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December 1, 2025

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

RE: Response to TCEQ NOD 3 Addendum – CCR105
Luminant Generation Company LLC - Tatum, Rusk County
Industrial Solid Waste Registration No. 31277
EPA Identification No. TXD000821306
Tracking No. 27220868; RN102583093/CN603256413

Luminant Generation Company LLC has prepared written responses for the deficiencies identified in the "Addendum to 3rd NOD - New Registration – Luminant Generation Company LLC Registration - No. CCR105" received via email from TCEQ on October 1, 2025. The written responses are in Table 1 and the attached technical memorandum.

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: Technical Memorandum "Response to TCEQ NOD 3 Addendum – CCR Registration No. CCR105"

cc with attachments:

Pradeep Patel (Pradeep.patel@tceq.texas.gov)
Daniella Ortiz de Montellano (daniela.ortiz-demontellano@tceq.texas.gov)

Table 1 - NOD Summary and Response
Registration No. CCR105 - Luminant Generation Company LLC
Application Deficiencies - Addendum to NOD 3

ID[1]	App. Section	App. Sub Section	Location[2]	Citation	Deficiency Description/Resolution	Response
1	VI	VI.27. B	[Appendix F 2022 Groundwater Monitoring System Certification Addendum No. 1 A1 Landfill Area] (.pdf pgs. 11-14)	40 CFR §257.94 30 TAC §352.911	Provide North-South and East-West geological cross sections across the landfill down to the bedrock and beyond the boundary of the mine spoils showing the local subsurface geology in the vicinity of the landfill along with the projected nearest wells to the cross sections. Also, provide the maximum and minimum historical groundwater levels on the monitoring wells in the cross sections.	Please see attached Technical Memorandum "Response to TCEQ NOD 3 Addendum - CCR Registration No. CCR105", Section 1.0, NOD Item No. 1 Response and requested A1 Area Landfill cross sections in Technical Memorandum Attachment 2.
2	VI	VI.27.D	Appendix F 2024 Annual Groundwater and Corrective Action Report A-1 Area Landfill January 31, 2025 (.pdf pgs. 267-269) [2017 CCR Rule Groundwater Monitoring System Certification MLSES-A1 Landfill October 16, 2017] (pdf pgs. 42-51)	40 CFR §257.91(c) 30 TAC §352.911	A1 Landfill: Provide a narrative, with site-specific technical information, on the method that was used to determine the well spacing of the landfill groundwater monitoring system and how the monitoring system can capture all potential contaminant pathways from the landfill. For example, explain how potential contaminants can be captured in the area where the potentiometric surface map indicates a groundwater flow direction towards the south and west of the facility.	Please see attached Technical Memorandum "Response to TCEQ NOD 3 Addendum - CCR Registration No. CCR105", Section 1.0, NOD Item No. 2 Response.
3			EPA Notice Letter - RCRA February 4, 2025	40 CFR §257.107(h)(7)	A1 Landfill: Post on the public website the '2019-Martin Lake-SWR 31277-Corrective Measures Assessment ML Landfill.pdf' on the 2019 Martin Lake CCR website (as has been done for the Ash Pond Area).	Please see attached Technical Memorandum "Response to TCEQ NOD 3 Addendum - CCR Registration No. CCR105", Section 1.0, NOD Item No. 2 Response. An Assessment of Corrective Measures (ACM) was initiated on April 8, 2019. At that time, the notification that an ACM has been initiated required at 40 CFR §257.107(h)(7) was only for unlined surface impoundments as stated in 40 CFR §257.95(g)(5). As part of the "Part A: Deadline to Initiate Closure" update published on August 8, 2020, 40 CFR §257.95(g)(5) was updated to remove the speficity only requiring the notification for unlined surface impoundments thus indicating that the notification is required for all units. There was not a posting requirement for landfills at the time this ACM was intiated.

4	VI	VI.27	EPA Notice Letter - RCRA February 4, 2025 [Appendix F Coal Combustion Residual Rule Background Groundwater Monitoring and Statistical Analysis Summary Report (.pdf pg. 511) A1 Area Landfill] February 26, 2024	40 CFR §257.91(a) 40 CFR §257.91(c)	A1 Landfill: Provide a site-specific technical justification explaining the use of well BMW-11A-R as the background well for the A1 Area Landfill CCR Unit. For example: Provide additional 'background' groundwater quality for comparison, or Provide additional discussion on alternative statistical methods used to address the EPA comment from the Notice Letter dated Feb. 4, 2025. Section 2.4 (.pdf p. 511) and Appendix C (.pdf pages 1498-1506) of the CCRRBGMandSAS Report (2/26/24) within Appendix F, Revision 2 (dated February 27, 2024) discusses the use of the interwell statistical method, which uses the background well groundwater quality, and therefore, the 'background nature' of well BMW-11A-R comes into question.	Please see attached Technical Memorandum "Response to TCEQ NOD 3 Addendum - CCR Registration No. CCR105", Section 1.0, NOD Item No. 4 Response.
5	VI	VI.27	EPA Notice Letter - RCRA February 4, 2025	40 CFR §257.91(a) 40 CFR §257.91(c)	PDP5: Please provide a narrative that addresses the fact there is no true background well because of groundwater mounding and radial groundwater flow centered on well MW-18A.	Please see attached Technical Memorandum "Response to TCEQ NOD 3 Addendum - CCR Registration No. CCR105", Section 1.0, NOD Item No. 5 Response and PDP-5 potentiometric surface maps in Technical Memorandum Attachment 3.
6	VI	VI.27	CCR Rule Background GW Monitoring and Statistical Analysis Summary Report February 26, 2024 (.pdf pg. 2275) EPA Notice Letter - RCRA February 4, 2025	40 CFR §257.93(h)(1)	PDP-5 Area: Provide additional narrative explaining the use of intrawell data evaluation statistical analysis method used in Surface Impoundment PDP 5, groundwater monitoring systems at the Martin Lake CCR Unit. Section 2.4 (.pdf p. 2275) and Appendix C (.pdf pages 2997-3006) of the CCRRBGMandSAS Report (2/26/24) within Appendix F, Revision 2 (dated February 27, 2024) discusses the use of the intrawell statistical method.	Please see attached Technical Memorandum "Response to TCEQ NOD 3 Addendum - CCR Registration No. CCR105", Section 1.0, NOD Item No. 6 Response.
7	VI	VI.27.B	[Appendix F, GWM System Certification – Addendum No. 1 PDP-5 December 2022, Figures 3 and 4 PDP 5] (pdf pgs. 9-10)	40 CFR §257.94	Update the geological cross sections across the PDP-5 Surface Impoundment (and the closed PDPs-1, 2 and 3) (A-A' and B-B') to include other nearby wells to extend the subsurface geology beyond the unit boundary. Also include the historical highest and lowest groundwater levels at each additional well added to the cross section. PDP 5: Provide a narrative explaining the groundwater table elevations that occur above the base of the closed units, within the closed middle portion of PDP 1, 2, and 3. The PDP-5 Addendum 1 includes two cross sections across the PDP 5 Impoundment (A-A' and B-B'). The cross sections include historical maximum and minimum groundwater elevations on wells MW-20A and MW-18A on A-A' and wells PDP-25 and MW-19 on B-B.' The groundwater table elevations occur above the base of closed units: PDP-1, PDP-2, and PDP-3.	Please see attached Technical Memorandum "Response to TCEQ NOD 3 Addendum - CCR Registration No. CCR105", Section 1.0, NOD Item No. 7 Response and updated PDP-5 cross sections in Technical Memorandum Attachment 4 and closure approval in Attachment 5.

8	VI	VI.28	Coal Combustion Residual Rule 2024 Annual Groundwater and Corrective Action Report Attachment 1 January 31, 2025 (pdf pgs. 42-43)	40 CFR §257.94	PDP-5 Area: Provide a narrative explaining the historical variation of the potentiometric contours including the radial groundwater flow direction in the PDP-5 Area. Use all of the wells in the groundwater monitoring system and any non-CCR wells available in the surrounding areas for construction of the potentiometric surface contours or explain why those wells are excluded. (The initial maps in 2017 and map year October 4, 2021, shows four flow directions (radial) and map year 2024 shows 2 flow directions). Overall, the facility shows radial flow. Provide a groundwater monitoring system that has a sufficient number of wells and a well spacing adequate to monitor any downward and/or lateral movement of potential contaminants in all directions due to radial flow, see comment 3 above.	Please see attached Technical Memorandum "Response to TCEQ NOD 3 Addendum - CCR Registration No. CCR105", Section 1.0, NOD Item No. 8 Response.
9	VI	VI.29	Alternate Source Demonstration 2024 MLSES - PDP 5 March 8, 2024 (pdf pg. 3)	40 CFR §257.94(e)	Provide additional water quality data from nearby wells or previous studies that indicate similar concentrations for SSI constituents to support the natural-source explanation within the ASD. Provide the location of the ASD-referenced sampled wells (distance and direction) in the Sabine uplift area in Texas, as cited in Texas Bureau of Economic Geology report (1991) as stated in the ASD submission.	Please see attached Technical Memorandum "Response to TCEQ NOD 3 Addendum - CCR Registration No. CCR105", Section 1.0, NOD Item No. 9 Response and Texas Bureau of Economic Geology report data summary in Technical Memorandum Attachment 6..
10	VI	VI.27.B	[Appendix F Coal Combustion Residual Rule Groundwater Monitoring System Certification MLSES - Ash Pond October 16, 2017] (pdf pg. 21)	40 CFR §257.91 30 TAC §352.911	Update the (C-C') Cross Section in Appendix F - Ash Pond with the historical maximum and minimum groundwater levels and trace the bottom of the three Ash Pond Units on the cross section (as in CCR Assessment of Corrective Measures Report, September 2019, pdf pg. 37) showing the geological formations and the separation between the groundwater table and the bottom of the Ash Ponds. The Groundwater Monitoring Report 2021 shows a North and Northeast (NE) groundwater flow direction, a North NE to NE direction in 2022, and a NE direction again in 2023 and 2024. Address the following: Justify the well spacing in the Ash Pond area in the down-gradient direction. Justify how the present groundwater monitoring well network can detect any release of potential contaminants from the Ash Pond area based upon the existing number of wells and well spacing.	Please see attached Technical Memorandum "Response to TCEQ NOD 3 Addendum - CCR Registration No. CCR105", Section 1.0, NOD Item No. 10 Response and updated Ash Pond Area cross sections in Technical Memorandum Attachment 7.

11	VI	VI.27.B	[Appendix F Coal Combustion Residual Rule Groundwater Monitoring System Certification MLSES - Ash Pond October 16, 2017] (pdf pgs. 21, 23)	40 CFR §257.93(a)	Provide information on using H-26, H-27, and H-33 as background wells as the groundwater may be affected by the operations of the facility (e.g. coal piles) to the west, which is upgradient (based on applicant-supplied groundwater flow maps) to these background wells. This may be based upon: Groundwater or other monitoring data to substantiate the 'background' quality of these three upgradient, background wells. Additionally, include any geotechnical analyses of the 'ML' lithologic unit that may indicate a low-flow boundary or 'isolation' of the lower sand body, in which the background wells are completed (as indicated in Cross Section C-C'), from the operations of the facility (e.g. coal piles).	Please see attached Technical Memorandum "Response to TCEQ NOD 3 Addendum - CCR Registration No. CCR105", Section 1.0, NOD Item No. 11 Response.
12	VI	VI.27.B	[CCR Assessment of Corrective Measures Report Ash Pond Area] September 2019 (pdf pgs. 37-38)	40 CFR §257.91 30 TAC §352.911	Cross section C-C' (Groundwater Monitoring System Certification Report, October 16, 2017, pg. 21) illustrates that the Ash Pond(s) monitoring wells are completed into the lower sand lithologic unit. This sand unit is partially isolated by a clay lithologic unit in the eastern three-quarters of the Ash Pond Management Unit. Cross section C-C' from the CCR Assessment of Corrective Measures Report (September 2019) illustrates that the three surface impoundments lie, either partially or wholly, within the upper sand lithologic unit. Justify how no monitoring wells were completed within the upper sand unit at least in the portions of the Ash Pond Management Unit that are underlain by the 'isolating' clay unit.	Please see attached Technical Memorandum "Response to TCEQ NOD 3 Addendum - CCR Registration No. CCR105", Section 1.0, NOD Item No. 12 Response.
13	VIII	VIII.33	[Appendix H (Revision 2) – Financial Assurance, Post- Closure Care Cost Estimate Tables 1, 2 & 3 February 27, 2024] (pdf pgs. 6-8)	30 TAC §352.1101(b)	Revise the post-closure cost estimates in the referenced tables to include the dollar year in which the estimates were made (i.e., 2024 dollars).	Please see attached Technical Memorandum "Response to TCEQ NOD 3 Addendum - CCR Registration No. CCR105", Section 1.0, NOD Item No. 13 Response and Post Closure Care Cost Estimates - Revision 3 located in Technical Memorandum Attachment 8.
14	N/A	N/A	NOD 3 Response Letter Dated 2/27/2024		In the NOD response letter, the response column refers to CCR registration No. CCR-106 numerous times; however, the Martin Lake CCR Facility is designated as CCR-105. Please revise the letter and make the necessary corrections.	Please see attached Technical Memorandum "Response to TCEQ NOD 3 Addendum - CCR Registration No. CCR105", Section 1.0, NOD Item No. 14 Response and replacement pages for NOD response letter in Technical Memorandum Attachment 9.
10(2)	VII	VII.31	[Appendix G Closure Plan Addendum 1 MLSES - A1 Area Landfill] December 2022 (.pdf pg. 80, 85)	40 CFR §257.102(d)(1)(iii)	Address in the Slope Stability Analysis Section, as required in NOD 3, dated 02/27/2024. The following issues were not fully addressed for A-1 Landfill. Slope Stability Analysis Section (Section 2.4: Slope Stability – A1 Area Landfill Cap/Cover System): Provide a statement indicating that an amendment will be submitted prior to construction for review and approval. The statement shall also indicate that 1) site-specific geotechnical data, 2) final cover materials testing data, and 3) final design criteria, with all analyses, shall be signed and sealed by a Texas Licensed P.E. (with Firm Number if applicable).	Please see attached Technical Memorandum "Response to TCEQ NOD 3 Addendum - CCR Registration No. CCR105", Section 1.0, NOD Item No. 10(2) Response and closure plan replacement page containing requested statement in Technical Memorandum Attachment 10.

12(2)	VII	VII.31	[Appendix G Closure Plan Addendum 1 for A1 Area Landfill, Ash Pond Area, and PDP-5] (A1 .pdf pg. 85, 92) (Ash Pond .pdf pg. 214, 219) (PDP5 .pdf pg. 355, 359)	30 TAC §352.4 40 CFR §257.102(b) 40 CFR §257.102(d)(3)(i)(D)	Address in the Settlement Analysis Section (2.3 Settling and Subsidence - Cap/Cover System), as required in NOD 3, dated 02/27/2024. The following issue was not addressed in the NOD 3 response. Settlement Analysis Section: Provide a statement indicating that an amendment will be submitted prior to construction for review and approval. The statement shall also indicate that site 1) specific geotechnical data, 2) final cover materials testing data, and 3) final design criteria, with all analyses, shall be signed and sealed by a Texas Licensed P.E. (with Firm Number if applicable).	Please see attached Technical Memorandum "Response to TCEQ NOD 3 Addendum - CCR Registration No. CCR105", Section 1.0, NOD Item No. 12(2) Response and closure plan replacement pages containing requested statement in Technical Memorandum Attachment 10.

[1] Deficiency ID – Key: Use this numbered ID 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.

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TECHNICAL MEMORANDUM

TO: Eric Chavers, Luminant Generation Company LLC

FROM: Will Vienne, Bullock, Bennett & Associates, LLC

RE: Response to TCEQ NOD 3 Addendum – CCR Registration No. CCR105
Martin Lake Steam Electric Station - Rusk and Panola Counties, Texas
(SWR 31277; RN102583093; CN603256413; EPA ID No. TXD000821306)

DATE: November 25, 2025

This technical memorandum was prepared by Bullock, Bennett & Associates, LLC (BBA) on behalf of Luminant Generation Company LLC (Luminant) to respond to Texas Commission on Environmental Quality's (TCEQ's) request for additional information regarding the Coal Combustion Residuals (CCR) Program registration application for CCR units at the Martin Lake Steam Electric Station in Rusk and Panola Counties, Texas (the Site). The Martin Lake CCR units regulated under the TCEQ's CCR Program include the East Ash Pond, West Ash Pond, and New Scrubber Pond (collectively referred to as the Ash Ponds); the Permanent Disposal Pond 5 (PDP-5); and the A1 Area Landfill. The information presented in this memo addresses the TCEQ's Addendum to 3rd Notice of Deficiency (NOD) issued October 1, 2025.

1.0 COMMENTS AND RESPONSES

This section provides a summary of the TCEQ's technical comments and responses to those comments. A copy of the TCEQ's Addendum to the 3rd NOD letter is provided in Attachment 1.

NOD Item No. 1

[A1 Landfill:] *Provide North-South and East-West geological cross sections across the landfill down to the bedrock and beyond the boundary of the mine spoils showing the local subsurface geology in the vicinity of the landfill along with the projected nearest wells to the cross sections. Also, provide the maximum and minimum historical groundwater levels on the monitoring wells in the cross sections.*

Response: The requested A1 Area Landfill cross sections are provided in Attachment 2.

NOD Item No. 2

A1 Landfill: Provide a narrative, with site-specific technical information, on the method that was used to determine the well spacing of the landfill groundwater monitoring system and how the monitoring system can capture all potential contaminant pathways from the landfill. For example, explain how potential contaminants can be captured in the area where the potentiometric surface map indicates a groundwater flow direction towards the south and west of the facility.

Response: A qualified professional engineer has certified that the CCR groundwater monitoring system at the A1 Area Landfill was designed and constructed to meet the groundwater monitoring system requirements of the *Groundwater Monitoring Systems* section [40 C.F.R § 257.91] of the CCR Rule (PBW, 2017a). The CCR Rule specifies that a CCR groundwater monitoring system must consist of a minimum of one upgradient and three downgradient wells. The A1 Area Landfill CCR groundwater monitoring system consists of twelve monitoring wells, including two upgradient wells and ten downgradient wells. The CCR monitoring wells were completed in the uppermost aquifer at approximately regular intervals around the perimeter of the CCR unit to (1) determine the direction of groundwater flow, (2) monitor upgradient groundwater conditions to establish background concentrations, and (3) monitor downgradient areas of the CCR unit so that potential releases from the unit could be detected.

The TCEQ reviewed the A1 Area Landfill monitoring well network as part of the registration package that was submitted to and approved by the TCEQ Industrial and Hazardous Waste (IHW) Program. Several monitoring wells have been replaced over time, but the current monitoring well locations are nearly identical to those that the TCEQ approved as part of the IHW registration approval. In regard to monitoring potential contaminant pathways on the south and west of the facility, there are several CCR groundwater monitoring wells located in those areas, including BMW-18, BMW-19, BMW-23, BMW-24, and BMW-28. Well BMW-28 was added to the landfill monitoring network in 2016 where a monitoring well was not present at the time, specifically to monitor groundwater near the southwest boundary of the landfill.

The current CCR groundwater monitoring well network has been effective at detecting statistically significant increases/levels (SSIs/SSLs) in downgradient wells at the A1 Area Landfill. The initial Detection Monitoring Program groundwater samples were collected from the A1 Area Landfill CCR monitoring well network in September 2017. The evaluation of those data was completed in 2018 using procedures described in the Statistical Analysis Plan (Golder, 2022a) to identify SSIs of Appendix III parameters over background concentrations. Alternate source evaluations were inconclusive for one or more of the SSIs. Consequently, an Assessment Monitoring Program was initiated and established for the A1 Area Landfill in July 2018 in accordance with 40 C.F.R. § 257.94(e)(2). Concentrations of Appendix IV constituents at SSLs above groundwater protection standards (GWPSs) were initially identified in January 2019 for arsenic, barium, cobalt, and lithium; however, cobalt is the only Appendix IV constituent that is currently observed at SSLs above the GWPS (BBA, 2025a).

An Assessment of Corrective Measures was initiated on April 8, 2019, and was completed on September 5, 2019 (Golder, 2019a), in accordance with 40 C.F.R. § 257.96 to address the Appendix IV SSLs. A public meeting was held on November 13, 2019, pursuant to 40 C.F.R. § 257.96(e), to discuss the results of the Assessment of Corrective Measures. A Remedy Selection Report (Golder, 2022b) was completed in January 2022 in accordance with the requirements of 40 C.F.R. § 257.97. Monitored natural attenuation (MNA) with source control measures was selected as the remedy to address the Appendix IV constituents observed at SSLs after a site-specific feasibility study to evaluate MNA as a potential groundwater remedy was performed in accordance with guidance and best practices promulgated by the United States Environmental Protection Agency (EPA, 2007a and 2007b) and Interstate Technology and Regulatory Council (ITRC, 2010).

In summary, the design of the A1 Area Landfill groundwater monitoring system has been effective at identifying SSIs/SSLs and satisfies the groundwater monitoring performance standard of the CCR Rule.

NOD Item No. 3

A1 Landfill: Post on the public website the '2019-Martin Lake-SWR 31277-Corrective Measures Assessment ML Landfill.pdf' on the 2019 Martin Lake CCR website (as has been done for the Ash Pond Area).

Response:

There was not a posting requirement at the time this Assessment of Corrective Measures was initiated on April 8, 2019. At that time, the notification that an Assessment of Corrective Measures has been initiated required at 40 C.F.R. § 257.107(h)(7) was only for unlined surface impoundments as stated in 40 C.F.R. § 257.95(g)(5). 40 C.F.R. §§ 257.107(h)(7) and 257.105(h)(9) point to 40 C.F.R. § 257.95(g)(5), which states: "If an assessment of corrective measures is required under § 257.96 by either paragraph (g)(3)(i) or (g)(4) of this section, and if the CCR unit is ***an existing unlined CCR surface impoundment*** as determined by § 257.71(a), then the CCR unit is subject to the closure requirements under § 257.101(a) to retrofit or close. In addition, the owner or operator must prepare a notification stating that an assessment of corrective measures has been initiated." [emphasis added]. As part of the "Part A: Deadline to Initiate Closure" update published on August 8, 2020, 40 C.F.R. §257.95(g)(5) was updated to remove the specificity only requiring the notification for unlined surface impoundments; however, that change has not been adopted by the TCEQ.

NOD Item No. 4

A1 Landfill: Provide a site-specific technical justification explaining the use of well BMW-11A-R as the background well for the A1 Area Landfill CCR Unit. For example: Provide additional 'background' groundwater quality for comparison, or provide additional discussion on alternative statistical methods used to address the EPA comment from the Notice Letter dated Feb. 4, 2025. Section 2.4 (.pdf p. 511) and Appendix C (.pdf pages 1498-1506) of the CCRRBGMandSAS Report (2/26/24) within Appendix F, Revision 2 (dated February 27, 2024) discusses the use of the interwell statistical method, which uses

the background well groundwater quality, and therefore, the 'background nature' of well BMW-11A-R comes into question.

Response:

The A1 Area Landfill was constructed on top of disturbed overburden soil (mine spoil) that was previously mined then backfilled as part of lignite mining operations at the former Beckville Lignite Mine. The Beckville Lignite Mine, which is a subsection of the former Martin Lake Lignite Mine, formerly operated and is regulated under a surface mining permit issued by the Railroad Commission of Texas (RRC). The A1 Area Landfill is surrounded to the north, east, and west by former mined areas (see Attachment 2, Figure 1). Areas to the southeast near the mine permit boundary are reportedly unmined. There is a well, BMW-31, located in an unmined area southeast and hydraulically downgradient of the A1 Area Landfill that was used as a CCR delineation well during the Assessment of Corrective Measures that was performed at the A1 Area Landfill in 2019 (Golder, 2019a). BWM-31 has only been sampled during the Assessment of Corrective Measures and has only been analyzed for fluoride and lithium. The BMW-31 sample results for those constituents (0.255 mg/L and 0.0203 mg/L, respectively) are similar to those observed in background well BMW-11A-R. Fluoride in BMW-11A-R has ranged from below the detection limit (<0.10 mg/L) to 0.353 mg/L. Lithium in BMW-11A-R has ranged from 0.0139 mg/L to 0.0686 mg/L. The limited sample data from BMW-31 falls within the range of concentrations observed at BMW-11A-R.

The CCR groundwater monitoring well network at the A1 Area Landfill was initially established when the CCR Rule was issued by the EPA in 2015 using Site monitoring wells BMW-11A-R, BMW-18, BMW-19, BMW-20, BMW-21, BMW-22, BMW-23, and BMW-24. Monitoring wells BMW-26, BMW-27, and BMW-28 were added to the CCR monitoring network in 2016 and well BMW-33 was added to the CCR monitoring network in 2020. Eight background groundwater monitoring events were performed from October 2015 to December 2016. The highest groundwater elevation during the background monitoring period was consistently observed at well BMW-11-AR. As a result, BMW-11-AR was designated as an upgradient well relative to the A1 Area Landfill and was used to establish background concentrations of Appendix III and IV constituents. Well BMW-33 is also located hydraulically upgradient of the A1 Area Landfill, but it was added after background had been established; therefore, it was not used to establish background.

The following statistical evaluation methods were selected to demonstrate groundwater compliance for the A1 Area Landfill under the CCR Rule:

- Use of interwell data evaluations, which compare new sample data to data from upgradient or background monitoring wells.
- Use of upper prediction limits (UPLs) to develop site-specific background concentrations for all Appendix III and Appendix IV constituents. This approach is a common statistical method used

to evaluate groundwater compliance for Subtitle D landfill facilities and is one of the approved options for groundwater quality data statistical evaluation under the CCR Rule.

- In detection monitoring, Appendix III constituent concentrations from each well are compared to background UPLs to ascertain if a statistically significant increase above background exists. Background UPLs are based on a 1-of-2 resampling approach, meaning that if zero or one concentration measurement from a series of two independent samples collected from a well do not exceed the appropriate UPL, then a statistically significant increase over background has not occurred at a CCR unit.
- In assessment monitoring, the 95% lower confidence limit of the mean (LCL) is calculated after each assessment monitoring event for each Appendix IV constituent. The set of data used to calculate LCLs is based on current and historical constituent concentrations. A statistically significant increase over the GWPS has occurred at a CCR unit when the LCL for at least one assessment monitoring constituent at a well is greater than the appropriate GWPS.

The statistical evaluation procedures used for the A1 Area Landfill groundwater data conform with the CCR Rule requirements in 40 C.F.R. § 257.93, as well as EPA's *Unified Guidance: Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities (Unified Guidance)* (EPA, 2009) and the American Society for Testing and Materials (ASTM) standard D6312-17, *Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs at waste Disposal Facilities* (ASTM, 2017).

The CCR regulations that govern the registrations for PDP-5, the Ash Ponds, and the A1 Area Landfill are focused on detecting and responding to releases from a regulated CCR unit, not from other sources such as mine spoil or other potential sources that are not regulated under the CCR Rule. *See* 40 C.F.R. § 257.91(a). Thus, the regulations do not require an operator to demonstrate background groundwater conditions absent any operations of the facility, or "pristine" conditions that pre-date any CCR disposal activities at the site. EPA has consistently explained that 40 C.F.R. § 257.91 requires a facility to determine background groundwater quality that has not been affected by "***the*** CCR unit." *See, e.g.*, 75 Fed. Reg. 35,128, 35,181 (June 21, 2010); 80 Fed. Reg. 21,302, 21,399, 21,400 (Apr. 17, 2015). Further, the regulations specifically provide that a facility operator "may demonstrate that a source ***other than the CCR unit*** caused the statistically significant increase over background levels for a constituent," in which case no corrective action under the regulations is required. 40 C.F.R. § 257.94(e)(2) [emphasis added].

In addition, EPA has consistently relied on the *Unified Guidance* to determine if a statistical approach meets the performance standards in 40 C.F.R. § 257.93. *See, e.g.*, 80 Fed. Reg. at 21,402; 85 Fed. Reg. 53,516, 53,543 (Aug. 28, 2020). According to the *Unified Guidance*, "[t]he most important quality of background is that it reflects the historical conditions unaffected by the activities it is designed to be compared to. These conditions could range from an uncontaminated aquifer **to *an historically contaminated site baseline unaffected by recent RCRA-actionable contaminant releases***

[emphasis added]. Representative background data will therefore have numerical characteristics closely matching those arising from the site-specific aquifer being evaluated." *Unified Guidance* at 5-1. The *Unified Guidance* does not prohibit a regulated unit from being located downgradient of other potential source areas or establishing background in groundwater that may be influenced by anthropogenic activities unrelated to the regulated unit. The objective of the statistical approaches presented in the *Unified Guidance* is to identify releases from regulated CCR units or changes in existing conditions as expeditiously as possible. As discussed in the response to NOD Item No. 2, the current CCR groundwater monitoring well network (and statistical approach) has been effective at detecting SSIs/SSLs in downgradient wells at the A1 Area Landfill.

In summary, the statistical approach utilized for the A1 Area Landfill CCR groundwater monitoring program conforms with the CCR Rule and with commonly accepted methods for evaluating groundwater monitoring data, and has been effective at identifying SSIs/SSLs in monitoring wells downgradient of the A1 Area Landfill; therefore, the groundwater monitoring system and statistical methods, including methods used to establish background, satisfy the groundwater monitoring performance standard of the CCR Rule.

NOD Item No. 5

PDP5: Please provide a narrative that addresses the fact there is no true background well because of groundwater mounding and radial groundwater flow centered on well MW-18A.

Response:

PDP-5 was constructed in 2010, prior to the CCR Rule being issued by EPA in 2015. PDP-5 has been registered and regulated under the TCEQ IHW Program as industrial non-hazardous solid waste management unit No. 024 (TCEQ Solid Waste Registration No. 31277) since it was constructed. TCEQ reviewed the PDP-5 monitoring well network as part of the registration package that was submitted to and approved by the TCEQ IHW Program. Several monitoring wells have been replaced or added over time, but the current monitoring well locations are similar to those that the TCEQ approved as part of the IHW registration approval.

The PDP-5 CCR groundwater monitoring system has been certified by a professional engineer in accordance with 40 C.F.R § 257.91 (PBW, 2017a). The PDP-5 CCR groundwater monitoring system consists of nine monitoring wells that are each screened in the uppermost aquifer at the Site. PDP-5 extends above natural grade and the PDP-5 area represents a localized topographic high from which groundwater flows radially outward. Data collected as part of the CCR groundwater monitoring events are evaluated using procedures described in the Statistical Analysis Plan for the unit (Golder, 2022d) to identify SSIs of Appendix III parameters over baseline concentrations. An intrawell data evaluation approach is used to compare the sample data to historical data at each groundwater monitoring well based on the following:

- Topographic and groundwater elevations near PDP-5 are higher than those in the surrounding area. Groundwater is mounded and flows radially outward in the vicinity of PDP-5 due to the topography near the impoundment's location.
- As shown on the groundwater potentiometric surface maps that were previously submitted to the TCEQ as part of the PDP-5 CCR Program registration package (PBW, 2017; BBA, 2024), three supplemental wells (PDP-27, PDP-28, and PDP-29) were installed at distances up to approximately 1,340 feet from PDP-5 and were gauged during the background period to evaluate groundwater elevations and groundwater flow directions in the vicinity of PDP-5 beyond the CCR groundwater monitoring network of wells. The groundwater potentiometric surface maps developed during the background monitoring period are reproduced in Attachment 3. The groundwater elevation data collected from these supplemental groundwater wells indicate that groundwater elevations continue to decrease at distances greater than 1,300 feet from PDP-5 and suggest that groundwater elevations would continue to decrease beyond the western property boundary of the MLSES along Farm-to-Market Road 2658. Groundwater elevations at PDP-5 are also considerably higher than those measured in the CCR groundwater monitoring wells in the Ash Pond Area, which is located east of the MLSES power block and east of PDP-5.
- Use of intrawell data evaluations complies with CCR Rule requirements as well as EPA's *Unified Guidance* (EPA, 2009). Intrawell data evaluations compare water quality data in each well against baseline values established from that well's own historical water quality data.

40 C.F.R § 257.93(f) allows a facility to use any statistical test method in evaluating groundwater monitoring data so long as the method "meets the performance standards of [40 C.F.R § 257.93(g)]." On at least two occasions, EPA has made clear that intrawell monitoring is not "per se prohibited by the CCR regulations" and that intrawell monitoring can meet the requirements of 40 C.F.R §§ 257.93(f) and (g) in some circumstances. *See* 85 Fed. Reg. at 53,543; *see also* 89 Fed. Reg. 38,950, 39,079, 39,064 (May 8, 2024). In fact, the agency has recognized that "intrawell comparison may be the *preferred* method" in certain circumstances. 85 Fed. Reg. at 53,543 (citing *Unified Guidance* at 5-6).

EPA has consistently relied on the *Unified Guidance* to determine if a statistical approach meets the performance standards in 40 C.F.R § 257.93. *See, e.g.*, 80 Fed. Reg. at 21,402; 85 Fed. Reg. at 53,543. According to the *Unified Guidance*, intrawell comparisons are appropriate when, among others, there is evidence of spatial variability, upgradient well background becomes contaminated, groundwater flow gradient is uncertain or unstable, or unique hydrogeological conditions otherwise preclude meaningful interwell comparisons. *Unified Guidance* at 5-6, 5-7, 8-3; 85 Fed. Reg. at 53,543; *see also Unified Guidance* at B-6 ("[I]nterwell comparisons between upgradient and downgradient well locations are not always appropriate, either due to natural spatial variability, screening of background and downgradient wells in different hydrostratigraphic positions, effects of groundwater mounding, *etc.* In

such cases, the appropriate statistical approach is to use an *intrawell* test at each compliance location.").

According to the *Unified Guidance*, intrawell monitoring is appropriate at PDP-5. The *Unified Guidance* explains that "[f]or sites historically contaminated above background, the only way to effectively monitor compliance wells may be to establish a historical intrawell baseline and measure increases above this baseline." *Unified Guidance* at 8-3. Intrawell monitoring may also be the best method when changes in groundwater quality impact upgradient background wells. *Id*. at 4-9; *see also id*. at 6-32 (discussing the advantages of using intrawell background). Thus, based on conditions at PDP-5, intrawell monitoring is an appropriate approach for establishing background groundwater quality for PDP-5.

NOD Item No. 6

PDP-5 Area: Provide additional narrative explaining the use of intrawell data evaluation statistical analysis method used in Surface Impoundment PDP 5, groundwater monitoring systems at the Martin Lake CCR Unit.

Section 2.4 (.pdf p. 2275) and Appendix C (.pdf pages 2997-3006) of the CCRRBGMandSAS Report (2/26/24) within Appendix F, Revision 2 (dated February 27, 2024) discusses the use of the intrawell statistical method.

Response:

See response to NOD Item No. 5.

NOD Item No. 7

Update the geological cross sections across the PDP-5 Surface Impoundment (and the closed PDPs-1, 2 and 3) (A-A' and B-B') to include other nearby wells to extend the subsurface geology beyond the unit boundary. Also include the historical highest and lowest groundwater levels at each additional well added to the cross section.

PDP 5: Provide a narrative explaining the groundwater table elevations that occur above the base of the closed units, within the closed middle portion of PDP 1, 2, and 3. The PDP-5 Addendum 1 includes two cross sections across the PDP 5 Impoundment (A-A' and B-B'). The cross sections include historical maximum and minimum groundwater elevations on wells MW-20A and MW-18A on A-A' and wells PDP-25 and MW-19 on B-B.' The groundwater table elevations occur above the base of closed units: PDP-1, PDP-2, and PDP-3.

Response:

The updated PDP-5 cross sections are provided in Attachment 4.

Closed PDP units PDP 1, 2, and 3 are regulated under the TCEQ IHW Program as industrial, non-hazardous solid waste management unit nos. 004, 005, and 006, respectively (TCEQ Solid Waste Registration No. 31277). TCEQ approved closure of PDP 1, 2, and 3 in a letter issued March 12, 2015.

The TCEQ closure approval letter stated that a release from the closed former impoundments was not indicated and that no further action was required other than filing a deed notice to restrict groundwater usage within the footprint of the closed former impoundments. A copy of the TCEQ closure approval letter is provided in Attachment 5.

It is important to note that the Texas and federal CCR regulations do not apply to any and all CCR activities or CCR disposal at a facility. For example, PDP 1, 2, and 3 are not regulated under the federal regulations that TCEQ adopted by reference in 30 TAC Chapter 352—that is, certain identified regulations at 40 C.F.R. Part 257, as amended through July 2, 2015.

The pending registrations pursuant to 30 TAC § 352.101 are only for PDP-5, the Ash Ponds, and the A1 Area Landfill. PDP 1, 2, and 3 are not regulated by 30 TAC Chapter 352 as CCR units and do not require registrations. Instead, the prior closure of PDP 1, 2, and 3 and any necessary monitoring or corrective action measures are covered by other Texas regulatory programs. In previously examining PDP-5's compliance status under the 2015 federal regulations (the ones adopted by Texas), EPA has considered only the requirement to monitor for potential releases from PDP-5 (the *regulated* CCR unit) using groundwater conditions "prior to operation of PDP-5," not prior to the operation of PDP 1, 2, and 3. *See* EPA, *Proposed Denial of the CCR Part B Alternate Liner Demonstration Application for the Martin Lake Steam Electric Station*, at 17 (Jan. 25, 2023).

NOD Item No. 8

PDP-5 Area: Provide a narrative explaining the historical variation of the potentiometric contours including the radial groundwater flow direction in the PDP-5 Area. Use all of the wells in the groundwater monitoring system and any non-CCR wells available in the surrounding areas for construction of the potentiometric surface contours or explain why those wells are excluded. (The initial maps in 2017 and map year October 4, 2021, shows four flow directions (radial) and map year 2024 shows 2 flow directions). Overall, the facility shows radial flow. Provide a groundwater monitoring system that has a sufficient number of wells and a well spacing adequate to monitor any downward and/or lateral movement of potential contaminants in all directions due to radial flow, see comment 3 above.

Response:

Luminant and its consultants working on the PDP-5 CCR project have consistently maintained that the PDP-5 area represents a localized topographic high from which groundwater flows radially outward. The CCR groundwater monitoring wells are spaced at semi-regular intervals around the perimeter of PDP-5 and are positioned to monitor groundwater conditions on all sides and in all downgradient directions from the unit. In constructing groundwater potentiometric surface maps for areas where groundwater radial flow occurs, the groundwater potentiometric contours will always have breaks in the contour lines if the monitoring network consists of a single ring of wells, regardless of how closely the wells are spaced. As discussed in the response to NOD Item No. 5, three supplemental wells (PDP-27,

PDP-28, and PDP-29) were installed and gauged during the background monitoring period to evaluate groundwater elevations and groundwater flow directions in the vicinity of PDP-5 beyond the CCR groundwater monitoring network of wells. Groundwater potentiometric maps that include groundwater elevation data from the supplemental wells have consistently demonstrated radial groundwater flow around the PDP-5 area (see Attachment 3). These supplemental wells were not incorporated into the CCR groundwater monitoring network because they are not located near the unit's waste boundary and, therefore, are not ideally positioned to monitor groundwater quality, as the CCR monitoring wells are.

The 2024 groundwater potentiometric maps noted in the TCEQ's comment show radial groundwater flow centered around MW-18A and the east-central side of PDP-5. Based on the consistent historical record of radial flow around the PDP-5 area, groundwater elevations are expected to decrease east of MW-18A.

In order to clearly demonstrate the radial flow conditions in the PDP-5 area, Luminant proposes to gauge water levels in supplemental wells PDP-27, PDP-28, and PDP-29 during future CCR monitoring events. Because both semiannual 2025 monitoring events have already been completed, gauging of the supplemental wells would begin during the first semiannual monitoring event in 2026. If TCEQ agrees with this plan, the PDP-5 Groundwater Monitoring Plan will be updated to provide that PDP-27, PDP-28, and PDP-29 will be gauged during each semiannual monitoring event, and the revised monitoring plan will be submitted to the TCEQ.

NOD Item No. 9

Provide additional water quality data from nearby wells or previous studies that indicate similar concentrations for SSI constituents to support the natural-source explanation within the ASD.

Provide the location of the ASD-referenced sampled wells (distance and direction) in the Sabine uplift area in Texas, as cited in Texas Bureau of Economic Geology report (1991) as stated in the ASD submission.

Response:

The uppermost aquifer at the Site consists of unconsolidated, sandy sediments belonging to the Wilcox Group (see geologic map in Attachment 6). The Wilcox Group, with the overlying Carrizo Sand Formation, forms the Carrizo-Wilcox Aquifer that runs from northeast Texas near Rusk and Panola Counties to south Texas near Dimmit and Webb Counties. The historical Appendix III parameter concentrations observed in the PDP-5 CCR monitoring wells are typical of concentrations observed in groundwater samples collected from other wells completed in the Carrizo-Wilcox Aquifer in the region. The Bureau of Economic Geology at the University of Texas at Austin (BEG) has summarized water chemistry data from Carrizo-Wilcox wells in the Sabine Uplift region of Texas, which includes the Martin Lake facility. The Carrizo-Wilcox groundwater samples summarized in the BEG study (Fogg et al., 1991) were analyzed for several Appendix III constituents, including calcium, chloride, pH, sulfate, and

total dissolved solids (TDS). The ranges and average concentrations observed for these constituents in the BEG study and in the PDP-5 CCR monitoring wells are summarized below:

Carrizo/Wilcox Groundwater Concentration Ranges

Constituent	BEG Regional Study (Fogg et al., 1991) (mg/L)	PDP-5 CCR Groundwater Samples (mg/L)
Calcium	0.10 – 4,374	1.0 – 226
Chloride	2.0 – 1,080	1.1 – 135
pH	4.5 – 8.9	4.2 – 6.98
Sulfate	0 – 1,570	1 – 489
TDS	35 – 2,018	45 – 1,190

Carrizo/Wilcox Groundwater Concentration Averages

Constituent	BEG Regional Study (Fogg et al., 1991) (mg/L)	PDP-5 CCR Groundwater Samples (mg/L)
Calcium	30.3	28
Chloride	68.2	23
pH	7.7	6.6
Sulfate	40.7	104
TDS	469	305

The ranges of Appendix III concentrations observed in the PDP-5 CCR groundwater monitoring well samples are consistent with those in the BEG study. The average concentrations for the PDP-5 samples are considerably lower than the upper end of concentrations observed in the BEG study and are similar to the BEG study averages overall. The PDP-5 sample averages are lower than the BEG study averages for all constituents other than sulfate. The variability in constituent concentrations in the Carrizo-Wilcox wells at the Site and in the region is high, with considerable variability occurring between sample locations and between sampling events. For example, the sulfate results in the BEG study have a standard deviation (i.e., the amount of variation from the mean sulfate value) of 103 mg/L. The standard deviation of sulfate concentrations in the PDP-5 CCR monitoring wells is similarly high at 130 mg/L.

The groundwater sample data from the BEG study are reproduced in Attachment 6, Table 1. The well location map from the BEG study is reproduced on Attachment 6, Figure 1 with the approximate location of the Martin Lake Steam Electric Station added for reference. Groundwater sample data collected as part of the PDP-5 CCR program were presented in the 2024 Annual Groundwater Monitoring and Corrective Action Report (BBA, 2025b) and in other documents submitted to the TCEQ as part of the CCR unit registration.

The significance of the BEG data set is that it represents groundwater data from the same geologic setting as the Site. Proximity to the Site is not necessarily more or less relevant to the observed water quality at the Site than the geologic setting in general; however, as requested by the TCEQ, BBA also reviewed the BEG study data to specifically identify wells located near the Martin Lake facility. The Martin Lake facility is located near the border of Rusk and Panola Counties in the outcrop area of the Wilcox Group (Attachment 6, Figures 1 and 2). Because the PDP-5 CCR monitoring wells are completed to total depths ranging from 25 to 67 feet below ground surface (bgs), the BEG study was reviewed to identify wells within Rusk and Panola Counties that were completed to less than 100 feet bgs with available groundwater data. The wells that meet these criteria are highlighted on the BEG well location map on Attachment 6, Figure 1. There were no wells identified in the immediate vicinity of the Martin Lake facility that were completed in the upper 100 feet bgs. There is one well with sample data (well no. 3552101) that is reportedly located within approximately 2 to 3 miles of the Martin Lake facility, but the well is completed deeper than the CCR monitoring wells, with a total depth of almost 200 feet. Similarly, in EPA's recent facility assessment of PDP-5 (EPA, 2025), EPA noted, based on Texas Water Development Board (TWDB) Groundwater Database records, the presence of a shallow water well (well no. 3544701) located offsite but near the Martin Lake facility; however, the TWDB water chemistry data sheets that EPA cited in their facility assessment letter incorrectly listed the well depth as 26 feet. The number *26* is the construction form item number shown next to the total depth item on the well construction form. The driller's well construction form lists the total depth of the well as 555 feet, which is considerably deeper than the PDP-5 CCR monitoring wells and thus not informative.

The BEG study included fourteen wells completed in the upper 100 feet bgs in Rusk or Panola Counties that had available groundwater sample data. The pH results for the well samples ranged from 6.5 to 7.6, the calcium results ranged from 6.5 mg/L to 157 mg/L, the chloride results ranged from 5.0 mg/L to 212 mg/L, the sulfate results ranged from 4.0 mg/L to 284 mg/L, and the TDS results ranged from 42.6 mg/L to 1,033 mg/L (Attachment 6, Table 1). These results are very similar to the ranges observed in the PDP-5 CCR monitoring well samples as listed in the tables above. Some PDP-5 CCR monitoring well sample results fall outside the data ranges for the shallow BEG study wells in Rusk and Panola County; however, the variability in parameter ranges is high in both the CCR and BEG well data; therefore, the minor discrepancies between the data sets are not unexpected, and do not indicate a release from the unit. Furthermore, the CCR well parameter ranges for calcium, chloride, sulfate, and TDS are within the ranges observed in the larger regional BEG data set. There have been occasional measurements of low pH over the 10-year CCR Program monitoring period, including one measurement (in well PDP-24 in September 2018) that fell outside the range observed in the larger regional BEG data set; however, in each case, the low pH measurements measured at the Site could not be confirmed during the following semiannual monitoring event. A representative water sample was collected from PDP-5 on October 28, 2021 (Golder, 2021). The PDP-5 water sample had a pH measurement of 8.31, which is higher than all groundwater pH measurements collected as part of PDP-5 CCR groundwater monitoring program. The relatively higher pH of the surface impoundment sample compared to that of the PDP-5 groundwater samples suggests that a release from PDP-5 would

increase the pH of groundwater instead of decreasing it or creating acidic conditions in the aquifer. Based on the long record of pH measurements collected as part of the CCR groundwater monitoring program and the pH measured in PDP-5, there is no indication of a release from the unit or ongoing adverse conditions associated with pH.

The BEG study did not evaluate boron data in Carrizo-Wilcox wells in the Sabine Uplift region; therefore, a direct comparison of the CCR groundwater monitoring data to regional boron concentrations was not available. However, another BEG study completed in 2019 (BEG and INTERRA, 2019) summarized boron water chemistry data in Carrizo-Wilcox wells across the TWDB's Management Area 13, which includes the extension of the Carrizo-Wilcox Aquifer into central and south Texas. Boron concentrations observed in that study ranged from about 0.1 to 26.5 ppm. Approximately fifty wells evaluated in the study that were distributed throughout the aquifer had boron concentrations in the 0.5 to 26.5 mg/L range. For comparison, boron concentrations in the PDP-5 CCR groundwater samples average 0.57 mg/L, and range from 0.023 mg/L to 4.24 mg/L.

The TCEQ groundwater ingestion PCL for boron is 4.9 mg/L for residential land use and 15 mg/L for commercial-industrial land use (TCEQ, 2025). The boron concentrations in all samples collected as part of the PDP-5 CCR groundwater monitoring program have been lower than the TCEQ groundwater ingestion PCLs for both residential and commercial-industrial land use. As such, the boron concentrations observed at the Site do not represent elevated concentrations relative to the concentrations that the TCEQ considers to be protective of human health and the environment. Furthermore, the boron groundwater concentrations observed in downgradient wells at the Martin Lake Ash Pond Area—where SSIs and SSLs have been identified and attributed to the Ash Pond CCR units, and where an assessment of corrective measures and remedy selection process have been completed—are considerably higher than those observed in the PDP-5 CCR groundwater monitoring wells. Historical boron concentrations in downgradient wells in the Ash Pond Area average about 7.5 mg/L, with maximum concentrations above 20 mg/L in some downgradient wells. PDP-5 receives CCR contact water from the Ash Ponds; therefore, if a release from PDP-5 had occurred, one would expect the boron groundwater concentrations at PDP-5 to be similar to those observed in the Ash Pond Area, which they are not. Note that the liner systems for the Ash Pond CCR units (East Ash Pond, West Ash Pond, and New Scrubber Pond) were retrofitted from 2020 to 2023. Boron groundwater concentrations in the Ash Pond Area have begun to decrease since the liner retrofits were completed.

In summary, PDP-5 CCR monitoring well data do not indicate conditions that deviate from typical Carrizo-Wilcox groundwater quality conditions. Based on the aquifer studies and regulatory standards discussed above, constituent concentrations observed in the PDP-5 wells do not represent excessive concentrations that would indicate a release from the unit.

NOD Item No. 10

Update the (C-C') Cross Section in Appendix F - Ash Pond with the historical maximum and minimum groundwater levels and trace the bottom of the three Ash Pond Units on the cross section (as in CCR

Assessment of Corrective Measures Report, September 2019, pdf pg. 37) showing the geological formations and the separation between the groundwater table and the bottom of the Ash Ponds.

The Groundwater Monitoring Report 2021 shows a North and Northeast (NE) groundwater flow direction, a North NE to NE direction in 2022, and a NE direction again in 2023 and 2024.

Address the following:

Justify the well spacing in the Ash Pond area in the down-gradient direction.

Justify how the present groundwater monitoring well network can detect any release of potential contaminants from the Ash Pond area based upon the existing number of wells and well spacing.

Response:

The Ash Pond Area cross sections have been updated as requested. In addition to the requested changes, the updated cross sections also incorporate lithologic data from other non-CCR wells in order to form a more complete view of the subsurface in the Ash Pond Area. The updated cross sections are provided in Attachment 7.

A qualified professional engineer has certified that the CCR groundwater monitoring system at the Ash Pond Area was designed and constructed to meet the groundwater monitoring system requirements of the *Groundwater Monitoring Systems* section [40 C.F.R § 257.91] of the CCR Rule (PBW, 2017c). The CCR Rule specifies that a CCR groundwater monitoring system must consist of a minimum of one upgradient and three downgradient wells. The Ash Pond Area CCR groundwater monitoring system consists of seven monitoring wells, including three upgradient wells and four downgradient wells. The CCR monitoring wells were completed within the uppermost aquifer at approximately regular intervals along the upgradient and downgradient sides of the CCR units to (1) determine the direction of groundwater flow, (2) monitor upgradient groundwater conditions to establish background concentrations, and (3) monitor downgradient areas of the CCR units so that potential releases from the unit could be detected.

The TCEQ reviewed the Ash Pond Area monitoring well network as part of the registration package that was submitted to and approved by the TCEQ IHW Program when the units were first constructed. Several wells were replaced when the CCR groundwater monitoring program was initiated in 2015, but the current monitoring well locations are similar to those included in the monitoring well network that the TCEQ approved as part of the IHW registration approval.

The Ash Pond Area monitoring well network considers local geology and groundwater conditions to accurately represent the quality of groundwater passing the waste boundary of the CCR unit as required by 40 C.F.R. § 257.91(a). Based on soil borings completed at the Site, the geology of the Ash Pond Area consists of three distinct stratigraphic zones. The upper zone (Zone A/X) is generally composed of an approximately 30- to 40-foot thick low to medium plasticity, lean clay to clayey sand unit. The upper zone is underlain by a fine sand and silty sand unit (Zone B) that is generally about 5 to

20 feet thick (PBW, 2017c). The Zone B sand is underlain by a continuous silty to sandy confining clay unit.

An Affected Property Assessment (APA) was conducted at the Ash Pond Area in accordance with TCEQ Texas Risk Reduction Program (TRRP) standards beginning in 2009 as a result of the detection of selenium concentrations in groundwater that exceeded the TRRP Tier 1 $^{GW}GW_{Ing}$ protective concentration level (PCL). An APA Report (APAR) that summarized the assessment was submitted to the TCEQ in May 2011 (PBW, 2011) and was approved by the TCEQ in December 2011 (TCEQ, 2011). Aquifer tests (slug tests) were conducted in both Zone A/X and Zone B as part of the APAR investigation. The hydraulic conductivities of Zone A/X reportedly ranged from 3.5×10^{-6} to 3.8×10^{-4} cm/sec, while those for Zone B ranged from 1.2×10^{-4} to 7.5×10^{-3} cm/sec. Zone A/X is classified in the APAR as a Class 3 groundwater resource and is not considered a reliable water resource. Zone B was classified in the APAR as a Class 2 groundwater resource and could be a reliable water resource; however, there are no groundwater receptors or production wells located downgradient of the Ash Ponds. Based on the findings of the TCEQ-approved APAR investigation, Zone B is considered the uppermost aquifer in the Ash Pond Area. The TCEQ approved the groundwater monitoring network for the Ash Pond Area as part of the APAR approval.

The current CCR groundwater monitoring well network has been effective at detecting SSIs/SSLs in downgradient wells at the Ash Pond Area. The initial Detection Monitoring Program groundwater samples were collected from the Ash Pond Area CCR monitoring well network in September 2017. The evaluation of those data was completed in 2018 using procedures described in the Statistical Analysis Plan (Golder, 2022d) to identify SSIs of Appendix III parameters over background concentrations. Alternate source evaluations were inconclusive for one or more of the SSIs. Consequently, an Assessment Monitoring Program was initiated and established for the Ash Pond Area in June 2018 in accordance with 40 C.F.R. § 257.94(e)(2). Concentrations of Appendix IV constituents at SSLs above GWPSs were initially identified in January 2019 for beryllium, cobalt, and lithium; however, beryllium and cobalt are the only Appendix IV constituents that are currently observed at SSLs above the GWPSs (BBA, 2025c). During the most recent reporting period (2024), SSLs above GWPSs were observed in the Ash Pond Area for beryllium in downgradient wells H-29, H-31, and H-32 and cobalt in downgradient wells H-28, H-31, and H-32. The liner systems for the Ash Pond CCR units (East Ash Pond, West Ash Pond, and New Scrubber Pond) were retrofitted from 2020 to 2023. Concentrations of beryllium and cobalt in groundwater samples from wells downgradient of the Ash Ponds have generally begun to decrease since the liner retrofits were completed.

An Assessment of Corrective Measures was initiated on April 8, 2019, and was completed on September 5, 2019, in accordance with 40 C.F.R. § 257.96 to address the Appendix IV SSLs (Golder, 2019b). A public meeting was held on November 13, 2019, pursuant to 40 C.F.R. § 257.96(e), to discuss the results of the Assessment of Corrective Measures. A Remedy Selection Report (Golder, 2022e) was completed in January 2022 in accordance with the requirements of 40 C.F.R. § 257.97. Monitored natural attenuation (MNA) with source control measures was selected as the remedy to

address the Appendix IV constituents observed at SSLs after a site-specific feasibility study to evaluate MNA as a potential groundwater remedy was performed in accordance with guidance and best practices promulgated by the EPA (EPA, 2007a and 2007b) and Interstate Technology and Regulatory Council (ITRC, 2010).

In summary, the Ash Pond Area groundwater monitoring system has been effective at identifying SSIs/SSLs and satisfies the groundwater monitoring performance standard of the CCR Rule.

NOD Item No. 11

Provide information on using H-26, H-27, and H-33 as background wells as the groundwater may be affected by the operations of the facility (e.g. coal piles) to the west, which is upgradient (based on applicant-supplied groundwater flow maps) to these background wells. This may be based upon:

Groundwater or other monitoring data to substantiate the 'background' quality of these three upgradient, background wells.

Additionally, include any geotechnical analyses of the 'ML' lithologic unit that may indicate a low-flow boundary or 'isolation' of the lower sand body, in which the background wells are completed (as indicated in Cross Section C-C'), from the operations of the facility (e.g. coal piles).

Response:

Affected groundwater has not been identified in the area of the facility's coal piles. Furthermore, the coal pile area and other areas near the power generation units are not regulated by the CCR regulations. Several groundwater investigations have been performed at the Martin Lake facility under TRRP (PBW, 2014; PBW, 2011; PBW, 2005), but none of the investigations have indicated the Ash Pond Area may be impacted by facility operations upgradient of the Ash Pond Area.

The CCR regulations that govern the registrations for PDP-5, the Ash Ponds, and the A1 Area Landfill are focused on detecting and responding to releases from a regulated CCR unit, not from other sources like a previously closed unit regulated under a different program, a coal pile, mine spoil, or other area at the facility. *See* 40 C.F.R. § 257.91(a). Thus, the regulations do not require an operator to demonstrate background groundwater conditions absent any operations of the facility, or "pristine" conditions that pre-date any CCR disposal activities at the site. EPA has consistently explained that 40 C.F.R. § 257.91 requires a facility to determine background groundwater quality that has not been affected by "***the*** CCR unit." *See, e.g.*, 75 Fed. Reg. at 35,181; 80 Fed. Reg. at 21,399, 21,400. Further, the regulations specifically provide that a facility operator "may demonstrate that a source ***other than the CCR unit*** caused the statistically significant increase over background levels for a constituent," in which case no corrective action under the regulations is required. 40 C.F.R. § 257.94(e)(2) [emphasis added].

In addition, EPA has consistently relied on the *Unified Guidance* to determine if a statistical approach meets the performance standards in 40 C.F.R. § 257.93. *See, e.g.*, 80 Fed. Reg. at 21,402; 85 Fed. Reg. at 53,543. According to the *Unified Guidance*, "[t]he most important quality of background is that it

reflects the historical conditions unaffected by the activities it is designed to be compared to. These conditions could range from an uncontaminated aquifer **to *an historically contaminated site baseline unaffected by recent RCRA-actionable contaminant releases*** [emphasis added]. Representative background data will therefore have numerical characteristics closely matching those arising from the site-specific aquifer being evaluated." *Unified Guidance* at 5-1. The *Unified Guidance* does not prohibit a regulated unit from being located downgradient of other potential source areas or establishing background in groundwater that may be influenced by anthropogenic activities unrelated to the regulated unit(s). The objective of the statistical approaches presented in the *Unified Guidance* is to identify releases from regulated CCR units or changes in existing conditions as expeditiously as possible. As discussed in the response to NOD Item No. 10, the current CCR groundwater monitoring well network (and statistical approach) has been effective at detecting SSIs/SSLs in downgradient wells at the Ash Pond Area. As such, the established background concentrations satisfy the groundwater monitoring performance standard of the CCR Rule.

NOD Item No. 12

Cross section C-C' (Groundwater Monitoring System Certification Report, October 16, 2017, pg. 21) illustrates that the Ash Pond(s) monitoring wells are completed into the lower sand lithologic unit. This sand unit is partially isolated by a clay lithologic unit in the eastern three-quarters of the Ash Pond Management Unit. Cross section C-C' from the CCR Assessment of Corrective Measures Report (September 2019) illustrates that the three surface impoundments lie, either partially or wholly, within the upper sand lithologic unit.

Justify how no monitoring wells were completed within the upper sand unit at least in the portions of the Ash Pond Management Unit that are underlain by the 'isolating' clay unit.

Response:

As discussed in the response to NOD Item No. 11, an APAR investigation was conducted at the Ash Pond Area in accordance with TCEQ TRRP standards beginning in 2009 due to the detection of selenium concentrations in groundwater that exceeded the TRRP Tier 1 $^{GW}GW_{Ing}$ PCL. An APAR that summarized the investigation findings was submitted to the TCEQ in May 2011 (PBW, 2011) and was approved by the TCEQ in December 2011 (TCEQ, 2011). As part of the APAR investigation, aquifer tests (slug tests) were conducted in the upper clay and clayey sand lithologic unit (Zone A/X) and the deeper sandy lithologic unit (Zone B). The hydraulic conductivities of Zone A/X reportedly ranged from 3.5×10^{-6} to 3.8×10^{-4} cm/sec, while those for Zone B ranged from 1.2×10^{-4} to 7.5×10^{-3} cm/sec. Zone A/X is classified in the APAR as a Class 3 groundwater resource and is not considered a reliable water resource. Zone B was classified in the APAR as a Class 2 groundwater resource and could be a reliable water resource; however, there are no groundwater receptors or production wells located downgradient of the Ash Ponds. Based on the findings of the TCEQ-approved APAR, Zone B is considered the uppermost aquifer in the Ash Pond Area.

NOD Item No. 13

Revise the post-closure cost estimates in the referenced tables to include the dollar year in which the estimates were made (i.e., 2024 dollars).

Response:

The updated post-closure care cost estimates are included in Attachment 8.

NOD Item No. 14

In the NOD response letter, the response column refers to CCR registration No. CCR-106 numerous times; however, the Martin Lake CCR Facility is designated as CCR-105. Please revise the letter and make the necessary corrections.

Response:

The revised pages from the NOD 3 document are included in Attachment 9.

NOD Item No. 10(2)

Address in the Slope Stability Analysis Section, as required in NOD 3, dated 02/27/2024. The following issues were not fully addressed for A-1 Landfill.

Slope Stability Analysis Section (Section 2.4: Slope Stability – A1 Area Landfill Cap/Cover System):

Provide a statement indicating that an amendment will be submitted prior to construction for review and approval. The statement shall also indicate that 1) site-specific geotechnical data, 2) final cover materials testing data, and 3) final design criteria, with all analyses, shall be signed and sealed by a Texas Licensed P.E. (with Firm Number if applicable).

Response:

Section 2.4 of the Closure Plan Addendum No. 1 has been updated to include the requested statement. The revised document page is provided in Attachment 10.

NOD Item No. 12(2)

Address in the Settlement Analysis Section (2.3 Settling and Subsidence - Cap/Cover System), as required in NOD 3, dated 02/27/2024. The following issue was not addressed in the NOD 3 response. Settlement Analysis Section:

Provide a statement indicating that an amendment will be submitted prior to construction for review and approval. The statement shall also indicate that site 1) specific geotechnical data, 2) final cover materials testing data, and 3) final design criteria, with all analyses, shall be signed and sealed by a Texas Licensed P.E. (with Firm Number if applicable).

Response:

Section 2.3 of the Closure Plan Addendum No. 1 has been updated to include the requested statement. The revised document page is provided in Attachment 10.

2.0 REFERENCES

ASTM, 2017. Standard Guide for Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs at Waste Disposal Facilities - D6312-17.

Bullock, Bennett & Associates, LLC (BBA), 2024. CCR Background Monitoring and Statistical Analysis Summary Report. PDP-5, Martin Lake Steam Electric Station, Rusk County, Texas. February 26.

Bullock, Bennett & Associates, LLC (BBA), 2025a. CCR 2024 Annual Groundwater Monitoring and Corrective Action Report, A1 Area Landfill, Martin Lake Steam Electric Station, Panola County, Texas. January 31.

Bullock, Bennett & Associates, LLC (BBA), 2025b. CCR 2024 Annual Groundwater Monitoring and Corrective Action Report, Permanent Disposal Pond 5, Martin Lake Steam Electric Station, Rusk County, Texas. January 31.

Bullock, Bennett & Associates, LLC (BBA), 2025c. CCR 2024 Annual Groundwater Monitoring and Corrective Action Report, Ash Pond Area, Martin Lake Steam Electric Station, Rusk County, Texas. January 31.

Bureau of Economic Geology (BEG) and INTERRA, Inc., 2019. Fresh, Brackish, and Saline Groundwater Resources in the Carrizo-Wilcox, Queen City and Sparta Aquifers in Groundwater Management Area 13 – Location, Quantification, Producibility, and Impacts. Texas Water Development Board Contract No. 1548301855. April.

Fogg, Graham E., Kaiser, W. R., Ambrose, M. L., 1991. The Wilcox Group and Carrizo Sand (Paleogene) in the Sabine Uplift Area, Texas: Ground-Water Hydraulics and Hydrochemistry. Publication of the Bureau of Economic Geology.

Golder, 2019a. CCR Assessment of Corrective Measures, Martin Lake Steam Electric Station – A1 Area Landfill, Panola County, Texas.

Golder, 2019b. CCR Assessment of Corrective Measures, Martin Lake Steam Electric Station – Ash Pond Area, Rusk County, Texas.

Golder, 2021. Alternate Liner Demonstration. Martin Lake Steam Electric Station, Rusk County Texas. November 30.

Golder, 2022b. Statistical Analysis Plan – Revision 1, Martin Lake Steam Electric Station – A1 Area Landfill, Panola County, Texas.

Golder, 2022c. Remedy Selection Report, Martin Lake Steam Electric Station – A1 Area Landfill, Panola County, Texas. January 18.

Golder, 2022d. Statistical Analysis Plan – Revision 1, Martin Lake Steam Electric Station – Permanent Disposal Pond 5, Rusk County, Texas.

Golder, 2022e. Statistical Analysis Plan – Revision 1, Martin Lake Steam Electric Station – Ash Ponds, Rusk County, Texas.

Golder, 2022f. Remedy Selection Report, Martin Lake Steam Electric Station – Ash Pond Area, Rusk County, Texas. January 18.

Interstate Technology and Regulatory Council (ITRC), 2010. A Decision Framework for Applying Monitored Natural Attenuation Processes to Metals and Radionuclides in Groundwater. Technical/Regulatory Guidance, December 2010.

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Pastor, Behling & Wheeler, LLC (PBW), 2014. Affected Property Assessment Report, Martin Lake Steam Electric Station, Permanent Disposal Pond Area.

Pastor, Behling & Wheeler, LLC (PBW), 2017a. CCR Rule Groundwater Monitoring System Certification – A1 Area Landfill, Martin Lake Steam Electric Station, Panola County, Texas.

Pastor, Behling & Wheeler, LLC (PBW), 2017b. CCR Rule Groundwater Monitoring System Certification – PDP 5, Martin Lake Steam Electric Station, Rusk County, Texas.

Pastor, Behling & Wheeler, LLC (PBW), 2017c. CCR Rule Groundwater Monitoring System Certification – Ash Pond Area, Martin Lake Steam Electric Station, Rusk County, Texas.

Texas Commission on Environmental Quality (TCEQ), 2011. Approval of Addendum to Revised APAR for Ash Ponds Area, and PBW, October 20, 2011 Response Letter and November 28, 2011 Email, Luminant Power Martin Lake Steam Electric Station. December 1.

Texas Commission on Environmental Quality (TCEQ), 2025. Tier 1 Protective Concentration Levels.

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United States Environmental Protection Agency (EPA), 2009. Unified Guidance Document: Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, EPA 530-R-09-007, March.

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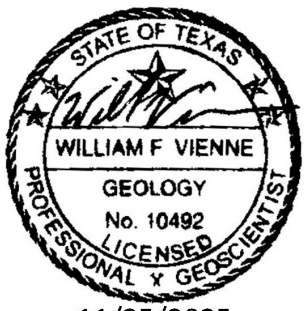
3.0 SIGNATURE PAGE

BULLOCK, BENNETT & ASSOCIATES, LLC



11/25/2025

William Vienne, P.G. (TX 82596)
Senior Hydrogeologist

Engineering Firm Registration: F-8542
Geoscience Firm Registration: 50127

Attachments

ATTACHMENT 1

TCEQ's Addendum to the 3rd NOD Dated October 1, 2025

Subject: Addendum to 3rd NOD - New Registration - Luminant Generation Company LLC – Registration No. CCR105

Luminant Generation Company LLC – Tatum, Rusk County, Texas
Martin Lake Steam Electric Station
New Coal Combustion Residuals (CCR) Registration No. CCR105
Industrial Solid Waste Registration No. 31277
EPA Identification No. TXD000821306
Tracking No. 27220868; RN102583093/CN603256413

Dear Ms. Collins:

The Industrial and Hazardous Waste Permits Section staff of the Texas Commission on Environmental Quality (TCEQ) reviewed your new registration application dated January 21, 2022, and the revisions dated May 25, 2022, and December 15, 2022. Our review of the application indicates that additional information must be presented to demonstrate compliance with Title 30 Texas Administrative Code (TAC) Chapters 305 and 352.

The deficiencies noted in the below table follow the format of the TCEQ CCR Registration application form. Each deficiency is uniquely identified in the below table and requires your response. Please note, when providing your response, you must:

1. Refer to the unique deficiency identifier;
2. Include the location in the registration application where your response requires revisions or where you provide additional information;
3. Include any other narrative necessary to explain your response;
4. If possible, provide a redline/strikeout version clearly identifying all proposed changes to the registration application;
5. Include replacement pages for insertion into the application. Each replacement page should contain a revision date and revision number; and
6. If a revision to the application causes text to shift and/or pagination to change, please provide all pages affected by the revision(s).

ID [1]	App. Section	App. Sub Section	Location[2]	Citation	Deficiency Description/Resolution
1	VI	VI.27. B	[Appendix F 2022 Groundwater Monitoring System Certification Addendum No. 1 A1 Landfill Area] (.pdf pgs. 11-14)	40 CFR §257.94 30 TAC §352.911	Provide North-South and East-West geological cross sections across the landfill down to the bedrock and beyond the boundary of the mine spoils showing the local subsurface geology in the vicinity of the landfill along with the projected nearest wells to the cross sections. Also, provide the maximum and minimum historical groundwater levels on the monitoring wells in the cross sections.

[1] Deficiency ID – Key: Use this numbered ID 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.

ID [1]	App. Section	App. Sub Section	Location[2]	Citation	Deficiency Description/Resolution
2	VI	VI.27.D	Appendix F 2024 Annual Groundwater and Corrective Action Report A-1 Area Landfill January 31, 2025 (.pdf pgs. 267-269) --- [2017 CCR Rule Groundwater Monitoring System Certification MLSES-A1 Landfill October 16, 2017] (pdf pgs. 42-51)	40 CFR §257.91(c) 30 TAC §352.911	A1 Landfill: Provide a narrative, with site-specific technical information, on the method that was used to determine the well spacing of the landfill groundwater monitoring system and how the monitoring system can capture all potential contaminant pathways from the landfill. For example, explain how potential contaminants can be captured in the area where the potentiometric surface map indicates a groundwater flow direction towards the south and west of the facility.
3			EPA Notice Letter - RCRA February 4, 2025	40 CFR §257.107(h)(7)	A1 Landfill: Post on the public website the '2019-Martin Lake-SWR 31277-Corrective Measures Assessment ML Landfill.pdf' on the 2019 Martin Lake CCR website (as has been done for the Ash Pond Area).

ID [1]	App. Section	App. Sub Section	Location[2]	Citation	Deficiency Description/Resolution
4	VI	VI.27	EPA Notice Letter - RCRA February 4, 2025 [Appendix F Coal Combustion Residual Rule Background Groundwater Monitoring and Statistical Analysis Summary Report (.pdf pg. 511) A1 Area Landfill] February 26, 2024	40 CFR §257.91(a) 40 CFR §257.91(c)	A1 Landfill: Provide a site-specific technical justification explaining the use of well BMW-11A-R as the background well for the A1 Area Landfill CCR Unit. For example: 1. Provide additional 'background' groundwater quality for comparison, or 2. Provide additional discussion on alternative statistical methods used to address the EPA comment from the Notice Letter dated Feb. 4, 2025. Section 2.4 (.pdf p. 511) and Appendix C (.pdf pages 1498-1506) of the CCRRBGMandSAS Report (2/26/24) within Appendix F, Revision 2 (dated February 27, 2024) discusses the use of the interwell statistical method, which uses the background well groundwater quality, and therefore, the 'background nature' of well BMW-11A-R comes into question.
5	VI	VI.27	EPA Notice Letter - RCRA February 4, 2025	40 CFR §257.91(a) 40 CFR §257.91(c)	PDP5: Please provide a narrative that addresses the fact there is no true background well because of groundwater mounding and radial groundwater flow centered on well MW-18A.

ID [1]	App. Section	App. Sub Section	Location[2]	Citation	Deficiency Description/Resolution
6	VI	VI.27	CCR Rule Background GW Monitoring and Statistical Analysis Summary Report February 26, 2024 (.pdf pg. 2275) EPA Notice Letter - RCRA February 4, 2025	40 CFR §257.93(h)(1)	PDP-5 Area: Provide additional narrative explaining the use of intrawell data evaluation statistical analysis method used in Surface Impoundment PDP 5, groundwater monitoring systems at the Martin Lake CCR Unit. Section 2.4 (.pdf p. 2275) and Appendix C (.pdf pages 2997-3006) of the CCRRBGMandSAS Report (2/26/24) within Appendix F, Revision 2 (dated February 27, 2024) discusses the use of the intrawell statistical method.
7	VI	VI.27.B	[Appendix F, GWM System Certification – Addendum No. 1 PDP-5 December 2022, Figures 3 and 4 PDP 5] (pdf pgs. 9-10)	40 CFR §257.94	1. Update the geological cross sections across the PDP-5 Surface Impoundment (and the closed PDPs-1, 2 and 3) (A-A' and B-B') to include other nearby wells to extend the subsurface geology beyond the unit boundary. Also include the historical highest and lowest groundwater levels at each additional well added to the cross section. 2. PDP 5: Provide a narrative explaining the groundwater table elevations that occur above the base of the closed units, within the closed middle portion of PDP 1, 2, and 3. The PDP-5 Addendum 1 includes two cross sections across the PDP 5 Impoundment (A-A' and B-B'). The cross sections include historical maximum and minimum groundwater elevations on wells MW-20A and MW-18A on A-A' and wells PDP-25 and MW-19 on B-B.' The groundwater table elevations occur above the base of closed units: PDP-1, PDP-2, and PDP-3.

ID [1]	App. Section	App. Sub Section	Location[2]	Citation	Deficiency Description/Resolution
8	VI	VI.28	Coal Combustion Residual Rule 2024 Annual Groundwater and Corrective Action Report Attachment 1 January 31, 2025 (pdf pgs. 42-43)	40 CFR §257.94	PDP-5 Area: Provide a narrative explaining the historical variation of the potentiometric contours including the radial groundwater flow direction in the PDP-5 Area. Use all of the wells in the groundwater monitoring system and any non-CCR wells available in the surrounding areas for construction of the potentiometric surface contours or explain why those wells are excluded. (The initial maps in 2017 and map year October 4, 2021, shows four flow directions (radial) and map year 2024 shows 2 flow directions). Overall, the facility shows radial flow. Provide a groundwater monitoring system that has a sufficient number of wells and a well spacing adequate to monitor any downward and/or lateral movement of potential contaminants in all directions due to radial flow, see comment 3 above.
9	VI	VI.29	Alternate Source Demonstration 2024 MLSES - PDP 5 March 8, 2024 (pdf pg. 3)	40 CFR §257.94(e)	1. Provide additional water quality data from nearby wells or previous studies that indicate similar concentrations for SSI constituents to support the natural-source explanation within the ASD. 2. Provide the location of the ASD-referenced sampled wells (distance and direction) in the Sabine uplift area in Texas, as cited in Texas Bureau of Economic Geology report (1991) as stated in the ASD submission.

ID [1]	App. Section	App. Sub Section	Location [2]	Citation	Deficiency Description/Resolution
10	VI	VI.27.B	[Appendix F Coal Combustion Residual Rule Groundwater Monitoring System Certification MLSES - Ash Pond October 16, 2017] (pdf pg. 21)	40 CFR §257.91 30 TAC §352.911	1. Update the (C-C') Cross Section in Appendix F - Ash Pond with the historical maximum and minimum groundwater levels and trace the bottom of the three Ash Pond Units on the cross section (as in CCR Assessment of Corrective Measures Report, September 2019, pdf pg. 37) showing the geological formations and the separation between the groundwater table and the bottom of the Ash Ponds. 2. The Groundwater Monitoring Report 2021 shows a North and Northeast (NE) groundwater flow direction, a North NE to NE direction in 2022, and a NE direction again in 2023 and 2024. Address the following: a. Justify the well spacing in the Ash Pond area in the down-gradient direction. b. Justify how the present groundwater monitoring well network can detect any release of potential contaminants from the Ash Pond area based upon the existing number of wells and well spacing.
11	VI	VI.27.B	[Appendix F Coal Combustion Residual Rule Groundwater Monitoring System Certification MLSES - Ash Pond October 16, 2017] (pdf pgs. 21, 23)	40 CFR §257.93(a)	Provide information on using H-26, H-27, and H-33 as background wells as the groundwater may be affected by the operations of the facility (e.g. coal piles) to the west, which is upgradient (based on applicant-supplied groundwater flow maps) to these background wells. This may be based upon: 1. Groundwater or other monitoring data to substantiate the 'background' quality of these three upgradient, background wells. 2. Additionally, include any geotechnical analyses of the 'ML' lithologic unit that may indicate a low-flow boundary or 'isolation' of the lower sand body, in which the background wells are completed (as indicated in Cross Section C-C'), from the operations of the facility (e.g. coal piles).

ID [1]	App. Section	App. Sub Section	Location[2]	Citation	Deficiency Description/Resolution
12	VI	VI.27.B	[CCR Assessment of Corrective Measures Report Ash Pond Area] September 2019 (pdf pgs. 37-38)	40 CFR §257.91 30 TAC §352.911	Cross section C-C' (Groundwater Monitoring System Certification Report, October 16, 2017, pg. 21) illustrates that the Ash Pond(s) monitoring wells are completed into the lower sand lithologic unit. This sand unit is partially isolated by a clay lithologic unit in the eastern three-quarters of the Ash Pond Management Unit. Cross section C-C' from the CCR Assessment of Corrective Measures Report (September 2019) illustrates that the three surface impoundments lie, either partially or wholly, within the upper sand lithologic unit. Justify how no monitoring wells were completed within the upper sand unit at least in the portions of the Ash Pond Management Unit that are underlain by the 'isolating' clay unit.
13	VIII	VIII.33	[Appendix H (Revision 2) – Financial Assurance, Post-Closure Care Cost Estimate Tables 1, 2 & 3 February 27, 2024] (pdf pgs. 6-8)	30 TAC §352.1101(b)	Revise the post-closure cost estimates in the referenced tables to include the dollar year in which the estimates were made (i.e., 2024 dollars).
14	N/A	N/A	NOD 3 Response Letter Dated 2/27/2024		In the NOD response letter, the response column refers to CCR registration No. CCR-106 numerous times; however, the Martin Lake CCR Facility is designated as CCR-105. Please revise the letter and make the necessary corrections.

ID [1]	App. Section	App. Sub Section	Location[2]	Citation	Deficiency Description/Resolution
10 (2)	VII	VII.31	[Appendix G Closure Plan Addendum 1 MLSES - A1 Area Landfill] December 2022 (.pdf pg. 80, 85)	40 CFR §257.102(d)(1)(iii)	Address in the Slope Stability Analysis Section, as required in NOD 3, dated 02/27/2024. The following issues were not fully addressed for A-1 Landfill. Slope Stability Analysis Section (Section 2.4: Slope Stability – A1 Area Landfill Cap/Cover System): Provide a statement indicating that an amendment will be submitted prior to construction for review and approval. The statement shall also indicate that 1) site-specific geotechnical data, 2) final cover materials testing data, and 3) final design criteria, with all analyses, shall be signed and sealed by a Texas Licensed P.E. (with Firm Number if applicable).
12 (2)	VII	VII.31	[Appendix G Closure Plan Addendum 1 for A1 Area Landfill, Ash Pond Area, and PDP-5] (A1 .pdf pg. 85, 92) (Ash Pond .pdf pg. 214, 219) (PDP5 .pdf pg. 355, 359)	30 TAC §352.4 40 CFR §257.102(b) 40 CFR §257.102(d)(3)(i)(D)	Address in the Settlement Analysis Section (2.3 Settling and Subsidence - Cap/Cover System), as required in NOD 3, dated 02/27/2024. The following issue was not addressed in the NOD 3 response. Settlement Analysis Section: Provide a statement indicating that an amendment will be submitted prior to construction for review and approval. The statement shall also indicate that site 1) specific geotechnical data, 2) final cover materials testing data, and 3) final design criteria, with all analyses, shall be signed and sealed by a Texas Licensed P.E. (with Firm Number if applicable).

[1] Deficiency ID – Key: Use this numbered ID 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.

Please submit your response (an unmarked copy and marked copy, for example in redline/strikeout format) via email for our review within 30 days of the date of this email. Please do not hesitate to contact me if you have any questions.

At the completion of the technical review, a complete NOD response package, which includes **all** NOD responses, **must be sent as a paper copy to IHW including an original signature page(s).**

Note: All confidential NOD response materials (paper or email) must be labeled as CONFIDENTIAL, contain **only** confidential materials **and must be submitted separately.** Do not submit **confidential and non-confidential information** in the same email. If TCEQ receives an email containing both confidential and non-confidential documents, the email will not be treated as confidential. **Applicants must mark each individual confidential page as confidential at the bottom of the page.**

Sincerely,

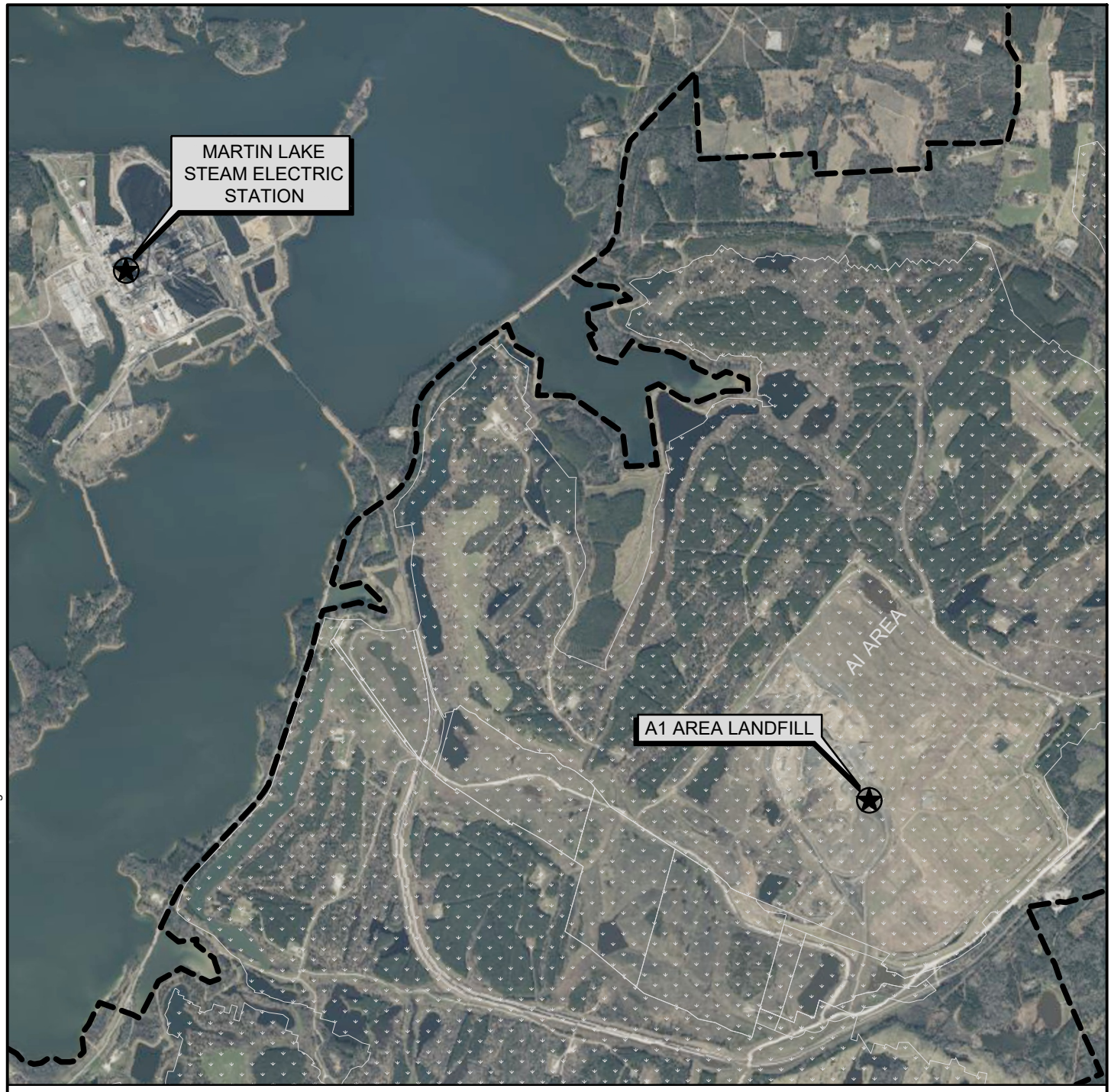
Pradeep Patel, P.G., Project Manager
Industrial and Hazardous Waste Permits Section
Waste Permits Division
Texas Commission on Environmental Quality

To: Renee Collins, Send electronically to renee.collins@luminant.com
cc: Eric Chavers, Send electronically to eric.chavers@luminant.com

bcc: Michelle Baetz, TCEQ Region 5, Send to TylerWaste@tceq.texas.gov
Charles Brown, P.G., Work Leader, TCEQ IHW Permits Section, Waste Permits Division MC 130 – Austin Charles.Brown@tceq.texas.gov
Pradeep Patel, P.G., Project Manager, TCEQ IHW Permits Section, Waste Permits Division MC 130 – Austin Pradeep.Patel@tceq.texas.gov
Lance Christian, P.G., Project Manager, TCEQ IHW Permits Section, Waste Permits Division MC 130 – Austin Lance.Christian@tceq.texas.gov
Daniela Ortiz de Montellano, Team Leader, TCEQ IHW Permits Section, Waste Permits Division MC 130 – Austin Daniela.Ortiz-demontellano@tceq.texas.gov
DataEntry-WPD@tceq.texas.gov

ATTACHMENT 2

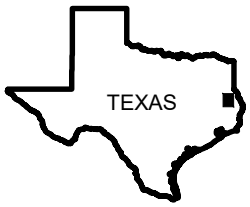
A1 Area Landfill Cross Sections and Associated Figures



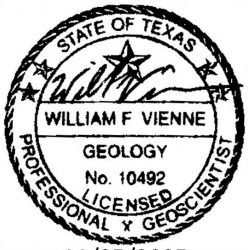
LEGEND

MARTIN LAKE LIGNITE MINE PERMIT BOUNDARY

MINED OUT AREA



QUADRANGLE LOCATION



11/25/2025

Scale in Feet

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Aerial Source:
2025 Microsoft Corporation; 2025 Maxar; CNES 2025 Distribution Airbus DS; 2025 TMAP Mobility Earthstar Geographics SIO

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 1

SITE LOCAITON MAP

PROJECT: 23643V-32	BY: HLS	DATE: NOV. 2025	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

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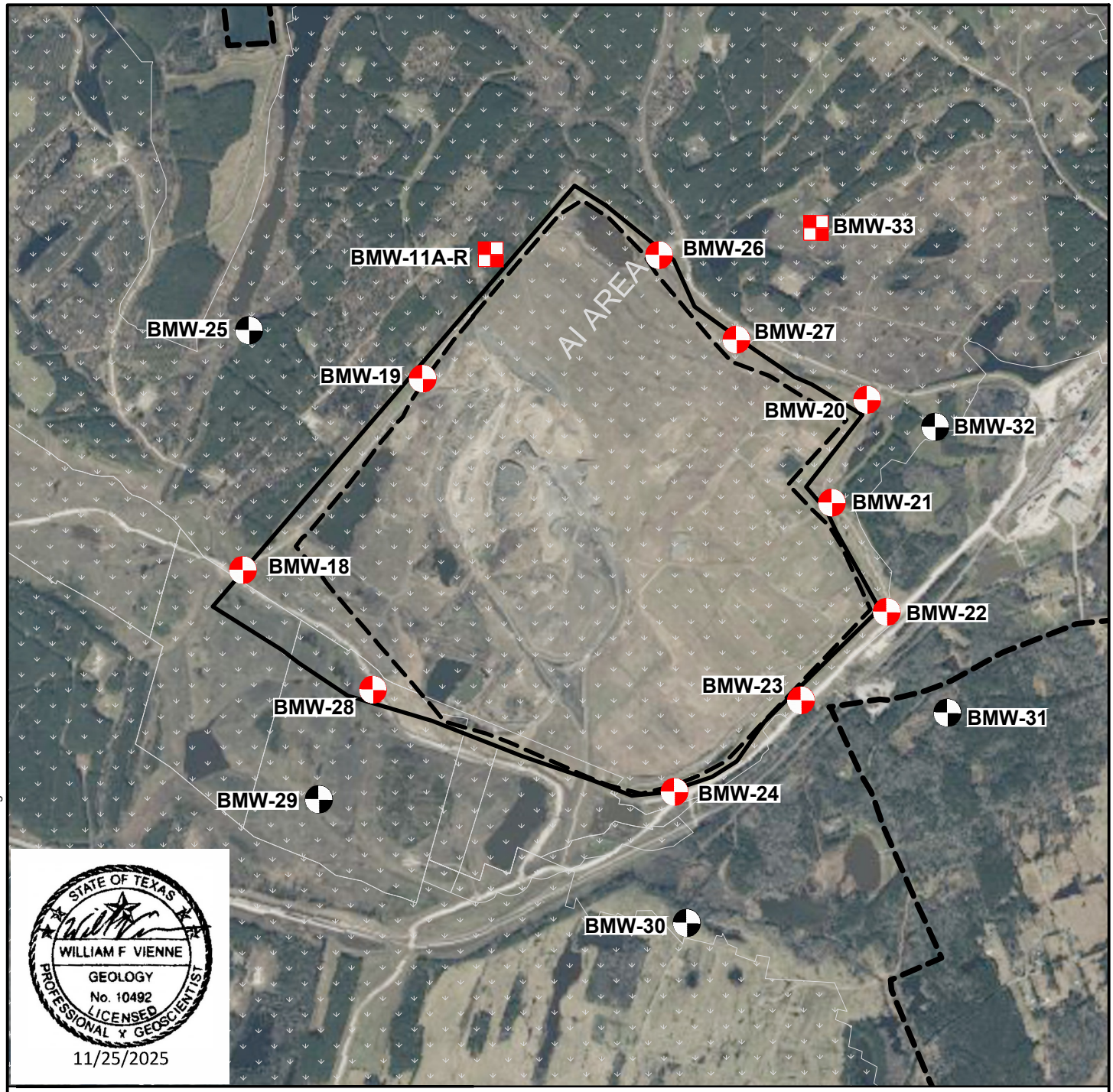

STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
11/25/2025

LEGEND

- MINED OUT AREA
- MARTIN LAKE LIGNITE MINE PERMIT BOUNDARY
- DEED RESTRICTION BOUNDARY
- WASTE BOUNDARY
- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- CCR DELINEATION WELL

NOTE(S):
1. EXTENT OF MINED OUT AREAS WAS TAKEN FROM THE 1993 MINING PERMIT FOR THE BECKVILLE MINE AND SHOULD BE CONSIDERED APPROXIMATE.

N

Scale in Feet
0 1000 2000

Aerial Source:
2025 Microsoft Corporation; 2025 Maxar; CNES 2025 Distribution Airbus DS; 2025 TMAP Mobility Earthstar Geographics SIO

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 2
DETAILED SITE PLAN
A1 AREA LANDFILL

PROJECT: 23643V-32	BY: HLS	DATE: NOV. 2025	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

Plot Date: 11/17/25 - 3:16pm, Plotted by: thigh
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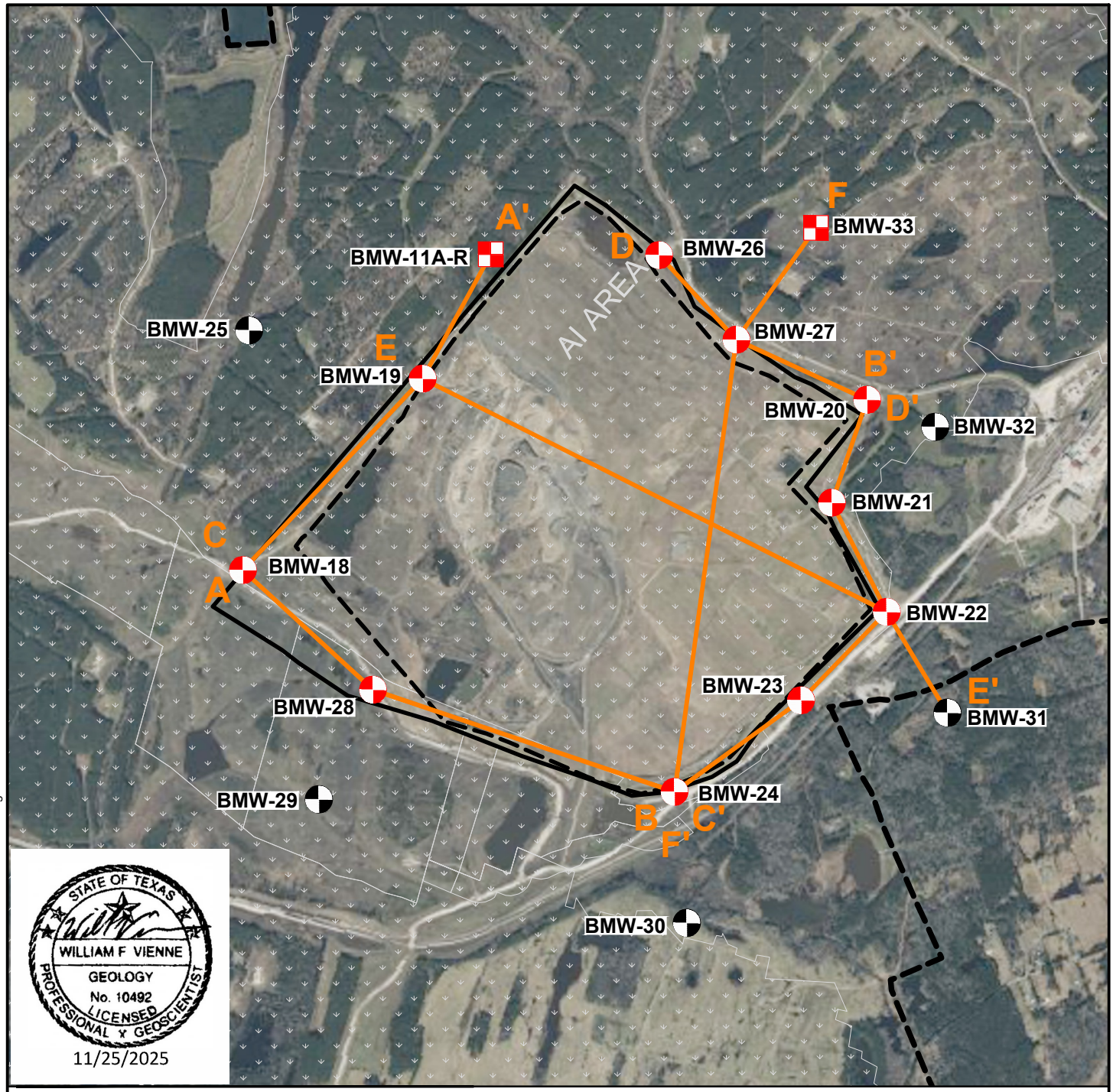

STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
11/25/2025

LEGEND

- MINED OUT AREA
- MARTIN LAKE LIGNITE MINE PERMIT BOUNDARY
- DEED RESTRICTION BOUNDARY
- WASTE BOUNDARY
- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- CCR DELINEATION WELL
- A——A' CROSS SECTION LOCATION

NOTE(S):
1. EXTENT OF MINED OUT AREAS WAS TAKEN FROM THE 1993 MINING PERMIT FOR THE BECKVILLE MINE AND SHOULD BE CONSIDERED APPROXIMATE.

N

Scale in Feet
0 1000 2000

Aerial Source:
2025 Microsoft Corporation; 2025 Maxar; CNES 2025 Distribution Airbus DS; 2025 TMAP Mobility Earthstar Geographics SIO

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 3
A1 AREA LANDFILL
CROSS SECTION LOCATION MAP

PROJECT: 23643V-32	BY: HLS	DATE: NOV. 2025	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

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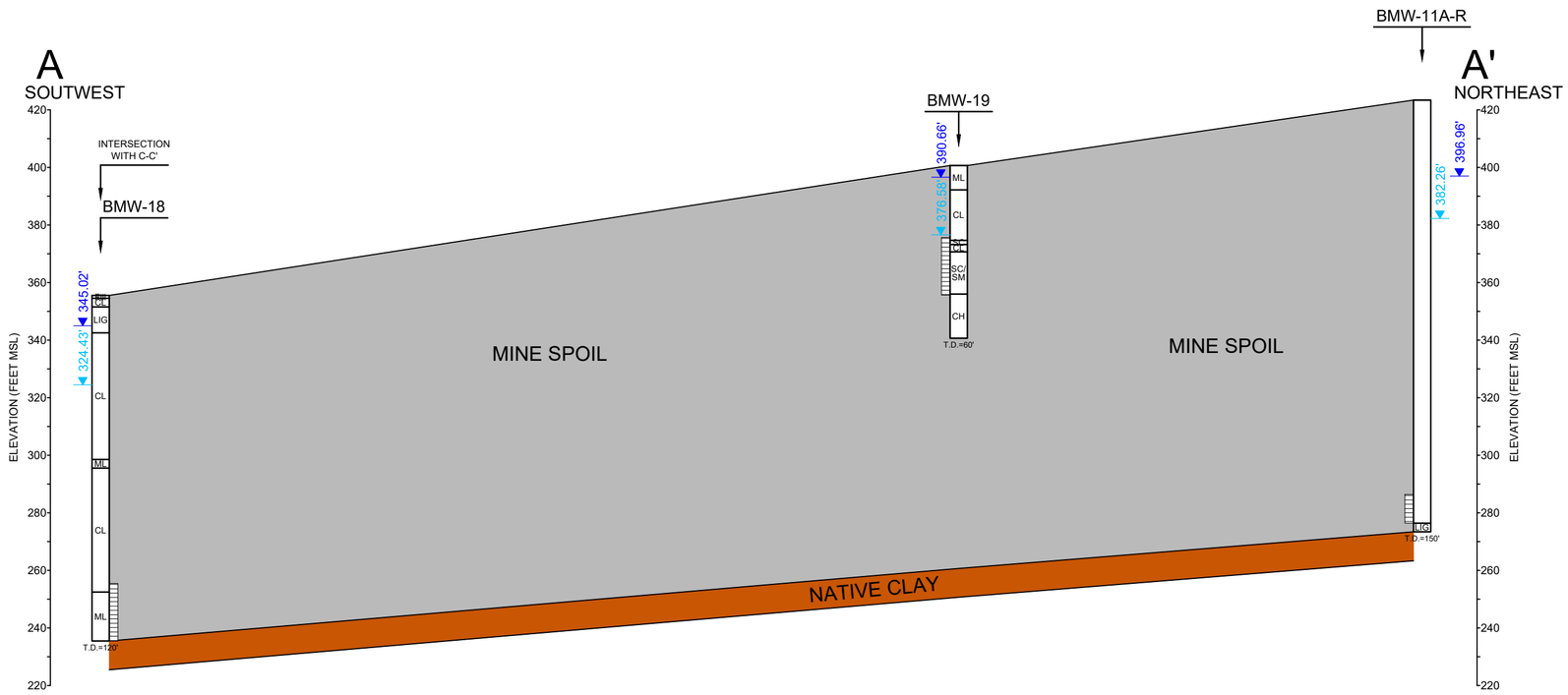
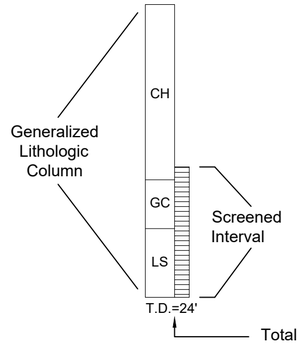


MONITORING WELL CONSTRUCTION



Max. Observed Historical Water Level (Ft MSL)

Min. Observed Historical Water Level (Ft MSL)

EXPLANATION

- SAND
- CLAY
- SILT
- SPOIL

SCALE IN FEET

VERTICAL 40

HORIZONTAL 480

12x Vertical Exaggeration

NOTES:

1. NOT FOR CONSTRUCTION.
2. MINE SPOIL/NATIVE CLAY CONTACTS ARE ESTIMATED BASED ON SOIL BORING INFORMATION.

STATE OF TEXAS
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GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST

11/25/2025

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

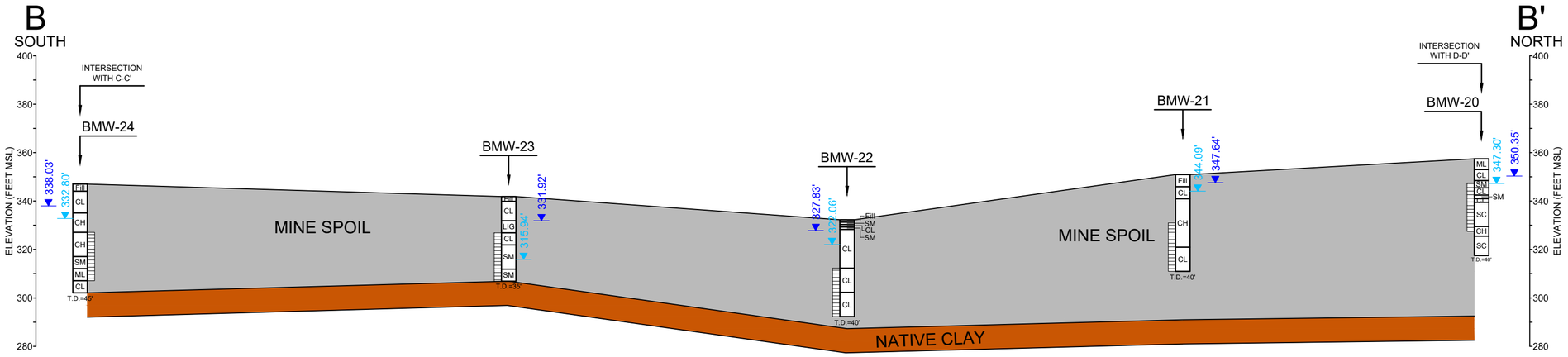
Figure 4

AREA LANDFILL
GEOLOGIC CROSS SECTION A-A'

PROJECT: 23643V-32	BY: HLS	DATE: NOV. 2025	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

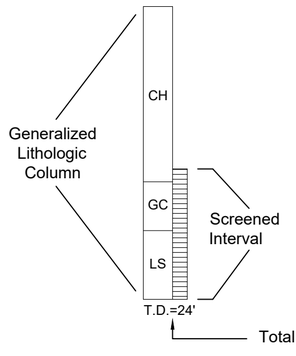
Plot Date: 11/17/25 - 3:17pm Plotted by: thigh
Drawing Path: C:\Users\thigh\OneDrive\Dwgs\25\061130\ Drawing Name: Martin Lake Steam Electric sections 25-1117.dwg



NOTES:

1. NOT FOR CONSTRUCTION.
2. MINE SPOIL/NATIVE CLAY CONTACTS ARE ESTIMATED BASED ON SOIL BORING INFORMATION.

MONITORING WELL CONSTRUCTION



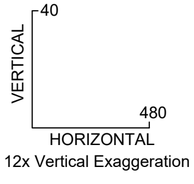
Max. Observed Historical Water Level (Ft MSL)

Min. Observed Historical Water Level (Ft MSL)

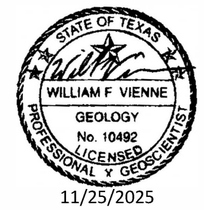
EXPLANATION

- SAND
- CLAY
- SILT
- SPOIL

SCALE IN FEET



12x Vertical Exaggeration



11/25/2025

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

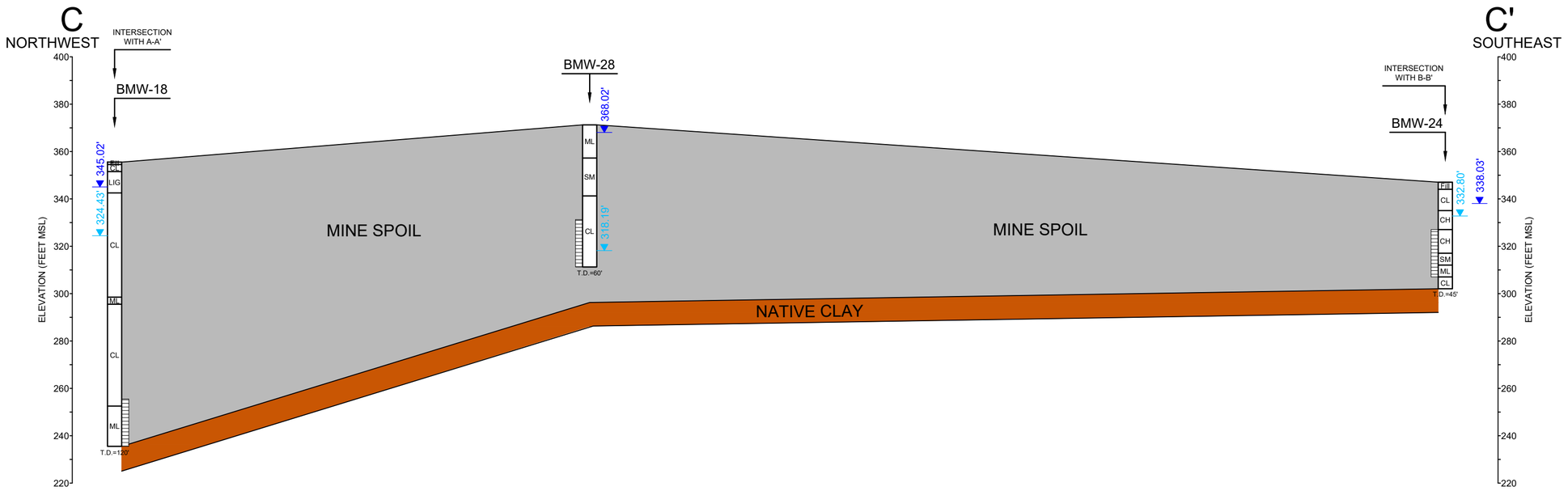
Figure 5

AREA LANDFILL
GEOLOGIC CROSS SECTION B-B'

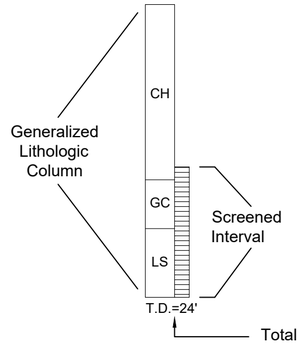
PROJECT: 23643V-32	BY: HLS	DATE: NOV. 2025	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

Plot Date: 11/17/25 - 3:17pm Plotted by: thigh
Drawing Path: C:\Users\thigh\OneDrive\Dwgs\25061130\ Drawing Name: Martin Lake Steam Electric sections 25-1117.dwg



MONITORING WELL CONSTRUCTION



Max. Observed Historical Water Level (Ft MSL)

Min. Observed Historical Water Level (Ft MSL)

EXPLANATION

- SAND
- CLAY
- SILT
- SPOIL

SCALE IN FEET

VERTICAL 40

HORIZONTAL 480

12x Vertical Exaggeration

NOTES:

1. NOT FOR CONSTRUCTION.
2. MINE SPOIL/NATIVE CLAY CONTACTS ARE ESTIMATED BASED ON SOIL BORING INFORMATION.

STATE OF TEXAS
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GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST

11/25/2025

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

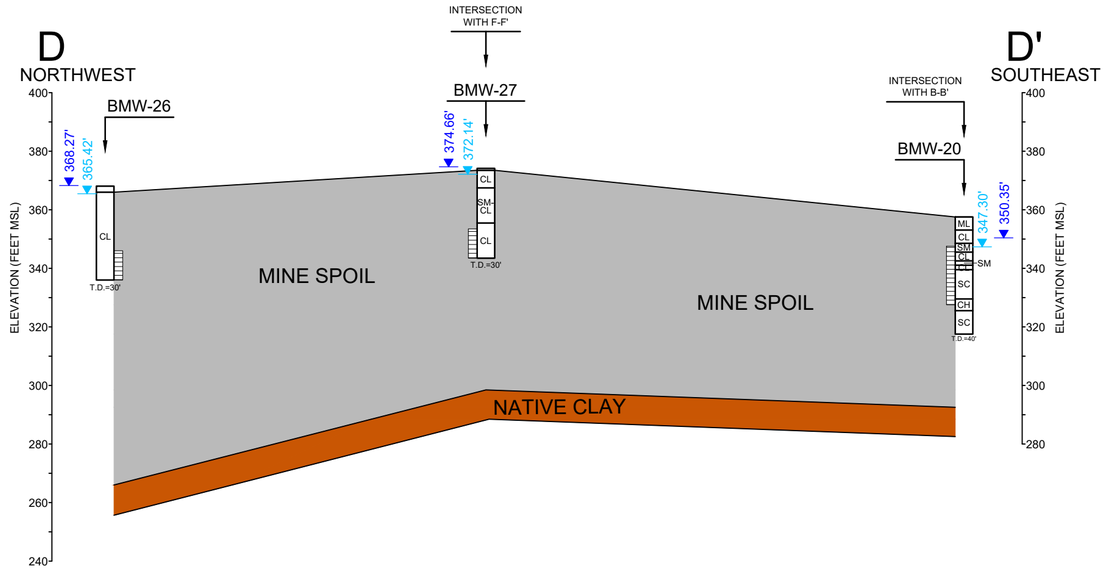
Figure 6

AREA LANDFILL
GEOLOGIC CROSS SECTION C-C'

PROJECT: 23643V-32	BY: HLS	DATE: NOV. 2025	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

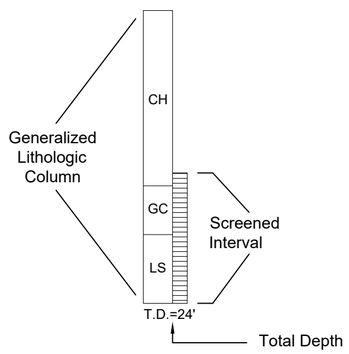
Plot Date: 11/17/25 - 3:17pm Plotted by: thigh
Drawing Path: C:\Users\thigh\OneDrive\Dwgs\25\061130_Drawing Name: Martin Lake Steam Electric sections 25-1117.dwg



NOTES:

1. NOT FOR CONSTRUCTION.
2. MINE SPOIL/NATIVE CLAY CONTACTS ARE ESTIMATED BASED ON SOIL BORING INFORMATION.

MONITORING WELL CONSTRUCTION



Max. Observed Historical Water Level (Ft MSL)

Min. Observed Historical Water Level (Ft MSL)

EXPLANATION

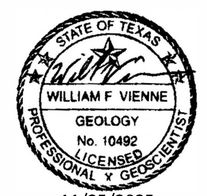
- SAND
- CLAY
- SILT
- SPOIL

SCALE IN FEET

VERTICAL 40

HORIZONTAL 480

12x Vertical Exaggeration



11/25/2025

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

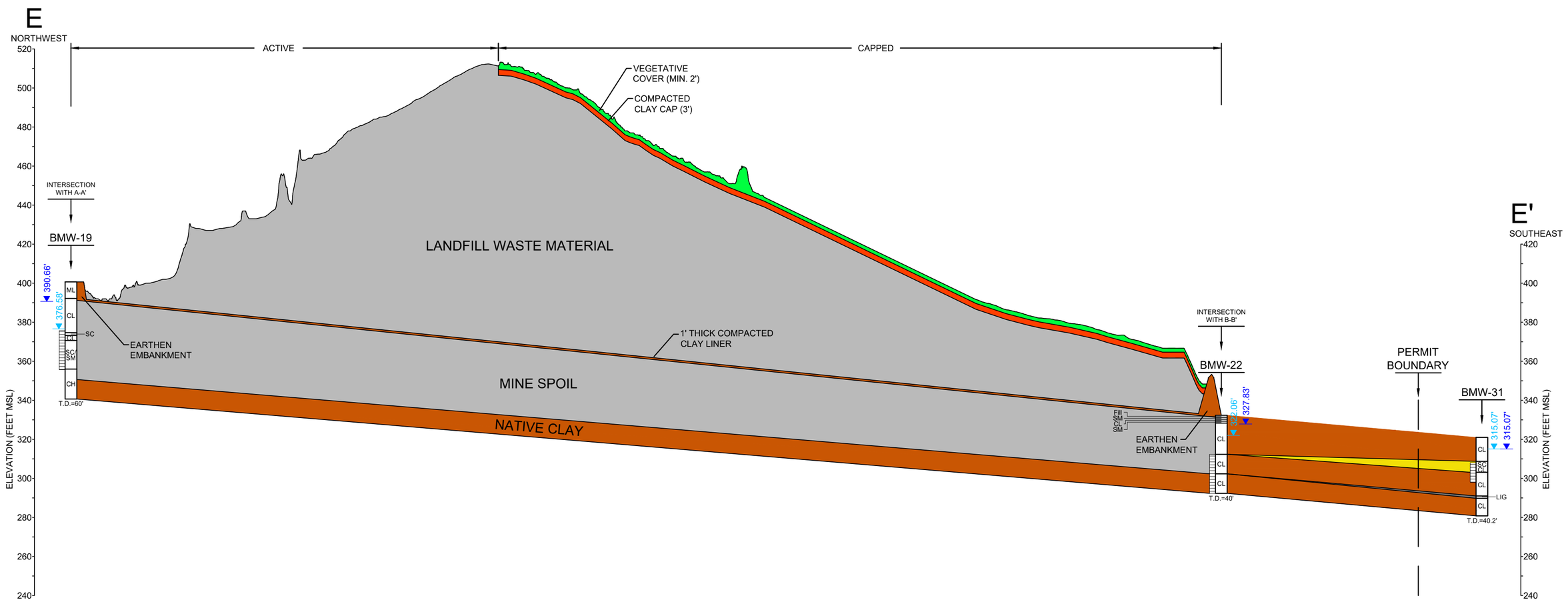
Figure 7

AREA LANDFILL
GEOLOGIC CROSS SECTION D-D'

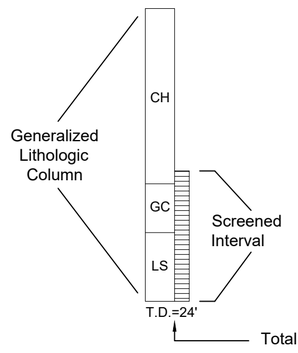
PROJECT: 23643V-32	BY: HLS	DATE: NOV. 2025	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

Plot Date: 11/17/25 - 3:17pm Plotted by: thigh
Drawing Path: C:\Users\thigh\OneDrive\Dwgs\25061130\ Drawing Name: Martin Lake Steam Electric sections 25-1117.dwg



MONITORING WELL CONSTRUCTION



Max. Observed Historical Water Level (Ft MSL)

Min. Observed Historical Water Level (Ft MSL)

EXPLANATION

- SAND
- CLAY
- SILT
- SPOIL/WASTE

SCALE IN FEET

VERTICAL 40

HORIZONTAL 480

12x Vertical Exaggeration

STATE OF TEXAS
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GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST

11/25/2025

NOTES:

1. THE WATER LEVEL IN BMW-31 WAS ONLY MEASURED ONCE, DURING ASSESSMENT OF CORRECTIVE MEASURES (GOLDER, 2019.)
2. LANDFILL TOPOGRAPHY IS BASED ON 2021 AND 2025 SURVEYS PERFORMED BY SCS.
3. NOT FOR CONSTRUCTION.
4. LANDFILL/MINE SPOIL/NATIVE CLAY CONTACTS ARE ESTIMATED BASED ON SOIL BORING INFORMATION.
5. VEGETATIVE COVER, CLAY LINER, AND CLAY CAP ARE APPROXIMATE.

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

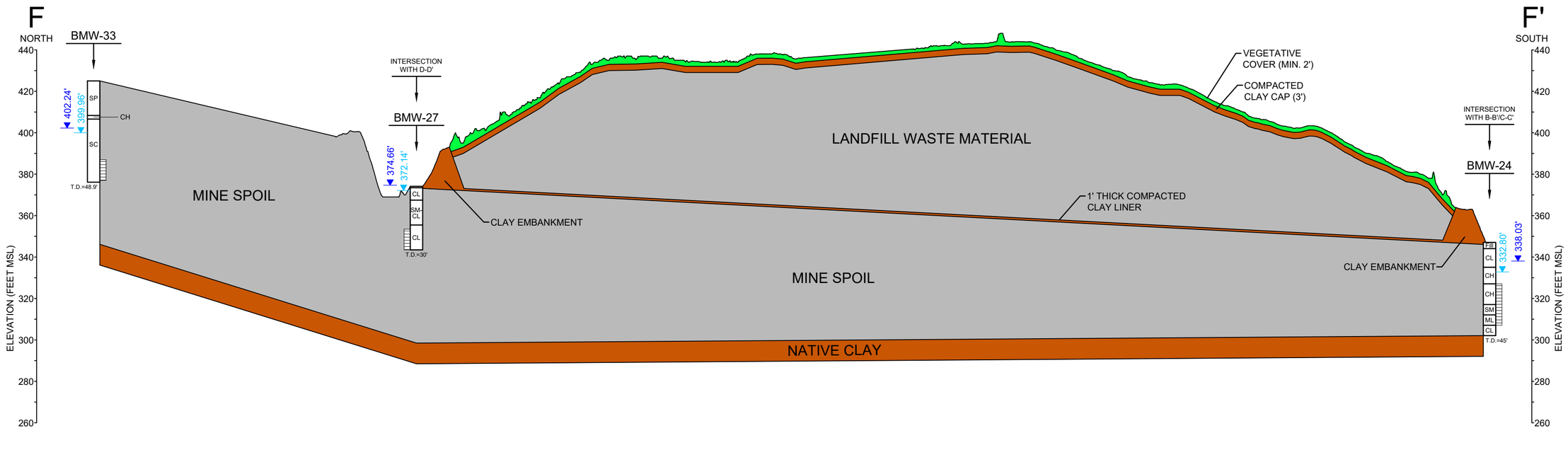
Figure 8

AREA LANDFILL
GEOLOGIC CROSS SECTION E-E'

PROJECT: 23643V-32	BY: HLS	DATE: NOV. 2025	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

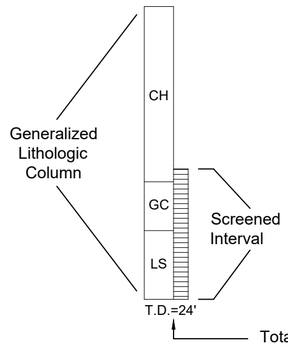
Plot Date: 11/20/25 - 1:02pm Plotted by: thigh
Drawing Path: C:\Users\thigh\OneDrive\Dwgs\25061130\ Drawing Name: Martin Lake Steam Electric sections 25-1120.dwg



NOTES:

1. LANDFILL TOPOGRAPHY IS BASED ON 2021 AND 2025 SURVEYS PERFORMED BY SCS.
2. NOT FOR CONSTRUCTION.
3. LANDFILL/MINE SPOIL/NATIVE CLAY CONTACTS ARE ESTIMATED BASED ON SOIL BORING INFORMATION.
4. VEGETATIVE COVER, CLAY LINER, AND CLAY CAP ARE APPROXIMATE.

MONITORING WELL CONSTRUCTION



Max. Observed Historical Water Level (Ft MSL)

Min. Observed Historical Water Level (Ft MSL)

EXPLANATION

- SAND
- CLAY
- SILT
- SPOIL/WASTE

SCALE IN FEET

VERTICAL 40

HORIZONTAL 480

12x Vertical Exaggeration

STATE OF TEXAS
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11/25/2025

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 9

AREA LANDFILL
GEOLOGIC CROSS SECTION F-F'

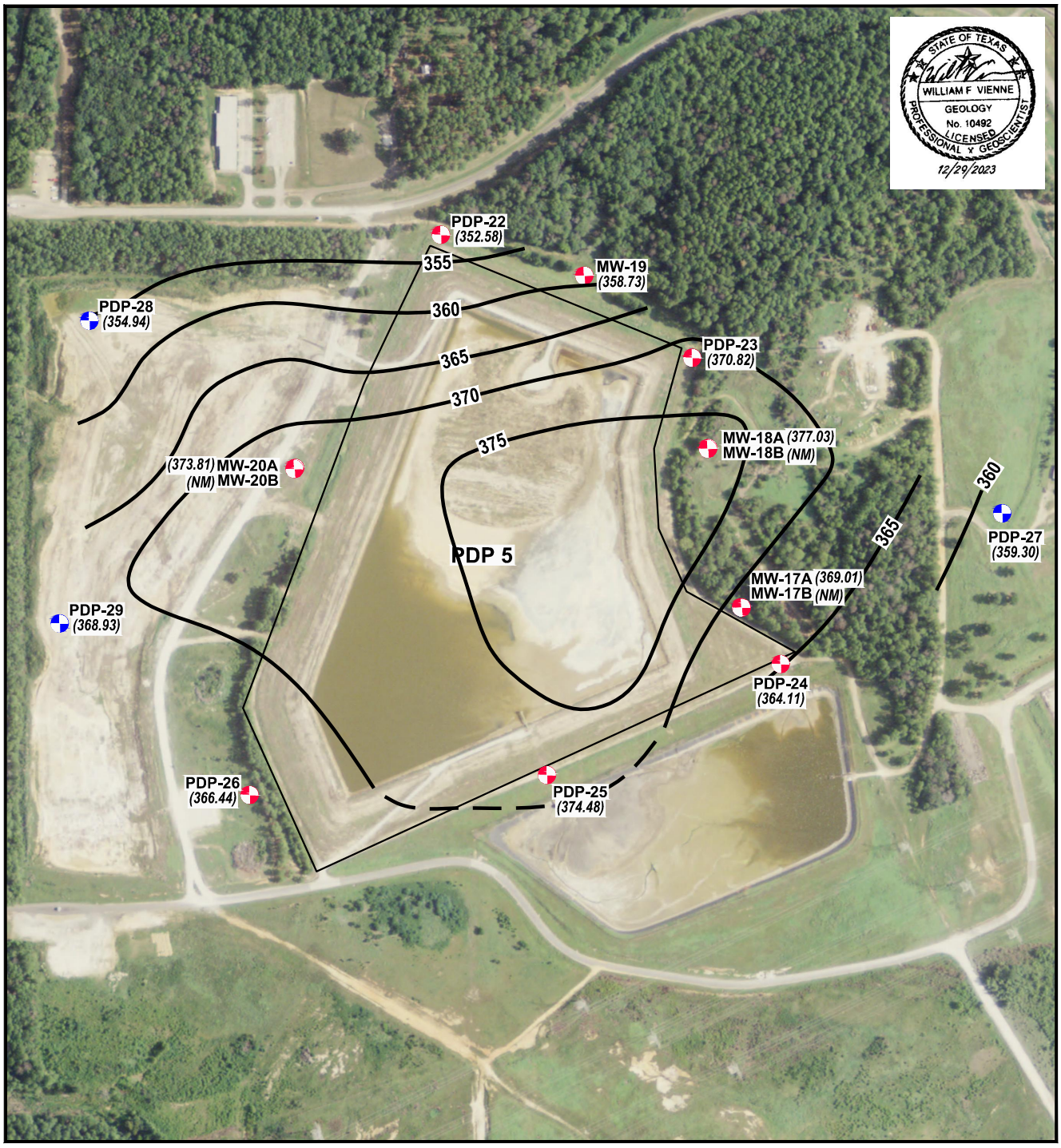
PROJECT: 23643V-32	BY: HLS	DATE: NOV. 2025	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

Plot Date: 11/20/25 - 1:02pm Plotted by: thigh
Drawing Path: C:\Users\thigh\OneDrive\Dwgs\25\061301\ Drawing Name: Martin Lake Steam Electric sections 25-1120.dwg

ATTACHMENT 3

PDP-5 Groundwater Potentiometric Surface Maps - Background Period



STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
12/29/2023

EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (374.34) Groundwater Potentiometric Surface (ft. MSL)
- — 360 — Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

Notes:
1. Only Zone A wells were used to construct potentiometric surface contours.

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

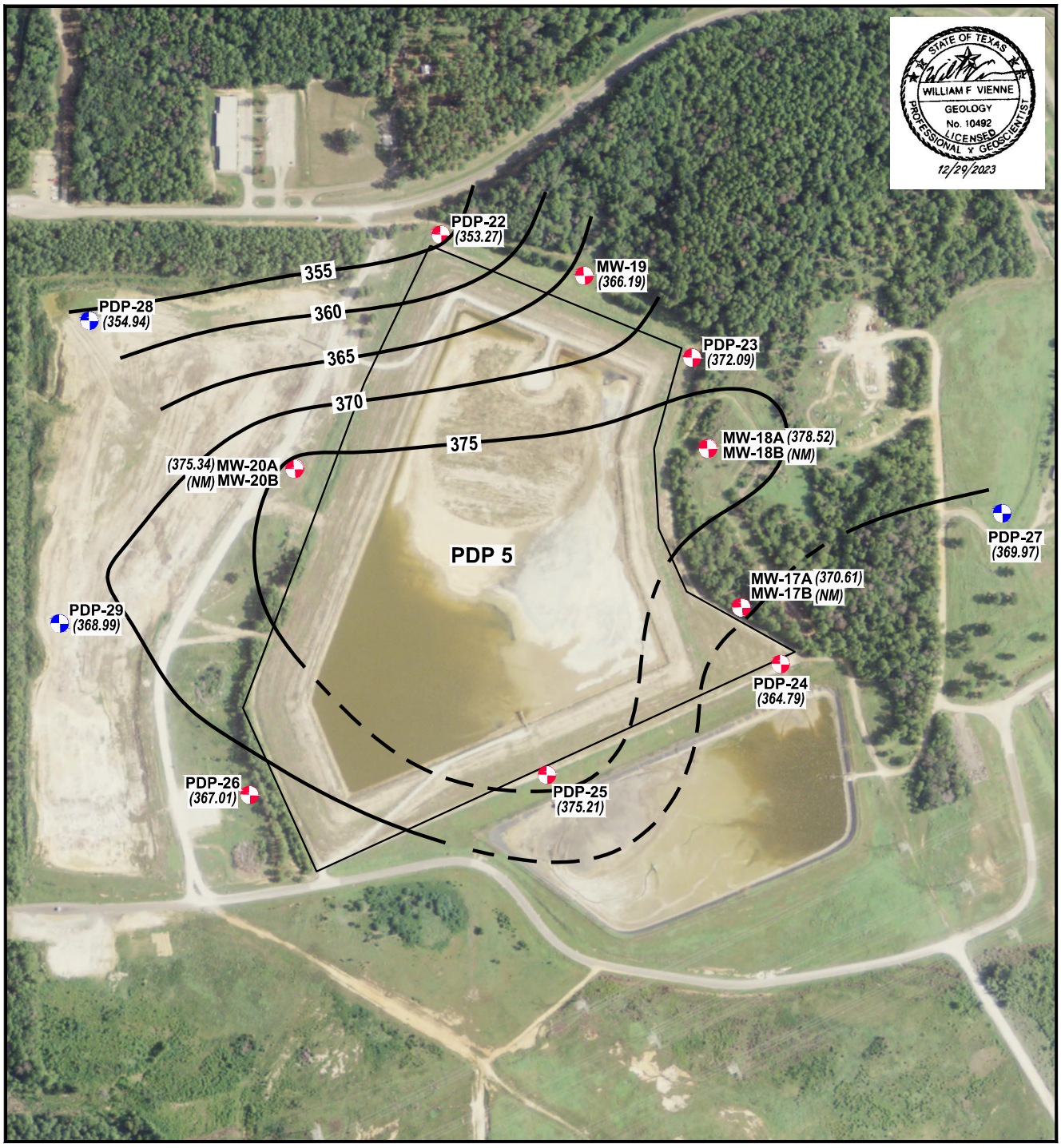
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 1

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP OCTOBER 20, 2015

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
12/29/2023

EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (374.34) Groundwater Potentiometric Surface (ft. MSL)
- — 360 — Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

Notes:
1. Only Zone A wells were used to construct potentiometric surface contours.

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

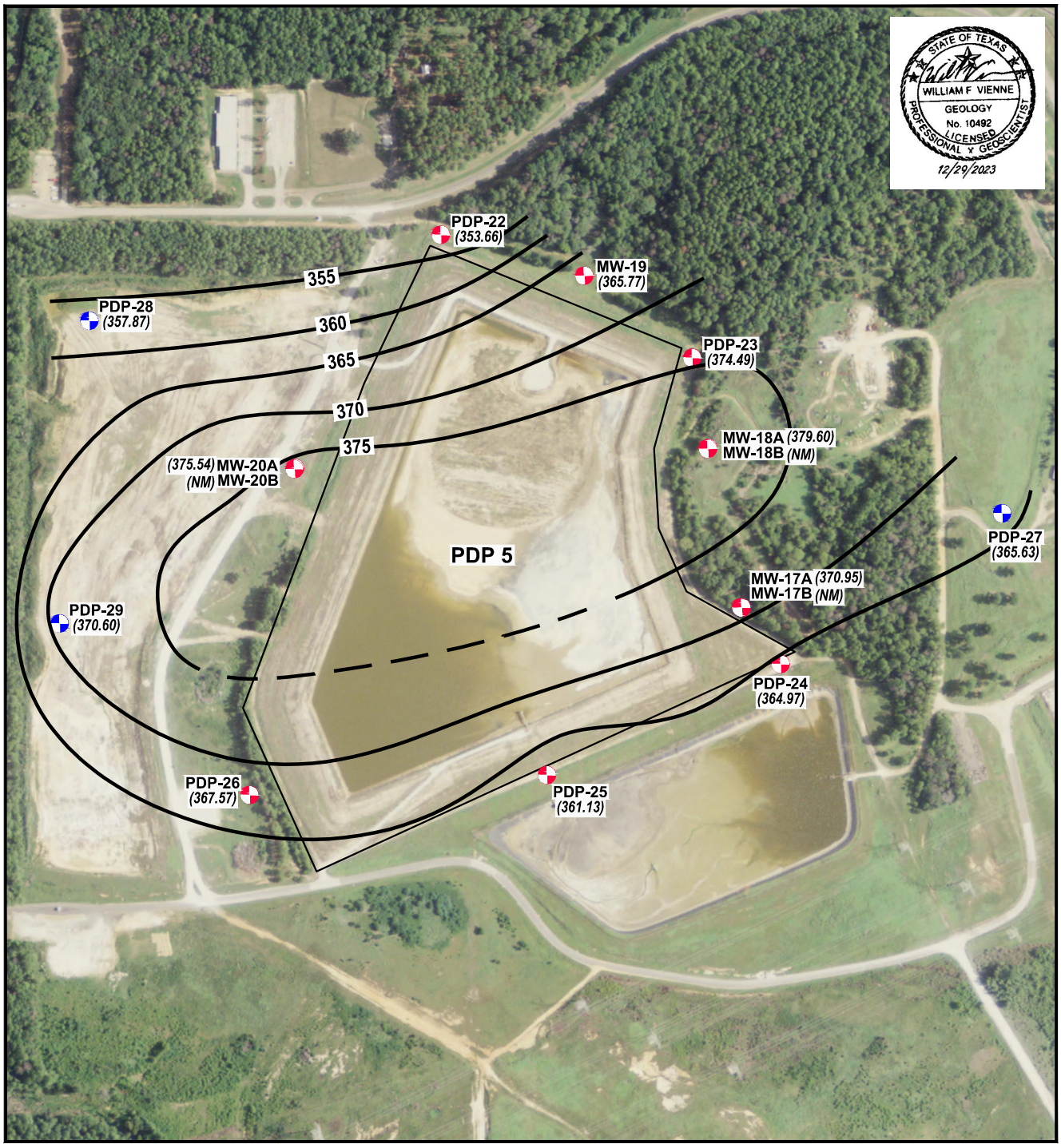
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 2

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - DEC. 14, 2015

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
12/29/2023

EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (374.34) Groundwater Potentiometric Surface (ft. MSL)
- — 360 — Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

Notes:
1. Only Zone A wells were used to construct potentiometric surface contours.

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

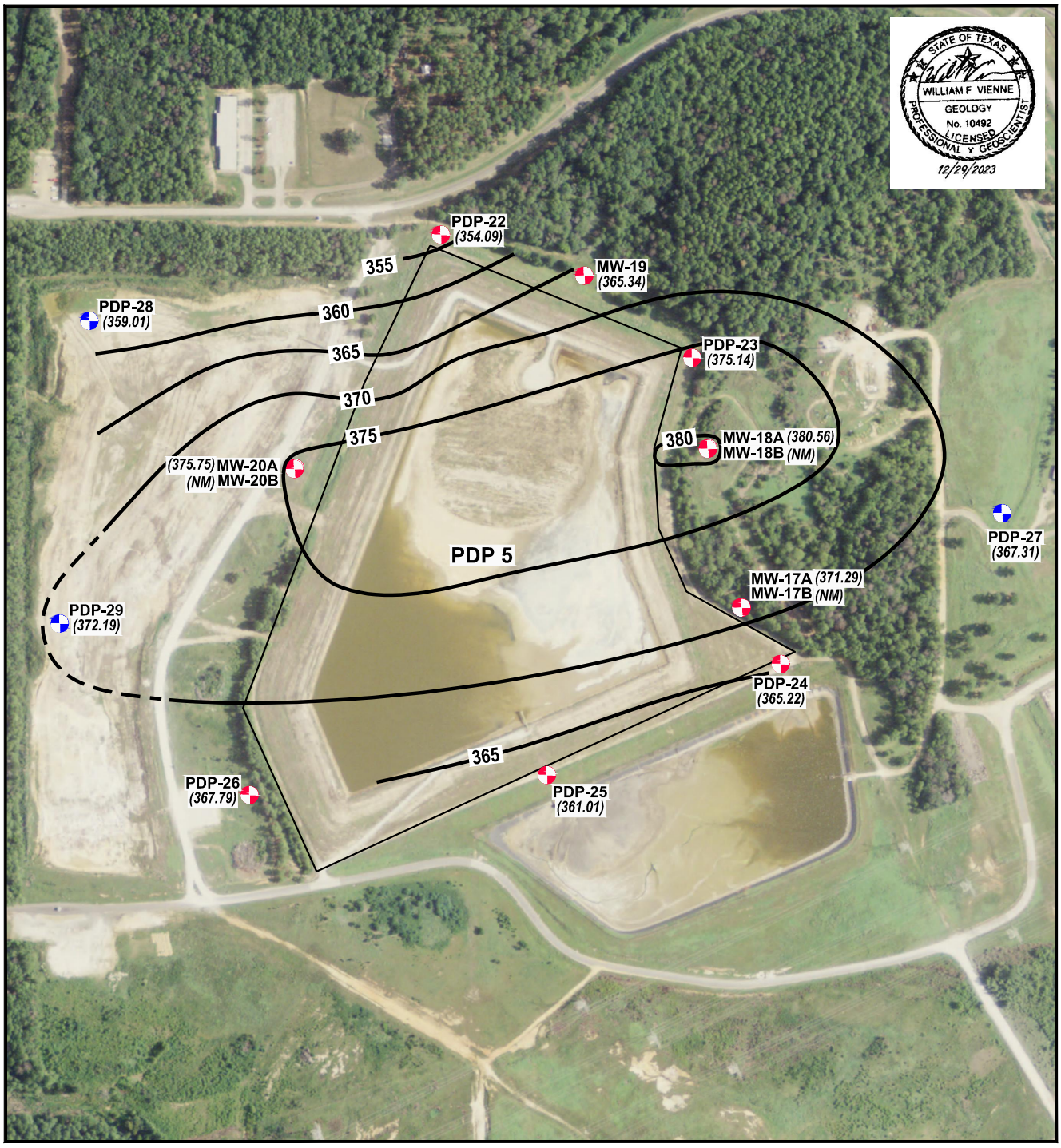
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 3

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - FEB. 24, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
12/29/2023

EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (374.34) Groundwater Potentiometric Surface (ft. MSL)
- — 360 — Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

Notes:
1. Only Zone A wells were used to construct potentiometric surface contours.

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

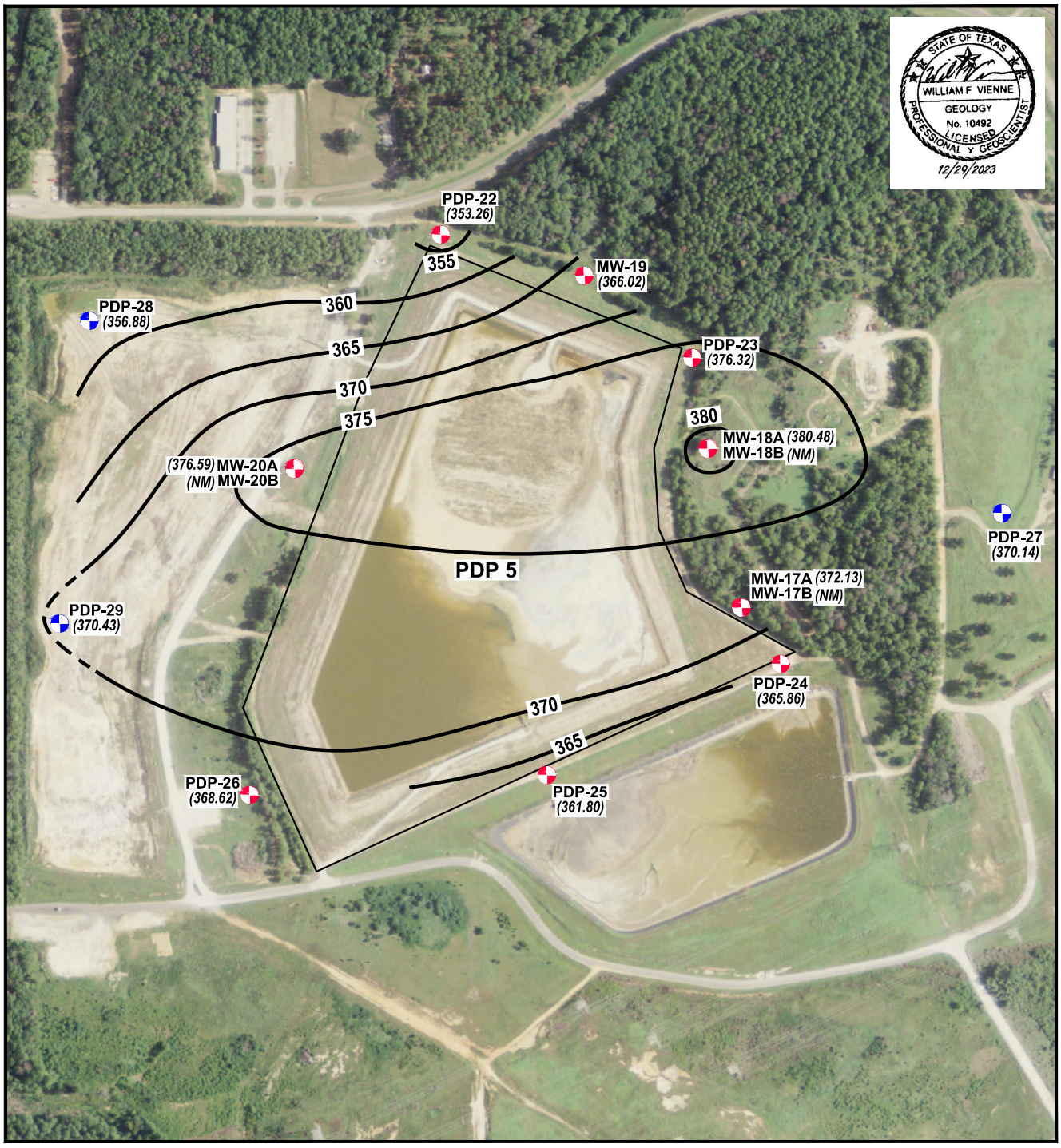
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 4

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - APRIL 5, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



STATE OF TEXAS
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GEOLOGY
No. 10492
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PROFESSIONAL GEOSCIENTIST
12/29/2023

EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (374.34) Groundwater Potentiometric Surface (ft. MSL)
- — 360 — Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

Notes:
1. Only Zone A wells were used to construct potentiometric surface contours.

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

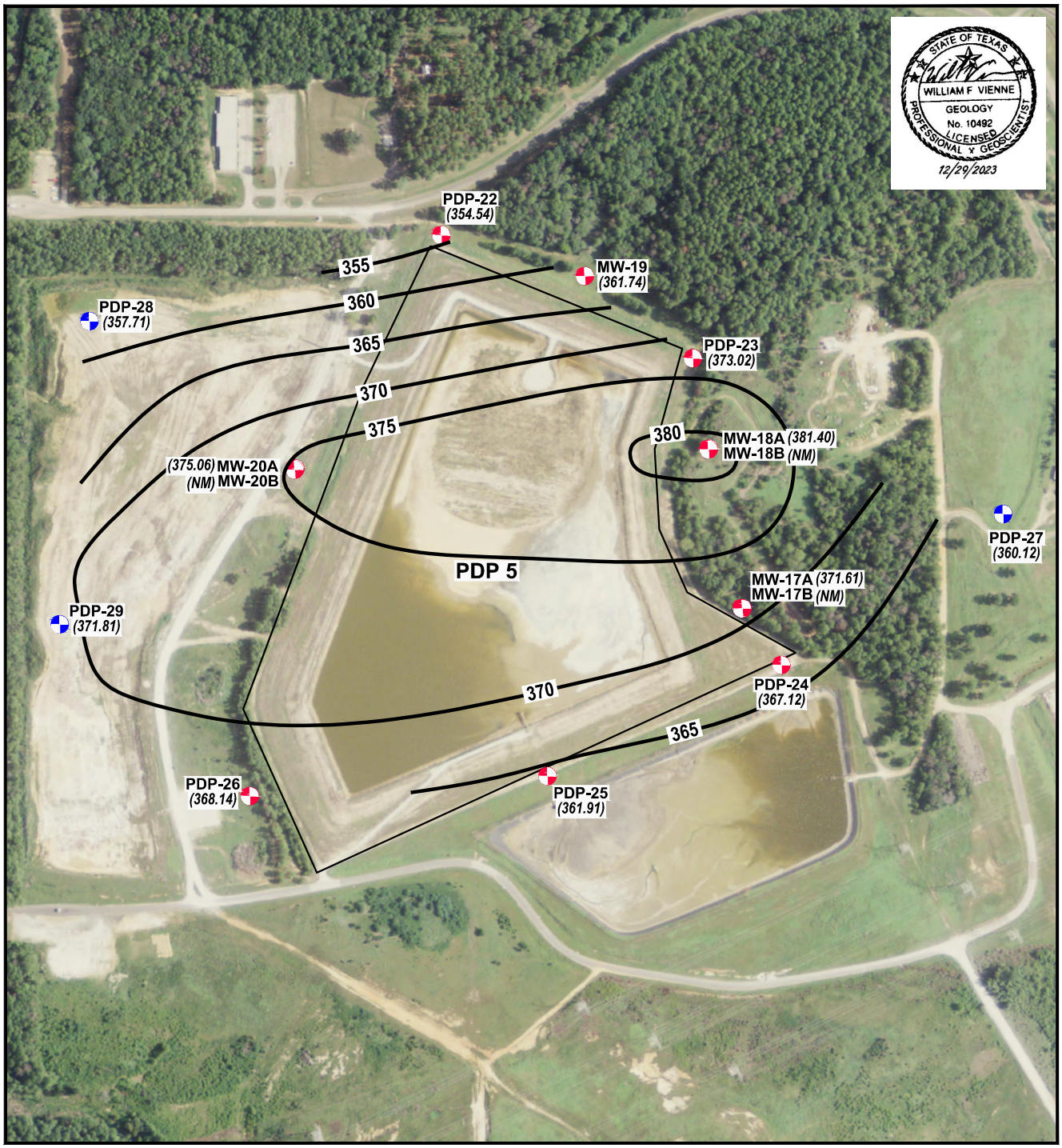
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 5

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - JUNE 6, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
12/29/2023

EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (374.34) Groundwater Potentiometric Surface (ft. MSL)
- — 360 — Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

Notes:
1. Only Zone A wells were used to construct potentiometric surface contours.

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

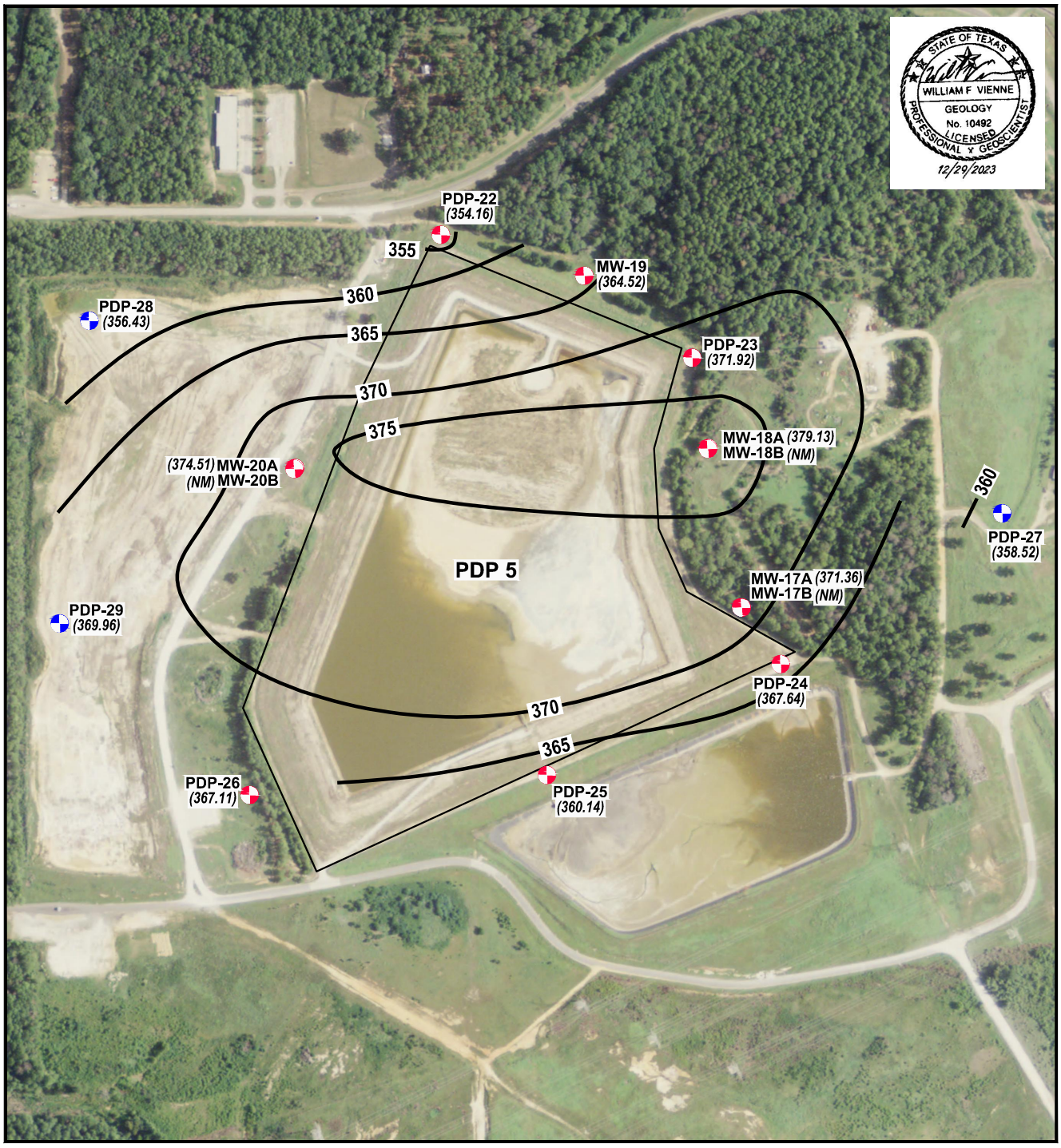
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 6

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - AUGUST 9, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
12/29/2023

EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (374.34) Groundwater Potentiometric Surface (ft. MSL)
- — 360 — Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

Notes:
1. Only Zone A wells were used to construct potentiometric surface contours.

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

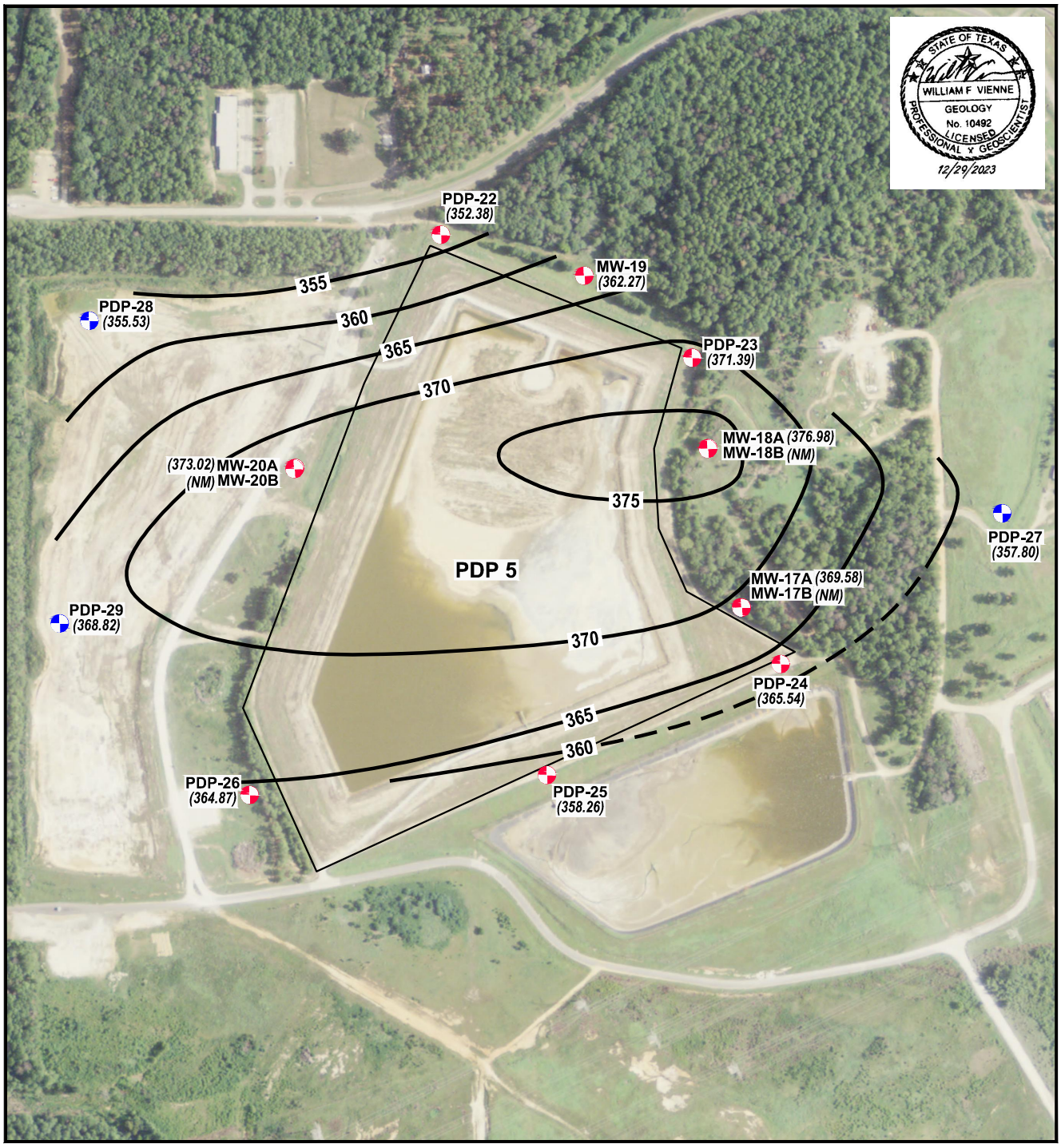
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 7

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - OCTOBER 17, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
12/29/2023

EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (374.34) Groundwater Potentiometric Surface (ft. MSL)
- — 360 — Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

Notes:
1. Only Zone A wells were used to construct potentiometric surface contours.

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 8

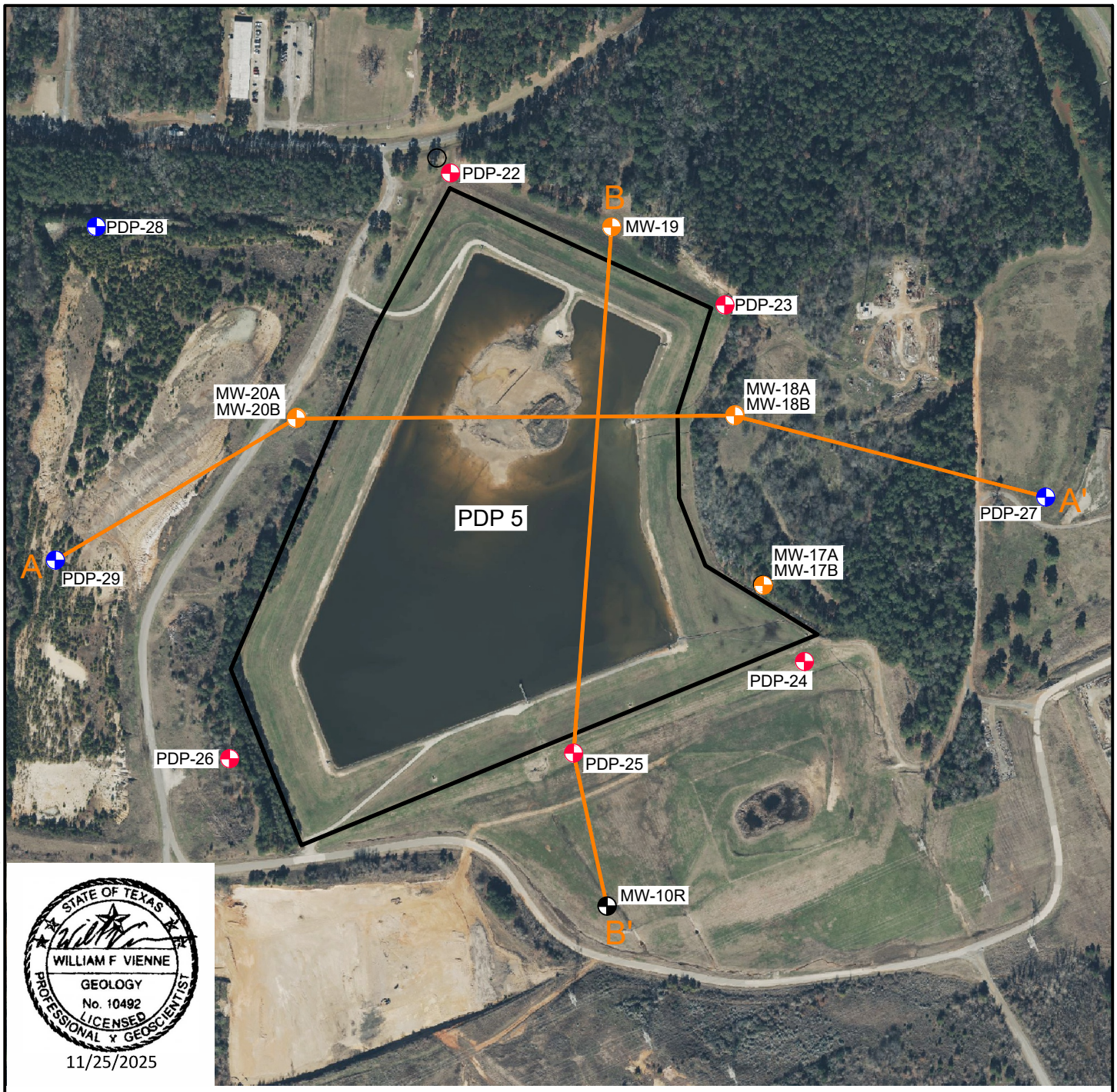
PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - DECEMBER 11, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

ATTACHMENT 4

PDP-5 Cross Sections and Associated Figures



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

11/25/2025

EXPLANATION

- Pre-Existing Well Used as CCR Monitoring
- Non-CCR Monitoring Well
- CCR Monitoring Well Location Installed in 2015
- Non-CCR Monitoring Well Used to Evaluate Groundwater Flow Direction
- A____A' Geologic Cross Section Location Lines

N

Scale in Feet

0 250 500

Aerial Source:
2025 Microsoft Corporation; 2025 Maxar; CNES 2025 Distribution Airbus DS; 2025 TMAP Mobility Earthstar Geographics SIO

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 2
CROSS SECTION LOCATION MAP

PROJECT: 23643V-32	BY: HLS	DATE: NOV. 2025	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

Plot Date: 11/03/25 - 10:45am, Plotted by: thigh
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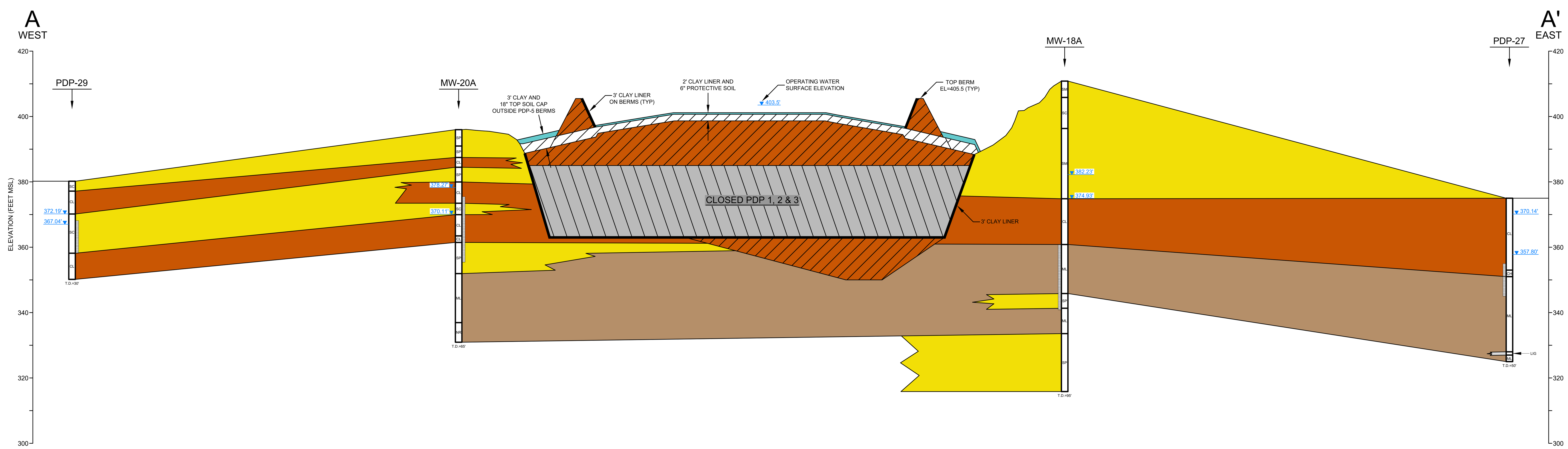
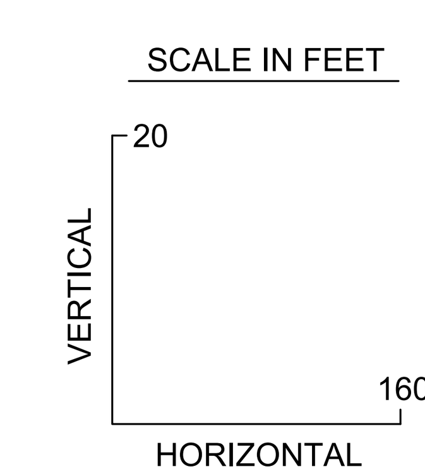
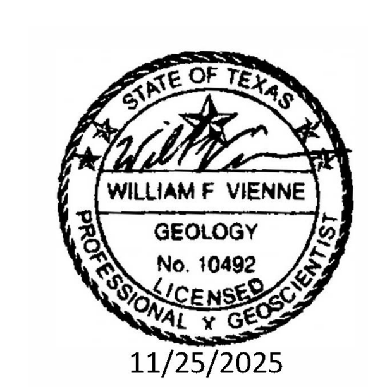




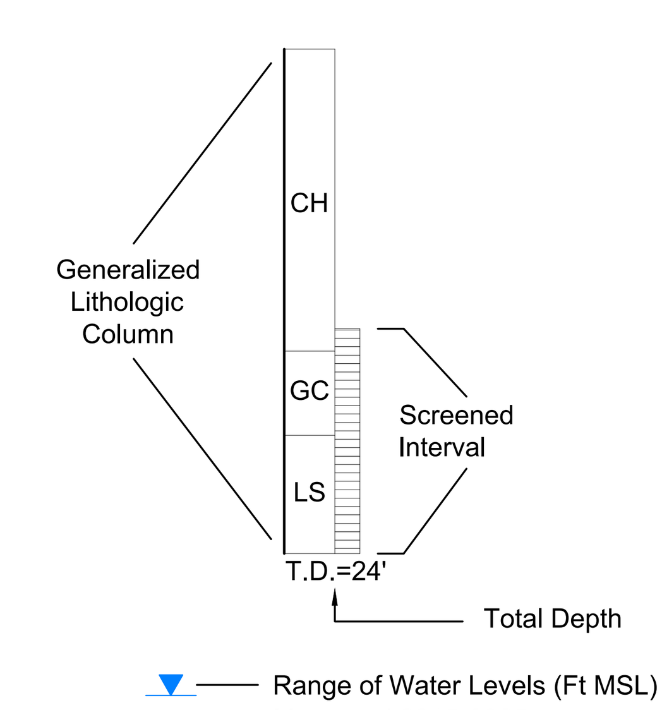
8x Vertical Exaggeration

LEGEND

- SAND
- CLAY
- SILT
- TOP SOIL
- CLOSED PDP 1, 2 & 3
- PDP-5 CLAY LINER AND CLOSED PDP 1, 2 & 3 CLAY CAP
- FILL



MONITORING WELL CONSTRUCTION



MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

GEOLOGIC CROSS SECTION A-A'

PROJECT: 23643V-32	BY: HLS	DATE: NOV. 2025	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

Plot Date: 11/03/25 - 11:14am, Plotted by: thigh
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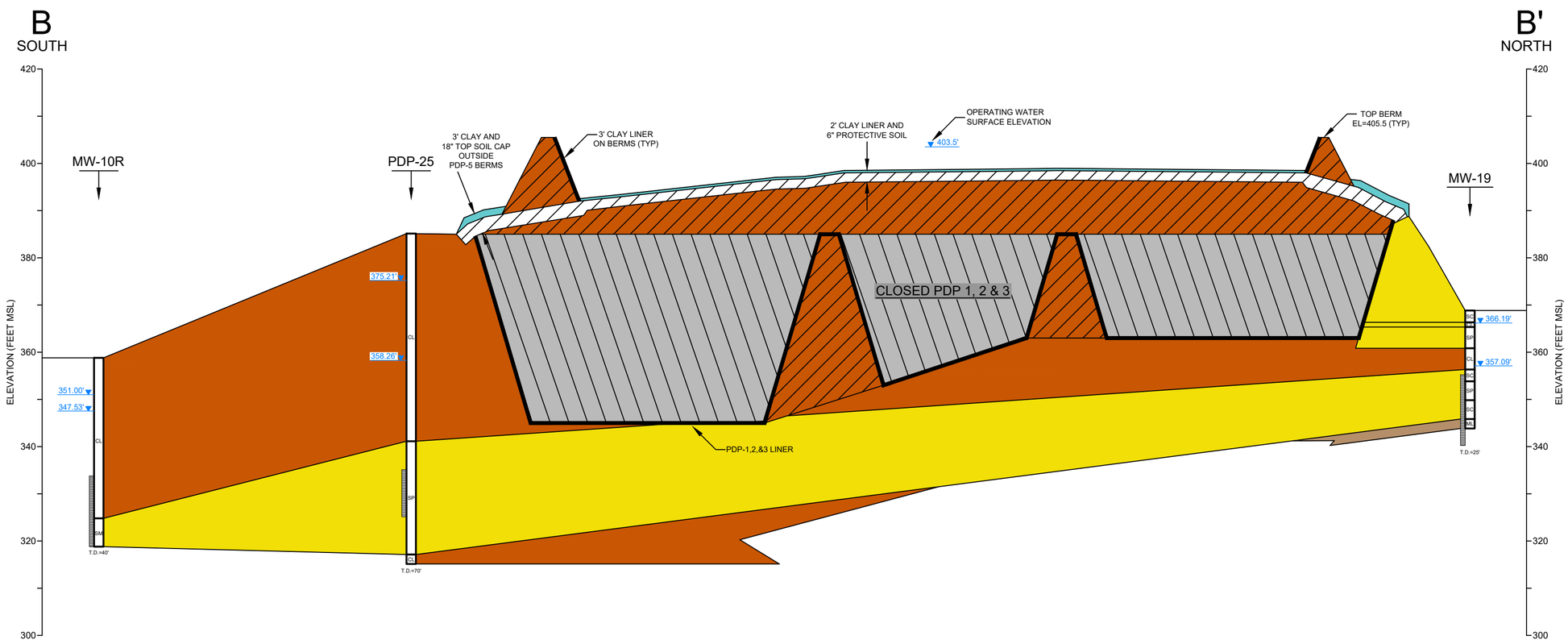
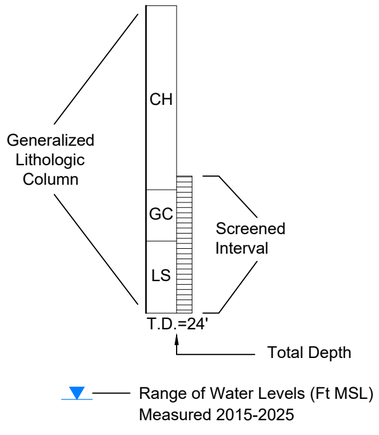


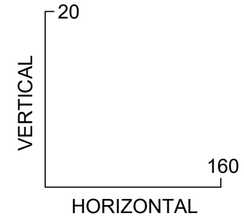
LEGEND

- SAND
- CLAY
- SILT
- TOP SOIL
- CLOSED PDP 1, 2 & 3
- PDP-5 CLAY LINER AND CLOSED PDP 1, 2 & 3 CLAY CAP
- FILL

MONITORING WELL CONSTRUCTION



SCALE IN FEET



8x Vertical Exaggeration

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

11/25/2025

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

GEOLOGIC CROSS SECTION B-B'

PROJECT: 23643V-32	BY: HLS	DATE: NOV. 2025	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

Plot Date: 11/03/25 - 10:05pm Plotted by: thigh
Drawing Path: C:\Users\thigh\OneDrive\Dwgs\25\061\ Drawing Name: Cross Sections 25-1101.dwg

ATTACHMENT 5

TCEQ Closure Approval Letter for PDP-1, PDP-2, and PDP-3

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

March 12, 2015

Mr. David P. Duncan
Director Environmental Generation
Luminant Power
1601 Bryan Street (EP-27)
Dallas, Texas 75201

Re: Approval
Closure Report, Waste Management Unit(s) 004,005, 006, dated December 5, 2014
Luminant Power, Martin Lake Steam Electric Station, 8850 FM 2658 North,
TCEQ SWR No. 31277, CN603256413, RN102583093
EPA ID No. TXD000821306

Dear Mr. Duncan:

The Texas Commission on Environmental Quality (TCEQ) has reviewed the above referenced submittal, dated December 5, 2014. Non-hazardous Waste Management Units (WMUs) 004, 005, and 006 are closed landfills containing residual combustion by-products that border each other at the subject facility. An Affected Property Assessment Report (APAR) dated May 13, 2014 subsequently approved by the TCEQ on August 29, 2014 indicated that all potential site chemical of concern (COCs) in soils and groundwater were reported below their respective Tier 1 Residential Protective Concentration Levels (PCLs). No groundwater wells are located within 0.5 miles of the site. Therefore, Luminant Power has pursued closure of the above referenced WMUs in accordance with TCEQ Guidance Document RG-366/TRRP-2A. In accordance with this guidance document, for WMUs where evidence of a release to the environment has not occurred, the subject WMUs were closed in accordance with 30 Texas Administrative Code Chapter 350.2(h).

These units were closed in-place with a two-foot thick compacted clay cap. The construction documentation and other historical records indicate that the non-hazardous wastes present in the closed units have been capped with two feet of compacted clay and three feet of fill soil. Irrespective of the findings of the APAR referenced above, Luminant will voluntarily continue semi-annual monitoring of the existing groundwater monitoring well network in conjunction with monitoring the active impoundment, PDP5 (WMU 024). The closed subject WMUs will be deed recorded to prevent future use of groundwater in the footprint of the WMUs. Please submit your proof of filing your institutional controls in accordance with 30 TAC Chapter 350.111 within 90 days from the date of this letter.

Based on the information contained in the subject report and other information available to staff, the TCEQ accepts the closure of the above referenced waste management unit. With the exception being the deed notice information requested above, no further action is required under 30 Texas Administrative Code (TAC) §335.8.

A copy of this letter has been forwarded to the TCEQ Registration and Reporting Section to update your Notice of Registration (NOR). For questions regarding the NOR, please contact the Registration and Reporting Section at (512) 239-6413

Please be aware that it is the continuing obligation of persons associated with a site to ensure that municipal hazardous waste and industrial solid waste are managed in a manner which does not cause the discharge or imminent threat of discharge of waste into or adjacent to waters in the state, a nuisance, or the endangerment of the public health and welfare as required by 30 TAC §335.4. If the actual response action fails to comply with these requirements, please take any necessary and authorized action to correct such conditions. A TCEQ field inspector may conduct an inspection of your site to determine compliance with the subject closure report.

Questions concerning this letter should be directed to me at (512) 239-2591. When responding by mail, please submit an original and one copy of all correspondence and reports to the TCEQ Remediation Division at Mail Code MC-127. An additional copy should be submitted to the local TCEQ Region Office. Please note that the Remediation Division has instituted a policy of sending letters via Portable Document Format (PDF) and email when appropriate. Therefore, current email addresses and the site identification information in the reference block should be included in all future submittals.

Sincerely,

C. Todd Counter, Project Manager
Team 1, VCP-CA Section
Remediation Division
Texas Commission on Environmental Quality

CTC/mdh

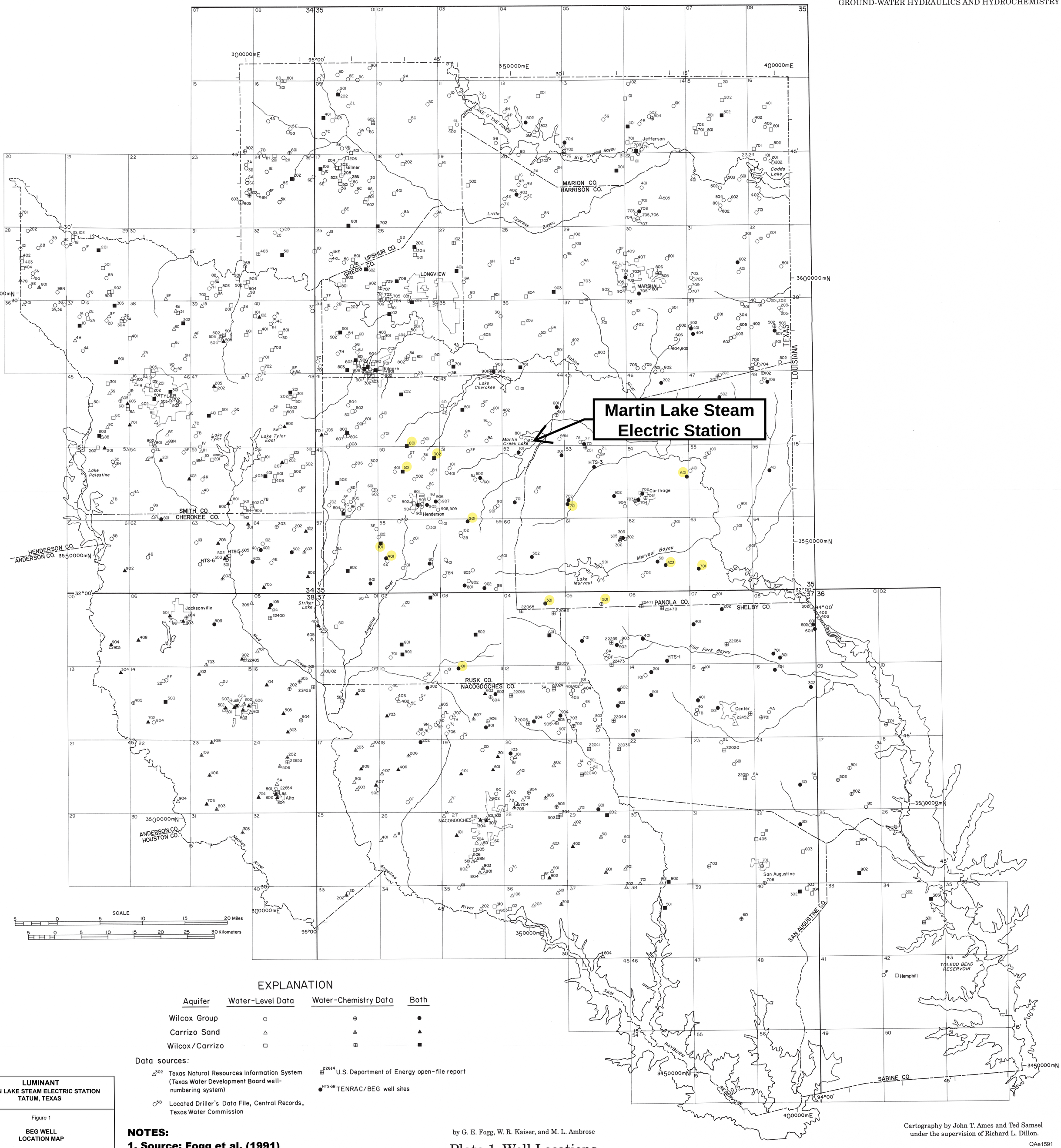
cc: Mr. Brian Thomas, Pastor, Behling & Wheeler, LLC, 5416 Plaza Drive, Texarkana, Texas 75503-1607
Mr. Michael Brashear, Waste Section Manager, TCEQ Region 5 Office, Tyler

ATTACHMENT 6

BEG Study Data Summary

THE UNIVERSITY OF TEXAS AT AUSTIN
BUREAU OF ECONOMIC GEOLOGY
W. L. FISHER, DIRECTOR

PLATE 1
THE WILCOX GROUP AND CARRIZO SAND (PALEOGENE)
IN THE SABINE UPLIFT AREA, TEXAS:
GROUND-WATER HYDRAULICS AND HYDROCHEMISTRY



EXPLANATION

Aquifer	Water-Level Data	Water-Chemistry Data	Both
Wilcox Group	○	⊕	●
Carrizo Sand	△	⧋	▲
Wilcox/Carrizo	□	⊞	■

Data sources:

- $\triangle^{302}$ Texas Natural Resources Information System (Texas Water Development Board well-numbering system)
- $\bigcirc^{58}$ Located Driller's Data File, Central Records, Texas Water Commission
- $\boxplus^{22634}$ U.S. Department of Energy open-file report
- $\bullet^{HTS\text{-}3B}$ TENRAC/BEG well sites

NOTES:

1. Source: Fogg et al. (1991)

2. Wells in counties near Martin Lake SES with reported total depths < 100 feet are highlighted.

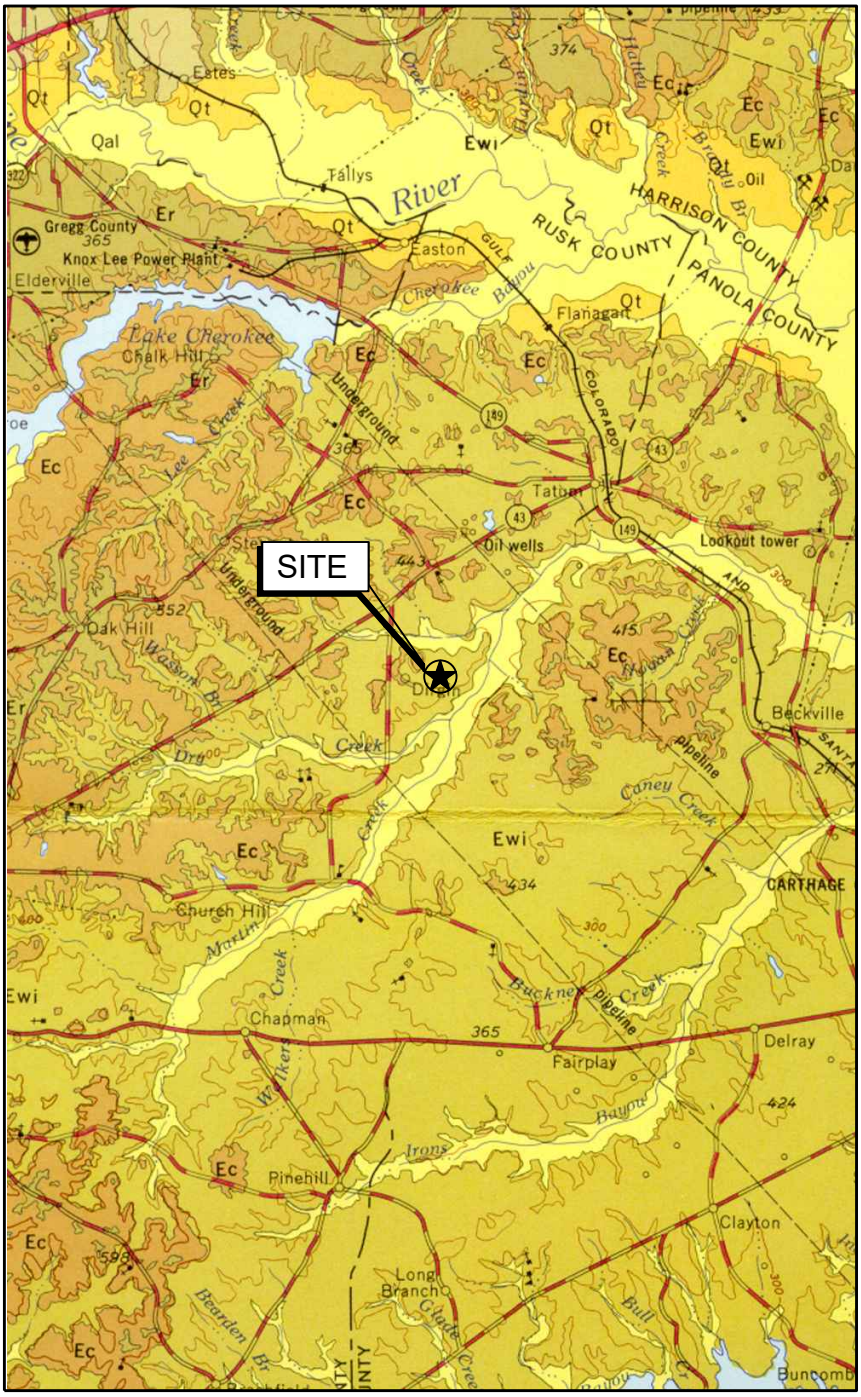
LUMINANT MARTIN LAKE STEAM ELECTRIC STATION TATUM, TEXAS			
Figure 1 BEG WELL LOCATION MAP			
PROJECT: 23643	BY: SLB	DATE: 11/14/2025	CHECKED: WV
Bullock, Bennett & Associates, LLC Engineering and Geoscience			

by G. E. Fogg, W. R. Kaiser, and M. L. Ambrose

Plate 1. Well Locations
1991

Cartography by John T. Ames and Ted Samsel
under the supervision of Richard L. Dillon.

QAe1591



EXPLANATION

(Formations Described in Separate Text)

Recent	Qal	Alluvium	QUATERNARY
Pleistocene	Qt	Fluviatile terrace deposits undivided	
Eocene	Er	Reklaw Formation	TERTIARY
	Ec	Carrizo Sand	
	Ewi	Wilcox Group undivided	

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

11/25/2025

Approximate Property Boundary

N

Scale 1:250,000

0 5

Statute Miles

Source: Geologic Atlas of Texas, Tyler Sheet, 1975.

LUMINANT

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 2

REGIONAL GEOLOGIC MAP

PROJECT: 23643	BY: SLB	REVISIONS
DATE: Nov. 2025	CHECKED: WV	

Bullock, Bennett & Associates, LLC
Engineering and Geoscience

TABLE 1
WATER WELL RECORDS FROM FOGG ET AL. (1991)

County	Well No.	Data Source	Unit	Interval	Date Collected	Depth (ft)	pH (s.u.)	Ca (mg/L)	Cl (mg/L)	SO4 (mg/L)	TDS (mg/L)
Cherokee	22400	DOE	WX/CZ	A	11/8/1978	610	6.3	12.9	25.0	121	463.31
Cherokee	22405	DOE	WX/CZ	A	11/8/1978	400	6.1	11.8	14.0	43.0	191.52
Cherokee	22426	DOE	WX/CZ	A	11/11/1978	151	5.6	7.7	14.6	15.6	161.29
Cherokee	22653	DOE	WX/CZ	A	11/14/1978	650	8.9	0.1	19.0	13.0	444.78
Cherokee	22654	DOE	WX/CZ	A	11/14/1978	499	8.8	0.4	71.0	5.0	853.97
Cherokee	3454801	TNRIS	WX	A	3/9/1971	1097	8.3	2.0	9.0	4.0	633.00
Cherokee	3461902	TNRIS	CZ	A	3/9/1971	668	7.5	4.0	12.0	14.0	196.00
Cherokee	3463205	TNRIS	CZ	A	3/8/1971	300	7.7	5.0	12.0	36.0	383.00
Cherokee	3463301	TNRIS	CZ	A	9/22/1976	283	8.3	41.0	24.0	216.0	495.34
Cherokee	3463501	TNRIS	WX	A	3/4/1971	300	8.3	3.0	20.0	4.0	782.00
Cherokee	3463502	TNRIS	CZ	A	3/4/1971	200	7.3	5.0	13.0	117.0	352.00
Cherokee	3453503	TNRIS	CZ	A	9/22/1976	300	7.6	3.0	11.0	96.0	338.09
Cherokee	3453602	TNRIS	WX	A	3/1/1971	540	8.5	2.0	16.0	4.0	757.00
Cherokee	3463802	TNRIS	CZ	A	3/5/1971	210	7.9	6.0	16.0	80.0	351.00
Cherokee	3463802	TNRIS	WX	A	3/3/1971	250	7.2	2.0	26.0	185.0	472.00
Cherokee	3464203	TNRIS	CZ	A	3/4/1971	97	5.7	2.0	4.0	4.0	39.00
Cherokee	3464402	TNRIS	WX	A	3/8/1971	425	8.5	3.0	13.0	7.0	577.00
Cherokee	3464502	TNRIS	WX	A	3/3/1971	419	8.7	3.0	11.0	37.0	688.00
Cherokee	3464603	TNRIS	CZ	A	3/3/1971	118	6.4	2.0	2.0	5.0	44.00
Cherokee	3464705	TNRIS	CZ	A	9/22976	205	7.9	32.0	23.0	177.0	482.91
Cherokee	3464902	TNRIS	CZ	A	3/4/1971	78	7	53.0	6.0	24.0	220.00
Cherokee	3761402	TNRIS	CZ	A	9/23/1976	460	7.5	15.0	28.0	203.0	474.88
Cherokee	3733202	TNRIS	CZ	A	10/6/1970	960	8.5	1.0	21.0	55.0	393.00
Cherokee	3805904	TNRIS	CZ	A	2/25/1971	340	7.4	1.0	8.0	10.0	193.00
Cherokee	3886408	TNRIS	CZ	A	6/29/1977	707	8.3	4.0	36.0	53.0	308.96
Cherokee	3806501	TNRIS	CZ	A	1/13/1955	752	8.3	2.0	18.0	41.0	470.00
Cherokee	38906603	TNRIS	CZ	A	6/29/1977	685	8.6	1.0	13.0	5.0	414.71
Cherokee	3806604	TNRIS	WX	A	4/5/1952	720	8.2	6.0	25.0	15.0	460.40
Cherokee	3807503	TNRIS	WX	B	2/18/1971	1215	8.6	2.0	40.0	4.0	896.00
Cherokee	3807703	TNRIS	CZ	A	3/11/1971	400	8.4	3.0	13.0	4.0	341.00
Cherokee	3807902	TNRIS	CZ	A	2/16/1971	370	5.5	12.0	14.0	79.0	162.05
Cherokee	3808104	TNRIS	CZ	A	12/1/1962	555	6.1	19.0	14.0	208.0	511.11
Cherokee	3808105	TNRIS	WX	A	9/23/1976	993	8.6	1.0	60.0	4.0	921.24
Cherokee	3808005	TNRIS	CZ	A	2/17/1971	150	5.6	1.0	4.0	4.0	52.00
Cherokee	3613304	TNRIS	CZ	A	1/13/1971	648	7.8	2.0	11.0	9.0	205.00
Cherokee	3814405	TNRIS	WX	A	1/13/1971	500	8.2	2.0	17.0	4.0	670.00
Cherokee	3814503	TNRIS	WC/CZ	A	1/6/1971	448	8.2	1.0	30.0	36.0	311.00
Cherokee	3814702	TNRIS	CZ	A	1/8/1971	180	8.4	10.0	24.0	94.0	475.00
Cherokee	3815102	TNRIS	CZ	A	1/6/1971	670	8.4	1.0	13.0	17.0	297.00
Cherokee	3815502	TNRIS	CZ	A	1/13/1971	429	7.8	1.0	18.0	56.0	4464.00
Cherokee	3815602	TNRIS	CZ	A	10/27/1970	718	7.7	2.0	19.0	48.0	469.00
Cherokee	3815603	TNRIS	CZ	A	10/27/1970	450	8.0	2.0	21.0	42.0	477.00
Cherokee	3815604	TNRIS	CZ	A	1/15/1971	550	8.5	1.0	18.0	48.0	453.00
Cherokee	3715606	TNRIS	CZ	A	1/6/1971	520	8.6	1.0	16.0	50.0	454.00
Cherokee	3815607	TNRIS	CZ	A	1/15/1971	675	8.6	1.0	18.0	50.0	459.00
Cherokee	3816104	TNRIS	CZ	A	1/11/1971	295	7.8	2.0	21.0	6.0	511.00
Cherokee	3816202	TNRIS	WX	A	1/11/1971	501	8.5	3.0	218.0	4.0	1238.00
Cherokee	3816303	TNRIS	WX	A	1/6/1971	211	6.8	56.0	14.0	53.0	243.00
Cherokee	3816505	TNRIS	CZ	A	1/12/1971	250	8.3	2.0	40.0	9.0	570.00
Cherokee	3816803	TNRIS	CZ	A	6/28/1977	333	8.3	1.0	23.0	26.0	459.67
Cherokee	3816904	TNRIS	WX	A	12/16/1970	135	6.4	23.0	33.0	109.0	309.00
Cherokee	3823106	TNRIS	CZ	A	10/28/1970	294	7.9	4.0	23.0	70.0	481.00
Cherokee	3823108	TNRIS	CZ	A	1/14/1971	390	8.0	2.0	19.0	53.0	476.00
Cherokee	3823406	TNRIS	CZ	A	12/8/1977	254	8.2	1.0	24.0	5.0	509.33
Cherokee	3823703	TNRIS	CZ	A	10/28/1970	303	7.8	2.0	24.0	58.0	503.00
Cherokee	2823803	TNRIS	CZ	A	10/26/1970	340	7.8	2.0	21.0	31.0	490.00
Cherokee	3824202	TNRIS	CZ	A	10/21/1970	500	8.3	1.0	12.0	22.0	282.00

TABLE 1
WATER WELL RECORDS FROM FOGG ET AL. (1991)

County	Well No.	Data Source	Unit	Interval	Date Collected	Depth (ft)	pH (s.u.)	Ca (mg/L)	Cl (mg/L)	SO4 (mg/L)	TDS (mg/L)
Cherokee	3824566	TNRIS	CZ	A	10/21/1970	510	8.3	2.0	65.0	4.0	651.00
Cherokee	3824704	TNRIS	CZ	A	10/21/1970	420	7.9	3.0	13.0	5.0	723.00
Cherokee	3824802	TNRIS	CZ	A	10/20/1970	545	8.1	2.0	62.0	5.0	533.00
Cherokee	3824804	TNRIS	CZ	A	10/20/1970	614	8.0	2.0	65.0	5.0	639.00
Cherokee	3931303	TNRIS	CZ	A	10/30/1970	425	7.8	1.0	46.0	30.0	604.00
Gregg	3525602	TNRIS	WX/CZ	B	12/9/1966	536	6.9	18.0	19.0	27.0	187.00
Gregg	3526202	TNRIS	WX/CZ	A	5/30/1961	398	7.4	9.0	382.0	23.0	886.00
Gregg	3526702	TNRIS	WX/CZ	B	12/9/1966	533	7.9	2.0	73.0	16.0	529.00
Gregg	3526707	TNRIS	WX/CZ	A	12/9/1966	404	8.3	4.0	121.0	19.0	684.00
Gregg	3526708	TNRIS	WX/CZ	B	5/28/1975	540	7.7	7.0	480.0	3.0	1260.78
Gregg	3526801	TNRIS	WX/CZ	A	12/9/1966	299	8.0	6.0	500.0	24.0	1181.00
Gregg	3527102	TNRIS	WX/CZ	B	12/12/1966	500	8.0	9.0	455.0	7.0	1018.00
Gregg	3527401	TNRIS	WX/CZ	A	12/16/1966	505	7.1	5.0	435.0	9.0	979.00
Gregg	3533501	TNRIS	WX/CZ	B	5/25/1975	762	8.5	2.0	92.0	4.0	763.13
Gregg	3533001	TNRIS	WX/CZ	A	2/23/1971	507	8.6	1.0	10.0	12.0	406.42
Gregg	3533803	TNRIS	WX/CZ	A	5/27/1972	388	8.5	1.0	9.0	13.0	375.41
Gregg	3533901	TNRIS	WX/CZ	B	4/12/1951	875	--	12.0	699.0	23.0	1738.00
Gregg	3533904	TNRIS	WX/CZ	A	5/27/1975	528	8.5	1.0	9.0	23.0	414.34
Gregg	3533908	TNRIS	WX/CZ	A	5/27/1975	527	8.5	1.0	8.0	21.0	443.70
Gregg	3534182	TNRIS	WX/CZ	A	5/29/1975	389	8.5	2.0	104.0	4.0	757.70
Gregg	3534202	TNRIS	WX/CZ	A	5/29/1961	281	7.7	6.0	422.0	24.0	1064.00
Gregg	3534401	TNRIS	WX/CZ	A	12/2/1965	190	8	5.0	16.0	31.0	549.00
Gregg	35354404	TNRIS	WX/CZ	B	12/8/1966	911	8.8	4.0	960.0	86.0	2244.00
Gregg	3534602	TNRIS	WX/CZ	A	12/2/1966	300	7.7	12.0	27.0	150.0	514.00
Gregg	3535701	TNRIS	WX/CZ	B	5/27/1975	464	8.8	2.0	65.0	32.0	665.55
Gregg	3535901	TNRIS	WX/CZ	A	5/30/1981	183	7.9	5.0	23.0	9.0	400.00
Gregg	3535902	TNRIS	WX/CZ	A	12/1/1966	183	8	5.0	23.0	15.0	413.00
Gregg	3536701	TNRIS	WX/CZ	A	7/24/1970	39	7.2	65.0	20.0	11.0	276.00
Harrison	3528402	TNRIS	WX	B	7/2/1964	850	7.4	6.0	221.0	11.0	633.64
Harrison	3522708	TNRIS	WX	B	7/28/1976	400	8.2	3.0	45.0	24.0	537.69
Harrison	3528983	TNRIS	WX	A	2/10/1972	272	6.8	12.0	21.0	80.8	240
Harrison	3538702	TNRIS	WX	B	6/26/1973	351	7.1	12.0	22.0	4.0	65.87
Harrison	3536705	TNRIS	WX	B	6/14/1977	225	7.6	10.0	33.0	13.0	248.57
Harrison	3530805	TNRIS	WX	A	2/8/1977	24	5.8	2.0	8.0	4.6	35.05
Harrison	3530806	TNRIS	WX	A	2/8/1977	45	6.2	9.0	15.0	4.0	28.28
Harrison	3531602	TNRIS	WX	B	7/28/1976	185	7.6	56.0	37.0	15.0	373.99
Harrison	3539401	TNRIS	WX	A	6/15/1970	35	7.4	41.6	64.0	30.3	293
Harrison	3539404	TNRIS	WX	B	7/29/1976	494	8.3	7.0	22.0	12.0	416.83
Harrison	3540502	TNRIS	WX	B	10/20/1954	158	8.8	10.0	585.0	0.0	458.13
Harrison	3540507	TNRIS	WX	B	6/14/1977	145	7.6	34.0	44.0	64.0	394.86
Harrison	3516202	TNRIS	WX	B	6/15/1970	147	8.1	8.0	11.0	6.0	314
Harrison	3517201	TNRIS	WX	B	8/11/1964	310	7.8	2.0	24.0	0.0	286.55
Marion	3512502	TNRIS	WX	B	7/21/1977	832	8.4	4.0	309.0	4.0	983.98
Marion	3513704	TNRIS	WX/CZ	A	4/11/1968	720	8.5	2.0	212.0	0.0	849.58
Marion	3514401	TNRIS	WX/CZ	B	6/4/1968	485	8.4	2.0	245.0	0.0	927.83
Marion	3514504	TNRIS	WX	B	5/31/1968	840	8.4	5.0	700.0	0.0	1639.63
Marion	3514703	TNRIS	WX/CZ	B	2/5/1973	797	7.5	13.0	36.0	40.0	168.16
Marion	3515502	TNRIS	WX	B	7/20/1977	285	8.2	13.0	37.0	138.0	584.79
Marion	3516403	TNRIS	WX	B	4/18/1988	509	8.1	4.0	325.0	0.0	1075.12
Marion	3521301	TNRIS	WX/CZ	A	7/20/1977	348	8.1	2.0	336.0	4.0	1008.95

TABLE 1
WATER WELL RECORDS FROM FOGG ET AL. (1991)

County	Well No.	Data Source	Unit	Interval	Date Collected	Depth (ft)	pH (s.u.)	Ca (mg/L)	Cl (mg/L)	SO4 (mg/L)	TDS (mg/L)
Nacogdoches	22005	DOE	WX/CZ	A	10/27/1978	43	6.6	13.5	10.0	5.0	106.32
Nacogdoches	22024	DOE	WX/CZ	A	10/27/1978	52	8.3	1.5	10.0	5.0	544.82
Nacogdoches	22040	DOE	WX/CZ	A	11/3/1978	348	8.4	0.5	10.0	5.0	616.27
Nacogdoches	22041	DOE	WX/CZ	A	11/3/1978	23	7.0	34.6	37.0	5.0	238.65
Nacogdoches	22055	DOE	WX/CZ	A	11/4/1978	66	5.9	10.2	10.0	5.0	74.56
Nacogdoches	3709502	TNRIS	CZ	A	8/13/1975	285	7.8	23.0	11.0	23.0	140.36
Nacogdoches	3710302	TNRIS	WX	A	8/12/1975	91	7.6	111.0	186.0	254.0	802.91
Nacogdoches	3710703	TNRIS	CZ	A	1/10/1969	242	7.0	9.0	12.0	29.0	169.23
Nacogdoches	3711682	TNRIS	WX	A	12/6/1968	294	6.7	7.0	5.0	4.0	62.01
Nacogdoches	3711603	TNRIS	CZ	A	8/13/1975	42	6.3	19.0	15.0	4.0	185.91
Nacogdoches	3711604	TNRIS	WX	A	12/6/1968	345	7.4	49.0	16.0	46.0	278.42
Nacogdoches	3711807	TNRIS	CZ	A	1/9/1969	100	7.8	4.0	10.0	30.3	293.06
Nacogdoches	3711901	TNRIS	WX	A	8/13/1975	463	8.1	3.0	9.0	27.0	294.52
Nacogdoches	3711906	TNRIS	WX	A	12/13/1968	565	8.0	4.0	6.0	19.0	353.39
Nacogdoches	9712804	TNRIS	WX	A	1/8/1969	373	8.6	2.0	4.0	11.0	336.13
Nacogdoches	3712903	TNRIS	WX	A	12/9/1968	170	7.1	43.0	6.0	56.0	247.26
Nacogdoches	3712904	TNRIS	WX	A	12/9/1968	237	8.2	2.0	15.0	52.0	335.08
Nacogdoches	3713702	TNRIS	WX	A	12/4/1968	200	8.1	19.0	31.0	172.0	557.45
Nacogdoches	3717203	TNRIS	CZ	A	1/9/1969	397	6.1	38.0	47.0	30.0	442.80
Nacogdoches	3717607	TNRIS	CZ	A	9/27/1964	460	6.4	18.0	18.0	122.0	292.37
Nacogdoches	3717608	TNRIS	CZ	A	1/13/1969	267	8.1	5.0	9.0	52.0	493.62
Nacogdoches	3718202	TNRIS	WX	A	12/19/1968	540	8.3	3.0	3.0	5.0	476.08
Nacogdoches	3718206	TNRIS	CZ	A	1/4/1969	408	6.5	21.0	20.0	72.0	194.35
Nacogdoches	3718406	TNRIS	CZ	A	1/10/1969	438	6.9	34.0	16.0	143.0	356.28
Nacogdoches	3718407	TNRIS	CZ	A	1/13/1969	500	8.0	4.0	11.0	66.0	308.64
Nacogdoches	3719301	TNRIS	CZ	A	8/12/1975	340	7.6	56.0	16.0	55.0	230.81
Nacogdoches	3719401	TNRIS	CZ	A	8/13/1975	580	7.1	11.0	12.0	30.0	149.99
Nacogdoches	3719601	TNRIS	CZ	A	1/7/1968	400	6.5	11.0	8.0	26.0	109.00
Nacogdoches	3720103	TNRIS	WX	A	12/31/1968	500	8.5	4.0	10.0	12.0	205.22
Nacogdoches	3720703	TNRIS	CZ	A	1/15/1969	425	7.1	15.0	16.0	65.0	177.17
Nacogdoches	3720704	TNRIS	CZ	A	1/15/1969	400	7.1	17.0	15.0	65.0	174.62
Nacogdoches	3720803	TNRIS	CZ	A	1/15/1969	500	8.1	6.0	18.0	55.0	439.88
Nacogdoches	3720804	TNRIS	WX	A	1/21/1969	425	7.5	3.0	4.0	12.0	285.45
Nacogdoches	3720902	TNRIS	WX	A	8/12/1975	630	8.2	3.0	6.0	13.0	402.93
Nacogdoches	3721801	TNRIS	WX	A	1/9/1969	392	8.0	7.0	16.0	111.0	389.29
Nacogdoches	3727101	TNRIS	CZ	A	2/3/1969	444	7.0	1.0	10.0	20.0	168.00
Nacogdoches	3727201	TNRIS	CZ	A	8/12/1975	502	7.4	1.0	9.0	17.0	160.45
Nacogdoches	3727303	TNRIS	CZ	A	6/25/1947	518	6.8	2.0	52.0	22.0	237.94
Nacogdoches	3727803	TNRIS	CZ	A	12/12/1968	660	8.7	2.0	6.0	26.0	575.68
Nacogdoches	3727804	TNRIS	CZ	A	12/12/1988	600	8.7	2.0	6.0	25.0	573.48
Nacogdoches	3728303	TNRIS	WX/CZ	A	7/8/1966	300	7.2	7.0	11.0	16.0	197.15
Nacogdoches	3728304	TNRIS	WX/CZ	A	6/8/1966	347	7.4	7.0	11.0	38.0	163.65
Nacogdoches	3728902	TNRIS	CZ	A	8/12/1975	500	7.6	2.0	11.0	47.0	242.83
Nacogdoches	3729202	TNRIS	WX/CZ	A	7/5/1961	274	7.1	12.0	11.0	48.0	341.53
Nacogdoches	3729402	TNRIS	CZ	A	8/12/1975	352	7.8	1.0	12.0	20.0	173.53
Nacogdoches	3729501	TNRIS	CZ	A	1/9/1969	448	7.8	2.0	11.0	64.0	253.45
Nacogdoches	3729801	TNRIS	CZ	A	1/8/1969	450	8.3	2.0	5.0	25.0	227.09
Nacogdoches	3736303	TNRIS	CZ	A	12/11/1968	590	8.3	1.0	5.0	14.0	224.94

TABLE 1
WATER WELL RECORDS FROM FOGG ET AL. (1991)

County	Well No.	Data Source	Unit	Interval	Date Collected	Depth (ft)	pH (s.u.)	Ca (mg/L)	Cl (mg/L)	SO4 (mg/L)	TDS (mg/L)
Panola	HTS-3B	BEG	WX	B	8/23/1983	190	8.5	3.6	19.2	14.0	560.00
Panola	3544603	TNRIS	WX	B	6/23/1977	567	8.5	2.0	239.0	4.0	1038.3
Panola	3545701	TNRIS	WX	B	5/23/1977	396	8.5	2.0	147.0	4.0	818.27
Panola	3548702	TNRIS	WX	B	7/25/1972	226	6.3	5.0	13.0	3.0	127.00
Panola	3547502	TNRIS	WX	B	6/21/1977	304	8.0	9.0	39.0	4.0	275.26
Panola	3547502	TNRIS	WX	B	5/11/1961	182	7.0	21.0	40.0	5.0	267.00
Panola	3548106	TNRIS	WX	B	6/21/1977	162	7.6	29.0	35.0	4.0	282.40
Panola	3552301	TNRIS	WX	B	6/24/1977	320	8.2	3.0	118.0	10.0	751.53
Panola	3553201	TNRIS	WX	B	11/00/45	280	8.5	2.0	89.0	0.0	912.00
Panola	3553701	TNRIS	WX	B	6/23/1977	33	6.7	9.0	47.0	28.0	238.70
Panola	3553702	TNRIS	WX	B	6/24/1977	389	8.3	5.0	8.0	12.0	250.73
Panola	3553902	TNRIS	WX	B	6/23/1977	337	7.7	18.0	15.0	4.0	236.14
Panola	3554601	TNRIS	WX	B	8/3/1972	40	6.6	9.0	21.0	4.0	107.81
Panola	3554702	TNRIS	WX	B	7/24/1972	257	7.4	7.0	27.0	4.0	247.00
Panola	3554703	TNRIS	WX	B	6/22/1977	320	8.0	9.0	26.0	4.0	261.64
Panola	3554704	TNRIS	WX	B	5/20/1951	242	8.0	8.0	31.0	0.0	273.63
Panola	3554706	TNRIS	WX	B	4/00/1958	265	6.6	40.0	37.0	7.0	279.67
Panola	3556401	TNRIS	WX	B	6/21/1977	220	8.1	6.0	30.0	4.0	287.96
Panola	3560502	TNRIS	WX	A	6/23/1977	190	7.8	4.0	18.0	26.0	323.40
Panola	3561303	TNRIS	WX	B	6/24/1977	290	8.4	5.0	122.0	5.0	645.80
Panola	3561305	TNRIS	WX	B	6/24/1977	327	8.6	2.0	328.0	4.0	1096.93
Panola	3561306	TNRIS	WX	B	6/24/1977	285	8.3	2.0	193.0	10.0	881.45
Panola	3562501	TNRIS	WX	B	6/20/1977	292	8.0	6.0	357.0	4.0	1195.25
Panola	3562502	TNRIS	WX	B	6/20/1977	40	7.0	21.0	6.0	6.0	90.46
Panola	3563701	TNRIS	WX	A	6/22/1977	40	7.1	29.0	93.0	25.0	350.57
Panola	3704301	TNRIS	WX	A	8/2/1972	80	7.6	157.0	212.0	284.0	1033.13
Panola	3705201	TNRIS	WX	A	6/20/1977	45	6.7	48.0	129.0	178.0	616.31
Rusk	22059	DOE	WX/CZ	A	11/4/1978	348	7.4	32.3	29.0	9.0	408.23
Rusk	22062	DOE	WX/CZ	A	11/5/1978	299	7.7	33.9	24.0	12.0	344.20
Rusk	22065		WX/CZ	A	11/5/1978	33	6.9	6.5	20.0	18.0	174.03
Rusk	3541803	TNRIS	WX	B	8/26/1977	599	8.2	2.0	5.0	19.0	337.98
Rusk	3542202	TNRIS	WX/CZ	B	10/1/1976	750	8.2	4.0	8.0	4.0	526.98
Rusk	3542801	TNRIS	WX	A	9/21/1972	67	6.5	16.0	6.0	12.0	95.26
Rusk	3543501	TNRIS	WX/CZ	A	10/1/1976	220	7.9	23.0	9.0	34.0	200.14
Rusk	3544601	TNRIS	WX	B	7/29/1977	427	8.0	1.0	216.0	4.0	982.83
Rusk	3549502	TNRIS	WX/CZ	B	9/20/1972	585	7.8	2.0	7.0	32.0	482.73
Rusk	3549801	TNRIS	WX	A	9/18/1972	291	7.7	1.0	12.0	5.0	494.08
Rusk	3550302	TNRIS	WX	A	7/29/1977	49	6.6	26.0	90.0	16.0	287.96
Rusk	3550501	TNRIS	WX	A	9/21/1972	48	7.0	19.0	9.0	4.0	42.64
Rusk	3550801	TNRIS	WX/CZ	B	6/30/1977	624	8.3	2.0	18.0	8.0	274.72
Rusk	3550905	TNRIS	WX	B	2/19/1955	668	8.0	3.0	16.0	21.0	262.00
Rusk	3550966	TNRIS	WX	B	6/30/1977	752	8.2	4.0	6.0	10.0	279.25
Rusk	3551602	TNRIS	WX	B	7/29/1977	810	7.8	31.0	23.0	38.0	307.69
Rusk	3552101	TNRIS	WX	A	6/30/1977	192	8.6	1.0	9.0	17.0	451.17
Rusk	3552701	TNRIS	WX	A	6/30/1977	392	7.8	47.0	37.0	152.0	450.89
Rusk	3557602	TNRIS	WX/CZ	B	9/30/1976	658	7.7	3.0	10.0	11.0	189.74
Rusk	3557901	TNRIS	WX	A	9/19/1972	315	8.4	4.0	17.0	29.0	453.41
Rusk	3558101	TNRIS	WX/CZ	A	6/30/1977	31	7.6	37.0	12.0	4.0	143.63
Rusk	3558401	TNRIS	WX/CZ	A	9/20/1972	82	7.2	43.0	7.0	58.0	181.49
Rusk	3558601	TNRIS	WX	A	7/1/1977	292	8.2	5.0	9.0	36.0	397.99
Rusk	3559201	TNRIS	WX	A	7/1/1977	36	7.5	33.0	5.0	4.0	155.17
Rusk	3559801	TNRIS	WX	A	7/6/1961	412	7.0	35.0	19.0	19.0	297.00
Rusk	3559902	TNRIS	WX	A	7/1/1977	480	8.3	3.9	5.0	12.0	299.62
Rusk	3560101	TNRIS	WX	A	7/29/1961	190	7.2	9.0	10.0	20.0	233.62
Rusk	3702301	TNRIS	WX	A	9/28/1976	280	8.7	3.0	5.0	11.0	219.89
Rusk	3702801	TNRIS	WX/CZ	A	9/27/1972	850	8.6	2.0	10.0	4.0	550.8

TABLE 1
WATER WELL RECORDS FROM FOGG ET AL. (1991)

County	Well No.	Data Source	Unit	Interval	Date Collected	Depth (ft)	pH (s.u.)	Ca (mg/L)	Cl (mg/L)	SO4 (mg/L)	TDS (mg/L)
Rusk	3702802	TNRIS	WX/CZ	A	7/1/1977	430	7.5	4.0	7.0	16.0	163.04
Rusk	3703502	TNRIS	WX/CZ	A	7/1/1977	666	6.3	11.0	14.0	65.0	160.48
Rusk	3704661	TNRIS	WX/CZ	A	7/1/1977	315	8.3	2.0	10.0	16.0	293.35
Rusk	3711101	TNRIS	WX	A	9/27/1976	59	7.2	42.0	9.0	4.0	134.48
Sabine	3625802	TNRIS	WX/CZ	A	7/17/1976	50	6.2	8.0	8.0	4.0	99.72
Sabine	3634303	TNRIS	WX/CZ	A	7/21/1971	30	6.3	9.0	6.0	3.0	73.00
Sabine	3634501	TNRIS	WX/CZ	A	5/9/1942	881	--	1.0	22.0	0.0	542.90
Sabine	3738502	TNRIS	WX/CZ	A	7/12/1976	285	8.1	7.0	243.0	4.0	114.88
Sabine	3731703	TNRIS	WX	A	7/12/1976	315	7.3	9.0	11.0	55.0	211.52
Sabine	3732701	TNRIS	WX	A	5/6/1942	600	--	1.0	7.0	6.0	865.00
Sabine	3732708	TNRIS	WX	A	5/17/1942	512	--	3.0	8.0	43.0	444.00
Sabine	3738501	TNRIS	WX/CZ	A	2/8/1972	510	8.2	3.0	108.0	4.0	880.82
Sabine	3739061	TNRIS	WX	A	7/13/1976	420	7.9	5.0	10.0	4.0	485.78
Sabine	3740302	TNRIS	WX/CZ	A	7/13/1976	219	7.7	47.0	10.0	104.0	355.73
Shelby	HTS-1-SA	BEG	WX/CZ	B	8/17/1983	361	8.7	1.0	10.5	22.0	880.00
Shelby	22010	DOE	WX/CZ	A	10/25/1978	26	5.3	36.4	44.0	231.0	661.30
Shelby	22020	DOE	WX/CZ	A	10/28/1978	197	7.3	128.4	102.0	294.0	1171.71
Shelby	22036	DOE	WX/CZ	A	10/31/1978	299	8.4	0.8	25.0	61.0	846.82
Shelby	22044	DOE	WX/CZ	A	11/3/1978	246	8.2	3.6	15.0	44.0	513.33
Shelby	22299	DOE	WX/CZ	A	11/7/1978	43	7.0	922.0	354.0	344.0	1671.12
Shelby	22452	DOE	WX/CZ	A	11/28/1978	33	5.5	13.2	10.0	31.0	251.11
Shelby	22470	DOE	WX/CZ	B	11/10/1978	292	7.1	34.0	27.0	5.0	523.00
Shelby	22471	DOE	WX/CZ	A	11/11/1978	75	5.9	44.8	100.8	300.0	943.07
Shelby	22473	DOE	WX/CZ	A	11/11/1978	23	4.5	22.0	49.5	14.0	363.12
Shelby	22684	DOE	WX/CZ	B	12/2/1978	492	7.8	5.9	10.8	7.0	524.19
Shelby	3616701	TNRIS	WX	A	7/28/1977	206	7.6	21.0	41.0	34.0	196.00
Shelby	3617501	TNRIS	WX	A	5/11/1961	200	8.0	3.0	46.0	17.0	404.00
Shelby	3617502	TNRIS	WX	A	9/1/1972	31	7.2	13.0	8.0	6.0	161.16
Shelby	3617002	TNRIS	WX	B	7/28/1977	50	7.0	13.0	12.0	5.0	169.16
Shelby	3705701	TNRIS	WX	B	7/29/1977	59	7.3	37.0	91.0	47.0	431.05
Shelby	3765902	TNRIS	WX	B	2/8/1973	430	7.4	3.0	32.0	4.0	287.60
Shelby	3786401	TNRIS	WX	B	8/30/1972	170	8.4	5.0	11.0	15.0	414.75
Shelby	3707202	TNRIS	WX	B	8/30/1972	150	8.0	48.0	45.0	30.0	466.93
Shelby	3707401	TNRIS	WX	B	7/29/1977	519	8.4	1.0	207.0	4.0	966.19
Shelby	3708601	TNRIS	WX	A	8/31/1972	330	8.2	3.0	720.0	4.0	1942.37
Shelby	3708604	TNRIS	WX	A	9/1/1972	39	7.2	22.0	6.0	4.0	131.42
Shelby	3708701	TNRIS	WX	A	7/28/1977	139	`8.2	1.0	11.0	4.0	499.61
Shelby	3708801	TNRIS	WX	A	8/29/1972	39	7.5	26.0	11.0	4.0	124.32
Shelby	3713602	TNRIS	WX	A	8/30/1972	51	7.2	159.0	134.0	1570.0	2536.81
Shelby	3713603	TNRIS	WX	B	7/29/1977	118	8.1	14.0	23.0	62.0	428.87
Shelby	3714201	TNRIS	WX	A	7/29/1977	55	7.3	28.0	9.0	17.0	155.20
Shelby	3714501	TNRIS	WX	A	7/29/1977	58	7.0	27.0	60.0	11.0	281.23
Shelby	3714701	TNRIS	WX	A	7/29/1977	74	7.9	54.0	127.0	27.0	677.03
Shelby	3715101	TNRIS	WX	A	4/5/1960	474	8.6	5.0	34.0	51.0	711.00
Shelby	3715461	TNRIS	WX	A	8/29/1972	48	6.3	10.0	47.0	41.0	286.50
Shelby	3715501	TNRIS	WX	A	7/28/1977	35	6.7	8.0	13.0	16.0	162.31
Shelby	3716201	TNRIS	WX	A	7/28/1977	59	7.6	19.0	12.0	17.0	159.65
Shelby	3716302	TNRIS	WX	A	7/28/1977	25	7.4	22.0	71.0	22.0	267.46
Shelby	3716701	TNRIS	WX	A	7/28/1977	42	6.6	21.0	53.0	13.0	250.52
Shelby	3724681	TNRIS	WX	A	7/28/1977	60	7.4	48.0	21.0	108.0	401.33
Shelby	3732301	TNRIS	WX	A	7/28/1977	50	7.5	38.0	32.0	32.0	295.65

TABLE 1
WATER WELL RECORDS FROM FOGG ET AL. (1991)

County	Well No.	Data Source	Unit	Interval	Date Collected	Depth (ft)	pH (s.u.)	Ca (mg/L)	Cl (mg/L)	SO4 (mg/L)	TDS (mg/L)
Smith	3428801	TNRIS	CZ	A	3/16/1960	415	6.7	28.0	26.0	65.0	252.00
Smith	3429201	TNRIS	WX	A	6/21/1976	774	7.9	3.0	16.0	24.0	343.16
Smith	3437101	TNRIS	WX/CZ	A	4/5/1962	800	7.4	10.0	16.0	28.0	274.00
Smith	3	TNRIS	WX	B	5/16/1962	990	8.1	4374.1	13.0	21.0	266.00
Smith	3737901	TNRIS	CZ	A	4/9/1962	747	6.9	12.0	4.0	10.0	114.00
Smith	3438302	TNRIS	WX	B	10/7/1971	1269	8.1	3.0	362.0	4.0	1219.00
Smith	3439505	TNRIS	CZ	A	6/29/1976	584	8.1	5.0	11.0	17.0	194.76
Smith	3440102	TNRIS	CZ	A	6/29/1976	420	7.9	6.0	10.0	20.0	189.30
Smith	3445603	TNRIS	CZ	A	6/24/1976	750	7.7	15.0	3.0	8.0	111.63
Smith	3445685	TNRIS	WX	A	2/22/1961	940	8.0	2.0	25.0	25.0	374.00
Smith	3445803	TNRIS	WX	A	6/24/1976	780	7.9	7.0	8.0	15.0	159.99
Smith	3446301	TNRIS	WX/CZ	A	8/6/1958	1078	7.2	83.0	167.0	202.0	679.03
Smith	3446501	TNRIS	WX/CZ	A	8/25/1954	1144	--	4.0	18.0	10.0	250.00
Smith	3446701	TNRIS	CZ	A	4/9/1952	913	7.2	8.0	4.0	8.0	110.00
Smith	3448801	TNRIS	CZ	A	6/29/1976	715	7.7	12.0	18.0	24.0	199.79
Smith	3447205	TNRIS	CZ	A	6/30/1976	707	8.0	2.0	7.0	7.0	241.70
Smith	3447401	TNRIS	CZ	A	6/30/1976	673	8.2	5.0	3.0	10.0	157.37
Smith	3448201	TNRIS	WX/CZ	A	10/7/1952	738	8.4	5.0	10.0	19.0	261.00
Smith	3448802	TNRIS	CZ	A	7/1/1976	531	8.5	1.0	5.0	13.0	324.87
Smith	3453201	TNRIS	CZ	A	4/9/1962	992	7.5	8.0	8.0	16.0	183.00
Smith	3454201	TNRIS	CZ	A	7/26/1976	990	8.5	7.0	6.0	10.0	168.47
Smith	3454602	TNRIS	CZ	A	7/26/1976	818	8.7	2.0	10.0	12.0	325.11
Smith	3455802	TNRIS	CZ	A	4/9/1962	200	7.8	1.0	10.0	61.0	267.00
Smith	3456207	TNRIS	CZ	A	7/1/1976	505	8.3	1.0	18.0	99.0	394.04
Smith	3456401	TNRIS	WX	B	6/2/1960	105	8.3	4.0	820.0	52.0	1958.00
Smith	3541701	TNRIS	CZ	A	10/4/1971	290	6.5	7.0	20.0	43.0	142.00
Upshur	3415902	TNRIS	WX	A	1/16/1967	412	7.4	6.0	2.0	7.0	128.00
Upshur	3416801	TNRIS	WX	B	8/25/1977	637	8.1	5.0	256.0	14.0	801.50
Upshur	3423602	TNRIS	WX	B	1/6/1967	900	8.0	4.0	23.0	28.0	387.22
Upshur	3424202	TNRIS	WX/CZ	B	12/14/1977	460	8.1	5.0	25.0	30.0	319.98
Upshur	3432403	TNRIS	WX/CZ	A	4/28/1990	505	7.5	5.0	21.0	16.0	189.00
Upshur	3432501	TNRIS	WX/CZ	B	2/28/1961	607	6.9	16.0	1080.0	44.0	2018.00
Upshur	3509202	TNRIS	WX/CZ	A	8/25/1977	367	8.0	4.0	11.0	39.0	338.14
Upshur	3509401	TNRIS	WX/CZ	A	8/25/1977	330	7.9	4.0	18.0	34.0	286.05
Upshur	3509602	TNRIS	WX/CZ	A	3/29/1981	370	8.4	15.0	18.0	34.0	254.19
Upshur	3517103	TNRIS	WX/CZ	A	8/25/1977	400	8.3	3.0	18.0	36.0	280.29
Upshur	3517801	TNRIS	WX/CZ	A	1/31/1966	510	8.4	4.0	148.0	13.0	520.75
Upshur	3518702	TNRIS	WX/CZ	A	12/16/1933	610	7.7	8.0	340.0	26.0	838.00
					Average:	391	7.7	30.3	68.2	40.7	469
					Standard Deviaiton:	259	0.8	258	145	103	432
					Maximum:	1269	8.9	4374	1080	1570	4464
					Minimum:	23	4.5	0.10	2.0	0.00	28.3

Notes:

1. Wells in counties near Martin Lake SES with reported well depths < 100 feet are highlighted on this table and on the BEG Well Location Map (Figure 1).

2. Data is from Fogg et al. (1991). Data was sourced from Texas Natural Resources Information System/Texas Water Commission (TNRIS), U.S. Department of Energy (DOE), or TENRAC/BEG (BEG).

3. The DOE and BEG well IDs are assigned by those agencies. The TNRIS well IDs are state well numbers that use a grid-based location system:

- First two digits identify the 1-degree quadrangle.
- Next two digits identify the 7.5-minute quadrangle.
- The fifth digit identifies the 2.5-minute quadrangle.
- The last two digits are unique well identifiers.

ATTACHMENT 7

Ash Pond Area Cross Sections and Associated Figures

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

11/25/2025

EXPLANATION

- Non-CCR Monitoring Well
- CCR Monitoring Well
- A____A' Geologic Cross Section Location Lines

N

Scale in Feet

0 250 500

Aerial Source:
2025 Microsoft Corporation; 2025 Maxar; CNES 2025 Distribution Airbus DS; 2025 TMAP Mobility Earthstar Geographics SIO

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 2
ASH POND AREA GROUNDWATER MONITORING NETWORK

PROJECT: 23643V-32	BY: HLS	DATE: NOV. 2025	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

Plot Date: 11/05/25 - 1:17pm, Plotted by: thigh
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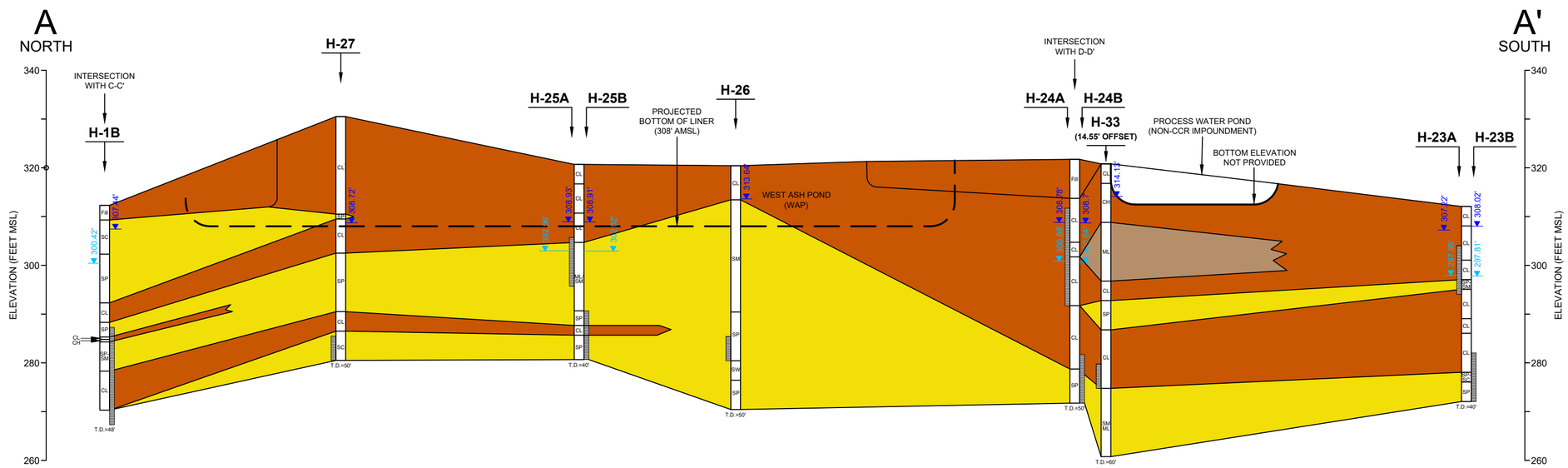
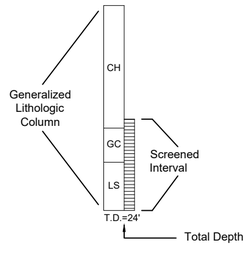


MONITORING WELL CONSTRUCTION



Max. Observed Historical Water Level (Ft MSL)

Min. Observed Historical Water Level (Ft MSL)

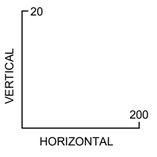
EXPLANATION

SAND

CLAY

SILT

SCALE IN FEET



10x Vertical Exaggeration

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

11/25/2025

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 5
ASH POND AREA
GEOLOGIC CROSS SECTION A-A'
WEST SIDE OF WEST ASH POND
THROUGH PROCESS WATER POND

PROJECT: 23643V-32	BY: HLS	DATE: NOV. 2025	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

Plot Date: 11/05/25 - 1:17pm Plotted by: thigh
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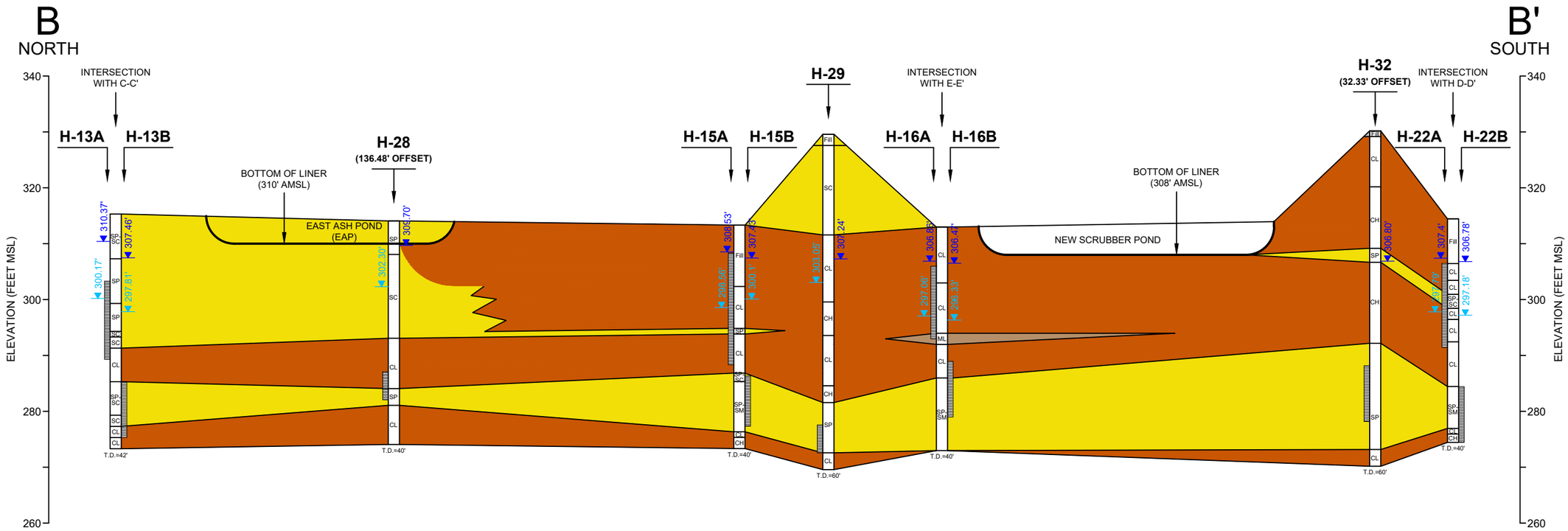
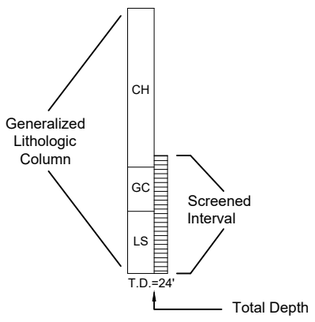


MONITORING WELL CONSTRUCTION



Max. Observed Historical Water Level (Ft MSL)

Min. Observed Historical Water Level (Ft MSL)

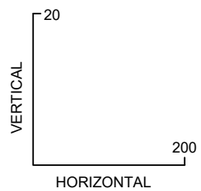
EXPLANATION

- SAND
- CLAY
- SILT

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

11/25/2025

SCALE IN FEET



10x Vertical Exaggeration

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 6
ASH POND AREA
GEOLOGIC CROSS SECTION B-B'
EAST SIDE OF ASH POND
THROUGH SCRUBBER POND

PROJECT: 23643V-32	BY: HLS	DATE: NOV. 2025	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

Plot Date: 11/05/25 - 1:17pm, Plotted by: thigh
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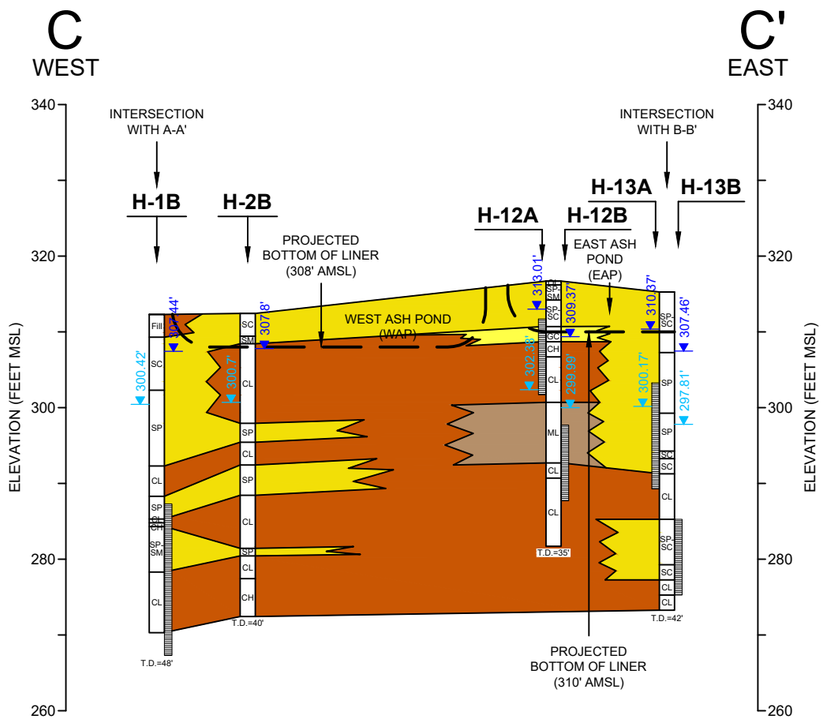
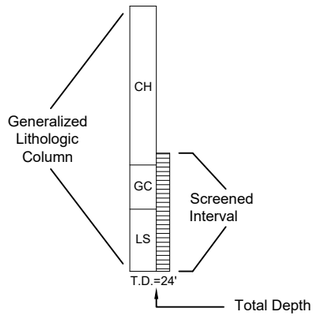


EXPLANATION

- SAND
- CLAY
- SILT
- GRAVELY SAND

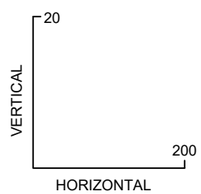
MONITORING WELL CONSTRUCTION



- Max. Observed Historical Water Level (Ft MSL)
- Min. Observed Historical Water Level (Ft MSL)

STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
11/25/2025

SCALE IN FEET



10x Vertical Exaggeration

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 7
ASH POND AREA
GEOLOGIC CROSS SECTION C-C'
NORTH SIDE OF WEST ASH POND
AND EAST ASH POND

PROJECT: 23643V-32	BY: HLS	DATE: NOV. 2025	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

Plot Date: 11/05/25 - 1:17pm Plotted by: thigh
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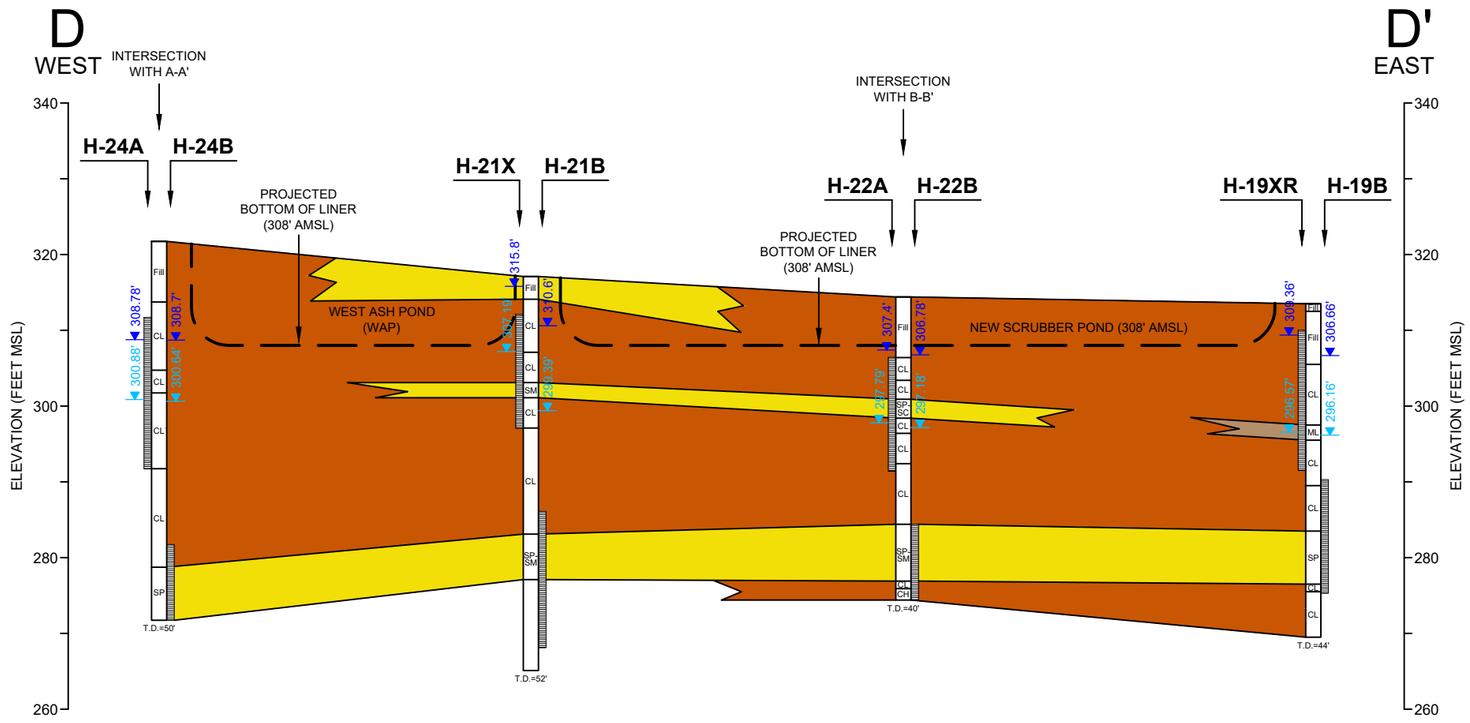
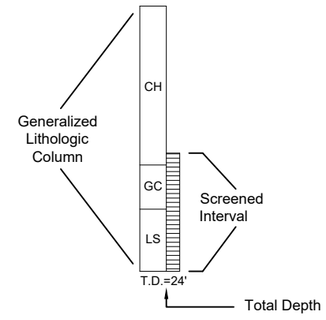


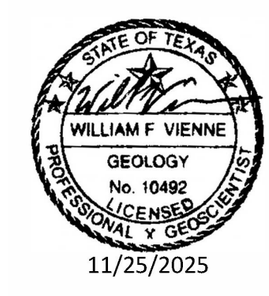
EXPLANATION

- SAND
- CLAY
- SILT

MONITORING WELL CONSTRUCTION



- Max. Observed Historical Water Level (Ft MSL)
- Min. Observed Historical Water Level (Ft MSL)



11/25/2025

SCALE IN FEET

VERTICAL 20 — HORIZONTAL 200

10x Vertical Exaggeration

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 8
ASH POND AREA
GEOLOGIC CROSS SECTION D-D'
SOUTH SIDE OF WEST ASH POND
AND SCRUBBER POND

PROJECT: 23643V-32	BY: HLS	DATE: NOV. 2025	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

Plot Date: 11/05/25 - 1:18pm, Plotted by: thigh
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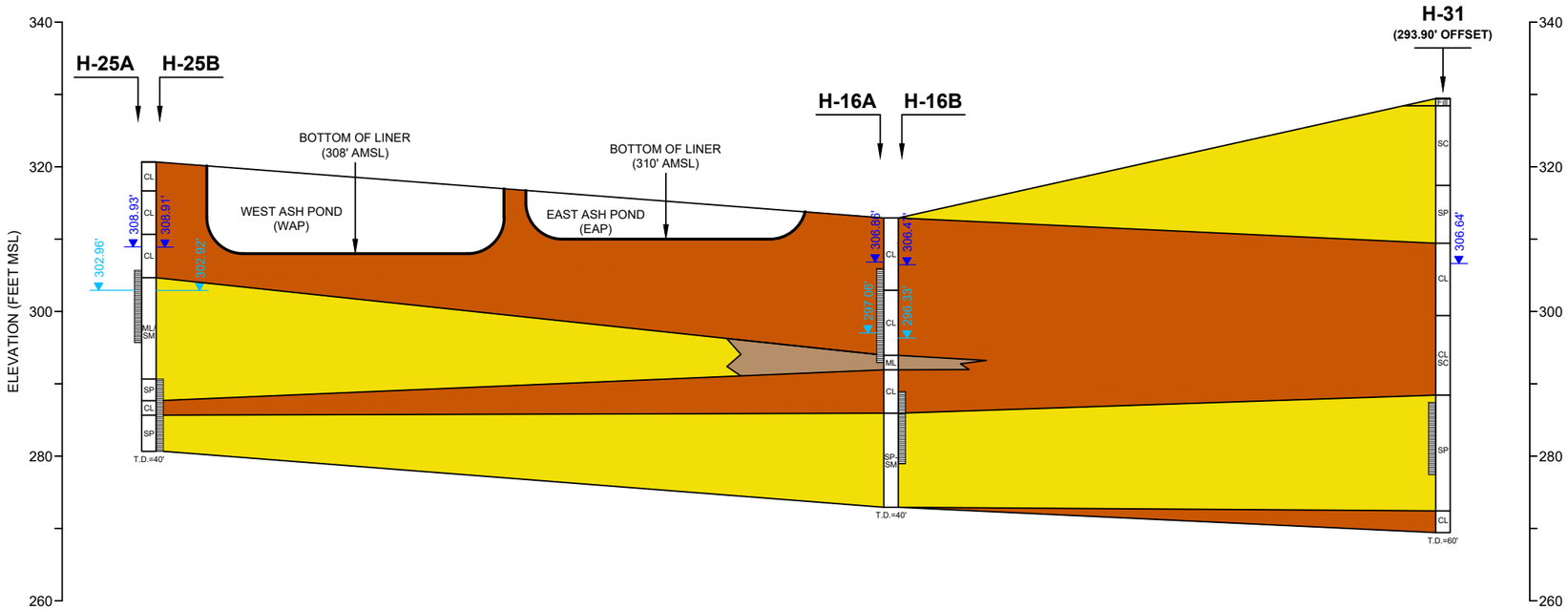
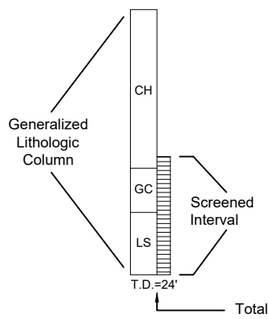
E — WEST

E' — EAST



MONITORING WELL CONSTRUCTION



Max. Observed Historical Water Level (Ft MSL)

Min. Observed Historical Water Level (Ft MSL)

EXPLANATION

- SAND
- CLAY
- SILT

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

11/25/2025

SCALE IN FEET

VERTICAL 20

HORIZONTAL 200

10x Vertical Exaggeration

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 9
ASH POND AREA
GEOLOGIC CROSS SECTION E-E'
THROUGH WEST ASH POND
AND EAST ASH POND

PROJECT: 23643V-32	BY: HLS	DATE: NOV. 2025	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

Plot Date: 11/05/25 - 1:18pm. Plotted by: thigh
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APPENDIX H – FINANCIAL ASSURANCE

Post-Closure Care Cost Estimate

Bullock, Bennett & Associates, LLC ∗ 165 N. Lampasas Street ∗ Bertram, Texas 78605
Telephone: 512.355.9198 ∗ Fax: 512.355.9197

DATE: November 25, 2025

TECHNICAL MEMORANDUM

TO: Mr. Eric Chavers, Luminant

BBA Project No. 23643V

FROM: Dan Bullock, PE / Will Vienne, PG

MARTIN LAKE POWER PLANT
PDP-5, ASH PONDS AND A1 AREA LANDFILL
POST CLOSURE CARE COST ESTIMATES - REVISION 3

Luminant Generation Company, LLC (Luminant) owns and operates the Martin Lake Steam Electric Station (MLSES) located approximately five miles southwest of Tatum in Rusk County, Texas. Coal Combustion Residuals (CCR) including fly ash, bottom ash, and gypsum are generated as part of MLSES unit operation and managed in Permanent Disposal Pond No. 5 (PDP-5), the Bottom Ash Ponds and New Scrubber Pond (referred to collectively as the Ash Ponds) and in the A1 Area Landfill (A1 LF).

These CCR Units are regulated under 40 CFR 257, Subpart D (the "Federal CCR Rule") and 30 Texas Administrative Code (TAC) Chapter 352 (The "TCEQ CCR Rule"). In accordance with 30 TAC §352.201, Luminant is required to submit an application to TCEQ to obtain a registration for each of these CCR Units. Bullock, Bennett & Associates, LLC (BBA) was retained by Luminant to assist with preparation of Post Closure Care Cost Estimates (PCCEs) for PDP-5, the Ash Ponds and the A1 LF in accordance with §352.1101. This technical memorandum presents the PCCEs estimated by BBA for these units. The PCCEs were prepared using TCEQ Technical Guidance Documents TG-30 and TG-31 and related documents.

1.0 CCR Unit Closure Assumptions

The PCCEs were prepared based on the following closure assumptions for the MLSES CCR Units:

- PDP-5:
  - CCR Unit Closure:
    - Closure in Place with low permeability cap
    - Cap Area: 40 acres
  - Groundwater Closure:
    - No evidence of a release to groundwater to date
    - Continuation of Detection Monitoring for Groundwater
    - Nine (9) monitoring wells sampled semi-annually
  - Existing Leachate Collection System operated throughout post closure care period
- Ash Ponds:
  - West Ash Pond (WAP), East Ash Pond (EAP) and New Scrubber Pond (NSP) managed as one CCR Unit
  - CCR Unit Closure:
    - Closure in Place with low permeability cap
    - Cap Areas:
      - WAP and EAP Cap Area: 25 acres

  - NSP Cap Area: 13 acres
  - Total: 38 acres
- Groundwater Closure:

  - Monitored Natural Attenuation (MNA) with MNA Groundwater Monitoring
  - Continuation of Detection and Assessment Monitoring for Groundwater
  - Seven (7) monitoring wells sampled semi-annually

- A-1 Area Landfill:
  - CCR Unit Closure:
    - Closure in Place with low permeability cap
    - Cap Areas:
      - Existing Cap Area: 464 acres
      - Future Cap Area: 321 acres
      - Total: 785 acres
  - Groundwater Closure:
    - Monitored Natural Attenuation (MNA) with MNA Groundwater Monitoring
    - Continuation of Detection and Assessment Monitoring for Groundwater
    - Twelve (12) monitoring wells sampled semi-annually

2.0 Post Closure Care Cost Assumptions

The following general assumptions were incorporated into the PCCEs:

- Post Closure Care Period. A post-closure care period of 30 years is assumed in accordance with 30 TAC §352.1241 and 40 CFR § 257.104(c).
- CCR Unit Inspections. Weekly and annual inspections of the CCR Units are required under §352.831 and §352.841. It is assumed that these inspections will continue throughout the Post Closure Care Period.
- Final Cover Maintenance. It is likely that some level of maintenance/repair will be required for the final cover systems used to close the CCR Units. The PCCEs include the following assumptions for final cover maintenance/repair:
  - Years 1-5 After Closure - it is assumed that erosion damage on 5% of the cap soil will be repaired each year. The thickness of each repair is assumed to average 6 inches of soil. In addition, the repaired areas will be revegetated.
  - Years 6-30 After Closure - it is assumed that erosion damage on 5% of the cap soil will be repaired three times during this period. The thickness of each repair is assumed to average 6 inches of soil. In addition, the repaired areas will be revegetated.
  - Estimated engineering/mobilization costs associated with the repairs/revegetation are included in the PCCEs.
  - Annual mowing costs for the final cover are included in the PCCEs.
- General Site Maintenance. Maintenance of run-off/drainage structures, access roads, fencing, signs, etc. are included in the PCCEs.
- Groundwater Monitoring. Semi-annual groundwater monitoring in accordance with the Federal/TCEQ CCR Rules (detection monitoring or assessment monitoring) is on-going for the units. It is assumed that the current groundwater monitoring program will continue throughout the Post Closure Care Period. It is

also likely that maintenance of the monitoring well system at the units will be required during the post closure care period. The PCCEs assume that one monitoring well will be replaced every 10 years at each CCR Unit.

In addition, the Ash Ponds and A1 LF incorporate MNA as a groundwater remedy as part of closure. For those CCR Units, it is assumed that MNA analyses will be included in the semi-annual groundwater monitoring events.

- One Time Post Closure Care Costs. The following one time activities associated with post closure care are included in the PCCEs:
  - Deed Notices/Surveys
  - Monitoring Well Plugging and Abandonment
- Leachate Collection – PDP-5. Martin Lake PDP-5 is constructed with a leachate collection system to remove leachate from the unit after closure. For the PDP-5 PCCE, it is assumed that all free liquids in PDP-5 will be removed during closure and the existing leachate collection system will be operated throughout the post closure care period to remove water that infiltrates through the low permeability cap. For the PCEE, the average annual volume of leachate generated following closure was estimated to be approximately 1,000 gallons per year using the Hydrologic Evaluation of Landfill Performance (HELP) Model (see Attachment A). Costs to dispose of this estimated volume of leachate as Class II Industrial Waste and maintain the leachate collection system through the post closure care period are included in the PCCE for PDP-5.
- Contingency. A 10% contingency factor is included in the PCCEs.
- All unit costs are in 2021 dollars. Cost increase from Year 2021 to Year 2025 is based on Consumer Price Index percentage increase of 20% over that period.

3.0 Post Closure Care Cost Estimate

Based on the assumptions listed above, the 30-Year post closure care cost estimates (in Year 2025 dollars) for the MLSES CCR Units are as follows (see Tables 1, 2 and 3 for details):

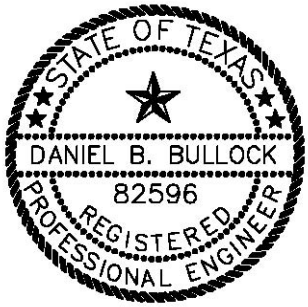
- PDP-5: $2,432,144
- Ash Ponds: $2,469,857
- A1 LF: $9,927,675

It should be noted that the PCCEs presented herein are considered Opinions of Probable Cost and represent BBA's best judgement based on the assumptions stated, information available at the time the estimates were prepared, and BBA's experience with similar sites. The PCCEs are susceptible to variations in future cost of materials, labor, and equipment and should not be considered guaranteed maximum prices for post closure care activities.

Please do not hesitate to contact us if you have any questions or comments.

Dan B. Bullock, P.E.
Principal Engineer (TX PE 82596)

Bullock, Bennett & Associates, LLC



11/25/2025

Will Vienne, P.G.
Senior Consultant (TX PG 10492)

Bullock, Bennett & Associates, LLC

TABLES

Table 1

Martin Lake Steam Electric Station - PDP-5
Post Closure Care Cost Estimate - 30 TAC 352.1101

Item	Unit	Rate	Quantity	Cost/Event	No. of Events	30-Year Cost
CCR Unit Inspections (Annually)	LS	$15,000	1	$15,000	30	$450,000
Final Cover Maintenance						
- Erosion Repair, 6-inch avg. thickness, 5% of cap per year, Years 1-5	CY	$5	1,613	$8,067	5	$40,333
- Erosion Repair, 6-inch avg. thickness, 5% of cap, 3 times, Years 6-30	CY	$5	1,613	$8,067	3	$24,200
- Revegetation, 5% of cap area per year, Years 1-5	AC	$1,500	2.0	$3,000	5	$15,000
- Revegetation, 5% of cap area, 3 times, Years 6-30	AC	$1,500	2.0	$3,000	3	$9,000
- Engineering/Mobilization for Final Cover Repairs/Revegetation Events	LS	$5,000	1	$5,000	8	$40,000
- Mowing, per year	AC	$150	40	$6,000	30	$180,000
General Site Maintenance (Annually)						
- Run-off/Drainage Structures	LS	$2,000	1	$2,000	30	$60,000
- Access Roads, fencing, signs, etc.	LS	$1,000	1	$1,000	30	$30,000
Leachate Management (Annually)						
- Leachate Disposal (Class II)	Gal	$10	1,000	$10,000	30	$300,000
- Leachate System Maintenance	LS	$2,000	1	$2,000	30	$60,000
GW Monitoring (Annually)						
- Detection Monitoring - Semi-annual Collection/Analysis, (9 MWs, 1 Dup)	EA	$500	10	$5,000	60	$300,000
- Annual Report	LS	$10,000	1	$10,000	30	$300,000
- Monitoring Well Maintenance (1 MW replaced every 10 years)	EA	$5,000	1	$5,000	3	$15,000
One Time Post Closure Care Costs						
- Deed Notices/Surveys	LS	$10,000	1	$10,000	1	$10,000
- Monitoring Well Plugging and Abandonment	EA	$1,000	9	$9,000	1	$9,000
					Subtotal 30-Year Post Closure Care Costs:	$1,842,533
					Contingency (10%):	$184,253
					Year 2021 30-Year Post Closure Cost Estimate:	**$2,026,787**
					Year 2025 CPI-Adjusted 30-Year Post Closure Cost Estimate:	**$2,432,144**

Notes:

1. LF - linear foot
2. SY - square yard
3. CY - cubic yard
4. EA - each
5. AC - acre
6. M - month
7. Gal - gallons
8. See Technical Memorandum for cost assumptions
9. Unit costs shown are based on 2021 dollars. Cost increase from Year 2021 to Year 2025 is based on Consumer Price Index percentage increase of approximately 20% over that period.

Table 2

Martin Lake Steam Electric Station - Ash Ponds
Post Closure Care Cost Estimate - 30 TAC 352.1101

Item	Unit	Rate	Quantity	Cost/Event	No. of Events	30-Year Cost
CCR Unit Inspections (Annually)	LS	$15,000	1	$15,000	30	$450,000
Final Cover Maintenance						
- Erosion Repair, 6-inch avg. thickness, 5% of cap per year, Years 1-5	CY	$5	1,533	$7,663	5	$38,315
- Erosion Repair, 6-inch avg. thickness, 5% of cap, 3 times, Years 6-30	CY	$5	1,533	$7,663	3	$22,989
- Revegetation, 5% of cap area per year, Years 1-5	AC	$1,500	1.9	$2,850	5	$14,250
- Revegetation, 5% of cap area, 3 times, Years 6-30	AC	$1,500	1.9	$2,850	3	$8,550
- Engineering/Mobilization for Final Cover Repairs/Revegetation Events	LS	$5,000	1	$5,000	8	$40,000
- Mowing, per year	AC	$150	38	$5700	30	$171,000
General Site Maintenance (Annually)						
- Run-off/Drainage Structures	LS	$3,000	1	$3,000	30	$90,000
- Access Roads, fencing, signs, etc.	LS	$1,500	1	$1,500	30	$45,000
GW Monitoring (Annually)						
- Detection Monitoring - Semi-annual Collection/Analysis, (7 MWs, 1 Dup)	EA	$500	8	$4,000	60	$240,000
- Assessment Monitoring - Semi-annual Analysis, (7 MWs, 1 Dup)	EA	$350	8	$2,800	60	$168,000
- MNA Monitoring - Semi-annual Analysis, (7 MWs, 1 Dup)	EA	$200	8	$1,600	60	$96,000
- Annual Report (Including MNA)	LS	$15,000	1	$15,000	30	$450,000
- Monitoring Well Maintenance (1 MW replaced every 10 years)	EA	$5,000	1	$5,000	3	$15,000
One Time Post Closure Care Costs						
- Deed Notices/Surveys	LS	$15,000	1	$15,000	1	$15,000
- Monitoring Well Plugging and Abandonment	EA	$1,000	7	$7,000	1	$7,000
					Subtotal 30-Year Post Closure Care Costs:	$1,871,104
					Contingency (10%):	$187,110
					Year 2021 30-Year Post Closure Cost Estimate:	**$2,058,214**
					Year 2025 CPI-Adjusted 30-Year Post Closure Cost Estimate:	**$2,469,857**

Notes:

1. LF - linear foot
2. SY - square yard
3. CY - cubic yard
4. EA - each
5. AC - acre
6. M - month
7. Gal - gallons
8. See Technical Memorandum for cost assumptions
9. Unit costs shown are based on 2021 dollars. Cost increase from Year 2021 to Year 2025 is based on Consumer Price Index percentage increase of approximately 20% over that period.

Table 3

Martin Lake Steam Electric Station - A1 Area Landfill
Post Closure Care Cost Estimate - 30 TAC 352.1101

Item	Unit	Rate	Quantity	Cost/Event	No. of Events	30-Year Cost
CCR Unit Inspections (Annually)	LS	$15,000	1	$15,000	30	$450,000
Final Cover Maintenance						
- Erosion Repair, 6-inch avg. thickness, 5% of cap per year, Years 1-5	CY	$5	31,662	$158,308	5	$791,542
- Erosion Repair, 6-inch avg. thickness, 5% of cap, 3 times, Years 6-30	CY	$5	31,662	$158,308	3	$474,925
- Revegetation, 5% of cap area per year, Years 1-5	AC	$1,500	39.3	$58,875	5	$294,375
- Revegetation, 5% of cap area, 3 times, Years 6-30	AC	$1,500	39.3	$58,875	3	$176,625
- Engineering/Mobilization for Final Cover Repairs/Revegetation Events	LS	$15,000	1	$15,000	8	$120,000
- Mowing, per year	AC	$150	785	$117,750	30	$3,532,500
General Site Maintenance (Annually)						
- Run-off/Drainage Structures	LS	$8,000	1	$8,000	30	$240,000
- Access Roads, fencing, signs, etc.	LS	$4,000	1	$4,000	30	$120,000
GW Monitoring (Annually)						
- Detection Monitoring - Semi-annual Collection/Analysis, (12 MWs, 1 Dup)	EA	$500	13	$6,500	60	$390,000
- Assessment Monitoring - Semi-annual Analysis, (12 MWs, 1 Dup)	EA	$350	13	$4,550	60	$273,000
- MNA Monitoring - Semi-annual Analysis, (12 MWs, 1 Dup)	EA	$200	13	$2,600	60	$156,000
- Annual Report (Including MNA)	LS	$15,000	1	$15,000	30	$450,000
- Monitoring Well Maintenance (1 MW replaced every 10 years)	EA	$5,000	1	$5,000	3	$15,000
One Time Post Closure Care Costs						
- Deed Notices/Surveys	LS	$25,000	1	$25,000	1	$25,000
- Monitoring Well Plugging and Abandonment	EA	$1,000	12	$12,000	1	$12,000
					Subtotal 30-Year Post Closure Care Costs:	$7,520,967
					Contingency (10%):	$752,097
					Year 2021 30-Year Post Closure Cost Estimate:	**$8,273,063**
					Year 2025 CPI-Adjusted 30-Year Post Closure Cost Estimate:	**$9,927,675**

Notes:

1. LF - linear foot
2. SY - square yard
3. CY - cubic yard
4. EA - each
5. AC - acre
6. M - month
7. Gal - gallons
8. See Technical Memorandum for cost assumptions
9. Unit costs shown are based on 2021 dollars. Cost increase from Year 2021 to Year 2025 is based on Consumer Price Index percentage increase of approximately 20% over that period.

ATTACHMENT A
PDP-5 HELP MODEL RESULTS

HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE
HELP MODEL VERSION 4.0 BETA (2018)
DEVELOPED BY USEPA NATIONAL RISK MANAGEMENT RESEARCH LABORATORY

Title: Martin Lake PDP 5 **Simulated On:** 1/3/2022 14:52

Layer 1

Type 1 - Vertical Percolation Layer (Cover Soil)
SiL - Silty Loam(Moderate)
Material Texture Number 23

Thickness	=	18	inches
Porosity	=	0.461	vol/vol
Field Capacity	=	0.36	vol/vol
Wilting Point	=	0.203	vol/vol
Initial Soil Water Content	=	0.2798	vol/vol
Effective Sat. Hyd. Conductivity	=	9.00E-06	cm/sec

Layer 2

Type 4 - Flexible Membrane Liner
LDPE Membrane
Material Texture Number 36

Thickness	=	0.04	inches
Effective Sat. Hyd. Conductivity	=	4.00E-13	cm/sec
FML Pinhole Density	=	1	Holes/Acre
FML Installation Defects	=	4	Holes/Acre
FML Placement Quality	=	2	Excellent

Layer 3

Type 1 - Vertical Percolation Layer
Clay
Material Texture Number 43

Thickness	=	24	inches
Porosity	=	0.451	vol/vol
Field Capacity	=	0.419	vol/vol
Wilting Point	=	0.332	vol/vol
Initial Soil Water Content	=	0.4174	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E-07	cm/sec

Layer 4

Type 1 - Vertical Percolation Layer (Waste)
High-Density Electric Plant Coal Fly Ash
Material Texture Number 30

Thickness	=	720	inches
Porosity	=	0.541	vol/vol
Field Capacity	=	0.187	vol/vol
Wilting Point	=	0.047	vol/vol
Initial Soil Water Content	=	0.187	vol/vol
Effective Sat. Hyd. Conductivity	=	5.00E-05	cm/sec

Layer 5

Type 3 - Barrier Soil Liner

C (Moderate)

Material Texture Number 29

Thickness	=	48	inches
Porosity	=	0.451	vol/vol
Field Capacity	=	0.419	vol/vol
Wilting Point	=	0.332	vol/vol
Initial Soil Water Content	=	0.451	vol/vol
Effective Sat. Hyd. Conductivity	=	6.80E-07	cm/sec

Note: Initial moisture content of the layers and snow water were computed as nearly steady-state values by HELP.

General Design and Evaporative Zone Data

SCS Runoff Curve Number	=	84.2	
Fraction of Area Allowing Runoff	=	100	%
Area projected on a horizontal plane	=	40	acres
Evaporative Zone Depth	=	18	inches
Initial Water in Evaporative Zone	=	5.037	inches
Upper Limit of Evaporative Storage	=	8.298	inches
Lower Limit of Evaporative Storage	=	3.654	inches
Initial Snow Water	=	0	inches
Initial Water in Layer Materials	=	171.343	inches
Total Initial Water	=	171.343	inches
Total Subsurface Inflow	=	0	inches/year

Note: SCS Runoff Curve Number was calculated by HELP.

Evapotranspiration and Weather Data

Station Latitude	=	32.31	Degrees
Maximum Leaf Area Index	=	5	
Start of Growing Season (Julian Date)	=	0	days
End of Growing Season (Julian Date)	=	367	days
Average Wind Speed	=	6	mph

Average 1st Quarter Relative Humidity	=	1 %
Average 2nd Quarter Relative Humidity	=	22 %
Average 3rd Quarter Relative Humidity	=	88 %
Average 4th Quarter Relative Humidity	=	22 %

Note: Evapotranspiration data was obtained for Dirgin, Texas

Normal Mean Monthly Precipitation (inches)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
3.940712	3.384053	4.449471	3.632658	4.152557	5.603921
3.172363	2.83961	2.855806	4.403743	4.552789	4.108209

Note: Precipitation was simulated based on HELP V4 weather simulation for:
Lat/Long: 32.31/-94.55

Normal Mean Monthly Temperature (Degrees Fahrenheit)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
51.6	52.5	64.1	73	79.7	89.4
92.3	89.7	84.1	74	66.1	57.1

Note: Temperature was simulated based on HELP V4 weather simulation for:
Lat/Long: 32.31/-94.55
Solar radiation was simulated based on HELP V4 weather simulation for:
Lat/Long: 32.31/-94.55

Average Annual Totals Summary

Title: Martin Lake PDP 5
Simulated on: 1/6/2022 8:32

	Average Annual Totals for Years 1 - 30*				
	(inches)	[std dev]	(cubic feet)	(gallons)	(percent)
Precipitation	47.10	[5.76]	6,838,323.4	51,154,215.3	100.00
Runoff	4.062	[2.566]	589,755.5	4,411,677.7	8.62
Evapotranspiration	42.959	[5.448]	6,237,618.8	46,660,632.2	91.22
Subprofile1					
Percolation/leakage through Layer 2	0.000690	[0.000293]	100.1	749.1	0.00
Average Head on Top of Layer 2	2.5255	[1.058]	---	---	---
Subprofile2					
Percolation/leakage through Layer 5	0.000690	[0.000293]	100.1	749.1	0.00
Average Head on Top of Layer 5	0.0000	[0]	---	---	---
Water storage					
Change in water storage	0.0747	[1.8339]	10,849.0	81,156.3	0.16

* Note: Average inches are converted to volume based on the user-specified area.

Peak Annual Totals Summary

Year	Percolation/leakage through Layer 2 (cubic feet)	Percolation/leakage through Layer 2 (gallons)
1	94.36	705.86
2	90.86	679.71
3	114.98	860.12
4	133.94	1001.98
5	68.53	512.66
6	72.73	544.05
7	65.14	487.29
8	129.67	969.97
9	145.04	1084.99
10	96.08	718.70
11	113.33	847.75
12	127.05	950.38
13	170.85	1278.05
14	110.62	827.46
15	176.37	1319.34
16	32.26	241.34
17	135.53	1013.81
18	114.29	854.96
19	124.03	927.84
20	9.75	72.90
21	36.21	270.86
22	65.90	492.99
23	79.54	594.98
24	31.83	238.14
25	99.15	741.70
26	78.99	590.87
27	111.77	836.07
28	180.88	1353.09
29	76.11	569.33
30	118.42	885.85

APPENDIX H – FINANCIAL ASSURANCE

Post-Closure Care Cost Estimate

ATTACHMENT 9

NOD 3 Response Letter Replacement Pages

Table 1 - NOD Summary and Response
Registration No. CCR105 - Luminant Generation Company LLC
Application Deficiencies - NOD 3

ID	App. Section	App. Sub Section	Location[2]	Citation	Deficiency Description/Resolution	Response
1	V	V.26.A.2	[Closure Plan, Bottom Ash Ponds and NSP, Figure 3]	40 CFR §257.73(c)(1)(vii)	Revise Figure 3 to specify what existing contours represent (e.g., top of 4-in concrete revetment, geomembrane, protective cover, etc.). In addition, revise Figure 3 to ensure that elevations associated with bottom liner system for West Ash Pond (WAP), East Ash Pond (EAP), and the New Scrubber Pond (NSP) are consistent with other application drawings. Update Figure 3 with the signature, date, and seal of a Texas Licensed P.E.	Please see attached Technical Memorandum "Response to TCEQ NOD No. 3 - CCR Registration Application No. CCR105", Comment Item No. 1 in Section 2.0. Closure Plan Addendum No. 2 referenced in the response memorandum is located in Appendix G of the application.
2	V	V.26.A.2	[App G]	30 TAC §352.4 and 40 CFR §257.105(f)(9)	Revise the following Figure 4 drawings with the signature, seal, and date of a Texas Licensed P.E, and include a statement that final elevations will be provided during closure of all CCR units: • Proposed Grading Plan, Closure Plan, Ash Pond Area • Proposed Final Cover Grading Plan, Post Closure Plan, Ash Pond Area • Proposed Grading Plan, Closure Plan, PDP-5 • Proposed Final Cover Grading Plan, Post Closure Plan, PDP-5	Please see attached Technical Memorandum "Response to TCEQ NOD No. 3 - CCR Registration Application No. CCR105", Comment Item No. 2 in Section 2.0. Closure Plan Addendum No. 2 referenced in the response memorandum is located in Appendix G of the application.
3	V	V.26.B	[App E, Alternate Liner Demonstration Application, PDP-5]	40 CFR §257.71(d)(2)(viii)	Revise the application, as appropriate, in response to EPA's proposed decision to deny the alternate liner demonstration request for PDP-5 as noted in the EPA letter dated January 25, 2023.	Luminant submitted a request to withdraw the Alternate Liner Demonstration (ALD) on January 2, 2024. The application has been revised to reflect this update. A copy of this request is located in Appendix E. Also, see discussion of the ALD and withdrawal request under Item V.26.B. of the registration application.
4	VI	VI.27.C	[App F, GWM System Certification – Addendum No. 1, A-1 Landfill]	40 CFR §257.91(f)	Provide a P.E. Certification for BMW-33, which appears to have been added to the A1 Landfill Groundwater Monitoring (GWM) network as an upgradient well in 2019. Provide all applicable information to support the conclusion.	Please see attached Technical Memorandum "Response to TCEQ NOD No. 3 - CCR Registration Application No. CCR105", Comment Item No. 4 in Section 2.0. The Groundwater Monitoring System Certification Addendum No. 2 for A1 Landfill referenced in the response memorandum is located in Appendix F of the application.

5	VI	VI.28	[App F, GWM Plan – Revision 2, Ash Pond Area, Section 5, pg. 19]	40 CFR §257.93(c)	Revise to ensure that the rate and direction of groundwater (GW) flow will be determined each time GW is sampled.	A statement indicating that the rate and direction of groundwater flow will be determined each time groundwater is sampled is provided in Section 2.2.3 of the Groundwater Monitoring Plan-Revision 2. Groundwater Monitoring Plan-Revision 2 is located in Appendix F.
6	VI	VI.28	[App F, GWM Plan Revision 2, Ash Pond Area, Section 1.2.5, pg. 5]	30 TAC 352.951(b) and 40 CFR 257.95(h)	Page 5 of the referenced GWM Plan states, "The GWPS shall be:… for constituents for which an MCL has not been established, the background concentration for the constituent or approved regional screening level established in accordance with CCR Rule Section 257.91." 40 CFR 257.91 cites groundwater monitoring system requirements and does not address the GWPS. Revise the application to remove this reference and all language relating to the establishment of GWPS based on regional screening levels, as it is not one of the allowed ways to establish GWPS listed in 40 CFR 257.95(h) or 30 TAC 352.951(b). These rules only allow for the use of an MCL if it exists for that constituent, or the background concentration for that constituent.	References to approved regional screening levels in the Groundwater Monitoring Plans for all CCR units have been removed. Groundwater Monitoring Plan-Revision 2 for all CCR units is located in Appendix F.
7	VI	VI.29.A VI.29.C VI.30.H VIII.33	[App F, 2021 GWM & Corrective Action Report Revision 1 – PDP-5] [Table VI.C, CCR Units Under Detection Monitoring; Table VI.D, CCR Units Under Assessment Monitoring] [Table VI.D-2: Groundwater Assessment Monitoring Parameter] [Appendix H, Post Closure Cost Estimates, Table 1]	40 CFR §257.94(e) Application Instructions, & 40 CFR 257.94(e) and 30 TAC §352.231(b) 40 CFR §257.93(h)(2) & 40 CFR §257.94 40 CFR 257.94(e) and 30 TAC §352.1101(b)	Confirm PDP-5 is in the proper groundwater monitoring program (detection, assessment, or corrective action) and make appropriate adjustments to the application as necessary. If PDP-5 should be in assessment monitoring or corrective action, describe what actions have been taken or will be taken, along with any necessary revisions to the application, including updates to PDP-5 information and any post-closure cost estimates. The 2021 GWM report for PDP-5 identified SSIs for boron in MW-23 and MW-25, calcium in MW-20A, MW-23, and MW-25, and chloride in MW-19. The report indicates that some of the SSIs were not valid because resampling did not confirm the refenced SSIs. Resampling for all referenced SSIs did not occur within 90-days.	Please see attached Technical Memorandum "Response to TCEQ NOD No. 3 - CCR Registration Application No. CCR105", Comment Item No. 7 in Section 2.0.

8	VI	VI.29.B	[App. F, GWM and Corrective Action]	Application Instructions & 40 CFR §257.93(d)	Provide a Background Evaluation Report (BER) which discusses the establishment of background GW concentrations for the constituents listed in 40 CFR 257 Appendix III and IV. Submit a separate BER for each GWM network on-site. In addition, place the BER as a separate file on the facility's website.	Please see attached Technical Memorandum "Response to TCEQ NOD No. 3 - CCR Registration Application No. CCR105", Comment Item No. 8 in Section 2.0. The "Background Groundwater Monitoring and Statistical Analysis Summary Report" for the each CCR unit have been added to Appendix F. The reports are also referenced under item VI.29. and VI.30. of the registration application.
9	VI	VI.29.C	[App F, 2021 GWM and CA Reports, A1-Landill, Ash Pond Area, & PDP-5]	40 CFR §257.90(e)(5), (e)(6)(iii)(A), and (e)(6)(iv)(A) 40 CFR §257.94(e)(2)	Comment: Please ensure that future GWM reports include: all sampling performed during the year; any prescribed resampling data or ASDs; and a determination on whether any SSIs occurred.	Future Groundwater Monitoring and Corrective Action Reports will include all sampling performed during the year, any prescribed resampling data or ASDs, and a determination on whether any SSIs occurred.
10	VII	VII.31	[App. G, Closure Plan for A1 Area Landfill, Ash Pond Area, and PDP-5]	40 CFR §257.102(d)(1)(iii)	Revise the slope stability analysis for the final cover system associated with the A1 Area Landfill, Ash Pond Area, and PDP-5 to provide a statement indicating that an amendment will be submitted to include site specific geotechnical data, final cover materials testing data, and final design criteria prior to construction for review and approval. The analysis must be signed and sealed by a Texas Licensed P.E.	Please see attached Technical Memorandum "Response to TCEQ NOD No. 3 - CCR Registration Application No. CCR105", Comment Item No. 10 in Section 2.0.
11	VII	VII.31	[App. G, Closure Plan for A1 Area Landfill]	40 CFR §257.102(d)(1)(iii)	Revise the slope stability analysis for the A1 Area Landfill to provide an evaluation for the interface between each component of the final cover system (e.g., vegetative soil layer/compacted mine spoil; compacted mine spoil/subgrade).	Please see attached Technical Memorandum "Response to TCEQ NOD No. 3 - CCR Registration Application No. CCR105", Comment Item No. 11 in Section 2.0.
12	VII	VII.31	[App. G, Closure Plan for A1 Area Landfill, Ash Pond Area, and PDP-5]	30 TAC §352.4; and 40 CFR §257.102(b) & (d)(3)(i)(D)	Revise the application to include a settlement analysis for the final cover system for each CCR unit. Provide a statement indicating that an amendment to include a settlement analysis with site specific geotechnical data, final cover materials testing data, and final design criteria will be submitted prior to construction for review and approval. The analysis must be signed and sealed by a Texas Licensed P.E.	Please see attached Technical Memorandum "Response to TCEQ NOD No. 3 - CCR Registration Application No. CCR105", Comment Item No. 12 in Section 2.0.
13	VIII	VIII.33	[Appendix H, Post Closure Cost Estimates, Table 2]	30 TAC §352.1101(b)	Revise the post-closure cost estimate for the NSP to ensure that the final cover area is consistent with the facility's closure plan. The post-closure cost estimate indicates that the final cover area for the NSP is 36 acres, while Table V.A, Surface Impoundment Characteristics and the 2016 Closure Plan, indicates the area is 13 acres.	Please see attached Technical Memorandum "Response to TCEQ NOD No. 3 - CCR Registration Application No. CCR105", Comment Item No. 13 in Section 2.0.

14	VIII	VIII.33	[Appendix H, Post Closure Cost Estimates, Table 2 & 3]	30 TAC §352.1101(b)	Revise the post-closure cost estimates in the referenced tables to include the dollar year in which the estimates were made (i.e., 2021 dollars).	Please see attached Technical Memorandum "Response to TCEQ NOD No. 3 - CCR Registration Application No. CCR105", Comment Item No. 14 in Section 2.0.

[1] Deficiency ID – Key: Use this numbered ID 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.

[1] Deficiency ID – Key: Use this numbered ID to identify the NOD response.
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Bullock, Bennett & Associates, LLC ∗ 165 N. Lampasas Street ∗ Bertram, Texas 78605
Telephone: 512.355.9198 ∗ Fax: 512.355.9197

February 26, 2024
BBA Project No. 23643-01-2024

Mr. Eric Chavers
Luminant Generation Company LLC
6555 Sierra Drive.
Irving, Texas 75309

RE: Response to TCEQ NOD No. 3
CCR Registration Application No. CCR105
Martin Lake Steam Electric Station - Rusk and Panola Counties, Texas
(TCEQ CCR Registration Application No. CCR105)

Dear Mr. Chavers:

This letter report provides information to address Texas Commission on Environmental Quality (TCEQ) Notice of Deficiency (NOD) No. 3 on the Coal Combustion Residual (CCR) Registration Application for the Martin Lake Steam Electric Station (MLSES), which the TCEQ issued by email on December 22, 2023.

1.0 INTRODUCTION

Luminant Generation Company LLC (Luminant) owns and operates the MLSES located approximately 5 miles southeast of Tatum, Rusk County, Texas. The MLSES consists of three coal-fired power generation units. CCRs including fly ash, bottom ash, and gypsum are generated as part of the MLSES unit operations. Currently, CCRs generated at the MLSES are transported off-site for beneficial reuse by third-parties or are managed by Luminant in surface impoundments located on the MLSES property or at the A1 Area Landfill located approximately 2.5 miles east of the MLSES. The following three MLSES CCR unit areas are regulated under the TCEQ CCR Rule (30 T.A.C. Chapter 352):

- East Ash Pond, West Ash Pond, and New Scrubber Pond (collectively referred to as the Ash Pond Area);
- Permanent Disposal Pond 5 (PDP-5); and
- A1 Area Landfill.

ATTACHMENT 10

Closure Plan Addendum 1 Replacement Pages – A1 Area Landfill, Ash Ponds, and PDP-5

Closure Plan Addendum 1 Replacement Pages – A1 Area Landfill

2.3 Settling and Subsidence – A1 Area Landfill System

40 C.F.R. §257.102(d)(3)(i)(D) states that the disruption of the integrity of the final cover system must be minimized through a design that accommodates settling and subsidence. An evaluation of potential settlement for the final cap/cover systems for the A1 LF is attached as Appendix B to this Addendum. The A1 LF Closure Plan will be updated to include a cap/cover system settlement evaluation using site-specific data during design of the final cap/closure systems for the landfill. An amendment will be submitted prior to construction for review and approval. The ammendment will include 1) specific geotechnical data, 2) final cover materials testing data, and 3) final design criteria, with all analyses, and shall be signed and sealed by a Texas Licensed P.E. (with Firm Number if applicable).

2.4 Slope Stability – A1 Area Landfill Cap/Cover System

The A1 LF Closure Plan will be updated to include cap/cover system slope stability modeling using site-specific geotechnical data during design of the final cap/closure systems for the landfill. An amendment will be submitted prior to construction for review and approval. The amendment will include 1) site-specific geotechnical data, 2) final cover materials testing data, and 3) final design criteria, with all analyses, and shall be signed and sealed by a Texas Licensed P.E. (with Firm Number if applicable).

2.5 HELP Modeling in 2016 Closure Plan

The 2016 Closure Plan for the A1 LF included Hydrologic Evaluation of Landfill Performance (HELP) model evaluations to compare the permeability of the then-proposed cap to the landfill liner (PBW, 2016). The HELP model evaluations in the 2016 Closure Plan have been replaced by the infiltration evaluations presented above for the new cap/cover system and have been deleted from this amended Closure Plan.

2.6 Conclusions

The final cap/cover system for the A1 LF described above complies with the final cover system requirements of 40 C.F.R. §257.102(d)(3)(i)(A) through (D).

Closure Plan Addendum 1 Replacement Pages Ash Ponds

k = hydraulic conductivity of Infiltration Layer (m/s)

- Assumptions:

  1) The 18-inch infiltration layer is assumed to have a maximum hydraulic conductivity of $1x10^{-7}$ cm/sec.

  2) The hydraulic head above the infiltration layer was assumed to be 12 inches (30.48 cm). This is a conservative assumption for the infiltration layer, since the final cap/cover system will be sloped to divert water that infiltrates through the overlying erosion soil layer away from the infiltration layer.

  3) Cap area for evaluation is assumed to be 1 acre to match area used for the above Ash Pond geomembrane/GCL cap evaluation.

- Flow Rate Through 18-inch Infiltration Layer

  A = 1 acre (4046.86 m^2)

  k = $1x10^{-7}$ cm/sec (1 X 10^{-9} m/sec)

  h = 1 foot x 30.48 cm/ft = 30.48 cm (0.3048 m)

  t = 18 inches X 2.54 cm/in = 45.72 cm (0.4572 m)

  Q = (4046.86 m^2) x ($1x10^{-9}$ m/sec) x ((0.3048 m / 0.4572 m) + 1)

  = $6.75x10^{-6}$ m^3/s per acre of cap or 154 gallons per day per acre of cap

The final cap/cover systems for the Ash Ponds comply with the requirements of 40 C.F.R. §257.102(d)(3)(i)(B), since the estimated liquid flow rate through the final cap/cover system (0.10 gallons per acre per day) is significantly less than the estimated liquid flow rate through an 18-inch thick infiltration layer (154 gallons per acre per day).

2.2 Equivalent Erosion Protection - Ash Pond Cap/Cover Systems

The final cap/cover systems for the Ash Ponds include an 18-inch erosion layer consisting of 12 inches of general fill overlain with 6 inches of soil capable of supporting native vegetation. This complies with the requirements of 40 C.F.R. §257.102(d)(3)(ii)(B), which states that the final cover system must use of an erosion layer that contains a minimum of six inches of earthen material that is capable of sustaining native plant growth.

2.3 Settling and Subsidence - Ash Pond Cap/Cover Systems

40 C.F.R. §257.102(d)(3)(i)(D) states that the disruption of the integrity of the final cover system must be minimized through a design that accommodates settling and subsidence. An evaluation of potential settlement for the final cap/cover systems for the Ash Ponds is attached as Appendix A to this Addendum. The Ash Pond Closure Plan will be updated to include a cap/cover system settlement evaluation using site-specific data during design of the final cap/closure systems for the Ash Ponds. An amendment will be submitted prior to construction for review and approval. The ammendment will include 1) specific geotechnical data, 2) final cover materials testing data, and 3) final design criteria, with all analyses, and shall be signed and sealed by a Texas Licensed P.E. (with Firm Number if applicable).

2.4 Slope Stability - Ash Pond Cap/Cover Systems

The Ash Pond Closure Plan will be updated to include cap/cover system slope stability modeling using site-specific geotechnical data during design of the final cap/closure systems for the Ash Ponds. An amendment will be submitted prior to construction for review and approval. The amendment will include 1) site-specific geotechnical data, 2) final cover materials testing data, and 3) final design criteria, with all analyses, and shall be signed and sealed by a Texas Licensed P.E. (with Firm Number if applicable).

Closure Plan Addendum 1 Replacement Pages – PDP-5

$$Q = (4046.86\ m^2) \times (1 \times 10^{-9}\ m/sec) \times ((0.3048\ m / 0.4572\ m) + 1)$$

$$= 6.75 \times 10^{-6}\ m^3/s \text{ per acre of cap or } 154 \text{ gallons per day per acre of cap}$$

The final cap/cover system for PDP-5 complies with the requirements of 40 C.F.R. §257.102(d)(3)(i)(B), since the estimated liquid flow rate through the final cap/cover system (0.32 gallons per acre per day) is significantly less than the estimated liquid flow rate through an 18-inch thick infiltration layer (154 gallons per acre per day).

2.2 Equivalent Erosion Protection – PDP-5 Cap/Cover System

The final cap/cover system for PDP-5 includes an 18-inch erosion layer consisting of 12 inches of general fill overlain with 6 inches of soil capable of supporting native vegetation. This complies with the requirements of 40 C.F.R. §257.102(d)(3)(ii)(B), which states that the final cover system must use of an erosion layer that contains a minimum of six inches of earthen material that is capable of sustaining native plant growth.

2.3 Settling and Subsidence – PDP-5 Cap/Cover System

40 C.F.R. §257.102(d)(3)(i)(D) states that the disruption of the integrity of the final cover system must be minimized through a design that accommodates settling and subsidence. An evaluation of potential settlement for the final cap/cover system for PDP-5 is attached as Appendix A to this Addendum. The PDP-5 Closure Plan will be updated to include a cap/cover system settlement evaluation using site-specific data during design of the final cap/closure system for PDP-5. An amendment will be submitted prior to construction for review and approval. The ammendment will include 1) specific geotechnical data, 2) final cover materials testing data, and 3) final design criteria, with all analyses, and shall be signed and sealed by a Texas Licensed P.E. (with Firm Number if applicable).

2.4 Slope Stability – PDP-5 Cap/Cover System

The PDP-5 Closure Plan will be updated to include cap/cover system slope stability modeling using site-specific geotechnical data during design of the final cap/closure system for PDP-5. An amendment will be submitted prior to construction for review and approval. The amendment will include 1) site-specific geotechnical data, 2) final cover materials testing data, and 3) final design criteria, with all analyses, and shall be signed and sealed by a Texas Licensed P.E. (with Firm Number if applicable).

2.5 HELP Modeling in 2016 Closure Plan

The 2016 Closure Plan for PDP-5 included Hydrologic Evaluation of Landfill Performance (HELP) model evaluations to compare the permeability of the then-proposed cap options against each other and to the PDP-5 bottom liner system (PBW, 2016). The HELP model evaluations in the 2016 Closure Plan have been replaced by the infiltration evaluations presented above for the new cap/cover system and have been deleted from this amended Closure Plan.

2.6 Conclusions

The final cap/cover system for PDP-5 described above is an alternative final cover system that complies with the requirements of 40 C.F.R. §257.102(d)(3)(ii)(A) through (C).