APPENDIX B

NONJURISDICTIONAL FACILITY ANALYSIS

Powerlines and Pipeline Laterals

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1.0 INTRODUCTION

Under Section 3 and Section 7(c) of the Natural Gas Act (NGA), the Federal Energy Regulatory Commission (FERC or Commission) considers all relevant factors bearing on the public convenience and necessity as part of a decision to approve facilities under the Commission's jurisdiction. The jurisdictional facilities associated with the Golden Pass LNG Terminal and Pipeline Project (Project) include the liquefied natural gas (LNG) terminal facilities, the waterline from State Highway (SH) 87 to the LNG terminal site, the natural gas pipeline system and associated facilities, the Beaumont Lateral, and the interconnect meter stations. These facilities are discussed in detail in sections 1 through 5 of the Golden Pass LNG Terminal and Pipeline Project environmental impact statement (EIS).

Occasionally, proposed projects have associated facilities that do not come under the jurisdiction of the Commission. Golden Pass LNG Terminal LP and Golden Pass Pipeline LP (Golden Pass) identified the following potential nonjurisdictional facilities related to the proposed Project:

- One or two 230 kilovolt (kV) powerlines;
- Ten pipeline laterals, ranging in diameter from 10 to 30 inches and in length from 50 to 4,400 feet, to connect the planned meter station interconnects on the Golden Pass pipeline system to existing interstate and intrastate pipeline systems. These connecting laterals would be constructed by the respective pipeline owner/operators.

See table 1-1 for a summary of the nonjurisdictional facilities for the Project.

Under National Environmental Policy Act, the Commission has the responsibility to attempt to review infrastructure facilities that are associated with, and a necessary part of, a jurisdictional project. Our review indicates that none of these facilities are likely to be constructed if not for the action (*e.g.*, LNG terminal and pipeline system) proposed by Golden Pass.

Of the facilities identified above, the powerlines would be necessary for the operation of the LNG facility to meet the LNG facility's electric power requirements. There are two routes proposed for the powerlines: a primary and a secondary route with multiple alternative segments associated with each route. For purposes of this analysis, we have assumed the more direct of the segment alternatives for each route. Construction of the interconnecting pipelines (or laterals) would depend on whether the pipeline companies enter into agreements with Golden Pass to accept delivery of natural gas from the Golden Pass pipeline system. However, we note that, because there are no agreements in place between Golden Pass and the operators of the pipelines at the potential interconnect sites, the exact location and length of the interconnecting laterals is speculative and may change.

The following environmental analysis addresses the proposed powerlines and pipeline laterals. Four of the ten laterals are short 50-foot lengths of pipe located within the proposed meter station interconnects analyzed in the EIS. These four laterals include the KM Texas, KM Tejas, Tennessee Gas, and TETCO laterals (see table 1-1). We have determined that the environmental analysis for these four laterals is satisfactorily covered in the EIS. As such, these four laterals are not addressed in this analysis. Our[1] independent environmental review of the powerlines and the remaining six laterals is presented below.

[1] "We," "us," and "our" refer to the environmental staff of the FERC's Office of Energy Projects.

TABLE 1-1

Nonjurisdictional Facilities

Owner/ Operator	County, State	Potential Facility	Milepost	Approximate Length (miles)	Land Requirements (acres) [a/]
Powerlines:					
Entergy	Jefferson, TX	Primary 230 kV powerline	LNG site	10	97.0
		Secondary 230 kV powerline	LNG site	20	194.0
Pipeline Laterals:					
NGPL (interstate)	Jefferson, TX	30-inch pipeline	1.2	0.04 (225 feet)	0.52
Centana (intrastate)	Jefferson, TX	10-inch pipeline	1.2	0.11 (600 feet)	1.38
KM Texas[b/] (intrastate)	Jefferson, TX	20-inch pipeline	32.6	0.01 (50 feet)	Within meter station interconnect
KM Tejas [b/] (intrastate)	Jefferson, TX	20-inch pipeline	34.6	0.01 (50 feet)	Within meter station interconnect
AEP Texoma (intrastate)	Orange, TX	30-inch pipeline	42.8	0.69 (3,650 feet)	8.38
Florida Gas (interstate)	Orange, TX	24-inch pipeline	44.0	0.83 (4,400 feet)	10.1
Channel (intrastate)	Orange, TX	30-inch pipeline	60.6	0.1 (525 feet)	1.2
Tennessee Gas [b/] (interstate)	Calcasieu, LA	30-inch pipeline	72.8	0.01 (50 feet)	Within meter station interconnect
TETCO [b/] (interstate)	Calcasieu, LA	30-inch pipeline	75.2	0.01 (50 feet)	Within meter station interconnect
Transco (interstate)	Calcasieu, LA	30-inch pipeline	77.9	0.05 (250 feet)	0.58

a/ Based on a 60- and 100-foot-wide right-of-way for the powerlines and a 100-foot-wide right-of-way for the pipelines.
b/ The environmental analysis for this lateral is not addressed in this appendix B, but is included as part of the analyses for the associated meter station/interconnect in section 4 of the EIS.

2.0 PERMITS, APPROVALS AND REGULATORY REQUIREMENTS

All of the non-jurisdictional facilities would require some level of review and approval by appropriate Federal and state agencies depending on the extent of the construction disturbance, the resources affected, and applicable regulations. For example, Entergy's powerlines would be subject to review and approval by the Public Utility Commission of Texas (PUCT), which is currently conducting an environmental review of the powerlines and its alternative routes. Entergy would also would require a U.S. Army Corps of Engineers (COE) permit and a stormwater permit from the Texas Council on Environmental Quality (TXCEQ). These permits and approvals would include, but are not limited to, those listed in table 2-1.

TABLE 2-1

Major Permits, Approvals, and Consultations

Agency	Permit/Approval/Consultations
Federal	
Advisory Council on Historic Preservation	NHPA, Section 106 – Comment on the Project and its effect on historic properties
U.S. Army Corps of Engineers, Galveston District	Rivers and Harbors Act, Section 10 – Permit CWA, Section 404 – Authorization
U.S. Department of Commerce National Oceanic and Atmospheric Administration, National Marine Fisheries Service	ESA, Section 7 – Threatened and endangered species consultation MSFCMA – EFH consultation
U.S. Department of the Interior U.S. Fish and Wildlife Service, Regions 2 and 4	Section 7, ESA – Threatened and endangered species consultation Migratory Bird Treaty Act – Consultation Fish and Wildlife Coordination Act
U.S. Environmental Protection Agency, Region VI	CWA, National Pollutant Discharge Elimination System (NPDES) stormwater construction permit (Notice of Intent)
Texas	
Public Utility Commission of Texas	Certificate of Public Convenience and Necessity – Powerlines
Railroad Commission of Texas	CWA – Hydrostatic test water discharge permit; Section 401 Water Quality Certification, Supplementary letter application and Texas Pollutant Discharge Elimination System (TPDES)
Texas Commission on Environmental Quality	CWA - TPDES wastewater discharge permit, temporary water use permit (hydrostatic testing) (LNG terminal); Section 402 Water Quality Certification, TPDES construction storm water general permit, temporary water use permit (hydrostatic testing) (pipeline)
Texas Parks and Wildlife Department	ESA – Threatened and endangered species consultation
Texas Historical Commission	NHPA, Section 106 – Review and comment on undertakings potentially affecting cultural resources
Texas Coastal Coordination Council	CZMA – Consistency determination with the Texas CMP.
Texas Department of Transportation	Road opening/access permit; pipeline/powerline road crossing permits
Texas General Land Office	Right-of-way on public lands
City of Port Arthur	Building permits, local floodplains
Jefferson County	Local floodplains
Drainage/Irrigation Districts	Construction near levees, crossing approval
Levee Districts	Letter of no objection (pipeline)
Louisiana	
Louisiana Department of Environmental Quality	CWA, Section 401 – Water Quality Certification, Louisiana Pollution Discharge Elimination System (LPDES) construction stormwater discharge general permit, hydrostatic discharge general permit (pipeline) Groundwater certifications for aboveground facilities
Louisiana Department of Wildlife and Fisheries	ESA – Threatened and endangered species consultation
Louisiana Department of Culture, Recreation & Tourism, Office of Cultural Development, Division of Archaeology	NHPA, Section 106 – Review and comment on undertakings potentially affecting cultural resources
Calcasieu Parish Police Jury	Building permits and floodplain development permit

3.0 PROJECT DESCRIPTION

The following sections described the proposed powerlines and pipeline lateral facilities. Figures B-1 through B-5 show the location of these facilities.

3.1 POWERLINES

The Golden Pass LNG terminal would require 35 megawatts of electric power supply to meet the demands of terminal operations. To supply this electricity, Entergy is evaluating two 230 kV electric transmission lines from two existing Entergy substations. The secondary powerline is under consideration to provide additional capacity in the event that the primary substation and route cannot meet anticipated demand.

The primary powerline extends approximately 10 miles from Entergy's Port Acres Bulk substation in Port Arthur, Texas, to the LNG terminal site. The preliminary route for the transmission line would begin at the Entergy substation near SH 73, and would generally proceed southeast along the Gulf Canal and Taylor Bayou to SH 87, and then continue south along SH 87 and the west side of the Sabine Neches Waterway (SNWW) to the LNG terminal site (see figure B-1). There are 22 alternative segments being evaluated for this route. Most are at the north end of the route around the Chevron Phillips refinery. One longer alternative would cross through land managed by the Texas Parks and Wildlife.

The secondary powerline extends approximately 20 miles from Entergy's Sabine Station substation in north Port Arthur, Texas, to the LNG terminal site. The preliminary route for this powerline would begin at the existing Entergy substation west of SH 73, and would generally proceed south along a canal, cross the Neches River, and continue to the west shore of Sabine Lake. The route would continue along the western edge of Sabine Lake to Keith Lake Cut where it would cross the Port Arthur Channel and continue south along SH 87 and the Golden Pass primary access road to the LNG terminal. There are 13 alternative segments that are being evaluated, some which cross through Port Arthur (see figure B-1).

The electric powerline would be constructed and operated by Entergy. In areas where the transmission line would be located parallel to an existing roadway, Entergy would require a 60-foot-wide right-of-way. On the Golden Pass property or any other areas not parallel to an existing roadway, Entergy would require a 100-foot right-of-way.

Both the primary and secondary powerlines would parallel existing utility and roads rights-of-way. Golden Pass estimates that approximately 60 steel towers or concrete poles, ranging in height from 81 to 100 feet, would be constructed and spaced at approximate 1,085-foot intervals along the primary route. Using these same assumptions, the secondary route would require approximately 120 steel towers. Typically, concrete poles would be used for the straight sections of the powerline and are about 81.5 feet tall. Steel lattice towers would be used at the angle points along the route and are generally 100 feet tall. Each tower is estimated to occupy approximately 800 square feet of land.

In addition to the lands impacted by the permanent base of the towers, we believe that additional temporary workspace could be required to construct the foundations and install the towers and could affect an area of about 6,400 square feet (80 feet by 80 feet) at each tower location. Our review also indicates that development of the powerlines may require that the towers be placed more closely together than the 1,085-feet (or average of 880 feet) identified by Golden Pass, with a more likely tower spacing of 600 feet. Spacing at 1,085-foot intervals would require much taller towers (well over the 81 to 100 feet identified by Golden Pass) to account for sag in the span at the lowest point which must have a minimum ground clearance of about 30 feet.

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Figure B-1
Entergy Powerline Routes

Finally, Golden Pass did not account for any permanent access ways that might be required for maintenance of the towers, such as an access road between towers in areas distant from public ways. Therefore, while the analysis presented for the Entergy powerlines are based on the information provided by Golden Pass, we note that detailed design modifications may result in additional impacts that have not been calculated. The final design, assessment of impacts, and identification of any appropriate mitigation measures would ultimately be between the project proponent and federal and state agencies with jurisdiction over the design, siting, and approval of this facility.

3.2 PIPELINE LATERALS

3.2.1 NGPL and Centana Laterals

The NGPL and Centana laterals would be located at the meter station interconnect site at MP 1.2 in Jefferson County, Texas. The NGPL lateral would consist of approximately 225 feet of 30-inch-diameter pipeline and the Centana lateral would consist of approximately 600 feet of 10-inch-diameter pipeline (see figure B-2).

3.2.2 AEP Texoma Lateral

The AEP Texoma lateral would connect the meter station interconnect site at MP 42.8 with the Texoma Pipeline in Orange County, Texas. The Texoma lateral would consist of approximately 3,650 feet of 30-inch-diameter pipeline (see figure B-3).

3.2.3 Florida Gas Lateral

The Florida Gas lateral would connect the meter station site at MP 44.0 with the Florida Gas pipeline in Orange County, Texas. The Florida Gas lateral would consist of approximately 4,400 feet of 24-inch-diameter pipeline (see figure B-3).

3.2.4 Channel Lateral

The Channel lateral would connect the meter station interconnect site at MP 60.6 with the Channel intrastate pipeline located in Orange County. Texas. The Channel lateral would consist of approximately 525 feet of 30-inch-diameter pipeline (see figure B-4).

3.2.5 Transco Lateral

The Transco lateral would connect the proposed meter station interconnect at MP 77.8 with the Transco interstate pipeline near Starks, Louisiana. The approximate length of the 30-inch-diameter lateral would be approximately 250 feet (see figure B-5).

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Figure B-2
NGPL and Centana Laterals

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Figure B-3
AEP Texoma and Florida Gas Laterals

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Figure B-4
Channel Lateral

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Figure B-5
Transco Lateral

4.0 ENVIRONMENTAL ANALYSIS

Potential environmental impacts associated with the powerlines and pipeline laterals are summarized in the following sections.

4.1 GEOLOGY AND SOILS

The pipeline laterals and powerlines would be located within the Gulf Coast physiographic region. The ground surface within the Project area is mostly comprised of Chenier plain and coastal plain sediments deposited by fluvial, tidal, littoral (beach or shoreline) and deltaic processes during the Holocene epoch, or the period between present day and 5,000 years ago (Fisher et al, 1973). The coastal plain is characterized as seaward-thickening sediment deposits to depths of thousands of feet below the present day land surface. The terrain is relatively flat to gently sloping.

Two types of landforms characterize the Chenier plain: broad marshes containing organic clays and peat, and long, narrow relict beach features called "cheniers" that appear as ridges parallel to the coast. Chenier ridges form as a result of cyclic shoreline advance and retreat, and are typically mixtures of silt, sand and shell fragments. They are slightly elevated features that attain elevations of 5 to 10 feet above sea level. The Chenier plain is found primarily in southwest Louisiana. It is a 15 to 20-mile-long strip of Holocene deposits that extend from Vermillion Bay to Sabine Lake and the associated SNWW. The LNG terminal site occurs at the western edge of the Chenier Plain.

The primary powerline would be constructed adjacent to the existing SH 87 right-of-way, crossing more than 7 miles of wetland soils. The secondary powerline would be constructed adjacent to SH 73 and potentially within Sabine Lake. Blasting would not likely be required for construction of the tower footings. Based on a general review of the potentially affected area, we do not anticipate any adverse impacts to geology and soils due to the construction or operation of the proposed powerlines.

The pipeline laterals would affect a variety of soil types depending on location. Table 4-1 identifies the soil types located in the area of each pipeline lateral and the general characteristics of the soil. Because the proposed pipeline laterals would not be constructed in areas where bedrock is close to the surface, blasting it is not anticipated that blasting would be required for construction of these facilities. No adverse impacts to geology or soils are anticipated due to the construction or operation of the pipeline laterals.

TABLE 4-1

Soils Affected by Pipeline Laterals

Owner/ Operator	County, State	Milepost	Soil Series	Prime Farmland	Soil Characteristics
Pipeline Laterals:					
NGPL (interstate)	Jefferson, TX	1.2	Barnett	No	Very poorly drained, mucky peat
Centana (intrastate)	Jefferson, TX	1.2	Barnett	No	Very poorly drained, mucky peat
AEP Texoma (intrastate)	Orange, TX	42.8	Orcadia-Anahuac Complex	Yes	Somewhat poorly drained, silt loam
Florida Gas (interstate)	Orange, TX	44.0	Orcadia-Anahuac Complex	Yes	Somewhat poorly drained, silt loam
Channel (intrastate)	Orange, TX	60.6	Camptown Silt Loam	No	Very poorly drained, silt loam
Transco (interstate)	Calcasieu, LA	77.9	Guyton-Messer silt loams	Yes	Very poorly drained, silt loam

4.2 WATER RESOURCES

An evaluation of the water resources in the Project area along with anticipated Project impacts is presented in the following sections.

4.2.1 Groundwater

4.2.1.1 Powerlines

The powerline rights-of-way would be located above the USGS defined Coastal Lowlands Aquifer System in southeastern Texas. This system underlies most of the Gulf Coastal Plains, extending from southern Texas to the Florida panhandle. The coastal lowlands aquifer system is one of the most extensively used aquifer systems in the southern U.S. and yields large quantities of water for agricultural, commercial, industrial, and public/domestic supplies.

No major or minor Texas Water Development Board defined aquifers would be crossed by the powerline rights-of-way. Public water supply in this area in Texas is derived from surface waterbodies. The Port Arthur Department of Water Utilities obtains its water from the Lower Neches Valley Authority, which draws water from several surface water sources, including the Neches River.

The powerline rights-of-way are underlain by the Chicot Aquifer. The Chicot Aquifer is not a U.S. Environmental Protection Agency (EPA) designated sole-source aquifer in Texas. As such, the powerline rights-of-way would not cross any EPA sole source aquifers.

4.2.1.2 Pipeline Laterals

The Chicot aquifer underlies the entire Project area including all of the pipeline laterals. The Chicot Aquifer is designated as an EPA designated sole-source aquifer in Louisiana, but not in Texas. The

Transco lateral in Calcasieu Parish, Louisiana, would be the only lateral located within the EPA sole-source aquifer designated portion of the Chicot Aquifer. The other pipeline laterals would not be located within an EPA designated sole source aquifer.

Because of saltwater intrusion, groundwater underlying the NGPL, Centana, AEP Texoma, Florida Gas, and Channel laterals is considered of poor quality and not generally potable for human consumption. The groundwater underlying the Transco lateral is within the EPA designated sole-source Chicot Aquifer in Louisiana. The public water supply in Calcasieu Parish is derived from groundwater.

In general, the depth of the pipeline trench excavation would be relatively shallow (6 feet) as compared to the depth of the aquifer (800 to 1,200 feet) within the Project area. Due to the depth of the aquifer boundary and presence of a thick clay layer over the aquifer boundary within the Project area, impacts to the aquifer or its water quality would not be adversely affected by activities associated with construction of the pipeline laterals.

4.2.2 Surface Water

Table 4-2 provides a breakdown of the surface waters and wetland affected by the powerline and pipeline laterals.

TABLE 4-2

Estimated Waterbody and Wetland Impacts

Owner/ Operator	County/Parish, State	Approximate Length (miles/feet)	Waterbodies Crossed (No.)	Wetlands Crossed (feet)	Wetland Class a/
Powerlines:					
Entergy					
Primary Powerline	Jefferson, TX	10	4	37,900	PEM, E2EM1P, E1UBL, PFO1C, PSS1A
Secondary Powerline	Jefferson, TX	20	4	27,335	PEM, E2EM1P, PFO1A, PFO1C, PSS1A
Pipeline Laterals:					
NGPL	Jefferson, TX	0.04 (225 feet)	0	225	E2EM1P
Centana	Jefferson, TX	0.11 (600 feet)	0	600	E2EM1P
AEP Texoma	Orange, TX	0.69 (3,650 feet)	0	2,400	PFO1A, PSS1A
Florida Gas	Orange, TX	0.83 (4,400 feet)	2	600	PFO1A
Channel	Orange, TX	0.1 (525 feet)	0	200	PFO1C, PFO1A
Transco	Calcasieu, LA	0.05 (250 feet)	0	0	--

a/ COE jurisdictional wetlands, based on National Wetlands Inventory mapping.
- E2EM1P: estuarine, intertidal, emergent, persistent, irregularly-flooded
- E1UBL: estuarine, subtidal, unconsolidated bottom
- PEM palustrine emergent
- PFO1A: palustrine forested, broad-leaved deciduous temporarily-flooded
- PFO1C: palustrine forested, broad-leaved deciduous seasonally-flooded
- PSS1A: palustrine scrub shrub, broad-leaved deciduous, temporarily-flooded

4.2.2.1 Powerlines

The powerline rights-of-way would be located within the USGS-designated Sabine Lake watershed. This watershed covers an area of 1,040 square miles in Texas and Louisiana and is a portion of the larger Galveston Bay-Sabine Lake Unit in Louisiana and Texas.

The primary powerline would cross four surface water bodies including:

- Salt Bayou, which connects Keith Lake with the Port Arthur Channel;
- a small inlet adjacent to SH 87 at the western edge of the Port Arthur Channel;
- the Intracoastal Waterway located directly north of Round Lake; and
- Alligator Bayou.

In 1995, the Texas Parks and Wildlife Department (TXPWD) and the COE installed a water control structure at Salt Bayou to prevent saltwater intrusion and restore the historic salinity gradient across the marsh lands on the two refuges and state park. This would allow restoration of good quality habitat for waterfowl and other wildlife.

Alligator Bayou originally began 3 miles northwest of Port Arthur in eastern Jefferson County and flowed 9 miles south to Taylors Bayou in southwest Port Arthur. However, with urban growth in Port Arthur, the bayou has been channeled and dammed in its upper and middle reaches and currently does not support aquatic life use according to the Texas 2004 Water Quality Inventory.

The primary powerline crossing of these waterbodies should not involve any direct disturbance of the waterway as the transmission lines would be suspended over the waterbodies. We assume tower installation activities and construction equipment access would not result in a direct disturbance of the waterbodies. As such, we would expect no surface waterbody impacts from the construction of the powerline, assuming proper implementation of best management practices for erosion and sedimentation control.

The secondary powerline would cross:

- Unnamed canal
- SNWW (two crossings) – Neches River and Port Arthur Channel
- Sabine Lake – 11 miles

The Neches River is part of the SNWW which extends north from the Gulf of Mexico, and includes the Sabine Pass and Port Arthur Channels. At the Neches River, the SNWW divides and continues northwest up the Neches River to Beaumont and northeast up the Sabine River to Orange, Texas. This estuarine, commercial waterway services the ports of Port Arthur, Beaumont, and Orange, Texas; and forms a deepwater channel between the Sabine and Neches Rivers and the Gulf of Mexico. The secondary powerline route would cross the Neches River (and the SNWW) near the junction of the Neches and Sabine Rivers and the Port Arthur Channel (and the SNWW) just north of the LNG terminal. The secondary powerline crossings of these waterbodies should not involve any direct disturbance of the waterway as the transmission lines would span over the waterbodies. Therefore, no surface waterbody impacts from the construction of the powerline would be expected, assuming proper implementation of best management practices for erosion and sedimentation control.

Sabine Lake is approximately 20 miles long, 8 miles wide, and 6.5 feet deep and receives water from the Sabine River, which drains 9,325 square miles in southern Louisiana and Texas, and the Neches River,

which drains 7,948 square miles in southwest Texas. The secondary powerline route would be along the western shoreline of Sabine Lake and adjacent to two dredge material placement areas for most of the lake crossing. Alternate routes that would avoid the lake would require construction within populated areas in Port Arthur.

4.2.2.2 Pipeline Laterals

NGPL and Centana Laterals

The NGPL and Centana laterals are located within the USGS-designated Sabine Lake watershed. The laterals would not cross any waterbodies as shown on available USGS mapping and Project aerial photos.

AEP Texoma Lateral

The Texoma lateral is located within the Lower Neches watershed in Orange County, Texas. The Texoma lateral would not cross any waterbodies as shown on available USGS mapping and Project aerial photos.

Florida Gas Lateral

The Florida Gas lateral is also located within the Lower Neches watershed in Texas. The Florida Gas lateral would cross two waterbodies, Anderson Gully and an unnamed creek, as shown on available Project mapping including USGS maps and aerial photography.

Anderson Gully is a tributary of the Texas Commission on Environmental Quality (TXCEQ) Stream Segment 0601, which is listed as the Neches River Tidal segment of the Neches River Basin. Anderson Gully is a Category 1 water body in Texas, which means that all designated uses for the waters as indicated by bacterial densities (contact use), dissolved mineral concentrations (general uses), and dissolved oxygen concentrations (aquatic life use) are fully supported and not threatened. This segment of Anderson Gully was previously affected by a release of jet fuel from a nearby 14-inch pipeline owned by Texas Eastern Products Pipeline Company. The TXCEQ, TXPWD, and Texas General Land Office are the agencies responsible for overseeing site clean up and restoration activities.

While we have no specific information on the proposed crossing method for Anderson Gully at this time, the crossing would be designed to minimize or mitigate for environmental impacts in accordance with federal and state permit conditions. It is also possible that Anderson Gully would be used as a source of hydrostatic test water. This activity would also be regulated by federal and state permits to minimize and mitigate environmental impacts.

Channel Lateral

The Channel lateral is located within the Lower Sabine watershed in Texas. The Channel lateral would not cross any waterbodies as shown on available USGS mapping and Project aerial photos.

Transco Lateral

The Transco lateral is located within the West Fork, Calcasieu watershed in Louisiana. The Transco lateral would not cross any waterbodies as shown on available USGS mapping and Project aerial photos.

4.2.3 Wetlands

The wetland types present in the powerlines and pipeline lateral areas generally include lacustrine (*i.e.*, open water lakes), estuarine marshes (*i.e.*, coastal emergent marsh), palustrine emergent, palustrine scrub-shrub, and palustrine forested.

4.2.3.1 Powerlines

We reviewed the National Wetlands Inventory (NWI) mapping data published by the U.S. Fish and Wildlife Service (FWS) to identify potential wetland areas crossed by the powerlines (see table 4-1). The primary powerline right-of-way would cross 16 different wetland types as identified on the NWI maps. Based on our review and the information provided, the primary powerline would cross a total of approximately 7.2 miles of estuarine and palustrine wetlands. The secondary powerline would cross a total of 15 different wetland types for a total estimated wetland crossing length of 5.2 miles.

Assuming a fill disturbance area of 800 square feet per tower (as estimated by Golden Pass), construction of the 60 towers could permanently impact approximately 1.1 acres of wetlands for the primary route. The 120 towers on the secondary route could permanently impact approximately approximately 2.2 acres of wetlands. This estimate does not include any temporary access roads needed for construction or extra workspace within wetlands. As previously stated in Section 1.0, in areas where the transmission line would be located parallel to an existing roadway, Entergy would require a 60-foot-wide right-of-way. On the LNG terminal property or any other areas not parallel to an existing roadway, Entergy would require a 100-foot right-of-way.

For the COE and the PUCT to determine whether practicable alternatives for the powerlines have been assessed and incorporated as appropriate, the proponent is required to avoid wetland and waterbody impacts to the maximum extent possible. The proponent also must demonstrate that it has taken appropriate and practicable steps to minimize wetland and waterbody impacts in compliance with the COE's Section 404(b)1 guidelines that restrict discharges of dredged or fill material where a less environmentally damaging alternative exists.

4.2.3.2 Pipeline Laterals

The lateral pipelines would cross a total of seven different wetland types as identified on NWI mapping for the Project area. All of the laterals as currently proposed would involve some wetland disturbance. The specific wetland types at each lateral site are described below.

NGPL and Centana Laterals

The NGPL and Centana laterals would cross estuarine wetlands south of SH 87. Construction of the NGPL lateral would result in approximately 0.5 acres of temporary disturbance and the Centana lateral would impact an estimated 1.4 acres of wetland.

AEP Texoma Lateral

The Texoma lateral would cross palustrine forested and scrub shrub wetlands. Construction of the Texoma lateral would result in an estimated 5.5 acres of impact to wetlands.

Florida Gas Lateral

The Florida Gas Lateral would cross at least two temporarily flooded palustrine forested wetlands along the south side of SH 105. Construction of the Florida Gas lateral would result in an estimated 1.4 acres of wetland disturbance.

Channel Lateral

The Channel lateral would cross seasonally and temporarily flooded palustrine forested wetland. Construction of the Channel lateral would result in an estimated 0.5 acres of wetland disturbance.

Transco Lateral

The Transco lateral would cross urban-developed wetlands. Construction of the Transco lateral would result in an estimated 0.6 acre of wetland disturbance.

Wetland Impacts

Temporary impacts during construction activities would occur within the pipeline construction corridor and extra workspace areas where marsh vegetation would be cleared for equipment movement and installation of the pipeline. Additional temporary impacts associated with construction of the laterals could include temporary changes to wetland soils and hydrology. During construction, in herbaceous wetlands, the impact on vegetation would be short term, since the herbaceous vegetation would regenerate quickly. Failure to properly segregate soil could result in mixing of the soil layers, resulting in altered biological components of the wetland. These changes could affect the reestablishment and natural recruitment of native wetland vegetation. In addition, inadvertent compaction and furrowing of soils during construction could result from the temporary stockpiling of soil and the movement of heavy machinery. This could alter the natural hydrologic patterns of the wetlands, inhibit seed germination, or increase seedling mortality. Altered surface drainage patterns and hydrology could increase the potential for siltation, and increased turbidity may result from construction and trenching activities. Construction clearing activities and disturbance of wetland vegetation could temporarily affect the wetland's capacity to buffer flood flows or control erosion. Construction activities also have the potential to diminish the recreational and aesthetic value of wetlands.

All of the wetlands crossed by the pipeline laterals would be field delineated and described in the applicable permit applications to the COE and the TXCEQ and the LADEQ. These permit applications would include the proposed wetland construction methods and all measures to avoid, minimize and mitigate impacts to wetlands. Pre- and post-construction measures would be implemented to ensure successful revegetation of affected areas.

4.3 VEGETATION

4.3.1 Powerlines

The majority of the primary powerline would be constructed along existing rights-of-way including SH 87. The vegetated areas along the powerline right-of-way consist primarily of wetlands. As such, the type of vegetation affected by the construction right-of-way is directly related to the wetland types crossed by the powerline (*e.g.*, coastal marsh, palustrine scrub shrub wetland, etc.). One palustrine forested wetland was identified along the right-of-way route, as shown on NWI maps. The majority (55

percent) of the secondary powerline would be constructed in Sabine Lake. This powerline would also cross approximately 3.4 miles of coastal marsh wetlands based on NWI mapping.

Vegetation would be permanently affected by the installation of the towers. Vegetation would also be affected by ROW clearing and any required equipment access roads. Following installation of the powerline, all temporary construction work areas would be recontoured and restored to as near pre-construction conditions as possible. We assume that following construction the right-of-way would require periodic mowing to maintain the vegetation in herbaceous-shrub growth stage, thereby eliminating trees and tall shrubs. With the exception of the forested wetland, no long-term impacts to vegetation resources are anticipated.

4.3.2 Pipeline Laterals

The NGPL and Centana laterals lie within the Chenier Plain sub-unit of the Coastal Prairie physiographic region, which is characterized by a mosaic of tidal and freshwater wetlands and upland grasslands with narrow bands of deciduous forest occurring along coastal cheniers (*i.e.,* elevated plains), man-made levees, and dredged material deposits. Most of the natural communities of the Coastal Prairie region have undergone extensive alteration. The area of freshwater wetlands has decreased over the last several decades due to salt water intrusion caused by development, dredging, channelization, land subsidence, and other factors, including construction of the SNWW and Intracoastal Waterway.

The other pipeline laterals lay within the Piney Woods region of east Texas and Louisiana. This region is characterized by rolling hills covered with pines and oaks, and rich bottomland hardwood forests. The soils are generally acidic sand to sandy loams, with elevations ranging from 200 to 500 feet above sea level. This region is typified by pine and mixed pine/hardwood forests interspersed with croplands and prairie.

Construction of the NGPL and Centana laterals would result in the temporary impact to coastal marsh vegetation, which is predominantly herbaceous. Vegetation would return once construction is completed.

Construction on the Texoma, Florida Gas, Channel and Transco laterals would require the clearing of mixed forest land. These forests would be permanently impacted because the pipeline right-of-way would be maintained in an herbaceous growth state following construction.

4.4 WILDLIFE AND FISHERIES

4.4.1 Powerlines

The primary wildlife and fisheries habitat along the primary and secondary powerline rights-of-way are found in the adjacent wetland areas. The coastal marsh wetlands within the area and Sabine Lake support a multitude of wildlife that includes at least 4 species of amphibians, 8 species of reptiles, 37 species of birds, and 18 species of mammals based on the presence of habitat and historical occurrences. The palustrine wetlands along the powerline route including emergent, scrub shrub, and forested habitat also provide foraging, breeding, migratory, and wintering habitat for a variety of terrestrial and aquatic wildlife.

Open water/channel shoreline habitat generally is considered to be any aquatic habitat that lacks emergent, hydrophytic vegetation and is at least 2 meters (6.6 feet) deep. These habitats are maintained by rainfall, river and runoff inflow, and Gulf of Mexico tidal influences. Based on the presence of similar

regional habitat, there is a high species diversity comprising at least 2 species of reptiles, 8 species of birds, and 3 species of mammals.

Initial clearing and construction activities would disrupt wildlife habitat comprised of palustrine wetland, estuarine emergent marsh. During clearing and grading, smaller, less mobile wildlife could experience direct mortality during clearing and grading activities. Other wildlife would likely leave the area when construction begins and may relocate into similar nearby habitats. Stresses related to increased levels of competition could cause disruption of breeding cycles of some wildlife species, lower reproductive success, and reduced survival.

Electric utility power lines have been documented as a cause of avian mortality due to wire strikes. Construction of the powerlines could cause potential injury or mortality to migrating birds that may strike the towers or powerlines. The powerlines would be constructed to the north and east of the J.D. Murphree Wildlife Management Area, which encompasses 24,500 acres of fresh and brackish marsh, and supports large populations of waterfowl and migratory birds. The powerlines could have a long term impact on migratory birds. The level of impact and measures to minimize and mitigate those impacts would be evaluated by federal and state agencies including the TXCEQ, TXPWD, and FWS during the permit review process.

Several listed threatened and endangered species have the potential to occur during certain periods of the year in areas occupied by the powerline rights-of-way. Entergy would need to consult with the FWS and state wildlife agencies regarding potential impacts to threatened and endangered species from the powerlines.

4.4.2 Pipeline Laterals

Pipeline lateral construction would temporarily affect a total of 22.2 acres of wildlife habitat, including palustrine wetlands, estuarine emergent wetlands, upland forest/scrub shrub, and cropland and pasture. Following construction of the laterals, all workspace would be restored to pre-construction contours and be allowed to return to its original vegetative state with the exception of the forested areas that would be maintained in an herbaceous state as a part of the 50-foot-wide permanent easement. Long-term impacts would be limited to the clearing of forests for new right-of-way. Although there are no designated significant habitats located within the project area, wetland areas would be temporarily impacted during construction. Construction timeframes that would avoid or minimize impacts to wildlife species would be determined along with specialized construction and operation mitigation plans.

Several listed threatened and endangered species have the potential to occur during certain periods of the year in areas occupied by the pipeline laterals. The Project proponent would need to consult with the FWS and state wildlife agencies regarding potential impacts to threatened and endangered species.

4.5 CULTURAL RESOURCES

4.5.1 Powerlines

The information provided by Golden Pass does not indicate that there are any previously recorded cultural resource sites located along the SH 87 corridor where the primary powerline would likely be routed. The secondary powerline could encounter cultural resources along the northern segment, but it is unlikely there are any cultural resources along dredge material placement areas on the west side of Sabine Lake. As part of permitting for the powerlines and before initiation of construction activities, Entergy would be

required to consult with the state historic preservation officer regarding potential impacts to cultural resources.

4.5.2 Pipeline Laterals

We reviewed the cultural resource survey information provided by Golden Pass for the Golden Pass pipeline system for the areas that would be affected by the pipeline laterals. While Golden Pass has not provided site-specific survey information for the pipeline lateral routes, it has conducted surveys along the proposed routes for the Mainline and Loop in areas near the routes for the proposed laterals. Based on this information, there are no previously recorded, or newly recorded, archeological resources in areas that would be affected by the pipeline laterals. We do note that there is one potential architectural resource located near the Florida Gas lateral at mainline MP 44.0. Prior to construction of these facilities, clearance would need to be obtained from the SHPO to ensure that no adverse impacts would occur to cultural resources within construction work areas.

4.6 LAND USE

4.6.1 Powerlines

Land use categories crossed by the primary powerline include primarily open land and industrial land. The powerline parallels SH 87 and crosses an existing industrial area in West Port Arthur to the north of the Intracoastal Waterway. The nearest residential areas are located across the Port Arthur Channel on Pleasure Island and along the southeastern edge of Keith Lake near the LNG terminal site. Land use categories crossed by the secondary powerline include open land and industrial land, and Sabine Lake. To minimize impacts on incompatible land uses, both powerlines would parallel existing road and utility rights-of-way.

4.6.2 Pipeline Laterals

The land use categories crossed by the pipeline lateral consists primarily of open land and forest land. Open land is found at the NGPL and Centana laterals near the proposed LNG terminal site. The open land at this location consists of coastal marsh habitat. The remaining laterals would be in predominantly rural, forested areas with some nearby agricultural/pasture land use. The laterals should not have any adverse impacts on existing land use.

4.7 ALTERNATIVES

4.7.1 Powerlines

Entergy is currently conducting a Routing Study and Environmental Assessment to finalize the preferred alignment for the powerlines before it files for a Certificate of Public Convenience from the PUCT and for Section 10/404 permits from the COE. The PUCT and COE would conduct an environmental review of the proposed powerline route and its alternatives as part of permit review.

4.7.2 Pipeline Laterals

The alignment for the pipeline laterals would be a function of the location of the Golden Pass meter station/interconnects and the existing pipelines. Because there are no agreements in place between Golden Pass and the operators of the pipelines at the potential interconnect sites, the exact location and length of the interconnecting laterals is speculative and may change. Our alternatives analysis is based on

the preliminary alignments for the laterals provided by Golden Pass. The COE would require a detailed alternatives analysis of the proposed interconnection site and pipeline laterals to determine if no feasible alternatives exist that are less environmentally damaging.

NGPL and Centana Laterals

The NGPL and Centana laterals would be located along an existing access road within wetlands. The location of the laterals in wetlands is a result of the proposed interconnects and the locations of the existing NGPL and Centana pipelines. There appears to be no practical alternative routes for these laterals.

AEP Texoma Lateral

The Texoma lateral would be adjacent to the Golden Pass pipeline for its entire length (approximately 3,650 feet) from the interconnect site to the AEP Texoma pipeline. By paralleling the Mainline, the lateral would take advantage of the corridor disturbed during construction of the Mainline. About 2,400 feet of wetland would be crossed by this lateral. There appears to be no practical alternative routes for this lateral.

Florida Gas Lateral

The Florida Gas pipeline lateral would extend from the proposed interconnect site to the east towards the Florida Gas plant along SH 105 in Orange County, Texas. This lateral would make use of an existing road right-of-way for its entire length. This route would cross two waterbodies including Anderson Gully. However, by paralleling the previously disturbed roadway, environmental impacts would be minimized. The only practical alternative would be to install the lateral on the north side of SH 105, rather than the south side. However, while this may reduce wetland impacts, it would require at least one (and possibly two) crossings of SH 105.

Channel Lateral

The Channel lateral is a 525-foot-long pipeline extending from the interconnect site to the Channel pipeline. This lateral is located in an undeveloped forested area. It appears from aerial photography that the interconnect site and lateral may have been sited to minimize impacts to forest land. However, this results in greater forested wetland impacts along the lateral. It appears that forested wetland impacts could be reduced if the lateral were located on the southern side of the Southern railroad right-of-way. However, unless the interconnect were also moved to the south side of the railroad, wetland impacts may be similar because of the larger work space needed to cross under the railroad. This alternative may be evaluated during the federal and state review for the Channel lateral.

Transco Lateral

The Transco lateral would involve a 250-foot-long pipeline extending from the Mainline to the Transco pipeline. The lateral would be installed along the edge of an existing aboveground facility. This route would parallel an existing disturbed area and appears to be the most practical alternative.

5.0 CONCLUSIONS

Our review of the nonjurisdictional powerlines and laterals indicates that construction of these utilities would not have an adverse impact on groundwater resources, geologic resources, or existing land uses.

Impacts to vegetation and fish and wildlife species, including threatened and endangered species, would be minimal. Construction of these facilities could temporarily increase the potential for erosion in wetlands and waterbodies, but appropriate "best management practices" would be implemented to protect exposed soils. Following construction, the workspace used to construct the powerlines and laterals would be restored as near as possible to preconstruction conditions, thus minimizing any long-term impacts along the rights-of-way. These projects, when proposed, would be subject to appropriate review by appropriate federal and state agencies, including the PUCT and the COE, to determine the magnitude of environmental impacts and what measures would be implemented to minimize these impacts.