REPORT

Structural Stability Assessment 5-Year Update

Martin Lake Steam Electric Station

Ash Pond Area and Permanent Disposal Pond 5

Rusk County, Texas

Submitted to:

Luminant Generation Company, LLC

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Submitted by:

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PROFESSIONAL CERTIFICATION

This document and all attachments were prepared by Golder Associates Inc. under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I hereby certify that the Structural Stability Assessment Update has been prepared in accordance with the requirements of 40 C.F.R. § 257.73(d) and 30 T.A.C. § 353.731.

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Associate
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FIGURES

1.0 INTRODUCTION

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. The power plant and related support areas occupy approximately 700 acres on a peninsula on the southwest side of Martin Lake (Figure 1). The MLSES consists of three coal/lignite-fired units with a combined operating capacity of approximately 2,250 megawatts. Coal Combustion Residuals (CCR) including fly ash, bottom ash, and gypsum are generated as part of MLSES unit operation and managed in the Bottom Ash Ponds and New Scrubber Pond (referred to collectively as the Ash Pond Area) and in Permanent Disposal Pond No. 5.

The U.S. Environmental Protection Agency promulgated 40 C.F.R. Part 257, Subpart D (the CCR Rule) and the Texas Commission on Environmental Quality (TCEQ) promulgated 30 T.A.C. Chapter 352 (which largely adopts the federal CCR Rule by reference) to establish technical requirements for new and existing CCR landfills and surface impoundments. On June 28, 2021, USEPA approved the majority of TCEQ's CCR program, which will now operate in lieu of the federal regulations. The Bottom Ash Ponds (BAPs), New Scrubber Pond (NSP) and Permanent Disposal Pond No. 5 (PDP-5) have been identified as Existing CCR Surface Impoundments regulated under the CCR Rule. It should be noted that the New Scrubber Pond has been referred to in past CCR reports as both the SP and the NSP. This pond will be referred to as the NSP in this report and all subsequent reports.

Section 257.73(d) specifies that periodic structural stability assessments must be conducted for each CCR surface impoundment and 30 T.A.C. 352.731 adopts this requirement by reference. In accordance with § 257.73(g), the initial Structural Stability Assessment for the BAPs, NSP and PDP-5 was completed and placed in the facility operating record in October 2016 (Golder, 2016b). As specified in § 257.73(f)(3), the Structural Stability Assessment must be updated every five years from the completion date of the initial plan. Golder Associates Inc., member of WSP (Golder), was retained by Luminant to prepare this updated Structural Stability Assessment for the BAPs, SP and PDP-5.

1.1 Description of Bottom Ash Ponds

The MLSES generates bottom ash, fly ash, and flue gas desulfurization (FGD) material during electricity generation. The following surface impoundments, shown on Figure 1, are in operation at the MLSES and subject to the CCR rule.

The WAP and EAP (collectively "Bottom Ash Ponds" or "BAPs") are located approximately 2,000 feet east of the MLSES power plant (Figure 2). The WAP and EAP receive recovered sluice water from bottom ash dewatering bins and other MLSES process wastewater sources that typically include bottom ash fines. The ponds also act as surge basins for various water streams in the ash-water system. Process wastewater can be transferred from the MLSES impoundments to the NSP and PDP-5 or used as makeup water to the bottom ash system. When sufficient ash has accumulated in either the WAP or EAP, the recovered sluice water is diverted to the other pond. Ash in the inactive pond is then removed and transported via rail car to the A1 Area Landfill. The BAPs were originally constructed in the 1977 and upgraded in 1988 (WAP) and 2010 (EAP).

The WAP and EAP are constructed partially above and partially below grade and are surrounded by engineered earthen embankments that extend above grade. The WAP and EAP share an interior embankment and cover areas of approximately 14.6 acres and 9.6 acres, respectively. The crest elevation of the BAP embankments is 330 feet above mean sea level (MSL) and the EAP borders Martin Lake (normal pool elevation 306 feet MSL).

The BAPs were originally constructed in 1977 with an in-situ compacted clay liner. The WAP was removed from service in March 1988 and re-lined with a double 60-mil high density polyethylene (HDPE) liner system overlain with a concrete revetment mat. The EAP was dredged and removed from service in 1989, and a new south embankment was constructed to allow for an increase in the size of the NSP. The EAP remained inactive until the installation of a new double 60-mil HDPE liner system with concrete revetment mat was completed in February 2010.

In 2020, the EAP was retrofitted with a new composite liner system meeting the requirements of § 257.70(b). The retrofitted liner system was installed on top of the existing liner system and consisted of the following (from bottom to top):

- A polymer-enhanced geosynthetic clay liner (GCL) and
- A 60-mil HDPE liner

The liner system in the WAP will be similarly retrofitted in 2021.

Based on available construction data, the BAPs were constructed to provide the following estimated storage capacities:

- WAP: 232.6 acre-feet; and
- EAP: 125.8 acre-feet.

1.2 Description of New Scrubber Pond

The New Scrubber Pond (NSP) is located immediately south of the EAP and east of the WAP (Figure 2). The NSP is an approximately 12.5-acre surface impoundment that is used to manage FGD wastes as well as discharge from the sludge thickener sumps, the plant yard sumps, and storm water management areas. Solids are managed similarly to the ash solids from the WAP and EAP. Process wastewater can be transferred from the NSP to the BAPs and PDP-5 or used as makeup water to the scrubber systems. The NSP was originally constructed in t1977 and was expanded to its current size in 1989.

The NSP is constructed partially above and partially below grade and is surrounded by engineered earthen embankments that extend above grade. The west embankment of the NSP is an internal/shared embankment with the WAP, and a portion of the northern embankment is an internal/shared embankment with the EAP. The crest elevation of the NSP embankments is 330 feet MSL. Martin Lake (normal pool elevation 306 feet MSL) adjoins portions of the north and south embankments of the NSP.

The NSP was originally constructed in 1977 with an in-situ compacted clay liner and was expanded to its current size in 1989. The NSP was relined in 1989 with a double 60-mil HDPE liner system, overlain with a concrete revetment mat.

In 2022, Luminant anticipates retrofitting the NSP with a new composite liner system meeting the requirements of 40 CFR § 257.70(b). The retrofitted liner system will be installed on top of the existing liner system and will consist of the following (from bottom to top):

- A polymer-enhanced geosynthetic clay liner (GCL) and
- A 60-mil HDPE liner

Based on available construction data, the NSP was constructed to provide an estimated storage capacity of 198.9 acre-feet.

1.3 Description of PDP-5

Permanent Disposal Pond No. 5 (PDP-5) is located approximately 3,000 feet west-northwest of the MLSES power plant (Figure 3). PDP-5 is an approximately 40-acre surface impoundment that was constructed in 2010 over three closed PDPs (PDPs 1-3). PDP-5 is primarily used to manage excess liquids, including storm water from large precipitation events and excess process wastewater from both the FGD and bottom ash loops. Recovered CCR wastewaters are received in PDP-5 during cleaning cycles for the BAPs and NSP. Process wastewater can be transferred between the BAPs, NSP, or used as makeup water for specific CCR related systems. Process wastewater can be transferred from PDP-5 to the BAPs and the NSP.

PDP-5 is constructed above grade and is surrounded by engineered earthen embankments. The crest elevation of the PDP-5 embankments is 405.5 feet MSL, and the embankments are approximately 10 to 15 feet above surrounding grade. The liner system for the PDP-5 consists of a 6-inch thick soil layer over a 2-foot thick compacted clay layer on the base and a 3-foot thick compacted clay liner on the upstream slope and beneath the new PDP-5 embankment. A 3-foot thick compacted clay layer overlain with 18 inches of topsoil was placed over the portions of PDP-1, PDP-2, and PDP-3 beyond the PDP-5 embankment. The compacted clay layers have an in-place permeability less than $1x10^{-7}$ cm/sec).

Based on available construction data, PDP-5 was constructed to provide an estimated storage capacity of 190.3 acre-feet.

1.4 Previous Stability Evaluations

As required under § 257.73(d), the Initial Structural Stability Assessment for the BAPs, the NSP, and PDP-5 was completed and placed in the MLSES operating record in October 2016 (Golder, 2016). No structural stability deficiencies were identified in the surface impoundments during the initial assessment.

In addition, Golder and ETTL Engineers and Consultants (ETTL) have previously performed evaluations on the BAPs, the NSP and PDP-5 as part of the following reports submitted to Luminant:

- Ash and Scrubber Ponds and Permanent Disposal Pond #4, Stability Investigation Report, Luminant Martin Lake SES, Rusk County, Texas, Golder, dated December 2012.
- Geotechnical Investigation, Luminant Martin Lake SES, Reline East Ash Disposal Pond, Tatum, Texas, ETTL, dated December 2008.

The studies found the BAPs and NSP slopes to be adequately stable.

ETTL also performed stability evaluations on PDP-5 in 2009, as presented in the following report:

- Geotechnical Investigation, Luminant Martin Lake SES, Vertical Expansion of Permanent Disposal Ponds 1, 2, and 3, Tatum, Texas. ETTL Engineers and Consultants Inc. Tyler, Texas, dated July 2008.
- Geotechnical Investigation, Luminant Martin Lake SES, Vertical Expansion of Permanent Disposal Ponds 1, 2, and 3, Tatum, Texas – Supplemental Seepage and Slope Stability. ETTL Engineers and Consultants Inc., dated October 2009.

The above reports found the design slopes of PDP-5 to be stable as long as drainage is functional, preventing the embankments from saturating.

2.0 SUBSURFACE CONDITIONS

The MLSES site is located in the Martin Creek area which is situated in the Sabine River Valley and lies on the west flank of the Sabine Uplift. The formations in the region comprise sedimentary deposits of continental and marine origin, mainly the lower Wilcox Group flanked by younger beds like the Carrizo Sand. In the Martin Creek area, the Wilcox formation is estimated to be about 650- to 700-feet thick and consists of sandy clays, silty sands, clays, and lignite in varying amounts. The Rockdale formation is the major component in the area among the sediments of the Wilcox group occupying approximately the middle four-fifths of the Wilcox Section. The Wilcox Group is underlain by the Paleocene Midway Group (containing Upper Willis and Lower Kincaid), which is estimated to be 900-feet thick around the site and is composed mainly of silty clay and clay. The Midway Group overlies a section of Cretaceous Rocks that are approximately 7000-feet thick (Rone Engineers, 1984).

2.1 Site Geology

2.1.1 Bottom Ash Ponds and Scrubber Pond

2.1.1.1 Subsurface Investigations and Laboratory Testing

Information from previous subsurface investigations was used to characterize the subsurface site conditions. In 2008, ETTL conducted a subsurface investigation for the EAP as part of an effort to reline the pond. ETTL drilled twelve borings along the crest of the EAP embankment at approximate elevation 330 feet – mean sea level (ft-msl). All borings were 40-feet deep except one which was 100-feet deep. The boring map and boring logs are presented in Appendix A. Geotechnical laboratory testing – moisture contents, Atterberg limits, grain size distribution, and consolidated-undrained (CU) triaxial compression tests - was conducted on selected samples. The soil index testing results presented as part of the boring logs, while the CU test results from ETTL are summarized in Appendix B.

Golder conducted a subsurface investigation for the WAP and NSP in December 2012. Golder completed eight, 50- to 60-foot deep borings along the crest of the pond embankments at approximate elevation 330 ft-msl. The boring map and boring logs are presented in Appendix A. As part of the investigation, laboratory testing was performed on selected samples in accordance with commonly accepted methods and practices. Undisturbed and disturbed soil samples were tested to determine water content, Atterberg limits, grain size distribution, and shear strength. Water content determination was performed in accordance with ASTM D2216; Atterberg limits were determined in accordance with ASTM D4318; and grain size distribution was performed in accordance with ASTM D422. Shear strength testing consisted of unconsolidated-undrained (UU) triaxial compression in general accordance with ASTM D2850. Laboratory test results are presented in Appendix B.

The findings from the above subsurface investigations were reviewed for their applicability to this study and are summarized in the following sections.

2.1.1.2 Subsurface Site Conditions

The above borings consisted of fill and native soils. The soils encountered in the borings generally consisted of stiff to hard sandy clays and firm to very dense sands. The subsurface stratigraphy generally consisted of interchanging layers of clays, sandy clays, clayey sands and non-plastic sands. The clayey sand layers ranged in thickness from 2 to 16 feet where encountered. The sandy clay and clay layers are described as firm to hard, low to high plasticity clays and vary in thickness from 2 to 38 feet. Loose to very dense, silty or poorly graded sand was typically encountered beneath or interlayered with the sandy clay/clayey sand strata. The 100-foot boring by ETTL showed deeper layers of very dense silty sand with intermittent layers of hard low plasticity clay.

Water was encountered in each of the eight borings performed by Golder, ranging between El. 296.1 to

303.3 ft-msl. The average water elevation measured in the Golder boreholes, during drilling, was at El.

300.3 ft-msl. The ETTL borings measured the water level to range between El. 304 to 309 ft-msl, with an average water level of El. 306 ft-msl, coinciding with the normal pool elevation of the adjacent Martin Lake (a man-made reservoir).

Groundwater levels measured in 2015, from wells surrounding the BAPs, varied from approximately El. 304 ft-msl in the southeast corner to El. 307 ft-msl in the northwest corner. Measurements taken in 2020 indicate that the groundwater levels vary from approximately 304 ft-msl in the southeast corner to 308 ft-msl near the western edge of the WAP.

2.1.2 PDP-5

2.1.2.1 Subsurface Investigations and Laboratory Testing

In 2008, ETTL performed a pre-construction subsurface investigation for PDP-5 that included a total of eleven borings within the PDP-5 footprint. In addition, three cone penetrometer tests (CPTs) were performed. As part of a supplemental investigation in 2009, ETTL drilled a further three borings within the pond footprint. The map of the borings, and boring and CPT logs are presented in Appendix A.

ETTL performed laboratory tests including natural moisture contents (ASTM D2216), Atterberg limits (ASTM D4318), particle size distributions (ASTM D 1140 and ASTM D422). Unconsolidated-undrained (UU) triaxial compression tests (ASTM D2850) were performed to determine the strength characteristics of cohesive substrata. Direct shear tests (ASTM D3080) were performed on coarser materials including remolded bulk ash samples. Consolidation tests (ASTM D2435) and permeability tests (ASTM D5084) were also performed but are not relevant to the current study. The results of the laboratory tests performed by ETTL are presented in Appendix B.

2.1.2.2 Subsurface Site Conditions

Most of the above borings were drilled through the bottom ash within closed PDP-1, 2, and 3. Based on particle size, the ash classifies as very loose to medium dense poorly graded sands in some locations, to silts in other locations and depths. The borings passing through existing embankments of PDP-1, 2, and 3 contained medium stiff to very stiff clay of low plasticity and/or high plasticity clay with clayey sand. Native soils were identified in deeper borings as very dense silt with hard low plasticity clay seams.

Two borings located outside of the ash encountered groundwater approximately between El. 355 to 368 ft- msl. Groundwater levels measured in 2015, from wells surrounding PDP-5, indicate that the groundwater level varies from approximately El. 355 ft-msl in the north to El. 375 ft-msl in the south. Measurements taken in 2019 indicate that the groundwater levels vary from 360 ft-msl in the north, to approximately 380 ft-msl to the east. The groundwater along the southern portion of PDP-5 is at approximately 365 ft-msl.

3.0 SITE RECONNAISSANCE

Following a review of the structural stability assessment and past inspection reports, Golder performed a site reconnaissance on September 28, 2021 to observe conditions at the crest, downstream slopes, and areas beyond the Ash Ponds. With the exception of portions of the WAP where the CCR has been removed in preparation for retrofitting, it was not feasible to observe the conditions of the upstream slopes below the water level.

During the site visit no items of concern were noted.

4.0 UPDATED STRUCTURAL STABILITY ASSESSMENT - §257.73(d)(1)(i)-(vii)

The CCR rules require conducting periodic structural stability assessments by a qualified professional engineer to document whether the design, construction, operation and maintenance is consistent with recognized and generally accepted good engineering practices for the maximum volume of CCR and CCR wastewater that can be impounded therein.

4.1 Foundations and Abutments - §257.73(d)(1)(i)

As noted above, the foundation soils for the BAPs and NSP generally consist of stiff to hard sandy clays and compact to dense sand. As discussed below, the embankment fill appears to be well-compacted. The foundation soils and abutments of the BAPs and NSP are stable.

Parts of the foundation soils for PDP-5 embankments are founded on the existing bottom ash of underlying PDP-1, 2, and 3 which were previously closed as landfills. Based on particle size, the bottom ash classifies as very loose to medium dense, poorly graded sand at some locations and silts at other locations and depths. Based on the above mentioned ETTL reports and the preparation of foundation materials during construction, the foundations and abutments are generally considered to be stable. The possibility of liquefaction of bottom ash in the foundation is considered in the Safety Factor Assessment report (Golder, 2021).

4.2 Slope Protection - §257.73(d)(1)(ii)

The downstream slopes of the BAPs, NSP and PDP-5 embankments are protected from erosion and deterioration by the establishment of a vegetative cover. Portions of the EAP and the NSP adjacent to Martin Lake are protected from wave action with roller compacted concrete. The vegetative cover is inspected weekly for erosion, signs of seepage, animal burrows, sloughing, and plants that could negatively impact the embankment. For the BAPs and NSP, the interior slopes are protected from wave action by concrete revetment mats or riprap. The slopes of PDP-5 are covered with vegetative cover for erosion protection.

4.3 Dikes (Embankment) - §257.73(d)(1)(iii)

4.3.1 Bottom Ash Ponds and Scrubber Pond

No construction documentation or testing details of the original BAPs and NSP embankment fills are available. Based on the borings, the embankments were constructed using a clayey fill likely from an on- site borrow source. Golder's subsurface investigation of 2012 and ETTL's investigation of the EAP in 2008 comprised boreholes drilled into the embankment. These borings found the embankment soils to generally consist of stiff to hard sandy clay, clayey sand, and clay, consistent with well-compacted fill.

The WAP and NSP were relined in 1989; however, the liner system did not meet the requirements of 40 CFR § 257.70(b). Consequently, the EAP was retrofitted with a compliant liner in 2020, and the WAP is currently undergoing retrofitting. The NSP is scheduled to be retrofitted in 2022. Besides the retrofitted liner system, no significant changes have been made to the BAPs and NSP embankments since their initial construction.

Based on a review of past inspection reports and on recent observations, the BAPs and NSP embankments are sufficient to withstand the range of loading conditions they are subjected to.

4.3.2 PDP-5

PDP-5 was constructed with on-site soils in 2010/2011. Within the base of PDP-5, a 2-foot thick layer clay liner was placed was placed over PDP-1, PDP-2 and PDP-3. A 3-foot thick clay layer was placed over the upstream slope and beneath the new PDP-5 embankment. A 3-foot thick clay layer overlain with 18 inches of topsoil was placed over the portions of PDP-1, PDP-2, and PDP-3 beyond the PDP-5 embankment. Sections of the PDP-5 embankment overlie the bottom ash from the closed ponds.

The clay liner was specified to be installed and compacted in 6-inch lifts, to at least 95% Standard Proctor maximum dry density at 0% to 4% over optimum moisture content. The embankment was specified to be constructed in loose lifts of 8-inch maximum thickness, followed by compaction to 95% standard Proctor maximum dry density.

Based on a review of past inspection reports and on recent observations, each of the embankments are sufficient to withstand the range of loading conditions they are subjected to.

4.4 Vegetated Slopes - §257.73(d)(1)(iv)

The exterior slopes of the surface impoundments at the MLSES are vegetated to control erosion. Luminant maintains the vegetation in a manner that ensures that the weekly inspections required under the CCR Rule can be conducted; however, the height of the vegetation varies depending on the frequency of maintenance.

The US Court of Appeals for the District of Columbia Circuit issued an Order that remanded and vacated the CCR Rule requirement that vegetation on the exterior portions of dikes on CCR surface impoundments be maintained not to exceed 6 inches in height. EPA proposed to address this requirement in 2018 but it has not finalized any new requirements.

4.5 Spillways - §257.73(d)(1)(v)

There are no spillways on any of the surface impoundments.

4.6 Hydraulic Structures - §257.73(d)(1)(vi)

The only subsurface penetrations in the BAPs and NSP are 24-inch dewatering lines that pass through the WAP and the NSP embankments, which are used for decanting process wastewater from within the ponds. These dewatering lines connect to a collection sump at the low pressure ash water pump station located to the south of the NSP. All other piping passes above the crest of the embankments.

According to as-built drawings prepared by HDR Engineering, Inc., a 14-inch diameter HDPE overflow pipe, encased in a 20-inch diameter HDPE pipe passes through the southern embankment. Flow through this pipe is controlled with a valve located near the toe of the embankment.

Discharge from PDP-5 is accomplished using a submersible pump suspended from a pump platform adjacent to the overflow pipe along the southern embankment. All other piping passes above the crest of the embankment.

No significant deterioration, deformation, distortion, bedding deficiencies, sedimentation, or debris were observed that may negatively affect the operation of the surface impoundments.

4.7 Downstream Slopes Adjacent to Water Body - §257.73(d)(1)(vii)

The east slope of the EAP and the south slope of the NSP are adjacent to Martin Lake. The normal pool elevation of Martin Lake is at El. 306 ft-msl. This water level is relatively shallow against the exterior slope. Moreover, the exterior slopes of both the east side of the EAP and the south side of the NSP are lined with roller compacted concrete to protect these slopes from erosion, as well as seepage. Nevertheless, the impact of drawdown of Martin Lake on the stability of the BAP and NSP embankments is considered in the Safety Factor Assessment report (Golder, 2021). The results of stability analysis indicate that the factor of safety for rapid drawdown conditions is approximately 1.6, which exceeds the typically required value of 1.30.

4.8 Structural Stability Deficiencies - §257.73(d)(2)

No structural stability deficiencies were identified during this assessment.

5.0 CONCLUSIONS

Based on our review of the information provided by Luminant, on information prepared by Golder Associates Inc., and on our on-site observations, no structural stability deficiencies were identified in the surface impoundments during this assessment.

6.0 REFERENCES

ETTL Engineers and Consultants Inc. 2008. Geotechnical Investigation, Luminant Martin Lake SES, Vertical Expansion of Permanent Disposal Ponds 1, 2, and 3, Tatum, Texas.

ETTL Engineers and Consultants Inc. 2009. Geotechnical Investigation, Luminant Martin Lake SES, Vertical Expansion of Permanent Disposal Ponds 1, 2, and 3, Tatum, Texas – Supplemental Seepage.

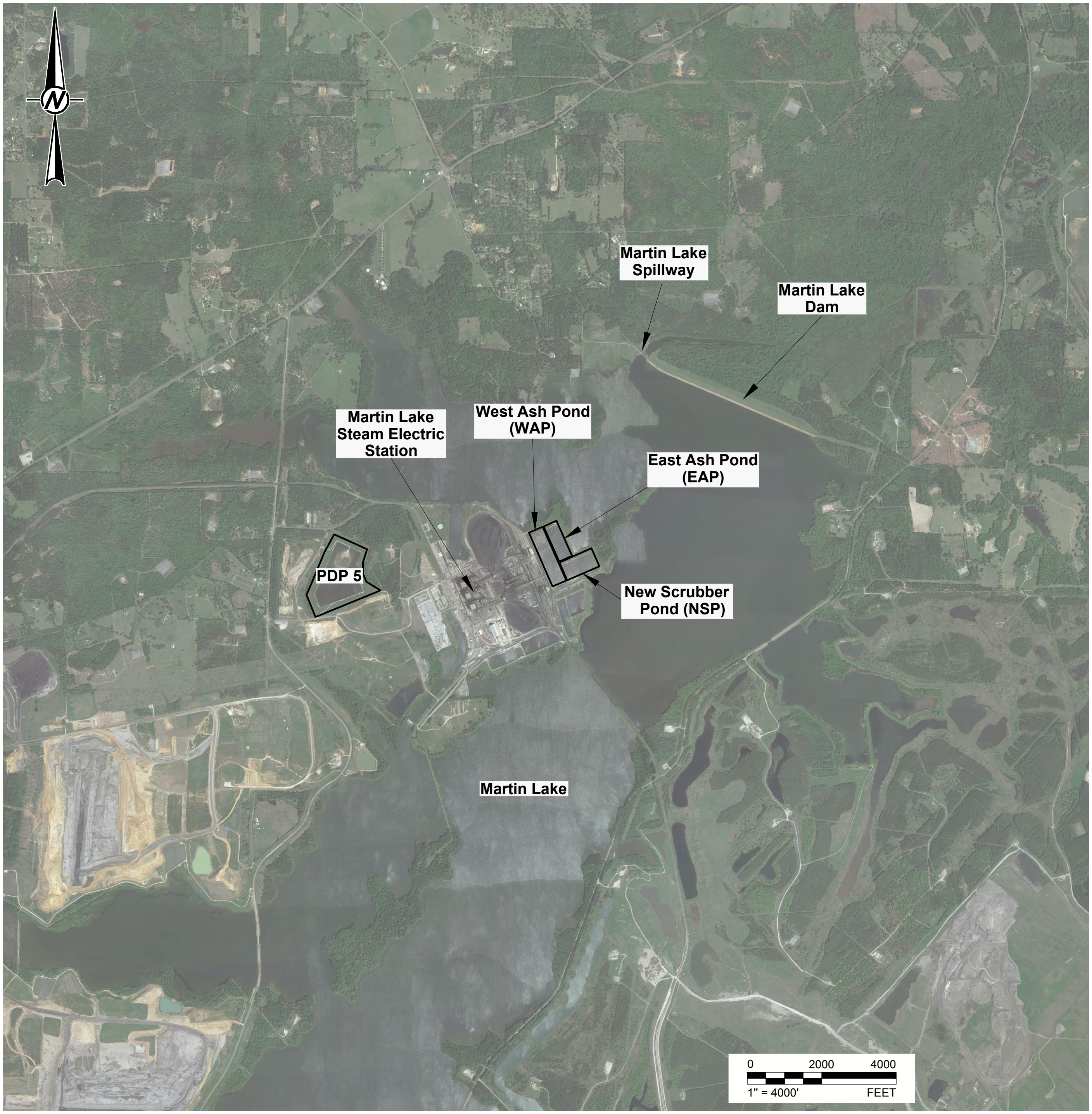
Golder Associates Inc. 2021. Factor of Safety Assessment Update, Luminant Martin Lake Steam Electric Station.

Golder Associates Inc. 2012. Ash and Scrubber Ponds and Permanent Disposal Pond #4 – Stability Investigation Report, Luminant Martin Lake Power Plant, Rusk County, Texas.

Golder Associates Inc. 2016. Structural Stability Assessment Report, Luminant Martin Lake Steam Electric Station.

HDR Engineering Inc. 2011. Martin Lake Steam Electric Station, Rusk County, Texas – Permanent Disposal Pond #5 – As Recorded Drawings.

Figures



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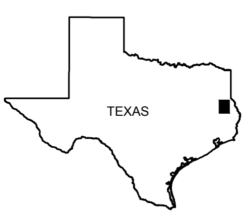

PHOTOGRAPH LOCATION

CLIENT
LUMINANT GENERATION COMPANY

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
ASH POND AREA AND PDP-5
STRUCTURAL STABILITY ASSESSMENT UPDATE

TITLE
SITE PLAN

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-10-01
DESIGNED	AJD
PREPARED	AJD
REVIEWED	PJB
APPROVED	PJB

PROJECT NO.	CONTROL	REV.	FIGURE
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CLIENT
LUMINANT GENERATION COMPANY

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
ASH POND AREA AND PDP-5
STRUCTURAL STABILITY ASSESSMENT UPDATE

TITLE
ASH POND AREA MAP

CONSULTANT

GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-10-01
DESIGNED	AJD
PREPARED	AJD
REVIEWED	PJB
APPROVED	PJB

REFERENCE(S)
BASE MAP TAKEN FROM GOOGLE EARTH, IMAGERY DATED 4/9/19.

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LUMINANT GENERATION COMPANY

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
ASH POND AREA AND PDP-5
STRUCTURAL STABILITY ASSESSMENT UPDATE

TITLE
PDP-5 AREA MAP

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-10-01
DESIGNED	AJD
PREPARED	AJD
REVIEWED	PJB
APPROVED	PJB

REFERENCE(S)
BASE MAP TAKEN FROM GOOGLE EARTH, IMAGERY DATED 4/9/19.

PROJECT NO.	CONTROL	REV.	FIGURE
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