is hereby filed in the Deed Records of Milam County, Texas in compliance with the recordation requirements of said rules.

Reference is hereby made to that certain Industrial Solid Waste Class II Disposal Site Deed Recordation dated July 17, 2018 and recorded in the Deed Records of Milam County, Texas in Book 1343, Page 389 (the "**2018 Deed Recordation**"). This Deed Recordation is being executed to accurately reflect the legal description of the Landfill, as defined by the final boundary of the Landfill (as defined in the 2018 Deed Recordation). This Deed Recordation hereby amends and restates the 2018 Deed Recordation in its entirety.

This landfill is referred to as the "AX Landfill" (the "**Landfill**") and is located at the Sandow Steam Electric Station (the "**Site**"), and is more particularly described on Exhibit A attached hereto and made a part hereof. The TCEQ Solid Waste Registration Number for the Site is 88209. The Landfill is listed as Waste Management Unit 008 on the Site's Notice of Registration. The Landfill was initially deed recorded on December 19, 2014 and updated on July 7, 2018. The Site was retired from service in January 2018. The Landfill is still active. The Landfill is 179.102 acres in size and contains Class 2 non-hazardous industrial solid waste primarily consisting of fly ash, bed ash, and lesser amounts of construction debris. In addition, minor amounts of other Class 2 and Class 3 non-hazardous industrial solid wastes may also be placed in the Landfill. Cells 1 and 2 of the Landfill will be closed as a Class 2 non-hazardous landfill. No waste has been placed in Cell 2-A. For more information contact Renee Collins, Senior Director, Environmental Services, Luminant Generation Company, 6555 Sierra Drive, Irving, TX 75039.

The metes and bounds description and a survey plat (Sheet 1 of 2) are attached to this document. The land was transferred from Alcoa USA Corp. to Luminant Generation Company LLC effective May 22, 2018.

For additional information, contact:

TCEQ
Central Records
12100 Park 35 Circle, Building E
Austin, TX 78753
TCEQ SWR No. 88209

Mail: TCEQ – MC 199
P.O. Box 13087
Austin, TX 78711-3087

EXECUTED this 18th day of August, 2021.

LUMINANT GENERATION COMPANY LLC,
a Texas limited liability company

By: Matthew A. Goering, Senior Vice President

STATE OF TEXAS §
§
COUNTY OF DALLAS §

This instrument was executed before me on the 18th day of August, 2021, by Matthew A. Goering, Senior Vice President for LUMINANT GENERATION COMPANY LLC, a Texas limited liability company, in the capacity herein stated and on behalf of said limited liability company.

Notary Public in and for the State of Texas

TONY ST CLAIR
Notary ID #130937183
My Commission Expires
December 19, 2024

EXHIBIT A

AX LANDFILL

AX CLASS II LANDFILL TRACT

STATE OF TEXAS **August, 2017**
COUNTY OF MILAM

363.249 ACRES

These notes describe that certain tract of land situated in the **WILLIAM H. TEMPLE SURVEY, A-358,** the **S. L. JOHNSON SURVEY, A-228** and the **WILLIAM H. TEMPLE SURVEY, A-362**, all located in Milam County, Texas; subject tract being a part of and out of the following tracts:

- Called "176.216 Acres" conveyed in a Warranty Deed from Robert L. Crump, et ux to Aluminum Company of America, a Pennsylvania Corporation dated 3-27-1991 of record in Volume 640, Page 661, Official Records of Milam County (ORMC), same tract also conveyed in a Warranty Deed from Richard E. Crump, et ux to Aluminum Company of America, a Pennsylvania Corporation dated 3-27-1991 of record in Volume 640, Page 676, ORMC
- Called "118 Acres" (Tract No. 112) conveyed in a deed from McAlester Fuel to Aluminum Company of America, Inc. dated 1-5-1983 and recorded in volume 484, page 7 of the Milam County Deed Records
- Called "59 Acres" (Tract No. 52) conveyed in a deed from McAlester Fuel to Aluminum Company of America, Inc. dated 1-5-1983 and recorded in volume 484, page 7 of the Milam County Deed Records
- Called "1271.923 Acres" conveyed in a deed from McAlester Fuel to Aluminum Company of America, Inc. dated 1-5-1983 and recorded in volume 484, Page 7 of the Milam County Deed Records
- Called "258 Acres" conveyed in a deed from McAlester Fuel to Aluminum Company of America, Inc. dated 1-5-1983 and recorded in volume 484, Page 7 of the Milam County Deed Records

ALL OF THE ABOVEMENTIONED TRACTS BEING A PART OF AN UNDETERMINED NUMBER OF ACRES SUBJECT TO NAME CHANGE FROM ALUMINUM COMPANY OF AMERICA, A PENNSYLVANIA CORPORATION TO ALCOA INC., DATED 12-11-1998 AND RECORDED IN VOL. 884, PG. 369, ORMC; subject tract being surveyed on the ground under the direct supervision of Bruce Lane Bryan, Registered Professional Land Surveyor No. 4249, during August, 2017 and being more fully described as follows:

BEGINNING at an interior corner of subject tract (North = 335,870.1393 feet, East = 3,032,261.6888 feet); set a ½" iron rod capped (Bryan Technical Services) at same corner;

THENCE South 47° 25' 37" East with the lower Eastern line of subject tract, over and across said "176.216 Acres", a distance of **2,254.20 feet** to a set ½" iron rod capped (Bryan Technical Services) at the Easternmost corner of subject tract;

THENCE with the Southern line of subject tract the following meanders:

- **South 42° 29' 19" West** **512.84 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **South 47° 26' 35" West** **482.47 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 82° 41' 16" West** **102.72 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 82° 41' 16" West** **223.86 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 76° 26' 12" West** **90.03 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 73° 05' 11" West** **98.30 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 77° 38' 31" West** **111.07 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 72° 27' 19" West** **595.72 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **South 19° 41' 59" West** **894.98 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **South 50° 17' 58" West** **308.06 feet** to a set ½" iron rod capped (Bryan Technical Services) on the approximate location of the common line of aforementioned "176.216 Acres" and "118 Acres" (Tract No. 112, further described as a First Tract – 59 Acres"), referred to in earlier transactions as a public road (no evidence remains);
- **South 41° 00' 12" West** **603.83 feet** (passing the common line of said **WILLIAM H. TEMPLE SURVEY, A-358** and **WILLIAM H. TEMPLE SURVEY, A-362** at approximately 98 feet, same being the approximate common line of said 118 Acres" (Tract No. 112, further described as a First Tract – 59 Acres") and aforementioned "258 Acres") to a set ½" iron rod capped (Bryan Technical Services);
- **South 39° 47' 34" West** **263.26 feet** to a set ½" iron rod capped (Bryan Technical Services) and
- **South 48° 50' 24" West** **919.85 feet** to a set ½" iron rod capped (Bryan Technical Services) at the Southernmost corner of subject tract;

THENCE with the Western line of subject tract the following meanders:

- **North 44° 37' 07" West** **646.03 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 47° 56' 41" West** **324.31 feet** to a set ½" iron rod capped (Bryan Technical Services);

- **North 55° 47' 45" West** **351.31 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 50° 43' 17" West** **128.50 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 40° 33' 55" West** **239.17 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 37° 29' 55" West** **234.71 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 46° 36' 33" West** **199.29 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 7° 15' 04" East** **99.92 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 43° 47' 03" West** **86.93 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 38° 32' 05" West** **302.46 feet** (passing a common line of said "258 Acres" and aforementioned "1271.923 Acres" at approximately 286 feet) to a set ½" iron rod capped (Bryan Technical Services);
- **North 21° 13' 52" West** **253.82 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 8° 13' 18" West** **530.24 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 0° 00' 00" East** **401.98 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 12° 35' 53" East** **221.25 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 25° 05' 50" East** **168.60 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 29° 58' 52" East** **864.52 feet** (passing a common line of said "1271.923 Acres" and aforementioned "118 Acres" (Tract No. 112, further described as a Third Tract – 35 Acres") at approximately 146 feet) to a set ½" iron rod capped (Bryan Technical Services) in the approximate common line of said **WILLIAM H. TEMPLE SURVEY, A-362** and **S. L. JOHNSON SURVEY, A-228**;
- **North 21° 20' 40" East** **293.32 feet** to a set ½" iron rod capped (Bryan Technical Services) and
- **North 21° 20' 40" East** **76.74 feet** to a set ½" iron rod capped (Bryan Technical Services) at the Northwestern corner of subject tract;

THENCE with the Northern line of subject tract the following meanders:

- **South 78° 35' 15" East** **317.34 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 66° 43' 16" East** **192.93 feet** to a set ½" iron rod capped (Bryan Technical Services);

- **North 53° 03' 47" East** **242.60 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 50° 24' 11" East** **202.98 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **South 40° 34' 56" East** **184.36 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **South 65° 20' 18" East** **342.61 feet** (passing the common line of said **WILLIAM H. TEMPLE SURVEY, A-362** and **S. L. JOHNSON SURVEY, A-228** at approximately 64 feet, passing the common line of said **WILLIAM H. TEMPLE SURVEY, A-362** and **WILLIAM H. TEMPLE SURVEY, A-358** at approximately 114 feet, to a set ½" iron rod capped (Bryan Technical Services);
- **North 87° 39' 46" East** **413.83 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 52° 00' 53" East** **392.96 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 31° 48' 28" East** **219.21 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 47° 01' 05" East** **178.24 feet** to a set ½" iron rod capped (Bryan Technical Services) and
- **North 55° 49' 04" East** **93.09 feet** to a set ½" iron rod capped (Bryan Technical Services) at the Northeastern corner of subject tract;

THENCE with aforementioned Eastern line of subject tract the following meanders:

- **South 47° 25' 37" East** **1,076.48 feet** (passing the approximate North line of aforementioned 118 Acres" (Tract No. 112, further described as a First Tract – 59 Acres" at approximately 809 feet, passing the approximate common line of aforementioned 118 Acres" (Tract No. 112, further described as a First Tract – 59 Acres" and aforementioned "176.216 Acres" at approximately 970 feet (referred to in earlier transactions as a public road (no evidence remains),
- **South 65° 58' 23" East** **72.76 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **South 50° 13' 21" East** **116.33 feet** to a set ½" iron rod capped (Bryan Technical Services) and
- **South 0° 05' 51" East** **39.19 feet** to the **PLACE OF BEGINNING,** containing according to the dimensions herein stated an area of **363.249 Acres.**

Surveyor's Note: Bearings and coordinates shown herein are oriented to Local Alcoa Control Network, Central Zone 4203, NAD 27 datum. Distance recited herein are grid values; to convert to surface values multiply by a combined scale factor of 1.00009435. No on-the-ground evidence of parcels discovered due to strip mining activities; parcel locations determined by files provided by Alcoa, Inc.

Bruce Lane Bryan Registered Professional Land Surveyor No. 4249
TBPLS Firm No. 10128500
Bryan Technical Services, Inc.
911 N. Main, Taylor TX 76574 512-352-9090 www.bryantechnicalservices.com

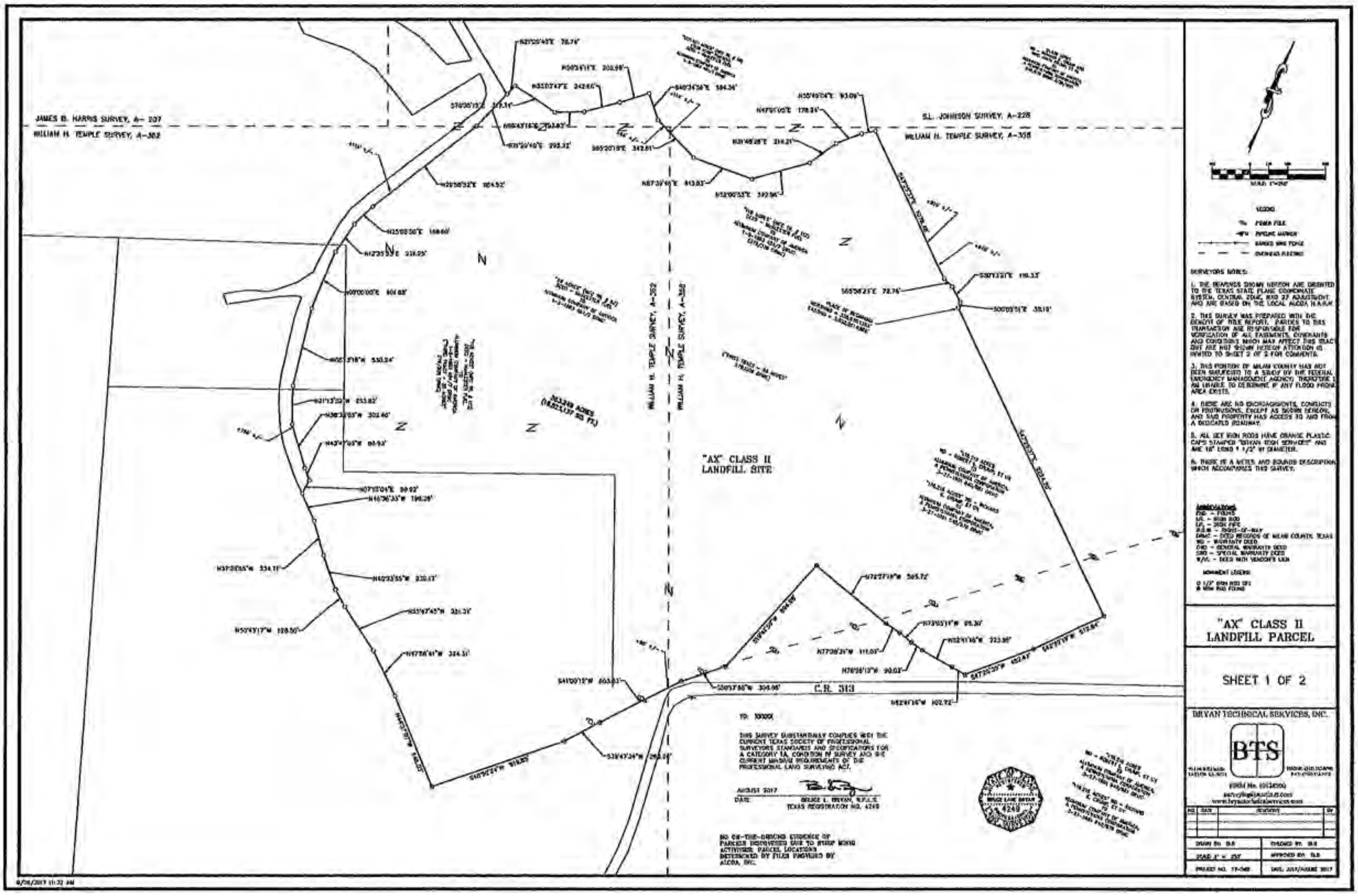

JAMES B. HARRIS SURVEY, A- 207
WILLIAM H. TEMPLE SURVEY, A-382
S.L. JOHNSON SURVEY, A-228
"AX" CLASS II LANDFILL SITE
C.R. 313
SURVEYOR'S NOTES:
"AX" CLASS II LANDFILL PARCEL
SHEET 1 OF 2
BRYAN TECHNICAL SERVICES, INC.
BTS

EXHIBIT A

SAVE AND EXCEPT

AX CLASS II LANDFILL TRACT

STATE OF TEXAS **November, 2018**
COUNTY OF MILAM

184.147 ACRES

These notes describe that certain tract of land situated in the **WILLIAM H. TEMPLE SURVEY, A-358** and the **WILLIAM H. TEMPLE SURVEY, A-362**, both located in Milam County, Texas; subject tract being a part of and out of a called "363.249 Acres" conveyed in a Special Warranty Deed from Alcoa USA Corp., a Delaware Corporation to Luminant Generation Company, LLC dated 5-22-2018 and recorded in Document No. 1340, Page 898, Official Records of Milam County (ORMC), subject tract being surveyed on the ground under the direct supervision of Bruce Lane Bryan, Registered Professional Land Surveyor No. 4249, during November 2018 and being more fully described as follows:

BEGINNING at the Easternmost corner of said "363.249 Acres" (North = 334345.103 feet, East = 3033921.713 feet); found a ½" iron rod capped (Bryan Technical Services) at same corner;

THENCE with the Southern line of subject tract the following meanders:

- **South 42° 29' 19" West** **512.84 feet** to a found ½" iron rod capped (Bryan Technical Services);
- **South 47° 26' 35" West** **482.47 feet** to a found ½" iron rod capped (Bryan Technical Services);
- **North 82° 41' 16" West** **102.72 feet** to a found ½" iron rod capped (Bryan Technical Services);
- **North 82° 41' 16" West** **223.86 feet** to a found ½" iron rod capped (Bryan Technical Services);
- **North 76° 26' 12" West** **90.03 feet** to a found ½" iron rod capped (Bryan Technical Services);
- **North 73° 05' 11" West** **98.30 feet** to a found ½" iron rod capped (Bryan Technical Services);
- **North 77° 38' 31" West** **111.07 feet** to a found ½" iron rod capped (Bryan Technical Services);
- **North 72° 27' 19" West** **595.72 feet** to a found ½" iron rod capped (Bryan Technical Services);
- **South 19° 41' 59" West** **894.98 feet** to a found ½" iron rod capped (Bryan Technical Services);
- **South 50° 17' 58" West** **308.06 feet** to a found ½" iron rod capped (Bryan Technical Services)

- **South 41° 00' 12" West** **603.83 feet** (passing the common line of said **WILLIAM H. TEMPLE SURVEY, A-358** and **WILLIAM H. TEMPLE SURVEY, A-362** at approximately 98 feet, same being the approximate common line of said 118 Acres" (Tract No. 112, further described as a First Tract – 59 Acres") and aforementioned "258 Acres") to a found ½" iron rod capped (Bryan Technical Services);
- **South 39° 47' 34" West** **263.26 feet** to a found ½" iron rod capped (Bryan Technical Services) and
- **South 48° 50' 24" West** **919.85 feet** to a found ½" iron rod capped (Bryan Technical Services) at the Southernmost corner of subject tract;

THENCE with the Western line of subject tract the following meanders:

- **North 44° 37' 07" West** **646.03 feet** to a found ½" iron rod capped (Bryan Technical Services);
- **North 47° 56' 41" West** **324.31 feet** to a found ½" iron rod capped (Bryan Technical Services);
- **North 55° 47' 45" West** **351.31 feet** to a found ½" iron rod capped (Bryan Technical Services);
- **North 50° 43' 17" West** **128.50 feet** to a found ½" iron rod capped (Bryan Technical Services);
- **North 40° 33' 55" West** **239.17 feet** to a found ½" iron rod capped (Bryan Technical Services);
- **North 37° 29' 55" West** **234.71 feet** to a found ½" iron rod capped (Bryan Technical Services);
- **North 46° 36' 33" West** **199.29 feet** to a found ½" iron rod capped (Bryan Technical Services);
- **North 7° 15' 04" East** **99.92 feet** to a found ½" iron rod capped (Bryan Technical Services) at the Northwestern corner of subject tract;

THENCE over and across said "363.249 Acres" with the Northwestern line of subject tract as follows:

- **South 58° 15' 55" East** **156.97 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **South 61° 22' 30" East** **271.89 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **South 63° 51' 01" East** **368.07 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 39° 16' 55" East** **103.34 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 38° 46' 10" East** **258.12 feet** to a set ½" iron rod capped (Bryan Technical Services);

- **North 39° 39' 11" East** **356.40 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 39° 41' 50" East** **233.06 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 36° 54' 34" East** **113.22 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 14° 30' 59" East** **31.50 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 33° 44' 02" East** **99.42 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 38° 31' 05" East** **506.16 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 41° 08' 26" East** **330.41 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 40° 18' 14" East** **223.15 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 40° 20' 54" East** **223.15 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 40° 19' 59" East** **221.95 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 44° 36' 15" East** **328.53 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 44° 24' 41" East** **552.10 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 43° 59' 16" East** **111.61 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 49° 45' 59" East** **67.34 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 62° 55' 48" East** **27.15 feet** to a set ½" iron rod capped (Bryan Technical Services);
- **North 44° 21' 04" East** **219.89 feet** to a set ½" iron rod capped (Bryan Technical Services) and
- **North 49° 48' 00" East** **196.10 feet** to a set ½" iron rod capped (Bryan Technical Services) in the Northeast line of aforementioned "363.249 Acres"; found a ½" iron rod capped (Bryan Technical Services) at an exterior corner of same bearing North 50° 13' 21" West a distance of 23.77 feet;

THENCE with said Northeast line of aforementioned "363.249 Acres", same being the Northeast line of subject tract, as follows:

- **South 50° 13' 21" East** **76.87 feet** to a found ½" iron rod capped (Bryan Technical Services);
- **South 00° 05' 51" East** **39.19 feet** to a found ½" iron rod capped (Bryan Technical Services);
- **South 47° 25' 37" East** **2254.20 feet** to the **PLACE OF BEGINNING**, containing according to the dimensions herein stated an area of **184.147 Acres.**

Surveyor's Note: Bearings and coordinates shown herein are oriented to Local Alcoa Control Network, Central Zone 4203, NAD 27 datum. Distance recited herein are grid values; to convert to surface values multiply by a combined scale factor of 1.00009435. No on-the-ground evidence of parcels discovered due to strip mining activities; parcel locations determined by files provided by Alcoa, Inc.

Bruce Lane Bryan Registered Professional Land Surveyor No. 4249
TBPLS Firm No. 10128500
Bryan Technical Services, Inc.
911 N. Main, Taylor TX 76574 512-352-9090 www.bryantechnicalservices.com

Property Owner Affidavit

"I/We, Renee Collins, as Delegated Representative
(Printed Signatory Name) (Signatory Capacity)
As authorized signatory for Luminant Generation Company LLC
(Printed Name of Property Owner of Record)

Acknowledge that the State of Texas may hold the property owner of record either jointly or severally responsible for the operation, maintenance, and closure and post-closure care of the facility. I further acknowledge that I or the operator and the State of Texas shall have access to the property during the active life and post-closure care period, if required, after closure for the purpose of inspection and maintenance."

Renee Collins 5/9/2022
(Property Owner's Signature) (Date)

FILED
in the Office of the
Secretary of State of Texas

OCT 04 2007

Corporations Section

CERTIFICATE OF CONVERSION OF TXU SANDOW DEVELOPMENT LP

(1) The name of the Converting Entity is TXU Sandow Development LP, a Texas Limited partnership.

(2) The name of the Converted Entity is Sandow Power Company LLC, a Texas limited liability company.

(3) The Converted Entity shall be a limited liability company and its jurisdiction of formation shall be the State of Texas.

(4) A Plan of Conversion has been approved, and an executed copy of the Plan of Conversion is and will be available at the principal place of business of the Converting Entity and the Converted Entity, 1601 Bryan Street, Dallas, Texas 75201.

(5) A copy of the Plan of Conversion will be furnished by the Converted Entity, on written request and without cost, to any member of the Converting Entity or the Converted Entity.

(6) The approval of the Plan of Conversion was duly authorized by all action required by the laws under which the Converting Entity was organized and by its constituent documents.

Executed this 4th day of October, 2007.

TXU SANDOW DEVELOPMENT LP

By: _____

Name: Jared S. Richardson

Title: Assistant Secretary

Step 62
HOUSTON2112660.2

FILED
In the Office of the
Secretary of State of Texas
OCT 0 4 2007
Corporations Section

CERTIFICATE OF FORMATION
OF SANDOW POWER COMPANY LLC

(1) The name of the filing entity being formed is Sandow Power Company LLC (the "Company").

(2) The Company will be a Texas limited liability company.

(3) The purpose for which the Company is formed is for the transaction of any and all lawful purposes for which a limited liability company may be organized under the Texas Business Organizations Code.

(4) The period of duration of the Company is perpetual, or until the earlier dissolution of the Company in accordance with the provisions of the Company's limited liability company agreement.

(5) The address of the Company's initial registered office is 350 N. St. Paul Street, Suite 2900, Dallas, Texas 75201. The name of the Company's initial registered agent at such address is CT Corporation System.

(6) The Company will be managed by managers. The names and addresses of the initial managers are as follows: David A. Campbell, 1601 Bryan Street, Dallas, Texas 75201, Michael P. Childers, 1601 Bryan Street, Dallas, Texas 75201, Charles R. Enze, 1601 Bryan Street, Dallas, Texas 75201, and Michael T. McCall, 1601 Bryan Street, Dallas, Texas 75201.

(7) The Company is being formed under a plan of conversion. The converting entity (the "Converting Entity") is TXU Sandow Development LP, a Texas limited partnership. The Converting Entity was formed in the State of Texas on May 1st, 2006. The address of the Converting Entity is 1601 Bryan Street, Dallas, Texas 75201.

Executed this 4th day of October, 2007.

SANDOW POWER COMPANY LLC

By: _____

Jared S. Richardson
Assistant Secretary

Step 62
DALLAS\342906.1

Vistra Corp.
6555 Sierra Drive
Irving, TX 75039

O 214-875-8996

Texas Commission on Environmental Quality
12100 Park 35 Circle
Austin, Texas 78753

Re: Delegation of Administrative Authority for Vistra Corp.

This letter confirms the signatory authority for environmental matters related to the subsidiary entities of Vistra Operations Company LLC, which is a subsidiary of Vistra Corp.

Vistra Operations Company LLC hereby authorizes Renee Collins, Senior Director – Environmental Services, to act in the following capacities as it relates to administrative issues related to the below listed subsidiaries: Authorized Responsible Official and Alternate Designated Representative; as well, Ms. Collins has signatory authority for all air, water and waste permitting activities, and for water rights and water quality regulatory submissions. Those subsidiaries for which Ms. Collins has signatory authority are: Luminant Mining Company LLC, Luminant Generation Company LLC, La Frontera Holdings, LLC, Sandow Power Company LLC, Oak Grove Management Company LLC, Coleto Creek Power, LLC, Brightside Solar, LLC, Emerald Grove, LLC, and Core Solar SPV I, LLC.

Vistra Operations Company LLC hereby authorizes Renee Collins, Senior Director – Environmental Services, to act in the following capacities as it relates to administrative issues related to the below listed Vistra Corp. subsidiaries: Duly Authorized Representative and Alternate Designated Representative; as well, Ms. Collins has signatory authority for all air, water and waste permitting activities, and for water rights and water quality regulatory submissions. Those subsidiaries for which Ms. Collins has signatory authority are: Hays Energy, LLC and Midlothian Energy, LLC.

This delegation of authority is effective as of January 12, 2022, supersedes all previous delegations for this responsibility, and is valid until revoked or revised by Vistra Operations Company LLC.

I, Barry Boswell, being Executive Vice President—Generation Operations and Services of Vistra Operations Company LLC, the parent company to each of the above listed entities, and designee in charge of business functions, policy or decision-making functions for solar, battery, and fossil operations, hereby delegate authority, as detailed herein, to Renee Collins, Senior Director – Environmental Services.

Signature Date 1/12/22

cc: David Mitchell – Senior Counsel

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions regarding completion of this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission (*If other is checked please describe in space provided.*)

☒ New Permit, Registration or Authorization (*Core Data Form should be submitted with the program application.*)

☐ Renewal (*Core Data Form should be submitted with the renewal form*) ☐ Other

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN 603256413		RN 102147881

SECTION II: Customer Information

4. General Customer Information	5. Effective Date for Customer Information Updates (mm/dd/yyyy)	1/24/2022

☐ New Customer ☒ Update to Customer Information ☐ Change in Regulated Entity Ownership

☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name *(If an individual, print last name first: eg: Doe, John)*	*If new Customer, enter previous Customer below:*
Luminant Generation Company LLC	

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*
800881216	17529678207	75-2967820	109506043

11. Type of Customer: ☒ Corporation ☐ Individual Partnership: ☐ General ☐ Limited

Government: ☐ City ☐ County ☐ Federal ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

12. Number of Employees
☐ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☒ 501 and higher

13. Independently Owned and Operated?
☐ Yes ☒ No

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☐ Owner ☐ Operator ☒ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ Voluntary Cleanup Applicant ☐ Other:

15. Mailing Address:	6555 Sierra Drive						
	City: Irving	State: TX	ZIP: 75039	ZIP + 4: 2479			

16. Country Mailing Information *(if outside USA)*	17. E-Mail Address *(if applicable)*

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(214) 875-8382		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information (*If 'New Regulated Entity" is selected below this form should be accompanied by a permit application*)

☐ New Regulated Entity ☐ Update to Regulated Entity Name ☒ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated in order to meet TCEQ Agency Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name (*Enter name of the site where the regulated action is taking place.*)

Sandow Steam Electric Station

23. Street Address of the Regulated Entity: *(No PO Boxes)*	3896 Charles Martin Hall Road							
	City	Rockdale	**State**	TX	**ZIP**	76567	**ZIP + 4**	
24. County	Milam							

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:	From I35 in Round Rock, drive East on US Hwy 79 approximately 35 miles, take FM 1766 South about 5 miles to plant entrance

26. Nearest City	**State**	**Nearest ZIP Code**
Rockdale	TX	76567

27. Latitude (N) In Decimal:			**28. Longitude (W) In Decimal:**		
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
30	33	51	97	03	50

29. Primary SIC Code (4 digits)	**30. Secondary SIC Code** (4 digits)	**31. Primary NAICS Code** (5 or 6 digits)	**32. Secondary NAICS Code** (5 or 6 digits)
4911		221112	

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

Generation of Electricity-Retired in 2018

34. Mailing Address:	**6555 Sierra Drive**							
	c/o Environmental Services							
	City	**Irving**	**State**	**TX**	**ZIP**	**75039**	**ZIP + 4**	**2479**
35. E-Mail Address:								

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
( ) -		( ) -

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Emissions Inventory Air	☒ Industrial Hazardous Waste
				New Registration
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Waste Water	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Eric Chavers	**41. Title:**	Environmental Coordinator

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(903) 389-6062		( ) -	eric.chavers@luminant.com

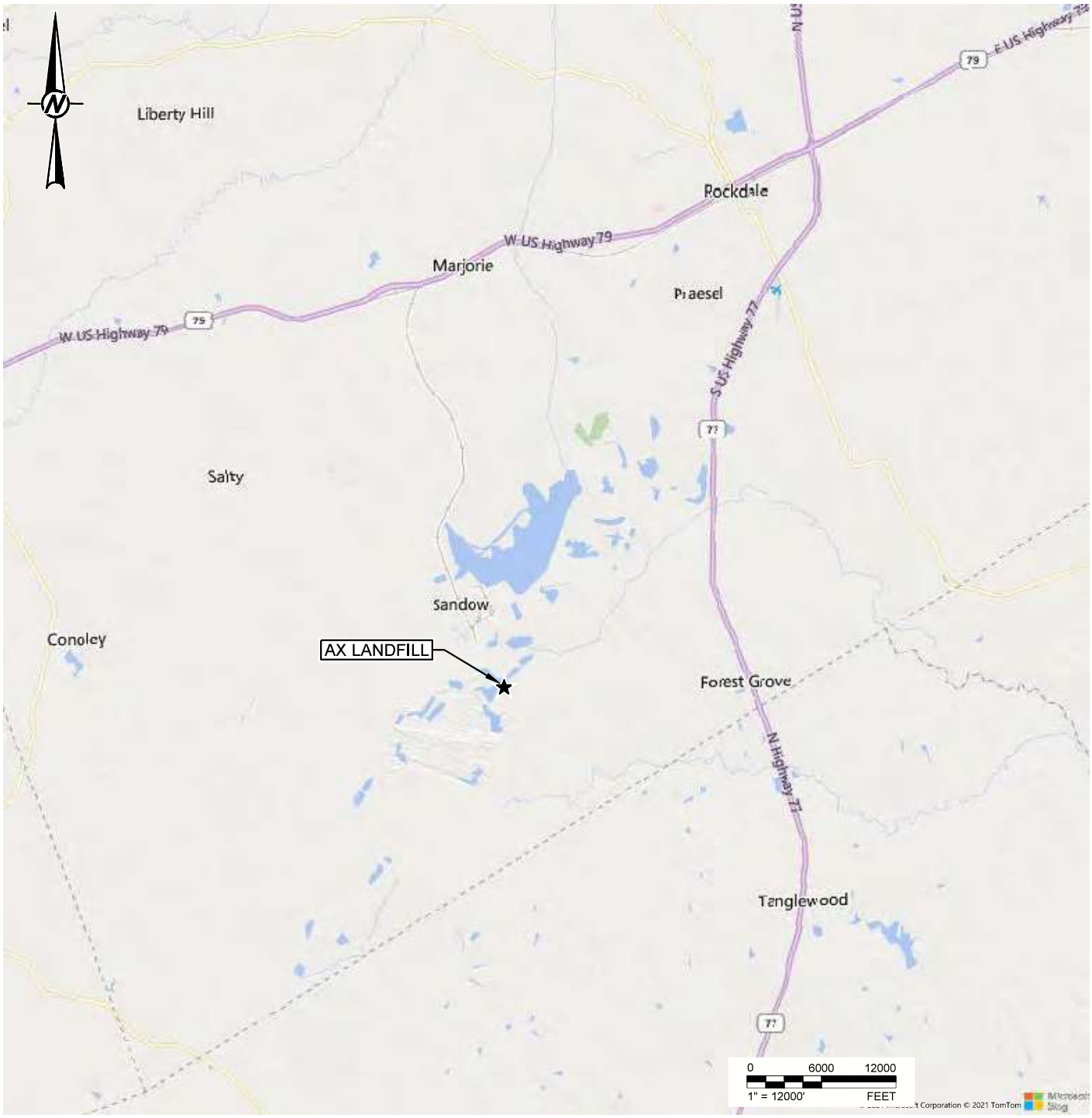
SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	Luminant Generation Company LLC	**Job Title:**	Sr. Director, Environmental Services
Name *(In Print):*	Renee Collins	**Phone:**	(214) 875- 8382
Signature:	Renee Collins	**Date:**	5/9/2022

ATTACHMENT 1

CCR UNIT MAPS AND INFORMATION



REFERENCE(S)
BASE MAP TAKEN FROM BING MAPS.

STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
12/29/21

CLIENT
LUMINANT GENERATION COMPANY, LLC

PROJECT
FORMER SANDOW STEAM ELECTRIC STATION
ROCKDALE, TEXAS

TITLE
GENERAL LOCATION MAP

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-12-14
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.	CONTROL	REV.	FIGURE
20142034		0	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
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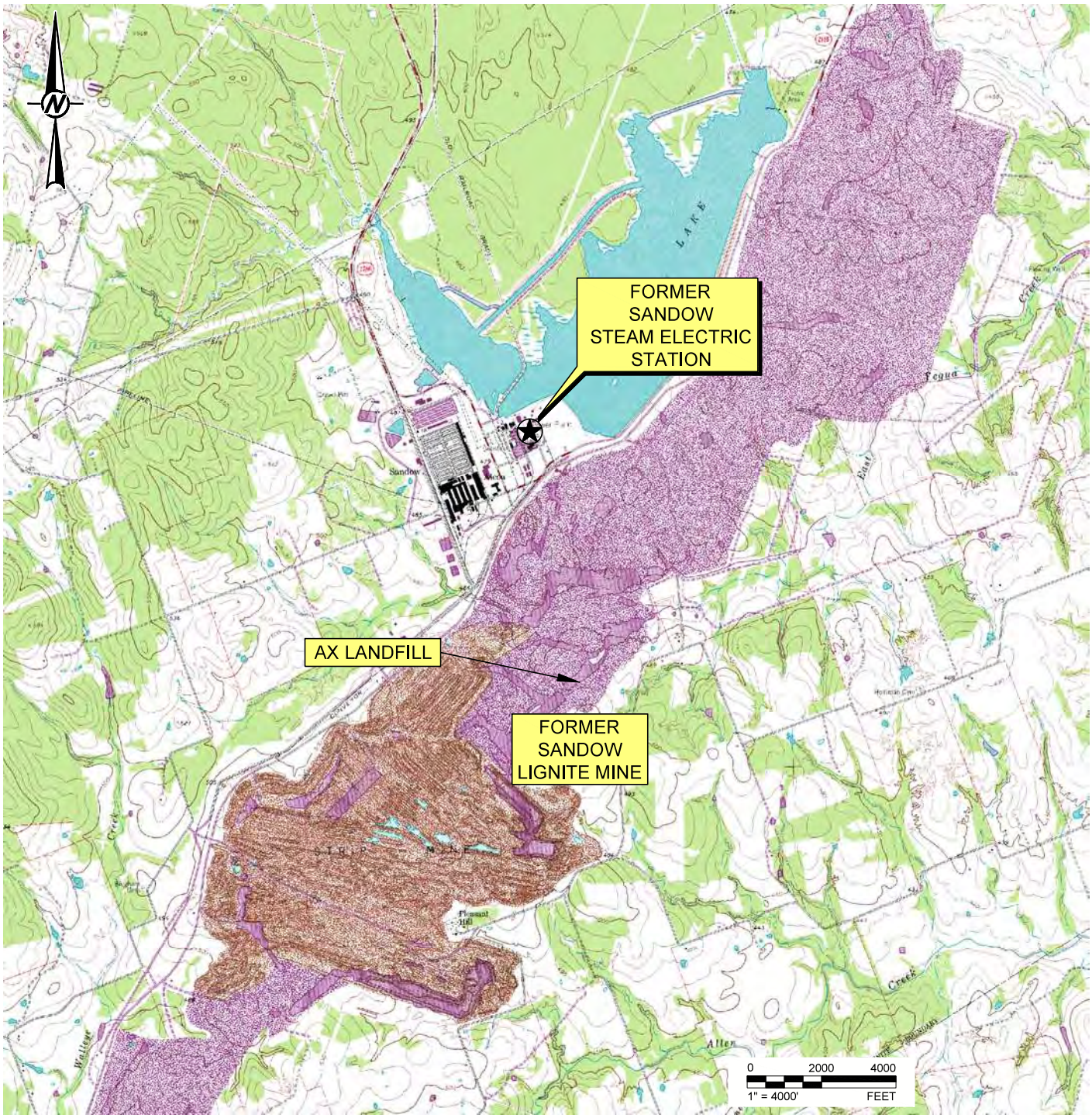
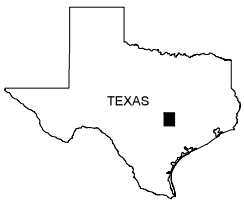


REFERENCE(S)

BASE MAP TAKEN FROM TNRIS.GOV, ALCOA LAKE, TX 7.5 MIN. USGS QUADRANGLE DATED 1963, REVISED 1988.

STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
12/29/21



QUADRANGLE LOCATION

CLIENT
LUMINANT GENERATION COMPANY, LLC

PROJECT
FORMER SANDOW STEAM ELECTRIC STATION
ROCKDALE, TEXAS

TITLE
TOPOGRAPHIC MAP

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-12-07
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.	CONTROL	REV.	FIGURE
20142034		0	2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

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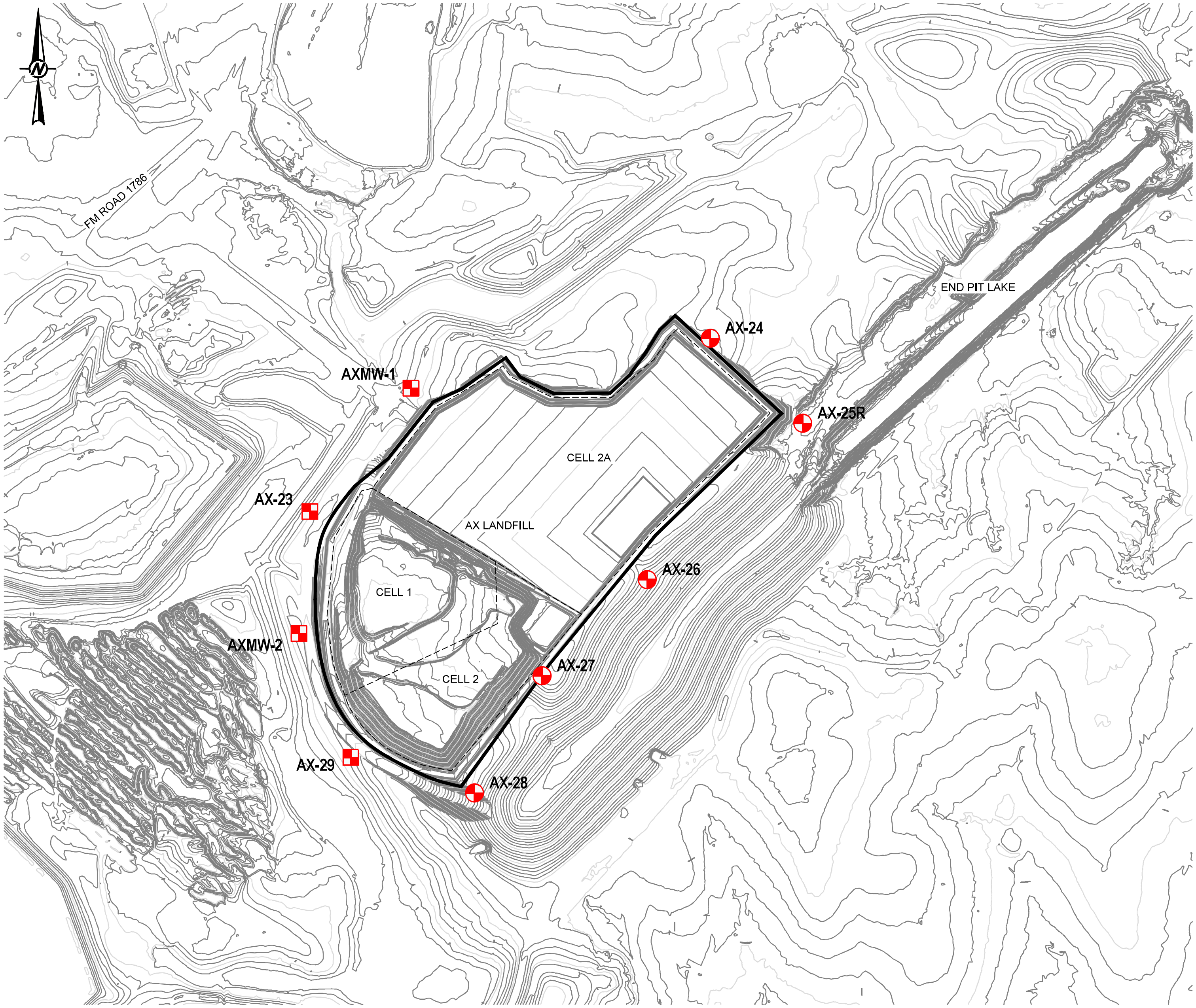


LEGEND

- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- CELL BOUNDARY
- FACILITY REGISTRATION BOUNDARY

STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST

REFERENCE(S)

EXISTING GRADE CONTOURS OUTSIDE OF CELLS 1,2 AND 2A ARE CIRCA 2006 AND ARE SHOWN FOR REFERENCE ONLY. CONTOURS DO NOT NECESSARILY REFLECT EXISTING CONDITIONS.

0 400 800
1" = 800' FEET

CLIENT
LUMINANT GENERATION COMPANY, LLC

PROJECT
FORMER SANDOW STEAM ELECTRIC STATION
ROCKDALE, TEXAS

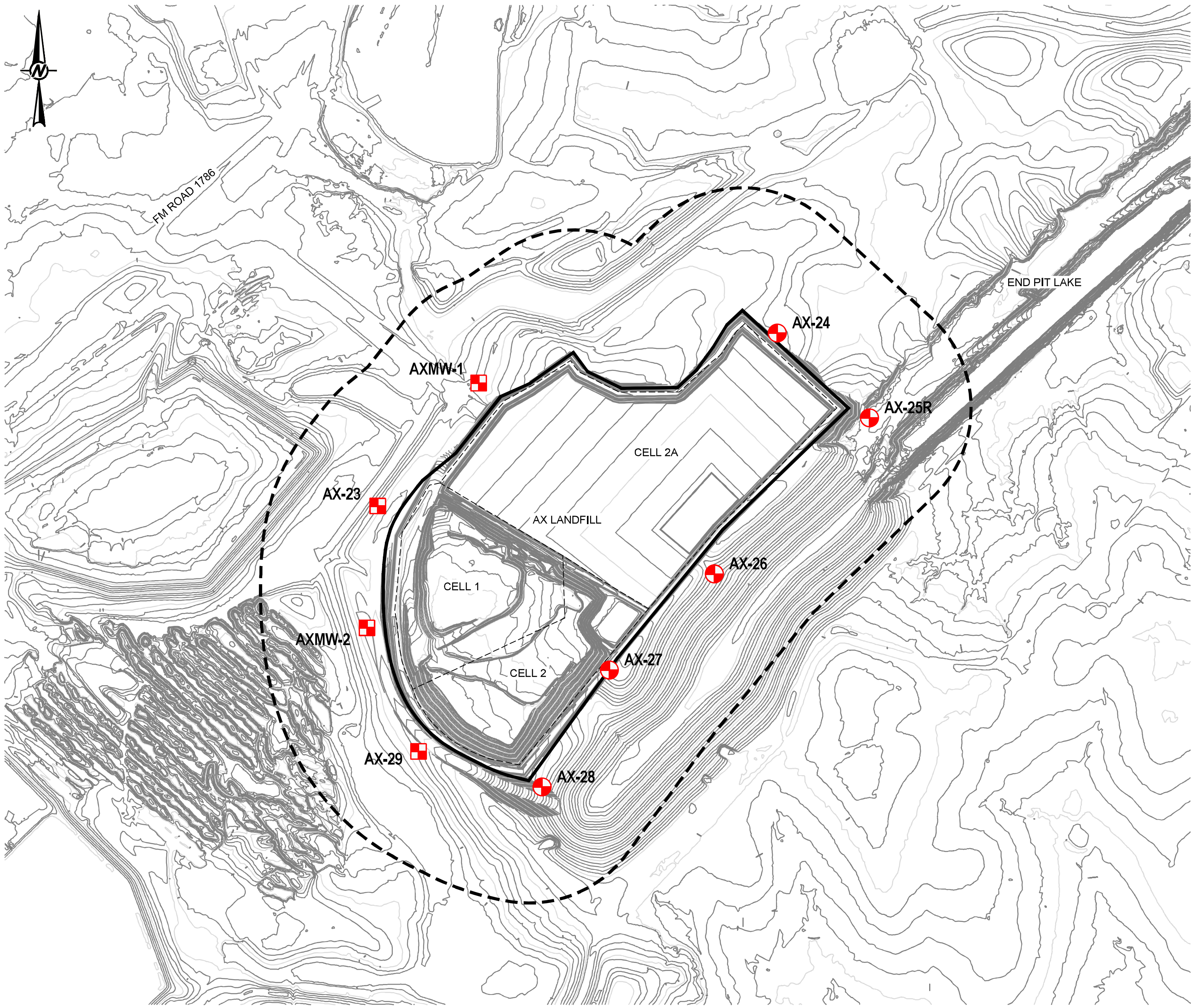
TITLE
FACILITY LAYOUT MAP

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-12-14
DESIGNED	RS
PREPARED	RS
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.	REV.	FIGURE
20142034	0	3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B



STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
12/29/21

LEGEND

- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- CELL BOUNDARY
- 1,000 ft RADIUS
- FACLITY REGISTRATION BOUNDARY

REFERENCE(S)
EXISTING GRADE CONTOURS OUTSIDE OF CELLS 1,2 AND 2A ARE CIRCA 2006 AND ARE SHOWN FOR REFERENCE ONLY. CONTOURS DO NOT NECESSARILY REFLECT EXISTING CONDITIONS.

0 400 800
1" = 800' FEET

CLIENT
LUMINANT GENERATION COMPANY, LLC

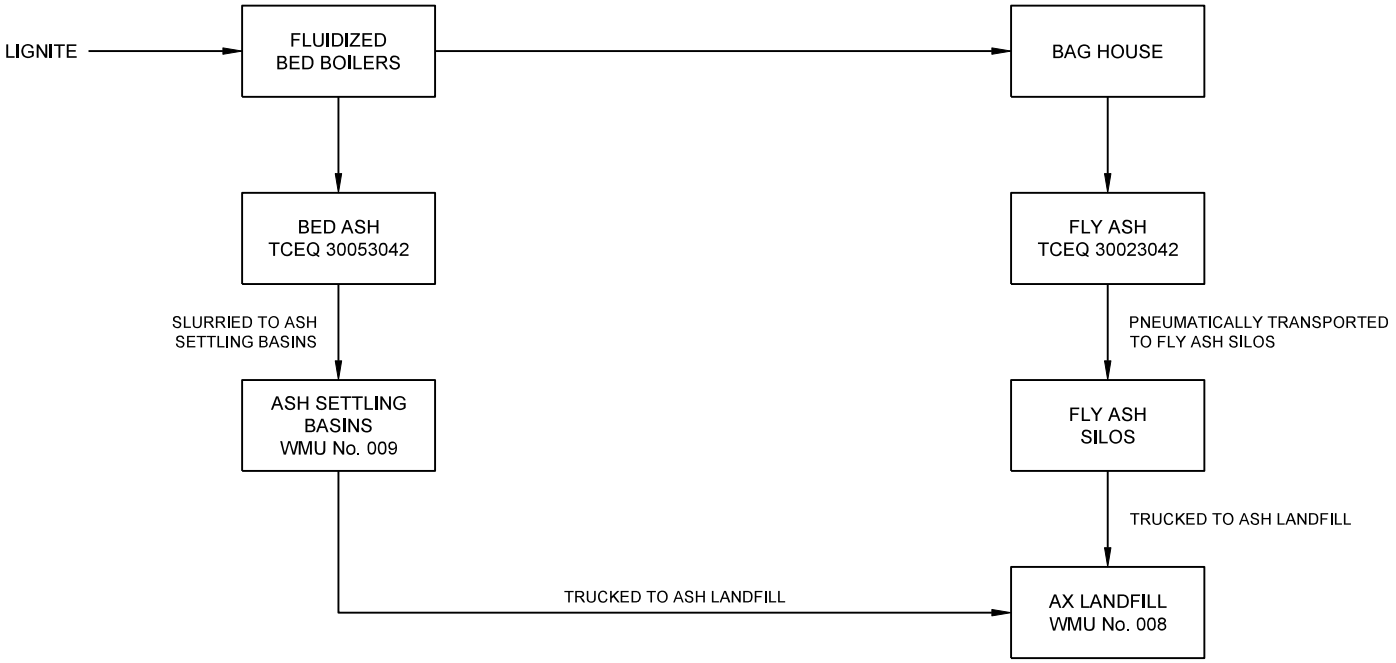
PROJECT
FORMER SANDOW STEAM ELECTRIC STATION
ROCKDALE, TEXAS

TITLE
SURROUNDING FEATURES MAP

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-12-14
DESIGNED	RS
PREPARED	RS
REVIEWED	WFV
APPROVED	WFV

PROJECT NO. 20142034 REV. 0 FIGURE 4



CLIENT
LUMINANT GENERATION COMPANY, LLC

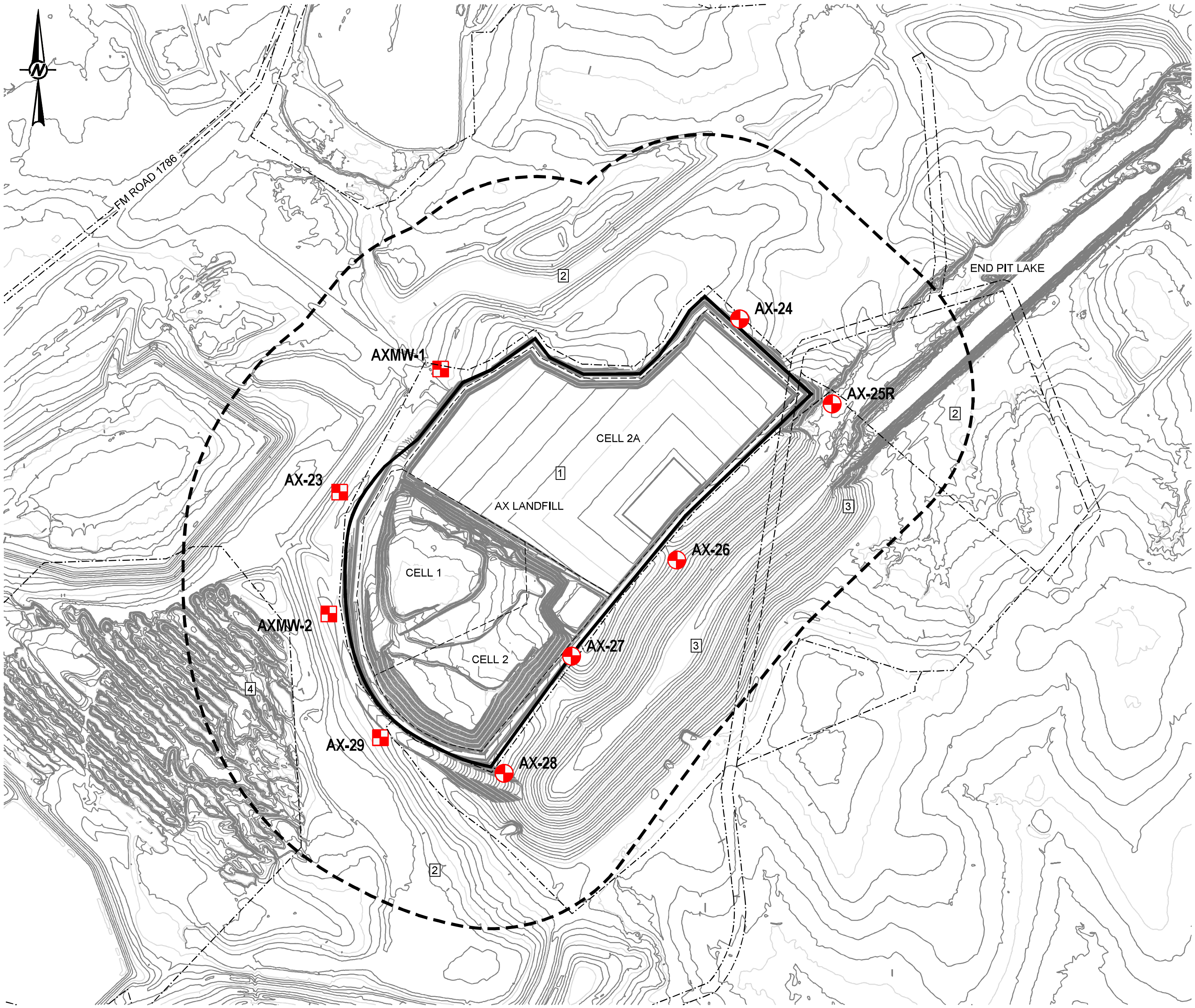
CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-12-13
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	PJB

PROJECT
FORMER SANDOW STEAM ELECTRIC STATION
ROCKDALE, TEXAS

TITLE
SIMPLIFIED CCR PROCESS FLOW DIAGRAM

PROJECT NO.	CONTROL	REV.	FIGURE
20142034		0	5



LEGEND

- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- CELL BOUNDARY
- 00.25 MILE RADIUS
- APPROXIMATE PARCEL BOUNDARY
- PARCEL MAP ID
- FACILITY REGISTRATION BOUNDARY

REFERENCE(S)

1. EXISTING GRADE CONTOURS OUTSIDE OF CELLS 1,2 AND 2A ARE CIRCA 2006 AND ARE SHOWN FOR REFERENCE ONLY. CONTOURS DO NOT NECESSARILY REFLECT EXISTING CONDITIONS.
2. PROPERTY AND MINERAL OWNER'S NAMES AND MAILING ADDRESSES WERE RESEARCHED FROM MILAM COUNTY APPRAISAL DISTRICT REAL PROPERTY ACCOUNT INFORMATION RECORDS AS OF DECEMBER 10, 2021.

0 400 800
1" = 800' FEET

CLIENT
LUMINANT GENERATION COMPANY, LLC

PROJECT
FORMER SANDOW STEAM ELECTRIC STATION
ROCKDALE, TEXAS

TITLE
SURROUNDING PROPERTY OWNERS MAP

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-12-14
DESIGNED	RS
PREPARED	RS
REVIEWED	WFV
APPROVED	WFV

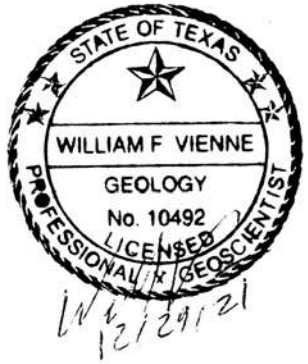
PROJECT NO. 20142034 REV. 0 FIGURE 6

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

TABLE 1
LAND OWNERSHIP LIST
SANDOW STEAM ELECTRIC STATION

Map ID	CAD Owner ID	Owner Name	Mailing Address			
1	20520445	LUMINANT GENERATION CO LLC	6555 SIERRA DR	IRVING	TX	75039
2	10354	ALCOA USA CORP	PO BOX 1491	ROCKDALE	TX	76567
3	20520844	ALCOA USA CORP	201 ISABELLA ST	PITTSBURGH	PA	15212
4	20519951	LUMINANT GENERATION CO LLC	PO BOX 219071	DALLAS	TX	75221

Notes:
1. Property information from Milam County Appraisal Districts (CAD) real property account information records as of December 3, 2021.



TECHNICAL MEMORANDUM

DATE May 18, 2022 **Project No.** 31404097.007

TO Eric Chavers
Luminant Generation Company LLC

FROM Patrick J. Behling, P.E., Will Vienne, P.G.

LUMINANT GENERATION COMPANY LLC
SANDOW STEAM ELECTRIC STATION – MILAM COUNTY, TEXAS
REGISTRATION NO. CCR111 - AX LANDFILL
RESPONSE TO TCEQ CCR UNIT REGISTRATION COMMENTS

Luminant Generation Company LLC (Luminant) formerly operated the Sandow Steam Electric Station (SASES) located approximately 7 miles southwest of Rockdale in Milam County, Texas. The SASES was an approximately 581-megawatt, lignite-fired electric generation unit that was placed into service in 2009 and retired in early 2018. Coal Combustion Residuals (CCR) including fly ash and bed ash were generated as part of the SASES operation and placed in the AX Landfill (AX LF) located approximately 7,500 feet south of the generating unit.

The U.S. Environmental Protection Agency promulgated 40 C.F.R. Part 257, Subpart D (the CCR Rule) and the Texas Commission on Environmental Quality (TCEQ) promulgated 30 T.A.C. Chapter 352 (which largely adopts the federal CCR Rule by reference) to establish technical requirements for new and existing CCR landfills and surface impoundments. On June 28, 2021, USEPA approved the majority of TCEQ's CCR program (hereafter, the TCEQ CCR Rule) and new and existing CCR landfills and surface impoundments are regulated under the TCEQ CCR Rule in lieu of the Federal CCR Rule as of that date.

The AX LF at the SASES has been identified as an Existing CCR Landfill regulated under the TCEQ CCR Rule. In accordance with §352.101, Luminant submitted a registration application for the AX LF to TCEQ on January 21, 2022. TCEQ responded with comments to the AX LF registration application in a letter dated April 22, 2022, including a request that Luminant provide documentation to verify that the AX LF complies with the floodplains, endangered species, and surface water protection requirements of 40 C.F.R. §§ 257.3-1, 257.3-2, and 257.3-3. This memorandum has been prepared by Golder Associates USA Inc., a WSP Company (Golder) to document AX LF compliance with 40 C.F.R. §§ 257.3-1, 257.3-2, and 257.3-3.

Golder Associates USA Inc.
2201 Double Creek Dr, Suite 4004, Round Rock, Texas, USA 78664 T: +1 512 671-3434 F: +1 512 671-3446

1.0 Description of AX Landfill

A Site Plan for the AX LF is shown on Figure 1. The AX LF consists of Cells 1, 2 and 2A and covers an area of approximately 150 acres. Cell 1 was constructed in 2013 and Cell 2 was constructed in 2015. A third landfill cell (Cell 2A) was constructed in 2016; however, Cell 2A never received any CCR or other non-hazardous waste.

The AX LF is constructed partially above and partially below grade and is surrounded by engineered earthen dikes that extend approximately 10 to 15 feet above surrounding grade. The minimum elevation of the top of the perimeter dikes surrounding the AX LF is approximately 479.9 ft. above mean sea level (MSL) (Golder, 2021).

A geosynthetic liner system consisting of a 30-mil thick Geomembrane Supported Geosynthetic Clay Liner (GSGCL) underlain by 2 feet of soil exhibiting a minimum hydraulic conductivity of 5 X 10^{-5} cm/sec has been installed in the AX LF. The liner system is installed across the bottom of each cell, extends across the interior dikes, and extends up the inside sides of the perimeter dikes. The liner system is covered with an approximately 18-inch layer of protective soil to prevent damage to the liner during landfill operations. The base of the landfill is sloped toward a collection area for runoff from active landfill areas at the downgradient edge of the cell.

CCR has been placed within the perimeter dikes that surround Cells 1 and 2. CCR is placed no more than approximately 2 feet below the top of the dikes and the material is sloped upward toward the center of the landfill. Closure of the AX LF has not been initiated and Cells 1 and 2 are active. Cell 2A is also active; however, Cell 2A has never received any CCR or other non-hazardous waste. CCR has not been placed in any of the AX LF cells since the SASES was retired in 2018; however, the landfill has continued to receive authorized non-CCR waste streams.

2.0 Compliance with 40 C.F.R. § 257.3-1 Requirements

2.1 40 C.F.R. § 257.3-1 Requirements

40 C.F.R. § 257.3-1 codifies Floodplain requirements for Solid Waste Disposal Facilities and states:

a) *Facilities or practices in floodplains shall not restrict the flow of the base flood, reduce the temporary water storage capacity of the floodplain, or result in washout of solid waste, so as to pose a hazard to human life, wildlife, or land or water resources.*

b) *As used in this section:*

1) *Base flood means a flood that has a 1 percent or greater chance of recurring in any year or a flood of a magnitude equaled or exceeded once in 100 years on the average over a significantly long period.*

2) *Floodplain means the lowland and relatively flat areas adjoining inland and coastal waters, including flood-prone areas of offshore islands, which are inundated by the base flood.*

3) *Washout means the carrying away of solid waste by waters of the base flood.*

2.2 40 C.F.R. § 257.3-1 Evaluation

The nearest surface water bodies to the AX LF are East Yegua Creek and its tributaries located approximately 1.5 miles east of the landfill (TWDB, 2022). The area in the vicinity of AX LF consists of reclaimed mine lands that have been regraded following completion of historical lignite mining operations. Based on USGS topographic maps of the AX LF area, the elevation of East Yegua Creek and its tributaries near the landfill are on the order of 450.0 ft. MSL (USGS, 2022).

The Federal Emergency Management Agency (FEMA) National Flood Hazard online mapping system maintains flood maps that delineate the extent of the 100-year floodplain (the base flood as defined in § 257.3-1) for properties across the United States. However, the AX LF and vicinity have not been mapped by FEMA and Flood Insurance Rate Maps (FIRMs) are not available to identify the 100-year floodplain in the area (FEMA, 2022).

The AX LF is surrounded by engineered earthen dikes that extend approximately 10 to 15 feet above surrounding grade and the minimum elevation of the top of the perimeter dikes is approximately 479.9 ft. MSL (Golder, 2021). Storm water runoff generated from areas outside the landfill is diverted away from the landfill by the perimeter dikes and associated drainage ditches, swales and other surface features. The perimeter dikes also provide flood protection for the landfill.

Although a detailed hydraulic analysis of flooding in the vicinity of the AX LF was not performed, available elevation data indicates that the AX LF is not located within the 100-year floodplain of East Yegua Creek and its tributaries and the perimeter dikes surrounding the landfill would not be overtopped by the 100-year flood. The elevation of East Yegua Creek and its tributaries in the vicinity of the landfill are on the order of 450.0 ft. MSL, which is approximately 30 feet lower than the top of the AX LF dikes. Based on regional topography, flood waters in East Yegua Creek during the 100-year flood would flow away from the AX LF and would not approach the top of the AX LF perimeter dikes. Since flood waters during the 100-year flood would flow away from the AX LF and the perimeter dikes of the landfill would not be overtopped during the 100-year flood, the landfill will not restrict the

flow of the 100-year flood or reduce the temporary water storage capacity of the 100-year floodplain and there would be no washout of solid waste from the landfill.

2.3 Conclusions

Available data indicate that the AX LF complies with the floodplain requirements of 40 C.F.R. § 257.3-1 as described in Section 2.2.

3.0 Compliance with 40 C.F.R. § 257.3-2 Requirements

3.1 40 C.F.R. § 257.3-2 Requirements

40 C.F.R. § 257.3-2 codifies Endangered Species requirements for Solid Waste Disposal Facilities and states:

a) *Facilities or practices shall not cause or contribute to the taking of any endangered or threatened species of plants, fish, or wildlife.*

b) *The facility or practice shall not result in the destruction or adverse modification of the critical habitat of endangered or threatened species as identified in 50 CFR part 17.*

c) *As used in this section:*

   1) *Endangered or threatened species means any species listed as such pursuant to section 4 of the Endangered Species Act.*

   2) *Destruction or adverse modification means a direct or indirect alteration of critical habitat which appreciably diminishes the likelihood of the survival and recovery of threatened or endangered species using that habitat.*

   3) *Taking means harassing, harming, pursuing, hunting, wounding, killing, trapping, capturing, or collecting or attempting to engage in such conduct.*

3.2 40 C.F.R. § 257.3-2 Evaluation

To address the endangered species requirements of 40 C.F.R. § 257.3-2, Golder reviewed the Texas Parks and Wildlife Department (TPWD) threatened and endangered species listing for Milam County (TPWD, 2022). Table 1 summarizes those species identified by TPWD in Milam County with a state or federal listing and provides a description of preferred habitat, distribution and migration.

The AX LF is constructed in an area of reclaimed mine lands that have been regraded and revegetated following completion of decades of historical lignite surface mining operations. In addition, other industrial facilities associated with power plant and related operations surround the AX LF area. The landfill area is not known to serve as habitat, foraging area, or refuge to the threatened/endangered species identified in Table 1 and the land developed for the AX LF does not exhibit distinctive characteristics that are different from large areas of similar undeveloped land in the vicinity of the landfill.

Based on the evaluation of the listed species and their preferred habitats against the pre-construction and current conditions of the AX LF, construction and operation of the landfill did not cause or contribute to the taking of any endangered or threatened species and the landfill did not result in the destruction or adverse modification of the critical habitat of endangered or threatened species.

3.3 Conclusions

Available data indicate that the AX LF complies with the endangered species requirements of 40 C.F.R. § 257.3-2 as described in Section 3.2.

4.0 Compliance with 40 C.F.R. § 257.3-3 Requirements

4.1 40 C.F.R. § 257.3-3 Requirements

40 C.F.R. § 257.3-3 codifies Surface Water requirements for Solid for Solid Waste Disposal Facilities and states:

a) *For purposes of section 4004(a) of the Act, a facility shall not cause a discharge of pollutants into waters of the United States that is in violation of the requirements of the National Pollutant Discharge Elimination System (NPDES) under section 402 of the Clean Water Act, as amended.*

b) *For purposes of section 4004(a) of the Act, a facility shall not cause a discharge of dredged material or fill material to waters of the United States that is in violation of the requirements under section 404 of the Clean Water Act, as amended.*

c) *A facility or practice shall not cause non-point source pollution of waters of the United States that violates applicable legal requirements implementing an areawide or Statewide water quality management plan that has been approved by the Administrator under section 208 of the Clean Water Act, as amended.*

d) *Definitions of the terms Discharge of dredged material, Point source, Pollutant, Waters of the United States, and Wetlands can be found in the Clean Water Act, as amended, 33 U.S.C. 1251 et seq., and implementing regulations, specifically 33 CFR part 323 (42 FR 37122, July 19, 1977).*

4.2 40 C.F.R. § 257.3-3 Evaluation

The AX LF has been designed and constructed to contain precipitation that falls on the active portions of the landfill (Golder, 2021). The landfill is surrounded by earthen dikes that extend 10 to 15 feet or more above the surrounding grade, so precipitation that falls within the active areas of the landfill is contained. The base of each landfill cell is sloped toward a collection area at the downgradient edge of the cell to assist in handling of rainfall accumulation. Run-off from active landfill areas that accumulates in the collection area is applied to the active landfill areas to control dust and/or is allowed to evaporate. Run-off from active landfill areas is not discharged from the landfill. As a result, the AX LF does not cause a discharge of pollutants into waters of the United States that is in violation of the requirements of the NPDES under section 402 of the Clean Water Act.

CCR solids are permanently disposed in the AX LF and the AX LF will be closed in place with an engineered cap when the landfill is closed (PBW, 2016). While the landfill is active, the perimeter dikes prevent release of CCR solids and the engineered cap will prevent the release of CCR solids once the landfill is closed. As a result, the AX LF does not cause a discharge of dredged material or fill material to waters of the United States that is in violation of the requirements under section 404 of the Clean Water Act.

The AX LF is designed to contain/manage precipitation that falls on the active portions of the landfill and there are no non-point source wastewater discharges from the landfill (Golder, 2021). As a result, the AX LF does not cause non-point source pollution of waters of the United States that violates applicable legal requirements implementing an areawide or Statewide water quality management plan that has been approved by the Administrator under section 208 of the Clean Water Act.

4.3 Conclusions

Available data indicate that the AX LF complies with the surface water requirements of 40 C.F.R. § 257.3-3 as described in Section 4.2.

5.0 References

Federal Emergency Management Agency (FEMA), 2022. On-line Flood Hazard Mapping System.

Golder Associates (Golder), 2021. Run-on and Run-off Control System Plan – 5 Year Update, AX Landfill, Sandow Unit No. 5, October.

Pastor, Behling & Wheeler, LLC (PBW), 2016. CCR Closure Plan – AX Landfill Cells 1, 2 and 2A, Sandow 5 Generating Plant, October.

Texas Parks and Wildlife Department (TPWD), 2022. Rare, Threatened, and Endangered Species of Texas List for Milan County. Revision March 17, 2022.

Texas Water Development Board (TWDB), 2022, East Yegua Creek Information. On-line report.

USGS, 2022. On-line topographic map, Alcoa Lake 7.5 Minute Quadrangle.

Tables

Table 1.
Threatened and Endangered Species - Milam County

Common Name[1]	Scientific Name	Status[2]		Description
		Federal	Texas	
Amphibian				
Houston Toad	*Anaxyrus houstonensis*	LE	E	Houston Toads disappeared from the Houston area (Harris, Fort Bend and Liberty counties) during the 1960s following an extended drought and the rapid urban expansion of the city of Houston. Although this species has been found in nine additional counties (Austin, Bastrop, Burleson, Colorado, Lavaca, Lee, Leon, Milam, Robertson) as recently as the 1990s, several of these populations have not been seen since they were first discovered. Of the few remaining populations, the largest is in Bastrop County (IUCN, 2018). According to Animal Diversity Web (ADW, 2014), the Houston Toad is limited to an extremely small range in southeastern Texas. Since its discovery in 1953 it has never been found north of Burleson County, south of Fort Bend County, east of Liberty County, or west of Bastrop County. It is likely that the Houston Toad is now extirpated from Fort Bend, Harris and Liberty counties (Forstner and Dixon, 2011). Houston Toads are restricted to areas with sandy, friable soil such as loblolly pine forest, mixed deciduous forest, post oak savannah, and coastal prairie (IUNC, 2018). Plants that are often present in Houston Toad habitat include loblolly pine, post oak, bluejack or sandjack oak, yaupon, and little bluestem (TPWD, 2018b). Breeding may occur from late January to late June, but usually earlier than May, in rain pools, flooded fields, roadside ditches, and natural or man-made ponds. Optimal habitats are non-flowing, fishless pools that persist for at least 60 days (long enough for larvae to metamorphose) (IUCN, 2018). The Houston Toad is associated with soils of the Sparta, Carrizo, Goliad, Queen City, Reklaw, Weches and Willis geologic formations (TPWD, 2018a).
Birds				
Black rail	*Laterallus jamaicensis*	LT	T	The black rail can be found in salt, brackish, and freshwater marshes, pond borders, wet meadows, and grassy swamps; nests in or along edge of marsh, sometimes on damp ground, but usually on mat of previous years dead grasses; nest usually hidden in marsh grass (TPWD, 2022a). Black rails are year-round residents along the upper and central Texas coast and rare migrats in the eastern third of the state. In Texas, black rails are usually found in saltgrass marshes. This species are locally uncommon residents of the upper and central Texas coast. Nationally, populations declined between the 1920s and 1970s due to habitat loss and degradation. The future of black rails in Texas is still threatened by these factors as well as the threats of more frequent major hurricans and rising sea levels (Texas A&M, 2022).
Piping plover	*Charadrius melodus*	LT	T	Piping plovers are migratory and spend 3-4 months on their breeding grounds in the northern U.S and southern Canada. They begin arriving from the wintering areas in mid-April (TPWD, 2022b). Piping plovers are found on beaches, sandflats, and dunes along Gulf Coast beaches and adjacent offshore islands. Also spoil islands in the Intracoastal Waterway (TPWD, 2022a).
Rufa Red Knot	*Calidris canutus rufa*	LT	T	Habitat is primarily seacoasts on tidal flats and beaches, herbaceous wetland, and Tidal flat/shore. Bolivar Flats in Galveston County, sandy beaches Mustang Island, few on outer coastal and barrier beaches, tidal mudflats and salt marshes (TPWD, 2022a).
Shallow-tailed kite	*Elanoides forficatus*		T	Lowland forested regions, especially swampy areas, ranging into open woodland; marshes, along rivers, lakes, and ponds; nests high in tall tree in clearing or on forest woodland edge, usually in pine, cypress, or various deciduous trees (TPWD, 2022a).
White-faced Ibis	*Plegadis chihi*		T	The white-faced ibis prefers freshwater marshes, sloughs, and irrigated rice fields, but can be found in brackish and saltwater habitats. Nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats (TPWD, 2022a). This species inhabits primarily freshwater wetlands, especially cattails and bulush marshes, although they feed in flooded hay meadows, agricultural fields and estuarine wetlands (Texas A&M, 2022). In Texas they breed and winter along the Gulf Coast and may occur as migrants in the Panhandle and West Texas (TPWD, 2022c).
Whooping Crane	*Grus americana*	LE	E	Whooping cranes are found in small ponds, marshes, and flooded grain fields for both roosting and foraging. Potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties (TPWD, 2022a).

Table 1.
Threatened and Endangered Species - Milam County

Common Name[1]	Scientific Name	Status[2]		Description
		Federal	Texas	
Wood Stork	*Mycteria americana*		T	Wood storks prefer to nest in large tracts of baldcypress (*Taxodium distichum*) or red mangrove (*Rhizophora mangle*); forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds; breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960 (TPWD, 2022a). This species has an extremely large home range and althought the population is decreasing, it is evaluated at the "Least Concern" level (IUCN, 2018). This bird eats mostly fish (Cornell, 2014).
Fishes				
Chub shiner	*Notropis potteri*		T	This species is found in Brazos, Colorado, San Jacinto, and Trinity river basins in flowing water with silt or sand substrate (TPWD, 2022a).
Smalleye shiner	*Notropis buccula*	LE	E	This species is endemic to the Brazos River drainage; presumed to have been introduced into the Colorado River. Historically found in lower Brazos River as far south as Hempstead, Texas but appears to now be restricted to upper Brazos River system upstream of Possum Kingdom Lake. Typically found in turbid waters of broad, sandy channels of main stream, over substrate consisting mostly of shifting sand (TPWD, 2022a).
Sharpnose shiner	*Notropis oxyrhynchus*	LE	E	This species' range is now restricted to upper Brazos River upstream of Possum Kingdom Lake. Typically found in turbid water over mostly silt and shifting sand substrates (TPWD, 2022a).
Mollusks				
Brazos heelsplitter	*Potamilus streckersoni*		T	The Brazos heelsplitter has been reported from streams, but not far into the headwaters, to large rivers, and some reservoirs. In riverine systems occurs most often in nearshore habitats such as banks and backwater pools but occasionally in mainchannel habitats such as riffles. It is typically found in standing to slow-flowing water in soft substrates consisting of silt, mud or sand but occasionally in moderate flows with gravel and cobble substrates (TPWD, 2022a).
False spike	*Fusconaia mitchelli*	PE	T	The false spike occurs in small streams to medium-size rivers in habitats such as riffles and runs with flowing water. Is often found in stable substrates of sand, gravel, and cobble (TPWD, 2022a).
Texas fawnsfoot	*Truncilla macrodon*	PT	T	Ths mollusk occurs in large rivers but may also be found in medium-sized streams. It is found in protected near shore areas such as banks and backwaters but also riffles and point bar habitats with low to moderate water velocities. Typically occurs in substrates of mud, sandy mud, gravel and cobble. It is considered intolerant of reservoirs (TPWD, 2022a).
Reptiles				
Texas Horned Lizard	*Phrynosoma cornutum*		T	The Texas horned lizard can be found in open terrestrial habitats with sparse vegetation, including grass, prairie, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky. It burrows into soil, enters rodent burrows, or hides under rock when inactive. Occurs to 6000 feet, but largely limited below the pinyon-juniper zone on mountains in the Big Bend area.(TPWD, 2022a).
Plants				
Navasota ladies'-tresses	*Spiranthes parksii*		E	This species occurs in openings in post oak woodlands in sandy loams along upland drainages or intermittent streams, often in areas with suitable hydrologic factors, such as a perched water table associated with the underlying claypan; flowering populations fluctuate widely from year to year (TPWD, 2022a).

Notes:

Table 1.
Threatened and Endangered Species - Milam County

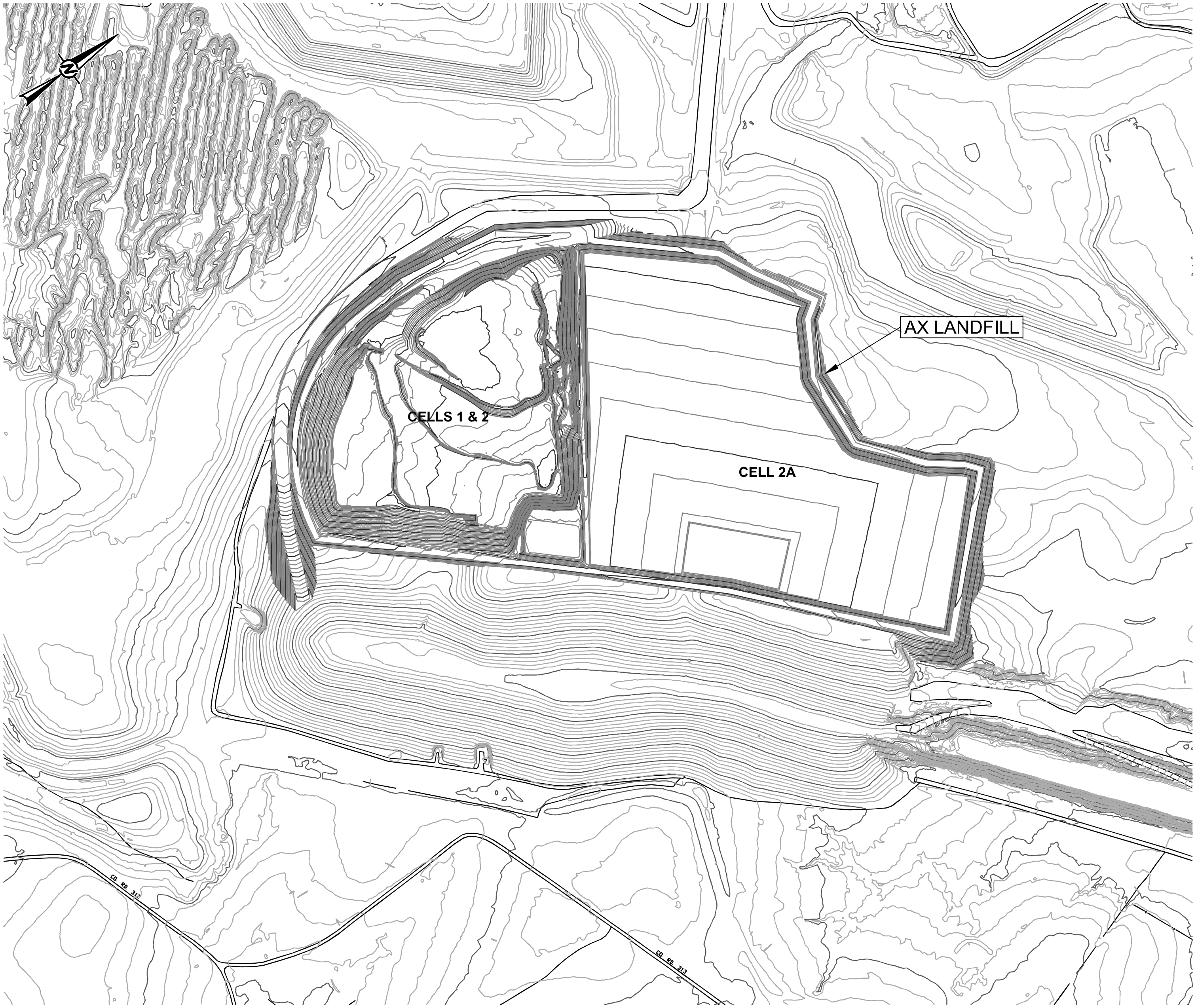
Common Name[1]	Scientific Name	Status[2]		Description
		Federal	Texas	

1. Taxa provided in the Texas Parks and Wildlife Departments (TPWD) Rare, Threatened, and Endangered Species of Texas List for Milan County. 2022. Revision March 17, 2022. http://www.tpwd.state.tx.us/gis/ris/es/ Only taxa listed as candidate, threatened or endangered on either the federal or state list are included.
2. T = Threatened; E = Endangered; C = Candidate for Listing; LT = Listed Threatened; LE = Listed Endangered; PT = Federally Proposed Threatened; PE = Federally Proposed Endangered.

References:

ADW (Animal Diversity Web) Accessed 03 November 2014. <animaldiversity.ummz.umich.edu/>
Cornell Lab of Ornithology, 2014. All About Birds. <www.allaboutbirds.org/guide/search.aspx>
Forstner, M.R.J. and J. Dixon. Houston Toad (*Bufo houstonensis*) 5-year review: summary and evaluation. Final Report for Section 6 project E-101. Submitted to Texas Parks and Wildlife Department and U.S. Fish and Wildlife Service.
Houston Chronicle. 2017. Swallow-tailed Kites prove elusive in Texas. July 28, 2017. Gary Clark.
IUCN (International Union for Conservation of Nature) Red List of Threatened Species. Accessed August 30, 2018. <www.iucnredlist.org>
Texas Breeding Bird Atlas. 2019. Texas A&M AgriLife Extension. https://txtbba.tamu.edu/species-accounts/swallow-tailed-kite/. Accessed pm 6/10/2019.
Texas A&M AgriLife Research. 2022. The Texas Breeding Bird Atlas. On-line: txtbba.tamu.edu
TPWD. 2018a Rare, Threatened, and Endangered Species of Texas List for Harris County. Revision August 8, 2018.
TPWD 2018b. Houston Toad (*Anaxyrus houstonensis*) https://tpwd.texas.gov/huntwild/wild/species/htoad/. Accessed August 30, 2018.
TPWD. 2019. Rare, Threatened, and Endangered Species of Texas List for Harris County. Revision April 8, 2019.
TPWD. 2022a. Rare, Threatened, and Endangered Species of Texas List for Milan County. Revision March 17, 2022.
TPWD, 2022b. Piping Plover Publication. On-line: tpwd.texas.gov/publications/pwdpubs/medai/pwe_bk_w7000_0013_piping_plover.pdf
TPWD, 2022c. White-face Ibis (*Plegadis chihi*). On-line:tpwd.texas.gov/huntwild/wild/species/ibis

Figures



NOTE(S)

1. EXISTING GRADE CONTOURS OUTSIDE OF CELLS 1,2 AND 2A ARE CIRCA 2006 AND ARE SHOWN FOR REFERENCE ONLY. CONTOURS DO NOT NECESSARILY REFLECT EXISTING CONDITIONS.

CLIENT
LUMINANT GENERATION COMPANY, LLC

PROJECT
SANDOW STEAM ELECTRIC STATION
AX LANDFILL
RESPONSE TO TCEQ CCR UNIT REGISTRATION COMMENTS

TITLE
SITE PLAN

CONSULTANT
GOLDER MEMBER OF WSP

YYYY-MM-DD	2022-05-13
DESIGNED	AJD
PREPARED	AJD
REVIEWED	PJB
APPROVED	PJB

PROJECT NO.	CONTROL	REV.	FIGURE
31404097.007		0	1

APPENDIX B – LOCATION RESTRICTIONS AND GEOLOGY

CCR Rule Location Restriction Demonstration
CCR Rule Location Restriction Evaluation

TECHNICAL MEMORANDUM

DATE October 10, 2018 **Project No.** 18107517

TO Jeff Jones
Luminant Generation Company LLC

FROM Patrick J. Behling, P.E.

LUMINANT GENERATION COMPANY LLC
CCR RULE LOCATION RESTRICTION DEMONSTRATION
SANDOW 5 GENERATING PLANT – MILAM COUNTY, TEXAS
AX LANDFILL

Luminant Generation Company LLC (Luminant) formerly operated the Sandow 5 Generating Plant (Sandow 5) located approximately 7 miles southwest of Rockdale in Milam County, Texas (Figure 1). Unit No. 5 was an approximately 581-megawatt, lignite-fired electric generation unit that was placed into service in 2009. Coal Combustion Residuals (CCR) including fly ash and bed ash were generated as part of Unit No. 5 operation. Sandow Unit No. 5 suspended operations in early 2018.

The U.S. Environmental Protection Agency's (EPA's) rule entitled *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities* (CCR Rule) has established technical requirements for CCR landfills and surface impoundments (See 80 Fed. Reg. 21,302 (Apr. 17, 2015); 83 Fed. Reg. 36,435 (July 30, 2018)). The following landfill at Sandow 5 has been identified as an Existing CCR Landfill regulated under the CCR Rule:

- AX Landfill.

The AX Landfill Ash (AX LF) is located approximately 7,500 feet south of Sandow 5 (Figure 1). Golder Associates Inc. (Golder) was retained by Luminant to evaluate the AX LF against the applicable location restriction criterion for existing CCR landfills described in Section 257.64 of the CCR Rule. This memorandum sets forth Luminant's location restriction demonstration and corresponding certification required by the CCR Rule.

LOCATION RESTRICTION DEMONSTRATION – SUMMARY OF FINDINGS/CONCLUSIONS

This location restriction demonstration concludes that the AX LF satisfies the CCR Rule location restriction criterion for existing CCR landfills (unstable areas). The AX LF is underlain by mine spoil that has the potential for settlement; however, the AX LF has been designed to ensure that the integrity of the structural components of the CCR unit will not be disrupted in accordance with §257.64.

A professional engineering certification for the subject location restriction evaluations is included as part of this memorandum.

MEMORANDUM ORGANIZATION

The memorandum is organized as follows:

Golder Associates Inc.
2201 Double Creek Dr, Suite 4004, Round Rock, Texas, USA 78664 T: +1 512 671-3434 F: +1 512 671-3446

SECTION 1.0 Location Restriction Criterion & CCR Unit Description

LOCATION RESTRICTION CRITERION

Existing CCR Landfills must comply with the Unstable Areas location restriction described in Section 257.64 of the CCR Rule. The CCR Rule requires that the CCR Landfill owner or operator certify that the CCR Unit meets the specified location restriction requirements by October 17, 2018 for continued operation of the CCR Unit.

CCR UNIT DESCRIPTION

The AX LF received bed ash, fly ash and a limited amount of other non-hazardous waste from Sandow 5 and is considered an existing CCR Landfill under the CCR Rule. The AX LF consists of two cells (Cell 1 and Cell 2). The landfill was registered with the TCEQ as a Class 2 non-hazardous industrial waste landfill in June 2008 and the registration was updated in February 2015 (PBW, 2008; PBW, 2015)). Cell 1 was constructed in 2013 and Cell 2 was constructed in 2015. A third landfill cell (Cell 2A) was constructed in 2016; however, Cell 2A never received any CCR or other non-hazardous waste.

The AX LF is constructed partially above and partially below grade and is surrounded by engineered earthen dikes that extend approximately 10 to 15 feet above surrounding grade. A geosynthetic liner system consisting of a 30 mil thick Geomembrane Supported Geosynthetic Clay Liner (GSGCL) underlain by 2 feet of soil exhibiting a minimum hydraulic conductivity of 5 X 10-5 cm/sec has been installed in the AX LF.

Section 2.0 Unstable Areas

Section 257.64(a) of the CCR Rule states:

a) *An existing or new CCR landfill, existing or new CCR surface impoundment, or any lateral expansion of a CCR unit must not be located in an unstable area unless the owner or operator demonstrates by the dates specified in paragraph (d) of this section that recognized and generally accepted good engineering practices have been incorporated into the design of the CCR unit to ensure that the integrity of the structural components of the CCR unit will not be disrupted.*

Section 257.53 of the CCR Rule defines unstable area as follows:

- Unstable area: a location that is susceptible to natural or human-induced events or forces capable of impairing the integrity, including structural components of some or all of the CCR unit that are responsible for preventing releases from such unit. Unstable areas can include poor foundation conditions, areas susceptible to mass movements, and karst terrains.
- Poor Foundation Conditions: those areas where features exist which indicate that a natural or human-induced event may result in inadequate foundation support for the structural components of an existing or new CCR unit.
- Areas Susceptible to Mass Movement: those areas of influence (i.e., areas characterized as having an active or substantial possibility of mass movement) where, because of natural or human-induced events, the movement of earthen material at, beneath, or adjacent to the CCR unit results in the downslope transport of soil and rock material by means of gravitational influence. Areas of mass movement include, but are not limited to, landslides, avalanches, debris slides and flows, soil fluctuation, block sliding, and rock fall.
- Karst terrain: an area where karst topography, with its characteristic erosional surface and subterranean features, is developed as a result of dissolution of limestone, dolomite, or other soluble rock. Characteristic physiographic features present in karst terrain include, but are not limited to, dolines, collapse shafts (sinkholes), sinking streams, caves, seeps, large springs, and blind valleys.

Under § 257.64(b), the following factors must be considered when determining whether an area is unstable:

- on-site or local soil conditions that may result in significant differential settling;
- on-site or local geologic or geomorphic features; and
- on-site or local human-made features or events (both surface and subsurface).

The CCR Rule requires that an existing CCR landfill not be located in an unstable area, or if the unit is located in such an area, the CCR Unit must be designed to maintain the integrity of the structural components of the unit. Soil geotechnical investigations performed in the AX LF area concluded that soils underlying the landfill consist primarily of 100 feet or more of disturbed overburden soil (mine spoil), which is comprised of highly heterogenous, interbedded layers of sands, silts and/or clays. The mine spoil is underlain by a seam of hard, undisturbed lignite and the lignite is underlain by hard, unmined silty sands/clays and/or sandstone underburden.

Since the AX LF is constructed on top of mine spoil, it is necessary to ensure that the structural components of the AX LF will not be disrupted. The liner system is the critical structural component for the AX LF that could potentially be affected by settlement of the underlying spoil due to the loading placed on the liner from the CCR material placed in the landfill. The liner system in the AX LF was engineered to accommodate this potential settlement without damage to the unit by increasing the length of the overlaps of the GSGCL material at the GSGCL panel seams to account for possible movement of the panels during settlement. Due to the adequacy of the design of the AX LF, the integrity of the structural components of the CCR unit will not be disrupted despite the underlying mine spoil. Thus, the AX LF meets the requirements of 40 CFR Section 257.64.

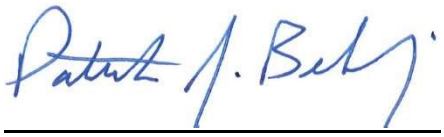
Section 3.0 Limitations

In preparing this evaluation, Golder has reviewed historic, design and investigative information and other data furnished by Luminant. Golder has relied on this information in completing the location restriction evaluation for the AX LF.

The conclusions presented in this memorandum assume that subsurface site conditions in the vicinity of the AX LF reasonably match those conditions associated with site borings, laboratory testing results, etc. The reported conclusions are also based on our understanding of current site operations, maintenance and CCR management practices at Sandow 5 at the current time as provided by Luminant.

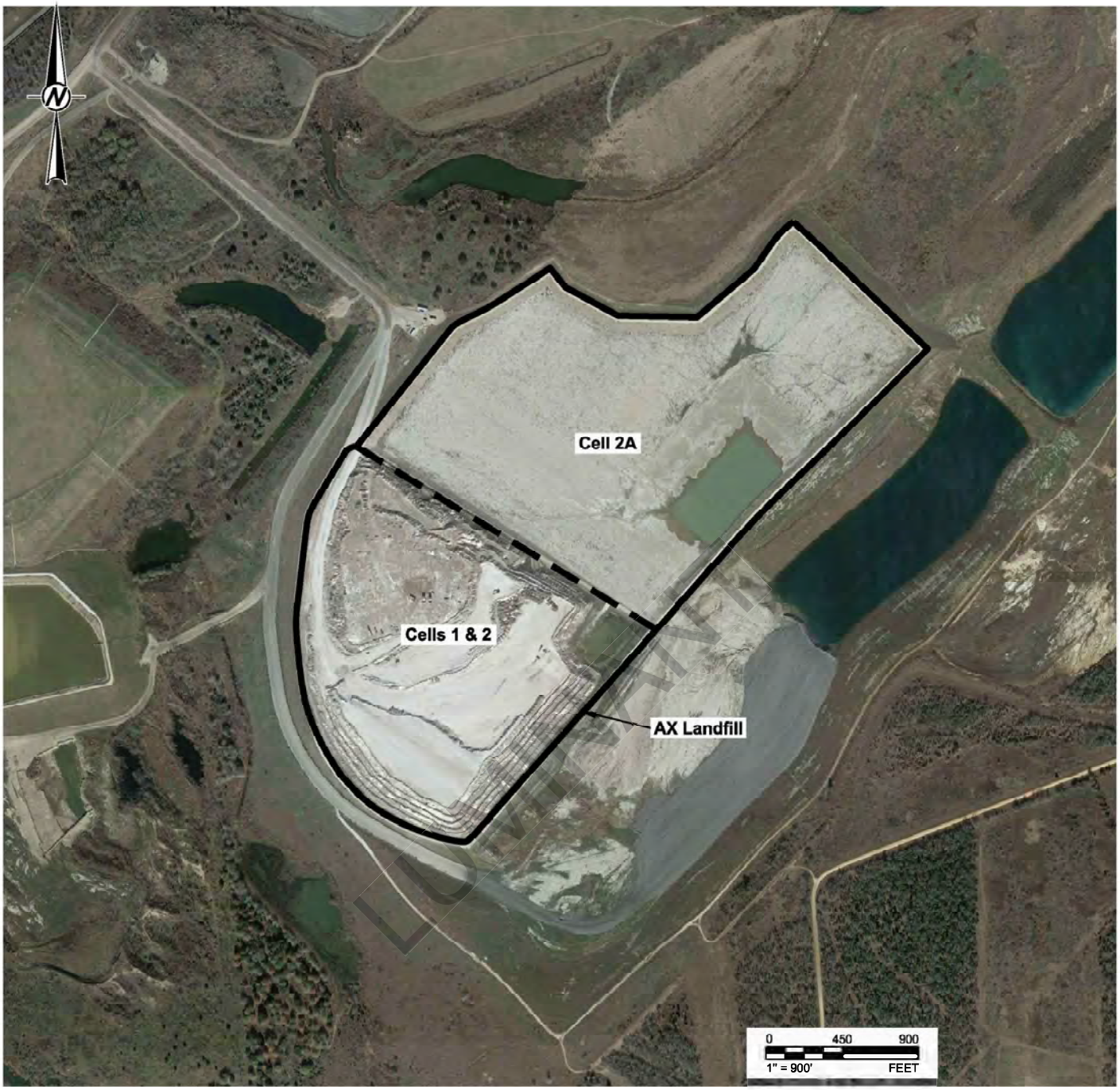
Section 4.0 Professional Certification

I, Patrick J. Behling, being a Registered Professional Engineer in good standing in the State of Texas, do hereby certify, to the best of my knowledge, information, and belief, that the information contained in this CCR Rule Location Restriction Demonstration has been prepared in accordance with the accepted practice of engineering. I certify that the CCR Unit described in this report and as explained further in the CCR Rule Location Restriction Evaluation – Sandow 5 AX Landfill, Golder Associates Inc. October 10, 2018, meets the requirements of 40 CFR Section 257.64.



Patrick J. Behling, P.E.
Principal Engineer
Texas PE No. 79872
Golder Associates Inc.
Texas Engineering Firm No. 2578

Figures



CLIENT
LUMINANT GENERATION COMPANY LLC

PROJECT
SANDOW STEAM ELECTRIC STATION
AX LANDFILL
CCR RULE LOCATION RESTRICTION DEMONSTRATION

TITLE
SITE PLAN

CONSULTANT
GOLDER

YYYY-MM-DD	2018-10-15
DESIGNED	BZH
PREPARED	BZH
REVIEWED	PJB
APPROVED	PJB

REFERENCE(S)
IMAGERY FROM GOOGLE EARTH DATED 1/07/2018.

PROJECT NO.	REV.	FIGURE
18107517-5	0	1

TECHNICAL MEMORANDUM

DATE October 10, 2018

Project No. 18107517

TO Jeff Jones
Luminant Generation Company

FROM Patrick J. Behling, P.E.

LUMINANT GENERATION COMPANY LLC
CCR RULE LOCATION RESTRICTION EVALUATION
SANDOW 5 GENERATING PLANT – MILAM COUNTY, TEXAS
AX LANDFILL

Luminant Generation Company LLC (Luminant) formerly operated the Sandow 5 Generating Plant (Sandow 5) located approximately 7 miles southwest of Rockdale in Milam County, Texas (Figure 1). Unit No. 5 was an approximately 581-megawatt, lignite-fired electric generation unit that was placed into service in 2009. Coal Combustion Residuals (CCR) including fly ash and bed ash were generated as part of Unit No. 5 operation. Sandow Unit No. 5 suspended operations in early 2018.

The U.S. Environmental Protection Agency's (EPA's) rule entitled *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities* (CCR Rule) has established technical requirements for CCR landfills and surface impoundments (See 80 Fed. Reg. 21,302 (Apr. 17, 2015); 83 Fed. Reg. 36,435 (July 30, 2018)). The following landfill at Sandow 5 has been identified as an Existing CCR Landfill regulated under the CCR Rule:

- AX Landfill.

The AX Landfill Ash (AX LF) is located approximately 7,500 feet south of Sandow 5 (Figure 1). Golder Associates Inc. (Golder) was retained by Luminant to evaluate the AX LF against the applicable location restriction criterion for existing CCR landfills described in Section 257.64 of the CCR Rule. This memorandum discusses the results of the evaluation.

LOCATION RESTRICTION EVALUATION – SUMMARY OF FINDINGS/CONCLUSIONS

This location restriction evaluation supports the conclusion reached in the certified demonstration that the AX LF satisfies the CCR Rule location restriction criterion for existing CCR landfills (unstable areas). The AX LF is underlain by mine spoil that has the potential for settlement; however, the AX LF has been designed to ensure that the integrity of the structural components of the CCR unit will not be disrupted in accordance with §257.64.

Golder Associates Inc.
2201 Double Creek Dr, Suite 4004, Round Rock, Texas, USA 78664 T: +1 512 671-3434 F: +1 512 671-3446

MEMORANDUM ORGANIZATION

The memorandum is organized as follows:

SECTION 1.0 - Location Restriction Criteria & CCR Unit Description

SECTION 2.0 - Unstable Areas

SECTION 3.0 - Limitations

FIGURE 1 – Site Plan – AX Landfill

APPENDIX A (Location Restriction Evaluation Supporting Documents)

SECTION 1.0 Location Restriction Criteria & CCR Unit Description

LOCATION RESTRICTION CRITERIA

Existing CCR Landfills must comply with the Unstable Areas location restriction described in Section 257.64 of the CCR Rule. The CCR Rule requires that the CCR Landfill owner or operator certify that the CCR Unit meets the specified location restriction requirements by October 17, 2018 for continued operation of the CCR Unit.

CCR UNIT DESCRIPTION

The AX LF received bed ash, fly ash and a limited amount of other non-hazardous waste from Sandow 5 and is considered an existing CCR Landfill under the CCR Rule. AX LF consists of two cells (Cell 1 and Cell 2). The landfill was registered with the TCEQ as a Class 2 non-hazardous industrial waste landfill in June 2008 and the registration was updated in February 2015 (PBW, 2008; PBW, 2015)). Cell 1 was constructed in 2013 and Cell 2 was constructed in 2015. A third landfill cell (Cell 2A) was constructed in 2016; however, Cell 2A never received any CCR or other non-hazardous waste.

The AX LF is constructed partially above and partially below grade and is surrounded by engineered earthen dikes that extend approximately 10 to 15 feet above surrounding grade. A geosynthetic liner system consisting of a 30 mil thick Geomembrane Supported Geosynthetic Clay Liner (GSGCL) underlain by 2 feet of soil exhibiting a minimum hydraulic conductivity of 5 X 10^{-5} cm/sec has been installed in the AX LF.

REFERENCES

1. Pastor, Behling & Wheeler, LLC (PBW), 2015. Update to TCEQ Notification – AX Area Landfill, Sandow Steam Electric Station Unit 5, February 3.
2. PBW, 2008. TCEQ Registration Package - AX Area Landfill, Rockdale, Texas. June 4.

Section 2.0 Unstable Areas

DESCRIPTION OF LOCATION RESTRICTION

Section 257.64(a) of the CCR Rule states:

a) *An existing or new CCR landfill, existing or new CCR surface impoundment, or any lateral expansion of a CCR unit must not be located in an unstable area unless the owner or operator demonstrates by the dates specified in paragraph (d) of this section that recognized and generally accepted good engineering practices have been incorporated into the design of the CCR unit to ensure that the integrity of the structural components of the CCR unit will not be disrupted.*

Section 257.53 of the CCR Rule defines unstable area as follows:

- Unstable area: a location that is susceptible to natural or human-induced events or forces capable of impairing the integrity, including structural components of some or all of the CCR unit that are responsible for preventing releases from such unit. Unstable areas can include poor foundation conditions, areas susceptible to mass movements, and karst terrains.
- Poor Foundation Conditions: those areas where features exist which indicate that a natural or human-induced event may result in inadequate foundation support for the structural components of an existing or new CCR unit.
- Areas Susceptible to Mass Movement: those areas of influence (i.e., areas characterized as having an active or substantial possibility of mass movement) where, because of natural or human-induced events, the movement of earthen material at, beneath, or adjacent to the CCR unit results in the downslope transport of soil and rock material by means of gravitational influence. Areas of mass movement include, but are not limited to, landslides, avalanches, debris slides and flows, soil fluctuation, block sliding, and rock fall.
- Karst terrain: an area where karst topography, with its characteristic erosional surface and subterranean features, is developed as a result of dissolution of limestone, dolomite, or other soluble rock. Characteristic physiographic features present in karst terrain include, but are not limited to, dolines, collapse shafts (sinkholes), sinking streams, caves, seeps, large springs, and blind valleys.

Under § 257.64(b), the following factors must be considered when determining whether an area is unstable:

- on-site or local soil conditions that may result in significant differential settling;
- on-site or local geologic or geomorphic features; and
- on-site or local human-made features or events (both surface and subsurface).

EVALUATION

The CCR Rule requires that an existing CCR landfill not be located in an unstable area, or if the unit is located in such an area, the CCR Unit must be designed to maintain the integrity of the structural components of the unit. A soil geotechnical investigation was performed in the AX LF area in 2008 (PBW, 2008). The investigation

concluded that soils underlying the landfill area consist primarily of disturbed overburden soil (mine spoil), which is comprised of highly heterogenous, interbedded layers of sands, silts and/or clays. The mine spoil extends from ground surface to depths of approximately 100 feet below ground surface or more. The mine spoil is underlain by a seam of hard, undisturbed lignite and the lignite is underlain by hard, unmined silty sands/clays and/or sandstone underburden.

Since the AX LF is constructed on top of mine spoil, it is necessary to ensure that the structural components of the AX LF will not be disrupted. The liner system is the critical structural component for the AX LF that could potentially be affected by settlement of the underlying spoil due to the loading placed on the liner from the CCR material placed in the landfill. A settlement study was performed for the AX LF area to estimate the potential spoil settlement after the landfill was constructed and filled to capacity (PBW, 2008). The liner system in the AX LF was engineered to accommodate potential settlement without damage to the unit by increasing the length of the overlaps of the GSGCL material at the liner panel seams to account for possible movement of the panels during settlement (PBW, 2012; PBW, 2014). As-built engineering drawings for AX LF Cell 1 and Cell 2 are reproduced in Appendix A.

CONCLUSION

Due to the adequacy of the design of the AX LF, the integrity of the structural components of the CCR unit will not be disrupted despite the underlying mine spoil. Thus, the AX LF meets the requirements of 40 CFR Section 257.64.

REFERENCES

1. Pastor, Behling & Wheeler, LLC (PBW), 2014. As-Built Drawings, AX Area Cell No. 2, Luminant Power, Sheets C1 and C2. December.

2. PBW, 2012. As-Built Drawings, AX Area Cell No. 1, Luminant Power, Sheets C1 and C2. September.

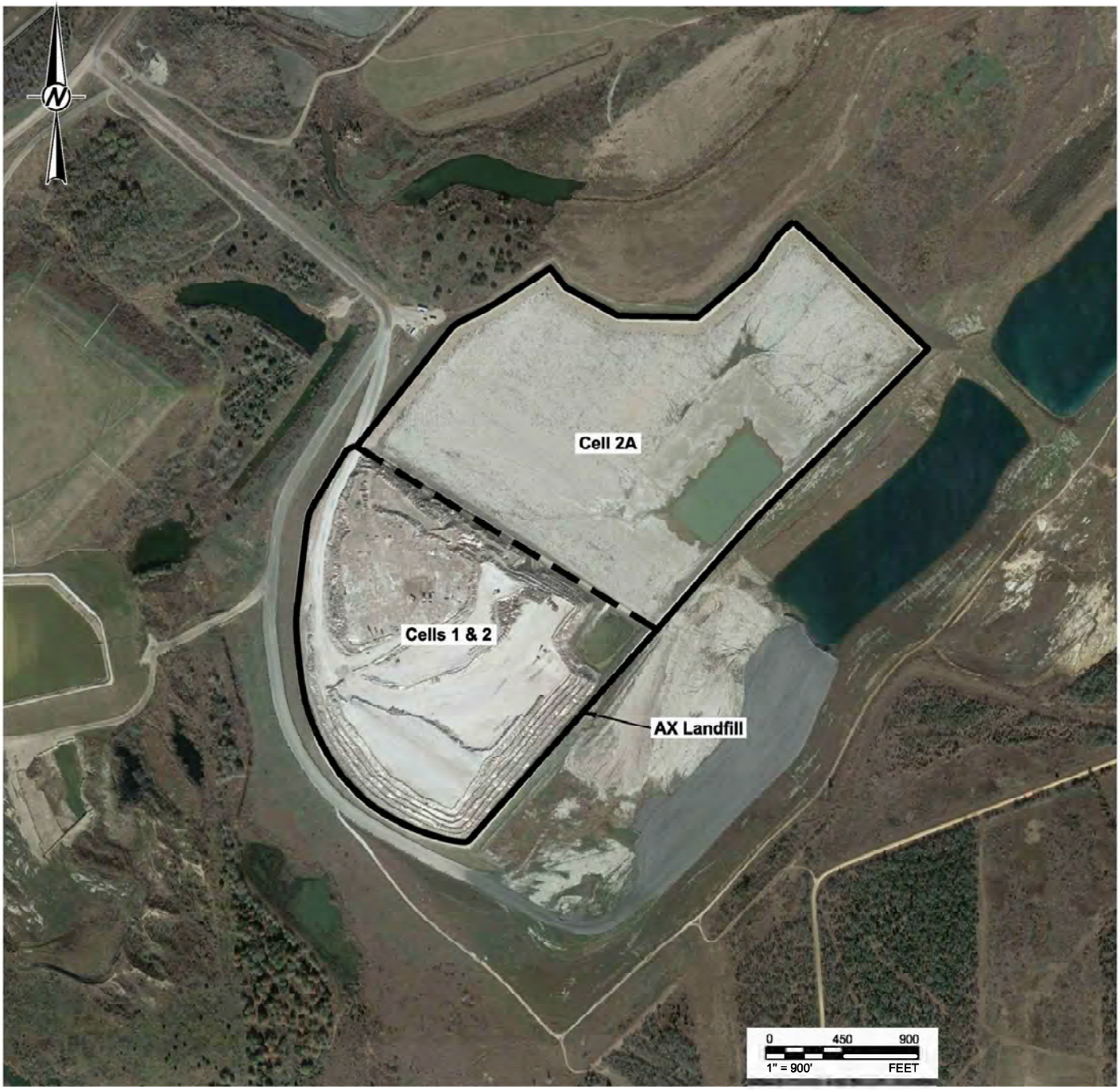
3. PBW, 2008. TCEQ Registration Package - AX Area Landfill, Rockdale, Texas. June 4.

Section 3.0 Limitations

In preparing this evaluation, Golder has reviewed historic, design and investigative information and other data furnished by Luminant. Golder has relied on this information in completing the location restriction evaluation for the AX LF.

The conclusions presented in this memorandum assume that subsurface site conditions in the vicinity of the AX LF reasonably match those conditions associated with site borings, laboratory testing results, etc. The reported conclusions are also based on our understanding of current site operations, maintenance and CCR management practices at Sandow 5 at the current time as provided by Luminant.

Figures



CLIENT
LUMINANT GENERATION COMPANY LLC

PROJECT
SANDOW STEAM ELECTRIC STATION
AX LANDFILL
CCR RULE LOCATION RESTRICTION EVALUATION

TITLE
SITE PLAN

CONSULTANT
GOLDER

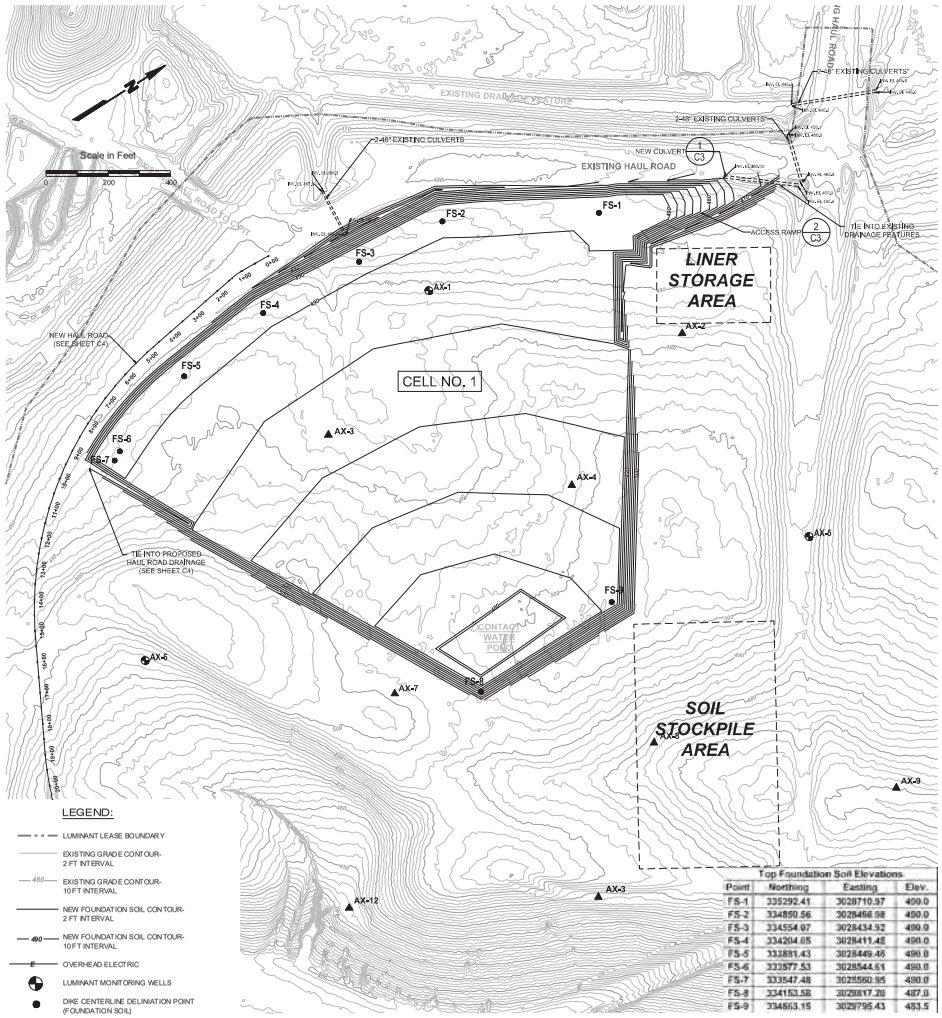
YYYY-MM-DD	2018-10-15
DESIGNED	BZH
PREPARED	BZH
REVIEWED	PJB
APPROVED	PJB

REFERENCE(S)
IMAGERY FROM GOOGLE EARTH DATED 1/07/2018.

PROJECT NO.	REV.	FIGURE
18107517-5	0	1

APPENDIX A

Supporting Documents – Unstable Areas



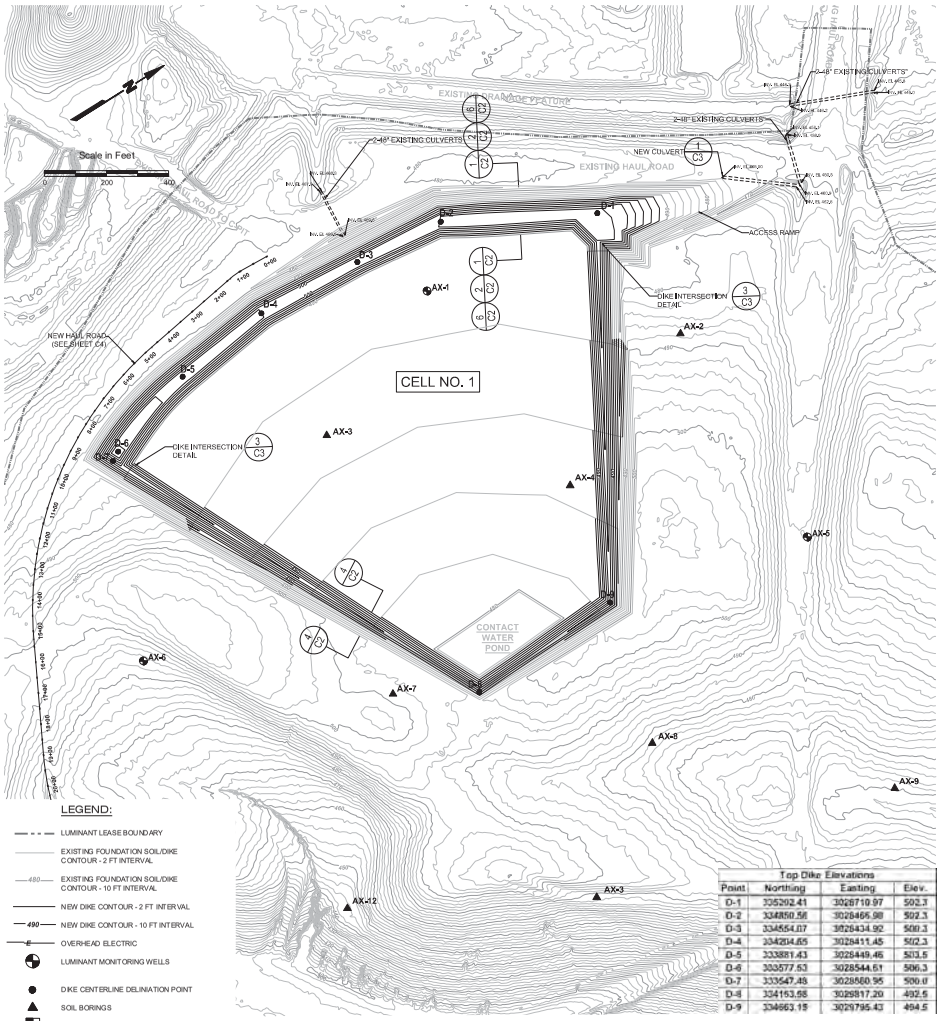
LEGEND:

- LUMINANT LEASE BOUNDARY
- EXISTING GRADE CONTOUR- 2 FT INTERVAL
- 480 EXISTING GRADE CONTOUR- 10 FT INTERVAL
- NEW FOUNDATION SOIL CONTOUR- 2 FT INTERVAL
- 490 NEW FOUNDATION SOIL CONTOUR- 10 FT INTERVAL
- E OVERHEAD ELECTRIC
- LUMINANT MONITORING WELLS
- DIKE CENTERLINE DELINIATION POINT (FOUNDATION SOIL)
- SOIL BORINGS
- ALCOA MONITORING WELL

Top Foundation Soil Elevations

Point	Northing	Easting	Elev.
FS-1	335292.41	3028710.97	490.0
FS-2	334850.56	3028466.98	490.0
FS-3	334554.97	3028434.92	490.0
FS-4	334204.65	3028411.45	490.0
FS-5	333881.43	3028449.46	490.0
FS-6	333577.53	3028544.61	490.0
FS-7	333547.48	3028560.95	490.0
FS-8	334153.58	3029817.20	487.0
FS-9	334663.15	3029795.43	483.5

CELL NO. 1 FOUNDATION SOIL PLAN



LEGEND:

- LUMINANT LEASE BOUNDARY
- EXISTING FOUNDATION SOIL/DIKE CONTOUR - 2 FT INTERVAL
- 480 EXISTING FOUNDATION SOIL/DIKE CONTOUR - 10 FT INTERVAL
- NEW DIKE CONTOUR - 2 FT INTERVAL
- 490 NEW DIKE CONTOUR - 10 FT INTERVAL
- E OVERHEAD ELECTRIC
- LUMINANT MONITORING WELLS
- DIKE CENTERLINE DELINIATION POINT
- SOIL BORINGS
- ALCOA MONITORING WELL

Top Dike Elevations

Point	Northing	Easting	Elev.
D-1	335292.41	3028710.97	502.3
D-2	334850.56	3028466.98	502.3
D-3	334554.97	3028434.92	500.3
D-4	334204.65	3028411.45	502.3
D-5	333881.43	3028449.46	503.5
D-6	333577.53	3028544.61	506.3
D-7	333547.48	3028560.95	506.0
D-8	334153.58	3029817.20	492.5
D-9	334663.15	3029795.43	494.5

CELL NO. 1 DIKE PLAN

AS-BUILT

REFERENCE	NO.	REVISIONS	BY	DATE
	1	FOUNDATION SOIL CONTOURS MODIFIED.	PJB	10/22/12

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY PATRICK J. BEHLING, P.E. NO. 79872 ON SEPTEMBER 17,2012

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS
TEXAS ENGINEERING FIRM NO. 4760

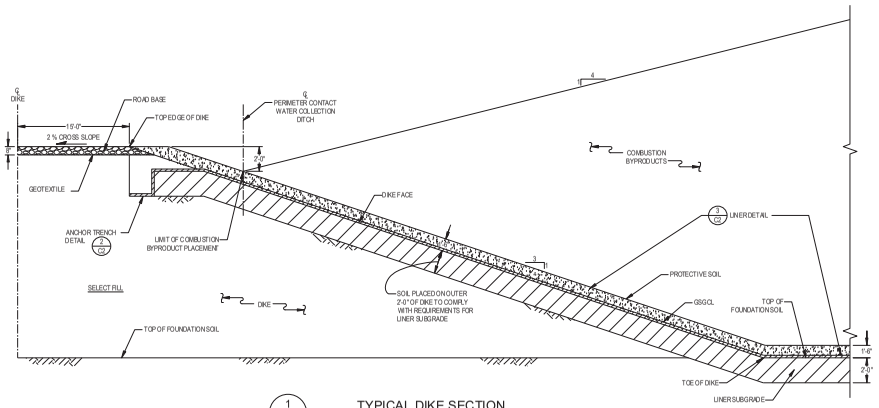
DESIGNED BY:	PJB
DRAWN BY:	MKS
CHECKED BY:	PJB
APPROVED BY:	PJB
FILE NAME:	1706_C1.DWG

LUMINANT POWER

AX AREA CELL NO. 1

CELL NO. 1 PLANS

DATE: SEPTEMBER 2012 | SHEET NO. C1 | SEQ NO. 1



1 / C2 TYPICAL DIKE SECTION
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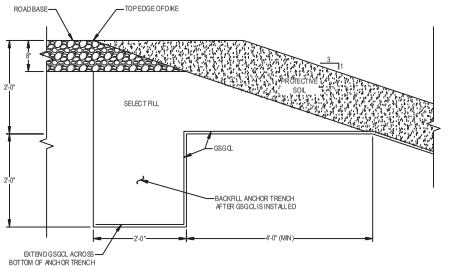

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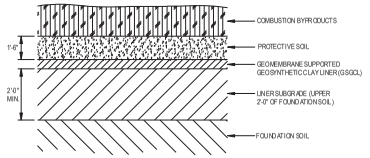

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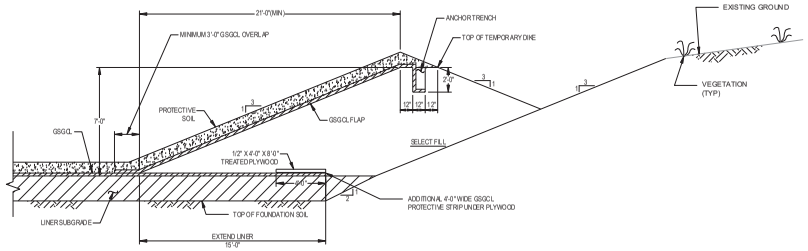

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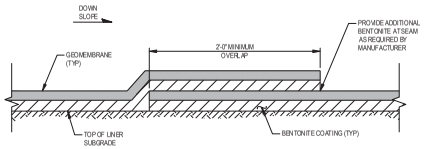

5 / C2 TYPICAL GSGCL SEAM DETAIL
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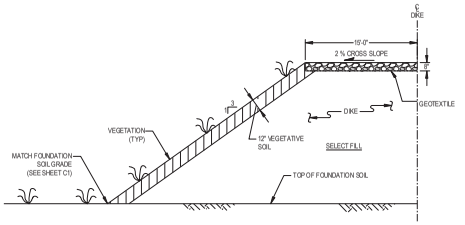

6 / C2 TYPICAL DIKE EXTERIOR SECTION
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AS-BUILT

REFERENCE	NO.	REVISIONS	BY	DATE

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY PATRICK J. BEHLING, P.E. NO. 79872 ON SEPTEMBER 17,2012

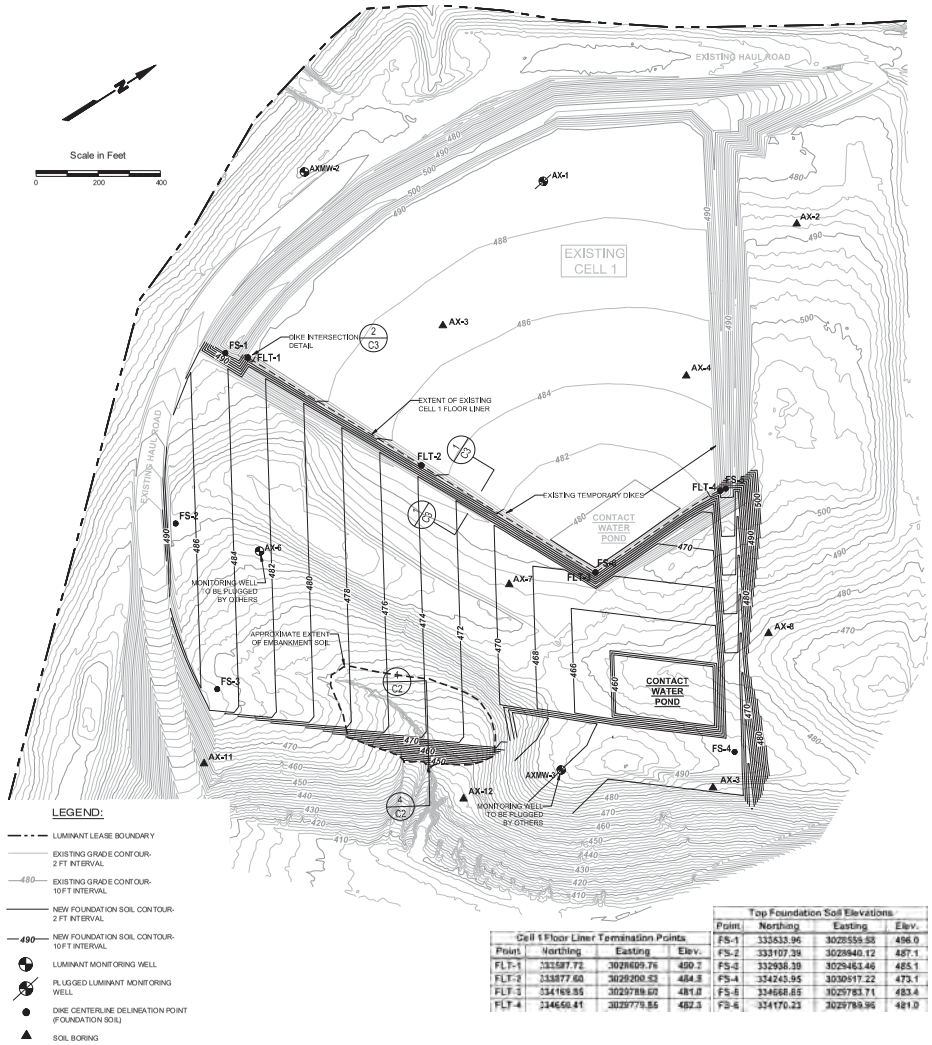
PASTOR, BEHLING & WHEELER, LLC CONSULTING ENGINEERS AND SCIENTISTS TEXAS ENGINEERING FIRM NO. 4760	
DESIGNED BY:	PJB
DRAWN BY:	MKS
CHECKED BY:	PJB
APPROVED BY:	PJB
FILE NAME:	1766_C2.DWG

LUMINANT POWER

AX AREA CELL NO. 1

MISCELLANEOUS DETAILS

DATE: SEPTEMBER 2012	SHEET NO. C2	SEQ NO. 1



LEGEND:

- LUMINANT LEASE BOUNDARY
- EXISTING GRADE CONTOUR- 2 FT INTERVAL
- EXISTING GRADE CONTOUR- 10 FT INTERVAL
- NEW FOUNDATION SOIL CONTOUR- 2 FT INTERVAL
- NEW FOUNDATION SOIL CONTOUR- 10 FT INTERVAL
- LUMINANT MONITORING WELL
- PLUGGED LUMINANT MONITORING WELL
- DIKE CENTERLINE DELINEATION POINT (FOUNDATION SOIL)
- SOIL BORING

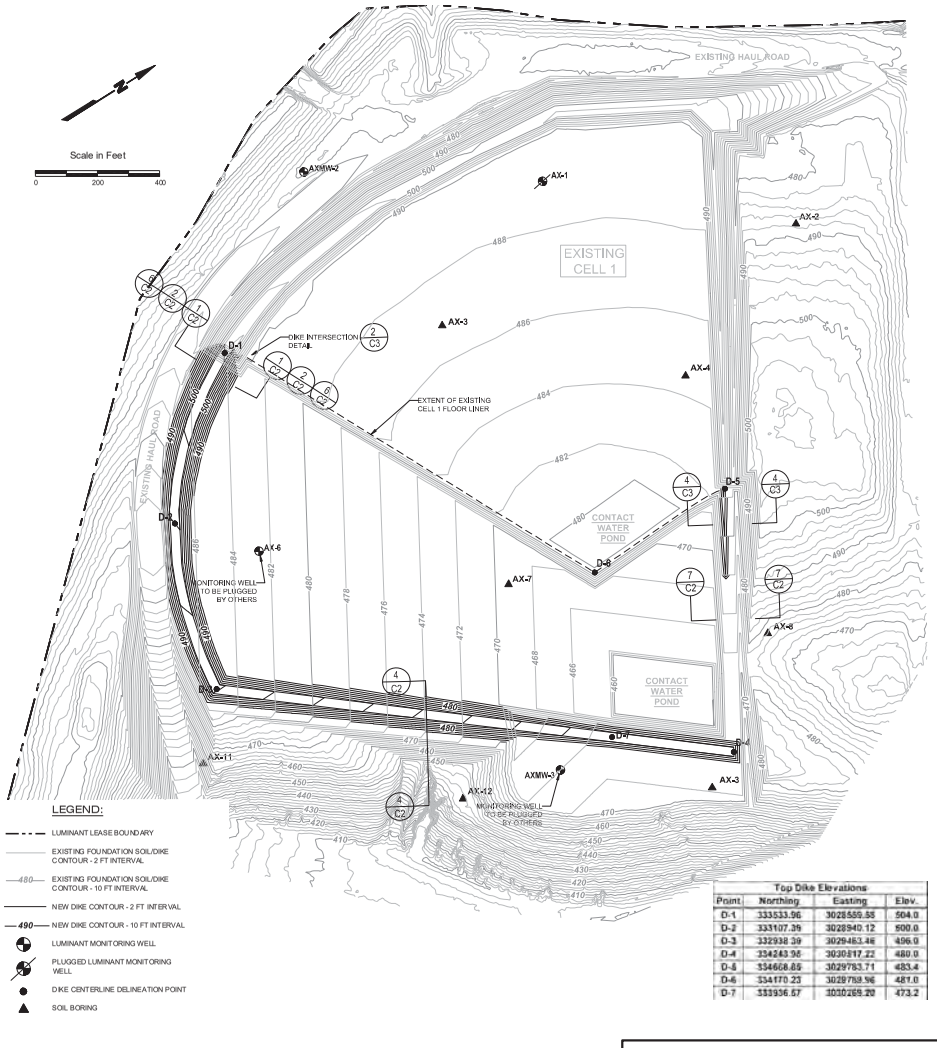
Cell 1 Floor Liner Termination Points

Point	Northing	Easting	Elev.
FLT-1	333587.72	3029609.76	490.7
FLT-2	333877.60	3029200.53	484.8
FLT-3	334169.55	3029789.60	481.0
FLT-4	334459.41	3029779.86	482.3

Top Foundation Soil Elevations

Point	Northing	Easting	Elev.
FS-1	333533.96	3028555.53	496.0
FS-2	333107.39	3028940.12	487.1
FS-3	332938.39	3029463.46	485.1
FS-4	334243.95	3030517.22	473.1
FS-5	334668.85	3029783.71	483.4
FS-6	334170.23	3029789.96	481.0

CELL NO. 2 FOUNDATION SOIL PLAN



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- LUMINANT LEASE BOUNDARY
- EXISTING FOUNDATION SOIL/DIKE CONTOUR - 2 FT INTERVAL
- EXISTING FOUNDATION SOIL/DIKE CONTOUR - 10 FT INTERVAL
- NEW DIKE CONTOUR - 2 FT INTERVAL
- NEW DIKE CONTOUR - 10 FT INTERVAL
- LUMINANT MONITORING WELL
- PLUGGED LUMINANT MONITORING WELL
- DIKE CENTERLINE DELINEATION POINT
- SOIL BORING

Top Dike Elevations

Point	Northing	Easting	Elev.
D-1	333533.96	3028555.53	504.0
D-2	333107.39	3028940.12	500.0
D-3	332938.39	3029463.46	496.0
D-4	334243.95	3030517.22	480.0
D-5	334668.85	3029783.71	483.4
D-6	334170.23	3029789.96	481.0
D-7	333936.57	3030269.20	473.2

CELL NO. 2 DIKE PLAN

AS-BUILT

REFERENCE	NO.	REVISIONS	BY	DATE
	1	ISSUED FOR CONSTRUCTION	PJB	4/29/15

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY PATRICK J. BEHLING,P.E. NO. 79872 ON APRIL 29, 2015.

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS
TEXAS ENGINEERING FIRM NO. 4760

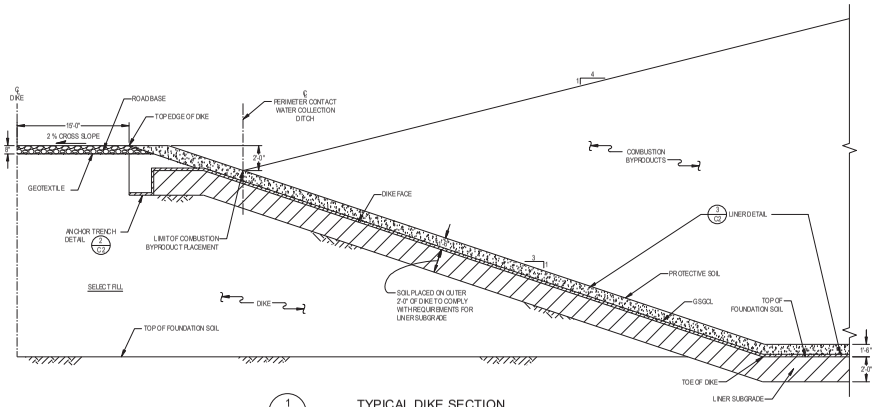
DESIGNED BY:	MKS
DRAWN BY:	MKS
CHECKED BY:	PJB
APPROVED BY:	PJB
DRAWING No:	25247-000-CG-0001-00014

LUMINANT POWER

AX AREA CELL NO. 2

CELL NO. 2 PLANS

DATE: DECEMBER 2014 | SHEET NO. C1 | SEQ NO. 1



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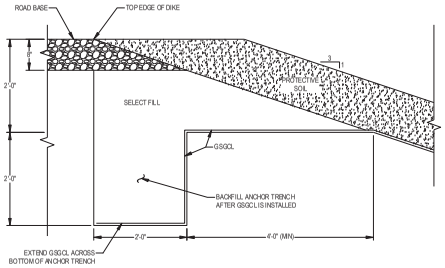

2/C2 ANCHOR TRENCH DETAIL
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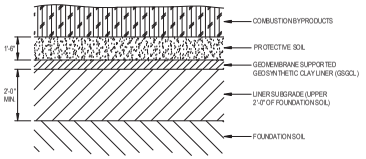

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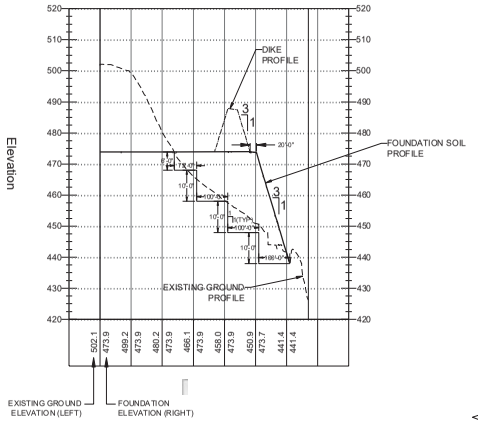

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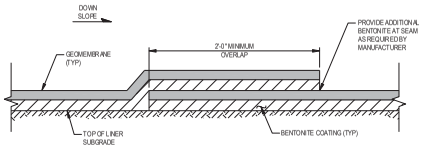
HORIZONTAL SCALE: 1"=200'



5/C2 TYPICAL GSGCL SEAM DETAIL
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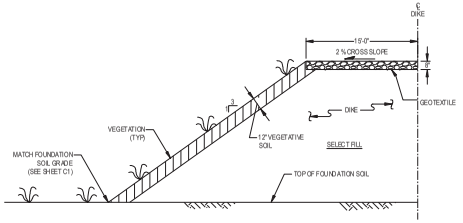

6/C2 TYPICAL DIKE EXTERIOR SECTION
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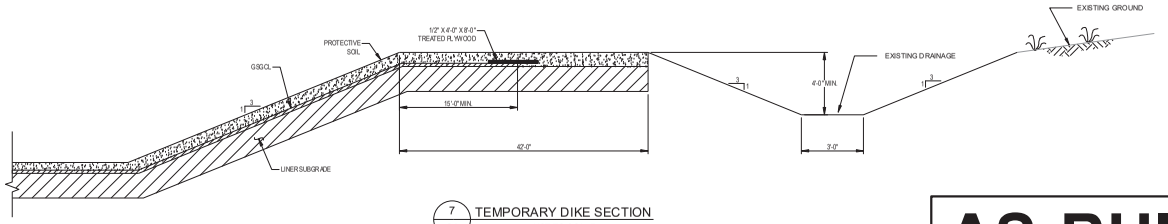

7/C2 TEMPORARY DIKE SECTION
NOT TO SCALE

AS-BUILT

REFERENCE	NO.	REVISIONS	BY	DATE
	1	ISSUED FOR CONSTRUCTION	PJB	4/29/15

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY PATRICK J. BEHLING,P.E. NO. 79872 ON APRIL 29, 2015.

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS
TEXAS ENGINEERING FIRM NO. 4760

DESIGNED BY:	MKS
DRAWN BY:	MKS
CHECKED BY:	PJB
APPROVED BY:	PJB
DRAWING No:	25247-000-CG-0001-00015

LUMINANT POWER

AX AREA CELL NO. 2

MISCELLANEOUS DETAILS

DATE: DECEMBER 2014 | SHEET NO. C2 | SEQ NO. 1