

RAILROAD COMMISSION OF TEXAS
HEARINGS DIVISION

SMRD DOCKET NO. C15-0011-SC-50-C

LUMINANT MINING COMPANY LLC

**APPLICATION FOR RENEWAL/REVISION OF PERMIT NO. 50A, KOSSE MINE
LIMESTONE AND ROBERTSON COUNTIES, TEXAS**

**ORDER OF APPROVAL OF APPLICATION FOR
RENEWAL/REVISION OF PERMIT NO. 50A, RENUMBERED AS 50B**

Statement of the Case

Luminant Mining Company LLC (Luminant), 1601 Bryan Street, Dallas, Texas 75201, applied to the Railroad Commission of Texas (Commission), Surface Mining and Reclamation Division, for a renewal/revision of its Permit No. 50A, Kosse Mine in Limestone and Robertson Counties. The application was filed pursuant to the Texas Surface Coal Mining and Reclamation Act, TEX. NAT. RES. CODE CH.134 (Vernon Supp. 2015) (Act) and the Commission's "Coal Mining Regulations," Tex. R.R. Comm'n 16 TEX. ADMIN. CODE CH. 12 (West 2015) (Regulations). The 15,040-acre permit area is located along State Highway (SH) 7 approximately 6 miles east of the town of Kosse, Texas and approximately 12 miles west of Marquez, Texas. Copies of the application were filed in required county and Commission offices and distributed to required local, state, and federal agencies for review and comment. Notice of the application was published in newspapers of general circulation in Limestone and Robertson Counties. Written comments were made on the application following public notice and notice to agencies and landowners. No hearing was requested.

Luminant has addressed all issues relating to the application in accordance with the Act and Regulations. The parties to the proceeding are the applicant, Luminant, and Staff of the Commission's Surface Mining and Reclamation Division (Staff).

Luminant has accepted the Staff's Technical Analysis with addenda. Based upon the application, as supplemented, evidence presented, and the Staff's Technical Analysis and addenda, and considering comments filed, all factual issues have been addressed as required by the Act and Regulations, with the proposed permit provisions as set out in the Findings of Fact and Appendix I, and the Soil Testing Plan included as Appendix II.

Luminant's currently accepted reclamation performance bond is a blanket collateral bond for all of its statewide mining operations in the amount of \$1,100,000,000. This bond is secured by a carve out from the superpriority perfected first-lien security interest in certain real property and personal property of Texas Competitive Electric Holdings Company LLC, the indirect parent company of Luminant. The Commission's June 17, 2014 Order accepting the bond contemplated a bond amount of \$149,065,635 for the Kosse Mine permit. Staff recommends that the Kosse Mine bond be increased to \$168,583,171, which is less than Luminant's estimated reclamation costs of \$176,165,220. Because Luminant's current bond exceeds the sum of the estimated reclamation costs for its Texas mines, including Luminant's proposed increase to the bond amount attributable to the Kosse Mine, no changes to Luminant's existing blanket collateral bond are necessary as a result of this permit renewal.

After review of the application and supplements, exhibits, the Staff's Technical Analysis and Addenda, and comments, the examiner recommends that the Commission approve the application, as supplemented, with the permit provisions contained in Appendix I and the Soil Testing Plan contained in Appendix II. The Commission hereby adopts the Findings of Fact and Conclusions of Law and determines

that the renewal/revision application is approved.

FINDINGS OF FACT

1. By letter dated April 27, 2015, received by the Commission on April 28, 2015, Luminant Mining Company LLC (Luminant), 1601 Bryan Street, Dallas, Texas, 75201 submitted its application for a surface mining and reclamation permit for renewal/revision of its Kosse Mine, Permit No. 50A. The application was filed pursuant to the Texas Surface Coal Mining and Reclamation Act, TEX. NAT. RES. CODE CH.134 (Vernon Supp. 2015) (Act) and the Commission's "Coal Mining Regulations," Tex. R.R. Comm'n 16 TEX. ADMIN. CODE CH. 12 (West 2016) (Regulations). The 15,040-acre permit area is located in Limestone and Robertson Counties along State Highway (SH) 7 approximately 6 miles east of the town of Kosse, Texas and approximately 12 miles west of Marquez, Texas. Luminant's permitted Bremond Mine (formerly, Twin Oak Mine), near Bremond, Texas, Permit No. 49A, is approximately 4.9 miles south of the Kosse permit area. The permit area is bound: on the west by various property tracts and Limestone County Road (LCR) 712 and FM 2749; on the north by various property tracts, Cox Creek and LCR 716; on the east by various property tracts and the FM 1246 and FM 937 intersection near Oletha, Texas; and on the south by various property tracts and Robertson County Road (RCR) 477. Luminant operates the lignite mine. The mine supplies fuel to the Oak Grove Steam Electric Station. Permit No. 50A was issued on February 7, 2012, and contains approximately 15,040 acres. The proposed Permit No. 50A Renewal/Revision boundary also consists of approximately 15,040 acres. Luminant requests approval of the mining of approximately 2,304 acres during the permit term (2016 – 2020) and proposes to mine in four of the mine areas over the term of the proposed renewal (SD2).
2. The Director, SMRD, determined the 14-volume application to be administratively complete on May 5, 2015. Staff of Surface Mining and Reclamation Division (Staff) filed two comment letters listing application deficiencies and providing non-substantive comments (hereinafter, "CL1" and "CL2"). Luminant filed two supplemental documents (hereinafter, "SD1" and "SD2") in response. These documents were filed as follows: CL1, by letter dated July 2, 2015; SD1, by letter dated November 19, 2015; CL2, by letter dated December 22, 2015; and SD2, by letter dated February 26, 2016. Staff filed its Technical Analysis ("TA") by letter dated March 21, 2016. Staff supplemented its TA on March 22, 2016, with revisions to Appendix III of the TA.
 - (a). All information contained in the supplements was for the purpose of supplementation, clarification, limitation, or correction of data and information addressed in sections of the administratively complete application. The application and all supplements were appropriately placed on file for public inspection. The information contained in the supplemental documents does not constitute a material change to an application for which additional notice must be provided pursuant to §12.212(d) of the Regulations. The required public notice was published after the filing of the application. The notice indicated that the application might be further supplemented. The supplementary documents were filed to address Staff exceptions to compliance and other comments. The supplements do not result in any material effects on landowners or the environment that are greater than those initially proposed or that create a need for additional notice.
 - (b). By letter dated November 24, 2015, the Director, SMRD, sought a 60-day extension of time for Staff to review the application pursuant §134.085(d) of the Act, claiming that portions Luminant's SD1 (those pertaining to Section .116) did not address any application deficiency noted by Staff. The Hearings Examiner determined, in a letter dated December 4, 2015, that this request was improper because Staff's statutory 120-day review period under the Act was not close to expiration. By letter dated December 8, 2015, the Director, SMRD, withdrew the

request but reserved the right to renew it if necessary.

3. Staff notes no remaining substantive deficiencies; however, Staff recommends six permit provisions, including revisions to Existing Permit Provision No. 1, the addition of five new permit provisions, and the removal of five existing permit provisions. All accepted permit provisions are set out in Appendix I to this Order.
4. The application has met the requirements set out in § 12.107 for format and content, with adoption of the Findings of Fact, the permit provisions contained in Appendix I, and the Soil Testing Plan contained in Appendix II. Form SMRD-1C was filed, and it contains information required by §§12.116-12.154 [§12.107(a)]. In the application, as supplemented, the information is current, presented clearly and concisely, and is supported by appropriate references [§12.107(b)]. Technical data has been submitted as required [§12.107(c) and (e)], and the data were prepared by or under the direction of professionals in the subjects analyzed [§12.107(d)]. A responsible official of the applicant verified the application, as supplemented, under oath that the information is true and correct to the best of the official's information and belief [§12.107(g)].
5. The application was filed at least eight months prior to the projected commencement of operations as set out in §12.106(b)(1) of the Regulations. The required filing fee of \$3,000 has been paid.
6. Notice of application was published once each week for four consecutive weeks in a newspaper of general circulation in the locality of the surface mining and reclamation operations as follows: on July 30 and August 6, 13, and 20, 2015, in *The Groesbeck Journal*, and on July 24 and 31 and August 7 and 14, 2015, in *The Bremond Press*. Luminant identified the location of the public offices where the application, as supplemented, was filed in accordance with §12.122 of the Regulations and submitted an original affidavit and news clippings showing publication in accordance with §12.123 of the Regulations. The notice of application as published contains all information required by the Act and the Regulations. The notices contained all required information concerning the applicant, the location and boundaries of the permit area, the availability of the application for inspection and the address to which comments were to be sent.
7. A copy of the application was filed for public review in the offices of the Limestone and Robertson County Clerks; copies were also filed with the Railroad Commission of Texas in Austin, Texas.
8. In accordance with its policy, the Commission placed notices of application in first-class mail on July 29, 2015, to owners of interests in lands within the permit boundary and tracts adjacent to the permit boundary. Returned notices of this mailing for which updated or corrected addresses were available were re-mailed. Luminant was advised of notices that were returned with insufficient addresses, and Luminant updated addresses as available.
9. On July 27, 2015, the Commission placed notices of application and cover letters as first-class mail or interagency mail, as appropriate, to the required divisions of the Texas Commission on Environmental Quality (TCEQ); Texas Historical Commission (THC); University of Texas, Bureau of Economic Geology; Texas State Soil and Water Conservation Board; Texas Parks and Wildlife Department (TPWD); General Land Office; USDA, Natural Resources Conservation Service (NRCS); USDI Fish and Wildlife Service (USFWS); USDI Office of Surface Mining Reclamation and Enforcement; U.S. Department of the Army Corps of Engineers (USACE); and to the Limestone and Robertson County Clerks and County Judges.
10. No individuals filed comment letters; one state agency, TPWD, filed comments with the Commission by letter dated February 16, 2016; and one federal agency, USFWS, filed comments by letters dated

July 16, 2015 and September 24, 2015. TPWD's and USFWS's comments regarding the proposed renewal/revision application are addressed in Finding of Fact No. 32.

11. No request for hearing was filed, and no hearing was held.
12. Section .116 of the application, as supplemented, includes all information required to show organizational information, ownership and control, current officers and directors, updated compliance information, and other mining permits and identifications. In addition, Section .117 of the application, as supplemented, contains right-of-entry documentation.
 - (a). Luminant is a Texas limited liability company. Luminant provided its resident agent, CT Corporation, 350 North St. Paul Street, Dallas, Texas 75201. The following is the current ownership and control of Luminant. Energy Future Holdings Corp. is the parent corporation of Energy Future Competitive Holdings Company LLC. Energy Future Competitive Holdings Company LLC is the parent corporation of Texas Competitive Electric Holdings Company LLC. Texas Competitive Electric Holdings Company LLC is the corporate parent of Luminant Holding Company LLC, the corporate parent of Luminant Mining Company LLC. All officers and directors of these entities have been identified in the application, as supplemented.
 - (b). Luminant proposes to conduct mining operations on property it owns, on property owned by affiliates, and on property where a valid coal and lignite lease exists. Oak Grove Mining Company, LLC and Oak Grove Power Company LLC own certain tracts or are the lessee(s) of certain land tracts located within the proposed permit area. Luminant does not propose any surface mining operations on any property for which it does not have a valid right-of-entry. Information on the right-of-entry and property ownership is detailed in Sections 116 and 117 of the permit application, Appendices 116-B and 116-C (SD1 and SD2). The applicable tracts are shown on the *Property Ownership Map*, Plates 116-1 and 116-2 located in Section 116 of the application, as supplemented in SD1. The location of occupied dwellings was updated in SD1.
 - (c). Section .116 of the application, as supplemented, includes identification of all tracts within and adjacent to the permit area and owners of all interests in those tracts (Appendices B and C, Section .116, as supplemented (SD1), and Plates 116-1 and 116-2, Property Ownership Map (SD1). Section .116, Appendix D, as supplemented in SD2, contains required compliance information. Section .116, Appendix E (SD1 and SD2) contains required information regarding lignite interests that have been severed from the surface estate. Section .116, Appendix F, Tables 116-F-1 and 116-F-2 of the application includes all oil/gas leasehold and right-of-entry information for those property tracts proposed to be disturbed and/or mined during the permit term. Luminant indicates that accommodation agreements have been executed with oil and gas entities with leases on lands, with the exception of Trend Gathering and Treating LP, Energy Transfer Fuel, LP, and J. Sugar Co., Inc. The agreements have been filed in the Limestone and Robertson County Courthouses.
 - (d). The information provided regarding violations and fee payment has been compared with the information contained in the Applicant Violator System (AVS) database and the AVS database has been updated as needed. The Office of Surface Mining Reclamation and Enforcement operates the AVS database to identify violators across the country. The AVS database has been queried to determine whether Luminant or any controller identified in the application, or found in the database, currently has any outstanding violations at coal mines owned or operated in the United States. The system also indicates whether Luminant or any controller is delinquent in the payment of abandoned mine land (AML) reclamation fees. A

report of the findings resulting from a query of the AVS database is provided in Appendix VI of Staff's TA. No pending violations or non-payment of AML fees were found to exist. The AVS system links Luminant and/or its controllers to eighteen (18) outstanding violations, bond forfeitures, and/or civil penalties. The violations are linked to Luminant through William K. Reilly. Luminant indicates that William K. Reilly, a director of Energy Future Holdings Corp., served as a director of DuPont from 1993 until April 2012, and the noted violations appear to be related to DuPont and one or more settlement agreements related to its Island Creek Coal Mine. Luminant is investigating the identified violations to determine the extent of Mr. Reilly's association with them, if any. Based on the information in the AVS database, all the noted violations are under the Island Creek settlement. No outstanding or unabated violations were found.

13. The requirements of §12.118(a), (b), and (c) of the Regulations have been met.
 - (a). The permit area is not within an area designated as unsuitable for surface mining activities under §§12.75 - 12.85 of the Regulations, and not within any area under study for designation in an administrative proceeding.
 - (b). Luminant does not claim an exemption under §12.118(b) provided for applicants having made substantial financial commitments prior to January 4, 1977.
 - (c). Luminant will not conduct surface mining activities within 300 feet of an occupied dwelling other than those owned by Luminant.
14. Luminant has included information in the application, as supplemented, in compliance with §12.119 for the life of mine and §12.125(1) for the size, sequence, and timing of sub-areas of the mine.
 - (a). Areas proposed for mining during the proposed permit term (2016 – 2020) and for the life-of-mine area has been included in the application, as supplemented. The application, as supplemented, includes information which complies with the requirements of §12.119(a) of the Regulations for the anticipated starting and termination dates of each phase of mining and the anticipated number of acres of land to be affected for each phase of mining and over the total life of the permit. (SD2) Luminant proposes to recover approximately 9.45 million tons of lignite per year during the proposed five-year renewal term, with approximately 47.26 million tons projected for recovery during the proposed renewal term. The Mine Years and proposed Mined and Affected Acres are shown in the following table. "Out Years" 2021-2025 describe the next permit term subject to Commission approval (SD2, Table 119-1).

Year	Mined Acres	Affected Acres
2015	1,351	1,554
2016	422	485
2017	583	670
2018	436	501
2019	408	469
2020	274	315
2016-2020	181	208
2021-2025*	2,073	2,384

Note: Mined acres include auxiliary areas.

* Denotes out years.

- (b). The application includes information for the size, sequence, and timing of sub-areas of the permit and the life-of-mine anticipated permit terms required by §12.125(1) of the

Regulations (Application, SD1 and SD2) and a Life-of-Mine Map, Plates 125-1 and 125-2 (SD2). Luminant proposes mining approximately 2,304 acres during the permit term (2016 – 2020) and an additional 2,073 acres in future terms (2021 – 2025) and proposes to mine in areas DI, DIII, DV, and EI and several auxiliary areas during the requested permit term. Luminant proposes mining and other mining-related disturbances on the following approximate acreages as set out in Table 125-1, Section .125, SD2, as follows:

MINING AREA	YEAR	MINE BLOCK ACRES
DI	2015	210
DI	2016	125
DI	2017	181
DI	2021-2025*	345
DI Aux. Area	2016-2020	108
DI Aux. Area No. 7	2015	19
Heads Creek Aux.	2016-2020	73
DIII	2015	319
DIII	2018	90
DIII	2019	95
DIII	2021-2025*	241
DV	2017	155
DV	2018	133
DV	2019	135
DV	2020	138
DV	2021-2025*	703
EI	2015	803
EI	2016	297
EI	2017	247
EI	2018	213
EI	2019	178
EI	2020	136
EI	2021-2025*	784

* Denotes out years.

15. Luminant has included information in compliance with §12.125(2) for a description and identification of cultural, historical, and archaeological resources listed on or eligible for listing on the National Register of Historic Places and known archaeological sites within the proposed permit area and adjacent areas. Luminant has provided information in accordance with §12.151 for measures to be used to prevent or minimize adverse impacts on such resources or on the interests of persons who have valid existing rights. Sites identified included those eligible for listing in the National Register of Historic Places, protected cemeteries and burial grounds, sites requiring additional testing, sites determined ineligible for listing in the NRHP, and site mitigation status as required. Of the 272 sites identified, 41 were identified since submission of Luminant's previous permit renewal application. Of these sites, 37 were determined to be located within first five-year permit term planned disturbance. A schedule was included for mitigating impacts to sites of unknown significance that cannot be avoided by mining and/or construction of various structures. In Section .151 of the permit Luminant included its Protection, Testing, Treatment, and Mitigation Plan, including compliance with the Memorandum of Agreement between the Commission and the Texas Historical Commission, treatment [avoidance, testing, or mitigation by category (NRHP-listed, sites eligible for such listing, sites requiring additional evaluation, and sites that are ineligible)], and a treatment plan for newly discovered sites. Existing

Permit Provision No. 1 was previously approved to protect these sites until eligibility is determined and appropriate action taken for each site that is unknown at this time or for which eligibility has not yet been determined. The 37 sites that must be protected are shown on Figure 125(2)-I (SD1) and are listed in Table 125(2)-II (SD1 and SD2). Several sites have not yet been tested or testing is not complete and the sites must be avoided until protected, mitigated, or determined ineligible for listing. Therefore, Staff again recommends proposed Permit Provision No. 1, with slight modifications, stating, "All cultural resource sites within the permit boundary, identified during or subsequent to baseline surveys, for which eligibility for nomination to the National Register of Historic Places has not been determined, shall not be disturbed by mining and/or mining-related activities. Copies of all correspondence items, including all attachments, between Luminant and the Texas Historical Commission shall concurrently be provided to the SMRD." This information indicates the continued need for the permit provision as modified in Staff's proposal. The Commission approves Permit Provision No. 1.

16. Luminant has provided information that complies with §12.120 for personal injury and property damage insurance. Luminant has provided adequate proof of insurance coverage in the form of a certificate of liability insurance coverage, which was previously approved administratively by letter dated August 5, 2015 and effective from August 1, 2015 through August 1, 2016, in compliance with §12.311 of the Regulations.
17. The application, as supplemented in SD1 and SD2, includes identification of other licenses and permits required in accordance with §12.121 to address all areas proposed for inclusion in the proposed permit area. This listing includes: the TCEQ Texas Pollutant Discharge Elimination System (TPDES) wastewater discharge permit; TCEQ water use permit for Area D; TPDES stormwater multi-sector general permit; TPDES stormwater construction general permit; TCEQ solid waste registration; U.S. Environmental Protection Agency (EPA) hazardous waste identification number; USACE Nationwide 21 permit for wetlands; USACE Nationwide 21 permit reauthorized, February 26, 2013, individual permits for wetlands for Permit No. 50A (E Area and D Area); Mine Safety and Health Administration identification; TPWD scientific permit; and USFWS fish and wildlife permit (Interior Least Tern Recovery). Luminant updated Section .121 of the application and Appendix A thereto in SD2. Copies of issued permits must be provided to the Commission upon receipt.
18. All requirements have been met for §§12.122, 12.123, and 12.124 for identifying the location of the public office(s) for public availability of the application, newspaper identification and publication, description of existing environmental resources that could be impacted by the operations, respectively.
19. The application, as supplemented in SD1, provides an adequate description of the hydrology and geology of the proposed permit area and adjacent areas as required by §§12.126 - 12.127 of the Regulations.
 - (a). Hydrological characteristics of groundwater and surface water have been adequately described. Groundwater for the study area occurs in the Simsboro, Calvert Bluff and Hooper Formations of the Wilcox Group, as well as the Carrizo Sand Formation in the Claiborne Group; Figure 126-4, Section 126 of the application depicts the locations of the outcropping and downdip portions of these aquifers. Water-bearing properties of geologic units are included in Table 126-1. Overburden sand thickness information is included on Plates 127-9 and 127-10. Sand units SD1, SD2, OBU, ISD1, ISD2, IBU, USD1, USD2, UBU, SIM1, and SIM2 were identified and are described in Sections 3.2.3 through 3.2.5 of Section 127 of the report contained in the application. The top of the Simsboro Formation (Sands SIM1 and SIM2) is located from less than 10 feet to more than 100 feet beneath the lowest lignite seam, L4 in the initial permit area and L8 in the expansion permit area. Appendix 127-C contains a summary of pH, acid/base accounting, percent sand, percent clay, boron and selenium for the

non-lignite stratigraphic units.

- (b). The application as supplemented in SD1 contains detailed geologic information specific to the proposed renewal/revision area. The geological information provided includes a description of the thickness and extent of the lignite seams and physical and chemical characteristics of the overburden, interburden, and underburden, locations of geologic data points and cross sections from continuous cores drilled between 1987 and 2014 within the proposed permit area. Some 1987 data were replaced in 2006 due to quality concerns. Forty-nine cores were used to characterize the permit area. Figure 127-3 was revised to include one of the initial 30 cores that had been omitted from the figure. Additional data, including lab data, were provided for Core CC-87-08(R).A licensed professional geoscientist certified Section .127.
 - (1). Revised Plate 127-1 (Geologic Cross Section Location Map, SD-1) shows cross-section locations in the approved permit area, with core and gridhole locations. Plates 127-2 through 127-7 show geologic cross-sections within various portions of the permit area. Plate 127-8 depicts the elevations (in ft amsl) of the tops of the L3 and L8 lignite seams, along with lignite void areas, core and gridhole locations, and auxiliary areas. Overburden thickness and overburden sand thickness are provided on Plates 127-8 - 127-10. In the application, Luminant identified overburden, interburden and underburden units with a summary of average, maximum, minimum and standard deviation values for pH, acid-base accounting, sand content, clay content, boron, selenium and percent pyritic sulfur; the units include sand units, interbedded sand, silt and clay units, and clay units (Appendix 127-C, *Stratigraphic Unit Descriptions and Statistics*). Luminant also analyzed the core chemical characteristics of the overburden intervals for suitability as a topsoil and subsoil substitute. Suitable overburden intervals for each core are identified, as reviewed by Staff and in accordance with Staff's TA, as further discussed in Section .145(b)(4).
 - (2). The information from the cores, cross sections, and other data have been analyzed and provide sufficient information to identify all strata above and immediately below the lowest coal seam to be mined and to determine the quality of the overburden and interburden.
20. Luminant adequately describes the groundwater hydrology of the permit area and adjacent areas in Section .128 of the application as supplemented. The groundwater baseline data has previously been submitted and approved by the Commission in previous applications for permits or permit renewals for this mine. This renewal/revision application updated inventories for water, oil and gas wells to identify current conditions and updated plates to show the proposed mine plan. Otherwise, this renewal/revision application presented the same data contained in the last permit renewal/revision application for the Kosse Mine that the Commission previously approved. The updated information included in this application, along with the approved permit, adequately characterizes the groundwater hydrology.
- (a). The approved permit contains 62 monitoring wells (including one replacement well) installed to characterize the baseline groundwater quantity and quality. Aquifer test results for 26 of these wells were provided in Appendix 128-C and summarized in Table 128-5. Of the 62 monitoring wells, 58 wells were used for monitoring of baseline water quality and water level monitoring of the Calvert Bluff overburden, the interburden zones, the Calvert Bluff underburden, and the Simsboro Formation underburden, while 4 wells were used for aquifer testing only (Table 128-1). The information provided in the approved permit included a generalized overburden potentiometric surface map (Plate 128-5), underburden potentiometric surface maps (Plates 128-6 and 128-7), and groundwater sampling results for chemicals and

trace metals (Tables 128-2 and 128-3). Plates 128-2 and 128-3 depict well locations for water wells and oil and gas wells, respectively.

- (b). The principal sources of shallow groundwater in the permit area are sand units in the Calvert Bluff Formation and the Simsboro Formation. Results of groundwater sampling are summarized in Tables 128-2 (chemicals) and 128-3 (trace metals), and Appendix 128-B contains the lab sheets for the laboratory analysis results. Although values vary, overburden groundwater values determined from the 2004-2007 data analyses were: (1) Calvert Bluff Overburden: pH, 6.3 to 7.5 standard units, averaging about 7; total dissolved solids (TDS) concentrations, 151 to 2,720 mg/L, averaging about 620 mg/L; dissolved iron concentrations, nondetectable to 2.8 mg/L, averaging about 0.3 mg/L; dissolved manganese concentrations, nondetectable to 1.9 mg/L, averaging about 0.3 mg/L.; (2) Calvert Bluff Underburden: pH, 6.4 to 7.6 standard units, averaging about 7; TDS concentrations, 172 to 1,570 mg/L, averaging 450 mg/L; dissolved iron concentrations, nondetectable to 1.6 mg/L; and dissolved manganese concentrations, nondetectable to 1.1 mg/L; and (3) Simsboro Underburden: pH, 6.2 to 7.5 s.u., averaging about 7; TDS concentrations, 117 to 1,150 mg/L, averaging 330 mg/L; dissolved iron concentrations, nondetectable to 7.8 mg/L; and dissolved manganese concentrations, nondetectable to 2.1 mg/L. The information contained in the approved permit as updated includes the hydraulic conductivities, hydrologic data from a well inventory, data from monitoring and test wells, borehole geophysical logs, continuous overburden cores, overburden cores, and aquifer tests. Table 128-6 of the application for renewal/revision, as supplemented in SD1, lists approximately 281 water wells within the permit area and within approximately one mile of this boundary; there are approximately 33 additional wells included in this application. Approximately 47% are estimated to be used for domestic, livestock watering, or domestic irrigation purposes. One public water supply well held by Robertson County Water Supply Corporation is located approximately 1.5 miles southeast of the proposed permit area. The additional wells are primarily industrial. Of the identified wells, approximately 137 wells are for industrial use, 53 are unused, and 8 had an unknown use. Locations are shown on Plate 128-2 of SD1. Oil and gas wells and well locations within and adjacent to the proposed permit area are identified on Plate 128-3 and in Appendix 128-D of the application.
 - (c). Data provided indicates that the underburden sands and the overburden sands do not appear to be hydraulically connected. Overburden groundwater discharges into Steele Creek and Willow Creek and their tributaries. Sampling results from the first water-bearing stratum beneath the lowest lignite seam to be mined were included in the baseline information in the application as updated. No springs have been identified within the proposed permit area that will be affected by proposed mining operations [See Finding of Fact No. 21(d)].
 - (d). Monitoring of underburden groundwater indicates that water levels have dropped an average of 16 feet between 1987 and the present and Luminant posits that the drop is due to increased Simsboro Formation supply well usage; Staff concurs with this conclusion and notes a portion of the decrease may be due to recharge diminishment in the outcrop areas.
21. The surface water hydrology for the permit area is adequately described in the approved permit, Section .129. The surface baseline data has previously been submitted and approved by the Commission in previous applications for permits or permit renewals for this mine. This renewal/revision application presented updated plates to show the proposed mine plan. Otherwise, this renewal/revision application presented the same data contained in the last permit renewal/revision application for the Kosse Mine that the Commission previously approved. The description includes general information and baseline hydrologic conditions for primary creeks, tributaries, and impoundments. The surface water monitoring stations are adequately located to describe conditions

for the proposed permit area.

- (a). Plate 129-1, Surface Water Data Location Map, depicts watershed boundaries, surface water monitoring stations, and one-time surface waters within the proposed permit area. Several tributaries of Steele Creek (a tributary to the Navasota River in the Navasota River Watershed of the Brazos River Basin), including Willow Creek, Heads Creek, Cox Creek, and Owens Creek, drain the proposed permit area. Detailed surface water quantity and quality information for the proposed permit area is provided in the narrative section of the application, Section 129, in Tables 129-1 through 12, Figures 129-1 through 4, Plates 129-1 and 2, and Appendices 129-A through F (SD1). Approximately 200 premine impoundments (livestock or farm ponds) have been identified with locations and owners shown on Plate 129-2, Study Area Impoundments; however, none are major impoundments.
- (b). Based upon a study performed for the applicant by Pastor, Behling & Wheeler, LLC ("PBW"), there are over 200 naturally occurring or man-made impoundments within and near the proposed renewal/revision area. Twenty-four (24) of these water bodies were sampled within and near the proposed renewal/revision area for water quality (13 water bodies on July 12, 2005, and 11 water bodies on February 20-21, 2007). Water quality data are included in the application, Tables 129-9 and 129-10. Photographs of the ponds are included in Appendix 129-B. No major surface-water impoundments are located within the proposed permit area.
- (c). Surface water quantity and quality data were presented in the initial permit application from four baseline monitoring stations (Plate 129-1) from 12 months of sampling in 1987-1988 and 12 months of sampling in 2004-2005. Volume of flows at these four stations and methods used to measure flow are described. Stream flows were estimated using long-term historical records from the USGS for nearby stream stations at Upper Keechi Creek and Tehuacana Creek (Figure 129-1), that are similar in size, relief, climate, and vegetation as the primary watershed receiving drainage from the proposed permit area, Steele Creek. Streamflow conditions were estimated using Upper Keechi Creek, because its watershed size and geometry are most similar to the proposed permit area watersheds. Water quality data for monthly sampling events are included in Tables 129-7 (general chemistry) and 129-8 (metals), with laboratory analyses contained in Appendix 129-C. In addition, sampling results from a one-time sampling of 13 ponds within and near the proposed permit are included in Tables 129-9 (general chemistry) and 129-10 (metals). In 2005 Luminant's consultant collected baseline data for the then-proposed renewal/expansion area that was much smaller than the larger study area examined for the initially-approved permit, and that updated data was included in Luminant's previous application.
 - (1). An additional 12 months of data were collected from baseline monitoring stations and stations for the previously-approved expansion area. Monitoring stations are shown on Plate 129-1.¹ Photographs and descriptions are included in the application, Appendix 129-B. Monitoring stations approved for the existing permit term, as revised in consultant PBW's study, are proposed for use during the requested permit term (SW-1, Crest/Staff Gauge on Steele Creek upstream of renewal/revision area; SW-2A, Crest/Staff Gauge on Steele Creek downstream of renewal/revision area; SW-3, Staff Gauge on Willow Creek, formerly crest gauge for 1987 study; and SW-5, Staff Gauge on Heads Creek formerly, continuous recorder for 1987 study) as well as three proposed additional stream monitoring stations: SW-A, Crest/Staff Gauge on

¹ SW-1 through SW-3 and SW-5, and SW-A, SW-B, SW-C, SW-D, and SW-E for the proposed expansion area. Station SW-2 was relocated downstream of station SW-2A since very little flow was recorded in the 1987 study. Station SW-B was relocated to SW-E in that there was no flow at Station SW-B. Data for SW-C are not included in that its drainage area is not proposed for disturbance.

Cox Creek downstream of renewal/revision area; SW-D, Crest/Staff Gauge on Cox Creek upstream of renewal/revision area; and SW-E, Crest/Staff Gauge on Owens Creek downstream of renewal/revision area.

- (2). The water quantity and quality at these stations for the study period are summarized in Staff's TA pages 29-32. Monthly streamflow and water quality were measured at these stations.
 - (d). There are two significant springs in the area; however they are located 17 and 28 miles upstream of the proposed permit area and will not be affected by proposed mining operations. No other springs or seeps were identified in a door-to-door water well inventory when residents were also asked about springs or seeps on their properties.
 - (3). Information is provided for five wastewater permits issued by the TCEQ for US Silica Company, City of Thornton, City of Kosse, City of Bremond, and Luminant Generation Co. LP (f/k/a TXU Generation Co. LP).
22. Alternative water supplies have been identified to replace water supplies that may be affected and may require replacement as set out in §12.130 of the Regulations in Section .130 of the application. Luminant identified seven water rights in the vicinity of the proposed permit area, Table 130-1 and Figure 130-1. Three of these are downstream of the permit area: Water Right 5160 is held by Camp Cooley Ltd. on Steele Creek; Water Right 5298 is held by Luminant (the successor to TXU Electric Company) on Duck Creek; and Water Right 5931 is held by Luminant on tributaries of Steele Creek, Willow Creek, and Heads Creek within the central portion of the permit area. Sources of replacement water include public water systems that include several cities in the area, water supply corporations and others, deep wells into the Carrizo Wilcox, other aquifers, Lake Mexia, Lake Stamford, Lake Limestone, and Lake Navarro Mill. There are non-permitted diversions of 200 acre-feet of water or less used for domestic and livestock purposes that might be affected that are exempt from permitting. Impacts to stock ponds not located in mining areas are unlikely to be affected in that they are not dependent on runoff from streams controlled by mining activities. Luminant has acknowledged its responsibility to replace water sources used for domestic, agricultural, industrial, or other legitimate use if contamination, diminution, or interruption occurs as a proximate result of mining activities in accordance with the requirements of §12.130 of the Regulations. Potential impacts to groundwater users have been addressed in compliance with §12.146 of the Regulations.
23. All required climatological information has been provided for the permit area in the application, Section .131, in compliance with §12.131 of the Regulations for climatological information to characterize the proposed permit area. The report has been signed and sealed by a professional geologist. The study area is in the Modified Marine Subtropical Humid climatic region in Texas (Figure 131-1). Luminant presented regional temperature and precipitation data from the National Oceanic and Atmospheric Administration (NOAA) based on 2005 data from the Marlin, Texas station located approximately 26 miles west of the proposed permit renewal area. Mean annual precipitation was 36.63 inches for the years 1932 – 2004, as measured by the National Weather Service (NWS). For the years 1944 - 2004, the mean annual low temperature was 55.3° F (with the lowest mean monthly low temperature of 36.6° F in January) and the mean annual high temperature was 78.4° F (with the highest mean monthly high temperature of 95.9° in August), as measured by NOAA. Evaporation data was obtained from the Texas Water Development Board files for gross monthly evaporation, with a mean annual gross evaporation of 58.18 inches (Quadrangle 611) for the period of record 1954 – 2002. Local precipitation data were collected from one rain gauge operated by PBW and collected from October 2004 through March 2007 (Table 131-2), with the exception of December 20, 2004, when it was damaged, until February 17, 2005. Data from the NWS Cooperative Station in Thornton, approximately 10 miles northwest of the proposed permit renewal area, was used to

supplement the data for the missing period of time. The yearly total rainfall at the Thornton rain gauge was 36.98 inches, as supplemented, for 2006, compared to the PBW rain gauge for 2006 of 42.18 inches. The NWS station in Waco, Texas, approximately 45 miles west-northwest of the proposed permit renewal/revision area, provided wind speed and direction data for the period of record 1968-1980, indicating a most frequent annual wind direction of south and maximum sustained wind during the winter from strong cold fronts.

24. All required vegetative resource information for the proposed permit area is included in Section 132 of the application, as supplemented, and is sufficient to describe premine vegetation important for fish and wildlife habitat, and sufficient to predict the potential for the re-establishment of vegetation during reclamation. Luminant's consultant Blanton & Associates, Inc. (Blanton) conducted a baseline vegetation study in February 2015 for the 15,040 acre Kosse Mine permit area that is included in Section 132 of the application. Earlier surveys conducted include baseline reports by the firm now known as Atkins in 1987, 1991, and 2005, a baseline report by HDR Engineering, Inc. (HDR) in 2007, and the current baseline report from Blanton; summaries of these previous reports are included in the application. Additional surveys on the Navasota Ladies'-tresses (*Spiranthes parksii*) (an orchid) were also previously conducted by various firms and their findings incorporated into Blanton's report. In addition to a PBS&J report of a 2004 survey for the orchid, an additional HDR Navasota Ladies' Tresses Fall 2014 Field Survey Report for Permit No. 50A – Area D was included (Appendix 132-F), with an addendum containing supplemental information, Fall 2014 Field Survey Report, as well as the HDR Large-fruited Sand-Verbena (*Abronia macrocarpa*) May 2014 Field Survey Report for the Kosse Mine, Area D. SD 2 contains an appendix to this report, Appendix 132-G, Figure 1a, Large-fruited sand-verbena 2014 area of review – Proposed Project Area (USACE No SWF-2013-00349). These are two plants that are endangered in Robertson and/or Limestone Counties. The updated baseline report contained in the application, as supplemented in SD1 and SD2, adequately characterizes the proposed permit area for the renewal/revision area and is sufficient to describe premine vegetation important for fish and wildlife habitat, and sufficient to predict the potential for the re-establishment of vegetation during reclamation.
 - (1). The proposed permit area is located within the Post Oak Savannah vegetation area of Texas (Figure 132-2). A general location map is included (Figure 132-1, SD1). The types of vegetative communities within the 15,040-acre proposed permit area include: grasslands, 49.2%; upland hardwood forests, 30.5%; bottomland/riparian forests, 11.1%; hydric habitat, 3.8%; mesquite brushland, 1.7%; disturbed land (oil and gas well pads and paved roads), 1.4%; regenerative areas, 1.0%; cropland (primarily sorghum), 0.7%; and aquatic habitat, 0.6% (Table 132-1). Luminant included Plates 132-1 and 132-2 that depict vegetation and habitat types by color aerial photograph. The vegetation types are described in the application. Much of the area has been developed for agriculture; Bermudagrass and Bahiagrass dominate the pastureland areas. The hydric habitats are associated primarily with the creek floodplains. The application includes Plates 132-1 and 132-2, maps with depictions of topography, vegetation transects, and fish and wildlife sampling sites for the permit area. Information is included for vascular plant species and representative vegetation data for each habitat type.
 - (2). The application, as supplemented in SD1 and SD2, includes Appendix 132-C containing copies of correspondence from the USFWS regarding threatened and endangered species with the potential to occur in Robertson and Limestone Counties. Appendices 132-D, 132-E and 132-F (and their addenda) contain consultants' reports of surveys for the Navasota Ladies'-tresses orchid (*Spiranthes parksii*) within the approved permit area. The reports included aerial photo-mapping of survey areas and potential habitat. This orchid typically reaches 6-12 inches in height during florescence and has the potential for occurrence in Limestone and Robertson Counties. It is found within mature woodlands and occurring within upper reaches

of minor, intermittent tributaries of the Brazos and Navasota River Basins. There have been multiple known occurrences of this species outside the approved permit area, and two were found within the permit area in 2014 (Appendix 132-F), but none occurred within the disturbance boundary for the permit area. Luminant also provided information in Appendix 132-G and its addendum regarding the Large-Fruited Sand Verbena (*Abronia macrocarpa*), a plant species with the potential for occurrence, but no known occurrences, within the permit area. Conditions (*e.g.*, soils) that may support potentially suitable habitat for this species occur within the renewal area, although the verbena has not been observed during surveys that have been conducted in portions of the renewal area. However, Luminant has committed to conduct a 2016 presence/absence survey for this species in areas of potentially suitable habitat within the permit renewal area, as further discussed in Section .144 and the survey plan included as Appendix 144-H to the application.

25. As required by §12.133 of the Regulations, adequate fish and wildlife resource information is included in the application, as supplemented, with the current status of state and federal threatened and endangered species and with information to provide an accounting of premine wetlands and waters of the U.S. pursuant to §404 of the Clean Water Act. Previous fish and wildlife baseline studies have been conducted: the firm now known as Atkins performed studies in 1988, 1991, and 2005, and in 2006, HDR conducted baseline fish and wildlife studies for the previously-approved permit expansion area and prepared the baseline report contained in the previous permit renewal and expansion application for the requested 15,040-acre proposed permit area. In this renewal/revision application, Blanton submitted an updated baseline fish and wildlife report dated February 2015. This report, as supplemented (SD1 and SD2), includes appropriate scope and level of detail to enable the design of a protection and enhancement plan for fish and wildlife required by §12.144 of the Regulations, including site-specific resource information to address listed or proposed endangered or threatened species or their critical habitats or other habitats of unusually high value for fish and wildlife in accordance with the Endangered Species Act of 1973, as amended (16 U.S.C. §1531 *et seq*). The application has sufficient information for state-listed threatened and endangered species. The information meets the requirements of §12.133 of the Regulations. The area studied is in the Navasota River Watershed of the Brazos River Basin in east-central Texas in southern Limestone and northern Robertson Counties. The primary creek within the proposed permit area is Steele Creek, traveling from west to east through the central portion of the permit renewal area. Cox Creek and Owens Creek flow in a southerly direction and drain into Steele Creek. Heads Creek drains the central portion of the proposed permit area and drains into Steele Creek. The upper reaches of Willow Creek are in the southern part of the proposed permit area.
- (a). The creeks within the proposed permit renewal area are all intermittent based on quarterly surface water sampling data presented in Section 129, though Steele Creek is listed as perennial on Plate 133-1 and according to the USACE's definition in a permit issued to Luminant, with this inconsistency likely due to differing stream classification definitions (SD2). Marsh habitat and man-made ponds also make up a part of the study area.
- (b). In the study, three of ten aquatic sampling stations from Atkins' original 1988 report were revisited. HDR added ten new locations in 2006, and Blanton's current report included 17 sampling locations. Water quality sampling results are included in Tables 133-3 and 133-4. Appendices 133-B through 133-F as well as various tables within Section .133 contain species sampling results for fish, amphibians, reptiles, birds, mammals, and mussels of potential occurrence. Tables 133-1 and 133-2 of the application list numerous aquatic habitat sampling locations from 1988 and 2006, respectively, with a classification of type of habitat, depth, width, type of substrate, whether there is aquatic vegetation, bank height, and type of overhead canopy. All sampled creeks are intermittent (SD1), ranging in depth from 0.15 to approximately 3.6 feet; however, four were dry at the time of the study. One sampling site

was Cox Creek at a beaver pond. The width of the creeks sampled in 2006 ranged from approximately 3 to 35 feet. Two stations (including the beaver pond) had aquatic vegetation present during the 2006 sampling. Most 2006 sampling locations included mixed hardwood canopy, but the beaver pond had an open canopy. More detailed descriptions of each site are included in the study, and materials and methods used in sampling were described, along with sampling results and descriptions of species from the previous studies.

- (c). Lists of federally-listed and state-listed threatened and endangered species with the potential to occur in Limestone and Robertson Counties are included in the application in Appendix 133-A, as supplemented. Staff prepared a summary of threatened or endangered species that have been reported or may occur within the proposed permit area. Except for the Navasota Ladies'-tresses, interior least tern, and Houston toad (SD2), all other threatened or endangered species are either not likely to be within the proposed permit area, are possible, or are possible migrants to the area. The following table summarizes information from Luminant and Staff analysis:

Species	Protected Status	Likelihood of Occurrence
Plants		
Navasota Ladies'-Tresses Orchid	Federal Endangered	Present: Two flowering plants discovered on November 10, 2014, outside the disturbance boundary within the proposed renewal area
Large-Fruited Sand Verbena	Federal Endangered	Not Likely
Mollusks		
Smooth Pimpleback	State Threatened	Not Likely
Texas Fawnsfoot	State Threatened	Not Likely
Fish		
Blue Sucker	State Threatened	Not Likely
Sharpnose Shiner	Federal Endangered	Not Likely
Smalleye Shiner	Federal Endangered	Not Likely
Amphibians and Reptiles		
Houston Toad	Federal Endangered	Unknown
Texas Horned Lizard	State Threatened	Not Likely
Timber Rattlesnake	State Threatened	Possible
Alligator Snapping Turtle	State Threatened	Not Likely
Birds		
Interior Least Tern	Federal Endangered	Present: Occurrences from 2011-present; protected from impacts of mining operations under Luminant's Interior Least Tern Management Plan
Whooping Crane	Federal Endangered	Not Likely Except as Possible Stopover Migrant
Bald Eagle	State Threatened; Federally Protected under Bald and Golden Eagle Protection Act	Possible; two reported sightings in 2013 and 2014
Peregrine Falcon	State Threatened	Possible Rare Migrant
Rufa Red Knot	Federal Threatened	Not Likely Except as Possible Stopover Migrant
White-Faced Ibis	State Threatened	Not Likely Except as Possible Dispersal Migrant
Wood Stork	State Threatened	Possible Dispersal Migrant
Mammals		
Louisiana Black Bear	Federal Threatened	Not Likely
Red Wolf	Federal Endangered	None: Extirpated in Texas

Luminant's protection and enhancement plan for fish and wildlife is set out in Finding of Fact No. 34.

26. The information required by §12.134 of the Regulations for soil resources information is included in the application, as supplemented (SD1 and SD2). The information presented includes a map delineating different soils, soil identification, soil description, and present and potential productivity of existing soils. Luminant included a soils map (Plate 134-1, Sheets 1 and 2) depicting 28 native soil mapping units of 18 soil series, sample locations, and prime farmland soils. Detailed information is included in Tables 134-1 (*Acreage and Proportionate Extent of Soils*), 134-2 (*Taxonomic Classification of Soil Series*), and 134-3 (*Prime Farmland Soils Acreage and Proportionate Extent*), and in Appendices 134-A (Natural Resources Conservation Service official soil series descriptions),

134-B (soil interpretation tables), 134-C (source data sampling results by genetic horizon), 134-D (source data sampling results by the 0-12" and 12-48" intervals), and 134-E (source data sampling results by topsoil and subsoil intervals). More than 61% of soils are considered claypan soils (thin sandy or loamy topsoil overlying dense clayey subsoil; approximately 6.6% of the proposed permit area soils are a deep sand or loamy sand surface 20 inches or greater in thickness over more finely textured subsoil. There are also soils that have sandy surface intervals ranging from 20 to 40 inches thick and 40 to 80 inches thick. Prime farmland soil units comprise approximately 17.3% of the proposed permit area. Staff noted discrepancies between the data ranges within Luminant's frequency distributions and the baseline data; Luminant revised Table II (SD1) to address these discrepancies. Staff's TA suggests that the revised Table II continues to contain discrepancies between it, Plate 134-1, and the Web Soil Survey. Therefore, Staff proposes Permit Provision No. 9 which requires that within 60 days of permit issuance, Luminant shall correct discrepancies between Table II and Plate 134-1. The Commission adopts Staff's proposed Permit Provision No. 9, which is now adopted as Permit Provision No. 2. Luminant included in the application estimated crop yields for Limestone and Robertson Counties from the Natural Resources Conservation Service's (NRCS) Web Soil Survey website that are set out by soil map unit (if rated for crop production). Production information for crops in Limestone and Robertson Counties in 2013 is included in Table 134-5 (data provided from the Texas Agricultural Statistics Service). The proposed permit area is made up of soils that are classified as suited to cultivation or to pastureland, grazingland, or wildlife. A revised native soil baseline is included to represent the lands within the proposed permit boundaries. Table 134-8 includes minimum and maximum values for pH, acid/base accounting (ABA), neutralization potential, exchangeable acidity, potential acidity, pyritic sulphur, sand, silt, clay, cation exchange capacity, electrical conductivity, sodium adsorption ratio, soluble boron, total cadmium, total selenium, and percentage of coarse fragments. Depth weighted data do not meet the standards of the Commission suggested criteria for pH, ABA, clay, sand, sodium adsorption ratio, and selenium for the top four feet of reclaimed soils, that is, there are areas that do not meet these standards at certain depths. Luminant proposes to use topsoil and subsoil substitute material in reclaiming the top four feet of reclaimed soils. Cumulative frequency distributions for the proposed permit area are included (Tables 134-9 through 134-14, as supplemented) for the 0-12 inch interval, the 12-48 inch interval, and for topsoil and subsoil intervals for the following geochemical parameters: pH, ABA, clay, sand, pyritic sulphur, and selenium. Luminant will no longer utilize a 0.49% correction factor in the calculation of its soil bank calculations, and Luminant revised Tables 134-10 and 134-13 in SD2 to show frequency distributions to one decimal place. The information presented for the native soil baseline is sufficient to determine the suitability of topsoil and subsoil substitution proposed by Luminant, with Staff's proposed Permit Provision No. 10, which is now Permit Provision No. 3, specifying the use of mobile equipment for selective handling of oxidized overburden in reclaiming the top four feet.

27. Luminant has described premine land use in the application in accordance with the requirements of §12.135 of the Regulations for the proposed permit area, using historical land-use data, previous studies, limited field verification, and information from the NRCS. Plate 135-1, *Land Use Map*, depicting the premine land uses, is included in the application. In Table 135-1, Luminant identified the acreages and percentages of premine land uses for the permit area. These land uses include: undeveloped land, 46.6% (primarily dense to open woodlands); pastureland, 47.1%; industrial/commercial, 1.7% (roads and oil and gas facilities); cropland, 0.7%; grazingland, 3.1%; residential, 0.2%; and developed water resources, 0.6% (stock ponds). In addition to the categorization of uses, the application includes data for land productivity and capability, including pastureland and grazingland productivity (Tables 135-A-1 through 5) and yields for crops and pasture (Table 135-B-1), varying according to soil series and management. Per-acre cropland productivities for grain sorghum range from 25 bushels to 70 bushels. Typical forage grasses growing on premine pastureland would produce 2.5 to 9 Animal Unit Months per acre depending on soils and management. Other uses are included for soil series appropriate for other development, as well as limitations on uses. There are no municipal regulations applicable to the proposed permit area.

Luminant provided a reference to the TPWD 2013 Land and Water Resources Conservation and Recreation Plan and 2012 Texas Conservation Action Plan.

28. All requirements have been met for the submittal of maps, cross-sections, and plans for the application, as supplemented (SD 1 and SD 2) in accordance with §§12.136-.137 and §12.142. Section .136 of the application, as supplemented in SD1, includes a table entitled “Rule 12.136 Maps: General Requirements” that includes the locations of maps within the application containing certain required information. The locations are set out on pages 136-1 through 136-3, as supplemented, as follows:

SECTION	SUBJECT	LOCATION
12.136(1)	All boundaries of lands and names of present owners of record of those lands, both surface and subsurface, included in or contiguous to the permit area	Plates 116-1 and 116-2; Appendix 116-B and Appendix 116-C
12.136(2)	The boundaries of land within the proposed permit area upon which the applicant has the legal right to enter and begin surface mining activities	Plates 116-1 and 116-2
12.136(3)	The boundaries of all areas proposed to be affected over the estimated total life of the proposed surface mining activities, with a description of size, sequence, and timing of the mining of sub-areas for which it is anticipated that additional permits will be sought	Plates 125-1 and 2
12.136(4)	The location of all buildings on and within 1,000 feet of the proposed permit area, with identification of the current use of the buildings	Plates 116-1 and 2
12.136(5)	The location of surface and subsurface man-made features within, passing through, or passing over the proposed permit area, including, but not limited to major electric transmission lines, pipelines, and agricultural drainage tile fields	Plates 128-2 and 3 Plates 136-1 and 2, SUPP 1
12.136(6)	The location and boundaries of any proposed reference areas for determining the success of revegetation	None Proposed
12.136(7)	The locations of water supply intakes for current users of surface water flowing into, out of, and within a hydrologic area defined by the Commission, and those surface waters which will receive discharges from affected areas in the proposed permit area	Plate 129-1 Figure 129-1 Figure 129-4 Figure 130-1
12.136(8)	Each public road located in or within 100 feet of the proposed permit area	Plates 139-1-1 through 139-1-10
12.136(9)	The boundaries of any public park and locations of any cultural or historical resources listed or eligible for listing in the National Register of Historic Places, and known archeological sites within the permit or adjacent areas.	Section .125 – Appendix A Section .125 – Appendix B Figure 125(2)-1
12.136(10)	Each public or private cemetery or Indian burial ground located in or within 100 feet of the proposed permit area	Plates 125-1 and 2 Plates 139-1-1 through 139-1-10
12.136(11)	Any land within the proposed permit area and adjacent area which is within the boundaries of any units of the National System of Trails or Wild and Scenic River System, including study rivers designated under Section 5(a) of the Wild and Scenic Rivers Act.	None
12.136(12)	Other relevant information required by the Commission	None

In addition to these maps and plans, Luminant has provided information required by §12.137 for cross-sections maps, and plans:

SECTION	SUBJECT	LOCATION
12.137(a)(1)	Elevations and locations of test borings and core samples	Plate 127-1
12.137(a)(2)	Elevations and locations of monitoring stations used to gather data for water quality and quantity, fish and wildlife, and air quality, if required, in preparation of this application	Plates 128-1 and 128-5 Plate 129-1 Plate 132-1 and 2
12.137(a)(3)	Nature, depth, and thickness of the coal seams to be mined, any coal or rider seams above the seam to be mined, each stratum of the overburden, and the stratum immediately below the lowest coal seam to be mined	Plates 127-1 through 127-10
12.137(a)(4)	All crop lines and the strike and dip of the coal to be mined within the proposed permit area	Plates 127-2 through 127-8
12.137(a)(5)	Location and extent of known workings of active, inactive, or abandoned underground mines, including mine openings to the surface within the proposed permit and adjacent areas	None
12.137(a)(6)	Location and extent of subsurface water, if encountered, within the proposed permit and adjacent areas	Plates 128-5 through 128-7
12.137(a)(7)	Location of surface water bodies such as streams, lakes, ponds, springs, constructed or natural drains, and irrigation ditches within and the proposed permit and adjacent areas	Plates 129-1 and 129-2
12.137(a)(8)	Location and extent of existing or previous surface-mined areas within the proposed permit area	None
12.137(a)(9)	Location and dimensions of existing areas of spoil, waste, and noncoal waste disposal, dams, embankments, other impoundments, and water-treatment and air pollution control facilities within the proposed permit area	None
12.137(a)(10)	Location, and depth if available, of gas and oil wells within the proposed permit area and water wells in the permit area and adjacent area	Plates 128-2 and 128-3
12.137(a)(11)	Sufficient slope measurements to adequately represent the existing land surface configuration of the proposed permit area	Plates 137-1-1 and 137-1-2 Plates 137-2-1 and 137-2-2 Table 137-1
12.137(b)	Location of certifications	Section 137. Maps and plans not listed in Section 137 are certified individually.

Luminant has included the information required for the following operations maps and plans in accordance with §12.142 of the Regulations as follows (SD2):

SECTION	SUBJECT	LOCATION
142(1)	Lands affected and changed by the proposed operations	Plates 139-1-1 through -10
142(2)(A)	Buildings, utility corridors, and facilities	Plates 136-1 and 136-2 and Plates 139-1-1 through -10

SECTION	SUBJECT	LOCATION
142(2)(B)	Area of land to be affected by mining and reclamation	Plates 139-1-1 through -10
142(2)(C)	Area of land to be bonded	Plate 142-1 and 142-2
142(2)(D)	Coal storage, cleaning and loading areas	Plates 139-1-1 through -10
142(2)(E)	Topsoil, spoil, coal waste, and non-coal waste storage areas	Plates 139-1-1 through -10
142(2)(F)	Water diversion, collection, conveyance, treatment, storage, and discharge facilities	Plates 148-1 and 148-2
142(2)(G)	Air pollution collection and control facilities	None proposed
142(2)(H)	Source of waste and waste disposal facilities relating to coal processing or pollution control	Plates 139-1-1 through -10
142(2)(I)	Fish and wildlife enhancement and protection	Plate 144-1, Sheets 1 and 2
142(2)(J)	Explosive storage and handling facilities	None proposed
142(2)(K)	Location of each sediment pond, permanent impoundment, coal processing waste dam and embankment, and fill area for the disposal of excess spoil	Plates 148-1 and 148-2 and Plates 139-2-1 and 139-2-2
142(3)	Certification by a qualified registered professional engineer or geologist	Plates and tables are individually certified except as noted below.
142(4)	Description, plans, and drawings for each support facility	Plates 139-1-1 through -10 Figures in Appendix 144F

29. After issuance of Permit No. 50 with a 10,593-acre permit, revised with a reduction of 428 acres, the permit contained 10,165 acres. Luminant subsequently submitted a proposal to add 4,875 acres, which was approved as Permit 50A on February 7, 2012. Luminant requests a negative determination of prime farmland for all land tracts within the proposed 15,040-acre mine area that contain prime farmland soil units as identified in the application and depicted and catalogued (Plate 138-1 and 2, *Prime Farmland Assessment Map*). If land with prime farmland soils is considered prime farmland because of a cropping history and is proposed for disturbance by mining-related activities, special requirements for reconstruction of soils apply. The Regulations at §12.138 provide that the applicant must identify prime farmland soils. Luminant requests a negative determination for all prime farmland soils within the proposed permit area and bases its request for a negative determination of prime farmland on the 2007 prime farmland investigation, the *Prime Farmland Assessment Map* (Plate 138-1 and 2), and the historical use of the land, as demonstrated in the affidavits of use. Plate 138-1 identifies the prime farmland soil series, the tracts on which the soils occur, and the markings showing tracts for which Luminant has not documented right-of-entry. No negative determination of prime farmland may be made for tracts for which Luminant claims no right-of-entry. A negative determination may be made for tracts for which Luminant has documented right-of-entry and has proved a lack of cropping history. Tracts may be approved for a negative determination based on the presence of a mature canopy indicating that they could not have been cropped. Luminant provided affidavits of use from several persons which indicate that none of the tracts with prime farmland soils have been used as cropland for any five of the last ten years prior to acquisition or lease by Luminant. These affidavits are evidence that the persons signing the affidavits were acquainted with agricultural activities on the lands. No evidence controverting the affidavits was presented. The Commission approves a negative determination for prime farmland for all tracts within the proposed permit boundaries with prime farmland soils for which adequate affidavits have been provided and for which Luminant has documented a claimed right-of-entry and has included the tracts in Appendix 138-A. The Commission does not approve tracts for which Luminant claims no right-of-entry (and for which there are, therefore, no acquisition, lease, or option dates). A negative prime farmland determination is made for all tracts acquired by Luminant within the proposed permit area.
30. Luminant has submitted all required materials to document its proposed operations plan for the proposed permit term, as revised in the application and supplements, in accordance with §12.139 of the Regulations, and as set out in the permit provisions contained in Appendix I.

- (a). Luminant will recover six lignite seams. Luminant proposes mining in the following four mine areas that it has denoted in the application as DI, DIII, DV and EI areas. Auxiliary areas will also be mined. The Life of Mine map, (SD2) Plates 125-1 and 125-2, and the Mine Plan and Operations Map, Plates 139-1-1 through 139-1-10, show the areas to be mined in the proposed permit. The interburden unit thickness between the lignite seams ranges from less than 5 feet to greater than 40 feet. Lignite seams proposed for mining during the proposed permit term (2016-2020) range from 0.2 to 9 feet. Luminant includes mining methods that will maximize recovery of all economically mineable seams, normally greater than 0.5 feet thick. Mining and reclamation disturbances will be kept within the mining limits line (MLL) depicted on the life of mine map and the mining operations maps. Luminant proposes mining by dragline, or with mobile auxiliary equipment and/or a dragline. The overburden depth to bottom seam of lignite averages 180 feet; mining in shallower areas will progress more quickly, and maximum clearing distances will vary from a minimum of 1,050 feet in the DV Area to a maximum of 2,550 feet in the DIII Area (Years 1-4).² The time required depends upon various factors including depth of overburden, site-specific vegetation including heavily wooded areas and natural waterways that must be re-routed. Based on the information contained in Tables 139(T)-3 and 139(T)-4 and Figures 139(F)-35 through 38, Luminant requests additional time and distance for backfilling and grading standards for the dragline mining areas within the permit term. All clearing activities will be within surface water control. The clearing distances are approved as set out in the application, page 139-11 as supplemented (SD2), based on field conditions, equipment, and/or operational needs. With reference to clearing distances, Luminant has established the need for the distances based upon specific conditions in each named mine area. Luminant may utilize offset pits or angled pits in order to enhance recovery of lignite. If an angled or offset pit is used that will alter approved postmine slopes, a revision application will be submitted and approval from the Commission obtained before initiation of the angled or offset pits. Luminant requests stream buffer zone variances for waterway and creek segments depicted in Plates 139-4-1 and 2 which will support disturbances projected to occur within the proposed permit term.
- (b). Other operations are detailed in the application, including a description of the locations and types of sedimentation ponds and other structures in the surface water control plan, description of proposed dewatering activities in the D and E areas as depicted on Plate 146(d)-1 (SD2), locations of lignite stockpiles, description of overburden, interburden, and topsoil handling, methods of identification of suitable overburden material for placement in the top four feet of postmine surface as a topsoil and subsoil substitute, regrading, stabilization of reclaimed areas, structures used in the mining operations, waste handling, mine facilities, and the measures Luminant will use to control dust and other emissions of particulate matter from non-stationary sources. Luminant has listed temporary storage locations for storage of suitable selective placement material to be used in reclaiming the top four feet of the surface. The suitable material stockpiles are shown on Plates 139-1-1 through 10. No overburden or topsoil storage areas are proposed as a result of stripping operations. No disposal areas or structures for spoils are proposed. There are no proposed permanent overburden storage areas. Any excess construction material will be regraded as a part of postmine topography or used in construction. Stockpiles left in place for more than 30 days will be marked and protected from disturbance and erosion. Seeding and planting of

² The specific distances are:

	<u>Clearing Distance – Years 1-4</u>
DI Area	1,950 ft.
DIII Area	2,550 ft.
DV Area	1,050 ft.
EI Area	1,950 ft.

stockpiled materials will be conducted no later than the first normal period of favorable conditions. If conditions are not favorable, alternative methods such as seeding of temporary vegetation, mulching, disking, or sediment control measures could be used to protect suitable material stockpiles until conditions are favorable. Luminant has included language in the application confirming that it will meet §12.336's requirements for protection measures.

- (c). Luminant has included information in the application, as supplemented, to demonstrate that it will meet the requirements of §§12.382 and 12.402 of the Regulations for activities related to oil and gas wells and pipelines, with the adoption of subsections (1) and (2) of this Finding of Fact. Luminant has demonstrated a right by accommodation agreements to conduct certain activities required to lower or otherwise relocate or otherwise affect pipelines within the areas proposed for disturbance within the proposed permit term with the exception of those of Trend Gathering & Treating LP, Energy Transfer Fuel LP, and J Sugar Co. Inc. Regulation §12.382 requires that the applicant identify and describe pipelines located within the permit area and within 100 feet of the permit area and that the applicant visibly mark them at 200-foot intervals throughout the permit area. Luminant has adequately identified and described wells and pipelines and operations that may affect pipelines [Oil and gas well inventory location map (Plate 128-3), Utilities (Plates 136-1 and 2, SD2), and Mine Operations Maps (Plates 139-1-1 through 139-1-10, SD1 and SD2)]. In addition to marking pipelines, §12.382 provides that a minimum of six feet of compacted material must exist between the pipeline and any haul road or access road that crosses the pipeline; Luminant has undertaken to ensure that the six feet of compacted materials will exist for any road or other structure that crosses the pipeline. Regulation §12.382 also specifies that the permittee must not create a cut within 100 feet or one times the depth of the cut (whichever is greater) or conduct blasting within 500 feet of a pipeline. Luminant does not propose blasting. Luminant has undertaken to comply with the marking provisions. Luminant indicates that the location of pipelines will be visibly marked within 100 feet of mining activities. Any proposal related to variances must be reviewed by the Commission for compliance with §12.382, as well as with §12.402's requirements that all surface coal mining operations be conducted in a manner which minimizes damage, destruction, or disruption of services provided by oil, gas, and water wells, oil, gas, and coal-slurry pipelines, and other facilities mentioned in the regulation, that pass over, under, or through the permit area, unless otherwise approved by the owner of those facilities and the Commission.
- (1). No surface mining regulatory requirement sets out any buffer requirement for pipelines related to the vicinity of mining-related activities other than that pipelines must be marked at a minimum of 200-foot intervals within the permit area [12.382 (2)] and that the mine operator cannot create a mining cut within 100 feet of a pipeline or within one times the depth of the cut, whichever is greater, unless the Commission approves a variance.
- (2). All pipeline owners have facilities that may be affected by surface mining related activities that are proposed near the pipelines that may not require removal/relocation of the pipelines. Luminant indicates on 139-13 (SD1) that pipelines will be visibly marked within 100 feet of mining related construction activities every 25 feet, or if within 50 feet of mining related construction activities then every 10 feet. Therefore, Luminant and Staff agree that the existing Permit Provision No. 6 now incorporated into the permit application is no longer needed to meet the requirements of §12.402 of the Regulations.
- (3). Luminant has undertaken to comply with the Commission's Pipeline Safety Rules.

- (d). Should the railroad system access become limited between the Kosse Mine and Oak Grove Power Plant, the use of public roadways, using licensed vehicles, will be a secondary means of lignite transportation.
 - (e). Luminant has included a description of areas where final pits are proposed during the proposed permit term. Luminant also may request temporary cessation of operations (TCOs) and/or backfilling and grading variances in certain areas, and Table 139(T)-2 lists the TCOs and variances applicable to the permit term. Luminant must provide information sufficient for compliance with §12.384 prior to Commission approval of future TCOs. Backfilling and grading variance requests for the D and E mining areas (pp. 139-10 through 139-12) are addressed in Finding of Fact No. 35(c).
 - (f). Luminant requests variances from the stream buffer zone requirements for activities within the buffer zones of Heads Creek, Cox Creek, Steele Creek and Owens Creek for the stream sections shown on Plates 139-4-1 and 2. These requests are addressed in Finding of Fact No. 39.
 - (g). Final pits are proposed for the proposed permit term in the DI area in 2017, in the DIII area in 2019, in the DV area in 2020, in the EI area in 2017 and 2020.
 - (h). Luminant does not propose disposal areas or structures for spoil or coal processing waste, with the exception of the disposal of coal waste from portable coal screening facilities. Coal from these facilities will be placed in the active pit for disposal.
 - (i). Lignite is loaded from the pit, equipment walkways or benches and trucked to the Kosse Mine coal barn or approved stockpile areas. From there it is loaded into rail cars and transported by rail to the Oak Grove Steam Electric station. Lignite stockpile and facility areas are shown on Plates 139-1-1 through 10.
 - (j). Luminant may conduct exploration activities within the proposed permit area. Luminant has included a discussion of these activities on pp. 139-20 through 139-22. The discussion includes the proposed activities, conducted with prior notification to the Commission, limitations (no drilling in excess of 300 feet without prior approval by the Commission), providing a map of boreholes cased as wells by March 1 of the year after wells are installed, no diversion of streams, and protection for wildlife. Luminant will meet requirements of §§12.331-12.333 for casing and sealing of drilled holes, will minimize disturbances to the hydrologic balance, and will ensure that acid-forming material and toxic-forming material (AFM/TFM) requirements for handling and disposal will be met. A description of test pits is included.
 - (k). As suggested in Staff's Application Deficiency 139-3, Luminant has indicated that it will provide a map and notification by the end of the first calendar quarter of each year depicting the locations of bottom ash placement. If new uses of bottom ash on roads are not initiated, then Luminant will provide the Commission a notifying letter stating the absence of new bottom ash on roads.
31. No existing structures as defined by §12.3(63) of the Regulations (structures or facilities for which construction began prior to approval of the State program) will be used to facilitate surface mining and reclamation operations (§12.140, Regulations). No blasting is proposed (§12.141, Regulations).
32. The TPWD provided general information regarding protected vegetative and wildlife species and made various comments and recommendations. All comments and recommendations have been

addressed in the application, as supplemented, in compliance with the requirements of the Regulations. Regulation §12.132 requires a description of premine vegetation that is sufficient to predict the potential for reestablishing postmine vegetation. Regulation §12.133 requires site-specific information about species and habitats that are protected by state and federal law as threatened or endangered species, as well as habitats of unusually high value such as important streams, wetlands, and riparian areas. Regulation §§12.144 and 12.380 require a description of how the operator will minimize adverse impacts on fish and wildlife and related environmental values to the extent possible using the best technology currently available, and how the operator, where practicable, will enhance fish and wildlife resources. The Regulations include no statement requiring an investigation or description of all species and habitats within and near the proposed permit area. Additional requirements apply to alternative postmine land uses under the criteria of §§12.147 and 12.399. Where agricultural, fish and wildlife habitat, and undeveloped land uses are the planned postmine land uses, or where a permittee plans to plant vegetation for any land use, appropriate vegetation is required. TPWD commented on the application by letter dated February 16, 2016, expressing concerns related to various species, revegetation efforts, the planting list, native grasses, and grassland wildlife and habitat. TPWD also commented that the application, as supplemented, adequately addressed state-listed threatened and endangered species for the renewal term. Luminant has addressed TPWD's comments in accordance with Commission requirements by modifications to portions of the application. Luminant provided responses to TPWD's recommendations in an attachment to the SD2 Errata section and by incorporating some of the recommendations into SD2. Staff's responses to TPWD's and USFWS's recommendations are provided in Appendix III (revised) to Staff's TA and are based on a review of the application through SD2. Staff's TA recommends two new permit provisions, proposed Provision Nos. 7 and 8, related to compliance with the requirements of §12.144 of the Regulations. Luminant responded to Staff's TA by disagreeing with these proposed permit provisions, stating that proposed Provision No. 7 is contrary to a recent September 4, 2015 ruling from the Fifth Circuit Court of Appeals regarding the Migratory Bird Treaty Act, and that proposed Provision No. 8 is inconsistent with the governing Biological Opinion issued by USFWS to the Office of Surface Mining in 1996. These provisions are unnecessary and unwarranted, and the Commission declines to adopt them, as set forth in Finding of Fact No. 34. The requirements set out in Luminant's fish and wildlife plan will satisfy the requirements of the regulations and sufficiently address TPWD's and USFWS's comments.

- (a). In Staff's Application Deficiency 144-15, Staff commented that the yaupon and sweetgum species should be moved to the volunteer list and should be removed from the planting list in Appendix 144-C. In response, Luminant removed yaupon from the planting list and placed it on the volunteer list. Luminant also indicated that it would keep sweetgum (*Liquidambar styraciflua*) on the approved planting list of Appendix 144-C for fish and wildlife land use, but it added a footnote to Appendix 144-C to identify sweetgum as a minor component of the planting mix in order to remain an option to augment reforestation efforts. Luminant provided an explanation for keeping sweetgum on the approved planting list. TPWD commented that it had no objection to leaving sweetgum on the approved planting list, as footnoted by Luminant. Staff acknowledged TPWD's comment in Appendix III to Staff's TA.
- (b). Staff indicated that common lespedeza (*Kummerowia striata* (Thunb. Schindler) syn. *Lespedeza striata*) is not a native species and should be removed from the approved species list or noted as non-native. In response, Luminant provided a footnote to identify common lespedeza as non-native. TPWD commented that it had no objection at that time to leaving common lespedeza on the approved species list, footnoted as non-native. TPWD recommended that Luminant avoid actively seeding common lespedeza and should instead allow it to occur voluntarily in fish and wildlife habitat. TPWD also recommended that the mine operator be aware of common lespedeza's potential to overtake a disturbed area and to

move the species to the approved invaders list of species if it became problematic in the permit area or if it was added to the invasive species list maintained at www.texasinvasives.org/invasives_database and www.texasnonnatives.org/invasive. Based on this recommendation, Luminant subsequently deleted common lespedeza from Table 144-C and moved it to the approved invader list in Appendix 145-B. Luminant also revised Table 144-C to properly reflect western yarrow, the native variety, as a species for use in fish and wildlife areas (Table 144-C) as requested in Staff's Application Deficiency 144-15.

- (c). TPWD recommended that certain corrections be made to the list contained in Appendix 144-C of revegetation species that may be used during reclamation of forested Fish and Wildlife habitats. First, TPWD questioned the active planting of pigweed (*Amaranthus x texensis*) at Kosse Mine and other mine sites in the Pineywoods and recommended that if Luminant or the Commission determined that planting an *Amaranthus* species within the mining reclamation area is desirable and necessary, then a different *Amaranthus* species with a distribution in the renewal area ecoregion that was known to occur within the renewal area baseline or surrounding habitats should be chosen. Staff added that according to the Texas A&M extension service, pigweeds are so named because they are favored by swine, and that all mine sites appear to have significant populations of wild pigs which adversely impact reclamation areas. In response, Luminant deleted pigweed from Tables 144-C and 144-D (planting and seeding rates for fish and wildlife areas).
- (d). TPWD raised a concern that the active planting of yellow nutsedge would interfere with the establishment of other desirable species; therefore, TPWD recommended this species be removed from Table 144-C and Appendix 144-D and that it be placed on the list of species potentially occurring in revegetated Fish and Wildlife habitat (i.e., the approved invader list) of Appendix 145-B. Staff noted that the Texas Department of Agriculture does not include yellow nutsedge as a noxious weed, but that the BONAP (the Biota of North America Project, which only provides information at the species level) identifies yellow nutsedge within its top 15 list of worldwide noxious weeds. In response, Luminant deleted yellow nutsedge from Tables 144-C and 144-D.
- (e). TPWD recommended that certain appropriate corrections be made to Table 144-C, including: moving Inland ceanothus/Prairie redroot (*Ceanothus herbaceus*) to Shrubs with vegetation regions 3 and 4, revising the listing for Redroot/New Jersey tea and moving it to vegetation regions 1, 3 and 4, correcting the name of Snowy partridgepea to Showy partridgepea, moving Prairie rain-lily to vegetation regions 1, 3 and 4, moving several species to Aquatics rather than Forbs, and moving Blue-eye grass to the Forbs section. In response, Luminant made the recommended corrections.
- (f). TPWD commented that it had developed a Texas Monarch and Native Pollinator Conservation Plan in response to significant declines in the population of migrating monarch butterflies. TPWD recommended that for disturbed sites within the monarch migration corridor, revegetation efforts should include planting or seeding native milkweed (*Asclepias* spp.) and nectar plants as funding and seed availability allow. Luminant responded that Table 144-C currently includes three native species of *Asclepias* and 38 species that may serve as nectar plants for monarch butterflies, other butterflies, and other pollinators; thus, no changes were necessary in response to this recommendation. However, Luminant did add a notation in the table to identify known butterfly and pollinator-favored plant species.
- (g). TPWD commented that the non-native tropical milkweed (*Asclepias curassavica*) is a popular year-round milkweed but that it fosters greater transmission of a protozoan which increases the likelihood that monarchs become infected with a debilitating parasite; thus, it is not

appropriate for planting. TPWD recommended several species for Luminant's consideration for Appendix 144-D which should be commercially available and would provide increased species diversity and nectar and pollen for a variety of insects. TPWD stated that it would continue to coordinate with Luminant to identify other species that may be appropriate for planting that are commercially available and applicable to the ecoregion. In Appendix III to Staff's TA, Staff noted that one of the species noted by TPWD, Cowpen daisy (*Verbesina encelioides*), is missing from the planting list, and that the omission is likely due to an error, as the species is native to the area. Luminant responded that tropical milkweed is not included in Tables 144-C or 144-D, and that the species recommended by TPWD (with the exception of *Simsia calva*, which is not native to the region) are included on Table 144-C. Luminant also noted that in addition to the three native species of *Asclepias* and 38 species on Table 144-C that may serve as host and/or nectar plants for monarch butterflies, other butterflies and other pollinators have been footnoted on Table 144-C, and the footnote indicates that these species will be planted as funding and seed availability allow.

- (h). TPWD noted that Table 144-C identified sassafras (*Sassafras albidum*) for Texas Vegetation Regions 3 and 4 but should instead primarily identify sassafras for Regions 1 and 3. In response, Luminant revised Table 144-C to show Regions 1 and 3 (and removing Region 4) for sassafras.
- (i). TPWD noted that Table 144-C identified live oak for Region 3, but that live oak is not naturally-occurring in northern portions of Region 3 and 4, is not typically naturally-occurring in Limestone or Robertson Counties, and was not identified in the representative list of vascular plant species observed during field surveys for Kosse Mine. Thus, TPWD recommended removing live oak from Table 144-C for Kosse Mine. In response, Luminant deleted live oak from Table 144-C and appropriately moved it to the approved invader list in Appendix 145-B.
- (j). TPWD commented that it reviews USACE Section 404 permit applications and provides comments directly to the USACE; therefore, its comment letter did not address compensation for impacts to waters of the United States or the adequacy of the proposed mitigation plan. Staff acknowledges this comment in Appendix III to Staff's TA. Sufficient information is available in the application to show the adequacy of the reclamation plan for these areas.
- (k). TPWD noted that Appendix 145-C contained yellow (K.R., T-587) bluestem on the planting list for use on areas reclaimed to pastureland, and that is an introduced species that differs significantly from native bluestem grasses with regards to diversity, forage quality and structure. Because it is considered invasive, creates a homogeneous landscape lacking diversity, provides relatively low quality grass for forage and offers little benefit to wildlife, TPWD recommended that it be removed from the planting list. Additionally, TPWD noted that Appendix 145-C also included weeping lovegrass on the pastureland planting list and that this is also an introduced species that is considered invasive on disturbed sites; therefore, TPWD recommended that this species be removed from the planting list as well. In response, Luminant appropriately removed both species from the Planting Rates information detailed in Appendix 145-C (page 145-C-2) and Species List detailed in Appendix 145-B (page 145-B-3).
- (l). TPWD commented that native pastures allow dual use between agriculture and wildlife and encouraged Luminant to plant native grasses in pastureland and fish and wildlife reclamation areas. For the benefit to wildlife, TPWD recommended planting native species in fish and wildlife reclamation areas and avoiding the use of bermudagrass and other sod-forming grasses. In response, Luminant supplemented its application to note that in areas reclaimed as

fish and wildlife use, bermudagrass will not be utilized for erosion control except where rills and gullies recur for more than two growing seasons (after native species alone have been shown to unsuccessfully control the erosion) in order to provide rapid stabilization. Luminant noted that native species have been planted in fish and wildlife land use (with few exceptions as noted on Table 144-C) and have been utilized within areas designated as pastureland where it was likely to benefit local wildlife within the Kosse permit. Table 144-C, Table 145-B and pages 144-17 and 144-18, as supplemented (SD2), exclude the planting of bermudagrass in fish and wildlife areas.

- (m). TPWD commented that it is aware of coordination between Luminant, the Commission and the U.S. Fish and Wildlife Service (USFWS) regarding federally-listed species and defers comments regarding adequacy of the surveys and protection plans to the USFWS who is the lead authority regarding the Navasota ladies'-tresses (NLT), Houston toad (HT), large-fruited sand-verbena (LFSV), and interior least tern (ILT).
- (n). In a letter dated July 16, 2015, the USFWS informed the Commission that the USACE was proposing to authorize Luminant to fill streams and wetlands for the purpose of mining 4,204 acres on Area D of the Kosse Mine under Department of Army permit SWF-2012-00349. USFWS and USACE had engaged in consultation for the effects of this permit on the endangered NLT and the endangered HT. Habitat evaluations and surveys conducted pursuant to this consultation revealed NLT plants and habitat. It also identified potentially suitable HT habitat on Area D, and so in January 2015, the USACE requested initiation of formal consultation on adverse effects of actions proposed under the permit on the NLT and the HT. USACE also sought authorization for the incidental take of HTs, as the suitable habitat conditions for HTs exist within the proposed mine site. USACE also transmitted a Biological Assessment (BA) assessing the project's impacts to the USFWS. In the BA, USACE and Luminant propose to transplant NLT plants to a property supporting an existing NLT population and to preserve the property. In addition, they propose to purchase credits from an HT conservation bank as conservation measures (i.e., species-specific protective measures). As summarized in the USFWS's July 16, 2014 letter, the USFWS responded to the request for the initiation of formal consultation and provided comments on the BA by letter to the USACE dated March 5, 2015. On March 30, 2015, the USACE informed the Commission that USACE intended to use a 1996 Biological Opinion (BO) rendered by USFWS for the Commission, which authorized incidental take of federally listed species, provided the following terms and conditions are met: 1) the regulatory authority must implement and require compliance with any species-specific protective measures developed by the USFWS field office and the regulatory authority; 2) the regulatory authority must quantify the take resulting from activities carried out under this program; and 3) whenever the regulatory authority decides not to implement one or more of the species-specific measures recommended by the USFWS, it must provide a written explanation to the USFWS. If the USFWS does not concur, then the issue must be elevated to the regulatory authority, the USFWS, and the federal Office of Surface Mining for resolution. The March 30, 2015 letter also indicated that additional consultation under the Endangered Species Act by the USACE was not required in its Regulatory Program permit decisions for mining activities covered by Title V. The USFWS concluded its July 16, 2015 letter by recommending that the Commission work with the USFWS to develop and implement the species-specific protective measures for the NLT and the HT for the Kosse Mine Permit No. 50A. The USFWS's September 24, 2015 letter to the Commission clarified that while the USFWS's March 5, 2015 response letter to USACE discussed its concerns and comments for Area D, those comments and concerns are applicable to Areas DIII, DV, and EI as well.
- (o). Luminant's USFWS permit number TE840214-1 was amended, effective December 4, 2015.

This amendment revised the conditions applicable to the interior least tern (ILT). While item 10 on the permit amendment describes the “location where authorized activity may be conducted” as “Big Brown Mine, Freestone County, Texas,” the final page of the permit amendment states that the permitted persons are authorized to survey for the ILT for scientific and recovery purposes “within Texas.”

- (p). SMRD Staff has been in informal coordination with USFWS since November 17, 2014, when Luminant reported the presence of the NLT within the permit area. Coordination was initially minimal because the USACE, not SMRD, initiated formal consultation with the USFWS for the NLT and the HT; however, the USFWS kept SMRD Staff apprised of the consultation meetings. Since receipt of this application, SMRD and the USFWS have coordinated more closely. SMRD Staff have included USFWS in pre-supplement submittal meetings with Luminant in order to provide Luminant consistent guidance to resolve application deficiencies.
- (q). The USFWS recommends that the Commission work with it to quantify take and the effects of mining actions on these species at the Kosse Mine. Staff notes that Luminant has been requested to quantify the take and effects in the supplemental documents, and that the USFWS, Luminant and employees of SMRD participated in multiple conference calls and meetings discussing the effects of mining, protective measures, and quantification of take.
- (r). The USFWS recommends that the action area include the area one-half mile from the proposed limits of mining and expresses concerns that the NLT and the HT could be indirectly affected by the hydrology effects. Thus, USFWS would like the area affected within these two species habitats to be clearly described. Staff noted that the one-half mile distance estimate is a simulated worst-case scenario for drawdown effects and was used as a conservative estimate only. Impacts to the surface water and the near surface water-table aquifers are expected to be much more localized than the one-half mile estimate and are not expected to extend beyond the permit area. Drawdown from pumping in the deeper, confined groundwater aquifers does not have any effect on the near-surface water, and Luminant does not propose an operation plan for any wellfield dewatering or depressurizing action. Only a few sandy strata within the Calvert Bluff Formation and at the Simsboro Formation outcrop have a permeability and continuity of sand units to effect groundwater flow that is subject to gravity-induced drainage into mine pits. Monitoring indicates that the near-surface monitored sands were saturated near the surface with water levels at approximately 8.5 feet depth or greater, but have since dropped below the bottom of the well, likely due to boxcut activities in the EI Area. Water in the overlying soils and sediments remains hydrologically disconnected from the saturated zone and is not expected to experience any discernible drainage effects due to the mining activities. The surface geology in the southeastern portions of the active and proposed mine areas is entirely within the outcrop area of the Calvert Bluff Formation which does not appear to contain any saturated near-surface strata in the vicinity of the proposed activities. The maximum extent of drawdown shown as proposed on Plate 146(d)-1 would be expected to occur only in the overburden Calvert Bluff Formation strata. Although the conservative drawdown model predicts such overburden drawdown extending slightly beyond the permit boundary in places toward the west and north, if activities causing drawdown were conducted, they would not be expected to cause gravity drainage at the surface because it is not saturated. Similarly, active depressurization drawdown would only affect the saturated zone within the Simsboro Formation sands and would cause negligible effects on water in the surface soils and near-surface sediments. For the reasons set out in this Finding of Fact, it is not necessary that the action area include the area one-half mile from the proposed limits of mining and the NLT and the HT will not be indirectly affected by the hydrology effects.

- (s). The USFWS requests quantification be provided of the potential NLT habitat that could be directly or indirectly impacted by mining-related activities. In response, Luminant committed on page 144-13e (SD2) to quantifying the area of potential habitat during the 2016 survey and reporting this acreage in its survey report. The concern for indirect effects referenced by the USFWS was related to drawdown issues. Staff has responded to this concern by explaining that the half-mile distance estimate is a simulated worst-case scenario for drawdown effects and that impacts to the surface water and near-surface water-table aquifers are expected to be much more localized. This concern has been adequately addressed.
- (t). USFWS recommends the use of a low, medium and high suitability breeding habitat model (a regional approach) for the HT assessment to quantify the direct effects to the species from mining-related activities. Staff's TA provides a critique of Luminant's acreage estimates. Luminant updated the model to include 2014 aerial imagery, though removed areas that had been disturbed between the time that the imagery was obtained and the present. Staff further noted that Luminant did not provide a model depiction with its acreage quantification for comparative analysis, and that the basis for the acreage estimates should be revisited during consultation. Luminant did provide a map depicting potentially suitable HT habitat in the permit application, including in Sections 133 (SD1) and 144 (SD1), which is more pertinent and accurate than the regional modeling effort for identifying high and medium suitability habitat currently present in the permit area to specifically focus sampling locations. As noted in the first sentence of this paragraph, USFWS commented on the types of habitat to consider in its March 5, 2015 letter to the USACE (which SMRD received from USFWS on July 16, 2015, for quantifying potential Houston habitat and indicated that focusing on high suitability habitat alone for determining conservation credits was inappropriate. During meetings (as documented in correspondence in TA Appendix VIII and in Application Deficiency No. 144-6, Staff requested that Luminant address the applicable aspects of comments that USACE received in the March 5, 2015 USFWS letter. Because the habitat mapping for quantifying potential Houston toad habitat was only first provided in SD2, neither USFWS nor Staff had the opportunity to comment on the potential Houston toad quantification mapping effort for the permit area other than in Staff's TA. The mapping submitted is acceptable at this time. Because there will be ongoing consultation regarding this matter, revisiting the basis for the acreage estimates during consultation is likely.
- (u). USFWS recommends that habitat acreage be used as a surrogate for the enumeration of the HT for the purposes of identifying take and offsetting conservation measures. Staff agrees that potential habitat can be used as a surrogate and believes that potential habitat (breeding and non-breeding) would provide a better assessment than enumeration of HT within the area.
- (v). USFWS is concerned that there is no evidence that the postmine landscape would support the HT and specifically notes the proposal for planting Bermudagrass, the current state of stream reclamation, and the creation of artificial ponds. Staff agrees that there is no documentation of restored habitats that have been assessed for their ability to support the HT or the NLT; the performance standards of the Regulations do not include biotic assessments except for the assessment of vegetation cover as it relates to erosion control and species planted. USACE's requirements for restoration of wetlands and other waters of the United States under Luminant's Section 404 permits are required. Staff agrees that there may be an overall increase in Bermudagrass cover. Staff noted that Luminant has committed to using only native species in the reclamation of fish and wildlife habitat, except during stabilization of erosion prone areas, and only using Bermudagrass or other non-native species for stabilization when native grasses have failed twice in a given area. Staff also commented that many of the new developed water resources will be on-channel ponds in reclaimed ephemeral or

intermittent drainages. Luminant's application, as supplemented, addressing these matters, is sufficient.

- (w). USFWS recommends that Luminant place one of Luminant's nearby off-site properties (a 17-acre parcel) in Limestone County that has a known population of NLT into a conservation easement with a third-party land trust. The land trust should be a member of the National Land Trust Alliance and/or the Texas Land Trust Council. In response, Luminant has committed to placing a conservation easement with a third-party land trust on approximately 17 acres of land with a known population of NLT. USFWS also recommends that Luminant develop a NLT transplant plan and a long-term site management plan for the conservation easement site. In response, Luminant has provided a commitment to develop a management plan as part of the conservation easement terms and to develop a transplant plan (to be used if NLT is encountered) for review and approval by the USFWS and the Commission. Luminant has included a survey plan for NLT in Appendix 144-G. Based on the mine plan for this renewal application, the two NLT plants identified in the renewal area during the 2014 survey are located outside of the mining disturbance boundary. Although no disturbance of the two NLT plants is proposed, Luminant will fence the area where the two plants are found to limit access and avoid disturbance. If future mine plans include disturbance of the NLT plants, then Luminant will coordinate with the Commission and USFWS to determine appropriate protective measures.
- (x). USFWS recommends that Luminant enlarge the 17-acre conservation easement parcel to a size that would have a better chance of protecting the persistence of the population that is there and to accommodate potential transplants from the permit area. Staff responded that this topic was inadvertently not addressed in the discussions between USFWS, Luminant and Staff during 2015 and 2016. At this time there is no reliable indication of the size needed. The 17-acre easement is sufficient at this time.
- (y). USFWS recommends that discussions ensue to clarify the meaning of phrases "favorable for NLT surveys," "suitable conditions," and "additional conservation measures." In response, Staff noted that it is participating in a working group with the Texas Mining and Reclamation Association to develop a SMRD protocol that all mines within the range and distribution that this species would utilize, and which would be revised on an as-needed basis, when new information is discovered in NLT's ecology that indicates that a revision is necessary. Staff plans to invite USFWS, academia, and other NLT experts to join the working group, and these phrases would be relevant topics for discussion within the group. The Commission supports participation by Staff in this working group.
- (z). USFWS recommends that if the HT is found near or in the permit area, then the Commission re-coordinate as required under the regulations, but to also consider the added purpose of gaining, or allowing the USFWS the opportunity to gain, an understanding of the HT's potential use of reclaimed mine areas. Staff commented that the HT has not been found in the permit area. This topic may be discussed if their presence is confirmed in the future.
- (aa). The protective elements and reporting requirements of the interior least tern (ILT) management plan are provided in Appendix 144-E (SD 1, SD2). In Staff's Application Deficiency 144-21, Staff suggested a number of revisions to specifically tailor the ILT management plan to the Kosse Mine. In response, Luminant incorporated many of these suggested revisions into Appendix 144-E. Staff's responses to USFWS's comments are provided in Appendix III (revised) to Staff's TA and are based on a review of the application through SD2. The existing Permit Provision No. 2, which requires that Luminant update its protection plan for endangered Interior least Terns based on the outcome of its current

consultation with USFWS's Clear Lake Ecological Services Field Office, is no longer needed.

33. Luminant will meet requirements for air pollution control. No air quality monitoring plan must be filed in that the permit area is not located west of the 100th meridian west longitude and no other factors exist which result in the need for monitoring. A plan for fugitive dust control practices is included in the approved permit that will adequately control fugitive dust resulting from mining and reclamation operations as required by §12.143(b)(2) of the Regulations, including temporary closure of roads when not in use, the use of water trucks for reduction of dust from traveled surfaces, the application of asphalt emulsions, and prompt revegetation with temporary and permanent vegetation.
34. The application, as supplemented in SD1 and SD2, includes a protection and enhancement plan in accordance with §12.144 of the Regulations to minimize disturbances and adverse effects on fish and wildlife and related environmental values during the proposed operations and reclamation.
 - (a). The plan includes a description of adequate minimization and protective measures for threatened and endangered species, migratory birds, and other species in accordance with TPWD and USFWS requirements and consultation.
 - (1). Steps will be taken to protect bald eagles and to relocate timber rattlesnakes in accordance with TPWD Scientific Permit No. SPR-0393-586, if encountered within the proposed permit area, and Luminant will notify the Commission if they are encountered. Luminant coordinated with USFWS in 2008 to ensure compliance with the Migratory Bird Treaty Act (MBTA). Luminant contacted USFWS again in 2015 by telephone and by letter dated February 4, 2015 to solicit input and to follow up on prior consultation regarding MBTA compliance. The July 8, 2015 response letter from USFWS, contained in Appendix 144-A, indicates that USFWS believes that Luminant's mining and reclamation activities fall within the scope of prohibited conduct under the MBTA. This letter states that "[t]he MBTA provides, in part, that, unless and except as permitted by regulation, it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, or attempt to take, capture, or kill any migratory birds." Because USFWS believes the MBTA prohibitions apply to Luminant's mining activities, the letter recommended that Luminant incorporate USFWS's *Nationwide Standard Conservation Measures* into Luminant's generic wildlife plan as best management practices that are intended to avoid, minimize, or mitigate, to the extent practicable, potential impacts of permitted mining activities on migratory birds.
 - (2). In response to this letter, Luminant revised page 144-5 to incorporate practicable elements of the *Nationwide Standard Conservation Measures* in the Fish and Wildlife Plan and to reference a recent September 4, 2015 ruling regarding the MBTA by the United States Court of Appeals for the Fifth Circuit in *U.S. v. Citgo Petroleum Corp.*, No. 14-40128, 2015 WL 5201185, 801 F.3d 477 (5th Cir. 2015) (Appendix 144-A, SD2), which held that "the MBTA's ban on 'takings' only prohibits intentional acts (not omissions) that directly (not indirectly or accidentally) kill migratory birds." Because this court's ruling is binding in Texas, the USFWS's July 8, 2015 response does not accurately reflect the requirements of the MBTA in the State of Texas, and MBTA prohibitions do not apply to Luminant's mining activities, which do not involve intentional impacts on migratory birds.
 - (b). Luminant objects to USFWS's permit recommendations regarding the MBTA. Luminant sent a response letter to USFWS dated March 22, 2016 that references the Fifth Circuit's binding

opinion in *U.S. v. Citgo Petroleum Corp.* that accidental killing or injuring is not considered “taking” under the MBTA and explains that as long as Luminant is not deliberately and intentionally pursuing, hunting, taking, capturing, killing, or attempting to take, capture, or kill a migratory bird as part of its Texas operations, then Luminant is not exposed to potential liability under the MBTA. Luminant has provided a copy of this correspondence to the Commission. Luminant proposes that the Commission rely on the holding in *U.S. v. Citgo Petroleum Corp.* Staff’s position is that avoiding clearing activities that adversely affect these protected birds and habitat during their breeding season represents the best technology available that will minimize adverse impacts from mining activities. Staff suggests this is an issue that Luminant should resolve with USFWS, and that pending any changes in USFWS policy, the Commission must continue to follow the USFWS July 8 letter. SMRD Staff recommends the adoption of Permit Provision No. 7, requiring Luminant to conduct vegetation removal, trimming, and grading of premined vegetated areas in accordance with state laws, rules, and its most recent written coordination with the USFWS to adequately protect migratory birds during their reproduction cycle, and requiring Luminant to avoid vegetation removal, trimming, and grading of premine vegetated areas during the peak bird breeding period, stated to be beginning on February 15 ending August 15, until it provides written coordination with the USFWS that indicates otherwise and revises its plan accordingly. Staff emphasizes in its TA, pp. 76-78 that the Regulations require that adverse effects of mining on protected species shall be *minimized using the best technology currently available* [§12.380(a)], and that avoiding clearing activities that adversely affect migratory birds and habitat during their breeding season represents the best technology available.

- (c). The Commission finds that avoidance is not the best “technology” currently available in this case. Luminant in Appendix 144-E has included its Interior Least Tern Management Plan for the mine which is based on providing manageable nesting and foraging habitats that are compatible with mine activities and that increase available nesting and foraging habitats for the interior least terns. The terns have nested at the Big Brown mine that is approximately 45 miles away from the Kosse Mine, and have been observed nesting at the Kosse Mine since 2011. They appear to be attracted to certain disturbed areas associated with mining such as newly reclaimed areas and recently cleared areas within the mine. Terns were observed and protected in the D-III area, a recently planted area at the time, and in the D-VIII area where a suitable material stockpile was being developed. Two similar areas were used by terns in 2012, as well as in 2013 on suitable material recently placed, where grading operations were ongoing at the same time. Similarly, nesting occurred at two locations in the D-1 area in 2014 and in the D-1 and E-1 areas, with two and four colonies, respectively, all on recently leveled material. Luminant’s plan uses a typical nesting period, May through September and includes assessment annually in March. Active mining and reclamation areas will be modified using deterrent strategies that make the areas unattractive to terns, and areas identified as potential nesting habitat and where no operations are planned will be left undisturbed and unplanted to provide areas suitable for tern nesting. If suitable areas away from mining activities are not identified, seasonal nesting areas may be constructed to ensure nesting habitat is available. Luminant further describes specific modification and implementation activities, deterrent methods, and nesting habitat enhancement. This proposed permit provision is also rejected as unwarranted based on the holding in *U.S. v. Citgo Petroleum Corp.* The requirement of the “Coal Mining Regulations” is at the level of consultation with specific agencies; the Commission determines to follow the Fifth Circuit’s opinion in *U.S. v. Citgo Petroleum Corp.* and to find that Luminant’s management plan is sufficient. The Commission declines to adopt Staff-recommended Permit Provision No. 7.
- (d). SMRD Staff’s TA disagrees with Luminant’s proposed plan regarding the Houston toad (HT) and suggests that the nature of the effect on the HT cannot be determined with reasonable

certainty. Therefore, Staff proposed Permit Provision No. 8 which requires Luminant to develop a mitigation plan in coordination with the USFWS and Staff for *potential HT habitat* (emphasis added) impacted during the habitat survey years 2015-2017 and requires Luminant to submit the plan by mid-term of the permit for review and administrative approval by the SMRD Director. The Biological Opinion (BO) issued by the USFWS to the Office of Surface Mining in 1996 includes Terms and Conditions (T&Cs) designed to minimize the level of take of threatened and endangered species of potential occurrence in the permit area *if* (emphasis added) it is determined that incidental take of the species has occurred, which has not occurred. For the HT, Staff's focus should be on an applicant's meeting of the 1996 BO T&Cs, which are designed to minimize the level of *take if* (emphasis added) it is determined that incidental take of the species has occurred. The Application accurately describes these T&Cs and addresses the steps that need to be followed. Additionally, the USFWS Endangered Species Consultation Handbook specifically states that it is not appropriate to require mitigation for the impacts of incidental take. The incidental take statement itself states "When a particular activity may result in the take of a listed species but not at a level that would jeopardize the existence of that species, *the Service* (emphasis added) must determine the anticipated level of take, if possible, and provide reasonable and prudent measures for minimizing that take. The Service has not determined this, but instead has stated that the level of take is unquantifiable and has stated that it is concerned that this species may potentially be impacted by mining activities. Because Luminant has made specific commitments that it will continue its ongoing survey for the HT in accordance with its survey plan in Section 144 of the Application, Staff's proposed Permit Provision No. 8 is not necessary at this time and is not adopted.

- (e). Measures are included related to the removal of surface features, construction of roads and other facilities, proper design of diversions and stream channel restoration, roadway stream crossings, and timely revegetation of stream disturbances. Some ponds will be stocked with fish of appropriate species and stocking rates. Pond edge areas will serve to increase habitat diversity and provide cover and food for birds.
- (f). The protection plan, as supplemented in SD1 and SD2, meets the requirements of §§ 12.144 and 12.380 of the Regulations. The plan includes protective measures during active mining, mining in narrow bands to lessen impacts, and enhancement measures including restoration of streams and other wetlands, and construction of ponds and impoundments. Luminant will follow its USACE Nationwide Permit No. 21 authorization and mitigation plan. Should this permit differ from the proposed wetlands impact plan contained in the application, as supplemented, Luminant must file an application for revision with the Commission. Loss of wetlands will be mitigated. Luminant has included the following information regarding the presence of wetlands within the permit area (Section 133) and will comply with mitigation in accordance with acreage and linear feet as the units of measure to quantify impacts and mitigation. Wetland acreage and stream-channel linear feet are the units of measure in all existing surface mining and reclamation permits in Texas. Within the renewal area, the total areal extent of waters in the United States, including wetlands, is 678 acres. This acreage consists of the following types of waters of the United States:

JURISDICTIONAL CATEGORY	TOTAL PREMINE ACREAGE IN THE 15,040- ACRE PERMIT AREA
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FORESTED WETLANDS	485
NON-FORESTED WETLANDS	59
PONDS	55
STREAM CHANNELS	79
TOTAL	678

The projected compensatory mitigation ratios, based on ratios in the existing Kosse Mine USACE NWP 21 Authorization are: forested wetlands, 2.0:1.0; non-forested wetlands, 1.5:1.0; ponds, 1.0:1.0; and stream channels, 1.0:1.0.

- (g). Luminant includes vegetation lists for species for wildlife habitat and compensatory mitigation areas (Appendix 144-C, SD2) and will use appropriate species with proven nutritional value for fish and wildlife for planting and distribution that are appropriate to lands reclaimed to fish and wildlife habitat.
35. The application, as revised and supplemented, contains a reclamation plan for the permit area that includes all required information in accordance with §12.145 of the Regulations, including a detailed reclamation timetable, a detailed estimate of the costs of reclamation, a plan showing the final surface configuration of the permit area, a selective handling plan for reclamation of the top four feet of the surface, and a plan for revegetation.
- (a). A detailed timetable for the completion of each major step remaining in the reclamation plan for the permit area is included in the application, in accordance with §12.145(b)(1). This timetable is contained on page 145-9 of the application and includes the following:
- Coal removal – The timeline for reclamation is initiated by final coal removal from the pit.
- Backfilling and grading – Following coal removal, backfilling and grading will be completed within the timeframe and distance described in Section .139 of the application, as supplemented (backfilling and grading plan).
- Placement of suitable material – Following backfilling and grading, placement of suitable material will be completed within the time and/or distance requirements as established in Section .139 of the permit application.
- Revegetation - Seeding and planting will be conducted during the first normal period favorable for planting conditions after completion of backfilling and grading.
- Temporary vegetation - May be planted when seasonal conditions prevent planting permanent cover. Temporary cover is typically planted from September through November.
- Permanent vegetation - Warm-season grasses are typically planted during March through June. Trees and shrubs are typically planted from January through April within areas with established ground cover.
- Mulching - Suitable mulch and other soil stabilizing practices will be used on all areas to control erosion, promote germination of seed, or increase the moisture retention capacity of the soil.
- Extended responsibility period - Will be initiated when augmentation of the permanent vegetation has ceased and management units have been established.
- Phase I bond release - Application for Phase I bond release will be submitted within one year of the initiation of the ERP, with the exception of approved temporary structures that are needed for drainage control.
- Phase II and Phase III bond release will be submitted to the Commission within one year following completion of the extended responsibility period. The timetable also includes provisions that Surface Mining and Reclamation Division approval of quantitative data,

demonstrating revegetation success, will be obtained prior to submitting applications for Phase II and/or Phase III bond release, and that Phase II and/or Phase III bond release applications will be submitted between April 1 and September 30.

- (b). A detailed estimate of the cost of reclamation required to be covered by the performance bond is contained in the application, in accordance with §12.145(b)(2).
 - (1). Luminant provided its reclamation cost estimate in Section .145, Appendix H. The estimate, \$176,165,220.00 includes worst-case pit closure costs for the DI-Auxiliary worst-case pit, costs for mined areas, disturbed areas, ancillary areas, and facility reclamation costs. Staff's reclamation cost estimate is \$168,583,171. Staff's estimate includes the following disturbance categories: Dragline Mined, Worst-Case Pit DI-Auxiliary, Worst-Case Mined, Disturbed, and Facility Reclamation Costs.
 - (2). The Commission approves Luminant's estimate as the amount required to reclaim the permit area should reclamation be performed by a third-party at the direction of the Commission because it will result in a more conservative cost that is more appropriate for third-party reclamation.
 - (3). Luminant's accepted bond for all of its statewide mining operations is a blanket collateral bond in the amount of \$1,100,000,000. Staff's analysis indicates that Luminant's current bond exceeds the sum of the estimated reclamation costs for its Texas mines, including the proposed increase bond amount attributable to the Kosse Mine. Therefore, no changes to Luminant's existing blanket collateral bond are necessary as a result of this permit renewal.
- (c). The application, as supplemented, in accordance with §12.145(b)(3) includes a plan that shows the final surface configuration of the permit area. The application, as supplemented, includes descriptions of backfilling and regrading and indicates that backfilling and grading variances are needed for operational reasons as follows for the following mine areas: DI Area: Backfilling and grading will be completed within 180 days, and Luminant requests a maximum distance of 750 feet; DIII Area [Figure 139(F)-36, SD2]: Spoil and leveling area, 8 pit widths (@150 feet wide per pit, equaling 1,200 feet, Leveling and Grading Transition Zone, 3 pits @ 150 feet wide per pit, equaling 450 feet; total distance will equal 450 plus 1,200 (1,600 feet), and average annual pit progression during the proposed permit term will be 10 pit widths @ 150 feet each, with annual backfilling and grading time equal to 1,600 feet divided by 1,500 feet times 12 months per year, equals 13 months (rounded). A time frame of 13 months and a distance of 1,600 feet are requested to complete backfilling and grading for the DIII Area. DV Area: A time frame of 16 months and a distance of 1,500 feet are requested to complete backfilling and grading. E Area [Figure 139(F)-38 and Table 139(T)-4]: A time frame of 8 months and a distance of 1,200 feet are requested to complete backfilling and grading. Auxiliary Mine Areas: Clearing distances for an auxiliary area are determined according to the area in which the auxiliary is located (SD1). The application, as supplemented, includes the postmine contour maps, Plates 139-2-1 and 139-2-2, and the postmine slope maps, Plates 139-3-1 and 139-3-2. These maps and the slope comparison table, 139 (T)-1, indicate that premine and proposed postmine slopes are similar; a slight increase of approximately 5.5% occurs in the 0-5% slope, and slight decreases occur in the 5-10% slope (approximately 4% or less) and in the 10-15% and greater than 15% slope (approximately 1% or less). Based on these proposed changes, the postmine topography will approximate premine topography.
- (d). Luminant has included information to meet the requirement of §12.145(b)(4) for a plan for

the removal, storage, and redistribution of topsoil, subsoil, and other material to meet the requirements of §§12.334-12.338 of the Regulations as required by §12.145(b)(4) and has indicated that only mobile equipment shall be used in the selective handling of oxidized overburden approved for placement for the reclamation of the top four feet of reclaimed soils.

Luminant has provided a soil-handling plan that is acceptable as a method to prevent the presence of acid- and/or toxic-forming materials in the top four feet of reclaimed soils. Approval of the use of topsoil substitute material is based on the availability of sufficient suitable materials, the determination that the resulting soil medium is equal to or more suitable for sustaining revegetation than is the available topsoil, and that the substitute is the best available to support revegetation.

- (1). Luminant indicates (p. 145-A-11) that the information presented in Appendix 145-A, as supplemented, demonstrates that the suitable replacement material is a viable option for use within the top four feet of leveled minespoil. Key findings of Luminant's study are: Statistical analyses of the key parameters of concern, pH, ABA, sand, and clay, indicate that the suitable selective overburden replacement material meets RCT suitability criteria for these parameters; other potential constituents of concern, such as electrical conductivity, sodium adsorption ratio, and trace elements are within acceptable limits for use as a plant growth medium with minor exceptions; the pH, ABA, sand, and clay content of the identified suitable oxidized intervals (SOI) is as good as or better than the same parameters for native soils. Average values and frequency distributions for these parameters indicate that use of the SOI to create the upper four feet of postmine soils will be an improvement over native soils, primarily due to the replacement of the native droughty topsoil layers and claypan subsoil layers with a more homogenous, moderately-textured soil. Luminant indicates that many of the native soils in the Kosse Renewal/Revision Area provide a limited plant growth medium. Comparison of the selected suitable oxidized intervals to overburden characteristics supports the conclusions that selective handling of oxidized overburden can provide materials more suitable for postmine topsoil than are available in native soils.
- (2). A plan for the use of oxidized overburden to reclaim the top four feet of postmine soils is included in the application. Luminant compared data for identified SOI to Commission guidelines and to the native soil information contained in Section 134 of the application. Luminant indicates in Appendix 145-A that the SOI extends from natural ground surface to the shallowest of the base of the oxidized zone or 5 feet above the uppermost lignite seam, with the following exceptions: a 5-foot buffer zone above and below all rider seams; and all lignite seams and rider seams, including parting clays.
- (3). Haulback will be the primary method of selective placement of suitable overburden materials to achieve four feet or greater of suitable material in final reclamation. Mobile/auxiliary equipment will be used for placement of the suitable material in all other mining areas for the reconstruction of the top four feet of the regarded surface with suitable material.
- (4). There are areas proposed to be mined in this permit term where the SOI is thick enough to be selectively handled with a dragline, as shown on Plates 127-9 and 127-10.
- (5). Luminant provided details regarding how operators will distinguish suitable material from unsuitable material in the field. Operators will use the information provided on

Figure 127-4, Schematic Diagram of Suitable Oxidized Interval to select the suitable material.

- (e). As set out in §12.145(b)(5), the application, as supplemented, includes a plan for revegetation as required by §§12.390-12.393 and 12.395 of the Regulations. Luminant proposes a plan for revegetation in the application addressing the elements contained in §12.145(b)(5)(A – G). These include, as set out below: (1) a schedule for revegetation, species and amounts per acre of seeds and seedlings to be used, and methods to be used in planting and seeding, mulching techniques, irrigation and pest and disease control, (2) measures to be used to determine the success of revegetation (§12.395), and (3) a soil-testing plan for evaluation of the results of topsoil handling and reclamation procedures related to revegetation.
- (1). The schedule for revegetation includes Luminant's plan to seed and plant during the first normal period after the completion of backfilling and grading, typically March - June for permanent warm-season grasses, September - December for temporary cover, and January – April for trees. The timetable for reclamation is set out in Finding of Fact No. 35(a). The application includes information on reclaiming land for erosion control and wildlife use (Section .144, Appendix 144-B), and planting lists for fish and wildlife habitat and compensatory mitigation areas (Section .144, Appendix 144-C) that include native and introduced species of forbs and grasses, native trees, shrubs, vines, and aquatic plants. The application contains seeding rates and planting dates for grasses and forbs for grazing or hay production; Appendix 145-B, as supplemented, specifies desirable invader species for fish and wildlife habitat and pastureland (up to 25% of the ground cover), and Appendix 145-D sets out forage production standards for various grasses (SD2). Information is also provided for land management and fertilization, mulching, and other erosion control techniques. Luminant will use grazing as a management technique in accordance with the Commission's *Procedures and Standards for Determining Revegetation Success on Surface Mined Lands in Texas* and *Normal Husbandry Practices for Surface-Mined Lands in Texas*. Luminant will use irrigation only as necessary to extend the season to establish vegetation; mulching techniques will include use of cool-season annual or perennial species, bermudagrass sprigs, bermudagrass sod, and/or straw or hay. Luminant will follow state laws regarding pest control. Forage production standards for Luminant's list of grasses are included in Appendix 145-D (SD1).
- (2). To determine the success of revegetation, Luminant will follow standards set out in the Commission's *Procedures and Standards for Determining Revegetation Success on Surface-Mined Lands in Texas*. For fish and wildlife habitat, ground cover will meet a minimum of 90% of the 78% technical standard [§12.395(a)(2)], and trees and shrubs will meet a minimum 90% [§12.395(a)(2)] of the 30 trees per acre stocking standard as based on local conditions after consultation with the TPWD [letter to Director, SMRD, dated January 8, 1998, §12.395(b)(3)(A)]. For pastureland, ground cover will meet at least 90% of the 95% technical standard [§12.395(a)(2)], and productivity will meet at least the approved production standard during any two years of the extended responsibility period (except the first year). In addition, trees and shrubs must be healthy and have been in place for not less than two growing seasons, and at the time of bond release, at least 80% of the trees and shrubs used to determine success shall have been in place for 60% of the applicable minimum period of responsibility [§12.395(b)(3)(B)]. The proposed permit area receives more than 26 inches of rainfall per year; an extended responsibility period of five years is applicable to the proposed permit area.

- (3). Luminant includes a soil-testing plan in the application for evaluation of the results of soil handling and reclamation procedures related to revegetation. Appropriate select material placement and soil testing, in accordance with the Soil Testing Plan included as Appendix II to this Order (taken from the Staff's TA, Appendix VII), will ensure that the reclamation of the top four feet of reclaimed soils results in the required soil medium. Existing Permit Provision No. 5 specifies that no postmine soils, as sampled according to the approved soil-testing plan, shall have a pH value below 3.9 standard units (s.u). Luminant's revised soil-testing plan (SD2) indicates a minimum pH value of 3.9 standard units (s.u) in Table 145-1; therefore, existing Permit Provision No. 5 is no longer needed. The Commission approves the postmine soil performance standards as set out in Appendix II to this Order.
 - (f). Measures are included to maximize the use and conservation of the coal resource as required in §12.356 in accordance with §12.145(b)(6). Luminant will conduct surface mining so that the best technology currently available is used to minimize future re-disturbance and to recover all economically mineable seams.
 - (g). The application, as supplemented, includes a plan to ensure that all debris is covered or adequately disposed of, and that all acid-forming and toxic-forming materials and other materials required to be covered are covered with a minimum of four feet of non-toxic and non-acid-forming materials in accordance with §12.145(b)(7).
 - (h). As required by §12.145(b)(8), Luminant will seal all bore holes, abandoned water wells, monitoring wells, dewatering wells, and oil and gas wells in accordance with the following, as applicable: Coal Exploration Regulations, §12.331-333, Texas Department of Licensing and Regulations, 16 TAC Part 4, §76.1004, et seq., 16 TAC Part 1, §3.14 (as approved by the Commission). The plan, as supplemented, is sufficient and complies with §§12.331 – 12.333 of the Regulations.
 - (i). Luminant has included in the application, as supplemented, a description of steps to be taken to comply with requirements for air quality and water quality laws in accordance with §12.145(b)(9). Luminant will monitor and report water discharges as set out in the application, as supplemented, and will meet the terms, conditions, and effluent limitations set out in the TCEQ TPDES (Texas Pollutant Discharge Elimination System) permits. The information provided is sufficient to indicate that Luminant will comply with requirements of the USACE, the Clean Air Act (42 U.S.A. §7401 *et seq.*), and the Clean Water Act (33 U.S.C. §1251 *et seq.*).
36. Luminant proposes alternative postmine land uses for numerous tracts; Luminant owns virtually all of the tracts proposed for alternative land uses. A depiction of the proposed postmine land uses is included on Plate 147-1 of SD1. A summary is included in Table 147-1 of the application, SD1, indicating that Luminant will reclaim 9,966 acres of disturbed and mined lands as follows: pastureland, 78% of disturbed and mined lands (7,796 acres); fish and wildlife habitat, 18% of disturbed and mined lands (1,774 acres); developed water resources, 4% (361 acres); and industrial commercial, residential, and undeveloped, each less than 1% (35 acres). In the application, as supplemented in SD1 and SD2, Luminant describes the proposed postmine land uses, the plan for reclamation, a timetable, and information regarding bonding for performance. These proposals will not result in undue delay in reclamation or any hazard to public health or safety or threat of water-flow diminution or pollution. Adequate plant residue and stubble height will be maintained to sustain production and prevent soil erosion in accordance with Table 6 of the Commission's *Procedures and*

Standards for Determining Revegetation Success on Surface-Mined Lands in Texas. Fish and wildlife habitat areas are dedicated wholly or partially to the production, protection or management of species of fish or wildlife. Luminant has demonstrated that the alternative land use is economically viable, of more beneficial use to the landowner (Luminant), and is a reasonable reclamation alternative. The proposed changes will result in many areas of pastureland where dense or open woodlands existed premine. Luminant will, however, increase developed water resources, will develop some lands as fish and wildlife habitat, and will use species to increase food and cover for wildlife in pastureland areas. Staff analysis considers the alternative land uses as higher or better land uses. The alternative land uses as proposed are approved. However, Staff's TA notes that Luminant's proposed land-use plan is a 741-acre increase to the 9,225-acre postmine land-use plan administratively approved on December 2, 2015 in Revision No. 70. Staff's TA suggests that Luminant will likely need to submit a revision to the application following approval if it desires to incorporate the change in Revision No. 70 into its postmine land use plan due to discrepancies between the postmine land use maps (Plates 147-1 and 147-2) and the postmine land use plan in Revision No. 70 to provide consistency.

37. The application, as supplemented, contains required information for ponds, impoundments, embankments, and dams as required by §12.148 of the Regulations. Table 139(T)-6 (SD2) contains the impoundment schedule. Sediment Ponds (SP) D-7 and D-9 are proposed for the requested permit term. Approximate in-service dates are set out in Table 139(T)-6. Existing approved sediment ponds are D-1, D-2, D-5, D-6, D-8, E-1, E-3, E-4 (temporary pond) and E-5. No permanent or temporary impoundment detailed design plans are proposed within the application; however, they will be submitted at a later date and will comply with postmine land use Commission regulations. The general design plan information for permanent impoundments proposed within the permit term located in Table 139(T)-8 and on Plates 139-2-1 and -2, as supplemented, are approved.
38. Luminant proposes the following diversions during the permit term as shown in Table 139(T)-7 (SD2): D-5D, D-6B, D-6C, D-6G, D-6H, D-6J, D-7A, D-8 Diversion No. 2, D-9A, D-9B, Heads Creek Permanent Relocation No. 1 Mod. Nos. 1 and 3, Heads Creek Permanent Diversion No. 4, E-103 Diversion No. 1, Owens Creek Temporary Diversion Phases 1, 2 and 3, and Owens Creek Permanent Relocation. Previously approved diversions as shown on Table 139(T)-7 (SD2) include: D-1A, D-1B, D-1C, D-2A, D-2B-a, D-2B-b, D-5A, D-5B, D-5B Modification No. 1, D-5C, D-5A freshwater diversion, D-6A, D-6F, D-6I, D-8 Diversion No. 1, D-9C, Heads Creek Permanent Diversion - Nos. 2 and 3 Mod. 1, Heads Creek Temporary Reroute Nos. 1, 2, and 2 Mod. 1, D-127 Diversion No. 1, E-1A, E-1B, E-1 Haul Road Diversion Nos. 3, 4 and 5, E-3A Mod. 1, E-3C, E-3D, E-3E, Cox Creek Permanent Relocation, Stockpile A MFD No. 1, DI MFD – Nos. 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16, DIII MFD – Nos. 8, 13 Mod. 1, 14, 16 and 17, DVIII MFD Nos. 9 and 11, DV MFD Nos. 2, 4, 5, 7, 8, 9, 12, 13 and 14, E MFD No. 1, 2, 3, 4, 5, 6, 7, 8 and 9. No diversion general design plans were submitted in the permit application. Detailed design plans for the diversions will be submitted for approval by the Commission prior to construction.
 - (a). No detailed design plans for roads were submitted in this permit application. Design plans for roads not included in this application will be provided to the Commission for approval prior to construction at a later date. The primary route of travel for transporting lignite will be on haul roads within the Kosse Mine road system, and Table 154-1 lists all existing and proposed roads and the reclamation schedule for the roads.
 - (b). The application also includes required information for temporary miscellaneous flow diversions (all diversions of flow other than from intermittent or perennial streams) in accordance with requirements of §12.341. The miscellaneous flow diversions minimize adverse impacts to the hydrologic balance within the permit area and adjacent areas to prevent material damage outside the permit area and to assure the safety of the public. Their design, location, construction, maintenance, and removal will be sufficient to meet the performance

standards of subsection (a), and they are designed so that the combination of channel, bank, and floodplain configuration is adequate to safely pass the peak runoff of a two-year/6-hour design storm event for a temporary diversion.

- (c). No diversions will be located within prohibited distances from occupied dwellings or the permit boundaries, cemeteries, cultural resource sites, or in national parks, refuges, national system of trails, wilderness preservation areas or wild and scenic rivers.
 - (d). No perennial or intermittent stream channel diversions are proposed in this permit term. Perennial and intermittent stream channels will not be diverted without prior approval from the Commission, and all such diversions will be stable, will protect against flooding, and related damage, and will prevent additional contributions of suspended solids to streamflow outside the permit area using the best technology currently available. The diversions will comply with local, state, and federal laws and regulations. Diversion designs will incorporate appropriate channel linings, energy dissipators at discharge points where necessary, and other erosion protection measures. All diversions are designed to incorporate appropriate slope of banks and use of concrete or grass linings as applicable. Temporary diversions will be removed when they are no longer needed. All diversions will be appropriately bonded.
39. Luminant has requested variances from the prohibitions against conducting activities within 100 feet of perennial or intermittent streams set out in §12.355 of the Regulations. The Commission may approve disturbances within 100 feet of perennial or intermittent streams: (1) if proposed activities will not cause or contribute to the violation of applicable State or federal water quality standards and will not adversely affect the water quantity and quality or other environmental resources of the stream [§12.355(a)(1)], and (2) in cases of temporary or permanent stream-channel diversions, they will comply with §12.341 of the Regulations related to the requirements for approval of diversions [§12.355(a)(2)]. Luminant proposes stream buffer variances for waterway and creek segments depicted in Plates 139-4-1 and 139-4-2, *Stream Grade Map*, which will support disturbances projected to occur within the proposed permit term for stream sections in Heads Creek, Cox Creek, Steele Creek and Owens Creek. In compliance with the requirements of §12.355, Luminant has presented information sufficient to meet the requirements of §12.355(a)(1) and (2). All temporary and permanent stream channel diversions will comply with §12.341 in that the design capacities and construction will be at least equal to the capacity of the unmodified stream channel immediately upstream and downstream of the diversions; that is, the combination of channel, bank, and floodplain configuration will be adequate to safely pass at a minimum the peak runoff from a 2-yr/6-hr design storm event (for temporary ephemeral), a 10-yr/6-hr design storm event (for permanent ephemeral), or, a 100-yr/6-hr design storm event (for stream channel diversions). A registered professional engineer will certify designs as meeting the performance standards and design criteria. In areas where the stream channel is impacted by construction activities, a storm-water pollution prevention plan will be followed. Detailed design projects will include such protection plans.
40. The Application includes a description as required by §12.146 of the Regulations of measures to be taken to protect the hydrologic balance of the surface water and groundwater systems within the permit area and adjacent areas and to prevent damage outside the permit area, to meet water quality laws and to protect groundwater and surface water users as set out below and in these Findings of Fact. This includes Luminant's determination of probable hydrologic consequences (PHC) set out in Section .146 of the Application, Appendix D, as supplemented in SD1 and SD2, including a long-term groundwater monitoring plan (LTGM plan), a long-term surface water plan (LTSM) plan, alternate water supply information, operational procedures, as required by §§12.146 (c) and (d) of the Regulations (Finding of Fact No. 41).
- (a). Alternative water supplies are identified (Finding of Fact No. 22) should impacts to existing

water supplies occur as a proximate result of surface mining operations.

- (b). Selective handling of overburden and appropriate soil testing will identify acid-forming and/or toxic-forming materials (AFM/TFM), and Luminant has included an alternative testing plan after treatment or re-handling to ensure that all AFM/TFM are placed below the top four feet of reclaimed soils. In addition, low-permeability clays exist beneath the lowest lignite seam to be mined. The mixed overburden that will be used in backfilling and grading will likely be less transmissive of water than the premine overburden. Resaturation of the overburden is estimated to be from one to several tens of years. Luminant predicts that impacts to groundwater quality will include slight to moderate increases in TDS (total dissolved solids) concentrations.
- (c). Impacts to groundwater levels may occur in the vicinity of mining from groundwater inflow to the pit; these impacts are likely to be limited to the areas closest to the pit, and Luminant will control this water as a part of its water control plan. Advance dewatering will also cause water level declines. Depressurization of the underburden will also be needed to decrease pressure in Calvert Bluff underburden sands. In the expansion area, no depressurization is anticipated for the proposed five-year permit term. Groundwater declines will be greater in areas of greater saturated sand thickness. Luminant has identified areas that will require dewatering, saturated sands greater than 20 feet thick (Plate 128-4), most located along the north, east and southeast perimeter of the initial mine area. No advance dewatering is anticipated for the expansion area. Luminant contracted for computer modeling to predict potential impacts to water wells. Conservative factors such as boundary conditions and recharge were included in the model. Pumping schedules used in the modeling are set out in Table 146(d)-1. Staff's TA comments that while Luminant provided dewatering and depressurization-plan modeling simulators for the proposed term, no operation plan for conducting these activities was provided in the application. To ensure that Luminant is aware that it cannot conduct dewatering and depressurization without an operation plan, Staff proposes Permit Provision No. 11, which states that active well-field dewatering and depressurization activities are not approved and that Luminant may not conduct such activities unless it submits a revision for and receives approval from the SMRD Director of a satisfactory operation plan to conduct those activities. Staff's proposed Permit Provision No. 11 is adopted and will become Permit Provision No. 4.
- (d). The five-foot drawdown contour predicted from modeling from overburden dewatering could extend to a maximum of 5,000 feet beyond the dewatering fields and mine blocks, and the maximum extent of five-foot drawdown from underburden depressurization could extend to 20,000 feet beyond the underburden depressurization activities. Approximately 187 wells fall within these areas [Plate 146(d)-2]. A number of potentially impacted water wells listed in Table 146(d)-2 have been destroyed or abandoned. Closer wells screened in the same interval being dewatered or depressurized and wells screened at less than 200 to 300 feet are more likely to be impacted.
- (e). To assist in evaluating impacts to groundwater, Luminant includes a plan for the monitoring and reporting of dewatering and depressurization activities (pp. 146(d)-13 through 16, Application). Luminant will submit to the Commission a report summarizing annual activities within 60 days following the end of each calendar year. The report will include a potentiometric surface elevation chart that lists the LTGM wells, the baseline water levels from the wells, the fourth quarter (or most recent) water level from the LTGM wells, and the change in water levels, along with a summary of groundwater withdrawal amounts, a map showing the approximate location of the active well field during the previous year and the change in water levels, and an evaluation, with summary, that compares the observed effects

from dewatering/depressurization to the effects predicted in the Probable Hydrologic Consequences (PHC). Luminant will provide the Commission with a response addressing any observed or anticipated exceedance of the estimates contained in the approved permit application. Discharges of water from dewatering and depressurization activities will be routed through a final discharge pond prior to release from the permit area or will be monitored at the pipe outlet (the location of the TPDES sampling point) and will be monitored and reported to the Commission in accordance with Tables 146(d)-9, 146(d)-10 and 146(d)-11.

- (f). Luminant proposes a LTGM plan that will provide sufficient information to ensure the protection of the groundwater hydrologic balance. Luminant will monitor fourteen (14) overburden wells, thirteen (13) spoil wells, eleven (11) Calvert Bluff underburden or interburden wells, and ten (10) Simsboro underburden wells as depicted on Table 146(d)-4, for a total of 48 wells, 18 of which are baseline wells. Spoil wells will be installed within one year of backfilling and grading unless otherwise approved by the Commission or the Director. Quarterly samples will be taken and reported to the Commission for the following parameters: total dissolved solids (TDS), dissolved iron (Fe), dissolved manganese (Mn), sulfate (SO₄), chloride (Cl), field EC (electrical conductivity), field pH, and field temperature. For spoil monitoring wells, annual samples will be taken for 12 trace elements [p. 146(d)-14, Application]. If a new or replacement well is installed, Luminant will conduct one-time sampling for all of the quarterly and annual parameters, as well as calcium, dissolved magnesium, carbonate, nitrate- nitrogen, potassium, bicarbonate, and sodium.
- (g). The Application, as supplemented in SD1 and SD2, includes appropriate surface water information (Finding of Fact No. 21), modeling of potential impacts on surface water quantity and quality, and a long-term surface water monitoring (LTSM) plan sufficient to detect concentrations of required effluent parameters.
 - (1). Luminant's surface water modeling effort conservatively addressed mining for the life-of-mine. Watersheds were mapped and soils and land use data, topography, cover, and other characteristics, such as rainfall rates, were assigned to the watersheds and incorporated into a hydrologic model (USACE HEC-HMS Hydrologic Engineering Center - Hydrologic Modeling System, Version 3.1.0 (2006). The estimate of postmine evaporative losses was conservatively based on the 450 acres of surface area for life-of-mine water resources; this amount was compared to streamflow records for the monitoring station SW-2A immediately downstream of the permit area. The average annual net evaporative loss represents less than 4% of the average annual flow at that location. The model incorporated a postmine land use of pastureland as a conservative factor in predicting runoff rates and sediment yields for premining, during mining, and postmining scenarios for the 10- year/24-hour, 25-year/24-hour, and 100-year/24-hour design storm events. Table 146(d)-7 sets out predicted runoff volumes and peak flows for affected watersheds. Sediment yields were predicted using the 10-year/24-hour design storm event; they are predicted to increase during mining; after mining and revegetation, they are predicted to decrease to below pre-mine conditions.
 - (2). Measures will be taken, during and after the proposed surface mining activities, to minimize additional contributions of sediment to surface waters, so that discharges into receiving streams will meet applicable federal and State water quality laws and regulations in accordance with water quality permit requirements. Sediment ponds and impoundments will detain water and thereby decrease the contribution of TSS in discharges in accordance with the TCEQ TPDES permit requirements.

- (a). Results of sampling of each final discharge pond will be reported to the Commission. Watersheds will also be monitored at stream sampling stations that will be located appropriately to compare results of sampling at undisturbed and disturbed watersheds ("paired watersheds") along Steele Creek upstream and downstream of proposed disturbances. The stream stages will be monitored using staff gauges with channel rating curves, and rainfall will be recorded using a continuous recording rain gauge. Luminant describes TCEQ sampling requirements and procedures and proposed monitoring and reporting to the Commission.
- (b). Table 146(d)-9 (SD1) summarizes the Point Source and Hydrologic Balance monitoring procedures encompassing the LTSM Program, specifies monthly reporting per the TPDES permit, quarterly reporting of final discharge ponds to be sampled weekly until final bond release is granted, quarterly reporting in an electronic format (along with paper copies of laboratory reports) for long-term monitoring stations for flow data (daily minimum, maximum, and average), and water quality data (TDS, TSS, pH, total and dissolved iron and manganese), with annual updates of outfall location maps (disturbed and undisturbed).
- (c). Luminant includes Table 146(d)-10, TPDES Point Source Monitoring, that specifies effluent parameters and parameter limits for active mining final discharge ponds and postmining final discharge ponds. Active mining final discharge ponds (ponds that contribute flow to a TPDES outfall) that receive drainage from disturbed areas and discharge during times other than precipitation events will be sampled for the following parameters (effluent limits follow each parameter): TSS, 70 mg/L; Fe, 7.0 mg/L; Mn, 2.0 mg/L; and pH, greater than six and less than nine standard units; in addition, Al and flow will be reported, and if Se is required by the TPDES permit, the Se limits will be based on TMDL limits set by TCEQ.
- (d). For active mining final discharge ponds that do not receive water from disturbed areas that discharge only during precipitation events, and for postmining final discharge ponds (pond that receive water from a reclamation area that has been returned to approved contour and on which revegetation has commenced), the following parameters will be sampled for the following effluent limitations: settleable solids, 0.5 ml/L; and pH, greater than six and less than nine standard units; in addition, flow will be reported. For all three types of ponds, individual final discharge ponds (ponds that contribute flow to a TPDES outfall) will be sampled weekly.

41. A comprehensive update for the Kosse Mine cumulative hydrologic impact assessment (CHIA) of all anticipated lignite mining activities within a cumulative impact area in the Navasota River Basin contained in portions of Robertson and Limestone Counties was made by Staff in its review of Luminant's application for Kosse Mine Permit No. 50A (Docket No. C7-0026-SC-50-C; approved on February 7, 2012). Both surface water and groundwater impacts were assessed. Another CHIA for this same area is not needed at this time, as no measurable changes to water quality are anticipated. As reflected in Appendix I to Staff's TA, the following summary statements were derived from information contained in the existing CHIA document:

For surface water:

7.1.2 Statement of Findings

- (1) TDS concentration was used as the indicator parameter in a mass-balance analysis to project changes to the chemical quality of surface water. The largest projected increase will occur nearest the mine boundaries, as could be expected. At Mass-Balance Location No. B (downstream of the confluence of Steele Creek and the Navasota River), a potential increase in TDS concentration of 14.7% is projected (from 155 mg/L to 178 mg/L). This resultant concentration is significantly below the threshold value of 600 mg/L TDS for TCEQ Stream Segment No. 1209. At Mass-Balance Location No. A below the Lake Limestone dam, the cumulative effects from the Jewett Mine (Permit No. 32F) will be negligible due to the dilution effects of the Navasota River and Lake Limestone. The predicted increase in TDS concentration at the downstream node of the CIDA (Mass-Balance Location No. D) at the confluence of the Navasota River and the Brazos River is negligible (1.3% increase, from 421 to 426 mg/L TDS), indicating that no discernible effects will occur at this point. The cumulative impacts are insignificant, primarily the result of a large dilution effect from substantial runoff within the Navasota River Basin drainage area. TDS concentrations in the postmine period are predicted to be comparable to those of the premine period.
- (2) The physical changes projected within the reclaimed areas of the mines will cause small changes in the quantity of surface water available for downstream users. Changes that can be expected to the hydrologic flow regime include some attenuation of storm events by surface-water impoundments and somewhat longer sustained flows in receiving streams. The amount of water stored in impoundments and lost to evapotranspiration is negligible when compared to the aggregate amount of water originating from the entire Navasota River Basin CIDA. The attenuation of storm runoff and increase in sustained flows is insignificant when compared to the amount of storm runoff originating within the CIDA. For the proposed expansion of Kosse Mine, Luminant has shown in its PHC determination that, after mining and reclamation, runoff increases are slight because of a change in land use from undeveloped forest to commercial forest, pastureland and wildlife habitat.
- (3) The geomorphic changes within the CIAs drainage basins were evaluated in accordance with the reclamation plan proposed for the disturbed areas. The restoration of disturbed land to its approximate original contour and its managed revegetation will result in a lower soils-loss rate overall from premine to postmine conditions. The possible increases in erosion during certain phases of mining will be mitigated by the construction of surface-water control and treatment structures.

For ground water:

7.2.2 Statements of Findings

- (1) The projected aquifer-head drawdowns and declines as a result of mining activities in the Jewett (Permit No. 32F), Gibbons Creek and proposed expanded Kosse Mines have been assessed for the CIA and found to be generally insignificant. This projection results primarily due to the limited extent of the sand bodies and the usually unconfined conditions within isolated watershed areas encompassing the overburden aquifer(s).

- (2) The physical changes projected within the spoil areas of the Jewett Mine (Permit No. 32F), Gibbons Creek Mines and proposed expanded Kosse Mine will cause changes (resaturation rates, and geometry of the ground-water flow regime) that cumulatively are assessed to be insignificant. The principal reason for this result is the isolation of effects within generally unconfined aquifer conditions throughout local watershed areas. Transmissivity of the near-surface aquifers is expected to be permanently decreased within the reclaimed areas relative to the surrounding unmined areas.
 - (3) Mass-balance analyses used to project water-quality impacts of spoil-area ground water on surrounding aquifers indicate negligible cumulative effects throughout the CIA and CIDA for the subject mines. The same is true for the effects of spoil-area ground water on the streamflow water quality in critical reaches outside the mine areas. Material damage is determined to be insignificant, mainly due to the large dilution effects from the surrounding aquifers and from the substantial runoff within the large drainage areas.
42. The Commission approves the requested road buffer variances included in the application, as supplemented, for the requested renewal term. Continued approval of the following road buffer variances, which were previously approved by the Commission, were requested for the proposed permit term:
- (a). Public Road Buffer Zone Variances;
 - (1). State Highway (SH) 7 – Along both sides, starting at a point 1,232 feet east of the intersection of FM 2749 and S. Hwy 7, continuing 1,368 feet east. Then on the north side for 411 feet east. Then on both sides for 11,482 feet east. This variance is needed in order to achieve maximum coal recovery.
 - (2). RCR 460 – Along both sides, beginning at the intersection of RCR 460 and RCR 477, south 2,266 feet of said intersection.
 - (3). RCR 460 Relocation – Along the north side, starting at a point 244 feet northeast of the intersection of the permit boundary and RCR 477, continuing 3,340 feet southeast from the starting point.
 - (4). RCR 462 – Along the east side, from the southeast corner of the Ebenezer cemetery, 376 feet north to the Limestone – Robertson County line.
 - (5). RCR 477 Cut Off – Along both sides, from the intersection of SH 7 and RCR 477 Cut Off, 1,960 feet southeast to the intersection of RCR 477 Cut Off and RCR 477.
 - (6). RCR 477 – Along both sides, starting at a point 2,440 feet northeast of the intersection of the permit boundary and RCR 477, continuing 9,845 feet northeast to the intersection of RCR 477 and SH 7.
 - (7). RCR 477 – Along the north side, beginning at a point approximately 12,144 feet southwest of the intersection of SH 7 and RCR 477, then southwest approximately 612 feet.
 - (8). RCR 477 – Along North side, starting from the intersection of RCR 477 and SH 7, continuing 3,784 feet northeast.

- (9). LCR 714 Relocation – Along both sides, starting at a point 382 feet south of the intersection of SH 7 and the LCR 714 relocation, continuing 4,572 feet south to the corner of the Ebenezer cemetery buffer.
 - (10). LCR 714 – Along the east side, from the northeast corner of the Ebenezer Cemetery buffer, 463 feet south to the Limestone – Robertson County line.
 - (11). LCR 732 – Along both sides, starting at a point 2,455 feet south of the intersection of FM 1246 and LCR 732, continuing 7,942 feet south to the permit boundary.
- (b). Luminant also has provided information regarding its rights-of-way delineation. All of the county roads in the Kosse Mine area have established fences on both sides of them, and the County maintains the area within these right-of-way fences. Luminant will use these established fence lines as the right-of-way boundaries on each side of these roads where they exist. Actual field measurements of the right-of-way widths (fence to fence) of several of these county roads yielded an average width of 40 feet. Therefore, where no fence lines exist, Luminant will use 40 feet as the right-of way width (or 20 feet on either side of the road as measured from the road centerline). Luminant will notify the Commission in a timely fashion should it become aware of a situation in which a county road right-of-way may differ from the aforementioned widths.
 - (c). Luminant provided information that the roads will be maintained to: control or prevent erosion, siltation, and related pollution; control and prevent damage to fish and wildlife, water quality, streams, and drainageways; control or prevent damage to public or private property; use non-acid-forming and non-toxic-forming surface materials; submit for approval its plans and drawings prior to any road modifications, and bonding requirements.
 - (d). Luminant requested the public road buffer variances for mining, pond construction, construction of diversions, construction of roads, dewatering activities, regrading, reseeding, erosion repair, and such other activities associated with normal mining, construction, and reclamation procedures. Luminant has included information showing that the interests of the public will be protected [Subparagraph (c)].
43. Luminant has presented required information for its transportation system within the proposed permit area for the proposed permit term. Plates 154-1, 154-2, and 139-1-1 through -10 depict the transportation plan, including seven existing haulroads and/or haulroad modifications or extensions (DI, D7 – Nos. 1 and 2, D3 – Mod. 2, E1, E1 – Mod. 1, and E1 - extension), 17 existing access roads and/or access road modifications (D-5 Nos. 1, 2 and 3, DV – No. 5, D-6 – Nos. 1, 2 and 3; D-7 – Nos. 1 and 2; D-8 – Nos. 1 and 2, E-1 – Nos. 1, 2 and 3; and E-3 – Nos. 1, 2 and 3), 8 existing ancillary roads (LCR 732 Access Road, LCR 730 Access Road, LCR 716 Access Road, RCR 462 Access Road, RCR 460 Access Road, RCR 477 Access Road Nos. 1 and 2, and RCR 47 Cut Off Access Road), and two existing equipment assembly facilities roads (numbers 1 and 2). Proposed uses of the roads are set out in the application and approved permit, along with reclamation procedures and a schedule for reclamation (Table 154-1, SD2). Detailed design plans for roads have not been submitted in the application. Typical road sections are provided on Figures 154-1 through 4. The typical haulroad will be 80 feet wide with roadside drainage ditches. The road surface thickness may vary from 24 to 48 in. of crushed gravel. The typical dragline walkway will be 150 feet wide with a surface composed of natural ground. Typical access and service roads will be 15 feet and 25 feet wide, respectively, and constructed with roadside drainage ditches. The roads will be surfaced with 1 to 2 in. of crushed stone, bottom ash, iron ore, or other suitable surface. Road grades will not exceed 10 percent. Approximate culvert sizes supporting parameters and peak-flow determinations for typical watersheds are contained on page 154-4. Culverts will be installed in drainageways along the

roadway, as needed. Detailed design plans for roads not included in this permit renewal/revision application will be provided to the Commission for approval prior to construction. Luminant indicates that concrete headwalls, rock riprap or embankments covered with vegetation will be used to protect inlets of ditch relief culverts. The alteration of a natural drainageway during construction of a road is not proposed by Luminant. Detailed design plans for primary roads will be appropriately certified. Roads that are no longer needed to support mining and reclamation activities will be reclaimed.

44. No disposal of excess spoil is proposed.
45. The requirements of §12.216 of the Regulations have been met.
 - (a). The application, as supplemented, is accurate and complete and all requirements of the Act and Regulations have been met in the application as supplemented, with the inclusion of the permit provisions contained in Appendix I, the Postmine Soil Testing Plan and Postmine Performance Standards contained in Appendix II, and as approved by the Commission. All required application fees have been paid, and Luminant has provided all required substantive information requested by Staff.
 - (b). The operations may be feasibly accomplished under the mining and reclamation operations contained in the application, as supplemented.
 - (c). The CHIA has been completed, and the operations proposed by the application, as supplemented, and as approved by the Commission, have been designed to prevent material damage to the hydrologic balance outside the proposed permit area.
 - (d). The approved permit area is not included in an area designated unsuitable for surface coal mining operations, is not under study for designation, and the proposed revised permit will not adversely affect any publicly-owned parks or places included in or eligible for listing in the National Register of Historic Places. The application, as supplemented, does not propose activities within a National Park and is not within 100 feet of a cemetery or of any public road (except for access roads as allowed in the Regulations and other roads addressed in this Order). Proposed operations will not come within 300 feet of an occupied dwelling, public building, school, church, community, or institutional building
 - (e). The proposed operations will not affect any properties listed on or eligible for listing on the NRHP.
 - (f). All right-of-entry documentation has been provided.
 - (g). All compliance information has been provided. No pending violations or non-payment of AML fees were found to exist. The AVS system links Luminant and/or its controllers to eighteen (18) outstanding violations, which Luminant is investigating. Based on the information in the AVS database, all the noted violations are under the Island Creek Coal Mine settlement. No outstanding or unabated violations were found. Luminant does not control and has not controlled mining operations with a demonstrated pattern of willful violations or intent not to comply with the Act and Regulations.
 - (h). Operations will not be inconsistent with any other surface mining operations in adjacent areas.
 - (i). Luminant currently has a collateral bond for its statewide mining operations in place. No changes to Luminant's existing blanket collateral bond are necessary as a result of this permit renewal.

- (j). There are no alluvial valley floors to be considered pursuant to §12.202 of the Regulations. Luminant has, with respect to prime farmland, satisfied the requirements of § 12.201 of the Regulations.
 - (k). The proposed postmining land uses are approved in accordance with this Order.
 - (l). All specific approvals required for this application for revision pursuant to Subchapter K of the Regulations have been made.
 - (m). Approval of the revision will not affect the continued existence of endangered or threatened species or result in the destruction or adverse modification of critical habitat.
46. Official notice has been taken of the current franchise tax account status pages available on the Texas Comptroller of Public Accounts' website that evidence an active right to transact business in Texas. Luminant and Luminant Holding Company LLC, Luminant Mining Company LLC's corporate parent, have paid all franchise taxes due.
47. The required public posting of the consideration of this application by the Commission has occurred.

CONCLUSIONS OF LAW

Based on the above Findings of Fact, the following Conclusions of Law are made:

1. The Commission has jurisdiction under §§134.051 and 134.075 of the Act and §12.216 of the Regulations to approve this application for permit renewal/revision as contained in this Order, and as set out in Appendices I and II to this Order.
2. Proper notice of the application was provided in accordance with the requirements of the Act, §134.058 and 134.059, the Regulations, §12.207, the Commission's *Practice and Procedure*, 16 TEX. ADMIN. CODE §1.1 *et seq.* and the Administrative Procedure Act (APA), TEX. GOV'T CODE CH. 2001 (Vernon 2015).
3. No public hearing is warranted.
4. Based upon the Findings of Fact, the application for permit was submitted to the Commission by Luminant and was processed, circulated, and reviewed in accordance with requirements that ensure public participation and that comply with the Act, the Regulations, the Commission's *Practice and Procedure*, and the APA.
5. The application, as supplemented, with the permit provisions, soil-testing plan, and postmine soil performance standards set out in this Order, complies with the reclamation standards set out in the Act and Regulations.
6. A reclamation cost estimate for the Kosse Mine in the amount of \$176,165,220 is hereby approved.
7. Luminant's current blanket collateral bond in the amount of \$1,100,000,000 is in place as approved by the Commission and is not proposed for changes in this docket.
8. Based upon the updated compliance history filed by Luminant in accordance with §§12.116(14) and 12.215(g) of the Regulations and AVS Report, a renewed and revised permit may be issued for the Kosse Mine.

IT IS THEREFORE ORDERED BY THE RAILROAD COMMISSION OF TEXAS that the Findings of Fact and Conclusions of Law, permit provisions, and Soil Testing Plan contained in this Order are hereby adopted; and

IT IS FURTHER ORDERED that this application for a permit for surface coal mining and reclamation operations is approved as set out in this Order; and

IT IS FURTHER ORDERED that the permit is hereby renumbered as Permit No. 50B; and

IT IS FURTHER ORDERED that Luminant's current blanket collateral bond in the amount of \$1,100,000,000 remains in place. The amount of the bond is greater than reclamation costs of Luminant's permits; and

IT IS FURTHER ORDERED by the Commission that this order shall not be final and effective until 25 days after a party is notified of the Commission's order. If a timely motion for rehearing is filed by any party of interest, this order shall not become final and effective until such motion is overruled, or if such motion is granted, this order shall be subject to further action by the Commission. As authorized by TEX. GOV'T CODE § 2001.146(e), the time allotted for Commission action on a motion for rehearing in this case prior to its being overruled by operation of law, is hereby extended until 90 days from the date the parties are notified of the order.

SIGNED IN AUSTIN, TEXAS this 3rd day of May, 2016.

RAILROAD COMMISSION OF TEXAS


CHAIRMAN DAVID PORTER


COMMISSIONER CHRISTI CRADDICK


COMMISSIONER RYAN SITTON

ATTEST:


Secretary
Railroad Commission of Texas

APPENDIX I

PERMIT PROVISIONS

1. All cultural resource sites within the permit boundary, identified during or subsequent to baseline surveys, for which eligibility for nomination to the National Register of Historic Places has not been determined, shall not be disturbed by mining and/or mining-related activities. Copies of all correspondence items, including all attachments, between Luminant and the Texas Historical Commission shall concurrently be provided to the SMRD.
2. Within 60 days of permit issuance Luminant shall correct discrepancies between Table II and Plate 134-1, *Distribution of Soils*.
3. The values listed for ABA and Se in Tables 134-10 and 134-13, respectively, are the correct values and will be used in place of those listed in Table 145-1.
4. Active well-field dewatering and depressurization activities are not approved. Luminant may not conduct such activities unless it submits a revision for and receives approval from the Director of the Surface Mining and Reclamation Division of a satisfactory operation plan to conduct those activities.

APPENDIX II – SOIL-TESTING PLAN AND POSTMINE PERFORMANCE

STANDARDS (from Staff's TA Appendix VII)

After final grading, permanent markers will be placed on 1,000-ft centers in regraded areas to delineate a 23-acre grid system (see Plate 145-1 for minesoil monitoring grid map) for monitoring postmine soil quality and nutrient requirements. These markers will be maintained until land is released from all reclamation obligations.

Initial Soil Sampling

Initial soil sampling will consist of composite samples from each 5.7-acre grid as may be delineated by the advance of spoil leveling. Samples will be prepared and either shipped to the lab in a timely manner or promptly stored in a manner appropriate to minimize biological and geochemical changes during the period between collection and analysis. The samples will be collected, analyzed, and the results reported to the Commission within two years following rough backfilling and grading of each complete grid, prior to the placement of land into the ERP, and prior to approval of Phase I, II, or III bond release. This period allows sufficient time for additional reclamation efforts if the soil suitability criteria are not immediately met.

Adjacent samples will be collected no less than 200 ft apart. Six soil samples per grid will be mixed to make one composite sample per depth increment. If a grid is less than two acres in size, it will be combined with an adjacent grid. If a partial grid is ≥ 0.5 acre in size, additional sampling will be conducted on 200-ft centers. No more than two grids will be combined for initial sampling purposes. Composite samples will be made to represent the following depth increments: 0–1 ft and 1–4 ft in topsoil substitute scenarios. The samples will be collected using standard soil sampling techniques.

The composite soil samples representing the 0–1 ft increment will be analyzed for the following parameters:

1. pH
2. Potential acidity
3. Exchangeable acidity
4. Neutralization potential
5. Acid/base accounting = Neutralization potential – (Potential acidity + Exchangeable acidity)
6. Texture: sand, silt, and clay (USDA-NRCS)
7. Nitrate-nitrogen
8. Plant available phosphorus, potassium, calcium, and magnesium
9. Cation exchange capacity
10. Sulfur forms

The composite samples representing the 1–4 ft increment will be analyzed for the following parameters:

1. pH
2. Potential acidity
3. Exchangeable acidity
4. Neutralization potential
5. Acid/base accounting = Neutralization potential – (Potential acidity + Exchangeable acidity)
6. Texture: sand, silt, and clay (USDA-NRCS)
7. Cation Exchange Capacity
8. Sulfur forms

In addition to the above analyses, a random 10 percent of the samples (0-1' and 1'-4') will also be analyzed for cadmium, selenium, hot-water boron, electrical conductivity, and sodium adsorption ratio. Procedures for the above analyses will be as contained in RCT, Overburden Parameters and Procedures (May 16, 1989) with Soil Testing Procedures (March 1980, Texas Agricultural Extension Service) used for plant available nutrients.

The analytical results, an updated postmine soil bank, and a map showing all grids reported will be submitted to the Commission in both hard copy and digital formats. The map will display the grids sampled and reported plus the Texas State Plane coordinates.

Luminant will provide an updated bank with each initial report submitted, showing acres for each grid. Maps provided will clearly delineate the configuration of each grid represented by the data contained in the report.

Sampling to the Extent of Leveling

Grid centers will be surveyed and marked every 1,000 ft to delineate 23-acre grids. The 5.7-acre ($\frac{1}{4}$ of a 23-acre grid) grids will serve as the basis for all initial sampling. If a grid is sampled to its full extent of 5.7 acres, it will be reported as a complete grid (e.g., grid 1234A). However, if a grid is not completely leveled (5.7 acres), and the leveled portion needs to be placed into the ERP, the portion that has been leveled and will be proposed for placement into the ERA will be sampled and reported. The portion of a grid that has been sampled will be marked using the ERA line. The ERAs are marked in the field, with markers being placed so they are visible from one to the next. Markers are placed at each turn in an ERA line. So if anyone in the field needs to determine the extent of soil sampling for a portion of a grid, it would be as simple as locating the grid (from a map and/or the grid center post) and then observing which side of the ERA they are on.

Grid identification for reporting purposes will continue to be clear so that there is no question about whether grids have been reported. Portions of grids that are sampled to facilitate placement into ERP will be labeled in such a way that it is clear there will be further sampling and reporting as the remainder of that grid is leveled and proposed for ERP. For example, a complete 5.7-acre grid will be labeled as 2345A whereas the first portion of an adjacent grid would be labeled as 2346A-1 with subsequent samples being labeled as 2346A-2, etc. until the entire disturbance within that grid has been sampled and reported.

Initial samples will be collected at the approved density (one per acre). There will be no combinations of grids proposed for any advancing interior grids. Any portion of a grid that will be proposed for placement into the ERA will have the appropriate number of samples collected from it based on its acreage.

The native soil baseline will serve as the basis for determining postmine soil quality pertaining to the presence of acid- or toxic-forming materials compared to the premine soil as discussed in Section 12.386 of the regulations. Luminant proposes to use a banking method to establish postmine soil suitability by comparison of premine and postmine acreage exceeding baseline soil quality criteria. For parameters not listed in the statistical baseline, the statewide criteria as shown in Technical Release SA-2 will be used to determine postmine soil success.

The proposed substitute material in the 1–4 ft increment is of the same origin as the proposed topsoil substitute material. Therefore, it is projected to have comparable qualities for root development as the topsoil substitute material. Final demonstration of quality will be based on postmine productivity.

Maintenance Soil Sampling

Composite soil samples will be taken at the end of the growing season from the 0–1 ft depth and analyzed for pH, nitrate-nitrogen, and plant-available phosphorus, potassium, calcium, and magnesium in accordance with the RCT overburden parameters and procedures list. The samples will be collected from each management unit. For sampling and reporting purposes, a management unit will not exceed 100 acres in size. Any management unit greater than 100 acres in size will be subdivided during sampling to reflect areas of approximately equal size less than 100 acres. The divisions will generally be made along existing soil grid lines using either northings or eastings; whichever is appropriate for the management unit configuration. Each management unit will be identified by number and shown on the map accompanying the report. Subsamples will be obtained to represent approximately ten acres per subsample. These subsamples will be composited to

represent the management unit for analysis and reporting purposes. The soil samples will be obtained in the year immediately prior to the first year of productivity assessment, during the first year of productivity assessment, and during the second year of productivity assessment. In the event that years of productivity assessment are not concurrent, Luminant plans to collect maintenance samples in the year prior to the second year of productivity assessment. Analysis results and a map showing the units sampled will be submitted to the RCT during the first quarter of the year following each reporting period. In the event that maintenance liming has been conducted, the liming rates will be provided in the maintenance soil report.

The purpose of this sampling program is to provide documentation on soil conditions for management purposes. Luminant will not obtain maintenance samples from areas where trees are planted because fertilizer is not applied regularly to trees.

Ten Percent Random Sampling in Fourth Year of ERP

During the fourth year of ERP, a random 10 percent of the 5.7-acre grids (or approved larger size grids) will be sampled and analyzed in the same manner as the initial sampling requirements. The analytical results and a map showing the grids sampled will be provided to the Commission no later than February of the fifth year of the ERP. In the event that chemical and physical properties of the postmine soils warrant further investigation, the Commission may require additional testing.

Alternate Soil Testing Plan

In the event the postmine soil testing plan identifies AFM/TFM problems, an alternate soil testing plan will be developed. Luminant will submit a plan and schedule to the Commission for approval prior to the initiation of alternate soil testing.

Luminant will notify the Commission of its sampling schedule to allow members of the Commission staff to be present during this sampling. Upon request, splits of each sample taken during the sampling effort will be procured upon sample processing (after drying and grinding) and provided to the Commission.

Samples will be analyzed for the same parameters as those in the initial soil sampling, unless submittal of a more limited suite of parameters is approved by the Commission. The results of these analyses and a remediation plan will be submitted to the Commission.

Once Luminant conducts remediation, the affected area will be sampled using the initial soil sampling protocol. This is essential to ensure remediated acreage is accurately reflected in the postmine soil bank and to replace any previously submitted data for the grid(s). Luminant will submit results to the Commission verifying the successful correction of the identified soil problem.

Calculation of Disturbance Area Bank Account

The native soil baseline (Section 134) will provide the frequency distributions of native soils for regulated parameters. (See pages 145-22(a) and 145-22(b) for Areally-Weighted Frequency Distributions: Postmine Soil Performance Standards) These frequency distributions are then multiplied by the acreage within the actual disturbance area to yield the actual acreage allowed for each parameter value at each depth increment. The disturbance area depicted on the disturbance map will vary as mining progresses to reflect additional areas of disturbance. These changes to the disturbance boundary will be submitted to the RCT as part of each initial soil report or with each application for Extended Responsibility. Postmine acres sampled to date will be compared to the native soil baseline, and no parameter will fall below the postmine soil performance standards. Ultimately, the disturbance boundary will reflect the full extent of disturbance and reclamation within the mining permit.

Banked acres will be provided with each report of initial postmine soil data. Luminant plans to have only one bank for the entire permit area. If new areas are added to the permit, these additional areas will be incorporated into the existing soil bank. Acreage released from bond liability will continue to be included in the bank. Therefore, one bank will continue through a mine from the beginning of mining to the final extent of mining disturbance regardless of permit term or other time constraints. This approach will provide a truer means of evaluating postmine soil success throughout the entire life of a mine site than using intermediate bank areas. Luminant plans to provide one bank using two depth increments (0–1' and 1–4').

The following steps are involved in calculating the postmine bank account:

1. The premine standard is calculated by multiplying category baseline percentages for each soil parameter by total acres within the bank area.
2. The postmine values are the sums of total banked acres by category for each soil parameter represented by the initial soil sampling data.
3. Finally, balances are calculated as the difference between premine and postmine values to which adjustments are made. Adjustments are made by utilizing offsetting negative postmine balances in a given parameter category by amounts up to the unused sum of less desirable categories from the premine statistics.

The proposed postmine soil performance standards for the proposed Kosse Mine, Permit No. 50 renewal/revision/expansion area are attached.

TABLE 145-1

**AREALLY-WEIGHTED FREQUENCY DISTRIBUTIONS
POSTMINE-SOIL PERFORMANCE STANDARDS**

<u>SOIL DEPTH</u>	pH											
	s.u.											
	3.9	4.0	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9	
	-----% of area-----											
0-12"	1.0%	0.0%	0.0%	0.0%	1.1%	0.0%	3.7%	8.2%	6.0%	8.1%	6.2%	
12-48"	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	1.0%	5.0%	4.0%	6.2%	3.0%	

ACID-BASE ACCOUNTING (ABA)

<u>SOIL DEPTH</u>	Tons/ 1000 Tons (t/kt)			
	-4	-3	-2	-1
	-----% of area-----			
0-12"	1.0	1.1	7.6	15.9
12-48"	1.0	0.0	6.0	19.4

<u>SOIL DEPTH</u>	% Clay																	
	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58
	-----% of area-----																	
0-12"	2.1%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	0.0%

<u>SOIL DEPTH</u>	% Sand								
	81	82	83	84	85	86	87	88	89
	-----% of area-----								
0-12"	0.8%	1.0%	0.9%	0.8%	0.8%	0.0%	2.4%	0.0%	1.0%

<u>SOIL DEPTH</u>	Selenium (Se)		
	3	4	5
	-----% of area-----		
0-12"	1.1	0.0	0.0
12-48"	1.1	0.0	1.1

**100% OF THE POSTMINE 0-12" AND 12"-48" INCREMENTS
WILL MEET THE FOLLOWING STANDARDS**

Electrical Conductivity (EC)	≤ 4 mmhos/cm
Sodium Adsorption Ratio (SAR)	< 13
Boron (B)	≤ 5 ppm
Cadmium (Cd)	≤ 0.7 ppm