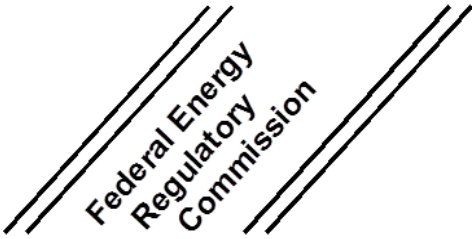

Office of
Energy Projects

February 2018

Gulf South Pipeline Company, LP **Docket No. CP17-476-000**

Westlake Expansion Project

Environmental Assessment

Washington, DC 20426

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426

OFFICE OF ENERGY PROJECTS

In Reply Refer To:
OEP/DG2E/Gas Branch 1
Gulf South Pipeline Company, LP
Westlake Expansion Project
Docket No. CP17-476-000

TO THE PARTY ADDRESSED:

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared an environmental assessment (EA) for the Westlake Expansion Project, proposed by Gulf South Pipeline Company, LP (Gulf South) in the above-referenced docket. Gulf South requests authorization to construct and operate one new compressor station, two new meter and regulator (M&R) stations, and about 0.3 mile of 16-inch-diameter natural gas pipeline in Calcasieu Parish, Louisiana.

The EA assesses the potential environmental effects of the construction and operation of the Westlake Expansion Project in accordance with the requirements of the National Environmental Policy Act. The FERC staff concludes that approval of the proposed project, with appropriate mitigating measures, would not constitute a major federal action significantly affecting the quality of the human environment.

The proposed Westlake Expansion Project includes the following facilities:

- one new 10,000 horsepower compressor station (Westlake Compressor Station);
- 0.3 mile of 16-inch-diameter natural gas pipeline;
- one new delivery M&R station (Entergy Lake Charles M&R Station); and
- one new receipt M&R station (Varibus M&R Station).

The FERC staff mailed copies of the EA to federal, state, and local government representatives and agencies; elected officials; Native American tribes; potentially affected landowners and other interested individuals and groups, including commenters; and newspapers and libraries in the project area. In addition, the EA is available for public viewing on the FERC's website (www.ferc.gov) using the eLibrary link. A limited number of copies of the EA are available for distribution and public inspection at:

Federal Energy Regulatory Commission
Public Reference Room
888 First Street NE, Room 2A
Washington, DC 20426
(202) 502-8371

Any person wishing to comment on the EA may do so. Your comments should focus on the potential environmental effects, reasonable alternatives, and measures to avoid or lessen environmental impacts. The more specific your comments, the more useful they will be. To ensure that the Commission has the opportunity to consider your comments prior to making its decision on this project, it is important that we receive your comments in Washington, DC **on or before March 27, 2018.**

For your convenience, there are three methods you can use to file your comments with the Commission. In all instances please reference the project docket number (CP17-476-000) with your submission. The Commission encourages electronic filing of comments and has expert staff available to assist you at 202-502-8258 or FercOnlineSupport@ferc.gov.

(1) You can file your comments electronically using the eComment feature located on the Commission's website (www.ferc.gov) under the link to Documents and Filings. This is an easy method for submitting brief, text-only comments on a project;

(2) You can also file your comments electronically using the eFiling feature on the Commission's website (www.ferc.gov) under the link to Documents and Filings. With eFiling, you can provide comments in a variety of formats by attaching them as a file with your submission. New eFiling users must first create an account by clicking on "eRegister." You must select the type of filing you are making. If you are filing a comment on a particular project, please select "Comment on a Filing"; or

(3) You can file a paper copy of your comments by mailing them to the following address:

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street NE, Room 1A
Washington, DC 20426

Any person seeking to become a party to the proceeding must file a motion to intervene pursuant to Rule 214 of the Commission's Rules of Practice and Procedures (18

CFR 385.214).[1] Only intervenors have the right to seek rehearing of the Commission's decision. The Commission grants affected landowners and others with environmental concerns intervenor status upon showing good cause by stating that they have a clear and direct interest in this proceeding which no other party can adequately represent. **Simply filing environmental comments will not give you intervenor status, but you do not need intervenor status to have your comments considered.**

Additional information about the project is available from the Commission's Office of External Affairs, at **(866) 208-FERC,** or on the FERC website (www.ferc.gov) using the eLibrary link. Click on the eLibrary link, click on "General Search," and enter the docket number excluding the last three digits in the Docket Number field (i.e., CP17-476). Be sure you have selected an appropriate date range. For assistance, please contact FERC Online Support at FercOnlineSupport@ferc.gov or toll free at (866) 208-3676, or for TTY, contact (202) 502-8659. The eLibrary link also provides access to the texts of formal documents issued by the Commission, such as orders, notices, and rulemakings.

In addition, the Commission offers a free service called eSubscription which allows you to keep track of all formal issuances and submittals in specific dockets. This can reduce the amount of time you spend researching proceedings by automatically providing you with notification of these filings, document summaries, and direct links to the documents. Go to www.ferc.gov/docs-filing/esubscription.asp.

[1] See the previous discussion on the methods for filing comments.

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TECHNICAL ACRONYMS AND ABBREVIATIONS

$\mu g/m^3$	micrograms per cubic meter
ATWS	additional temporary workspace
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
Commission	Federal Energy Regulatory Commission
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
dBA	decibels on the A-weighted scale
DOT	Department of Transportation
EA	environmental assessment
ESA	Endangered Species Act
EI	environmental inspector
Entergy M&R	Entergy Lake Charles Meter and Regulator
EO	Executive Order
EPA	Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
g	gravity
GHG	greenhouse gas
Gulf South	Gulf South Pipeline Company, LP
GWP	global warming potential
HAP	hazardous air pollutant
hp	horsepower
HUC	Hydrologic Unit Code
L_{eq}	24-hour equivalent sound level
L_{dn}	day-night sound level
LDEQ	Louisiana Department of Environmental Quality
LDNR	Louisiana Department of Natural Resources
LDWF	Louisiana Department of Wildlife and Fisheries
M&R	meter and regulator
NAAQS	National Ambient Air Quality Standards
NGA	Natural Gas Act
NEPA	National Environmental Policy Act
NNSR	Nonattainment New Source Review
NO_2	nitrogen dioxide

NOI	*Notice of Intent to Prepare an Environmental Assessment for the Proposed Westlake Expansion Project and Request for Comments on Environmental Issues*
NO_x	nitrogen oxides
NRCS	Natural Resources Conservation Service
NSA	noise sensitive area
NSPS	New Source Performance Standards
NSR	New Source Review
OEP	Office of Energy Projects
Order	FERC's *Order Issuing Certificate*
Plan	FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan*
Procedures	FERC's *Wetland and Waterbody Construction and Mitigation Procedures*
Project	Westlake Expansion Project
PSD	Prevention of Significant Deterioration
Secretary	Secretary of the Commission
SHPO	State Historic Preservation Office
SIL	significant impact level
SO_2	sulfur dioxide
SONRIS	Strategic Online Natural Resource Information System
SPCC Plan	*Spill Prevention, Containment, and Countermeasures Plan*
tpy	tons per year
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
VOC	volatile organic compounds
WEG	wind erodibility group

A. PROPOSED ACTION

The staff of the Federal Energy Regulatory Commission (Commission or FERC) has prepared this environmental assessment (EA) to assess the environmental impacts of the construction and operation of the Westlake Expansion Project (Project) proposed by Gulf South Pipeline Company, LP (Gulf South). We[2] prepared this EA in compliance with the requirements of the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) regulations for implementing NEPA (Title 40 of the Code of Federal Regulations, Parts 1500-1508 [40 CFR 1500-1508]), and the Commission's implementing regulations.[3]

1. INTRODUCTION

On July 20, 2017, Gulf South filed an application with the Commission in Docket No. CP17-476-000 under section 7(c) of the Natural Gas Act (NGA)[4] seeking a Certificate of Public Convenience and Necessity (Certificate) to construct and operate a new 10,000 horsepower (hp) compressor station (Westlake Compressor Station), about 0.3 mile of 16-inch-diameter natural gas pipeline, a new delivery meter and regulator (M&R) station (Entergy Lake Charles M&R Station [Entergy M&R Station]), and a new receipt M&R station (Varibus M&R Station). The proposed facilities would all be constructed in Calcasieu Parish, Louisiana (see figure 1).

FERC is the lead federal agency for the Project and for the preparation of this EA. Our principal purposes in preparing this EA are to:

- identify and assess potential impacts on the natural and human environment that could result from implementation of the proposed action;
- identify and recommend reasonable alternatives and specific mitigation measures, as necessary, to avoid or minimize Project-related environmental impacts; and
- facilitate public involvement in the environmental review process.

The EA is an integral part of the Commission's decision-making process in determining whether to authorize Gulf South's proposal.

2. PROJECT PURPOSE AND NEED

Under section 7(c) of the NGA, the Commission determines whether interstate natural gas transportation facilities are in the public convenience and necessity and, if so, grants a Certificate to construct and operate them. The Commission bases its decisions

[2] "We," "us," and "our" refer to the environmental staff of the Commission's Office of Energy Projects.
[3] See 18 CFR 380.
[4] See Natural Gas Code 15 of the U.S. Code, Chapter 15B.

on technical competence, financing, rates, market demand, gas supply, environmental impact, long-term feasibility, and other issues concerning a proposed project.

Gulf South's stated Project purpose is to provide firm transportation service to Entergy Louisiana, LLC's (Entergy Louisiana) proposed 990 megawatt natural gas-fired combined cycle electric generating station in Westlake, Louisiana (Lake Charles Power Plant). Gulf South's existing Index 198 System would interconnect with Entergy Louisiana's existing Varibus pipeline at the Varibus M&R station. The Varibus M&R Station would receive gas from Varibus' existing system to be compressed at the proposed Westlake Compressor Station and transported to the Entergy M&R Station and the Lake Charles Power Plant via the new proposed pipeline. Gulf South's Project would create an incremental 200 million cubic feet per day of capacity.

3. SCOPE OF THIS ENVIRONMENTAL ASSESSMENT

The topics addressed in this EA include geology, soils, groundwater, surface waters, wetlands, fisheries, wildlife, vegetation, species of special concern, land use, recreation, visual impacts, socioeconomics, cultural resources, air quality, noise, reliability and safety, cumulative impacts, and alternatives. This EA describes the affected environment as it currently exists and the environmental consequences of the Project, and compares the Project's potential impact with that of various alternatives. This EA also presents our recommended mitigation measures.

As the lead federal agency for the Project, FERC is required to comply with section 7 of the Endangered Species Act, as amended (ESA) and section 106 of the National Historic Preservation Act. These statutes have been considered in the preparation of this EA. In addition to FERC, other federal, state, and local agencies may use this EA in approving or issuing permits for all or part of the proposed Project. Permits, approvals, and consultations for the Project are discussed in section A.10 of this EA.

4. PROPOSED FACILITIES

The Westlake Compressor Station in Calcasieu Parish, Louisiana would consist of one new enclosed compressor station, which includes two natural gas-fired 5,000 hp International Organization for Standardization-rated Caterpillar reciprocating compressor engines and associated auxiliary buildings and facilities, including the following:

- yard and station piping;
- emergency generator;
- fuel gas heaters;
- gas aftercooler;
- gas filtration equipment;
- condensate and wastewater tanks;

- engine lube oil storage tank;
- coolant storage tanks;
- fuel gas metering;
- regulation and jack water coolers;
- communications tower;
- security fencing; and
- two permanent access roads.

Gulf South would also install approximately 1,600 feet (0.3 mile) of 16-inch-diameter pipeline from Gulf South's existing Index 198-3L line to the proposed Entergy M&R Station at milepost (MP) 0.1 of the proposed pipeline. Gulf South would install a tie-in and associated appurtenant facilities at the terminus of the proposed pipeline within a 30- by 60-foot-diameter fenced-in area to connect and tie-in to the Lake Charles Power Plant. The Entergy M&R Station would include the following appurtenant equipment:

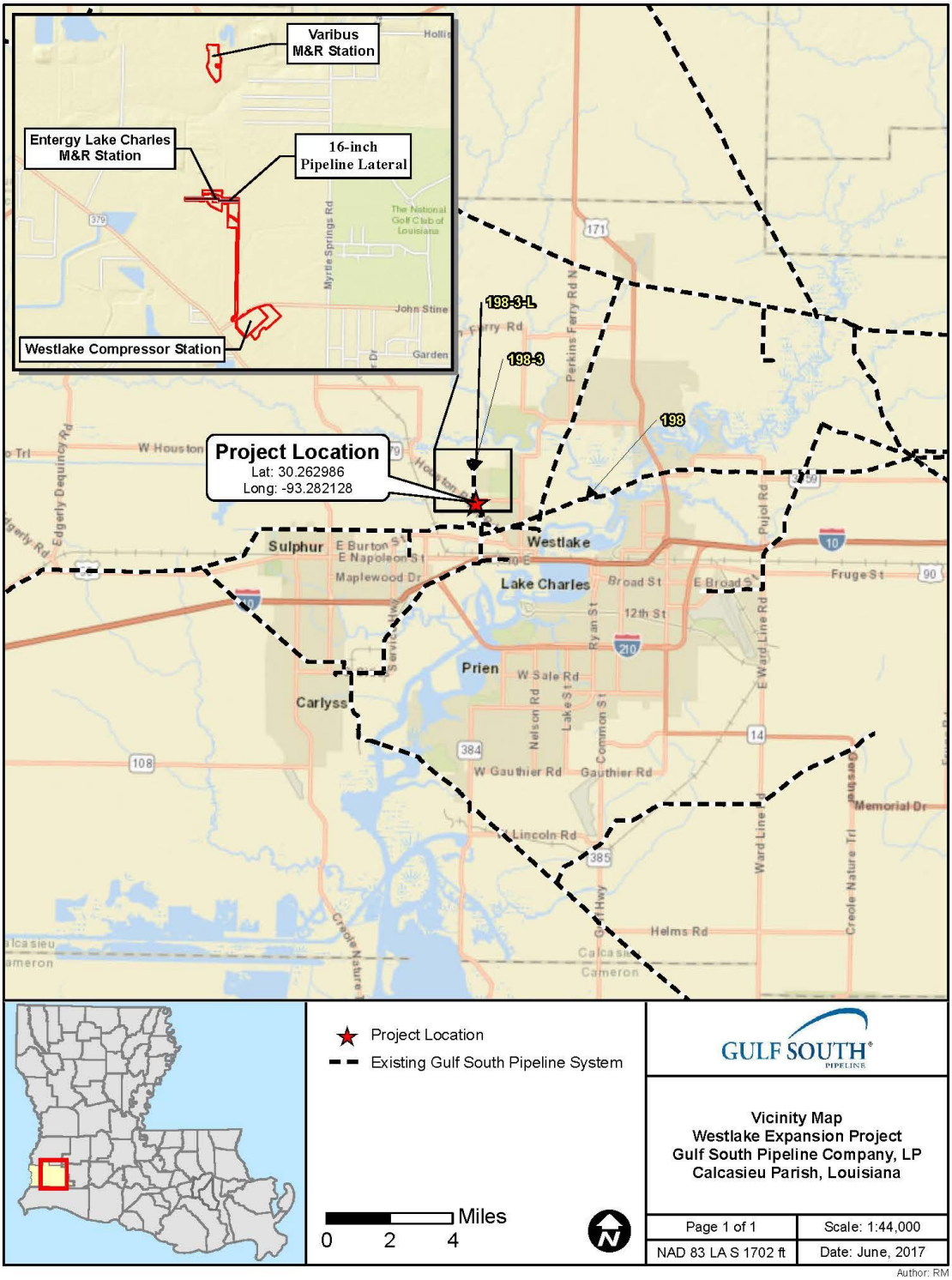
- inlet piping;
- filter separators with a liquid storage tank;
- M&R skids with pressure/flow control equipment;
- outlet piping;
- gas chromatograph building;
- remote terminal building;
- communications tower; and
- ancillary equipment, including an emergency generator.

Gulf South would also install the Varibus M&R Station within the property boundary of an existing Gulf South facility within the existing Entergy Louisiana's Roy Nelson Power Plant. Construction activities at the Varibus M&R Station would include the following:

- reconfiguration of station piping;
- reversal of the metering equipment;
- replacement of filter separators and storage tanks;
- replacement of regulators and control valves; and
- installation of an emergency generator.

Figure 1 shows the general Project location, and additional figures are provided in appendix A.

Figure 1 Project Overview Map



5. CONSTRUCTION AND OPERATION PROCEDURES

Gulf South would design, construct, test, operate, and maintain the proposed facilities to conform with or exceed federal, state, and local requirements, including the US Department of Transportation's (DOT) Minimum Safety Standards in 49 CFR 192, *Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards*, and 18 CFR 380.15, *Siting and Maintenance Requirements*.

During construction and restoration of the Project, Gulf South would implement the measures contained in the following plans, in addition to other federal, state, and local permit requirements:

- FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan);[5]
- FERC's *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures);[6]
- Spill Prevention, Containment, and Countermeasures (SPCC) Plan;
- Plan for the Unanticipated Discovery of Contaminated Environmental Media;
- Plan for the Unanticipated Discovery of Historic Properties and Human Remains During Construction;
- Environmental Complaint Resolution Plan; and
- Fugitive Dust Control Plan.

Our Plan and Procedures are baseline construction and mitigation measures developed in collaboration with other federal and state agencies and the natural gas pipeline industry to minimize the potential environmental impacts of construction on upland areas, wetlands, and waterbodies. Gulf South requested four modifications from sections V.B.2.a, VI.B.1.a., and VI.A.6. of FERC's Procedures regarding additional temporary workspace (ATWS) and permanent fill in wetlands. These modifications are further detailed in section B.3.3. Based on our review of the request for these modifications, we have determined that Gulf South has provided sufficient justification for these changes.

Gulf South would employ an environmental inspector (EI) to oversee and document environmental compliance and prepare FERC reports during the construction phase. All Project-related construction personnel would be informed of the EI's authority and would receive job-appropriate environmental training prior to commencement of

[5] The FERC Plan can be viewed on the FERC website http://www.ferc.gov/industries/gas/enviro/plan.pdf.

[6] The FERC Procedures can be viewed on the FERC website https://www.ferc.gov/industries/gas/enviro/procedures.pdf.

work on the Project. Depending on the progress of the construction, additional EIs may be added as necessary. FERC staff would also conduct inspections of the Project facilities during construction and restoration to determine compliance with any conditions attached to FERC's *Order Issuing Certificate* (Order).

Prior to commencement of any construction-related activities, survey crews would stake the limits of the construction work areas and access roads. Gulf South would avoid sensitive areas by flagging or fencing the resource, as appropriate. Gulf South would contact the national "one-call" system to identify and mark buried utility lines prior to ground disturbance. Construction work areas would be cleared of existing vegetation and graded, as necessary, to create level surfaces for the movement of construction vehicles. In accordance with the Plan, temporary erosion and sediment control measures would be installed following initial ground disturbance.

Gulf South would operate and maintain the proposed facilities in compliance with the Commission's guidance in 18 CFR 380.15, and the maintenance requirements in our Plan and Procedures. Project facilities would be marked and identified in accordance with applicable regulations. In accordance with 49 CFR Part 192, the pipeline would be inspected for leaks as part of scheduled operations and maintenance. Gulf South would participate in the local One Call system and would inspect, maintain, and replace pipeline markers and signs to ensure that the pipeline location is visible from the ground. These standards are in accordance with the *National Pipeline Safety Act of 1968,* as amended.

5.1 ABOVEGROUND FACILITY CONSTRUCTION

Gulf South would excavate the sites, as necessary, to accommodate the reinforced concrete foundation for the new compressor units and buildings. The foundation and piling/pier excavation depths would be determined upon completion of the geotechnical evaluations. After the concrete foundations have been completed and tested to verify minimum strength requirements, installation of the buildings and machinery would begin. The steel frames would be erected, followed by installation of the roofs, interior siding, insulation, and exterior siding. The compressor units would then be positioned on the foundations, leveled, grouted, and secured. Pipe connections associated with the new compressors and equipment would be flanged, screwed, or welded. Gulf South would test the piping system welds by a non-destructive method to ensure compliance with 49 CFR 192.

Permanent workspaces would be graveled or paved with asphalt. Following construction, Gulf South would install a security fence and property fences around the permanent aboveground facilities.

5.2 GENERAL PIPELINE CONSTRUCTION SEQUENCE

Gulf South would install the pipeline facilities below ground using conventional open-cut pipeline construction techniques. This typically consists of a sequential process of surveying, clearing, grading, excavating, pipe stringing, bending, welding, lowering-in, backfilling, hydrostatic testing, cleanup, and restoration. Crews working on each stage of construction generally proceed along the pipeline right-of-way in one continuous operation. The entire process would be coordinated to minimize the total time a tract of land would be disturbed and, therefore, exposed to erosion and precluded from normal use. Construction activities at any one location would last up to a few months.

In accordance with the FERC Plan, Gulf South would grade the disturbed temporary work areas to match pre-construction contours and drainage patterns, and reseed the areas within six working days of final grading. Gulf South would leave temporary erosion control measures in place or replace them with interim erosion control measures until sufficient vegetative cover has re-established.

5.3 SPECIAL CONSTRUCTION PROCEDURES

In addition to the standard pipeline construction methods discussed above, Gulf South would implement special construction procedures due to site-specific conditions and to reduce overall Project impacts. These special construction techniques are described below.

Road Crossings

The Project would cross one road, Houston River Road, and an adjacent roadside ditch. The road/ditch would be crossed by a subsurface bore. The subsurface bore method is a trenchless method used to install pipelines under sensitive areas such as wetlands and roads to avoid direct impacts on those features. This method would consist of drilling a small diameter pilot hole under the road and enlarging the hole through successive reaming until it is large enough to accommodate a prefabricated segment of pipe. Gulf South anticipates completing the road crossing within one day in order to minimize impacts on traffic. A minimum of 5 feet of soil (cover) over the pipe would be maintained at the road crossing and 4 feet of cover at the drainage ditch crossings. The crossing would be completed in accordance with DOT requirements (49 CFR 192) and the requirements of road crossing permits obtained by Gulf South for the Project.

Waterbody Crossings

Gulf South would cross waterbodies using a conventional open-cut method. The open-cut method uses the same general construction procedures described above for upland construction and consists of digging an open trench through the non-diverted flow of a waterbody. Equipment would operate from the banks of the waterbody to the

maximum extent practicable to excavate a trench. Gulf South would place the excavated trench material no less than 10 feet from the edge of the waterbody for use as backfill.

The pipeline segment would be weighted, as necessary, to provide negative buoyancy and placed below the anticipated scour depth. With the exception of field drains and roadside ditches, Gulf South would install the pipeline with a minimum of 5 feet of cover unless otherwise required by applicable federal, state, or local permits. Gulf South would limit the duration of construction within the waterbody to 48 hours. Gulf South would backfill the trench, restore the waterbody contours, and stabilize the banks within 24 hours of backfill via seeding and/or the installation of erosion control matting. Impacts on waterbodies would be minimized through the implementation of measures outlined in the FERC Procedures, including limiting the amount of equipment and activities in waterbodies, constructing crossings perpendicular to the axis of the waterbody channel, maintaining ambient downstream flow rates, restoring the stream to its original configuration and contour, and permanently stabilizing areas after construction.

Wetland Crossings

Gulf South would cross wetlands in accordance with FERC's Procedures. Construction through wetlands would be similar to the conventional open-cut method described above for upland areas; however, topsoil segregation techniques would be utilized in unsaturated wetlands to preserve the seed bank and to facilitate revegetation following the completion of construction activities. Construction mats would be used to minimize disturbance of wetland hydrology and to maintain soil structure, if site-specific conditions do not support construction equipment. The pipeline segment would be prefabricated and weighted, as necessary, to provide negative buoyancy. Gulf South would adhere to the measures specified in the FERC Procedures, including limiting the amount of equipment in wetlands, cutting vegetation above ground level and leaving the existing root system in place, restoring topsoil to its original location after backfilling, permanently stabilizing areas after construction, and monitoring wetlands post-construction to ensure successful revegetation.

6. CONSTRUCTION SCHEDULE

Gulf South plans to obtain all necessary permits to begin construction by September 2018. Based upon the anticipated schedule, construction would last approximately 11 months. Gulf South anticipates placing the facilities into service by August 1, 2019.

7. LAND REQUIREMENTS

Construction of the Project would disturb about 41.9 acres of land during construction and about 11.7 acres of land during Project operation. The remaining 30.2

acres would be restored to pre-construction conditions. Project construction would require about 6.1 acres of ATWS for equipment and material storage to facilitate specialized construction procedures, in areas where topsoil segregation is required, and at the tie-ins with existing pipeline facilities. Following construction, ATWS would be restored to pre-construction conditions. Land requirements are summarized in table 1 below.

Although Gulf South has identified areas where ATWS would be required, additional or alternative areas could be identified in the future due to changes in site-specific construction requirements. Gulf South would be required to file information on each of those areas for our review and approval prior to use.

Table 1
Land Requirements for the Proposed Project

Facility	Total Temporary Impact (acres)	Permanent/Operational Impact (acres)
Pipeline and Access Roads		
Pipeline Lateral	1.9	0.9
Additional Temporary Workspace	6.1	0.0
Temporary Access Road	3.8	0.0
Subtotal	*11.8*	*0.9*
Aboveground Facilities		
Westlake Compressor Station	17.1	9.7
Entergy M&R Station	5.3	0.9
Varibus M&R Station	7.5	0[a]
Permanent Access Roads	0.2	0.2
Subtotal	*30.1*	*10.8*
Project Total	**41.9**	**11.7**

[a] All work would be within an existing industrial facility and therefore the operational footprint will be within the existing footprint.

7.1 PIPELINE FACILITIES

Gulf South would construct the pipeline entirely within land owned and operated by Entergy Louisiana. Gulf South would require a 75-foot-wide right-of-way for pipeline construction and a 30-foot-wide permanent right-of-way for Project operation. Pipeline construction (including the temporary access road and extra workspace) would impact about 11.8 acres of land, and pipeline operation would impact about 0.9 acre of land.

7.2 ABOVEGROUND FACILITIES

Gulf South would lease about 17.1 acres for construction and 9.7 acres for operation of the Westlake Compressor Station. Following construction, temporary workspaces would be graded, stabilized, and allowed to revegetate. The permanent operational footprint of the compressor station would either be graveled or maintained in an herbaceous state and would be entirely fenced in.

The proposed Entergy M&R Station is within the Lake Charles Power Plant property. Construction and operation of the Entergy M&R Station would require 5.3 acres and 0.9 acre of land, respectively. The M&R Station would either be graveled or maintained in an herbaceous state and would be entirely fenced in.

Construction and operation of the tie-in with the Lake Charles Power Plant and associated appurtenant facilities would occur at the pipeline terminus within a 30-foot by 60-foot fenced area within the permanent right-of way for the pipeline.

The proposed receipt Varibus M&R Station is within an existing Gulf South facility site within Entergy Louisiana's Roy Nelson Power Plant property boundary. Construction would require 7.5 acres of land, with no land (other than that currently used for industrial use) required for operation. Land temporarily impacted by construction would be returned to pre-construction conditions.

8. NON-JURISDICTIONAL FACILITIES

Under Section 7 of the NGA, the Commission is required to consider, as part of the decision to approve facilities under its jurisdiction, all factors bearing on the public convenience and necessity. Occasionally, proposed projects have associated facilities that do not come under the jurisdiction of the Commission. These "non-jurisdictional" facilities may be integral to the need for the proposed facilities, such as a power plant at the end of a jurisdictional pipeline, or they may be minor, non-integral components of the facilities under the Commission's jurisdiction.

The Lake Charles Power Plant that is currently under construction within the proposed Project footprint at the Entergy M&R Station is a non-jurisdictional facility, and is further discussed in section B.11.

The Westlake Compressor Station would require the addition of new powerlines, waterlines from a new well, and a septic tank. A powerline would also be required at the Entergy M&R Station. Approximately 300 and 100 feet of new electric powerlines would be installed through a drop from the adjacent overhead powerline transmission corridor directly to the aboveground facilities at the compressor station and the Entergy M&R Station, respectively, and would not require any ground disturbance. Water would be acquired from a new well within the permanent footprint, and the septic tank would

also be installed within the permanent footprint of the compressor station. The Varibus M&R Station would utilize existing powerlines currently available at Gulf South's onsite facilities and would not require any non-jurisdictional facilities.

9. PUBLIC REVIEW AND COMMENT

On August 30, 2017, the Commission issued a *Notice of Intent to Prepare an Environmental Assessment for the Proposed Westlake Expansion Project and Request for Comments on Environmental Issues* (NOI). The NOI was sent to affected landowners; federal, state, and local government agencies; elected officials; environmental and public interest groups; Native American tribes; other interested parties; and local libraries and newspapers.

In response to the NOI, the Commission received comments from three Louisiana State Representatives, a State Senator, the Calcasieu Parish Policy Jury, and the Southwest Louisiana Economic Development Alliance, all stating their support for the Project. We received a comment from the Louisiana Department of Wildlife and Fisheries (LDWF) concurring on the Project's proposed pipeline right-of-way, use of best management practices, and included recommendations on forested vegetation clearing disposal, and a request for review of Gulf South's proposed wetland mitigation plan (see section B.3). We also received comments from the U.S. Environmental Protection Agency (EPA) recommending various measures related to Waters of the United States and air quality (see sections B.3 and B.8). The Choctaw Nation of Oklahoma requested shapefiles and the Phase I survey report. No other responses have been received to date. All comments are addressed in the relevant EA sections below.

10. PERMITS

Table B-1 in appendix B provides a list of known federal, state, and local permits for the Project, as well as any responses that have been received to date. Gulf South would be responsible for obtaining all permits and approvals required for the Project, regardless of their listing in table B-1.

B. ENVIRONMENTAL ANALYSIS

The following sections discuss the Project's potential direct and indirect impacts on environmental resources. When considering the environmental consequences of the proposed Project, the duration and significance of any potential impacts are described below according to the following four levels: temporary, short-term, long-term, and permanent. Temporary impacts generally occur during construction, with the resources returning to pre-construction conditions almost immediately. Short-term impacts could continue for up to three years following construction. Long-term impacts would require more than three years to recover, but eventually would recover to pre-construction conditions. Permanent impacts could occur because of activities that modify resources to the extent that they may not return to pre-construction conditions during the life of the Project, such as with the construction of an aboveground facility. An impact would be considered significant if it would result in a substantial adverse change in the physical environment.

1. GEOLOGY

1.1 PHYSIOGRAPHIC SETTING AND GEOLOGIC CONDITIONS

The proposed Project is in southwestern Louisiana within the West Gulf Coastal Plain, which is characterized by nearly level to moderately rolling irregular plains, which were formed by the deposition and subsequent uplift of continental marine sediments from the end of the Cretaceous period to the Pleistocene (The Nature Conservancy 2003). Topography in the Project vicinity is flat to gently sloping with elevation ranging from 0 to 20 feet above sea level. The primary lithology of the Project vicinity is clay, silt, and sand with secondary gravel (USGS 2017a).

1.2 MINERAL RESOURCES

Louisiana's primary resources include oil and gas production, and non-fuel mineral resources including salt, sand, gravel, crushed stone, and lime. Using the Louisiana Department of Natural Resources (LDNR) Strategic Online Natural Resource Information System (SONRIS) and the U.S. Geological Survey (USGS) Mineral Resource Data System, there are four "dry and plugged" or "plugged and abandoned" oil and/or gas wells within 1 mile of proposed Project facilities, with the nearest 0.29 mile from the Project area (LDNR 2017, USGS 2017b). In addition, there are no non-fuel mineral resources within 1 mile of the Project (LDNR 2017, USGS 2017b). Project construction and/or operational impacts on fuel and non-fuel mineral resources are not anticipated given the limited depth of disturbance required for construction of Project facilities and the distance to the nearest mineral resources.

The State of Louisiana does not have protected fossils, and per agency correspondence with the Louisiana Geological Survey, the presence of fossils is not

likely in the Project area. Additionally, the Antiquities Act of 1906 and the Paleontological Resources Preservation Act of 2009 protect objects of antiquity and fossils, respectively, on federal lands. No such protection for paleontological resources exists in laws or regulations for non-federal lands. Should paleontological resources be discovered during construction, Gulf South would temporarily cease excavation in the area and would notify the relevant local and state agencies as well as FERC; therefore, adverse impacts on sensitive or rare paleontological resources are not anticipated.

1.3 GEOLOGIC HAZARDS

Geologic hazards could affect the integrity of Project facilities during construction and operation. Potential hazards could include seismic-related issues such as ground rupture due to faulting, strong ground shaking, liquefaction, subsidence, slope stability and landslides, as well as flooding and scour and karst terrain. These conditions are discussed below.

Seismicity and Liquefaction

Historically, very few earthquakes have been recorded in Louisiana. Based on the USGS Earthquake Archive, for the period between January 1900 and November 2017, one earthquake occurred in Calcasieu Parish in October 1983 with a magnitude 3.8, located approximately 6.4 miles southwest of the Project area in Sulphur, Louisiana (USGS 2017c). Earthquakes of this magnitude have minimal to no resulting damaging.

Movement along active growth faults in the coastal plains tends to be small and non-seismogenic; in other words, the process is described as a gradual creep instead of sudden break or displacement (Louisiana Geological Society 2001). Based on the gradual nature of fault movement, proposed Project facilities are not anticipated to be affected by faults.

Soil liquefaction is a phenomena often associated with seismic activity in which saturated, non-cohesive soils temporarily lose their strength and liquefy (i.e., behave like a viscous liquid) when subjected to forces such as intense and prolonged ground shaking. The Project is in an area with low seismicity, including potentially induced seismicity and, as such, the potential for soil liquefaction to occur is negligible.

Ground Subsidence

Ground subsidence, involving the localized or regional lowering of the ground surface, may be caused by karst dissolution, sediment compaction due to oil and gas and/or groundwater extraction, and the occurrence of underground mines. Oil and gas extraction does not occur within 0.25 mile of the Project area and karst terrain and subsurface mines are not present in the Project area.

The Project is in a region underlain by evaporite deposits (i.e., salt and gypsum). During the exploitation of salt domes, large volumes of subsurface material are removed and the void is not replaced. Furthermore, sudden collapse of subsurface cavities in evaporative rock may be triggered by over-pumping (i.e. extraction) and enhanced percolation of groundwater. The Project area overlies the Chicot Aquifer, an unconsolidated aquifer. Unconsolidated aquifers are susceptible to regional ground subsidence via compaction from excessive groundwater extraction (USGS 2000). The nearest salt dome is approximately 2 miles southeast of the Project area and there are no records of subsidence issues caused by large scale groundwater extraction in the Lake Charles/Westlake area (Frischhertz 2017). Based on this information, we conclude the Project would not be affected by subsidence resulting from evaporite deposits or groundwater over-extraction.

Landslides

Landslides are defined as the movement of rock, debris, or soil down slope. The Project area is characterized as having a low incidence and low susceptibility for landslides (USGS 2014b). This is further supported by the generally flat topography and low potential for seismicity present in the Project area. Blasting is also not proposed or anticipated to be required for construction of the Project. As such, the potential for landslides to occur during construction or operation of the Project is negligible.

Flooding, Scour, and Hurricanes

The Project could be impacted by flash flooding due to its proximity to streams, rivers, and other nearby waterbodies and because portions of the Project area would be within the 100-year floodplain (AE Zone) as determined by the Federal Emergency Management Agency. AE Zones are subject to inundation by the 1 percent chance of an annual flood event. During operation, approximately 4.5 acres of the Project would be within the AE Zone, including 1.5 acres of impervious surfaces associated with the Westlake Compressor Station and the Entergy M&R Station. A total of approximately 4,050 cubic yards of floodplain storage volume would be displaced during Project operation as a result of the installation of paved surfaces and aboveground structures. Floodplain storage volumes do not include graveled access roads because they are pervious surfaces. The pipeline would be installed subsurface, and would not affect the floodplain. Prior to construction, Gulf South would obtain all necessary permits and/or approvals from federal, state, and local authorities for construction within the floodplain. Based on the limited quantity of floodplain storage displacement, the proposed Project is not anticipated to adversely impact the function of the floodplain.

Flooding could affect the pipeline by increasing buoyancy, causing the pipe to rise toward the land surface where it may become exposed. Furthermore, the pipeline would cross two waterbodies: a minor ephemeral waterbody and an intermediate perennial waterbody (see table B-2 of appendix B) where scour may cause the pipeline to become

exposed. Gulf South would design the pipeline to minimize potential impacts from flooding and scour, including measures such as concrete coating or weights, where necessary. The pipeline would also be installed with at least 4 feet of cover at the roadside ditch crossing and with at least 5 feet of cover at the crossing of the unnamed tributary of Bayou Verdine to minimize the potential for impacts from scour. Based on the mitigation measures to be implemented by Gulf South, we conclude flooding or scour would not adversely impact construction or operation of the pipeline.

Aboveground facilities would be designed to protect against damage due to high winds, water, and erosion resulting from hurricanes. Design wind loads used for the pre-engineered buildings would be determined from the Louisiana State Uniform Construction Code (Calcasieu Parish 2016); and in accordance with the latest codes and standards set forth in the International Building Code or American Society of Civil engineering, as required by local, state, and federal requirements. Furthermore, impacts from flooding within the Project area would be minimized by constructing sufficient drainage and stormwater conveyance systems to ensure that water is adequately managed onsite during rain events. Floodplain elevations in the Project area vary between 15 feet and 16 feet; however, the majority of the site is at an elevation of 17 feet to 18 feet. Access roads and other areas associated with the permanent aboveground facilities that are currently below the 100-year flood elevations would be brought to grade consistent with the remaining portions of the site at elevations between 17 feet and 18 feet. Therefore, based on the mitigation measures proposed above, we do not anticipate that hurricanes or flooding would adversely impact the Project facilities.

Expansive Soil

Soil expansion occurs when soils consisting primarily of clay and silt expand as a result of increased moisture content, and shrink upon drying. Expansion and shrinking of soils due to moisture fluctuations can cause damage to concrete slabs, foundations, and other confining structures. Shrink-swell potential is the relative change in volume to be expected with changes in moisture content (Natural Resources Conservation Service [NRCS] 2010). Two soil map units at the aboveground facility sites (Acadia silt loam, 1 to 3 percent slopes and Mowata-Vidrine complex, 0 to 1 percent slopes) are characterized by moderate shrink-swell potential; whereas, the remainder of the soil map units have low shrink-swell potential. Soils with moderate shrink-swell potential could cause foundations to crack.

Gulf South would design the aboveground facilities to ensure proper drainage to assist in the minimization of "swell" of soils following a rain event. Additionally, Gulf South would construct the aboveground facilities in accordance with all applicable federal, state, and local building codes and standards. Therefore, we conclude the presence of shrink-swell soils would not adversely impact the Project facilities.

Based on the above analysis, we conclude that impacts on mineral and paleontological resources from construction and operation of the Project facilities are not anticipated. Impacts on the Project due to potential geologic hazards in the project area are either not present or would be minor and would not significantly affect construction or operation of Project facilities.

2. SOILS

The NRCS Web Soil Survey provides descriptions of the soil series that would be crossed by the Project. There are six soil series within the Project area. Project area soils are predominantly poorly drained, hydric, wind and water erodible, and compaction-prone with moderate revegetation potential. Soils are not characterized by the presence of shallow bedrock (unconsolidated rock 60 inches or less from the surface).

Prime Farmland

The United States Department of Agriculture defines prime farmland as land that has the best combination of physical and chemical characteristics for the production of food, feed, fiber, and oilseed crops. With the exception of urban land, which underlies 3.2 acres of the Varibus M&R Station workspace, all Project area soils are designated prime farmland.

Existing land use on prime farmland is open land, with the exception of the proposed Westlake Compressor Station and associated ATWS. This area is pine plantation which is owned by Entergy Louisiana but is not being actively managed for commercial pine. Furthermore, this land would not be cultivated for commercial pine following completion of Project construction and the Project area is zoned for light industrial use.

Construction of Project facilities would result in approximately 11.7 acres of prime farmland undergoing a conversion to industrial land use. However, the permanent pipeline right-of-way (0.9 acre) would be revegetated and, the availability of prime farmland would not be adversely affected by pipeline operation with the exception of 0.04 acre at the western terminus of the pipeline which would be fenced as a custody transfer area west of the Entergy M&R Station for the non-jurisdictional Lake Charles Power Plant. Permanent impacts on prime farmland would therefore be limited to the footprints of the aboveground Westlake Compressor Station, the Entergy M&R Station, the permanent access road, and the fenced custody transfer area which quantitatively represent less than 0.01 percent of the total area of prime farmland within Calcasieu Parish. Therefore, we conclude that impacts on prime farmland from construction and operation of aboveground facilities would be permanent, but not significant.

Hydric Soils, Soil Rutting, and Compaction

Hydric soils are formed when conditions of saturation, flooding, or ponding occur long enough during the growing season to develop anaerobic conditions in the upper portion of the soil profile. Hydric soils are poorly to very poorly drained and are generally associated with wetlands and aquatic resources. Hydric soils are susceptible to rutting and compaction. With the exception of Urban land, which underlies 3.2 acres of the Varibus M&R Station workspace, all Project area soils are hydric.

Compaction and rutting of hydric soils would be minimized by using timber mats, as deemed necessary during construction, and by de-compacting impacted areas prior to Project completion. Gulf South would further minimize compaction through implementation of the construction and restoration measures outlined in the FERC Plan and Procedures. These include the segregation of topsoil from subsoil, the use of timber mats in wetlands, preparation of a proper seed bed prior to seeding, revegetating the right-of-way with seed mixes suitable for the area, and conducting follow-up inspections to evaluate the success of revegetation efforts. As such, any adverse impacts due to rutting and compaction would be adequately mitigated. Soils underlying permanent aboveground facility foundations would be permanently affected by compaction; however, these effects would be highly localized, minor, and not significant.

Soil Erosion and Revegetation Potential

Soil erosion is the wearing away of physical soil properties by wind and water, and could result in a loss of soil structure, organic matter, and nutrients, all of which, when present, contribute to healthy plant growth and ecosystem stability. Clearing, grading, and equipment movement can accelerate the erosion process and, without adequate protection, result in discharge of sediment to waterbodies and wetlands.

Water erosion is quantified by the NRCS using the erosion factor K, which ranges from 0.02 to 0.69, with the lower values representing lower erodibility and higher values representing higher erodibility. K factors are determined by the percentage of sand, silt, and clay as well as hydrologic factors that influence an area. K factors for Project soils range from 0.43 to 0.49 (i.e., high erodibility).

Wind erodibility groups (WEGs) are a set of classes given to soils based on compositional properties of the surface horizon such as texture, organic matter, content, and aggregate stability that are considered particularly susceptible to wind erosion. WEGs 1 or 2, out of 8 total groups denote the most severe erosion potential from wind. The Project area has soils with WEGs from 3 to 8, indicating low to moderate susceptibility to wind erosion.

To minimize or avoid potential impacts due to soil erosion, Gulf South would utilize erosion controls in the FERC Plan and Procedures. Temporary erosion controls, including interceptor diversions and sediment filter devices, such as silt fences, would be

installed immediately following land disturbing activities. Gulf South would inspect these devices on a regular basis and after each rainfall event of 0.5 inch or greater to ensure proper function. Gulf South would also use dust control measures, including routine wetting of the construction workspace as necessary where soils are exposed, using water from municipal sources Temporary erosion control devices would be maintained until the Project area is successfully revegetated.

Project area soils are classified with moderate revegetation potential. Restoration and revegetation growth specifications would follow the FERC Plan and Procedures, the NRCS' *Louisiana Field Office Technical Guide*, and a Project-specific Revegetation Plan. We have reviewed this plan and find it acceptable.

Given Gulf South's proposed mitigation measures and that disturbed areas would be returned to pre-construction conditions, maintained in an herbaceous state, or stabilized with gravel cover, we conclude impacts due to soil erosion or poor revegetation potential would be temporary, minor, and not significant.

Inadvertent Spills or Discovery of Contaminants

There is no known soil contamination in the immediate vicinity of the proposed Project areas. Gulf South has developed an Unanticipated Discovery of Contaminated Environmental Media Plan which would be implemented in the event of discovery of contaminated soil or groundwater during construction. Specifically, Gulf South would cease activities and restrict access in that area, initiate measures to avoid the spread of contamination, initiate measures to characterize the contamination, and notify appropriate agencies.

Gulf South would minimize soil contamination from spills or leaks of fuels, lubricants, and coolant from construction equipment by implementing its SPCC Plan. This plan specifies preventive measures to reduce the likelihood of a spill, as well as contain and cleanup and disposal procedures in the event of soil contamination from spills or leaks of fuels, lubricants, coolants, or other hazardous materials. We have reviewed Gulf South's Unanticipated Discovery of Contaminated Environmental Media Plan and SPCC Plan and find them acceptable.

In summary, permanent impacts on soils would be limited to 10.8 acres of land necessary for operation of the aboveground Westlake Compressor Station and Entergy M&R Station facilities. Gulf South would implement the mitigation measures in our Plan and Procedures to minimize construction impacts; would stabilize/revegetate temporary work areas; and would utilize recommended seed and fertilizer applications in compliance with NRCS guidelines for Louisiana to ensure that long-term to permanent impacts on disturbed areas are minimized. Gulf South would likewise implement its SPCC Plan in the event of a spill of fuels or other hazardous materials during construction. Based on these measures, we conclude that impacts on soils from

aboveground facilities and access roads would be permanent, but minor, and the potential for other adverse impacts would be adequately mitigated.

3. WATER RESOURCES AND WETLANDS

3.1 GROUNDWATER RESOURCES

All Project sites are within the locally named Chicot Aquifer System, which is within the Coastal Lowlands Aquifer System. Aquifer units within the Chicot Aquifer System are overlain by a surficial confining unit consisting of dense clays and interbedded sands. These interbedded shallow sands are hydraulically connected to underlying aquifer units, which consist of the "200-foot" sand, "500-foot" sand, and "700-foot" sand units in the Project area (Louisiana Department of Environmental Quality [LDEQ] 2011).

Sole Source Aquifers and Wellhead Protection Areas

The EPA oversees the Sole Source Aquifer Protection Program to protect high production aquifers that supply 50 percent or more of the region's water supply. The program is administered under Section 1424(e) of the Safe Drinking Water Act of 1974 and requires the EPA to review and approve federal financially assisted projects within Sole Source Aquifer regions that have the potential to create a significant hazard to public health. The Project area overlies the Chicot Aquifer, which is a sole-source aquifer. However, the Project does not involve federal financial assistance and, therefore, does not require EPA review.

Wellhead protection areas are defined as designated surface and subsurface zones surrounding public water supply wells or wellfields. These zones have been identified to prevent contaminants from compromising the quality of public drinking water. Project facilities do not overlie current wellhead protection areas (LDEQ 2017a).

Public and Private Water Supply Wells

No public or private potable water supply wells or springs were identified within 150 feet of the Project by Gulf South's review of SONRIS, discussions with landowners, or field survey investigations. However, two plugged and abandoned piezometer wells, one active power generation well, and four active monitor wells were within the proposed Project footprint, as detailed in table 2 below.

Table 2 Water Wells within 150 feet of the Westlake Expansion Project				
Owner	**Well Depth (feet below ground surface)**	**Water Level (feet below ground surface)**	**Status**	**Use**
Entergy M&R Station				
Gulf States Utility	21	Information Unavailable	Plugged and Abandoned	Piezometer
Varibus M&R Station				
Entergy Gulf	528	78	Active	Power Generation
Gulf State Utility	21	Information Unavailable	Plugged and Abandoned	Piezometer
NISCO	22	14	Active	Monitor
NISCO	21	10	Active	Monitor
NISCO	22	14	Active	Monitor
NISCO	21	11	Active	Monitor
NISCO = Nelson Industrial Steam Company Note: all wells are within the Project footprint				

Water required for construction activities would be obtained from nearby municipal sources; however, Gulf South anticipates a new groundwater well would be installed within the footprint of the Westlake Compressor Station. This well would withdraw approximately 60,000 gallons annually for sanitary and occasional maintenance uses from the Chicot Aquifer. Based on 2014 water use data, approximately 92 million gallons of freshwater is withdrawn daily from the Chicot Aquifer in Calcasieu Parish (USGS 2014c). Due to the minimal amount of groundwater withdrawals associated with Project operation, and because Gulf South would obtain the appropriate water well permit from Calcasieu Parish, we do not anticipate adverse impacts on groundwater supplies.

Active water wells within construction workspace would be clearly marked and avoided during construction. Gulf South would perform pre- and post-construction monitoring of well yield and water quality for water wells within 200 feet of the Project area. If during construction, a well is determined to have been impaired, Gulf South would compensate the landowner for the repair of the well, installation of a new well, or otherwise arrange for a suitable water supply.

Groundwater Contamination

The presence of existing groundwater contamination was unknown by the current landowner and was not identified during a review of federal and state regulatory databases. Additionally, Nelson Industrial Steam Company (NISCO) Plant Area Runoff Collection Basins and Roy Nelson Power Plant facility's Coal Ash Disposal Landfill

(located 2,550 feet northwest from MP 0.3 of the proposed pipeline), Wastewater Neutralization Basin (located 750 feet northwest of the Varibus M&R Station workspace), and the Unit 6 Settling Pond (located 4,450 feet west of the Varibus M&R Station workspace) has not identified concentrations of constituents of concern above LDEQ Risk Evaluation/Corrective Action Program standards and no further action has been required.

If contaminated groundwater is discovered during construction, Gulf South would implement measures in its Unanticipated Discovery of Contaminated Environmental Media Plan. An accidental spill of fuel or hazardous material during refueling or maintenance of construction equipment could affect groundwater if not cleaned up appropriately. Soils impacted from spills could continue to leach contaminants to groundwater long after the spill has occurred. To minimize the risk of potential fuel or hazardous material spills, Gulf South would implement the measures in its SPCC Plan, which includes spill prevention measures, reporting protocols, mitigation measures, and cleanup methods to reduce potential impacts should a spill occur.

Groundwater Impacts and Mitigation

Due to the shallow nature of the perched groundwater table, groundwater could be impacted immediately adjacent to Project work areas from temporary changes in overland water flow and recharge from trenching, backfilling, trench dewatering, clearing, and grading. However, these impacts would be temporary and flow patterns would return to pre-construction conditions once activities cease. In forested areas, water infiltration, which is normally enhanced by vegetation, could be reduced until vegetation is reestablished. Additionally, water tables may be altered in areas where soil compaction occurs along access roads due to the presence and movements of heavy machinery. The addition of impervious surfaces at aboveground facilities can also affect overland flow patterns and subsurface hydrology.

During construction, Gulf South would limit the amount of time trenches and bore pits remain open to allow local water tables to return to original elevations as quickly as possible. Upon completion of construction, Gulf South would restore the ground surface to original contours, to the extent practicable, and would re-vegetate disturbed areas, excluding areas within permanent aboveground facility fencelines and access roads, with the goal of restoring pre-construction overland flow and recharge patterns. In order to minimize or avoid potential impacts from soil compaction, Gulf South would decompact soils compacted by construction activities prior to Project completion. We conclude construction, operation, and maintenance of the facilities would not have significant or long-term impacts on groundwater resources with implementation of proposed mitigation measures and the Plan and Procedures. The addition of impervious surfaces at aboveground facilities may affect overland flow patterns and subsurface hydrology.

However, these effects would be highly localized and minor. Furthermore, Project impacts are not anticipated to affect the underlying Chicot Aquifer.

3.2 SURFACE WATER

The Project facilities are proposed in the West Fork Calcasieu and Lower Calcasieu watersheds. A total of 15 waterbody crossings would be required for the Project (as shown in appendix B, table B-2).

The centerline of the 16-inch-diameter pipeline would cross two waterbodies: an unnamed tributary of Bayou Verdine and a roadside ditch (Houston River Road). Gulf South proposes to cross the unnamed tributary of Bayou Verdine at MP 0.2 using an open-cut method (see section A.5.2). The roadside ditch at MP 0.09 would be crossed by a road bore. All other waterbody crossings would be associated with temporary workspaces and access roads, where either an existing culvert is currently in place (two crossings), or temporary equipment bridges (eight crossings) or permanent culverts would be installed (three crossings).

Under Section 303(d) of the Clean Water Act (CWA), states are required to identify waterbodies that are not attaining their designated use(s) and develop total maximum daily loads, which represent the maximum amount of a given pollutant that a waterbody can assimilate and still meet its designated use(s). Surface waters in the State of Louisiana are grouped into water quality management basins, which are then divided into management segments and subsegments to describe the hydrology of waterbodies and to manage and improve water quality. Based on the 2016 Louisiana Integrated Water Quality Report, all three of the subsegments in which the Project is located (LA030306_00, LA030801_00, and LA030806_00) are listed as 303(d) subsegments for mercury in fish tissue and dissolved oxygen (LDEQ 2017). The subsegment specific to each waterbody is listed in appendix B, table B-2.

Project construction may result in potential impacts on waterbodies, including increased sedimentation, increased turbidity, and the potential introduction of hazardous materials due to spills and leaks. Gulf South would minimize impacts on waterbodies by incorporating the measures outlined in the Plan and Procedures, including the use of erosion control devices (silt fence, straw bales, etc.) to prevent erosion and run-off. Further, Gulf South would implement its SPCC Plan, which describes measures to prevent, control, and clean-up inadvertent spills of hazardous materials, such as fuels, lubricants, and coolants.

With the exception of the placement of new permanent culverts for the proposed permanent access roads, impacts on waterbodies would be temporary. The open-cut crossing of the unnamed tributary of Bayou Verdine would be completed as expeditiously as possible, within 48 hours, as specified for intermediate streams in the Procedures, which would minimize the duration of impacts. The waterbody channel and banks would

be stabilized and revegetated following backfilling. Because the roadside ditch at MP 0.09 would be crossed via road bore, no impacts are anticipated on this waterbody. The use of temporary equipment bridges to cross streams within temporary workspaces would minimize impacts on these waterbodies. Two waterbodies would be crossed via existing culverts, thereby avoiding impacts. Construction of permanent access roads for the proposed Westlake Compressor Station and the Entergy M&R Station would require a total of three permanent culverts, which would impact two waterbodies in three locations. The installation of these permanent culverts would require a total of 0.02 acre of permanent fill within waterbodies. Gulf South would obtain authorizations pursuant to sections 401 and 404 of the Clean Water Act prior to construction and any mitigation measures (including compensatory mitigation) necessary for the installation of the permanent culverts required under such authorizations by the U.S. Army Corps of Engineers (USACE) and the LDEQ through this permitting process.

Given that Gulf South would implement the Plan and Procedures, we conclude that impacts on surface waters would not be significant. In addition, Gulf South would be required to adhere to any conditions imposed by permits issued by the USACE and LDEQ.

Hydrostatic Testing

In accordance with DOT regulations, Gulf South would perform hydrostatic testing of the 16-inch-diameter pipeline and the new above- and below-ground facility piping prior to placing the Project facilities into service. Hydrostatic testing is a method by which water is introduced to segments of pipe and then pressurized to verify the integrity of the pipeline. A total of 64,000 gallons of water is anticipated to be used for hydrostatic testing of the Project facilities and would be obtained from municipal sources. Gulf South anticipates utilizing up to 0.0042 grams of sodium thiosulfate per 1 gallon of water to reduce the concentration of chlorine in hydrostatic test water. The use of any biocides or other hydrostatic test water chemical additives would be in accordance with applicable federal, state, and local regulations. Following hydrostatic testing, test water would first pass through an energy-dissipation device before being discharged into a well vegetated, upland area in accordance with the Procedures. Given that Gulf South would perform hydrostatic testing in accordance with applicable regulations and that test water would be discharged into well-vegetated uplands, we conclude that hydrostatic testing would not result in significant impacts.

3.3 WETLANDS

Gulf South conducted wetland delineation surveys in accordance with the USACE's Wetlands Delineation Manual (USACE 1987) and the Atlantic and Gulf Coast Regional Supplement (Version 2.0) (USACE 2010) in April 2017 and identified a total of 21 wetland crossings necessary for the Project: 13 palustrine emergent (PEM) and eight palustrine forested (PFO) (appendix B, table B-3). PEM wetlands are characterized by

dominance of rooted herbaceous (non-woody) wetland plants. In the Project area, this includes sand and flatstem spikerush, maidencane, woolgrass, Jamaica sawgrass, Louisiana carex, and southern cattail. PFO wetlands are characterized by woody vegetation greater than 20 feet in height with more than 30 percent canopy cover. PFO wetlands in the Project area are dominated by loblolly pine, Chinese tallow, wax myrtle, water oak, and black tupelo. Impacts include 2.58 acres of PEM and 1.16 acres of PFO wetlands that would be disturbed during construction; of this, 0.24 acre of PFO and 0.06 acre of PEM would be permanently impacted and filled at the Westlake Compressor Station. In addition, Entergy Louisiana conducted wetland delineations west of Houston River Road, where the proposed Entergy M&R Station would be constructed, and identified an additional two PEM wetlands. However, these two wetlands would be permanently converted to industrial/developed land by Entergy Louisiana prior to construction of the proposed Project and would no longer be present at the time of Project construction.

Construction of the Project facilities would result in a total of 3.74 acres of impacts on wetlands, including 3.44 acres of temporary wetland impacts and 0.30 acre of permanent wetland fill. Gulf South would implement measures in the Plan and Procedures to minimize impacts on wetlands. As described in section A.5.3 above, topsoil would be segregated in unsaturated wetlands. In saturated wetlands where soils are unstable, Gulf South would use low ground-pressure equipment and/or install temporary timber equipment mats to prevent compaction and mixing of topsoil and subsoil from deep rutting. To prevent disturbed soils and sediment from migrating into adjacent undisturbed wetlands areas, Gulf South would install erosion controls prior to construction and properly maintain them during construction. Gulf South would store hazardous materials, such as lubricating oils and fuels, in upland areas at least 100 feet from wetland boundaries, whenever possible, or would employ precautions such as continual monitoring of fuel transfer, adequate secondary containment structures, and utilization of spill kits, in accordance with its SPCC Plan and the Procedures.

A majority of the impacts on wetlands would be temporary. About 1.2 acre of PFO wetlands would be cleared for temporary construction workspaces. This would be considered a long-term impact as it could take more than 20 years for PFO wetlands to return to pre-construction conditions. PEM wetlands are expected to revegetate relatively quickly. Gulf South would restore and revegetate all wetlands within temporary construction workspaces to pre-construction conditions and these wetlands would serve their previous function as wetlands. However, construction of the Westlake Compressor Station would permanently fill a total of 0.3 acre of wetlands. Gulf South proposes to mitigate impacts on wetlands through the purchase of mitigation credits from a USACE- and LDWF-approved mitigation bank. Additionally, the LDWF states in its letter dated August 9, 2017 that it tentatively approves of Gulf South's proposal to purchase credits, pending LDWF's review of documentation of all mitigation credit purchase agreements associated with the Project. Gulf South would obtain authorizations pursuant to sections

401 and 404 of the Clear Water Act prior to construction, and any mitigation measures (including compensatory mitigation) necessary for permanent impacts on wetlands would be required by the USACE and the LDEQ through their respective permitting processes.

Based on Gulf South's proposed mitigation measures and adherence to conditions of all applicable permits, we conclude that the Project would not result in significant impacts on wetlands.

Modifications to the Procedures

In accordance with sections V.B.2.a and VI.B.1.a. of FERC's Procedures, Gulf South would locate ATWS a minimum of 50 feet from waterbodies and wetlands. However, Gulf South has requested modifications to the Procedures for ATWS within 50 feet of a wetland and/or waterbody in three locations. Additionally, Gulf South requested a modification to section VI.A.6. of the Procedures to locate the Westlake Compressor Station within wetlands due to siting constraints. Table 4 lists each proposed modification along with justifications and equal compliance measures to minimize impacts. We have reviewed these justifications and compliance measures for these modifications and find them acceptable.

Table 4 Site-Specific Modifications to the FERC Procedures				
Waterbody or Wetland ID (Waterbody Name)	**Section of Procedures**	**Modification to FERC Procedures**	**Justification**	**Equal Compliance Measures**
WP1026 WP1027 WP1028 WP1029 WP1030	VI.B.1	ATWS at MP 0.0 located in wetland	Workspace required to utilize the existing culvert across SP1010; provide access along the existing pipeline right of way to the new lateral tie-in location; laydown, fabrication, staging, and parking for pipeline construction.	Topsoil to be segregated in unsaturated wetlands; temporary timber mats to be installed where necessary to create a stable surface for equipment; and erosion controls to be implemented as needed to control sedimentation until disturbed soils are adequately stabilized and the site has been restored.
SP1010 (Unnamed Tributary of Bayou Verdine)	V.B.2	ATWS at MP 0.0 within 50 feet of a waterbody	Utilization of workspace would limit any direct impact on SP1010 and would allow the use of the existing culvert for crossing. By allowing the setback to be minimized, the access can approach the crossing at a more direct route to prevent sharp turns for safer movement in the work area and across SP 1010 of personnel, materials, and equipment.	ATWS would be set back a minimum of 10 feet from the stream except at the existing culverted crossing. Erosion controls would be placed on either side of the stream for the full extent of the ATWS to control sedimentation.
SP9004 (Roadside Ditch)	V.B.2	ATWS at MP 0.09 within 50 feet of a waterbody	Workspace required for spoil storage to allow safe construction of the new pipeline.	ATWS would be set back a minimum of 10 feet from the stream. Erosion controls would be placed on either side of the stream for the full extent of the ATWS to control sedimentation.

Table 4 Site-Specific Modifications to the FERC Procedures				
Waterbody or Wetland ID (Waterbody Name)	**Section of Procedures**	**Modification to FERC Procedures**	**Justification**	**Equal Compliance Measures**
WP1008 WP1002	VI.A.6.	Aboveground facilities located in wetlands (permanent fill for the Westlake Compressor Station)	In siting of the Westlake Compressor Station, Gulf South took into consideration Executive Order 11990 – Protection of Wetlands, which requires federal agencies to avoid, to the extent possible, the long-term and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. Gulf South designed the Project to minimize permanent impacts on wetlands as much as practicable through configuration of the permanent footprint to significantly avoid the placement of facilities in wetlands.	Through intensive facility siting and equipment and workspace configuration, Gulf South minimized adverse impacts to a total of 0.3 acre of permanent impacts on wetlands. Gulf South proposes to mitigate impacts on wetlands through the purchase of mitigation credits from a USACE- and LDWF-approved mitigation bank.

4. VEGETATION, FISHERIES, AND WILDLIFE

4.1 VEGETATION

The Project facilities are proposed within the Coastal Plains and Flatwoods, Western Gulf Section of the Outer Coastal Plain Mixed Forest Province. The predominant vegetation type within this area is evergreen needle-leaved forests. Vegetation cover types found within this section are dominated by slash pine and longleaf pine, while bottomland forest, consisting of trees such as sugarberry, American sycamore, eastern cottonwood, maple, and hackberry, is prevalent along most major rivers.

Four general vegetation types were identified within the Project area: pine plantation (15.2 acres), open land (12.7 acres), wetlands (3.7 acres), and industrial/ developed land (10.3 acres). Table 5 describes the Project's impacts by vegetation type for each Project component. Pine plantations are planted stands of pine species managed and harvested on rotations for a variety of timber products. Open land is comprised of non-forested areas that are not otherwise classified as agricultural, and includes existing utility rights-of-way that contain predominantly herbaceous vegetation and few woody species. Wetlands delineated in the Project area include PEM and PFO wetlands, which were previously discussed in section B.3.3. Industrial/developed land crossed by the Project consists of land primarily associated with existing energy infrastructure and transportation corridors (e.g., roads and associated easements) and are typically either sparsely vegetated or lack vegetation due to the presence of impervious materials such as cement foundations, pavement, or gravel. Prior to construction of the Project, Entergy Louisiana would permanently convert the area within the Entergy M&R Station workspace and the remainder of the pipeline lateral (west of Houston River Road) to industrial/developed land, and is therefore categorized as such.

The primary impact on vegetation from the Project facilities would be the permanent removal of about 15 acres of planted stands of pine trees for the construction of the Westlake Compressor Station, including 9 acres for permanent operational use and 6 acres for temporary construction workspaces. Following construction, these 15 acres would be permanently converted to non-forested habitats for the operational life of the Project and would not be actively cultivated for commercial pine. As specified in Gulf South's Revegetation Plan, all temporary workspaces would be stabilized and revegetated with seed mixes recommended in the NRCS Louisiana Field Office Technical Guide (2013) or according to landowner agreements.

Given that a majority of the Project area would be restored and revegetated in accordance with Gulf South's Revegetation Plan and the Plan and Procedures, we conclude that the Project would not significantly impact vegetation.

4.2 FISHERIES

As previously discussed in section B.3.2, a total of 15 waterbody crossings are proposed. All waterbodies are freshwater and are classified as warm water fisheries. Species such as sunfish and minnows are likely to be found within the waterbodies crossed by the Project. No special status fish species were identified as being present within any of these waterbodies.

Impacts on fisheries from Project construction activities may be caused by increased sedimentation and turbidity, introduction of water pollutants, or entrainment of fish. With the exception of the placement of three new permanent culverts for the proposed access roads, Project activities within waterbodies would be temporary.

Gulf South would implement the measures discussed in section B.3.2 for the protection of surface water resources, which are also protective of fisheries. Measures to prevent soil runoff and siltation that could impact fisheries include installing proper erosion control devices (silt fence, slope breakers) and use of energy dissipation devices and sediment filters at the outlets of hoses during dewatering and discharge of hydrostatic test water.

Gulf South would complete the open-cut crossing of the unnamed tributary of Bayou Verdine within 48 hours and only between June 1 and November 30, in accordance with the Procedures. The use of temporary equipment bridges to cross streams within construction workspaces would minimize impacts on fisheries. Further, Gulf South would implement its SPCC Plan to prevent or clean-up inadvertent spills of hazardous materials. Lastly, the installation of the three culverts for permanent access roads at the Westlake Compressor Station and the Entergy M&R Station and would require a total of 0.02 acre of fill in waterbodies. As previously mentioned, Gulf South would adhere to conditions of its authorizations pursuant to sections 401 and 404 of the Clean Water Act from the LDEQ and USACE, respectively, which would include any mitigation measures (including compensatory mitigation) necessary for permanent impacts on wetlands and waterbodies, which would also be protective of fisheries. For these reasons, we conclude the Project's impacts on fisheries would not be significant.

4.3 WILDLIFE

Wildlife commonly found in the Project area include white-tailed deer, raccoon, striped skunk, eastern cottontail rabbit, eastern gray squirrel, common garter snake, American alligator, wild turkey, mourning dove, northern cardinal, wood thrush, and Carolina wren.

Potential impacts on wildlife include habitat removal, construction-related ground disturbance, and noise. Some individuals could be inadvertently injured or killed by construction equipment. However, more mobile species such as birds and larger

mammals would likely relocate to other nearby suitable habitat and avoid the Project area once construction activities commence. Wildlife in the area may also be adversely affected by construction noise; however, these impacts would be temporary and limited to the duration of construction. Wildlife in the area may temporarily displace to similar adjacent habitats during construction, but would likely return immediately following completion of construction. Noise levels along the 16-inch-diameter pipeline lateral would return to pre-construction levels immediately following completion of construction activities. Noise associated with new aboveground facilities would be permanent; however, the aboveground facilities associated with the Project would be within or adjacent to existing industrial facilities or within existing pine plantation. Therefore, noise associated with construction and operation of the Project is not anticipated to significantly impact wildlife in the Project area.

The disturbance of local habitat is not expected to have population-level effects on wildlife because the amount of habitat crossed represents only a small portion of the habitat available to wildlife throughout the Project area, and much of the disturbed habitat would return to pre-construction conditions following construction. Long-term impacts from habitat alteration would be further minimized by the implementation of the Plan and Procedures, which would ensure revegetation of all areas temporarily disturbed by construction. Individuals are expected to habituate to facility operations and reoccupy adjacent habitats following completion of construction activities.

Given the abundance of similar habitat adjacent to the Project area and Gulf South's commitment to revegetate all areas temporarily disturbed by construction, we conclude that the Project would not have a significant impact on wildlife or wildlife habitat in the Project area.

Migratory Birds

Migratory birds are species that nest in the U.S. and Canada during the summer and then migrate to and from the tropical regions of Mexico, Central and South America, and the Caribbean for the non-breeding season. Migratory birds are protected under the Migratory Bird Treaty Act ([MBTA] – 16 U.S. Code 703-711), and Bald and Golden Eagles are additionally protected under the Bald and Golden Eagle Protection Act ([BGEPA] – 16 U.S Code 668-668d). The MBTA, as amended, prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests. Executive Order (EO) 13186 was enacted in 2001 to, among other things, ensure that environmental analyses of federal actions evaluate the impacts of actions on migratory birds. EO 13186 directs federal agencies to identify where unintentional take is likely to have a measurable negative effect on migratory bird populations and avoid, minimize, or mitigate adverse impacts on migratory birds through enhanced collaboration with the U.S. Fish and Wildlife Service (USFWS), and emphasizes species of concern,

priority habitats, and key risk factors, with particular focus given to population-level impacts.

On March 30, 2011, the USFWS and FERC entered into a Memorandum of Understanding between the Commission and the USFWS regarding implementation of EO 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds" that focuses on migratory birds and strengthening migratory bird conservation through enhanced collaboration between the two agencies. This memorandum does not waive legal requirements under the MBTA, BGEPA, the ESA, or any other statutes, and does not authorize the take of migratory birds.

A variety of migratory bird species, including songbirds, raptors, and waterfowl utilize habitat located in the Project area. The USFWS-established Birds of Conservation Concern (BCC) lists migratory nongame birds that, without additional conservation actions, were likely to become candidates for listing under the ESA (USFWS 2008). The Project would cross Bird Conservation Regions 25 and 37 (West Gulf Coastal Plain/Ouachitas and Gulf Coast Prairie).

Some indirect impacts caused by construction activity and noise could occur during the construction period. Some individuals may leave the Project area as construction activities commence and relocate to available habitat nearby. The general nesting season for migratory birds is April 15-August 1. Gulf South's proposed initial disturbance (clearing and grading) would occur outside the general nesting season for migratory birds. Permanent vegetation removal (about 12 acres) would decrease the amount of available cover, nesting, and foraging habitat in the Project area; however, this impact would not be significant. No major alterations to migratory bird use and occurrence patterns, or to ecosystems or biodiversity, would occur from Project activities.

According to data from LDWF, there are no known bald eagle occurrence records within the Project area. Further, Gulf South's habitat assessment survey in April 2017 did not identify any eagles or nest in the Project area. In the event that the construction schedule is delayed or if nesting bald eagles are observed in the Project area, Gulf South has committed to implement the measures outlined in the USFWS' *National Bald Eagle Management Guidelines* (2007).

Given the limited area that would be disturbed, that initial clearing would be conducted outside of the migratory bird nesting season, and that no eagles or nests were observed in the Project area, we conclude that the Project would not significantly impact migratory birds or eagles.

4.4 SPECIAL STATUS SPECIES

Special status species are those species for which state or federal agencies provide an additional level of protection by law, regulation, or policy. Included in this category

are federally listed species that are protected under the ESA, species considered as candidates for such listing by the USFWS, and those species that are state-listed as threatened, endangered, or state species of special concern.

Federally Listed Species

In accordance with Section 7 of the ESA, the FERC, in coordination with the USFWS, must ensure that any federal action authorized, funded, or carried out by the agency does not jeopardize the continued existence of a federally listed threatened or endangered species or result in an adverse modification of designated critical habitat of a federally listed species. As our non-federal representative, Gulf South initiated informal consultation with the USFWS.

According to the USFWS' online project planning tool, Information for Planning and Consultation, the federally endangered red-cockaded woodpecker (*Picoides borealis*) may occur within the Project area. No other federally listed species or their critical habitat was identified in the Project area. The USFWS Recovery Plan for the red-cockaded woodpecker states that for nesting purposes, trees for cavity excavation are generally at least 60 years old, although the average stand age can be younger. The collection of one or more cavity trees plus a surrounding 200-foot-wide buffer of continuous forest is known as a red-cockaded woodpecker cluster. Generally, foraging habitat is within 0.5 mile of a cluster and is comprised of pine and pine-hardwood stands that are at least 30 years of age and have a moderately low average basal area.

Based on occurrence data provided by the LDWF on May 22, 2017, there are no known occurrences of red-cockaded woodpeckers in the Project area. Given that the forested portions of the Project area primarily consist of loblolly pine estimated to be approximately 14 years old, and that tree clearing would be conducted outside of the general nesting season (April 15-August 1), we conclude that the Project *is not likely to adversely affect* the red-cockaded woodpecker.

Gulf South sent a letter to the USFWS stating that the Project may affect, but is not likely to adversely affect the red-cockaded woodpecker on July 12, 2017. The USFWS concurred on July 14, 2017; therefore, no further ESA consultation is required.

State-Listed Species

Gulf South consulted with the LDWF on the potential presence of state-listed species within the Project area. Only two state-listed species were identified as being potentially present within the Project area: the bald eagle and red-cockaded woodpecker. The bald eagle is also federally protected under BGEPA and was previously discussed (see section 4.3) and the red-cockaded woodpecker is also federally listed and is discussed in the previous section above.

In addition, data provided by the Louisiana Natural Heritage Program indicated that there are no documented colonial nesting bird rookeries within 1,000 feet of the proposed Project; however, these rookeries may move from year to year. Surveys conducted in April 2017 did not identify any new rookeries in the area. Therefore, the Project would not impact colonial nesting bird rookeries.

Gulf South sent a consultation letter to the LDWF on July 12, 2017 stating that the Project is not anticipated to significantly impact the bald eagle or red-cockaded woodpecker and that the Project would not impact colonial nesting birds. No additional comments have been received to date.

5. LAND USE, RECREATION, AND VISUAL RESOURCES

Project construction would impact land use at the Westlake Compressor Station, Entergy M&R Station, pipeline lateral right-of-way, and three permanent access roads as described in the following sections. Land use types affected by the Project include:

- Pine Plantation – planted stands of pine species managed and harvested on rotations for a variety of timber products;
- Open Land – non-forested areas that include existing utility rights-of-way;
- Industrial/Developed – developed land primarily associated with existing energy infrastructure and transportation corridors (e.g., roads and associated easements); and
- Wetland – palustrine wetlands.

Temporary and permanent land cover impacts are summarized in table 5. Wetland impacts are discussed in section B.2.2.

Pine Plantation

Pine plantation accounts for 36 percent of the Project area and is comprised predominantly of loblolly pine and Chinese tallow. A total of 15.2 acres of pine plantation would be cleared for construction of the Westlake Compressor Station. About 9.1 acres would be permanently impacted for operation of the compressor station. Long-term impacts would occur on the remaining 6.1 acres of pine plantation cleared during construction due to the time required for trees to reestablish. This area is owned by Entergy Louisiana and not actively managed for commercial pine. This land would not be cultivated for commercial pine following completion of Project construction and the Project area is zoned for light industrial use. Gulf South would facilitate restoration and revegetation of this area with Entergy Louisiana and guidelines in the Plan.

Open Land

Open land accounts for 30 percent of the Project area; a total of 12.7 acres of open land would be disturbed for construction of the Project. Along the 16-inch-diameter

pipeline lateral, 0.1 acre of open land within the permanent right-of-way would be maintained in an herbaceous state, and would not result in a change of land use. Impacts on open land along the pipeline right-of-way would be temporary. A total of 0.1 acre of open land would be converted to industrial/developed land to allow permanent operation of the new Westlake Compressor Station.

Gulf South reviewed NRCS documents, as well as guidance specific to Louisiana to obtain recommendations for seed mixtures and soil amendments to be used during restoration of disturbed areas following construction activities. Following the completion of construction activities, disturbed areas would be reseeded in accordance with the Plan and Procedures and in accordance with the NRCS' Louisiana Field Office Technical Guide (NRCS 2016).

Table 5
Land Use (acres)

Facility	Pine Plantation		Open Land		Wetlands		Industrial/Developed		Project Total	
	Const.[a]	Op.[b]	Const.[a]	Op.[b]	Const.[a]	Op.[b]	Const.[a]	Op.[b]	Const.[a]	Op.[b]
Pipeline Facilities										
16-inch Pipeline Lateral	0.0	0.0	0.2	0.1	1.1	0.0	1.2	0.7	1.9	0.9
ATWS	0.0	0.0	4.6	0.0	0.6	0.0	0.3	0.0	6.1	0.0
Temporary Access Road	0.0	0.0	3.4	0.0	0.5	0.0	0.0	0.0	3.8	0.0
Subtotal	*0.0*	*0.0*	*8.1*	*0.0*	*2.2*	*0.0*	*1.6*	*0.7*	*11.8*	*0.9*
Aboveground Facilities										
Westlake Compressor Station	15.2	9.1	0.5	0.1	1.2	0.3	0.2	0.2	17.1	9.7
Entergy Lake Charles M&R Station	0.0	0.0	0.0	0.0	0.0	0.0	5.3	0.9	5.3	0.9
Varibus M&R Station	0.0	0.0	4.1	0.0	0.3	0.0	3.1	0.0	7.5	0.0
Permanent Access Roads	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2
Subtotal	*15.2*	*9.1*	*4.6*	*0.1*	*1.5*	*0.3*	*8.7*	*1.2*	*30.0*	*10.7*
Total	**15.2**	**9.1**	**12.7**	**0.2**	**3.7**	**0.3**	**10.3**	**1.9**	**41.9**	**11.7**

Note: The values in this table have been rounded for presentation purposes.

[a] Land affected during construction consists of temporary and new permanent impacts.

[b] Land affected during operation consists only of new permanent impacts.

5.1 INDUSTRIAL/DEVELOPED

Existing industrial/developed land accounts for approximately 25 percent of the Project area, including land at the pipeline right-of-way, ATWS, temporary access road, Westlake Compressor Station, Varibus M&R Station, and permanent access roads. In addition, the Lake Charles Power Plant property (where the Entergy M&R Station would be constructed) would be converted to industrial/developed land prior to construction of the Project. Most of the industrial/developed land is either sparsely vegetated or lacks vegetation due to the presence of impervious structures such as cement foundations, pavement, gravel pads, or bare compacted land with a hard surface. A total of 10.3 acres of industrial/developed land would be used during construction of the Project, of which 1.9 acres would be required for operation of the 16-inch pipeline lateral, Westlake Compressor Station, Entergy M&R Station, and permanent access roads.

5.2 RESIDENTIAL LAND AND COMMERCIAL AREAS

No residential land occurs within the Project area; however, construction of the Project could result in short-term impacts on nearby residential areas, including increased construction-related traffic on local roads as well as dust and noise generated during construction. Overall, impacts from construction of the Project would be minimal and consistent with existing surrounding facilities. Gulf South would minimize these impacts through implementation of mitigation measures which include:

- construction activities generally occurring during daytime hours whenever feasible;
- taking all measures necessary to ensure that utilities are not disrupted during construction. If the need to disrupt utilities arises, Gulf South would provide as much notice as possible to the landowner prior to the disruption; and
- maintaining traffic flow and emergency vehicle access on residential roadways and using traffic detail personnel and/or detour signs where appropriate.

Gulf South contacted the local planning districts with regards to future planned developments in Calcasieu Parish. One planned residential development within 0.25 mile of the lateral component of the Project was identified by the City of Westlake (Hawes and Tohn 2017); however, the construction schedule is currently unknown. No direct impacts on residential land or planned development are expected.

5.3 PUBLIC LAND AND OTHER DESIGNATED AREAS

None of the following designated areas are within the proposed Project area:

- lands owned or controlled by private preservation/conservation groups;

- lands owned or controlled by federal, state, or local agencies;
- natural, recreational, or scenic places; or
- Louisiana Coastal Management Zone.

Therefore, no impacts on public land and other designated areas are expected.

5.4 VISUAL RESOURCES

Impacts on visual and/or aesthetic resources would primarily occur during construction as a result of the presence of construction equipment. Most impacts on visual resources would be temporary; however, the creation of the new permanent pipeline right-of-way and the installation of aboveground facilities at the Westlake Compressor Station and Entergy M&R Station would create some minor permanent impacts on visual resources. The Varibus M&R Station would be constructed within an existing Gulf South facility located within the existing Entergy Louisiana's Roy Nelson Power Plant, and would not result in impacts on visual resources.

The Westlake Compressor Station and the Entergy M&R Station would be 0.35 mile and 0.46 mile, respectively, to the nearest sensitive visual areas (residences). The Westlake Compressor Station would be adjacent to an existing industrial facility and utility right-of-way to the west and would be surrounded by forest to the south and east, which would minimize any visual or aesthetic impairment to nearby residences. The Entergy M&R Station would be within the Lake Charles Power Plant property, which would be converted to industrial/developed land prior to Project construction. Therefore, the addition of the Westlake Compressor Station and Entergy M&R Station would not significantly affect visual resources. Visual impacts from construction and operation are expected to be minimal.

6. SOCIOECONOMICS

6.1 POPULATION, EMPLOYMENT, AND HOUSING

The proposed Project is in Calcasieu Parish, which has a total population of approximately 200,600 (U.S. Census 2016). The average civilian labor force for the parish is more than 124,400, representing approximately 62 percent of the total population.

There are approximately 65 hotels and motels and 37 RV parks available within commuting distance (approximately 30 miles) of the Project area (Lake Charles Convention and Visitors Bureau 2017). Additionally, there are approximately 724 units available for seasonal, recreational, or occasional use near the Project (U.S. Census Bureau 2015) as well as worker camps.

Overall, population impacts near the Project are expected to be temporary and proportionally small, as Gulf South anticipates construction to be complete within 11 months. During peak construction, the maximum number of workers would total approximately 130 to 150, with approximately 60 workers outside the peak period for construction. Due to the location of the Project and the availability of skilled laborers, it is estimated that 10 to 25 percent of the construction workforce would be non-local residents. Therefore, the peak population change in Calcasieu Parish would equal the total number of non-local construction workers, plus any family members accompanying them. Assuming approximately 20 percent of the 38 anticipated non-local workers bring three family members with them, the total increase in the population of the affected Parish would be approximately 61 people. This temporary increase of approximately 0.03 percent of the parish population would not significantly impact the population in Calcasieu Parish or the surrounding region. In addition, only 1 to 2 permanent jobs are anticipated due to the Project, resulting in negligible permanent impacts to population should these individuals relocate from outside the Project area.

Short-term impacts on employment would occur from jobs related to construction. Based on the relatively small number of workers being hired for construction of the Project, roughly 1 percent of the average civilian labor force, this impact on employment is not anticipated to be significant. The addition of 1 to 2 permanent employees would also have a negligible impact to employment in Calcasieu Parish.

No significant impacts on local housing markets are expected, as approximately 1,622 rental units are available in the City of Westlake and Lake Charles (U.S. Census 2016) and housing would be required for only 61 individuals during construction and 1 to 2 individuals during operations. Previous facility construction experience suggests that approximately 30 percent of the non-local workers would provide their own housing units (e.g., travel trailers or RV campers). Given the number of available hotel/motel rooms and campsites within commuting distance of the Project area, construction crews should not encounter difficulty in finding temporary housing. In addition, only 1 to 2 individuals would be hired permanently and sufficient housing exists for these individuals. Therefore, there would be no long-term impacts on housing.

Temporary and long-term permanent impacts on population are expected to be negligible with the addition of 38 temporary and 1 to 2 permanent employees as well as some family members. The number of new jobs and indirect jobs from construction and operations would not cause significant socioeconomic impacts. We conclude impacts on available housing and lodging would be temporary and not significant because of the relatively small labor force required.

6.2 ECONOMY

Educational, health, and social services make up the largest percentage industry in the U.S. and Louisiana, as well as the Westlake area, and Calcasieu Parish in general.

The unemployment rate within Calcasieu Parish, at 8.3 percent, is above the state average of 8.1 percent, but is the same as the national average. The per capita income of Calcasieu Parish ($25,005) is below the national average ($28,930), but above the state average ($24,981). Median household income for Calcasieu Parish ($45,312) is above the state average ($45,047), but below the national average ($53,889) (U.S. Census 2015).

Construction activities would have a beneficial impact on local and regional businesses. Construction workers could spend as much as 20 to 30 percent of their income on goods, services, and entertainment, in addition to money spent on temporary housing by non-local workers. Local and/or regional businesses would also benefit from construction material and equipment fuel purchases.

Project construction would result in short-term, beneficial impacts in terms of increased payroll and local material purchases. The estimated construction payroll for the Project is approximately $18,000,000. The local economies would experience increased revenues as a result of purchases made by the construction workforce in the form of lodging, fuel, food, entertainment, other miscellaneous expenses, and the associated multiplier effects. The addition of 1 to 2 employees during operations would also result in beneficial impacts to the economy as a result of increased payroll.

Sales tax revenue would increase as a result of this increased purchasing activity by the construction workforce along with materials and supplies purchased for the Project. Gulf South has provided an estimate of anticipated local revenues associated with these expenditures using the following assumptions:

- approximately one third of the estimated Project costs are local expenditures for Project construction materials and supplies subject to sales tax;
- 2 percent of the estimated Project costs are local expenditures for fuel, miscellaneous Project expenses, and local spending subject to sales tax; and
- all purchases are taxable at the general sales tax rate for the parish and state.

Utilizing the assumptions outlined above, the local sales tax revenues resulting from the Project are estimated to be approximately $683,000, providing a beneficial impact on the local economy.

6.3 PUBLIC SERVICES

Medical, fire, and police services are readily available in the Project area and have the capacity to manage the temporary influx of Project personnel with negligible impacts on public services. The Calcasieu Parish Ward 4 Fire District 3 is approximately 0.4 mile west of the Project; the Moss Bluff Sheriff's Department is approximately 4.5 miles

northeast of the Project; and the West Calcasieu Cameron Hospital is approximately 3.5 miles southwest of the Project.

Construction of the Project could result in a temporary increased demand on public services. Potential temporary impacts on services could include traffic-related incidents, medical emergencies, increases in traffic violations, and issuances of permits for vehicles subject to load and width restrictions.

Although the potential for police, fire, and medical services may increase slightly during construction activities, adequate public services exist in the Project area to handle a civil, criminal, or emergency event. Furthermore, there would be no large influx of workers. It is anticipated that the limited number of non-local construction workers would not relocate with school-age children due to the relatively short duration of construction activities. For these reasons, impacts on public services during construction are expected to be negligible.

Safety design measures and emergency response protocols are addressed in section B.9.

6.4 TRAFFIC AND TRANSPORTATION

Transportation systems in the Project area include a network of local, state, and federal roadways. The Project is in proximity to Louisiana State Highway 27, Louisiana State Highway 378, Louisiana State Highway 379, U.S. Highway 90, Interstate 10, Interstate 210, and U.S. 171. These major transportation routes would provide general access during construction and operation. Before construction commences, Gulf South would contact local officials regarding the minimization of short-term, localized impacts on roadways.

The movement of construction personnel, equipment, and materials to the work areas may slightly impact the transportation system in the Project area. Once equipment and materials reach the construction work area, construction traffic would be confined to the designated workspaces. Traffic associated with the Project is expected to be temporary and minimal, as construction working hours and commuting time to work are typically scheduled during off-peak hours. It is anticipated that workers would also be carpooling to the worksite in order to keep traffic to a minimum. Appropriate traffic control measures, such as flagmen and signs, would be used as necessary to ensure safety of local traffic.

Gulf South's construction contractors would be directed to ensure compliance with local weight limitations on area roadways and to remove any soil that falls from equipment onto roadway surfaces. Additionally, Gulf South would coordinate with state and local officials to obtain all necessary permits for temporary construction-related

impacts on roadways. As a result of these measures, we conclude traffic would not be significantly impacted by construction of the Project.

6.5 ENVIRONMENTAL JUSTICE

EO 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires that environmental analyses of federal actions address any disproportionately high and adverse human health or environmental effects on minority and low-income communities.

In its guidance for the consideration of environmental justice under NEPA, the CEQ defines a "minority" as an individual who is American Indian or Alaskan Native, Black or African American, Asian, Native Hawaiian or Pacific Islander, or Hispanic or Latino. CEQ characterizes a "minority population" as existing in an affected area where the percentage of defined minorities exceeds 50 percent of the population, or where the percentage of defined minorities in the affected area is meaningfully greater (10 percent higher) than the percentage of defined minorities in the general population or other appropriate unit of geographic analysis. The CEQ guidance further recommends that low-income populations in an affected area should be identified using data on income and poverty from the U.S. Census Bureau (CEQ 1997). Low-income populations are populations where households have an annual household income below the poverty threshold, which is currently $24,600 for a family of four (Health and Human Services 2017).

None of the census block groups within 0.25 mile of the Project have a minority population that exceeds the 50 percent minority threshold identified by EO 12898 or is meaningfully greater (i.e., 10 percent higher); therefore, no "minority population" as defined by CEQ exists within the Project area. Because no minority population exists, no disproportionately high and adverse impacts on minority populations are anticipated.

All three census block groups within 0.25 mile of the Project have a lower percentage of people below the poverty level than the State of Louisiana (19.8 percent) and are comparable or below the Calcasieu Parish average (17.1 percent) (U.S. Census 2015). Therefore, no disproportionately high and adverse impacts are anticipated on low-income populations.

7. CULTURAL RESOURCES

Section 106 of the National Historic Preservation Act, as amended, requires the FERC to take into account the effects of its undertakings on properties listed, or eligible for listing, on the National Register of Historic Places (NRHP), and to afford the Advisory Council on Historic Preservation an opportunity to comment. Gulf South, as a non-federal party, is assisting the FERC in meeting our obligations under Section 106 and its implementing regulations at 36 CFR 800.

Gulf South completed a cultural resources survey for the Project and provided the resulting Phase I Cultural Resources Survey report to the FERC and Louisiana State Historic Preservation Office (SHPO). The survey included both archaeological and architectural resources. A total of 75.5 acres was surveyed including a generally 230-foot-wide corridor for the pipeline lateral, the Westlake Compressor Station, the Varibus M&R Station, and extra work space. The Entergy M&R Station had been previously surveyed in 2016 with no cultural resources identified, and was not re-surveyed for this project. One historic resource (HR-PES-WLE-01), an early to mid-twentieth century historic lumbering site, was identified as a result of the survey. The site consisted of two historic standing structures (a ca. 1936 boiler room and a shavings vault) and a concrete foundation located at the Westlake Compressor Station extra workspace. The site was recommended as eligible for the NRHP under Criteria A and C. Because Gulf South has modified the Project workspace to avoid the site, and would maintain a minimum 200-foot vegetative buffer to avoid direct and indirect impacts on the site, Gulf South recommended there would be no adverse effects on the site. In a letter dated July 31, 2017, the SHPO concurred that the site was eligible under Criterion A but not under Criterion C, and that the site would not be adversely affected. We agree with the SHPO and have determined that the Project would have no adverse effect on historic properties.

Gulf South provided a plan to address the unexpected discovery of historic properties and human remains during construction. We and the SHPO requested revisions to the plan. Gulf South provided a revised plan which we find acceptable.

Gulf South contacted the following Native American tribes regarding the Project, and conducted follow-up telephone calls/emails: Alabama-Coushatta Tribe of Texas; Alabama Quassarte Tribal Town; Apache Tribe of Oklahoma; Chitimacha Tribe of Louisiana; Choctaw Nation of Oklahoma; Coushatta Tribe of Louisiana; Jena Band of Choctaw Indians; Kialegee Tribal Town; Mississippi Band of Choctaw Indians; Thlopthlocco Tribal Town; and Tunica Biloxi Tribe of Louisiana. The Alabama-Coushatta Tribe of Texas, Apache Tribe of Oklahoma, Mississippi Band of Choctaw Indians, and Kialegee Tribal Town indicated they had no concerns about the Project. The Choctaw Nation of Oklahoma requested shapefiles and the Phase I survey report. Gulf South provided the tribe with the shapefiles, the survey report, and the Unanticipated Discovery Plan. Upon review, the Choctaw Nation of Oklahoma indicated it had no objection to the Project, requested to be added to the notification list for discoveries, and suggested an archaeological monitor be present during construction. Gulf South has included the tribe in the notification list. No other responses have been received to date. We sent our NOI to these same tribes. The Choctaw Nation of Oklahoma responded and requested to be a consulting party and to be involved in the development of the Project area of potential effects. As noted above, Gulf South has provided the tribe with all requested information, and the tribe indicated no objection to the Project. No other responses to our NOI have been received.

8. AIR QUALITY

The term air quality refers to relative concentrations of pollutants in the ambient air. The subsections below describe air quality concepts that are applied to characterize air quality and to determine the significance of increases in air pollution.

Air quality in the Project area would be affected by construction and operation of the Project. Although air emissions would be generated by Project construction activities and operation of the proposed pipeline lateral and M&R stations, the majority of air emissions associated with the Project would result from operation of the new Westlake Compressor Station.

8.1 EXISTING ENVIRONMENT

The Project area is within Calcasieu Parish in southwestern Louisiana. The Westlake Compressor Station is north of the Lake Charles metropolitan area near Westlake. The climate in Calcasieu Parish is characterized by semitropical, moist weather in the summer and generally mild to cool winters with an average temperature of 61.4 degrees Fahrenheit (ºF) in January to an average high of 91.9ºF in August. Average precipitation is 64 inches per year, with well-distributed rainfall throughout the year (National Climatic Data Center 2017).

Ambient air quality is protected by the Clean Air Act (CAA) of 1970, as amended in 1977 and 1990. The EPA oversees the implementation of the CAA and establishes National Ambient Air Quality Standards (NAAQS) to protect human health and welfare.[7] NAAQS have been developed for seven "criteria air pollutants", including nitrogen dioxide (NO_2), carbon monoxide (CO), ozone, sulfur dioxide (SO_2), particulate matter less than or equal to 2.5 microns in aerodynamic diameter ($PM_{2.5}$), particulate matter less than or equal to 10 microns in aerodynamic diameter (PM_{10}), and lead, and include levels for short-term (acute) and long-term (chronic) exposures. The NAAQS include two standards, primary and secondary. Primary standards establish limits that are considered to be protective of human health and welfare, including sensitive populations such as children, the elderly, and asthmatics. Secondary standards set limits to protect public welfare, including protection against reduced visibility and damage to crops, vegetation, animals, and buildings (EPA 2017a). At the state level, the LDEQ has adopted the NAAQs, as promulgated by the EPA, and does not have any additional standards. Additional pollutants, such as volatile organic compounds (VOC) and hazardous air pollutants (HAP), are emitted during fossil fuel combustion. These pollutants are regulated through various components of the CAA that are discussed further in section 8.2.

[7] The current NAAQS are listed on EPA's website at https://www.epa.gov/criteria-air-pollutants/naaqs-table.

The EPA, and state and local agencies have established a network of ambient air quality monitoring stations to measure concentrations of criteria pollutants across the U.S. The data are then averaged over a specific time period and used by regulatory agencies to determine compliance with the NAAQS and to determine if an area is in attainment (criteria pollutant concentrations are below the NAAQS), nonattainment (criteria pollutant concentrations exceed the NAAQS) or maintenance (area was formerly nonattainment and is currently in attainment). Calcasieu Parish is designated attainment for all criteria pollutants (EPA 2017a, 2017b).

Greenhouse gases (GHG) occur in the atmosphere both naturally and as a result of human activities, such as the burning of fossil fuels. Carbon dioxide, methane, and nitrous oxide are GHG that are emitted during fossil-fuel combustion. GHGs are non-toxic and non-hazardous at normal ambient concentrations, and there are no applicable ambient standards or emission limits for GHG under the CAA. GHG emissions due to human activity are the primary cause of increased atmospheric concentration of GHGs since the industrial age and are the primary contributor to climate change. The primary GHGs that would be emitted by the Project are carbon dioxide (CO_2), methane, and nitrous oxide. During construction and operation of the Project, these GHGs would be emitted from the majority of construction and operational equipment, as well as from fugitive methane leaks from the pipeline and aboveground facilities.

Emissions of GHGs are typically quantified and regulated in units of carbon dioxide equivalents (CO_2e). The CO_2e takes into account the global warming potential (GWP) of each GHG. The GWP is the measure of a particular GHG's ability to absorb solar radiation as well as its residence time within the atmosphere. The GWP allows comparison of global warming impacts between different gases; the higher the GWP, the more that gas contributes to climate change in comparison to CO_2. Thus, CO_2 has a GWP of 1, methane has a GWP of 25, and nitrous oxide has a GWP of 298 (EPA 2017c).[8]

8.2 REGULATORY REQUIREMENTS

The provisions of the CAA that are applicable to the Project are discussed below. The estimated potential operational emissions for the Westlake Compressor Station, and the major regulatory thresholds, are shown in table 7.

Prevention of Significant Deterioration and Nonattainment New Source Review

Proposed new or modified air pollutant emission sources must undergo a New Source Review (NSR) prior to construction or operation. Through the NSR permitting

[8] These GWPs are based on a 100-year time period. We have selected their use over other published GWPs for other timeframes because these are the GWPs the EPA has established for reporting of GHG emissions and air permitting requirements. This allows for a consistent comparison with these regulatory requirements.

process, state and federal regulatory agencies review and approve project emissions increases or changes, emissions controls, and various other details to ensure air quality does not deteriorate as a result of new or modified existing emission sources. The two basic groups of NSR are major source NSR and minor source NSR. Major source NSR has two components: Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NNSR). PSD, NNSR, and minor source NSR are applicable to projects depending on the size of the proposed project, the projected emissions, and if the project is proposed in an attainment area or nonattainment/maintenance area. The LDEQ administers the PSD and NNSR permitting programs in Louisiana. PSD regulations define a major source as any source type belonging to a list of 28 specifically listed source categories that have a potential to emit 100 tons per year (tpy) or more of any regulated pollutant or 250 tpy for sources not among the listed source categories (such as natural gas compressor stations). These are referred to as the PSD major source thresholds.

The Westlake Compressor Station is not anticipated to exceed the PSD major source thresholds for any pollutants and is considered a minor source located in an attainment area. Therefore, the proposed construction and operation of the proposed Westlake Compressor Station does not trigger PSD or NNSR Review.

Title V Permitting

Title V is an operating air permit program run by each state for each facility that is considered a "major source." The major source threshold for an air emission source is 100 tpy for criteria pollutants, 10 tpy for any single HAP and 25 tpy for total HAPs. The proposed Westlake Compressor Station does not meet the definition of a major source and would therefore not require a Title V permit.

New Source Performance Standards

The EPA promulgates New Source Performance Standards (NSPS) for new, modified, or reconstructed sources to control emissions to the level achievable by the best-demonstrated technology for stationary source types or categories as specified in the applicable provisions discussed below. NSPS also establishes fuel, monitoring, notification, reporting, and recordkeeping requirements.

NSPS Subpart JJJJ sets emissions standards for nitrogen oxides (NO_x), CO, and VOC for emergency and non-emergency engines. Subpart JJJJ would apply to the reciprocating engines proposed at the Westlake Compressor Station.

NSPS Subpart OOOOa sets emission standards and compliance schedules for VOC and SO_2 emissions for new, modified, or reconstructed wet seal centrifugal compressor and reciprocating compressors; limits for bleed rates for natural-gas driven pneumatic controllers; requires work practice standards for compressor rod packing

compressor units; and sets fugitive leak monitoring and repair requirements for compressor stations. The various components of Subpart OOOOa would apply, as applicable, to the Westlake Compressor Station.

Gulf South would comply with the all applicable NSPS standards and requirements, as necessary and as stated in the air permit issued by the LDEQ for the Westlake Compressor Station.

National Emission Standards for Hazardous Air Pollutants

The 1990 CAA Amendments established a list of 189 HAPs, resulting in the promulgation of National Emission Standards for Hazardous Air Pollutants. The National Emission Standards for Hazardous Air Pollutants regulate HAP emissions from specific source types at major or area sources of HAPs by setting emission limits, monitoring, testing, record keeping, and notification requirements. The Westlake Compressor Station would have the potential to emit less than the combined HAP total threshold of 25 tpy and single HAP threshold of 10 tpy, and is therefore considered an area (and not major) source of HAPs. The applicable regulations for area sources are described below.

Subpart ZZZZ applies to all reciprocating internal combustion engines at area sources and would therefore apply to the engines at the Westlake Compressor Station. However, Gulf South would comply with Subpart ZZZZ by meeting the requirements of NSPS JJJJ.

General Conformity

The lead federal agency must conduct a conformity analysis if a federal action would result in the generation of emissions that would exceed the conformity threshold levels of the pollutant(s) for which a county is designated nonattainment or maintenance. Estimated emissions for the Project are not subject to review under the general conformity thresholds because the Project is in an area classified as attainment/unclassifiable for all criteria pollutants.

Mandatory Greenhouse Gas Reporting Rule

The EPA's Mandatory Reporting of Greenhouse Gases Rule requires reporting from applicable sources of GHG emissions if they emit greater than or equal to 25,000 metric tons of GHG (as CO_2e) in 1 year. The Mandatory Reporting Rule does not require emission control devices and is strictly a reporting requirement for stationary sources based on actual emissions. Although the rule does not apply to construction emissions, we have provided GHG construction emission estimates, as CO_2e, for accounting and disclosure purposes in table 6 below. Operational GHG emission estimates for the Project are presented, as CO_2e, in section B.8.5. Based on the emission estimates presented, actual GHG emissions from operation of the Westlake Compressor Station

would likely exceed the 25,000-tpy reporting threshold and reporting requirements for the Mandatory Reporting Rule would therefore be applicable to the Project.

8.3 STATE AIR QUALITY REGULATIONS

This section discusses the potentially applicable state air regulations for the proposed facility. In addition to federal standards, the LDEQ establishes additional standards. Prior to commencing construction, the Louisiana Administrative Code 33:III.501.C requires issuance of a state air permit. Gulf South submitted their state air permit to the LDEQ in July 14, 2017, and anticipates permit issuance in the first quarter of 2018. Opacity requirements imposed on the Project are reviewed below; all other state air quality regulations are either not applicable or impose general requirements.

Opacity Standard

The emissions associated with the Westlake Compressor Station and the M&R stations would be subject to opacity standards pursuant to the Louisiana Administrative Code 33:III.1311.C. These opacity standards limit each emission unit to 20 percent opacity. All of the proposed emission units would comply with this standard through the combustion of pipeline-quality natural gas, which is typically a clean-burning fuel.

8.4 CONSTRUCTION EMISSIONS IMPACTS AND MITIGATION

Project construction would result in temporary, localized emissions that would last the duration of construction activities (i.e., 11 months). Exhaust emissions would be generated by the use of heavy equipment and trucks powered by diesel or gasoline engines. Exhaust emissions would also be generated by delivery vehicles and construction workers commuting to and from work areas.

Construction activities would also result in the temporary generation of fugitive dust due to land clearing and grading, ground excavation, and driving on unpaved roads. The amount of dust generated would be a function of construction activity, soil type, soil moisture content, wind speed, precipitation, vehicle traffic and types, and roadway characteristics. Emissions would be greater during dry periods and in areas of fine-textured soils subject to surface activity.

Construction emissions were estimated based on the fuel type and anticipated frequency, duration, capacity, and levels of use of various types of construction equipment. Construction emissions were estimated using emission factors provided in the EPA's Compilation of Air Pollutant Emission Factors (AP-42) data (EPA 2006a, 2006b), EPA's MOVES2014 model, and 40 CFR 98. Table 6 below provides the total Project construction emissions, including exhaust emissions and fugitive dust from on-road and off-road construction equipment and vehicles, exhaust emissions from

construction worker vehicles for commuting and vehicles used to deliver equipment/materials to the site.

Table 6
Construction Emissions (tons per construction duration)

Activity	NO_x	CO	VOC	TSP	PM_{10}	$PM_{2.5}$	SO_2	Total HAPS	CO_2e
Westlake Compressor Station Construction	1.68	12.90	1.88	8.76	3.86	1.83	0.003	0.02	919.00
Pipeline Construction	1.75	0.84	0.25	4.78	1.49	0.26	0.004	0.02	705.00
M&R Station Construction (M&R and Entergy)	3.15	1.53	0.47	9.41	2.86	0.49	0.007	0.03	1,297.00
Total	**6.58**	**15.27**	**2.60**	**22.95**	**8.21**	**2.58**	**0.014**	**0.06**	**2,921.00**

TSP = total suspended particles

Construction emissions shown in table 6 are not expected to result in a violation or degradation of ambient air quality standards. Gulf South would minimize construction exhaust emissions by operating equipment on an as-needed basis and maintaining equipment and vehicles in accordance with manufacturers' specifications and EPA emission standards and using commercial-grade gasoline and diesel fuel products. In order to mitigate and minimize fugitive dust, Gulf South would implement measures contained in its Dust Control Plan, including the following:

- use water on roadways during construction, road grading, or land clearing;
- maintain roadways;
- clear streets to remove soil/material displaced by construction equipment/vehicle track out;
- maintain equipment regularly;
- cover open-bodied haul trucks when transporting materials;
- minimize soil disturbance; and
- use off-site parking and shuttle buses to minimize traffic, if necessary.

Construction emissions would occur over the duration of construction activity and would be emitted at different times throughout the Project area. Construction emissions would be relatively minor and would result in short-term, localized impacts in the immediate vicinity of construction work areas. With the mitigation measures proposed by Gulf South, we conclude air quality impacts from construction would be temporary and would not result in significant impact on local or regional air quality.

8.5 OPERATIONAL EMISSIONS IMPACTS AND MITIGATION

The Project would generate air emissions during operation of the proposed pipeline, Westlake Compressor Station, and both M&R stations. Operation of the pipeline and M&R stations would result in fugitive emissions from minor leaks associated with piping components and valves. Operation of the Westlake Compressor Station would result in operational emissions associated with the following equipment:

- two 5,000 hp natural gas-fired reciprocating internal combustion compressor engines (Caterpillar G3616);
- one 691 hp natural gas-fired emergency generator;
- condensate, wastewater, lubricating oil, ethylene glycol storage tanks (4,200 gallons each).

Table 7 provides estimates of the potential annual emissions at the Westlake Compressor Station. These estimated emissions are based on manufacturers' data, and assumptions that the station compressor engines operate at full capacity for an entire year (i.e., 8,760 hours per year). The Westlake Compressor Station would not likely operate at full load every day; therefore, table 7 provides conservative, worst-case estimates of emissions. Gulf South states that the Westlake Compressor Station would be operated as a base load facility with little seasonal variability. Therefore, the emissions throughout the year wouldn't change significantly based on the season.

Table 7
Potential Operational Emissions for the Westlake Compressor Station (tons per year)

Emission Source	NO_x	CO	VOC	PM_{10}	$PM_{2.5}$	SO_2	Total HAPS	CO_2e
5,000 hp compressor engine	24.14	7.44	10.86	1.46	1.46	0.09	1.82	20,344
5,000 hp compressor engine	24.14	7.44	10.86	1.46	1.46	0.09	1.82	20,344
emergency generator	0.04	0.01	0.01	0.005	0.005	0.0002	0.001	31
storage tanks	N/A	N/A	0.56	N/A	N/A	N/A	N/A	N/A
condensate loading	N/A	N/A	0.05	N/A	N/A	N/A	N/A	N/A
equipment leaks	N/A	N/A	0.13	N/A	N/A	N/A	N/A	301
natural gas venting	N/A	N/A	2.69	N/A	N/A	N/A	N/A	5,197
Total[1]	**48.32**	**14.89**	**25.16**	**2.93**	**2.93**	**0.18**	**3.64**	**46,217**
Permitting Thresholds (tons per year)								
PSD Major Source	*250*	*250*	*250*	*n/a*	*n/a*	*250*	*n/a*	*100,000*
Title V Major Source	*100*	*100*	*100*	*n/a*	*n/a*	*100*	*25*	*100,000*
Louisiana Permit Thresholds	*5*	*5*	*5*	*5*	*5*	*5*	-	-

N/A = no applicable emissions generated

[1] = rows may not sum to total due to rounding

Compressor unit blowdowns (gas venting) can occur during initial construction/ testing, operational startup and shutdown, maintenance activities, and during emergency purposes. Emission estimates of compressor unit blowdowns are provided in table 7. During construction and testing of the station, there is an increased frequency of blowdowns to ensure the facility would be operated reliably and safely. During normal operations, blowdowns during compressor startup/shutdown would be infrequent as normal operation does not require venting and units are pressurized to facilitate operation. However, occasional maintenance and startup/shutdown blowdowns could occur.

Fugitive emissions are minor leaks that would occur at valves, seals, and other piping components, and from operation and maintenance activities at the Westlake Compressor Station. Emission estimates of fugitive emissions are provided in table 7. In order to minimize fugitive emissions, Gulf South would maintain combustion efficiency by following the manufacturer's recommendations for scheduled maintenance and would test and repair pressure safety valves regularly. Gulf South must comply with EPA's 40 CFR 98, Subpart W and with 40 CFR 60, Subpart OOOOa standards, which both require leak detection and repair programs. However, certain provisions from 40 CFR 60, Subpart OOOOa are formally being reconsidered by the EPA, including the leak detection and repair programs. Gulf South has stated that it would comply with all provisions from Subpart OOOOa that apply at the time the Project is completed. Fugitive methane emissions are a source of GHG emissions from the proposed Project.

In addition to complying with all applicable air permits, Gulf South would mitigate the impacts of operational emissions through installation of low-emission combustion technology for NO_x and through the use of an oxidation catalyst system for CO, VOC, and HAPs. Gulf South would also limit the hours of operation of emergency equipment to only periods of testing and emergencies.

Air Quality Modeling

Gulf South completed an air quality dispersion model (model) to determine the impacts of emissions from the Westlake Compressor Station on regional air quality. The analysis was conducted using the EPA AERMOD model and methodology outlined in EPA and LDEQ guidance. The analysis assumed that the facilities would be running at full capacity (i.e., 8,760 hours per year at maximum emission rates). The model estimates the maximum predicted concentrations of criteria pollutants emitted from the compressor station using conservative assumptions. Background concentrations from the nearest air monitors were then added to the maximum predicted concentrations from the model and the total was compared to the NAAQS. The model results are provided below in table 8.

Table 8 Predicted Air Quality Impacts					
Pollutant	**Averaging Period**	**Existing Background (µg/m3)**	**Maximum Modeled Concentration (µg/m^3)**	**Combined Background and Maximum Modeled (µg/m^3)**	**NAAQS (µg/m3)**
CO	1-hour	3,436.8	48.2	3,485	40,000
	8-hour	1,374.7	42.6	1,417.3	10,000
NO_2	1-hour	67.2	141.1	208.3	188
	Annual	11.1	2.3	13.4	100
$PM_{2.5}$	24-Hour	16	5.0	21.0	35
	Annual	16	0.2	16.2	12
PM_{10}	24-Hour	64	6.8	70.8	150
	Annual	64	0.2	64.2	50
SO_2	1-Hour	87.3	0.6	87.9	196
	3-hour	87.3	0.6	87.8	1,300
	24-Hour	22.3	0.4	22.7	365
	Annual	3.1	0.0	3.2	80
µg/m^3 = micrograms per cubic meter					

The results in table 8 indicate that the combined total of existing background and maximum modeled concentrations are less than the applicable NAAQS for all pollutants. Therefore, the Project would not cause or significantly contribute to a degradation of ambient air quality. The Project would result in continued compliance with the NAAQS, which are established to be protective of human health, including sensitive populations such as children, the elderly, and asthmatics.

Downstream GHG Emissions

The Project would result in direct and downstream GHG emissions and would contribute to global increases in GHG levels. GHG emissions from construction and operation were included in tables 6 and 7 as CO_2e. The Project's requested certificated capacity is designated for the Lake Charles Power Plant near Westlake, Louisiana. The GHG emissions of the Lake Charles Power Plant are publically available in the Air Operating Permit, PSD Permit, and Acid Rain permit that were issued by the LDEQ. These permits estimate that the Lake Charles Power Plant total potential to emit is 3.2 million metric tons of GHG (as CO_2e) per year. This estimate assumes maximum load operation at the Lake Charles Power Plant for the entire year; however, the power plant's load will likely vary throughout the course of the year, depending on electricity demand. Projects are typically designed for peak use and rarely operate at maximum capacity 365

days per year; therefore, the actual GHG emissions from the power plant will likely be lower than the permitted potential to emit estimate.

In an effort to provide some context, the downstream emissions estimate was compared to the GHG inventory for the State of Louisiana using data from the Energy Information Administration (EIA) (EIA 2017). The EIA inventory identified that fossil-fuel related sources emitted 218.2 million metric tons of GHGs in Louisiana in 2015, the year with the most recently-available data. At the national level, the downstream emissions estimate was compared to the EPA's *Inventory of U.S. Greenhouse Gas Emissions and Sinks* (EPA 2017d). The EPA inventory estimated that 5,414.4 million metric tons of GHG were emitted at the national level in 2015. The downstream use of the Project-related natural gas could potentially increase GHG emissions from the 2015 levels by 1.5 percent within Louisiana and by 0.06 percent at the national level. This estimate represents the upper bound for the amount of end-use combustion that could potentially result from the gas transported by this Project. No standard methodology exists to determine how a project's contribution to GHG emissions would translate into physical effects on the environment for the purposes of evaluating the Project's impacts on climate change. Without an accepted methodology, the Commission cannot make a finding whether a particular quantity of GHG emissions poses a significant impact on the environment, whether directly or cumulatively with other sources, and how that impact would contribute to climate change.

9. NOISE

Noise is generally defined as sound with intensity greater than the ambient or background sound pressure level. Construction and operation of the Project would affect overall noise levels in the Project area. The magnitude and frequency of environmental noise may vary considerably over the course of the day, throughout the week, and across seasons, in part due to changing weather conditions and the effects of seasonal vegetative cover. Two measures that relate the time-varying quality of environmental noise to its known effect on people are the 24-hour equivalent sound level (L_{eq}) and day-night sound level (L_{dn}). The L_{eq} is an A-weighted sound level containing the same energy as the instantaneous sound levels measured over a specific time period. Noise levels are perceived differently, depending on length of exposure and time of day. The L_{dn} takes into account the duration and time the noise is encountered. Specifically, the L_{dn} is the L_{eq} plus a 10 decibel on the A-weighted scale (dBA) penalty added to account for people's greater sensitivity to nighttime sound levels (typically considered between the hours of 10:00 p.m. and 7:00 a.m.). The A-weighted scale is used to assess noise impacts because human hearing is less sensitive to low and high frequencies than mid-range frequencies. The human ear's threshold of perception for noise change is considered to be 3 dBA; 6 dBA is clearly noticeable to the human ear, and 10 dBA is perceived as a doubling of noise (Bies and Hansen 1988).

9.1 FEDERAL NOISE REGULATIONS

In 1974, the EPA published *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* (EPA 1974). This document provides information for state and local governments to use in developing their own ambient noise standards. The EPA has indicated that an L_{dn} of 55 dBA protects the public from indoor and outdoor activity interference. We have adopted this criterion and use it to evaluate the potential noise impacts from the proposed Project at noise sensitive areas (NSAs). NSAs are defined as homes, schools, churches, or any location where people reside or gather. FERC requires that the noise attributable to any new compressor engine or modifications during full load operation not exceed an L_{dn} of 55 dBA at any NSAs. Due to the 10 dBA nighttime penalty added prior to the logarithmic calculation of the L_{dn}, for a facility to meet the 55 dBA L_{dn} limit, it must be designed such that actual constant noise levels on a 24-hour basis do not exceed 48.6 dBA L_{eq} at any NSA.

No other applicable state or local noise regulations were identified for the Project.

9.2 AMBIENT NOISE CONDITIONS

The proposed Westlake Compressor Station would be in a predominantly developed and suburban setting near the city of Westlake in Calcasieu Parish. The area immediately surrounding the proposed compressor station consists of industrial land and pine plantation; however, numerous residences are within 1 mile of the proposed site, mainly to the east and southeast. Gulf South completed an ambient sound survey on June 8, 2016 to measure the existing sound levels during the daytime and nighttime at NSAs within 1 mile of the proposed site. The results of the ambient sound survey are provided in table 9.

9.3 CONSTRUCTION NOISE IMPACTS AND MITIGATION

Noise would be generated during construction of the Project. Construction activities in any one area could last from several weeks to several months on an intermittent basis. While individuals in the immediate vicinity of the construction activities would experience an increase in noise, this effect would be temporary and local. Noise mitigation measures that Gulf South would employ during construction include ensuring that sound muffling devices, which are provided as standard equipment by the construction equipment manufacturer, are kept in good working order. If needed, Gulf South could implement additional noise abatement techniques and other measures during construction to mitigate noise disturbances at NSAs. Nighttime noise is not expected to increase during construction because construction activities would be limited to daytime hours, with the exception of specialized construction activities and/or weather-related events.

9.4 OPERATION NOISE IMPACTS AND MITIGATION

The proposed compressor station would generate noise on a continuous basis (i.e., up to 24 hours per day) when operating. The noise impact associated with the compressor station would attenuate with distance. Noise generated at the compressor station would be from the following operational noise sources:

- reciprocating engines;
- reciprocating engine exhaust systems;
- engine air intakes;
- lube oil coolers;
- discharge gas coolers; and
- aboveground piping.

The results of the ambient sound survey were combined with the predicted noise impacts from the proposed compressor station equipment to determine the noise impacts from operation of the compressor station at each NSA. The noise survey also incorporates noise control measures for operational noise. Noise control measures at the compressor station includes exhaust silencers designed with an integrated catalyst; air intake filter-silencers; acoustical blanket material covering outdoor exhaust pipes; blowdown silencers; insulated roll-up equipment doors; and wall and roof system, among others. Gulf South has committed to installing the noise control measures recommended in the noise analysis. The results of the operational noise analysis are provided below in table 9.

Table 9
Noise Analysis for the Westlake Compressor Station

NSA	Type	Distance and Direction from Facility	Ambient Background Sound Levels (Ldn dBA)	Predicted Sound Level Contribution from Station (Ldn dBA)	Predicted Total Sound Level (Ldn dBA)	Predicted Change in Ldn from Existing Ambient (dBA)
NSA 1	residences	2,200 feet east	54.4	45.5	54.9	0.5
NSA 2	residences	2,300 feet east-southeast	54.9	45	55.3	0.4
NSA 3	residences	2,400 feet southeast	55.8	44.5	56.1	0.3
NSA 4	residences	3,000 feet northeast	51.6	42	52.1	0.5

The operational noise analysis in table 9 indicates that total noise at two NSAs would be greater than 55 dBA; however, the contribution from the Westlake Compressor Stations (i.e., excluding background noise) would not exceed 55 dBA L_{dn} at any NSA. Additionally, because the predicted change in sound levels at the NSAs are less than 3 dBA, the compressor stations would not result in a perceptible sound level increase during normal operation (Bies and Hansen 1988).

Blowdown events generate noise at compressor stations and occur when pressure in the compressor casing, piping, or the entire station must be released in a controlled manner. Blowdown events cause a temporary increase in sound levels that would typically last for about 1 to 5 minutes. Because of the short duration and infrequent occurrence, we do not believe that blowdown events would be a significant contributor to operational noise from the Project.

The Entergy and Varibus M&R Stations would also generate noise on a semi-continuous basis during operation. However, operation of the Entergy M&R and Varibus M&R Stations would result in minimal noise impacts that would not contribute significantly to impacts on existing noise levels. Additionally, both M&R Stations are in industrial areas with other significant noise sources (i.e., the Lake Charles Power Plant). Therefore, based on the existing industrial nature of the sites and the distance to the nearest NSAs, we do not believe that operation of the M&R Stations would result in impacts to nearby NSAs.

While the analysis above shows that noise impacts at the NSAs from the compressor station would be below our 55 dBA requirement, to verify compliance with the FERC's noise standards, **we recommend that**:

> **Gulf South should file with the Secretary of the Commission (Secretary) noise surveys for the Westlake Compressor Station no later than 60 days after placing the station into service. If a full power load condition noise survey is not possible, Gulf South should file an interim survey at the maximum possible power load within 60 days of placing the station into service and file the full power load survey within 6 months. If the noise attributable to operation of all equipment at the station under interim or full power load conditions exceeds an L_{dn} of 55 dBA at any nearby NSA, Gulf South should:**
>
> **a. file a report with the Secretary, for review and written approval by the Director of Office of Energy Projects (OEP), on what changes are needed;**
>
> **b. install additional noise controls to meet that level within 1 year of the in-service date; and**
>
> **c. confirm compliance with this requirement by filing a second full power load noise survey with the Secretary for review and written approval**

by the Director of OEP no later than 60 days after it installs the additional noise controls.

While existing noise levels would be impacted by operation of the Westlake Compressor Station, based on our analyses, sound mitigation measures proposed, and the recommendation stated above, we believe that the proposed Project would not result in significant noise impacts on residents or the surrounding communities.

10. RELIABILITY AND SAFETY

The transportation of natural gas by pipeline involves some incremental risk to the public due to the potential for accidental release of natural gas. The greatest hazard is a fire or explosion following a major pipeline rupture.

Methane, the primary component of natural gas, is colorless, odorless, and tasteless. It is not toxic, but is classified as a simple asphyxiate, possessing a slight inhalation hazard. If breathed in high concentration, oxygen deficiency can result in serious injury or death. Methane has an auto-ignition temperature of 1,000 degrees F and is flammable at concentrations between 5.0 percent and 15.0 percent in air. An unconfined mixture of methane and air is not explosive; however, it may ignite and burn if there is an ignition source. A flammable concentration within an enclosed space in the presence of an ignition source can explode. It is buoyant at atmospheric temperatures and disperses rapidly in air.

10.1 SAFETY STANDARDS

The DOT is mandated to prescribe minimum safety standards to protect against risks posed by pipeline facilities under Title 49 of the U.S. Code, Chapter 601. The DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA) administers the national regulatory program to ensure the safe transportation of natural gas and other hazardous materials by pipeline. It develops safety regulations and other approaches to risk management that ensure safety in the design, construction, testing, operation, maintenance, and emergency response of pipeline facilities. Many of the regulations are written as performance standards which set the level of safety to be attained and allow the pipeline operator to use various technologies to achieve safety. PHMSA's safety mission is to ensure that people and the environment are protected from the risk of pipeline incidents. This work is shared with state agency partners and others at the federal, state, and local level.

The pipeline and aboveground facilities associated with the proposed Project must be designed, constructed, operated, and maintained in accordance with the DOT Minimum Federal Safety Standards in 49 CFR 192. The regulations are intended to ensure adequate protection for the public and to prevent natural gas facility accidents and failures. The DOT specifies material selection and qualification; minimum design

requirements; and protection from internal, external, and atmospheric corrosion. Part 192 of 49 CFR incorporates compressor station design, including emergency shutdowns and safety equipment.

The DOT also defines area classifications, based on population density in the vicinity of the pipeline, and specifies more rigorous safety requirements for populated areas. The class location unit is an area that extends 220 yards on either side of the centerline of any continuous 1-mile length of pipeline. The four area classifications are defined below:

Class 1	Location with 10 or fewer buildings intended for human occupancy.
Class 2	Location with more than 10 but less than 46 buildings intended for human occupancy.
Class 3	Location with 46 or more buildings intended for human occupancy or where the pipeline lies within 100 yards of any building, or small well-defined outside area occupied by 20 or more people on at least 5 days a week for 10 weeks in any 12-month period.
Class 4	Location where buildings with four or more stories aboveground are prevalent.

Class locations representing more populated areas require higher safety factors in pipeline design, testing, and operation. For instance, pipelines constructed on land in Class 1 locations must be installed with a minimum depth of cover of 30 inches in normal soil and 18 inches in consolidated rock. Class 2, 3, and 4 locations, as well as drainage ditches of public roads and railroad crossings, require a minimum cover of 36 inches in normal soil and 24 inches in consolidated rock.

Class locations also specify the maximum distance to a sectionalizing block valve (*e.g.*, 10.0 miles in Class 1, 7.5 miles in Class 2, 4.0 miles in Class 3, and 2.5 miles in Class 4). Pipe wall thickness and pipeline design pressures; hydrostatic test pressures; maximum allowable operating pressure (MAOP); inspection and testing of welds; and frequency of pipeline patrols and leak surveys must also conform to higher standards in more populated areas. The proposed Project pipeline would be designed in accordance with a Class 3 location due to proximity to the parking lot associated with the Lake Charles Power Plant.

If a subsequent increase in population density adjacent to the right-of-way results in a change in class location for the pipeline, Gulf South would reduce the MAOP or replace the segment with pipe of sufficient grade and wall thickness, if required to comply with the DOT requirements for the new class location.

The DOT Pipeline Safety Regulations require operators to develop and follow a written integrity management program that contains all the elements described in 49 CFR 192.911 and addresses the risks on each transmission pipeline segment. The rule establishes an integrity management program which applies to all high consequence areas (HCA). The DOT has published rules that define HCAs where a gas pipeline accident could do considerable harm to people and their property in a high-density population area and requires an integrity management program to minimize the potential for an accident. One HCA was identified along the proposed pipeline lateral due to the parking lot associated with the Lake Charles Power Plant. The pipeline integrity management rule for HCAs requires inspection of the pipeline HCA every 7 years.

The DOT prescribes the minimum standards for operating and maintaining pipeline facilities, including the requirement to establish a written plan governing these activities. Each pipeline operator is required to establish an emergency plan that includes procedures to minimize the hazards of a natural gas pipeline emergency. Key elements of the plan include procedures for:

- receiving, identifying, and classifying emergency events, gas leakage, fires, explosions, and natural disasters;
- establishing and maintaining communications with local fire, police, and public officials, and coordinating emergency response;
- emergency system shutdown and safe restoration of service;
- making personnel, equipment, tools, and materials available at the scene of an emergency; and
- protecting people first and then property, and making them safe from actual or potential hazards.

The DOT requires that each operator establish and maintain liaison with appropriate fire, police, and public officials to learn the resources and responsibilities of each organization that may respond to a natural gas pipeline emergency, and to coordinate mutual assistance. The operator must also establish a continuing education program to enable customers, the public, government officials, and those engaged in excavation activities to recognize a gas pipeline emergency and report it to appropriate public officials. Gulf South would provide the appropriate training to local emergency service personnel before the pipeline is placed in service.

10.2 PIPELINE ACCIDENT DATA

The DOT requires all operators of natural gas transmission pipelines to notify the DOT of any significant incident and to submit a report within 30 days. Significant incidents are defined as any leaks that:

- caused a death or personal injury requiring hospitalization; or

- involve property damage of more than $50,000 (1984 dollars).[9]

During the 20 year period from 1995 through 2014, a total of 1,265 significant incidents were reported on the more than 300,000 total miles of natural gas transmission pipelines nationwide. The dominant causes of pipeline incidents are corrosion and pipeline material, weld or equipment failure constituting 49.6 percent of all significant incidents. The pipelines included in the data set in table 10 vary widely in terms of age, diameter, and level of corrosion control. Each variable influences the incident frequency that may be expected for a specific segment of pipeline.

Table 10
Natural Gas Transmission Pipeline Significant Incidents by Cause 1995-2014[1]

Cause	No. of Incidents	Percentage
Corrosion	291	23.0
Excavation[2]	207	16.4
Pipeline material, weld or equipment failure	337	26.6
Natural force damage	147	11.6
Outside force[3]	79	6.2
Incorrect operation	40	3.2
All other causes[4]	164	13.0
TOTAL	1,265	-

1. All data gathered from PHMSA Significant incident files, January 14, 2016. http://www.phmsa.dot.gov/pipeline/library/data-stats/pipelineincidenttrends
2. Includes third party damage
3. Fire, explosion, vehicle damage, previous damage, intentional damage
4. Miscellaneous causes or unknown causes

The frequency of significant incidents is strongly dependent on pipeline age. Older pipelines have a higher frequency of corrosion incidents and material failure, because corrosion and pipeline stress/strain is a time-dependent process. The use of both an external protective coating and a cathodic protection system,[10] required on all pipelines installed after July 1971, significantly reduces the corrosion rate compared to unprotected or partially protected pipe.

[9] $50,000 in 1984 dollars is approximately $112,955.73 as of May 2015 (CPI, Bureau of Labor Statistics, 2015)
[10] Cathodic protection is a technique to reduce corrosion (rust) of the natural gas pipeline through the use of an induced current or a sacrificial anode (like zinc) that corrodes at faster rate to reduce corrosion.

Outside force, excavation, and natural forces are the cause in 34.2 percent of significant pipeline incidents. These result from the encroachment of mechanical equipment such as bulldozers and backhoes; earth movements due to soil settlement, washouts, or geologic hazards; weather effects such as winds, storms, and thermal strains; and willful damage. Older pipelines have a higher frequency of outside forces incidents partly because their location may be less well known and less well marked than newer lines. In addition, the older pipelines contain a disproportionate number of smaller diameter pipelines; which have a greater rate of outside forces incidents. Small diameter pipelines are more easily crushed or broken by mechanical equipment or earth movement.

Since 1982, operators have been required to participate in "One Call" public utility programs in populated areas to minimize unauthorized excavation activities in the vicinity of pipelines. The "One Call" program is a service used by public utilities and some private sector companies (e.g., oil pipelines and cable television) to provide pre-construction information to contractors or other maintenance workers on the underground location of pipes, cables, and culverts.

The Project's construction and operation would represent a minimum increase in risk to the public; however, we are confident that with continued compliance with DOT safety standards, operation, and maintenance requirements, the Project would be constructed and operated safely.

11. CUMULATIVE IMPACTS

In accordance with NEPA and with FERC policy, we evaluated the potential for cumulative effects of the Project. Cumulative impacts represent the incremental effects of a proposed action when added to other past, present, or reasonably foreseeable future actions, regardless of the agency or party undertaking such other actions. Cumulative impacts can result from individually minor, but collectively significant actions, taking place over time.

This cumulative effects analysis generally follows a method set forth in relevant CEQ and EPA guidance and focuses on potential impacts from the proposed Project on resource areas or issues where the incremental contribution would be potentially significant when added to the potential impacts of other actions. To avoid unnecessary discussions of insignificant impacts and projects and to adequately address and accomplish the purposes of this analysis, an action must first meet the following three criteria to be included in the cumulative analysis:

- affect a resource potentially affected by the Project;
- cause this impact within all, or part of, the Project area; and
- cause this impact within all, or part of, the time span for the potential impact from the Project.

11.1 PROJECTS IDENTIFIED WITHIN THE GEOGRAPHIC SCOPE

Our cumulative impacts analysis considers actions that impact environmental resources affected by the proposed action, within all or part of the Project area affected by the proposed action (i.e., geographic scope), and within all or part of the time span of the impacts. The geographic scope used to assess cumulative impacts for each resource are discussed below in table 11. The projects considered in the cumulative impacts analysis are provided in table 12.

Table 11
Geographic Scope of Potential Impact of the Project

Resource	Geographic Scope
Geological Resources and Soils	Limits of Project disturbance
Water Resources	Watershed boundary (Hydrologic Unit Code 12 [HUC-12)
Vegetation, Wildlife, and Special Status Species	HUC-12
Land Use, Recreation, and Visual Resources	1 mile
Socioeconomics	County
Cultural Resources	Area of potential effect
Air Quality	Construction: 0.25 mile; Operation: 50 kilometer
Noise	Construction: 0.25 mile; Operation: 1 mile

- Project construction and restoration measures, including erosion control devices, are designed to confine impacts on geologic and soil resources to the project workspaces. Therefore, we evaluated potential cumulative impacts on soils and geological resources within the same construction footprint as the Project.
- Impacts on water resources (primarily increased turbidity) and wetlands could extend outside of the workspaces, but would also be contained to a relatively small area. Furthermore, impacts on water resources are traditionally assessed on a watershed level. Therefore, we evaluated other projects within the HUC-12 watersheds crossed by the Project.
- Impacts on fisheries, vegetation, wildlife, and special status species could extend outside of the workspaces to plant seed dispersion areas or individual home ranges for species with potential to occur in the Project area, but would generally be contained to a relatively small area. We believe the watershed scale is most appropriate to evaluate impacts as it provides a natural boundary and a geographic proxy to accommodate general wildlife habitat and ecology characteristics in the Project area.

Therefore, we evaluated projects within the HUC-12 watersheds crossed by the Project.

- Impacts on socioeconomic conditions could include entire counties, as demographic statistics are generally assessed on a county basis.
- Impacts on cultural resources are highly localized and generally confined to the historic property or resource that is affected. Therefore, the geographic scope for cultural resources impacts is limited to the area of potential effect.
- Temporary impacts on air quality, including fugitive dust, would be largely limited to areas within 0.25 mile of active construction. For long-term impacts on air quality from Project operation, we adopted the distance used by the EPA for cumulative modeling of large PSD sources during permitting (40 CFR 51, appendix W) which is a 50-kilometer radius of the Westlake Compressor Station. We evaluated current and proposed sources that overlap in time and location with construction activities and those with potentially significant long-term stationary emission sources within the geographic scopes.
- Impacts from construction and operational noise could potentially contribute to cumulative impacts on NSAs within 0.25 mile for construction activities and 1 mile of the Westlake Compressor Station. Therefore, we evaluated current and proposed sources within 0.25 mile for temporary impact and 1 mile of the compressor station for long-term impact.

An evaluation was performed to identify past, present, and reasonably foreseeable future projects within the resource-specific geographic scopes. In this analysis, we consider the impacts of past projects as part of the affected environment (environmental baseline) which was described and evaluated in the preceding analysis. However, present effects of past actions that are relevant and useful are also considered. Gulf South obtained information about present and future planned developments by consulting federal, state, and local agency and municipality websites, reports, and direct communications; permit applications with various agencies; and online database searches. The projects identified as occurring within the resource-specific geographic scopes are identified below based on resource type.

The Westlake Compressor Station would require the installation of a non-jurisdictional electric powerline and septic tank (see section A.8). A powerline would also be required at the Entergy M&R Station. The new overhead powerlines would be installed directly through a drop from the adjacent overhead power line transmission corridor directly to the aboveground facilities and would not require any ground disturbance. The powerlines would be permitted through the local authority and no additional impacts on resources are expected. The septic tank at the Westlake Compressor Station would be constructed within the permanent Project footprint. Gulf South would acquire any necessary federal, state, or local permits, as applicable, for non-

jurisdictional facilities. Because the proposed locations of the septic tank is within the permanent Project footprint, no additional impacts on resources are expected. Therefore, these projects are not included in the cumulative impact discussion below.

11.2 Potential Cumulative Impacts of the Proposed Action

As described in section B of this EA, Project-related construction and operation would temporarily and permanently impact the environment. The Project would impact geology and soils; water resources; vegetation and wildlife; socioeconomics; land use and visual resources; and air quality and noise. Table 12 below lists the past, present, and reasonably foreseeable projects identified within the geographic scope and within the same timeline as the Project for each resource and considered for cumulative impact analysis.

Table 12
Present and Reasonably Foreseeable Projects Considered for Cumulative Impacts within the Geographic Scope of the Project

Project Type/Name	Location	Project Description	Project Status	Potential Contribution to Cumulative Impacts
Driftwood LNG and Driftwood Pipeline, LLC (Driftwood Project)	2.4 miles north to pipeline from Varibus M&R Station; 11 miles southwest to LNG facility from Westlake Compressor Station;	New LNG production and export facility and 96 mile natural gas pipeline	Undergoing FERC review. Construction planned: 2018; Operation: 2025	Water Resources and Wetlands; Fisheries, Vegetation, Wildlife; Socioeconomics; Air Quality (operations)
Lake Charles Power Plant	Within pipeline and Entergy M&R Station footprint	980 megawatt combined cycle power plant with two combustion turbine generators, two heat recovery steam generators and one steam turbine generator	Construction: ongoing; Operation: May 2020	Soils and geology; Water Resources and Wetlands; Fisheries, Vegetation, Wildlife; Land Use, Visual Resources; Noise (construction); Socioeconomics; Air Quality (construction and operation)
Lake Charles Transmission Project	6.2 miles southwest	2 new substations, expand 2 existing substations, add 24 miles of high voltage transmission line	Construction: 2016; Operation: 2018	Water Resources and Wetlands; Fisheries, Vegetation, Wildlife; Socioeconomics
Port of Lake Charles Calcasieu Ship Channel	3.6 miles southeast	Rebuild wharf and storage facility, new administrative building, and other capital improvements	Construction: ongoing; Operation: 2019	Water Resources and Wetlands; Fisheries, Vegetation, Wildlife; Socioeconomics
Sasol Ltd. Project (Sasol)	0.9 mile southeast	Construction of a petrochemical complex with ethane cracker and six chemical manufacturing plants and gas to liquids facility	Construction: ongoing; Operation: 2017 and 2020	Water Resources and Wetlands; Fisheries, Vegetation, Wildlife; Socioeconomics Visual Resources; Land Use; Air Quality (operations)
Charleston Point	4.6 miles east	38 lot family residential development	Construction: ongoing; Operation: unknown	Water Resources and Wetlands; Fisheries, Vegetation, Wildlife; Socioeconomics
Sears Building/New Downtown District Facility	4.4 miles southeast	Former retail site to be converted into downtown district with residential and commercial properties	Construction: 2016; Operation: 2018	Water Resources and Wetlands; Fisheries, Vegetation, Wildlife; Socioeconomics
Terre Sainte	4.2 miles southeast	92 lot residential development	Construction: ongoing; Operation: unknown	Water Resources and Wetlands; Fisheries, Vegetation, Wildlife; Socioeconomics
Walnut Grove Development	4.1 miles southeast	180 lot residential development, some parks, and a town square	Construction: 2013; Operation: 2020	Water Resources and Wetlands; Fisheries, Vegetation, Wildlife; Socioeconomics
Unknown Residential Development	0.6 mile northeast	230 acre residential development	unknown	Water Resources and Wetlands; Fisheries, Vegetation, Wildlife; Socioeconomics
Unknown Residential Development	0.8 mile northeast	280 acre residential development	unknown	Water Resources and Wetlands; Fisheries, Vegetation, Wildlife; Socioeconomics

As indicated in table 12, there are multiple projects within the same geographic scope and timeline as the Project for all resources. Additionally, about 50 projects within the same geographic scope (i.e., county) with potential to contribute cumulatively to impacts on socioeconomics only (and no other resources) were identified in Gulf South's application. Due to the significant number of projects, and because they only impact socioeconomics, these projects are not listed in table 12 above, but are generally discussed below.[11] Resources with potential for the Project to contribute to overall cumulative impact are considered below by resource.

Geology and Soils

Construction activities, such as clearing, grading, and excavation, as well as the movement of construction equipment, could result in temporary impacts on soil resources, as described in section B.1. With implementation of the FERC Plan and Procedures, impacts would likely only temporarily impact the immediate workspace areas. The Lake Charles Power Plant is the only project that overlaps in construction schedule and geographic scope with the Entergy M&R Station. The Lake Charles Power Plant would likely result in temporary impacts on soil resources similar to the Project's impacts on soil resources (section B.1). However, given the large scope and duration of the Lake Charles Power Plant, Entergy would likely install erosion control measures or other best management practices, in accordance with state permits and standard construction practices. The proposed Project and the Lake Charles Power Plant Project may contribute cumulatively to impacts on soil resources. However, given the implementation of the Plan and Procedures for Gulf South's Project, best management practices by Entergy, and the relatively small and stationary area of disturbance for the proposed Project, we do not anticipate these cumulative impacts to be significant.

Water Resources and Wetlands

Due to the shallow nature of the perched groundwater table, groundwater could be impacted immediately adjacent to Project work areas during construction. The greatest potential for impacts would be during temporary construction activities such as trenching, backfilling, trench dewatering, clearing, and grading. Additionally, surface water would be temporarily impacted by the waterbody crossings and about 0.02 acre would be permanently impacted during operations due to the installation of a culvert. Wetlands would be temporarily impacted by construction and about 0.3 acre of wetlands would be permanently filled for Project operation. Groundwater, surface water, or wetlands could all potentially be impacted if there were a spill of hazardous materials such as hydraulic fluid or oil during construction.

[11] The complete listing of projects that may contribute to impacts on socioeconomics are available on FERC's website under accession number 20170720-5094 (available as Attachment 1H)

All of the projects identified in table 12 are within the same geographic scope and timeline as the proposed Project and may contribute cumulatively to impacts on water resources and wetlands. However, most of the larger-scale construction projects listed in table 12, such as the Driftwood Project, Lake Charles Power Plant, and the Sasol Project would likely be required to install erosion control measures or other best management practices as a standard construction practice or in compliance with state or local permits in order to minimize impacts on water resources and wetlands. While many of the projects listed above may result in a large volume of dredging of waterbodies, fill in wetlands, or changes in flow patterns, based on the limited scale of the proposed Project, the mitigation measures Gulf South would implement, including the measures specified in the Plan and Procedures and SPCC Plan, as well as any state or local measures identified in permits, impacts from the Project are not expected to significantly contribute cumulatively to impacts on water resources or wetlands.

Fisheries, Vegetation, and Wildlife

Construction of the Project may result in temporary impacts on fisheries from the potential impacts on water resources and wetlands. See the discussion in the above section regarding mitigation measures to minimize impacts on water resources and wetlands. All of the projects identified in table 12 are within the same geographic scope and timeline as the proposed Project and may contribute cumulatively to impacts on fisheries. Based on the mitigation measures listed in the above section, and given the limited scope of waterbody impacts and the temporary nature of construction, the Project is not expected to contribute cumulatively to impacts on fisheries.

Construction of the Project is expected to have temporary and permanent impacts on vegetation. All of the projects identified in table 12 are within the same geographic scope and timeline as the proposed Project and may contribute cumulatively to impacts on vegetation. However, given the relatively small acreage associated with permanent impacts on vegetation at the Project aboveground facilities, and the abundance of vegetation within the general vicinity of Calcasieu Parishes, the proposed Project is not expected to contribute cumulatively to impacts on vegetation.

Disturbance during construction is expected to cause short-term displacement of wildlife from, in, and near the construction workspace and mortality of wildlife that cannot avoid construction disturbance. All of the projects identified in table 12 are within the same geographic scope and timeline as the proposed Project and may contribute cumulatively to impacts on wildlife. However, based on the short-term and temporary nature of construction, and the abundance of similar habitat nearby, impacts from the Project are not expected to significantly contribute cumulatively to impacts on wildlife.

Land Use and Visual Resources

Construction and operation of the new aboveground facilities associated with the Project as well as those associated with the Lake Charles Power Plant Project and the Sasol Project would result in the conversion of existing land uses to industrial/developed land. A majority of the areas to be impacted by the projects identified within the geographic scope are classified as either industrial/developed land or as a combination of open land, forest, and wetlands. The conversion of open land, forest, and/or wetlands to industrial/developed land due to the construction and operation of the projects would result in a cumulative impact on land use; however, this impact would be minor as the project areas are predominately surrounded by other industrial/developed areas.

The proposed Project's impacts on visual resources would be greatest near the new aboveground facilities. However, the Westlake Compressor Station would be adjacent to an existing industrial facility and would be screened by trees, while the Entergy M&R Station would be within Entergy's new facility. Visual impacts associated with the pipeline lateral would be temporary in nature and limited to the construction phase. Similarly, the visual impacts associated with the Varibus M&R Station would be negligible due to its location within an existing industrial facility. Both the Lake Charles Power Plant Project and the Sasol Project involve expansions of existing industrial facilities; therefore, there would be minimal changes in the existing viewshed associated with these projects. The overall cumulative impact on visual resources associated with the construction and operation of the projects would be minor due to the existing industrial nature of the areas surrounding each of the projects.

Socioeconomics

Project-related impacts on population, public services, and environmental justice are expected to be negligible, as discussed in section B.5. Therefore, the Westlake Expansion Project would contribute negligibly to overall cumulative impacts on these resources, and they are not discussed further.

There are currently concerns of worker shortages in the southwest Louisiana region due to the recent industrial development boom. Many large industrial projects (see table 12) are expected to overlap in schedule and geographic scope with the Project, including an additional 50 projects named in Gulf South's application, which could create some challenges in recruiting local workers. However, based on the anticipated project schedules, the peak workforce for these projects is not anticipated to occur at the same time as the Project. In addition, the number of non-local workers that would be required to construct the proposed Project (38 workers) is relatively minor compared to these large industrial projects. Therefore, it is expected that the anticipated construction worker population residing in the study area would not increase significantly during Project construction.

Cumulative impacts of worker influx from multiple projects could have the effect of increased rental rates and shortages in housing if demand outstrips supply of suitable lodging. While beneficial to the housing market, this could adversely affect those seeking housing and could result in longer commutes for workers if they are unable to obtain housing near their place of work. However, the recent development boom in the Project area has led to an increase in the number of houses, apartments, and motels/hotels being constructed in the area. The influx of workers associated with the large industrial projects has also led to the construction of worker camps near Lake Charles. It is estimated that approximately 9,200 rooms are available in the study area and approximately 18,100 worker campsites are available. The total number of workers requiring housing for the projects listed in table 12 is approximately 9,200. Therefore, it is estimated that there would be sufficient housing for construction workers in the region during the Project's construction period.

The Westlake Expansion Project would contribute negligibly to overall cumulative impacts on employment and housing.

Project-related activities are expected to have a minor beneficial effect on the local economy through sales and property tax generation and the consumption of goods and services. Other projects within the geographic scope for socioeconomic impacts are anticipated to have a net positive economic impact on the local communities and counties during both construction and operation.

Road traffic in the area would increase during the construction phase of the proposed Project. Traffic from other projects that are constructed in the vicinity of and during the same timeframe as the proposed Project could contribute cumulatively to result in traffic congestion problems and increased traffic safety risks (see table 12). It is anticipated that measures such as utilizing flaggers and coordinating shift changes so that they occur during non-peak traffic hours would be implemented by the projects to decrease traffic congestion. Operation of the proposed Project would not contribute to traffic congestion in the area due to the minimal number of permanent employees at the facility. Therefore, the cumulative impacts on traffic congestion would be minor and temporary in nature. Therefore, the proposed Project is not likely to contribute to significant cumulative traffic impacts associated with these projects.

Air Quality

Construction of the proposed Project would result in short-term construction impacts and long-term operational impacts on air quality in the vicinity of the Project, as discussed in section B.7. Construction of current and reasonably foreseeable future projects and activities within the geographic scope that may impact air quality are discussed below.

Construction of the Lake Charles Power Plant would occur concurrently with construction of the proposed Project. Construction would involve the use of heavy equipment that would generate emissions of air pollutants and fugitive dust. Construction equipment emissions would result in short-term emissions that would be highly localized, temporary, and intermittent. In order to mitigate fugitive dust emissions, Gulf South would implement dust control measures such as watering access roads and construction areas. The Lake Charles Power Plant would also likely employ common construction practices, such as watering access roads and construction areas, to mitigate dust. Based on the mitigation measures proposed by Gulf South and included in the Plan, and the temporary and localized impacts of construction, the proposed Project would not result in significant cumulative impacts on air quality during construction.

The operation of the proposed Project, particularly the Westlake Compressor Station, would be a source of air emissions and minor fugitive emissions and would impact air quality. The Driftwood Project, the Lake Charles Power Plant, and the Sasol Project are the three projects listed in table 12 that would be a source of operational air emissions that may contribute cumulatively to air quality impacts. The existing Roy Nelson Power Plant is approximately 1.6 miles northwest of the proposed Westlake Compressor Station and is an existing facility that may contribute cumulatively to air quality impacts. However, because the facility is currently in operation, the background concentrations from nearby air monitors that were used in the air quality dispersion model to represent ambient air are inclusive of the power plant's emissions (see section B.8.5). Based on the results of the air quality dispersion modeling completed for the Westlake Compressor Station, predicated maximum impacts of all pollutants would not exceed the significant impact level (SIL), with the exception of NO_2. The SIL is used to determine if a source contributes significantly to air quality degradation and requires additional analysis using a refined air quality model. While the modeling for the Westlake Compressor Station indicated that emissions of NO_2 would likely exceed the SIL, these impacts extended westward towards the Sasol Project, and not northward towards the Driftwood Project or the Lake Charles Power Plant . Additionally, modeling completed during the air permitting process at the Lake Charles Power Plant Project indicated that NO_2 concentrations would not exceed the SIL and would therefore not contribute significantly to a violation of the NAAQS. Therefore, because the only air quality impacts from the proposed Project that exceed the SIL are anticipated to occur west of the Project, Gulf South used a refined model to evaluate the impacts of the Sasol Project in addition to the existing background (inclusive of the Roy Charles Power Plant) and the predicted concentrations from the Westlake Compressor Station.

The results of table 13 below indicate that the sum of impacts from the proposed Project, the Sasol Project, and background concentrations (i.e., existing air quality) would continue to be below the NAAQS and would remain protective of human health. Therefore, we conclude that impacts on air quality from operation and construction of the proposed Project are not anticipated to be significant.

Table 13 Maximum NO_2 Project Impacts of the Westlake Compressor Station and the Sasol Project				
Pollutant	**Modeled Source**	**Averaging Period**	**Projects Maximum Impact ($\mu g/m^3$)**	**NAAQS ($\mu g/m^3$)**
NO_2	Westlake Compressor Station	1-hour[1]	90	188
NO_2	Westlake Compressor Station, Sasol Project, and background	1-hour[1]	163	188
1 = eighth highest result of the 1-hour concentration was selected consistent with the NAAQS averaging methodology				

Noise

Construction of the Project would result in short-term and temporary impacts on existing noise levels in the Project area. Construction of the Project may occur concurrently with construction of the Lake Charles Power Plan, Sasol, and residential development Projects and would contribute cumulatively to impacts on noise levels. However, based on the short-term and temporary nature of construction-related activities, impacts from the Project are not expected to significantly contribute to cumulative impacts on noise levels during construction. Although the Project would result in impacts on existing noise levels in the vicinity of the Westlake Compressor Station, these impacts are not anticipated to result in a perceptible noise level increase. Therefore, operation of the Project would contribute negligibly to cumulative impacts on noise levels.

C. ALTERNATIVES

In accordance with NEPA and Commission policy, we evaluated alternatives to the Project to determine whether they would be reasonable and environmentally preferable to the proposed action. These alternatives included the no-action alternative, system alternatives, and site alternatives. The evaluation criteria used for developing and reviewing alternatives were:

- ability to meet the Project's stated objective;
- technical and economic feasibility and practicality; and
- significant environmental advantage over the proposed action.

Through environmental comparison and application of our professional judgment, each alternative is considered to a point where it becomes clear if the alternative could or could not meet the three evaluation criteria. To ensure a consistent environmental comparison and to normalize the comparison factors, we generally use desktop sources of information (e.g., publicly available data, geographic information system data, aerial imagery) and assume the same general workspace requirements.

The alternatives were reviewed against the evaluation criteria in the sequence presented above. The first consideration for including an alternative in our analysis is whether or not it could satisfy the stated purpose of the Project. An alternative that cannot achieve the purpose for the Project cannot be considered as an acceptable replacement for the project. The second evaluation criteria is feasibility and practicality. Many alternatives are technically and economically feasible. Technically practical alternatives, with exceptions, would generally require the use of common construction methods. An alternative that would require the use of a new, unique or experimental construction method may not be technically practical because the required technology is not available or is unproven. Economically practical alternatives would result in an action that generally maintains the price competitive nature of the proposed action. Generally, we do not consider the cost of an alternative as a critical factor unless the added cost to design, permit, and construct the alternative would render the project economically impractical.

Alternatives that would not meet the Project's objective or were not feasible were not brought forward to the next level of review (i.e., the third evaluation criterion). Determining if an alternative provides a significant environmental advantage requires a comparison of the impacts on each resource as well as an analysis of impacts on resources that are not common to the alternatives being considered. The determination must then balance the overall impacts and all other relevant considerations. In comparing the impact between resources, we also considered the degree of impact anticipated on each resource. Ultimately, an alternative that results in equal or minor advantages in terms of environmental impact would not compel us to shift the impacts to another location, potentially affecting a new set of landowners.

1. NO-ACTION ALTERNATIVE

Under the no-action alternative, Gulf South would not construct or operate the Westlake Expansion Project and none of the impacts associated with the Project would occur. However, the Project objectives would not be met. Gulf South would not be able to meet the Project shipper's stated need to transport 200 million cubic feet per day of natural gas to the Lake Charles Power Plant. Firm transportation capacity is not available in Gulf South's existing system to meet the Project shipper's need along the Project's path.

Although a Commission decision to deny the proposed action would avoid the environmental impacts addressed in this EA, other natural gas projects could be constructed to supply the Lake Charles Power Plant and provide a substitute for the natural gas supplies offered by Gulf South. The Lake Charles Power Plant was approved by the state and is currently under construction. Such alternative projects to supply the Lake Charles Power Plant would require the construction of additional and/or new facilities in the same or other locations to meet the Project objectives. These alternatives would result in their own set of specific environmental impacts that could be greater or equal to those associated with the current proposal. Therefore, we have dismissed this alternative as a reasonable alternative to meet the Project objectives.

2. SYSTEM ALTERNATIVES

System alternatives are alternatives to the proposed action that would make use of Gulf South's (or other companies') existing, modified, or proposed pipeline systems to meet the stated objective of the proposed Project. System alternatives must provide the same capacity (i.e., 200 million cubic feet of natural gas per day) to the Project shipper as the proposed Project. Gulf South evaluated using its existing pipeline and compressor station system to meet the stated objective. However, the MAOP of Gulf South's existing Index 198 is about 719 pounds per square inch, and is an insufficient pressure to allow delivery to the Lake Charles Power Plant, which requires a pressure of 735 pounds per square inch. Gulf South evaluated increasing the pressure on the existing Index 198 through the installation of additional compressor units at existing compressor stations. However, Gulf South does not have any existing compressor stations in the vicinity of the Lake Charles Power Plant.

Supply to the Lake Charles Power Plant is from existing Gulf South receipt points and from a new interconnect with a foreign pipeline (existing Varibus system at the new Varibus M&R Station). The pressure available on the foreign pipeline is anticipated to also be below the pressure required to supply the power plant, and would require additional compression as well. Therefore, there are no system alternatives that are technically feasible and would meet the Project objectives.

3. SITE ALTERNATIVES

Gulf South evaluated three alternative sites for the Westlake Compressor Station based on their proximity to the existing Index 198 line. Because the proposed Project would result in about 0.3 acre of permanent wetland fill, two additional site alternatives were evaluated to determine if they would result in fewer environmental impacts, including fewer permanent impacts to wetlands. Alternative Site 1 is directly north of the proposed Compressor Station site. This location is closer to the Lake Charles Power Plant tie-in, which is not as optimal as the proposed site in order to meet rapid pressure demand increases of the power plant. Additionally, this alternative is entirely within the

100-year floodplain, and would result in greater impacts to floodplain storage (about 9.7 acres) as compared with the proposed site (about 4.5 acres). Because Alternative Site 1 would represent a less optimal location from a design engineering perspective and would result in greater impacts to floodplain storage, and because the proposed site would result in a relatively small volume of permanent impacts to wetlands, Alternative Site 1 was dismissed from further consideration.

Alternative Site 2 is about 0.3 mile north of the proposed site of the Compressor Station site. Similar to Alternative Site 1, this site would be entirely within a 100-year floodplain, and would also be closer to the Lake Charles Power Plant tie-in, which makes the location less optimal in order to meet rapid pressure demand increases of the power plant. Alternative Site 2 would also result in 9.7 acres of impacts to floodplain storage as compared with the proposed site (about 4.5 acres). Lastly, four minor waterbodies and 9.2 acres of forest land would be permanently impacted by Alternative Site 2. Because Alternative Site 2 would represent a less optimal location from a design engineering perspective and would result in greater impacts to floodplain storage and forested land, and because the proposed site would result in a relatively small volume of permanent impacts to wetlands, Alternative Site 2 was dismissed from further consideration.

Lastly, with the exception of NSAs within a 0.5 mile, all alternatives had equivalent or greater environmental impacts than the proposed location. Based on the mitigation measures outlined in section B.8, we do not believe that noise levels at NSAs would be significantly impacted by operation of the Westlake Compressor Station. Further, we did not identify any unresolved resource conflicts, other than those discussed above, which would present a need to examine alternatives to the locations of the proposed facilities. Further, no comments were received regarding resources that would be impacted by the Project. Lastly, this site location was selected due to its close proximity to Gulf South's existing Index 198 line and optimal distance from the Lake Charles Power Plant tie-in. Therefore, because the impacts associated with the proposed location are not significant, we did not evaluate site alternatives further.

4. CONCLUSION

We reviewed alternatives to Gulf South's proposal based on our independent analysis. Although several of the site location alternatives appear to be technically feasible, no system, or aboveground facility alternatives provide a significant environmental advantage over the Project design. Therefore, we conclude that the proposed Project is the preferred alternative to meet the project objectives.

D. CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis in this EA, we have determined that if Gulf South constructs and operates the proposed facilities in accordance with its application and supplements, and the staff's recommended mitigation measures below, approval of the Project would not constitute a major action significantly affecting the quality of the human environment. We recommend that the Commission Order contain a finding of no significant impact and include the measures listed below as conditions in any authorization the Commission may issue to Gulf South.

1. Gulf South shall follow the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests) and as identified in the EA, unless modified by the Order. Gulf South must:

    a. request any modification to these procedures, measures, or conditions in a filing with the Secretary;
    b. justify each modification relative to site-specific conditions;
    c. explain how that modification provides an equal or greater level of environmental protection than the original measures; and
    d. receive approval in writing from the Director of OEP **before using that modification.**

2. The Director of OEP, or the Director's designee, has delegated authority to address any requests for approvals or authorizations necessary to carry out the conditions of the Order, and take whatever steps are necessary to ensure the protection of all environmental resources during construction and operation of the Project. This authority shall allow:

    a. the modification of conditions of the Order;
    b. stop-work authority; and
    c. the imposition of any additional measures deemed necessary to ensure continued compliance with the intent of the conditions of the Order as well as the avoidance or mitigation of unforeseen adverse environmental impact resulting from project construction and operation.

3. **Prior to any construction**, Gulf South shall file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel, EIs, and contractor personnel will be informed of the EI's authority and have been or will be trained on the implementation of the environmental mitigation measures appropriate to their jobs **before** becoming involved with construction and restoration activities.

4. The authorized facility locations shall be as shown in the EA, as supplemented by filed Project alignment sheets. **As soon as they are available, and before the start of construction**, Gulf South shall file with the Secretary any revised detailed survey alignment maps/sheets at a scale not smaller than 1:6,000 with station positions for all facilities approved by the Order. All requests for modifications of environmental conditions of the Order or site-specific clearances must be written and must reference locations designated on these alignment maps/sheets.

   Gulf South's exercise of eminent domain authority granted under NGA section 7(h) in any condemnation proceedings related to the Order must be consistent with these authorized facilities and locations. Gulf South's right of eminent domain granted under NGA section 7(h) does not authorize it to increase the size of its natural gas facilities to accommodate future needs or to acquire a right-of-way for a pipeline to transport a commodity other than natural gas.

5. Gulf South shall file shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all route realignments or facility relocations, and staging areas, pipe storage yards, new access roads, and other areas that would be used or disturbed and have not been previously identified in filings with the Secretary. Approval for each of these areas must be explicitly requested in writing. For each area, the request must include a description of the existing land use/cover type, documentation of landowner approval, whether any cultural resources or federally listed threatened or endangered species would be affected, and whether any other environmentally sensitive areas are within or abutting the area. All areas shall be clearly identified on the maps/sheets/aerial photographs. Each area must be approved in writing by the Director of OEP **before construction in or near that area**.

   This requirement does not apply to extra workspaces allowed by the Commission's Plan and/or minor field realignments per landowner needs and requirements which do not affect other landowners or sensitive environmental areas such as wetlands.

   Examples of alterations requiring approval include all route realignments and facility location changes resulting from:

   a. implementation of cultural resource mitigation measures;
   b. implementation of endangered, threatened, or special concern species mitigation measures;
   c. recommendations by state regulatory authorities; and
   d. agreements with individuals landowners that affect other landowners or could affect sensitive environmental areas.

6. **Within 60 days of the acceptance of this authorization and before construction begins**, Gulf South shall file an Implementation Plan with the Secretary for review and written approval by the Director of the OEP. Gulf South must file revisions to the plan as schedules change. The plan shall identify:

    a. how Gulf South would implement the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests), identified in the EA, and required by the Order;
    b. how Gulf South would incorporate these requirements into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at each site is clear to onsite construction and inspection personnel;
    c. the number of EIs assigned per facility, and how the company would ensure that sufficient personnel are available to implement the environmental mitigation;
    d. company personnel, including EIs and contractors, who would receive copies of the appropriate material;
    e. the location and dates of the environmental compliance training and instruction Gulf South would give to all personnel involved with construction and restoration (initial and refresher training as the project progresses and personnel change);
    f. the company personnel (if known) and specific portion of Gulf South's organization having responsibility for compliance;
    g. the procedures (including use of contract penalties) Gulf South would follow if noncompliance occurs; and
    h. for each discrete facility, a Gantt or PERT chart (or similar project scheduling diagram), and dates for:
        i. the completion of all required surveys and reports;
        ii. the environmental compliance training of onsite personnel;
        iii. the start of construction; and
        iv. the start and completion of restoration.

7. Gulf South shall employ at least one EI. The EI(s) shall be:

    a. responsible for monitoring and ensuring compliance with all mitigation measures required by the Order and other grants, permits, certificates, or other authorizing documents;
    b. responsible for evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract (see condition 6 above) and any other authorizing document;
    c. empowered to order correction of acts that violate the environmental conditions of the Order, and any other authorizing document;

d. a full-time position, separate from all other activity inspectors;
e. responsible for documenting compliance with the environmental conditions of the Order, as well as any environmental conditions/permit requirements imposed by other federal, state, or local agencies; and
f. responsible for maintaining status reports.

8. Beginning with the filing of its Implementation Plan, Gulf South shall file updated status reports with the Secretary on a **monthly basis until all construction and restoration activities are complete**. On request, these status reports would also be provided to other federal and state agencies with permitting responsibilities. Status reports shall include:

    a. an update on Gulf South's efforts to obtain the necessary federal authorizations;
    b. the construction status of the Project, work planned for the following reporting period, and any schedule changes for stream crossings or work in other environmentally sensitive areas;
    c. a listing of all problems encountered and each instance of noncompliance observed by the EI during the reporting period both for the conditions imposed by the Commission and any environmental conditions/permit requirements imposed by other federal, state, or local agencies;
    d. a description of the corrective actions implemented in response to all instances of noncompliance, and their cost;
    e. the effectiveness of all corrective actions implemented;
    f. a description of any landowner/resident complaints which may relate to compliance with the requirements of the Order, and the measures taken to satisfy their concerns; and
    g. copies of any correspondence received by Gulf South from other federal, state, or local permitting agencies concerning instances of noncompliance, and Gulf South's response.

9. Gulf South must receive written authorization from the Director of OEP **before commencing construction of any Project facilities**. To obtain such authorization, Gulf South must file with the Secretary documentation that it has received all applicable authorizations required under federal law (or evidence of waiver thereof).

10. Gulf South must receive written authorization from the Director of OEP **before placing the Project into service.** Such authorization would only be granted following a determination that rehabilitation and restoration of the areas affected by the Project are proceeding satisfactorily.

11. **Within 30 days of placing the authorized facilities in service**, Gulf South shall file an affirmative statement with the Secretary, certified by a senior company official:

    a. that the facilities have been constructed in compliance with all applicable conditions, and that continuing activities will be consistent with all applicable conditions; or
    b. identifying which of the conditions in the Order Gulf South has complied with or will comply with. This statement shall also identify any areas affected by the Project where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for noncompliance.

14. Gulf South shall file with the Secretary noise surveys for the Westlake Compressor Station **no later than 60 days** after placing the station into service. If a full power load condition noise survey is not possible, Gulf South shall file an interim survey at the maximum possible power load **within 60 days** of placing the station into service and file the full power load survey **within 6 months**. If the noise attributable to operation of all equipment at the station under interim or full power load conditions exceeds an L_{dn} of 55 dBA at any nearby NSA, Gulf South shall:

    a. file a report with the Secretary, for review and written approval by the Director of OEP, on what changes are needed;
    b. install additional noise controls to meet that level **within 1 year** of the in-service date; and
    c. confirm compliance with this requirement by filing a second full power load noise survey with the Secretary for review and written approval by the Director of OEP **no later than 60 days** after it installs the additional noise controls.

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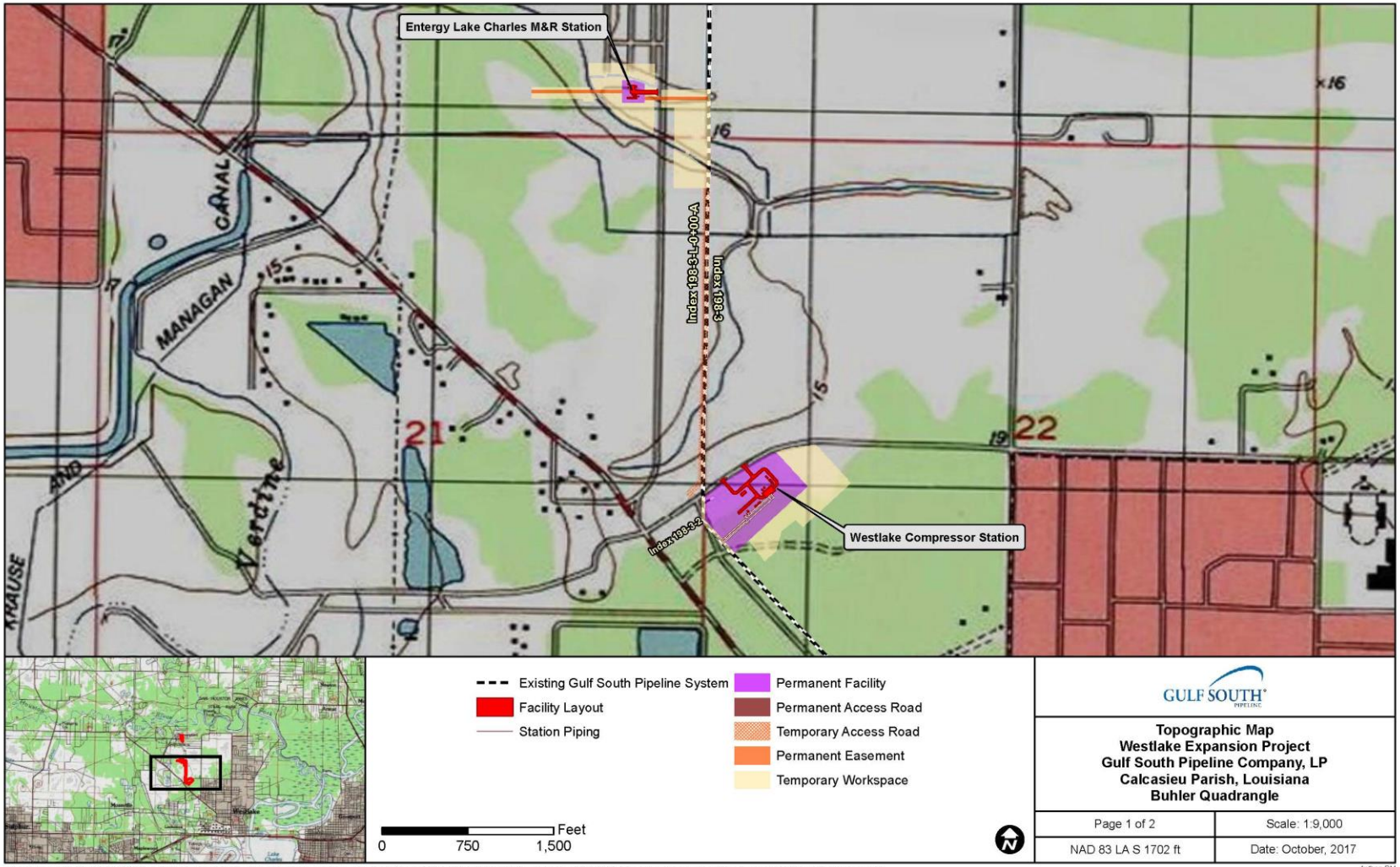
Appendix A

Project Figures


Entergy Lake Charles M&R Station
Westlake Compressor Station
Index 199-91-0-00-4
Index 199-9
Index 199-2-2
MANAGAN CANAL
KRAUSE
Verdine
21
22
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15
19
Existing Gulf South Pipeline System
Facility Layout
Station Piping
Permanent Facility
Permanent Access Road
Temporary Access Road
Permanent Easement
Temporary Workspace
Feet
0
750
1,500
GULF SOUTH PIPELINE
Topographic Map
Westlake Expansion Project
Gulf South Pipeline Company, LP
Calcasieu Parish, Louisiana
Buhler Quadrangle
Page 1 of 2
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Author: RM
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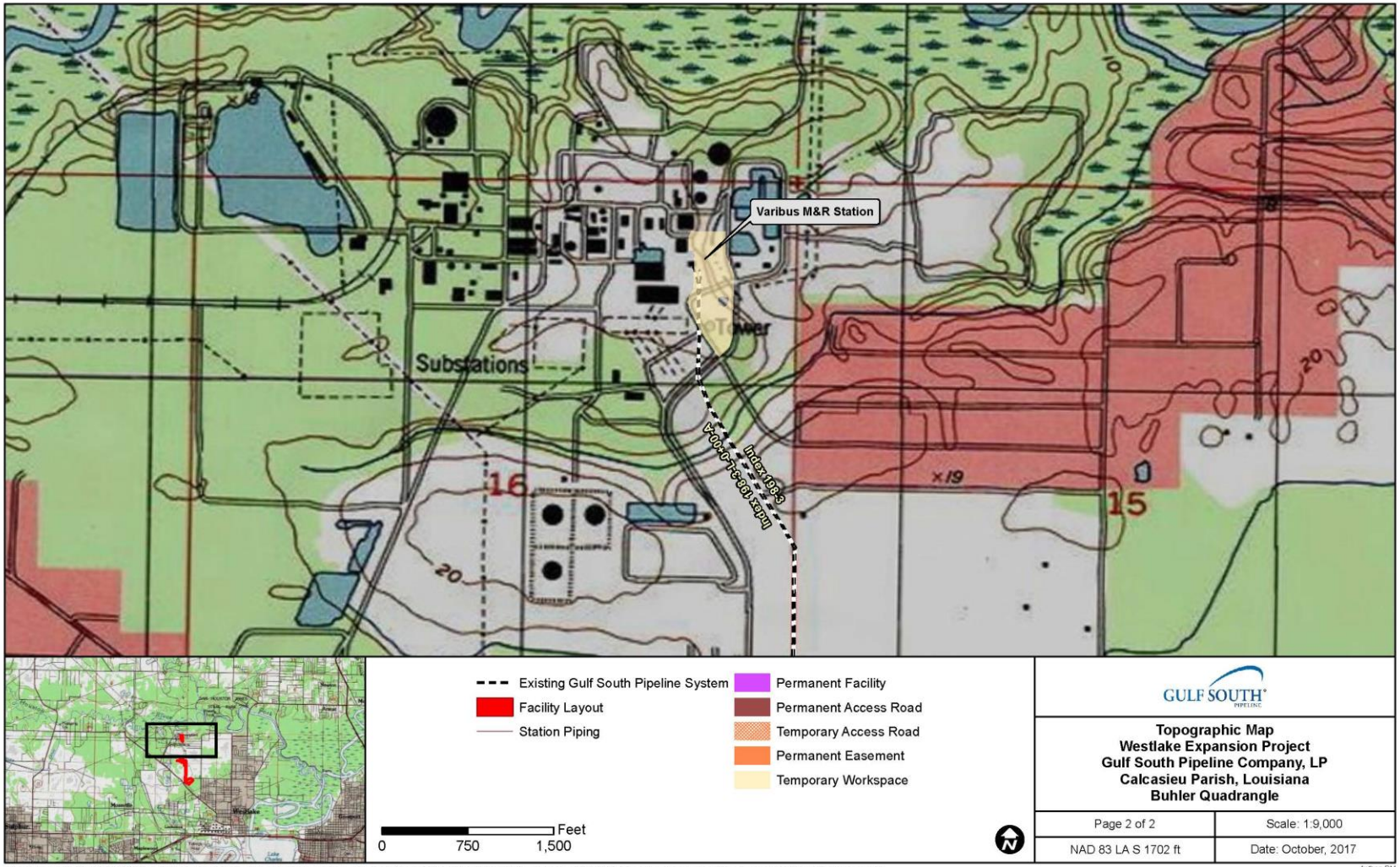

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Appendix B

Project Tables

Table B-1 Federal, State, and Local Permits and Consultations for the Project		
Agency	**Permit/Approval/Consultations**	**Status**
Federal		
FERC	Certificate of Public Convenience and Necessity under section 7(c) of the *Natural Gas Act*	Ongoing
U.S. Army Corps of Engineers (USACE)	Section 404 of the *Clean Water Act*, Nationwide Permit 12	Application submitted 7/14/17; receipt anticipated 1st quarter 2018
U. S. Fish and Wildlife Service (USFWS), Louisiana Ecological Services Field Office	Consultation regarding compliance with section 7 of the *Endangered Species Act*	Correspondence request submitted 7/12/17; response received on 7/7/17 concluded consultation
	Consultation regarding compliance with the *Migratory Bird Treaty Act*	
Alabama - Coushatta Tribe of Texas	Section 106 of the *National Historic Preservation Act*	Notification submitted 6/19/17; response received on 7/21/17 stating the tribe had no concerns
Alabama Quassarte Tribal Town, Oklahoma		Notification submitted 6/19/17; follow up voicemail on 7/21/17 and 8/16/17; no response from tribe
Apache Tribe of Oklahoma		Notification submitted 6/19/17; follow up voicemail on 7/21/17; response received 8/15/17 stating the tribe had no concerns
Chitimacha Tribe of Louisiana		Notification submitted 6/19/17; follow up voicemail on 7/21/17 and 8/15/17; no response from tribe
Choctaw Nation of Oklahoma		Notification submitted 6/19/17; shapefiles submitted 7/24/17 and Phase I Cultural Resources Report submitted to tribe per request; 10/5/17 tribe stated no concerns about Project; 10/31/17 tribe requested archaeological monitor present during construction
Coushatta Tribe of Louisiana		Notification submitted 6/19/17; follow up voicemail on 7/21/17 and 8/15/17; no response from tribe
Jena Band of Choctaw Indians		Notification submitted 6/19/17; follow up voicemail on 7/21/17 and 8/15/17 where tribe said review was pending; no response from tribe
Kialegee Tribal Town, Oklahoma		Notification submitted 6/19/17; follow up voicemail on 7/21/17 and 8/15/17; no response from tribe
Mississippi Band of Choctaw Indians		Notification submitted 6/19/17; follow up voicemail on 7/21/17; letter received 8/16/17 stating the tribe had no concerns

Thlopthlocco Tribal Town, Oklahoma		Notification submitted 6/19/17; follow up voicemail on 7/21/17 and 8/15/17; no response from tribe
Tunica Biloxi Tribe of Louisiana		Notification submitted 6/19/17; follow up voicemail on 7/21/17 and 8/15/17; no response from tribe
State		
Louisiana Department of Environmental Quality	Section 401 of the *Clean Water Act*	Ongoing
	Hydrostatic Test Water Discharge Permit	Notification to be provided prior to discharge in accordance with Gulf South's Statewide General Permit
	State Air Permit	Application submitted 7/14/2017; permit receipt anticipated by 1st quarter of 2018
	Louisiana Pollution Discharge Elimination System Construction Stormwater Discharge Permit	Exempt from permit requirements by the state of Louisiana per the Oil and Gas Exemption
Louisiana Department of Wildlife and Fisheries	Consultation regarding compliance with section 7 of the *Endangered Species Act*	Concurrence request submitted 7/12/17; response received 8/9/17
Louisiana Office of Cultural Development Division of Historic Preservation	Section 106 of the *National Historic Preservation Act*	Concurrence request submitted 7/12/17; concurrence received 7/31/17

Table B-2 Waterbodies within the Westlake Expansion Project Area							
Waterbody Name (Feature ID)	**16-inch Pipeline Milepost Location**	**Fisheries Classification**	**LDEQ Subsegment**	**FERC Classification[a]**	**Flow Regime**	**Approximate Waterbody Width (feet) [b]**	**Proposed Crossing Method**
16-inch-diameter Pipeline Lateral							
Unnamed Tributary of Bayou Verdine (SP1010)	0.00 (ATWS)	Warmwater	LA030801_00	Minor	Perennial	8[c]	Existing Culvert
Roadside Ditch (SP9004)	0.09	Warmwater	LA030801_00	Minor	Ephemeral	3[c]	Road Bore
Unnamed Tributary of Bayou Verdine (SP9001)	0.2	Warmwater	LA030801_00	Intermediate	Perennial	23[c]	Open-Cut
Aboveground Facilities							
Entergy M&R Station							
Roadside Ditch (SP9004)	N/A (Temporary Workspace	Warmwater	LA030801_00	Minor	Ephemeral	3	Equipment Bridge
Roadside Ditch (SP9004)	N/A (Temporary Workspace)	Warmwater	LA030801_00	Minor	Ephemeral	3	Equipment Bridge
Unnamed Tributary of Bayou Verdine (SP9002/SP9003)	0.18 (Temporary Workspace	Warmwater	LA030801_00	Minor	Ephemeral	3	Equipment Bridge
Varibus M&R Station							
Unnamed Tributary of Houston River (SP1007)	N/A (Temporary Workspace	Warmwater	LA030806_00	Minor	Intermittent	3	Equipment Bridge
Unnamed Tributary of Houston River (SP1008)	N/A (Temporary Workspace)	Warmwater	LA030806_00	Minor	Ephemeral	2	Equipment Bridge
Unnamed Tributary of Houston River (SP1009)	N/A (Temporary Workspace	Warmwater	LA030806_00	Minor	Ephemeral	1	Equipment Bridge
Access Roads							
16-inch-diameter Pipeline Lateral							
Roadside Ditch (SP1002)	0.00 (Temporary Access Road)	Warmwater	LA030801_00	Minor	Ephemeral	6	Existing Culvert
Unnamed Tributary of Bayou Verdine (SP1003)	0.00 (Temporary Access Road)	Warmwater	LA030306_00	Minor	Intermittent	8	Equipment Bridge

Westlake Compressor Station							
Roadside Ditch (SP1001)	N/A (Permanent	Warmwater	LA030306_00	Minor	Ephemeral	6	Permanent Culvert
Roadside Ditch (SP1001)	N/A (Permanent Access Road)	Warmwater	LA030306_00	Minor	Ephemeral	6	Permanent Culvert
Entergy Lake Charles M&R Station							
Roadside Ditch (SP9004)	0.09 (Permanent Access Road)	Warmwater	LA030801_00	Minor	Ephemeral	3	Permanent Culvert

a = Minor waterbodies: ≤ 10 feet wide; Intermediate: > 10 feet and < 100 feet wide; Major waterbodies: ≥ 100 feet wide.

b = Approximate waterbody width is based on the ordinary high watermark, as verified by field survey

c = proposed crossing length is equivalent to the approximate waterbody width

Table B-3
Wetland Resources Crossed or Otherwise Impacted by the Westlake Expansion Project Facilities

Feature ID	Wetland Type [a]	Proposed Crossing Method	Pipeline Crossing Length (feet)	Temporary Impacts (acres)	Operational Impacts (acres)
16-inch Pipeline Lateral					
WP1029	PEM	Open-cut	334	1.11	0
WP1028	PEM	Workspace only [b]	0	0.06	0
WP1027	PEM	Workspace only [b]	0	0.44	0
WP1030	PEM	Workspace only [b]	0	0.07	0
WP1026	PEM	Workspace only [b]	0	0.02	0
16-inch-diameter Pipeline Lateral			*334*	*1.7*	*0*
Westlake Compressor Station					
WP1009	PFO	Geotextile fabric/ Timber mat	N/A	0.02	0.00 [c]
WP1001_PFO	PFO	Geotextile fabric/ Timber mat	N/A	0.22	0.00 [c]
WP1001_PFO	PFO	Geotextile fabric/ Timber mat	N/A	0.5	0.00 [c]
WP1001_PFO	PFO	Geotextile fabric/ Timber mat	N/A	0.01	0.00 [c]
WP1001_PFO	PFO	Geotextile fabric/ Timber mat	N/A	0.01	0.00 [c]
WP1008	PFO	Fill	N/A	0.16	0.15
WP1007	PFO	Geotextile fabric/ Timber mat; Fill	N/A	0.15	0
WP1002_PFO	PFO	Fill	N/A	0.09	0.09
WP1002_PEM	PEM	Fill	N/A	0.06	0.06
Westlake Compressor Station Total			*N/A*	*1.22*	*0.30 [c]*
Varibus M&R Station					
WP1019	PEM	Geotextile fabric/ Timber mat	N/A	0.11	0.00 [c]
WP1020	PEM	Geotextile fabric/ Timber mat	N/A	0.01	0.00 [c]

WP1022	PEM	Geotextile fabric/ Timber mat	N/A	0.05	0.00 [c]
WP1023	PEM	Geotextile fabric/ Timber mat	N/A	0.09	0.00 [c]
Varibus M&R Station Total			*N/A*	*0.26*	*0.00* [c]
Access Roads					
16-inch-diameter Pipeline Lateral					
WP1012_PEM	PEM	Timber mat	N/A	0.11	0.00 [c]
WP1025	PEM	Timber mat	N/A	0.01	0.00 [c]
WP1026	PEM	Timber mat	N/A	0.42	0.00 [c]
Access Roads Total			*N/A*	*0.54*	*0.00* [c]

Note: Two PEM wetlands in the vicinity of the proposed Entergy Lake Charles M&R Station (west of Houston River Road) would be permanently converted to industrial/developed land by Entergy Louisiana prior to construction of the Project and would no longer be present at the time of Project construction and are not depicted

N/A – not applicable

a Cowardin Wetland Types: PEM - palustrine emergent; PFO - palustrine forested

b Wetland will not be crossed by the pipeline centerline, but is located within the Project footprint.

c Acreage presented is associated with the permanent operational impact of aboveground facilities or permanent access roads.