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GRAND CHENIER XPRESS PROJECT

Environmental Assessment

Washington, DC 20426

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TECHNICAL ABBREVIATIONS AND ACRONYMS

APE	Area of Potential Effects
AR	Access Road
BMPs	best management practices
CAA	Clean Air Act
CFR	Code of Federal Regulations
Certificate	Certificate of Public Convenience and Necessity
CO	carbon monoxide
CO _{2e}	carbon dioxide equivalents
Commission	Federal Energy Regulatory Commission
dBA	decibels on the A-weighted scale
DOT	U.S. Department of Transportation
EA	Environmental Assessment
EI	Environmental Inspector
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
USFWS	U.S. Fish and Wildlife Service
g	acceleration due to gravity
g/hp-hr	grams per horsepower-hour
GHG	greenhouse gases
GIS	geographic information system
HAP	hazardous air pollutant
hp	horsepower
km	kilometer
L _{dn}	day-night sound level
LDNR	Louisiana Department of Natural Resources
LDEQ	Louisiana Department of Environmental Quality
L _{eq}	24-hour equivalent sound level
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NGA	ANR Gas Act
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
	<i>Notice of Intent to Prepare an Environmental Assessment for the Proposed Grand Chenier XPress Project and Request for Comments on Environmental Issues</i>
NOI	
NRHP	National Register of Historic Places

NRCS	National Resources Conservation Service
NSA	noise sensitive area
NSPS	new source performance standards
NSR	new source review
NSPS	New Source Performance Standards
NSR	New Source Review
OEP	Office of Energy Projects
PACM	Potential Asbestos Containing Material
PGA	peak ground acceleration
PHMSA	Pipeline and Hazardous Materials Safety Administration
Plan	FERC's <i>Upland Erosion Control, Revegetation, and Maintenance Plan</i>
PM _{2.5}	Particulate Matter less than 2.5 microns in diameter
PM ₁₀	Particulate Matter less than 10 microns in diameter
PTE	Potential-to-Emit
ppmvd	parts per million by volume
Procedures	FERC's <i>Wetland and Waterbody Construction and Mitigation Procedures</i>
PSD	Prevention of Significant Deterioration
PTE	Potential-to-emit
Secretary	Secretary of the Commission
SHPO	State Historic Preservation Officer
SO ₂	sulfur dioxide
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
WHPA	Well Head Protection Area

A: PROPOSED ACTION

The staff of the Federal Energy Regulatory Commission (Commission or FERC) prepared this environmental assessment (EA) to assess the environmental impacts of ANR Pipeline Company's (ANR) proposed Grand Chenier XPress Project (Project). We¹ prepared this EA in compliance with the requirements of the *National Environmental Policy Act of 1969* (NEPA), the Council on Environmental Quality regulations for implementing NEPA (Title 40 of the Code of Federal Regulations [CFR] 1500-1508 [40 CFR 1500-1508]), and the Commission's implementing regulations under 18 CFR 380.

The FERC is the lead federal agency for authorizing interstate natural gas transmission facilities under the Natural Gas Act of 1969 (NGA), and the lead federal agency for preparation of this EA.

1.0 INTRODUCTION

On October 28, 2019, ANR filed an application with the Commission in Docket No. CP20-8-000 pursuant to sections 7(b) and 7(c) of the Natural Gas Act to abandon, construct, and operate certain natural gas pipeline facilities. The proposed Project includes natural gas facilities in Acadia, Jefferson Davies, and Cameron Parishes, Louisiana; and would provide open access firm transportation service of 400 million cubic feet per day of incremental capacity from ANR's Southeast Head station² to the Mermentau River GCX Meter Station.

The assessment of environmental impacts is an integral part of the Commission's decision on whether to issue ANR a Certificate of Public Convenience and Necessity (Certificate) to construct and operate the proposed facilities. Our principal purposes in preparing this EA are to:

- identify and assess potential impacts on the natural and human environment which could result from the 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.

2.0 PROJECT PURPOSE AND NEED

ANR's stated purpose of the Project is to provide open access firm transportation service of 400 million cubic feet per day of incremental capacity from ANR's Southeast

¹ "We," "us," and "our" refers to environmental staff of the Commission's Office of Energy Projects.

² ANR's Head Station is a pooling point where natural gas is aggregated from many receipt points.

Head station in Acadia Parish, Louisiana to the Mermentau River GCX Meter Station in Cameron Parish, Louisiana, that interconnects with the Trans Cameron Pipeline that is currently under construction. The Project would provide feed gas for Venture Global's Calcasieu Pass Terminal, a liquefied natural gas export facility, under construction by Venture Global, at the Calcasieu Ship Channel in Cameron Parish, Louisiana.

In addition, ANR states the proposed Project facilities would increase the reliability for all ANR's shippers who use its pipeline system by the addition of new horsepower which would provide additional peak-day capability and additional unit flexibility during non-peak periods in the critical market region for the ANR Pipeline system.

Under Sections 7(c) of the NGA, the Commission determines whether facilities are in the public convenience and necessity and, if so, grants a Certificate of Public Convenience and Necessity to construct and operate them. The Commission bases its decisions on both economic issues, including need, and environmental impacts.

3.0 SCOPE OF THIS ENVIRONMENTAL ASSESSMENT

As the lead federal agency for the Project, FERC is required to comply with Section 7 of the Endangered Species Act (ESA) and Section 106 of the National Historic Preservation Act. These statutes have been considered in the preparation of this EA. The Commission will use this document to consider the environmental impacts that could result if it authorizes the Project. In addition to FERC, other federal, state, and local agencies may use this EA for issuing permits for all or part of the proposed Project. Permits and approvals for the Project are discussed in section A.7.

The topics addressed in this EA include geology and soils; groundwater, surface water, and wetlands; fisheries, vegetation, wildlife, and special status species; cultural resources; land use and visual resources; socioeconomics; air quality and noise; reliability and safety; and cumulative impacts. The EA also assesses the no-action, system alternatives, and above ground facility site alternatives. The EA describes the affected environment as it currently exists, discusses the environmental consequences of the Project, and presents our recommended mitigation measures.

3.1 Public Review and Comment

On December 5, 2019, we issued a *Notice of Intent to Prepare an Environmental Assessment for the Proposed Grand Chenier XPress Project and Request for Comments on Environmental Issues* (NOI). The NOI was mailed to about 210 entities including federal, state, and local officials; Native American groups; agency representatives; potentially affected landowners; and local libraries and newspapers. Comments were requested from the public on specific concerns about the Project or environmental issues that should be considered during preparation of the EA.

We received one comment letter from the Choctaw Nation of Oklahoma acknowledging that the proposed Project is within their area of interest and requesting a copy of the Project EA.

3.2 Proposed Facilities

The Project involves:

- modifications of ANR's existing Eunice Compressor Station in Acadia Parish, Louisiana, to increase the total certificated horsepower (hp) from 24,000 hp to 39,370 hp. The modifications would include:
 - installing a 23,470 hp Solar Turbine Titan 130 natural gas-fired compressor;
 - installing 810 feet of new piping (440 feet of aboveground piping, and 370 feet of below ground piping);
 - uprating a Solar Mars 100 natural gas-fired turbine compressor unit from 12,000 hp to 15,900 hp;
 - placing an existing 12,000 hp reciprocating compressor (Unit 101B) on standby; and
 - abandoning in place an existing reciprocating compressor (Unit 101A);³
- construction of a new 23,470 hp greenfield compressor station (Mermentau Compressor Station) in Jefferson Davis Parish, Louisiana. The compressor station would include:
 - one 23,470 hp Solar Turbine Titan 130 natural gas-fired turbine compressor, filter separators, fuel gas heater, gas cooling bays, 3,506

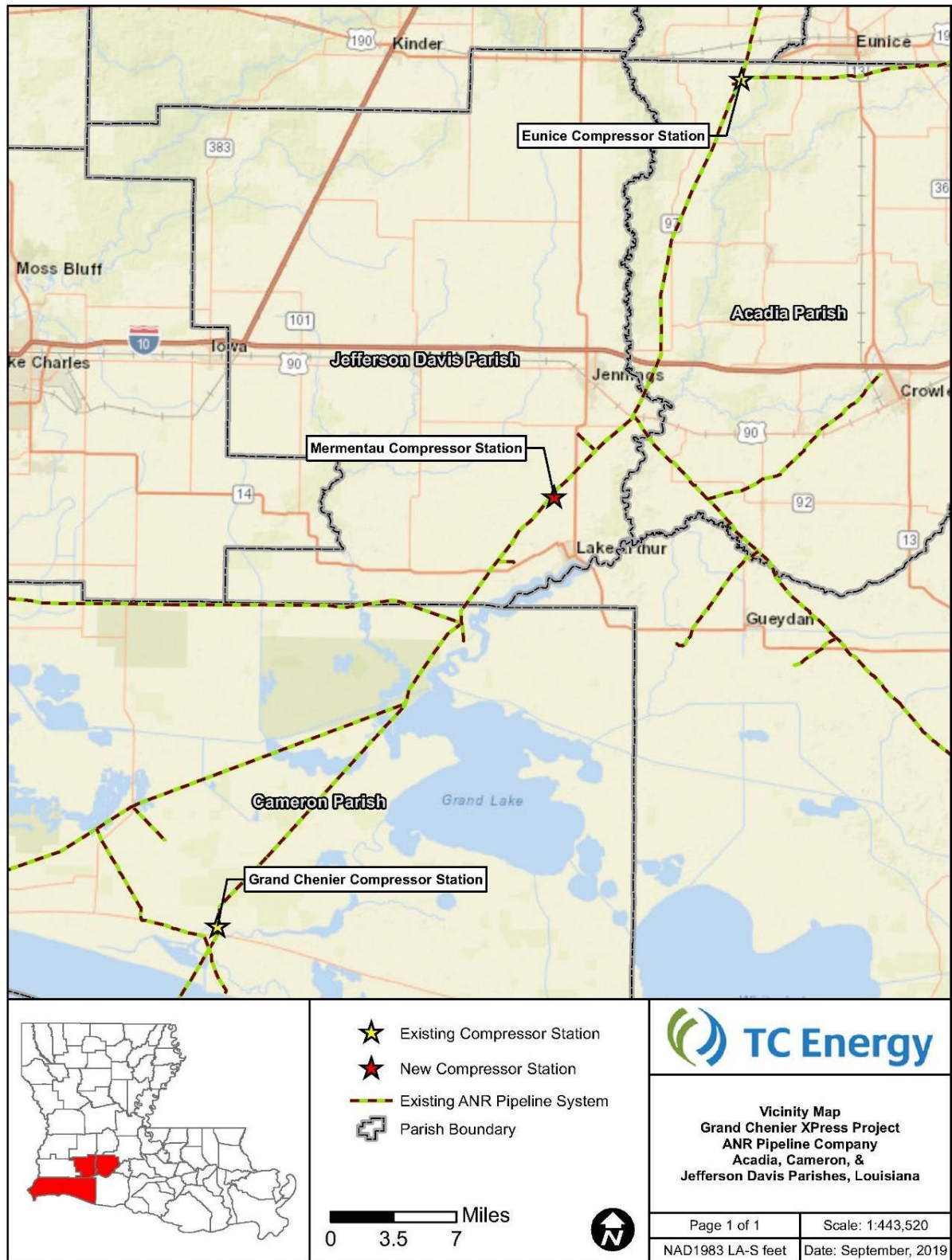
³ An existing reciprocating compressor unit (Unit 101B), would be placed on stand-by in 2020 as part of a replacement project to be conducted pursuant to ANR's blanket certificate (CP82-480-000), would be disconnected and abandoned in place at the Eunice Compressor Station as part of the proposed Project.

feet of associated piping (1,406 feet of aboveground piping, and 2,100 feet of below ground piping) and related appurtenant facilities;

- restaging the existing Dresser-Rand compressor unit, and installing 42 feet of aboveground piping at the Grand Chenier Compressor Station in Cameron Parish, Louisiana; and
- modifications of the Mermentau River GCX Meter Station under ANR's blanket certificate (CP82-480-000), including the installation of an additional meter run and related appurtenant facilities in order to increase the delivery capability from 700 million cubic feet per day to 1.1 billion cubic feet per day.

The general location of the proposed Project facilities is shown below in figure 1. Topographic site maps are provided in appendix A.

Figure 1. Location of Proposed Facilities



Path: P:\GIS\Client\TransCanada\Grand Cheniere Xpress Project\Maps\ENV\FERC\20190916_FERCIMXD1_Vic_FERC.mxd

4.0 LAND REQUIREMENTS

Construction of the project would require about 70.7 acres of land during construction. Permanent (operational) impacts associated with the installation of proposed aboveground facilities would total about 16.5 acres associated with foundations or impervious surfaces within the footprint of the planned Mermentau Compressor Station. ANR would acquire and own the parcel of land that would be impacted during construction and operation of the Mermentau Compressor Station. Following construction all areas temporarily disturbed by construction would be graded, restored to pre-construction contours, and revegetated.

Land requirements for construction and operation of the planned Project facilities are summarized in table 1.

Table 1. Summary of Land Requirements Associated with the Project		
Facility	Construction (acres)^a	Operation (acres)^b
Mermentau Compressor Station	41.9	16.5
Eunice Compressor Station ^c	20.3	0.0
Grand Chenier Compressor Station ^{c, d}	8.4	0.0
Project Total	70.7	16.5
a) Land affected during construction is inclusive of operation impacts (permanent). b) Land affected during operation consists only of new permanent impacts. c) Project activities will occur at existing aboveground facilities. d) Includes land requirements for the Mermentau River GCX Meter Station, as it is entirely within the existing Grand Chenier Compressor Station.		

5.0 CONSTRUCTION SCHEDULE

Pending receipt of all necessary regulatory approvals, ANR plans to commence construction of the Project in January 2021. ANR anticipates placing all Project facilities in-service in January 2022.

6.0 CONSTRUCTION, OPERATION, AND MAINTENANCE PROCEDURES

ANR would design, construct, operate, and maintain the Project in accordance with the U.S. Department of Transportation's (DOT) *Minimum Federal Safety Standards* in 49 CFR 192, *Transportation of ANR and Other Gas by Pipeline: Minimum Federal Safety*

Standards; the Commission's Siting and Maintenance Requirements at 18 CFR 380.15; and other applicable federal and state safety regulations.

ANR states that construction of the Project would occur in stages, from initial surveying and staking to testing and restoration; and that the majority of Project construction activities would be conducted between the hours of 7:00 a.m. to 7:00 p.m.; however, weather conditions, site conditions, specialized construction techniques, emergencies, or other atypical circumstances may necessitate nighttime work or extended work on Sundays and holidays. Additional information regarding estimated sound levels during daytime and nighttime construction activities is provided in section 8.0, Air Quality and Noise.

ANR would use conventional open-cut construction techniques for construction of belowground station and yard natural gas piping consistent with Commission and DOT specifications. Additionally, in order to minimize or avoid impacts on soils during construction and operation of the Project, ANR would implement soil mitigation procedures outlined in the Project's Environmental Construction Standards (ECS), which incorporates and adopts our *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan) and *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures)⁴, and includes a Project-specific Spill Prevention, Containment, and Control Plan (SPCCP), and other Project-specific plans such as ANR's Project-specific *Plan for the Unanticipated Discovery of Contaminated Environmental Media*.

Installation of facility foundations for the aboveground facilities and placement of gravel, asphalt, or concrete would begin with grading, leveling, and compacting the soils. Silt fence or other erosion control devices (ECDs) would be installed where necessary to minimize soil erosion and sedimentation in stormwater runoff from disturbed areas. Sediment and erosion controls would be implemented in accordance with the Project ECS. ANR would use high strength concrete, reinforced as necessary, for building foundations associated with major compressor equipment. Foundation depths could range from 2 feet to 8 feet for standard foundation installations, and from 15 feet to 75 feet for drilled pier and auger cast-in-place pile foundation installations at each of the Project compressor stations. ANR would compact in-place any soils excavated for the placement of foundations and use excess soil elsewhere on site or disposed of it at an approved offsite location.

Construction of elevated platforms and/or equipment associated with the Mermentau and Eunice Compressor Stations would begin with the installation of drilled piers or auger cast-in-place concrete piles. ANR would position and install the piers/piles using drilled shaft auger cast insulation, after which, it would install caps and place or pour the elevated platform. New piles to support the elevated equipment proposed for

installation at the Grand Chenier Compressor Station would be installed via pile driving. ANR would place the compressor unit at the Mermentau Compressor Station and associated equipment on the new elevated platforms, while the new equipment at the Eunice and Grand Chenier compressor stations would be installed at ground level. Following completion of clearing, grading, soil compaction, and installation of the concrete piles, clean aggregate fill material would be spread on geotextile fabric within the proposed permanent workspace below and adjacent to the new elevated platforms at the Mermentau Compressor Station.

ANR would construct the Mermentau Compressor Station, roads, and parking areas using gravel, asphalt, or concrete, as appropriate, and would install fencing around the new permanent footprint of the facility. Once construction is complete, all disturbed areas not covered with gravel, asphalt, or concrete will be graded, restored, and reseeded in accordance with ANR's ECS.

ANR would notify adjacent landowners before the preconstruction surveys and staking commence.

6.1 Operation and Maintenance

Following construction, ANR would operate and maintain the newly constructed Project facilities in the same manner as it currently operates and maintains its existing system, including compressor stations, and in accordance DOT's regulations in 49 CFR 192, and pursuant to the provisions of the Natural Gas Pipeline Safety Act of 1968, as amended. If necessary, ANR would install and maintain permanent structural controls to accomplish maximum stabilization, prevent erosion, and control sedimentation. Permanent erosion controls would be installed at the edge of the construction areas as needed to prevent siltation into waterbodies downslope of the construction area (e.g., swales). ANR would mow vegetation within the fenced area of the Mermentau Compressor Station, as needed. In addition, herbicide treatment would be applied in accordance with ANR's ECS and the manufacturer's recommendations within the facility fence line twice per year.

6.2 Non-Jurisdictional Facilities

Non-jurisdictional facilities are those facilities related to the Project that are not subject to FERC jurisdiction. ANR states that at this time, non-jurisdictional facilities necessary to operate the Project are anticipated to include a power line, an on-site mechanical septic treatment system, and a water well at the Mermentau Compressor Station. No new non-jurisdictional facilities are anticipated to be required for the proposed modifications to the Eunice and Grand Chenier Compressor Stations and the Mermentau River GCX Meter Station.

The Mermentau Compressor Station would require the addition of a new electrical power line, which would interconnect to Jefferson Davis Co-Op Inc.'s existing 12.47-kilovolt (kV) overhead power line located 0.16 mile east of the proposed Mermentau

Compressor Station. The incoming power would be connected to a new pad mounted service transformer at the compressor station. In addition, a water well and mechanical septic treatment system would be installed within the proposed facility fence line.

The FERC has no authority over the permitting, licensing, funding, construction, or operation of local electric lines or the new on-site water-supply well. However, the potential cumulative impacts associated with construction of the non-jurisdictional electrical facilities are discussed in section B.9.0 of this EA.

7.0 PERMITS, APPROVALS, AND REGULATORY CONSULTATIONS

Table 2 lists the major federal, state, and local permits, approvals, and consultations for construction and operation of the Project and provides the current status of each. ANR would be responsible for obtaining and abiding by all permits and approvals required for construction and operation of the Project regardless if they appear in the table.

Table 2. Environmental Permits, Approvals, and Regulatory Consultations			
Regulatory Agency/ Organization	Permit/Approval	Date Submitted / Anticipated Submittal	Date Received / Anticipated Receipt
Federal Energy Regulatory Commission	Certificate of Public Convenience and Necessity	October 28 2019	<i>Pending</i>
U.S. Fish and Wildlife Service – Louisiana Ecological Services Field Office	<i>Endangered Species Act, Section 7 Consultation; Bald and Golden Eagle Protection Act, Migratory Bird Treaty Act</i>	ESA Project review and Guidance for Other Federal Trust Resources Report <i>No Effect</i> Determination issued August 26, 2019	August 26, 2019
State			
Louisiana Department of ANR Resources – Office of Coastal Management	Joint Application for a Coastal Use Permit	Request for Determination for Grand Chenier Compressor Station to be submitted (1 st Quarter 2020)	Consistency Determination for Grand Chenier CS (1 st Quarter 2020)
Louisiana Department of Environmental Quality	Hydrostatic Test Water Discharge Permit (LAG- 67)	Notification to be provided prior to discharge in accordance with ANR's Statewide General Permit	N/A

Table 2. Environmental Permits, Approvals, and Regulatory Consultations			
Regulatory Agency/ Organization	Permit/Approval	Date Submitted / <i>Anticipated Submittal</i>	Date Received / <i>Anticipated Receipt</i>
	Title V Air Permit (Eunice CS)	August 22, 2019	(anticipated March 2020)
	Title V Air Permit (Mermentau Compressor Station)	October 17, 2019	(anticipated May 2020)
Louisiana Department of Wildlife and Fisheries	Threatened and Endangered Species Consultation/Clearance	August 27, 2019; September 17, 2019	September 6, 2019; September 20, 2019
Louisiana Office of Cultural Development Division of Historic Preservation	<i>National Historic Preservation Act</i> Section 106 Consultation	October 17, 2019	November 2019
Local			
Jefferson Davis Parish Police Jury	Development Permit	(2 nd Quarter 2020)	(anticipated 4 th Quarter 2020)
Acadia Parish Police Jury	Building Permit	(2 nd Quarter 2020)	(anticipated 4 th Quarter 2020)

B: ENVIRONMENTAL ANALYSIS

In the following sections, we address the direct and indirect construction and operational impacts, and proposed mitigation to minimize or avoid impacts for each resource. When considering the environmental consequences of the Project, the duration and significance of any potential impacts are described 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. In the following sections, we address direct and indirect effects collectively, by resource. There would be no impact on the following resources, and they are not discussed further:

- national or state wild or scenic rivers;
- recreation or scenic places;
- state parks, nature preserves, national trails, wilderness areas, or registered landmarks; or
- residential areas or planned developments.

The analysis in this EA is based upon ANR's application and supplemental filings and our experience with the construction and operation of natural gas infrastructure. However, if the Project is approved and proceeds to the construction phase, it is not uncommon for a project proponent to require modifications (e.g., minor changes in workspace configurations). These changes are often identified by a company once on-the-ground implementation work is initiated. Any Project modifications would be subject to review and approval from FERC's Director of the Office of Energy Projects (OEP) and any other permitting/authorizing agencies with jurisdiction.

1.0 GEOLOGY

The proposed Project is within the West Gulf Coastal Plain Section of the Coastal Plain physiographic province (U.S. Geological Survey [USGS], 2008). The Coastal Plain consists of Late Cretaceous-Period to Holocene-Epoch deposits that were formed in a mostly marine environment. The West Gulf Coastal Plain Section consists of Holocene to Pleistocene-Epoch deposits which are characterized by unconsolidated, fine detrital clay or mud, and silt. The predominant unconsolidated surficial geologic unit is delta deposits, which consist of coastal and coastal plain marine deposits (USGS, 2008).

The Prairie Terraces formation underlies the Project area at the Eunice and Mermentau compressor stations and the Chenier Plain; and Saline Marsh geologic formation underlies the Grand Chenier Compressor Station. The Prairie Terraces formation consists primarily of light gray to dark brown, sandy clay or mud and silt (USGS, 2019a). The Chenier Plain, Saline Marsh geologic formation is characterized by gray to black clay and silts with a moderate organic content. A chenier plain is a strand plain consisting of long, narrow-wooded beach ridges and intervening mudflats with marsh or swamp vegetation (Geological Society of America, 2008). Longshore currents from major delta complex tend to form accretion in the Chenier Plain, Saline Marsh formation (USGS, 2019b).

Elevations across the Project range from approximately 3 feet above mean sea level to approximately 42 feet above mean sea level (Appendix A). Topography in the Project area ranges from nearly level to gently sloping around irrigation berms in the agricultural fields.

1.1 Mineral Resources

A total of four oil and gas wells were identified within 0.25 mile of the Project area, as presented in table 3 below (Louisiana Department of Natural Resources [LDNR], 2019).

ANR states it would field verify the data provided in table 3 through civil surveys prior to the start of construction, and if an oil or gas well is encountered during construction of the Project, ANR would determine an appropriate buffer and construction procedure around the well based on site-specific conditions and coordination with the owner of the well. Additionally, ANR would implement other measures during construction of the Project to reduce the likelihood of impacts, such as flagging wells within the construction workspace or reducing the construction workspace, if necessary, to keep a safe buffer between stockpiled spoil and equipment and the well. If an oil or gas well is unexpectedly impacted during construction, ANR would stop work immediately, contain any spilled product per its SPCCP contained within their ECS, secure the area, and notify FERC, the well owner, as well as the appropriate state and/or local agency. ANR would compensate the owner for the repair or replacement of any oil and/or gas well damaged during construction.

Table 3. Oil and Gas Wells Located within 0.25 mile of the Project			
Well Owner	Serial Number	Status	Distance and Direction from Project Workspace (miles)
Mermentau Compressor Station			
Van Geffen	56692	Abandoned Dry Hole	0.07 NW
Van Geffen	163128	Active	0.08 S
Houssiere	65640	Active	0.13 SE
Eunice Compressor Station			
M R Jenkins	41329	Plug and Abandoned Dry Hole	0.03 W
Grand Chenier Compressor Station			
There are no oil and gas wells within 0.25 mile of the Project area at the Grand Chenier Compressor Station.			
Source: LDNR, 2019			

There are no underground natural gas storage reservoirs within 1 mile of the Project area (EIA, 2018); and there are no active or historic quarries, mines, or mine spoil areas within 1 mile of the Project area (USGS, 2019c, 2019d, 2003).

We conclude that given the distance to the nearest non-fuel resources, no impact are expected to these mineral resources, and with ANR's mitigation measures, Project construction and/or operational would not result in significant impacts on fuel resources.

1.2 Paleontology

The State of Louisiana does not have any protected fossils, and according to the Louisiana Geological Survey, it is not likely that noteworthy fossils would be common in the Project area (McCulloh, 2019). However, if paleontological resources are discovered during construction of the Project, ANR would temporarily cease excavation in the area and would notify the state geological survey or ANR history museum as well as FERC, so that all finds may be properly documented. We find this measure to be adequate for protection of paleontological resources during construction of the Project.

1.3 Geologic Hazards

Geologic hazards are naturally occurring physical conditions that may result in damage to land and property or injury to people. Within the Project area, these could potentially include seismic activity, including induced seismic activity due to deep waste fluid injection, soil liquefaction, landslides, surficial geologic faults, flash flooding, and ground subsidence.

According to the USGS Seismic Hazards maps for the U.S. (USGS, 2015), the Project is situated within an area of very low seismic probability. Based on historical seismic activity in the area, the USGS estimates that the 500-year earthquake (an earthquake with a 10 percent probability of occurring within any 50-year interval)

would result in peak ground acceleration of 1 percent gravity (g). Peak ground acceleration between 0 and 1 percent g are associated with the weak ground motion and no surface damage.

The Project area is located within a region that is comprised of a substantial number of surficial faults that are designated by the USGS as Class B Gulf-margin normal faults (USGS, 2019e; Crone and Wheeler, 2000). Class B features are defined as faults in which geologic evidence demonstrates the existence of a fault or suggests deformation during the Quaternary Period, but either the fault might not extend deeply enough to be a potential source of significant earthquakes because they are decoupled from the underlying basement rock making it unclear if they can generate significant seismic ruptures that could cause damaging ground motion; or the currently available geologic evidence cannot confidently assign the feature as a Class C fault (geologic evidence is insufficient to define the existence of tectonic fault) but not strong enough to assign it to Class A fault (a fault of recognized tectonic origin).

Based on review of seismic events recorded in the region, the epicenter of the nearest recorded earthquake (including induced seismic events typically caused by injection of wastewater in deep underground wells from oil and gas production) is approximately 40 miles west of the planned Mermentau Compressor Station. This earthquake occurred on October 16, 1983 and had a magnitude of 3.8 (USGS, 2019f). Magnitude scales measure the size of the earthquake at its source. In contrast, the Mercalli Scale is based on observable earthquake damage, and, as such, can be subjective. According to the Abbreviated Modified Mercalli Intensity (MMI) Scale, an earthquake with a magnitude 3.8 at its epicenter could cause vibrations that may be felt by persons at rest, especially in the upper floors of buildings, but would not necessarily cause damage (USGS, 2019g).

The USGS has recently compiled data to identify and determine the potential hazard of induced seismic events. Induced seismic events are generated, most commonly by the disposal of wastewater from oil and gas production through its injection in deep underground wells (USGS, 2019h; Petersen et al., 2018). According to the Louisiana Department of ANR Resources (LDNR) Strategic Online ANR Resources Information System (SONRIS), there are no Class 2 underground injection control wells within 0.25 mile of the Project facilities (LDNR, 2020).

The nearest incidence of induced seismicity event to the Project area occurred approximately 123 miles northwest of the Eunice Compressor Station. The earthquake occurred on October 3, 2014 and had a magnitude of 2.78 (U.S. Geological Survey, 2017a). According to the Abbreviated Modified Mercalli Intensity Scale, an earthquake of this magnitude at the distant epicenter location would not be felt except by a very few under especially favorable conditions. As such, it is reasonable to assume that this earthquake was not felt at the Eunice Compressor Station.

Based on the lack of recent and historic induced seismicity activity in the region, and that it is reasonable to assume that the Class B growth fault system in the

Project area is decoupled from the underlying crust, the potential for these faults to undergo reactivation solely due to fluid waste water disposal activity is considered low. This and given the distance of the nearest recorded induced seismic event from the Project area, induced seismicity is not anticipated to impact the Project facilities.

Soil liquefaction is a condition that typically occurs when loose, saturated soil, at or near ground surface lose their strength in response to strong ground shaking, typically from a seismic event. During liquefaction, water inhibits grain-to-grain contact, and the strength of the soil is greatly reduced such that soil may act like a viscous liquid with the ability to move and flow. Soil liquefaction can lead to landslides and extreme deformation of building foundations and buried pipelines. All three conditions (loose cohesionless, saturated soils, and strong ground shaking) are needed for soil liquefaction to occur. Given the low probability for strong ground shaking to occur in the Project area, the potential for soil liquefaction to occur is considered low.

Landslides occur when unconsolidated soils and sediments on steep slopes become saturated, usually from a long-term or significant rainfall event. As discussed above, the topography in the Project area is generally flat. According to the USGS Landslide Susceptibility Map of the United States, the Project facilities are proposed within an area with low landslide incidence (USGS, 2019i). There is however, one soil type present at the Grand Chenier Compressor Station that is characterized by steep slopes. However, all the Project workspace at the Grans Chenier Compressor Station would be within areas that have been previously graded and, as such, we conclude Project construction and/or operation would not be impacted by landslides.

Land subsidence is the sinking of the earth's surface, either gradually or abruptly, due to subsurface movement of materials such as water or soil, or by the dissolution of highly soluble bedrock, such as limestone and dolomite (karst). Areas with karst terrain may be more susceptible to subsidence events, as are areas where there is aquifer system compaction due to groundwater mining or dewatering in excess of natural recharge, drainage of organic soils, underground mineral resource mining, or thawing of permafrost (Galloway et al., 2005). However, the Project does not occur in areas where karst terrain is present, where permafrost is present, or where significant subsidence events are likely to occur due to groundwater pumping or mineral extraction (USGS, 2004b).

A little over a third of the U.S. is underlain by evaporite rocks, and the Project occurs within a region of evaporite rock. The presence of evaporite rock in the region has also led to the formation of salt domes. During the development of salt domes as storage reservoirs, large volumes of subsurface material are removed (solution mined) leaving behind a void which could weaken the overlying strata and, consequently, the risk of surface subsidence and collapse increases (Bureau of Economic Geology, 1985). The nearest salt dome to the Project is the Jennings Salt Dome approximately 11 miles northeast of the planned Mermentau Compressor Station (LDNR, 2019).

Given the distance to this salt dome, we conclude Project construction or operation are not anticipated to impact or be impacted by salt domes.

Another cause of subsidence in southeast Louisiana is the drainage of organic soils. Subsidence occurs in soils that are rich in organic carbon when they are drained for other land use purposes. According to USGS maps and the Natural Resources Conservation Service (NRCS) Web Soil Survey, the Project is not in an area characterized by organic soils (NRCS 2019; USGS, 2016).

According to the Federal Emergency Management Agency (FEMA), the Project facilities and associated workspaces at the Mermentau and Grand Chenier compressor stations would be entirely within the 100-year floodplain (A and AE zones, respectively) (FEMA, 2019a). A and AE floodzones are subject to inundation by the 1 percent chance of an annual flood event (FEMA, 2019b). The Eunice Compressor Station and associated temporary workspace are in an area designated as Zone X, which is defined as an area of minimal flood hazard (FEMA, 2019a, 2019b). As such, the Project could be impacted by flash flooding due to its proximity to streams, rivers, and other nearby waterbodies.

Although the proposed Mermentau Compressor Station site would be entirely within the 100-year floodplain, a majority of the operational area for the compressor station would be maintained in an herbaceous state (13.1 acres), and the new impervious and semi-permeable areas (totaling 3.4 acres) are not anticipated to adversely impact the function of the floodplain, as the area of new impervious surfaces proposed for the Project is relatively minor when compared to the floodplain as a whole. In addition, ANR would elevate the facility foundations by 12 feet at the Mermentau Compressor Station via piles and piers which would minimize the likelihood of flood damage to the facility.

We conclude that construction and operation of the Project would not result in any significant impacts on geologic resources, and we conclude that geologic hazard impacts on the Project would likewise not be significant. In addition, ANR would obtain all necessary permits and/or approvals from applicable authorities for construction (e.g., within the floodplain), and the proposed facilities would meet or exceed federal, state, and local standards.

2.0 SOILS

Detailed soil units impacted by the Project were identified and assessed using the NRCS Web Soil Survey (2019a). In addition, general information regarding these soils was obtained from Official Soil Series Descriptions contained within the U.S. Department of Agriculture (USDA) Soil Conservation Service and NRCS Soil Surveys of Jefferson Davis, Acadia, and Cameron Parishes (NRCS, 2019a, 2018a, 2018b, 2014a, 2014b, 2006, 2003, 1995). Soils within the Project area in Acadia, Cameron, and Jefferson Davis Parishes, Louisiana are comprised of four soil map units. Table 4 lists

the characteristics of each soil map unit within the Project area, such as prime farmland, hydric soils, compaction potential, erosion potential, steep slopes, shallow bedrock, shrink-swell and revegetation potential, as well as the acres impacted by construction and operation of the Project.

Erosion is a process that can be accelerated by construction activities. Factors that can influence the degree of erosion include soil texture, structure, length and percent slope, vegetative cover, as well as rainfall or wind intensity. Soils most susceptible to erosion by water are typified by bare or sparse vegetative cover, non-cohesive soil particles with low infiltration rates, and moderate to steep slopes. Characterization of erosion potential includes both water and wind as agents of erosion.

Soils with high erosion potential due to water within the Project area were identified based on the soil erodibility factor (K). None of the soil map units had a high erodibility due to wind. However, approximately 29 percent of the Project area (20.3 acres) contains soils that are considered highly erodible due to water.

Soils with elevated or steep slopes may be more susceptible to erosion, and only one of the soil map units (see table 4) within the Project area is characterized by slopes of between 1 and 20 percent. However, this soil mapped unit (Udifluvents, 1 to 20 percent slopes) occurs at the existing Grand Chenier Compressor Station, which is entirely paved and graveled, and steep slopes are not present.

Clearing, grading, excavating, backfilling, and equipment movement has the potential to accelerate the erosion process and without adequate protection could result in discharge of sediment to waterbodies and wetlands. Soil loss due to erosion could also reduce soil fertility and impair revegetation.

To minimize impacts on soil resources, ANR would implement the measures outlined in its ECS as well as applicable federal and state guidance including our Plan and Procedures. Temporary ECDs, such as interceptor diversions and sediment filter devices (filter socks and silt fence) would be installed following initial ground disturbance. ANR would install temporary trench breakers immediately following trench excavation for the new suction and discharge lines at the Mermentau Compressor Station. Temporary ECDs would be inspected on a regular basis, as well as after each rainfall event of 0.50 inch or greater, to ensure that the controls are functioning properly.

In order to minimize the potential for erosion during operation of Project facilities, ANR would install permanent ECDs, such as riprap, rock outlet protection, trench breakers (for the new suction/discharge lines), or French drains, in addition to performing regular restoration and revegetation activities. Permanent ECDs would be installed in accordance with revegetation measures outlined in our Plan and Procedures and specific landowner requests. The effectiveness of revegetation and permanent ECDs would be monitored by ANR's operating personnel during the long-term operation and maintenance of the Project facilities.

Table 4. Summary of Soil Characteristics for the Grand Chenier Project

Map Unit Name	Construction Impact Acreage ^{b, c}	Operation Impact Acreage	Prime Farmland ^a	Hydric Soils ^a	Soil Rutting Hazard ^a	Compaction Potential ^d	K Factor ^{a, e}	Wind Erodibility Potential ^{a, f}	Steep Slopes ^{a, g}	Shallow Bedrock ^{a, h}	Shrink- Swell Potential ^{a, i}	Re- vegetation Potential
Jefferson Davis Parish – Mermentau Compressor Station												
Midland silty clay loam, 0 to 1 percent slopes, rarely flooded	41.9	16.5	Yes	Yes	High	High	Moderate	Low	No	No	High	High
Acadia Parish – Eunice Compressor Station												
Crowley silt loam, 0 to 1 percent slopes	20.3	0.00	Yes	No	High	Moderate	High	Low	No	No	Moderate	High
Cameron Parish – Grand Chenier Compressor Station												
Mermentau clay	4.7	0.00	No	Yes	High	High	Low	Moderate	No	No	Moderate	Low
Udifluvents, 1 to 20 percent slopes	3.7	0.00	No	Yes	Not Rated	Not Rated	Not Rated	Not Rated	Yes	No	Not Rated	Low

a As designated by the NRCS.

b Represents total land affected by the Project, including temporary and permanent impacts.

c Soil impacts associated with the access driveways are included in the total construction impacts for each compressor station.

d Compaction Potential – Based on soil rutting hazard: Low (slight), Moderate (moderate), High (severe)

e The K Factor is a measure of the susceptibility of soils to water erosion. K Factor values range from 0.02 to 0.69 with soils of 0.69 having the highest susceptibility to water erosion. Soils with a K factor value of 0.02 to 0.24 are considered to have “Low” susceptibility to water erosion; K Factor values of 0.25 to 0.47 are considered to have “Moderate” susceptibility to water erosion; K Factors of 0.48 to 0.69 a “High” susceptibility to water erosion.

f Wind Erodibility Potential – Based on NRCS wind erodibility group classification: High (1.0-2.0), Moderate (3.0-4.0), Low (≥ 5.0)

g Steep Slopes – Represents soils with slopes greater than 8 percent.

h Shallow Bedrock – Represents soils with consolidated rock 60 inches or less from the surface.

i Shrink-swell potential is the relative change in volume to be expected with changes in moisture content, measured as the linear extensibility percent (LEP): Low (<3.0); Moderate (3.0- 5.9); High (6.0-8.9); Very High (≥9.0)

Source: NRCS, 2019a

The major factors considered when determining the revegetation potential of a soil include the prime farmland and hydric soil classifications, soil rutting hazard, compaction potential, wind and water erosion potentials, and the presence of steep slopes. Soils with low revegetation potential typically have high compaction and/or erosion potentials; additionally, slopes greater than eight percent are generally not classified as prime farmland, and/or are usually hydric in nature. Soils with low revegetation potential comprise approximately 12 percent (8.4 acres) of the total Project area.

The USDA defines prime farmland as land that “has the best combination of physical and chemical characteristics for producing food, feed, fiber, and oilseed crops” (NRCS, 2018b). This designation includes cultivated land, pasture, woodland, or other lands that are either used for food or fiber crops or are available for these uses. Prime farmland typically contains few to no rocks, is permeable to water and air, is not excessively erodible or saturated with water for long periods, and is not subject to frequent, prolonged flooding during the growing season.

Soils that do not meet the above criteria may be considered prime farmland if the limiting factor is mitigated, for example by means of artificial drainage. Farmland that does not meet the criteria for prime farmland may still be considered farmland of statewide importance, local importance, or prime farmland if special procedures are implemented to protect crops during the growing season. Generally, this land includes areas of soils that nearly meet the requirements for prime farmland, and that economically produce high yields of crops when treated and managed according to acceptable farming methods (NRCS, 2018b).

Soils at the planned Mermentau Compressor Station in Jefferson Davis Parish; and the existing Eunice Compressor Station Acadia Parish are designated by the NRCS as Prime Farmland (table 4). A total of 16.5 acres, or approximately 23 percent, of the soils that would be impacted by new permanent aboveground facilities are prime farmland and would be converted to industrial uses following the completion of construction. Temporary workspace would also impact prime farmland soils at the Mermentau and Eunice Compressor Stations; however, following completion of construction, these areas would be restored and allowed to revert to previous uses.

Construction activities that have the potential to adversely impact soils and revegetation potential within the Project area include:

- limited clearing of vegetation and debris;
- grading;
- excavations for proposed station and yard piping and building foundations;
- backfilling;
- leveling the site; and
- compacting the soils for the construction of building foundations.

Potential soil impacts include: loss of soil due to water or wind erosion; reduction of soil quality by mixing topsoil with subsoil or by bringing excess rocks to the surface;

soil compaction due to traffic by heavy equipment; and disruption of surface and subsurface drainage systems. In addition, the presence of certain soil conditions (low soil fertility) could result in poor revegetation of disturbed areas.

Successful restoration and revegetation of the Project workspaces are important for maintaining productivity and protecting the underlying soil from potential damage. Fertility and erosion are generally the two main factors that would limit the regrowth of vegetation, but these can be mitigated through the application of fertilizers and/or proper seeding. ANR would apply soil amendments, as needed in order to create a favorable environment for the re-establishment of vegetation. Unless otherwise requested by the landowner, temporary workspace necessary for construction of the Project facilities would be reseeded with the seed mixtures and application rates for revegetation provided in ANR's ECS, which were established in accordance with requirements from the NRCS's *Louisiana Field Office Technical Guide* and recommendations obtained through consultations with the NRCS Field Service Center in Louisiana (Devillier 2019; Turley, 2019; NRCS, 2018c). In addition, ANR would implement the exotic and invasive species control measures discussed in section B.4.0.

In agricultural areas, revegetation would be considered successful if crop growth and vigor are similar to adjacent undisturbed portions of the same field. In all other areas, revegetation would be considered successful if upon visual survey the density and cover of non-nuisance vegetation are similar in density and cover to adjacent undisturbed lands. Soils at the planned Mermentau Compressor Station and the existing Eunice compressor stations are characterized by high revegetation potential, revegetation is not anticipated to be an issue for the Project.

However, two soil map units within the Project area are characterized by low revegetation potential, both of which occur within the existing Grand Chenier Compressor Station. As discussed, the existing Grand Chenier Compressor Station is entirely graveled and paved, and as such revegetation success would not be an issue.

ANR would minimize adverse impacts on land, including agricultural and prime farmland, by implementing the best management practices identified in its ECS, and our Plan. ANR would coordinate with the applicable agencies and landowners in these areas to ensure the proper restoration of any impacted agricultural or residential areas, including replacement of segregated topsoil, stone removal, and compliance with reseeded recommendations. During construction activities, the topsoil from actively cultivated and rotated cropland and managed pasture would be stripped from the Project temporary workspaces and segregated from the subsoil in accordance with our Plan. Segregated topsoil would be returned following backfilling of the subsoil, ensuring preservation of topsoil within the construction area. Following the completion of construction, agricultural areas temporarily disturbed by construction of the Project would be allowed to return to pre-construction uses, and as such, construction activities in these areas would not adversely impact prime farmland.

ANR would continue to monitor and correct problems with topsoil replacement, soil compaction, rocks, drainage, and irrigation systems resulting from Project construction until restoration is determined successful. Restoration would be considered successful if the surface condition of the areas disturbed during construction, including the topsoil and the horizon of the upper subsoil, is similar to adjacent undisturbed lands, construction debris is removed, revegetation is successful, and proper drainage has been restored.

Shallow bedrock (less than 5 feet) and stony/rocky soils (containing rock fragments greater than 3 inches or comprising more than 5 percent (weight basis) of any layer within the soil profile) are not present in the Project area. ANR would install the new Project facility support piles using an auger, driven, or drilled, and as such, blasting would not be required for Project activities.

Hydric soils are defined as soils that are formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (U.S. Army Corps of Engineers, 1987). Soils that are artificially drained or protected from flooding (e.g., by levees) are still considered hydric if the soil, in its undisturbed state, would meet the definition of hydric soil. Generally, hydric soils are those that are poorly drained or very poorly drained. Due to extended periods of saturation, hydric soils can be prone to compaction and rutting. All but one of the soils in the Project area are characterized as hydric, as indicated in table 4, comprising about 71 percent of the soils within the Project area; however, some of these soils occur at the existing Grand Chenier Compressor Station, which is entirely paved and graveled and thus, hydric soils would not be a concern at this compressor station. If construction activities, particularly the operation of heavy equipment, occur when soils are saturated, soil compaction and rutting could result. ANR would minimize rutting and compaction of hydric soils by implementing its ECS, including the use of timber mats, as necessary, during construction.

Soil expansion occurs when soils consisting primarily of clay and silt expand as a result of increased moisture content and shrink upon drying. The shrinking and swelling of soils with moderate to very high shrink-swell potential can cause building foundations to crack (NRCS, 2018b). The Midland silty clay loam soil map unit, within the area of planned Mermentau Compressor Station in Jefferson Davis Parish, is the only soil map unit that has a high shrink-swell potential, with an Limited Extensibility Percent of 7.7 and comprising approximately 59 percent (41.94 acres) of the Project area (NRCS, 2019a). Two soil map units in the Project area are rated for moderate shrink-swell potential.⁵

In order to minimize the impacts of shrink/swell soil movements on the foundation, uniform soil moisture around the permanent structures and proper drainage must be maintained (NRCS, 2017; American Society of Civil Engineers Geo-Institute,

⁵ Shrink-swell potential is the relative change in volume to be expected with changes in moisture content measured as the linear extensibility percent (LEP) (NRCS, 2017).

2016). As discussed, and shown in table 4, the Mermentau Compressor Station is located on soil which has a high shrink-swell potential. In order to mitigate for the possibility of swelling and destabilization of facility foundations, ANR would utilize an auger to drill deep foundation piles to help transfer the structural load from an unstable soil to a deeper, more structurally sound stratum. Stormwater drainage systems would also be constructed to ensure proper drainage of the permanent compressor station site, which would minimize the swell of soils following rain events. Additionally, ANR would construct the Mermentau Compressor Station in accordance with all applicable federal, state, and local building codes and standards including the applicable Pipeline and Hazardous materials Safety Administration (PHMSA) requirements in 49 CFR 192. As such, impacts on building foundations are not anticipated to occur as a result of the presence of soils with shrink-swell potential at the planned Mermentau Compressor Station.

Soils having moderate shrink-swell potential, are found in the Project area at the existing Eunice and Grand Chenier compressor stations. However, the proposed modifications to existing building foundations and installation of new buildings at both compressor stations would occur within the existing facility fence lines. Project activities outside of the existing Eunice Compressor Station fence line would be limited to staging, equipment storage, and other temporary activities, with no permanent building foundations proposed. Therefore, impacts related to Project construction on shrink-swell soils at the Eunice and Grand Chenier compressor stations are not anticipated.

Based on ANR's review of both the U.S. Environmental Protection Agency's (EPA's) and Louisiana Department of Environmental Quality's (LDEQ) online databases, there are no contaminated sites within 0.50 mile of the Project (LDEQ, 2019a, 2019b; EPA, 2019a, 2019b).

However, ANR has identified Potential Asbestos Containing Material (PACM), which was utilized for coating on the existing station piping proposed for modifications at the existing Eunice Compressor Station. In addition, ANR also has a record of minor mercury contamination at a discrete location within the Eunice Compressor Station, which was remediated in January 2003 in accordance with LDEQ Risk Evaluation/Corrective Action Program Management Option 1 remediation standard.

ANR has identified PACM, which was utilized for coating on the existing station piping proposed for modifications at the existing Eunice Compressor Station; and that the minor removal and excavation of this station piping has the potential to contaminate Project workspace with PACM. To mitigate for potentially PACM, ANR would implement the measures detailed in its *Asbestos Management Procedures*, to avoid worker exposure and minimize potential impacts on environmental media (soils, groundwater, and surface water) during abatement of PACM at the Eunice Compressor Station. We have reviewed the content of this plan and find it acceptable.

Additionally, ANR states that it has records of minor mercury contamination at a discrete location within the Eunice Compressor Station, and that the contaminated area was remediated in January 2003 in accordance with LDEQ's Risk Evaluation/Corrective

Action Program Management Option-1 remediation standard requirements for the protection of human health, applicable to surface soil meeting the definition of non-industrial land use of 22 milligram per kilogram.

Remedial contamination report mapping provided by ANR shows that this previously impacted area is located directly adjacent to the existing office building, and no excavation activities associated with the proposed Project would occur within 165 feet of this previously remediated area. Further analytical testing showed that mercury contamination was limited to surficial soils to a maximum depth of 3 feet, and groundwater and surface water were not exposure pathways, given the depth to groundwater beneath the site, the low leachability potential for mercury at concentrations found in soils, and the distance to the nearest surface water body (1 mile). Given the distance between the planned Project construction activities at the Eunice Compressor Station, and the area formerly impacted by mercury contamination, we do not anticipate that Project construction would be impacted by potential residual mercury contamination, if any at the Eunice Compressor Station.

Based on correspondence with the LDNR and review of SONRIS, there are no state-registered brine pits associated with oil and gas drilling operations located within 0.25 mile of the Project areas (LDNR, 2020). In addition, no sources of contaminated groundwater were identified within 0.50 mile of the Project areas (LDEQ, 2019a; 2019b; U.S. Environmental Protection Agency, 2019a; 2019b).

In the event of an unanticipated discovery of contaminated media (soil and groundwater), ANR would adhere to its *Plan for the Unanticipated Discovery of Contaminated Environmental Media* which identifies the steps to be followed if contaminated sediments or soils (as identified by evidence of subsoil discoloration, odor, sheen, or other such indicators) are encountered during construction. We have reviewed the content of this plan and find it acceptable.

During construction, contamination from accidental spills or leaks of fuels, lubricants, and coolant from construction equipment could adversely impact soils. The effects of contamination are typically minor because of the low frequency and volumes of spills and leaks. ANR would implement its SPCCP included in the Project ECS that specifies cleanup procedures in the event of soil contamination from spills or leaks of fuel, lubricants, coolants, or solvents.

With ANR's proposed construction procedures (e.g., constructing the Mermentau Compressor Station on piles) and its commitment to implement the mitigation measures in its ECS SPCCP, *Plan for the Unanticipated Discovery of Contaminated Media*, and *Asbestos Management Procedures* during abatement activities at the Eunice Compressor Station, we conclude that there would be no significant impacts on soils due to the construction and/or operation of the Project.

3.0 WATER RESOURCES

3.1 Groundwater

The Project is underlain by one principle aquifer, the Coastal Lowlands aquifer system (USGS 2019j). The Coastal Lowlands aquifer system extends from Texas across Louisiana, Mississippi, and Alabama and into western Florida. This aquifer system consists of a multilayered aquifer system of interbedded sand and clay comprising water-yielding and semi-confining zones, respectively. Many of these aquifer zones have been identified, mapped, and named according to the depth at which they are encountered or the age or name of the geologic formation in which they occur (USGS 2019k). One of these regional aquifers is the Chicot aquifer system, which is composed of silt, sand, and gravel deposits interbedded with clay and sand units that dip towards the south and east. These sand units are locally named “shallow,” “upper,” and “lower” sand, and “200-foot,” “500-foot,” and “700-foot” sand. Shallow sand units of the Chicot aquifer system dominate the area where the Project is located in Jefferson Davis, Acadia, and Cameron parishes, Louisiana (USGS 2002).

The Chicot aquifer system is the principal source of fresh groundwater in southwestern Louisiana and the main source of fresh groundwater for Jefferson Davis, Acadia, and Cameron Parishes (LDNR, 2012, USGS 2019L); and the extent of fresh groundwater in the Chicot aquifer system underlies the entirety of the Project area (LDNR 2012; USGS 2002). The general thickness (the distance between the base of the aquifer and the water table) of the Chicot aquifer system in the vicinity of the Mermentau Compressor Station ranges from 80 to 120 feet.

Well screen depths range from 11 to 210 feet, with a mean depth of 66 feet (USGS 2004). In 2014, fresh-water withdrawals in Jefferson Davis Parish were approximately 166 mgd from groundwater sources, primarily from the Chicot aquifer system. Groundwater use in the parish is primarily for rice irrigation (76 percent), but other uses included aquaculture, public supply, general irrigation, rural domestic, industrial, and livestock supply.

The general thickness of the Chicot aquifer system in the vicinity of the Eunice Compressor Station ranges from 80 to 120 feet. Well screen depths in the Project vicinity range from 16 to 103 feet, with a mean depth of 39 feet (USGS 2004c). Based on the results of site-specific geotechnical investigations conducted for the Project at the Eunice Compressor Station, groundwater occurs at 17 feet below the surface. In 2014, water withdrawals in Acadia Parish were approximately 216.7 mgd from groundwater sources, primarily from the Chicot aquifer system. Groundwater use in the parish is primarily for rice irrigation (52 percent), but other uses included aquaculture, public supply, power generation, general irrigation, rural domestic, industrial, and livestock (USGS 2019m).

The general thickness of the Chicot aquifer system in the Project area ranges between 80 to 240 feet. Based on site-specific geotechnical investigations, groundwater at the Eunice and Grand Chenier Compressor Stations occurs at 17 and 4 feet below

ground surface, respectively (USGS 2004). Groundwater use in the parishes that would be impacted by the Project includes primarily rice irrigation, but other uses include public, industrial, aquaculture, rural domestic, and livestock supply (USGS 2019m).

Based on field surveys conducted by ANR for the Project area in July 2019, discussions with landowners, and/or a review of the USGS National Water Information System tool, there are no springs within 1 mile of the Project area (USGS 2017b). Therefore, no impacts on springs are anticipated to occur as a result of the Project.

Sole Source Aquifers and Wellhead Protection Areas

A sole source aquifer (SSA) is an aquifer designated by the EPA as the “sole or principal source” of drinking water for a given service area. This designation is given to aquifers that supply 50 percent or more of the drinking water for an area and for which there are no reasonably available alternative sources should the aquifer become contaminated. According to the EPA, the Project is underlain by the Chicot aquifer, which is a sole source aquifer (EPA 2017).

Wellhead Protection Areas (WHPAs) can be defined as designated surface and subsurface zones surrounding public water supply wells or wellfields. These zones are identified in an effort to prevent contaminants from entering the groundwater table and compromising the quality of public drinking water. A review of LDNR’s SONRIS and information obtained from the LDEQ, confirmed there are six WHPAs (four of which have mostly overlapping boundaries) within 3 miles of the Project.

Five of the WHPAs occur within the vicinity of Mermentau Compressor Station, with each WHPA associated with one public water supply well. A Trailer Town Trailer Park WHPA boundary is 1.13 miles southeast of the proposed Project area, and the associated well is approximately 2 miles southeast of the Project area. The boundaries of the other four WHPAs (all associated with the town of Lake Arthur) are slightly offset from one another and all occur approximately 2 miles southeast of the Project area at the closest point. The associated water supply wells are 2.87, 3.13, 3.22, and 3.28 miles southeast of the proposed Mermentau Compressor Station (Gibeson 2019).

The remaining WHPA (Cameron Parish Waterworks District) and associated public water supply well are approximately 2 miles and 3.06 miles, respectively, north of the Grand Chenier Compressor Station (Gibeson 2019).

Due to the distance of Project area from the WHPAs and the associated public water supply wells, we do not anticipate that Project construction or operation activities would have any impact on WHPAs or their associated public water supply wells (LDNR 2019).

Public and Private Wells

ANR identified public and private water supply wells within the vicinity of the Project through field surveys, landowner discussions, review of ANR records, and review of publicly available data from the LDNR SONRIS (LDNR 2019). Based on this review,

two water well were within 150 feet of the proposed Project workspace at the Eunice Compressor Station (table 5). One of these wells is within the existing Eunice Compressor Station, is owned by ANR, and is plugged and abandoned. No water wells occur within 150 feet of the Project workspace at the Mermentau and Grand Chenier Compressor Stations.

Table 5. Water Wells within 150 feet of the Project				
Well ID Number ^a	Status ^a	Use ^a	Owner ^a	Distance from Edge of Construction Workspace (feet) ^a
Eunice Compressor Station				
001-418 ^b	Plugged and Abandoned ^b	Domestic	ANR ^b	0
001-480 ^c	Active	Industrial Petroleum Refining	Michigan Wisconsin	109
001-33 ^c	Plugged and Abandoned	Irrigation	Jenkins & Sons	N/A
^a Based on information obtained from publicly available database (SONRIS) (LDNR, 2019). ^b Information updated per ANR's records. ^c Well was identified through a review of publicly available data; however, ANR or the associated landowner has no record and there is no visible evidence of this well's existence. Therefore, this well is not considered to be present. N/A – not applicable				

Construction of the aboveground facilities, associated suction/discharge lines, as well as activities in temporary workspaces have the potential to temporarily affect the overland water flow and recharge of shallow aquifers. Clearing vegetation, soil compaction, excavation, pile and pier installation, and dewatering could hinder the infiltration of water into the ground and have an effect on local vegetation and hydrology. However, we anticipate that these minor impacts would be temporary, and while a portion of the Project would include installation of paved surfaces, a permanent effect on groundwater is not anticipated.

The trenches for the new suction/discharge lines at the Mermentau Compressor Station, as well as excavations for new aboveground facility foundations at all of the Project facilities would be dug to a depth of approximately 8 feet below ground surface. These excavations could temporarily impact shallow groundwater. Should dewatering of the excavation areas be necessary due to high water table, impacts are expected to be negligible, as these minor disturbances would be highly localized and temporary.

Pile installations would be at depths of 15 to 75 feet at each Project compressor station. Auger-cast or driven piles would be utilized to support the foundations on which the proposed aboveground facilities at the Project compressor stations are to be located. The lengths and configuration of the proposed piles would provide adequate capacity for the anticipated loads and be based on recommendations to be developed in conjunction with Project-specific geotechnical data. Installation of the piles has the potential to

affect groundwater quality. In reply to FERC staff's environmental information request, ANR provided hydrogeologic profiles depicting the Chicot aquifer thickness, depth to groundwater, and known confining units in relation to planned structural support pile depths and approximate excavation depths at the Mermentau, Grand Chenier, and Eunice compressor stations. A review of these profiles indicates that the planned piles would be above the semi-confining unit marking the base of the Chicot aquifer at each of the Project compressor station. As such we do not anticipate impact to groundwater quality from construction utilizing pile installation.

Project activities at the Grand Chenier Compressor Station would occur within the limits of the existing facility fence line; therefore, potential impacts on groundwater are not anticipated to occur. Permanent impacts could result from the placement of impervious and semi-permeable ground cover during construction and operation of the new Mermentau Compressor Station and modifications to the existing Eunice Compressor Station.

No leaking underground storage tanks or other sources of groundwater contamination were identified within 0.5 mile of the Project (LDEQ, 2019a; 2019b; EPA, 2019a; 2019b). As discussed in section B.2.1. mercury contamination at the Eunice Compressor Station was remediated in January 2003 in accordance with EPA requirements; and leachability testing showed that soil to groundwater was not a concern at the concentrations found on site. As such, we do not anticipate Project construction to be impacted by residual mercury contamination in soils (see section B.2.1).

If contaminated groundwater is encountered during construction of the Project, ANR would implement measures outlined in its *Plan for the Unanticipated Discovery of Contaminated Environmental Media* which identifies the steps to be followed in the event that contaminated groundwater, as identified by evidence of odor, sheen, or other such indicators, are encountered during construction.

Given the limited groundwater use within the Project vicinity, and with ANR's implementation of its ECS (including its SPCC), which incorporates measures from our Plan and our Procedures; and their Plan for Unanticipated Discovery of Contaminated Environmental Media we conclude that the Project would not adversely impact groundwater quality or supply.

3.2 Surface Water Resources

One minor waterbody was identified within the Project area during ANR's July 2019 field surveys. The identified waterbody (SP1003_DT) is an ephemeral roadside ditch and is within the proposed temporary workspace for the Eunice Compressor Station. ANR would cross waterbody SP1003 DT during construction using a temporary culvert installed to not impede the flow.

Potential impacts on surface water resources include modification of aquatic habitat, increased sedimentation and turbidity, decreased dissolved oxygen concentrations, inadvertent release of chemical and nutrient pollutants from sediments,

and introduction of chemical contaminants such as fuels or lubricants. Whenever possible, ANR would conduct construction activities, such as the installation of timber mats or the new temporary culvert, during low-flow periods to minimize sedimentation and turbidity, stream bank disturbances, and limit the time it would take to complete in-stream construction. All waterbody construction and restorations activities would be conducted in accordance with ANR's ECS, which includes our Procedures, and ANR would implement best management practices (BMPs) and ECDs. Given that construction within waterbody SP1003 DT would be temporary, and ANR's commitment to implement its ECS, which includes restoration of the waterbody to its previous physical condition after construction, we conclude impacts on waterbodies would be temporary, and not significant. ANR would construct the project in accordance with applicable federal and state regulations, which could further minimize impacts on waterbodies.

3.3 Hydrostatic Test and Dust Control Water

ANR would use approximately 220,000 gallons of hydrostatic test water for the Project. All water would be obtained from municipal sources, trucked in, held in frac tanks, and reused until all tests are complete. No chemical additives would be used. Following testing, ANR would depressurize each test section and pass the water through an energy-dissipating device before discharging it into a well-vegetated area outside of each compressor station facility. ANR would use an additional 20,000 gallons of municipal water for dust control and follow the dust control measures outlined in its Project-specific Fugitive Dust Control Plan. Given the small volumes of water needed to construct this project, we conclude that no significant impacts would occur as a result of use of hydrostatic or dust control water. Additionally, ANR would adhere to all applicable federal, state, and local permit requirements regarding water discharge.

3.4 Wetlands

ANR's July 2019 wetland delineations identified two agricultural wetlands (one active rice field and one inactive rice field) within the Project's temporary workspace outside of the Eunice Compressor Station. The Project would result in 1.5 acres and 2.9 acres of temporary impacts on the inactive rice field and active rice field, respectively. The FERC Procedures' definition of wetlands excludes actively cultivated or rotated croplands; however, ANR would apply its ECS to minimize impacts on the active and inactive rice fields.

Where soils do not support the weight of the equipment, ANR would install timber matting or travel pads to minimize impacts. ANR's SPCCP provides restrictions and mitigation measures to limit potential impacts associated with the release of fuels, lubricants, or other potentially toxic materials used during construction. Project impacts on the rice fields all occur within temporary workspaces; following construction, these areas would revert to their previous condition and use.

Based on the land use of these areas, we conclude the Project would have no effect on wetlands, as defined by the FERC Procedures. Furthermore, based on the proposed

mitigation measures and implementation of ANR's ECS and SPCCP, we conclude that impacts on the active and inactive rice fields would be minimized to the extent practical, short-term, and would not be significant.

4.0 FISHERIES, VEGETATION, AND WILDLIFE

4.1 Fisheries

One waterbody (SP1003_DT) was identified as a warmwater fishery by ANR; however, waterbody (SP1003_DT) was identified by ANR during their field survey as an ephemeral roadside ditch within the temporary workspace for the Eunice Compressor Station. Because this waterbody is ephemeral, it is are not likely to be used by fish species (especially if the work areas are dry during construction). The temporary culvert would be installed such that it would not impede flow. Therefore, impacts from sedimentation would be limited to the installation and removal of the temporary culvert.

No Essential Fish Habitat is designated within the Project area. Furthermore, no recreational or commercial fisheries would occur within Project areas.

ANR would implement the measures included in its ECS, which adopts the measures outlined in our Procedures. ANR would conduct all stream work from June 1 and November 30 to minimize impacts on spawning fish (should they be present), install and maintain sediment and erosion controls (e.g., silt fence, slope breaker), and restore pre-construction contours at waterbody crossings. Therefore, we conclude project impacts on fisheries, if any, would be temporary and not significant.

4.2 Vegetation

The Project would occur within two dominant vegetation cover types, including developed land and agricultural land, which area also land use types and are discussed below in the Land Use section (section B.5).

Noxious Weeds and Invasive Species

To minimize the introduction or spread of invasive plant species to the Project area, ANR would implement several management strategies within the Project area where soil disturbance and/or removal of native vegetation may occur. Management and control measures used to control invasive species, as recommended by the NRCS, would include:

- following ANR's ECS to ensure that soil movement and the associated movement of non-native seeds are minimized;
- use of construction techniques that minimize the time that bare soil is exposed, thus minimizing the opportunity for invasive species to become established;

- controlling non-native or invasive species within the footprint of permanent facilities, using mechanical removal, as necessary;
- segregating topsoil in temporary workspaces within agricultural land, where conditions allow, to maintain the existing seed bank;
- cleaning equipment before moving sites in order to prevent the spread of invasive species; and
- monitoring disturbed areas following construction to verify that revegetation has been successful, and that invasive species have not become widely established.

Given the lack of sensitive vegetation types and ANR's commitment to restoring areas temporarily affected by construction, we conclude that the Project's impacts on vegetation would be permanent in some areas but would not be significant.

4.3 Wildlife

The Project is proposed within the Louisiana Coast Prairies and Marshes Section of the Outer Coastal Plain Mixed Forest Province. Representative wildlife within the project area includes common mammal, bird, and reptilian species. There are no managed wildlife habitats along project workspaces.

Agricultural land may provide suitable habitat to wildlife species such as common grackle, mourning dove, American crow, house finch, barn swallow, and common garter snake. Developed land within the Project area is almost entirely paved or graveled. Wildlife species typically found in developed land include racoon, American robin, mourning dove, and common garter snake.

Construction of the project would temporarily disturb 70.7 acres of wildlife habitat. Approximately 16.5 acres of wildlife habitat would be permanently impacted by operation of the aboveground facilities. Wildlife habitats that would be affected by construction and operation are relatively abundant in agricultural areas, and displaced wildlife could relocate to similar habitat adjacent to the Project area. Disruption of wildlife movement is expected to be minor and permanent due to the proposed fenced compressor station.

Construction and operation activities would reduce feeding, nesting, and cover habitat components. Mobile species could be disturbed or displaced from portions of their habitats, and mortality of less mobile individuals, such as some small mammals, reptiles, or amphibians, may occur. Indirect wildlife impacts associated with construction noise and increased human activity could include abandoned reproductive efforts, displacement, and avoidance of work areas. Further, wildlife in the affected area may be adversely affected by increased noise levels and lighting during construction and operation; however, the Project involves modifications to two existing compressor stations. Therefore, it is expected that any wildlife potentially sensitive to increased noise levels or lighting would already avoid the Project area at these existing facilities or relocate to similar, adjacent habitats during construction activities. However, both direct

and indirect impacts on wildlife within the construction workspace and other work areas, generally would be short-term (until vegetation is reestablished).

Following construction, all temporary workspaces would be allowed to revert to pre-construction conditions in accordance with ANR's ECS. Approximately 16.5 acres of wildlife habitat would be converted to fenced industrial sites; however, similar adjacent habitat is abundant in the project area, and two of the facilities (Grand Chenier and Eunice Compressor Stations) are existing. Based on the proposed avoidance, minimization, and restoration measures, we conclude that construction activities associated with the Project would not have a significant impact on local wildlife populations or habitat.

4.4 Federal and State Threatened and Endangered Species and Migratory Birds

Special status species are those species for which state or federal agencies afford an additional level of protection by law, regulation, or policy. Included in this category are federally listed species that are protected under the ESA, as amended, and those species that are state-listed as endangered or threatened. Section 7 of the ESA requires that the lead federal agency ensures that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of a federally listed endangered or threatened species, or result in the destruction or adverse modification of the designated critical habitat of a federally listed species. FERC, as the lead federal agency for NEPA review of the projects, is required to consult with the U.S. Fish and Wildlife Service (USFWS) to determine whether any federally listed endangered or threatened species or any of their designated critical habitat are near the projects and to determine the proposed action's potential effects on those species or critical habitats. If FERC determines that the project would have no effect on a listed species, further consultation with the USFWS is not required.

Federally Listed Species

Based on the USFWS Information for Planning and Consultation tool and Louisiana Ecological Services Field Office *ESA Project Review and Guidance for Other Federal Trust Resource Report*, there are two federally listed species with potential to occur in the Project vicinity, including the West Indian manatee and the Atlantic sturgeon (Gulf subspecies). Though the interior least tern and piping plover were identified as state-listed species that could occur within the Project area, the Information for Planning and Consultation results provided that the Project is out of range for both bird species, and USFWS confirmed in correspondence from August 26, 2019 that the proposed action would not impact any federally listed species. As there is no suitable habitat for either the west Indian manatee or the Atlantic sturgeon (Gulf subspecies) within the Project area (the only waterbody impacts would be on an ephemeral stream), we conclude that the project would have *no effect* on either of these species.

State

ANR consulted with the LDWF regarding state-listed species, and identified that the West Indian Manatee, brown pelican, interior least tern, and the piping plover could potentially occur within project areas. However, no suitable habitat is within the Project area for the identified species. The LDWF made a recommendation in correspondence from September 23, 2019 to contact a LDWF biologist if any state-listed species are encountered during construction, and ANR would adhere to this recommendation. Due to the lack of suitable habitat within the project area, and ANR's commitment to notify the LDWF if state-listed species are encountered, we conclude that impacts from the Project would be negligible on state-listed species, if any.

Migratory Birds

Migratory birds are protected under the Migratory Bird Treaty Act (16 United States Code sections 703-711), which prohibits the taking of any migratory bird, or a part, nest, or eggs of any such bird, except under the terms of a valid permit issued pursuant to federal regulations. Bald and Golden Eagles are additionally protected under the Bald and Golden Eagle Protection Act (16 United States Code sections 668-668d). Executive Order No. 13186 (66 Federal Register 3853), directs federal agencies to identify where unintentional take is likely to have a measurable negative effect on migratory bird populations and to avoid or minimize adverse effects on migratory birds through enhanced collaboration with the USFWS. Executive Order No. 13186 states that emphasis should be placed on species of concern, priority habitats, and key risk factors and that particular focus should be given to addressing population-level impacts. On March 30, 2011, the USFWS and the Commission entered into a Memorandum of Understanding that focuses on avoiding or minimizing adverse effects on migratory birds and strengthening migratory bird conservation through enhanced collaboration between the two agencies.

In accordance with Executive Order No. 13186 and the Memorandum of Understanding, 19 Birds of Conservation Concern species were identified within Bird Conservation Region 37, where the Project is proposed. Of the 19 Birds of Conservation Concern species listed for Bird Conservation Region 37 (appendix B) within the project area, 11 species only occur as occasional migrants, three occur year-round, and the remaining five have breeding ranges that extend into the Project area.

The nesting season for migratory birds in Louisiana is generally from April 15 to August 1; however, Project construction is planned to begin in January 2021 for an in-service date of January 1, 2022. No project areas were identified within any Important Bird Areas, and tree clearing is not anticipated for the Project.

Although construction activities may cause some migratory birds to avoid the Project area during construction, impacts would be limited to the relatively short construction period. During project operation, ANR's ECS prohibits routine vegetation maintenance clearing from occurring between April 15 and August 1 of any year, to

minimize potential impacts on migratory birds. Additional noise from the operation of the new proposed compressor station may cause increased avoidance of migratory birds around the facility. However, given the relatively small area of disturbance, the availability of similar adjacent habitats, ANR's proposed starting construction outside of the nesting season (which would likely preclude nesting) and the absence of tree clearing, we conclude that construction would not adversely impact migratory bird populations in the Project area.

5.0 LAND USE AND VISUAL RESOURCES

5.1 Land Use

Land use categories in the Project area include agricultural and developed land. Construction of all project facilities would affect about 70.7 acres of land, of which 16.5 acres would remain for the operation of the proposed Mermentau Compressor Station. A summary of the land use categories that would be affected by construction and operation of the Project facilities is provided in table 6.

Table 6. Summary of Land Use Impacts for the Project						
Facility	Agriculture		Developed		Total	
	Const. ^a	Op. ^b	Const. ^a	Op. ^b	Const. ^a	Op. ^b
Mermentau Compressor Station	41.9	16.5	0.0	0.0	41.9	16.5
Eunice Compressor Station	5.0	0.0	15.4	0.0	20.3	0.0
Grand Chenier Compressor Station ^{c,d}	0.0	0.0	8.4	0.0	8.4	0.0
Total	46.9	16.5	23.8	0.0	70.7	16.5
^a Land affected during construction is inclusive of operation impacts (permanent). ^b Land affected during operation consists only of new permanent impacts. ^c Project activities would occur at existing aboveground facilities. ^d Includes land requirements for the Mermentau River GCX Meter Station, as it is entirely within the existing Grand Chenier Compressor Station.						

Construction of the proposed Mermentau Compressor Station would require 41.9 acres of disturbance. The existing land use at the proposed compressor station site is comprised entirely of agricultural land (fallow fields). Following construction, 16.5 acres of agricultural lands would be converted and maintained as industrial land. Temporary workspace outside of the proposed permanent facility would be restored to pre-construction contours and allowed to revegetate or leased to other landowners for agricultural use.

The proposed modifications at the two existing compressor stations would require a total of 28.7 acres for construction, including 20.3 acres for the Eunice Compressor Station modifications in Acadia Parish, Louisiana and 8.34 acres at the Grand Chenier Compressor Station in Cameron Parish, Louisiana. All construction activities at the existing Grand Chenier Compressor Station would occur within the existing fence line

and associated facility driveways, while modifications to the existing Eunice Compressor Station would require temporary workspace both within and outside of the existing facility. Of the 20.3 acres at the Eunice Compressor Station, 5.0 acres outside of the existing facility would be leased from the landowner during construction and used primarily for the staging, parking, and storage of construction equipment and materials. Following construction, ANR would restore all temporary workspaces to pre-construction contours and allow them to revegetate. Construction impacts (8.4 acres) at the Grand Chenier Compressor Station include the temporary impacts associated with modifications to the Mermentau River GCX Meter Station, as it is entirely within the existing compressor station facility fence line. No new permanent impacts would occur as a result of the Project modifications to the existing facilities.

Residential areas

No residences are within 1,000 feet of the Project area. The nearest residence is approximately 1,000 feet west from the workspace at the existing Eunice Compressor Station.

Temporary impacts on residential areas include noise and fugitive dust during construction activities, altered traffic patterns, and increased traffic in the area of the proposed facilities. Permanent impacts on residential areas during operation of the compressor stations include noise (see section B.8.0) and visual impacts (see below). ANR would minimize impacts on nearby residences through implementing the following measures:

- limiting construction activities to daytime hours whenever feasible;
- ensuring that utilities are not disrupted during construction. If the need to disrupt utilities arises, ANR would provide as much notice as possible to the landowner prior to the disruption;
- notifying affected landowners and adjacent landowners prior to the start of construction;
- maintaining traffic flow and emergency vehicle access on residential roadways, and traffic detail personnel and/or using detour signs where appropriate; and
- inspecting road surfaces periodically and, if necessary, cleaning the surface of any soil and other debris.

Given these measures, and the distance to the nearest residences, we do not anticipate significant impacts on residences during construction or operation of the facilities.

Recreation and Public Interest Areas

ANR would use State Highway (SH) 82 to access the Grand Chenier Compressor Station during Project construction activities, which is designated as the Creole Nature Trail All-American Road National Scenic Byway. However, no road modifications or improvements would be required, and impacts would be temporary and only associated

with the construction of the Project. Visual impacts associated with modifications to the Grand Chenier Compressor Station would be minimal and consistent with the surrounding landscape, as further discussed below. Traffic may increase along SH-82 during construction; however, ANR would minimize impacts on traffic, as discussed in section B.6.0. Additionally, ANR has consulted with the Lake Charles/Southwest Louisiana Convention and Visitors Bureau, which is responsible for managing the Creole Nature Trail All-American Road, regarding Project construction activities, and has agreed to notify the visitors bureau when construction has commenced. Therefore, we conclude the Project would not have a significant impact on motorists traveling on the Creole Nature Trail All American Road Scenic Byway.

No other recreation or public interest areas are within 0.25 mile of the proposed Project.

Hazardous Waste Sites

ANR reviewed the EPA's and LDEQ's online databases to identify any historic sources of contamination within 0.5 mile of the Project. No EPA Superfund Sites or LDEQ-listed sites were identified within 0.5 mile of the proposed Project. However, one Superfund site was identified approximately 5 miles from the proposed Mermentau Compressor Station temporary workspace. The EPA referred the site to the LDEQ in September 2012 due to active releases of hazardous materials from an abandoned barge in the Mermentau River, and the Coast Guard responded to this event. Currently due to an on-site buried barge, the EPA is working on an interim removal action to prevent any active releases.

ANR has identified PACM, which was utilized for coating on the existing station piping proposed for modifications at the existing Eunice Compressor Station. Therefore, the minor removal and excavation of this station piping has the potential to contaminate Project workspace with PACM. ANR would conservatively assume that the piping is characterized by PACM and would implement its standard *Asbestos Management Procedures* to control worker exposure to hazards associated with asbestos. The piping coated with PACM would be managed in accordance with the applicable requirements defined in 40 CFR 763 and the Occupational Safety and Health Administration rules specified under 29 CFR 1926.1101 to avoid the potential for site contamination.

In addition, ANR also has a record of minor mercury contamination. Contamination for this site is discussed further above in section B.2.

If contaminated media is discovered during construction, ANR would implement its *Plan for the Unanticipated Discovery of Contaminated Environmental Media* and adhere to all applicable federal, state, and local regulations. The plan includes the steps ANR would take if contaminated sediments or soils, as identified by evidence of subsoil discoloration, odor, sheen, or other such indicators, are encountered during construction. With these measures and the Project's distance to Superfund sites (5 miles), we conclude the Project would not impact or be impacted by Superfund sites or contamination.

Coastal Zones

Construction and operation of the Grand Chenier Compressor Station are subject to Louisiana's Coastal Zone Consistency Review. ANR's current Coastal Consistency Determination was issued on February 7, 2018 and is only valid for two years from the date of issuance. Therefore, ANR intends to submit a new Request for Determination for the Project activities at the Grand Chenier Compressor Station in the first quarter of 2020. FERC must confirm ANR's receipt of these determinations prior to authorizing construction. Because these determinations have not yet been received, **we recommend that:**

- **ANR should not begin construction of the Project until it files with the Secretary of the Commission (Secretary) a copy of the determination of consistency with the Coastal Zone Management Plan issued by LDNR.**

5.2 Visual Resources

Construction at the existing Grand Chenier and Eunice Compressor Stations would result in negligible visual impacts, including the presence of equipment and workers. Although the Grand Chenier Compressor Station is adjacent to SH-82, which is designated as an All-American Road, impacts on visual resources associated with the modification of the compressor station will be minor and temporary, as previously discussed. The Grand Chenier Compressor Station is also 0.8 mile from the nearest residence at its closest point; however, it is in the proximity of other industrial facilities in a predominately rural area. The proposed installation of the elevated platforms would be at a lower elevation than the existing stack height; therefore, we conclude that additional permanent visual impacts are not anticipated.

Work at the existing Eunice Compressor Station would not result in new permanent impacts and is located approximately 1,000 feet from the nearest sensitive visual area (residence) at its closest point. The compressor station is also in the proximity of at least two major industrial facilities in a predominately rural and agricultural area. The proposed installation of the elevated platforms would be at a lower elevation than the existing stack height; therefore, additional permanent visual impacts are not anticipated.

The proposed Mermentau Compressor Station would be constructed on agricultural land. ANR has committed to maintaining an existing row of trees east of the facility between the site and the nearest residence (1,000 east of the facility) to minimize visual impacts on nearby residents.

Further, ANR would implement additional visual screening methods in consultation with local landscaping officials upon landowner request.

During construction, the presence of construction equipment and personnel at the compressor station sites would have a visual impact on nearby residents. Following the completion of construction, the current land use at the proposed Mermentau Compressor Station would be permanently converted to industrial use. The compressor station site would be fenced and graveled. ANR would use artificial lighting during construction and

to a lesser extent during operation of the Project facilities. The lighting effects would be localized to the extent practicable, and the proximity of the nearest sensitive visual areas from the Project facilities would be at least 1,000 feet away.

Given the distances from residences and ANR's proposed mitigation measures, we conclude that visual impacts of the Project would be permanent, but not significant.

6.0 SOCIOECONOMICS

6.1 Existing Socioeconomic Conditions

The planned Project facilities are in predominantly rural areas of southern Louisiana in Acadia, Cameron, and Jefferson Davis parishes. Details regarding population data and trends, including population density, for the Project area and surrounding region (Evangeline and St. Landry parishes) are provided in table 7.

Table 7. Existing Population Conditions in the Project Area				
Country/State/Parish/Town	Population (2010 Census)	Estimated Population in 2018	Estimated Population Change Since 2010 (%)	Population Density (persons per square mile) (2010)
United States	308,758,105	327,167,434	6.0	87.4
Louisiana	4,533,372	4,659,978	2.8	104.9
Acadia Parish	61,773	62,190	0.7	94.3
Cameron Parish	6,839	6,968	1.5	5.3
<i>Cameron</i>	406	IU	IU	IU
Evangeline Parish	33,988	33,443	-1.6	51.3
<i>Basile</i>	1,821	1,801	-1.1	IU
Jefferson Davis Parish	31,594	31,582	<0.1	48.5
<i>Lake Arthur</i>	2,738	2,774	1.3	IU
St. Landry Parish	83,384	82,764	-0.7	90.3
Eunice	10,398	9,989	-3.9	2,026.9
IU - Information Unavailable Source: U.S. Census, 2018, 2010				

Educational, health, and social services comprise the largest percentage of industry in Acadia, Cameron, Evangeline, Jefferson Davis, and St. Landry Parishes, Louisiana (U.S. Census Bureau Fact Finder, 2017). According to the U.S. Census Bureau Fact Finder for 2017, the unemployment rate in Acadia (8.9 percent), Evangeline (11.9 percent), and Jefferson Davis (9.1 percent) Parishes are higher than the unemployment rates in the State of Louisiana (7.2 percent) and the nation (6.6 percent) (U.S. Census

Bureau Fact Finder, 2017). The unemployment rates in Cameron (3.0 percent) and St. Landry (5.5 percent) Parishes are lower than the state and national averages. All per capita income statistics for the Project areas and the state were below the national average of \$31,177.

Median household income for the City of Basile (\$26,667), City of Lake Arthur (\$32,407), City of Eunice (\$29,189), Acadia Parish (\$40,492), Evangeline Parish (\$31,754), and St. Landry Parish (\$32,163) are all below the national average (\$57,652) and the average for the State of Louisiana (\$46,710), while Cameron Parish (\$60,194) and Jefferson Davis Parish (\$60,314) are above the state and national averages. (U.S. Census Bureau Fact Finder, 2017). These data are summarized in table 8, below:

Table 8. Existing Socioeconomic Conditions in the Project Area					
Country/State/ Parish/Town	Per Capita Income (U.S. Dollars 2017)	Median Household Income (U.S. Dollars 2017)	Civilian Labor Force	Unemployment Rate (Percent of Civilian Labor Force)	Major Industry
United States	31,177	57,652	161,159,470	6.6	Educational, health, and social services
Louisiana	26,205	46,710	2,188,424	7.2	Educational, health, and social services
Acadia Parish	21,591	40,492	27,417	8.9	Educational, health, and social services
Cameron Parish	29,681	60,194	3,215	3.0	Educational, health, and social services
<i>Cameron</i>	22,764	IU	93	IU	Retail Trade
Evangeline Parish	18,665	31,745	13,149	11.9	Educational, health, and social services
<i>Basile</i>	15,846	26,667	502	0.8	Arts entertainment, recreation, accommodation, and food services
Jefferson Davis Parish	23,068	60,314	13,396	9.1	Educational, health, and social services
<i>Lake Arthur</i>	19,698	32,407	994	16.2	Educational, health, and social services
St. Landry Parish	19,205	32,163	32,347	5.5	Educational, health, and social services
<i>Eunice</i>	18,425	29,189	4,313	6.4	Educational, health, and social services
Source: U.S. Census, 2017					
IU Information not Available					

During the construction phase, the Project would require temporary housing for 165 construction workers. The rental housing vacancy rates in the Project region are 30.8 percent in Acadia Parish, 6.1 percent in Cameron Parish, 18.5 percent in Evangeline Parish, 20.8 percent Jefferson Davis Parish, and 19.8 percent St. Landry Parish. There are approximately 320 units available for seasonal, recreational, or occasional use near the Project in Acadia Parish, 779 in Cameron Parish, 536 in Evangeline Parish, 260

Jefferson Davis Parish, and 935 St. Landry Parish (U.S. Census Bureau, 2010).

Based on available online resources, there are approximately 7 hotel or motels available within Acadia Parish, 4 in Cameron Parish, 3 in Evangeline Parish, 6 in Jefferson Davis Parish, and 13 in St. Landry Parish (Google Earth, 2019). Additionally, there are a total of 28 recreational vehicle (RV) parks within Acadia, Cameron, Evangeline, Jefferson Davis, and St. Landry parishes (Google Earth, 2019).

Table 9 summarizes the anticipated duration for construction of the Project facilities and the associated workforce requirements. The construction workforce would typically consist of personnel hired locally as well as from outside the Project area and would include compressor station facility construction specialists, supervisory personnel, and inspectors who would temporarily relocate to the Project area. It is expected that the majority of contractor labor would be local workers, not requiring temporary relocation to the Project area, and would reside in existing permanent housing.

Table 9. Anticipated Construction Schedule and Workforce Requirements for the Project		
Facility	Anticipated Duration of Construction ^a	Number of Workers Anticipated During Peak Construction Periods
Mermentau Compressor Station	13 months	80
Eunice Compressor Station	6.5 months	50
Grand Chenier Compressor Station	4 months	35
Project Total		165
^a Duration includes commissioning.		

The majority of the Project construction workforce (165 workers) is anticipated to occupy temporary residences in rental units near the Project area or are likely to use temporary housing such as hotels, motels, apartments, and RV parks within commuting distance of the Project components. This could affect the availability of housing in the Project area. However, given the number of hotel/motel rooms and campsites available in communities within commuting distance of the Project components (approximately 2,516 rental units), construction crews should not encounter difficulty in finding temporary housing. Therefore, we do not anticipate any long-term or significant impacts on local housing markets.

There is a well-established network of state highways and parish roads available for Project access (Google Earth, 2019). 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. These data are summarized in table 10, below:

Table 10. Existing Public Services and Facilities in the Vicinity of the Project Area					
Parish	Community Medical Services	Emergency Medical Services	Police Services	Fire Services	Major Transportation Routes
Acadia Parish	4	3	5	4	HWY 190
Cameron Parish	1	1	1	0	LA-82
Evangeline Parish	2	0	4	7	HWY 190
Jefferson Davis Parish	2	2	4	5	LA-26, LA-380
St. Landry Parish	4	9	7	4	HWY 190
Source: Google Earth, 2019					

Construction activities would have a minor net positive impact on local and regional businesses. Sales tax revenue would increase as a result of increased purchasing activity by the construction workforce along with materials and supplies purchased for the Project. Local and/or regional businesses would also benefit from construction material and equipment fuel purchases. ANR estimates that a total of approximately \$46 million would be distributed in construction payroll, including \$26.8 million, \$18.0 million, and \$1.2 million for construction of the Mermentau, Eunice, and Grand Chenier Compressor Stations, respectively.

Calculation of the property tax revenues associated with the planned Mermentau Compressor Station would be subject to the state, parish, and local taxes upon completion of construction. ANR prepared an estimate based on the cost of the Project facilities at the planned Mermentau Compressor Station and the cost of land, which resulted in an estimated annual property tax revenue of approximately \$82,590.

The Eunice and Grand Chenier Compressor Stations are existing industrial facilities. Therefore, property values in the vicinity of the existing compressor stations are not anticipated to be impacted by the construction and operation at these facilities.

Operation of the Project facilities would primarily be conducted by existing permanent staff with a total of only two new permanent employees. As such, operation the Project's natural gas facilities are not expected to induce growth, displace permanent residents or businesses, or cause any significant population increase.

Environmental Justice

Executive Order 12898, issued on February 11, 1994, directs federal agencies to identify and address any disproportionately high and adverse human health or environmental impacts of federal actions on minority and low-income populations. This section provides socioeconomic data for determining whether the construction and operation of the Project would occur in Environmental Justice Areas. Environmental Justice Areas are defined by the EPA as locations that have a meaningfully greater percentage of minorities than the general population has, or locations in which minorities

comprise more than 50 percent of the affected area's population. Low-income populations are defined on the basis of the U.S. Census poverty statistics as having a poverty level higher than the reference population. For this analysis, we compare the minority and low income population levels in the census block to the level in the Parish.

Table 11 summarizes the minority and low-income populations throughout the Project area compared to the state and national averages (U.S. Census Bureau 2017). All of the parishes in the Project area, with the exception of Cameron Parish (8.7 percent), are above the national average for persons below the poverty level (14.6 percent). Minority populations are highest in the City of Basile (46.5 percent) and lowest in the City of Cameron (0 percent).

Table 11. Demographics and Low-Income Populations in the Project Area (2017)								
Country/State/Parish/ Town	Persons Below Poverty Level (%)	White Non- Hispanic (%)	African American (%)	Hispanic (%)	Asian (%)	Native American (%)	Other (%)	Two or more races (%)
United States	14.6	61.5	12.3	17.6	5.3	0.7	0.2	2.3
Louisiana	19.6	59.0	32.0	5.0	1.7	0.5	0.2	1.6
Acadia Parish	21.5	77.5	17.6	2.4	0.1	0.1	0.2	2.1
Cameron Parish	8.7	91.3	2.8	5.5	0.3	0.0	0.0	0.1
<i>Cameron</i>	23.5	100.0	0.0	0.0	0.0	0.0	0.0	0.0
Evangeline Parish	26.4	67.0	27.4	3.4	0.4	0.1	0.0	1.6
<i>Basile</i>	42.8	53.4	25.6	13.9	0.5	0.3	0.3	5.9
Jefferson Davis Parish	19.6	78.6	16.3	2.3	0.4	0.7	0.0	1.8
<i>Lake Arthur</i>	28.4	86.2	10.4	1.4	0.0	0.0	0.0	2.0
St. Landry Parish	27.9	54.6	41.0	2.0	0.3	0.1	0.4	1.6
<i>Eunice</i>	30.5	60.9	34.1	3.4	0.0	0.1	0.0	1.6
Source: U.S. Census Bureau, 2017								

Census block groups were also utilized to conduct a more detailed analysis of the Project area. A census block group is a statistical division for presenting census data that is smaller than a county/parish or census tract, and typically contains between 600 and 3,000 residents. Census block groups within 1 mile of the Project were identified using the American Community Survey data (U.S. Census 2017). As summarized in table 12 these data show that none of the block groups within 1 mile of the major aboveground facilities has a minority population that exceeds 50 percent or that is 10 percentage points higher than the Parish population levels. In addition, none of the block groups have a greater low-income population than the reference Parish.

Table 12. Demographics and Low-Income Populations by Census Block Groups within 1-mile of the Project Area									
Census Tract and Block Group	Percent of Persons Below Poverty Level	White Non-Hispanic (%)	African American (%)	Hispanic (%)	Asian (%)	Native American (%)	Pacific Islander (%)	Some Other Race (%)	Two or More Races (%)
Mermentau Compressor Station									
Tract 0004.00, Block Group 1	14.6	80.0	7.3	12.1	0.0	0.6	0.0	0.0	0.0
Eunice Compressor Station									
Tract 9603.00, Block Group 1	17.3	98.9	1.1	0.0	0.0	0.0	0.0	0.0	0.0
Tract 9503.00, Block Group 3	21.4	88.9	9.92	1.15	0.0	0.0	0.0	0.0	0.0
Grand Chenier Compressor Station									
Tract 9701.00, Block Group 3	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tract 9701.00, Block Group 4	7.0	98.7	1.3	0.0	0.0	0.0	0.0	0.0	0.0
Source: U.S. Census, 2017									

Construction and operation of the Project would not disproportionately impact the health, social, or economic conditions of minority or low-income communities. The Project area is relatively sparsely populated, no residential lands would be impacted, and while general construction and operational disturbances (noise and dust) to landowners and residents may occur, they would not be directed toward any particular segment of the population. In addition, as discussed above, all block groups associated with the Project area fall below the percent of persons below poverty level and minority population percentage for the associated Parishes.

Further, minor positive economic effects of the Project would be realized by providing area communities with both short- and long-term opportunities for increased tax revenues. Within the rural, sparsely populated portions of the Project area, this increase in the tax revenue would provide local benefits to those communities. Therefore we conclude that the Project's impact minority communities would not be significant.

7.0 CULTURAL RESOURCES

In addition to accounting for impacts on cultural resources under NEPA, Section 106 of the National Historic Preservation Act, as amended, requires FERC to consider the effects of its undertakings on historic properties listed, or eligible for listing on the National Register of Historic Places (NRHP),⁶ and to afford the Advisory Council on

⁶ In accordance with 36 CFR 800.16(l)(1), a historic property is any prehistoric or historic district, site, building, structure, object, or property of traditional religious and cultural

Historic Preservation an opportunity to comment. ANR, as a non-federal party, is assisting FERC in meeting our obligations under Section 106 and its implementing regulations at 36 CFR 800.

7.1 Area of Potential Effects

The Project area of potential effects (APE) is the “geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist” (36 CFR 800.16(d)). The APE for direct effects encompasses the entirety of the proposed Project area which includes all areas of construction, operations, and maintenance for the Project and totals approximately 70.7 acres. As for indirect effects, the installation of new equipment and other modifications within the existing operational areas at the Eunice and Grand Chenier Compressor Stations would constitute in-kind elements on the landscape, and therefore, would not contribute to any new indirect effects to historic properties. However, to account for indirect effects at the proposed Mermentau Compressor Station, ANR examined all visible historic structures within a 0.5-mile radius of new permanent aboveground facilities.

7.2 Cultural Resources Investigation

In an effort to identify historic properties within the Project APE and to account for any direct or indirect effects to those properties by the proposed Project, ANR completed a cultural resources investigation which included background research and Phase I cultural resources surveys (Boudreaux 2019a and 2019b). Based on the results of the background research, no previously recorded resources were identified within the Project APE, nor were any historic structures identified within 0.5-mile of the Mermentau Compressor Station.

ANR completed Phase I cultural resources surveys at the Mermentau and Eunice Compressor Stations in July 2019. ANR surveyed by pedestrian transects; supplemented with systematic shovel testing. The cultural resources survey at the Eunice Compressor Station was focused on the proposed temporary workspace, as the existing operational area has been extensively modified by energy infrastructure. Cultural resources surveys were deemed not necessary for the proposed modifications to the Grand Cheniere Compressor Station, as these Project activities would be restricted to within the existing facility fence and associated access drive. No cultural resources were identified during the surveys.

On October 17, 2019, ANR submitted the Phase I cultural resources survey reports for the Mermentau and Eunice Compressor Stations to the Louisiana State Historic Preservation Officer (SHPO) for review and concurrence. Additionally, ANR consulted with the SHPO on October 17, 2019, for Project activities at the Grand Cheniere

importance to an Indian tribe or Native Hawaiian organization, included in, or eligible for inclusion in, the NRHP. This term includes artifacts, records, and remains that are related to and located within such properties.

Compressor Station, in which ANR recommended that no cultural resources investigations are warranted for this portion of the Project. ANR requested concurrence that the proposed Project will have no effect on historic properties listed or considered eligible for listing in the NRHP.

In two letters, both dated November 5, 2019, the SHPO concurred with ANR's recommendation that the Project activities at the Eunice and Mermentau Compressor Stations will have no effect on historic properties listed or eligible for listing in the NRHP. Furthermore, on November 19, 2019, the SHPO concurred with ANR's recommendation that historic properties will not be affected by Project activities at the Grand Chenier Compressor Station. FERC agrees that the proposed Project will not affect historic properties.

7.3 Tribal Consultation

ANR contacted the following Native American tribes regarding the proposed Project: Alabama-Coushatta Tribe of Texas; Chitimacha Tribe of Louisiana; Choctaw Nation of Oklahoma; Coushatta Tribe of Louisiana; Jena Band of Choctaw Indians; Mississippi Band of Choctaw Indians; and Tunica-Biloxi Indian Tribe. On October 11, 2019, ANR sent Project notification letters to the tribes to inform them about the Project and to request information on any concerns they may have with respect to possible impacts on properties of traditional religious and cultural significance. ANR followed up with the tribes via email on November 18, 2019, and received a response from the Choctaw Nation of Oklahoma on November 20, 2019, requesting copies of the Phase I cultural resources survey reports and associated Geographic Information Systems (GIS) files. On December 20, 2019, ANR sent the requested information to the Choctaw Nation of Oklahoma and sent an additional follow-up email to the other tribes. ANR has not received responses from any of the other tribes.

On December 5, 2019, FERC sent the Project NOI to these same tribes. The Choctaw Nation of Oklahoma sent a letter to FERC on February 8, 2020, indicating that the Project lies within their area of historic interest and requested copies of the EA, the cultural resources survey report, and Geographic Information System shapefiles associated with the Project. ANR sent the requested documents and information to the tribe on February 12, 2020. To date, FERC has not received responses from any of the other tribes.

7.4 Unanticipated Discoveries Plan

ANR developed a Project-specific *Plan for the Unanticipated Discovery of Historic Properties or Human Remains during Construction* (Unanticipated Discovery Plan). The plan outlines the procedures to follow, in accordance with state and federal laws, if unanticipated cultural resources or human remains are discovered during construction of the Project. The plan was submitted to FERC and we requested minor changes to the plan. ANR provided copies of the revised plan with the requested

revisions to FERC and the Louisiana SHPO. We find ANR's Unanticipated Discovery Plan to be acceptable.

7.5 Compliance with the National Historic Preservation Act

FERC has completed its compliance requirements with Section 106 of the National Historic Preservation Act for the proposed Project.

8.0 AIR QUALITY AND NOISE

8.1 Air Quality

Air quality would be affected by construction and operation of the Project. This section discusses the impacts on air quality from the proposed Project at the Mermentau Compressor Station in Jefferson Davis Parish, the Eunice Compressor Station in Acadia Parish, the Grand Chenier Compressor Station in Cameron Parish, and the Mermentau River GCX Meter Station. Both regional and local impacts are discussed.

The modifications at the meter station would only result in minor operational emissions from insubstantial leakage of methane from valves and fittings.

The proposed new Mermentau Compressor Station would emit pollutants during operation from the combustion of fuel-gas by the gas-fired turbine compressor unit and related appurtenant facilities.

Some of the proposed modifications of the existing Eunice Compressor Station would result increased emissions while others would decrease emissions. Installation of a new gas-fired turbine compressor unit and uprating of an existing unit would result in further emissions at that facility while the placing of an existing reciprocating compressor unit on stand-by as well as abandonment of an existing reciprocating compressor unit would reduce the amount of emissions during operation.

Modifications to the existing Grand Chenier Compressor Station in Cameron Parish, which involves restaging of the existing compressor unit, would not result in increased emissions during operation.

Table 13. Project Emissions during Construction and Operation

	Construction Emissions	Operational Emissions
Mermentau Compressor Station	Yes	Yes
Eunice Compressor Station	Yes	Yes
Grand Chenier Compressor Station	Yes	No

Mermentau River GCX Meter Station	Yes	No
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8.1.1 Types of Emissions from the Proposed Project

Air quality is protected by federal and state regulations. The Clean Air Act (CAA) designates seven pollutants as criteria pollutants. These are: particulate matter with an aerodynamic diameter of 10 microns or less (PM₁₀); particulate matter with an aerodynamic diameter of 2.5 microns or less (PM_{2.5}); sulfur dioxide (SO₂); nitrogen dioxide (NO₂); carbon monoxide (CO); ozone (O₃); and lead (Pb).

The combustion processes associated with gas-powered turbines as well as from construction vehicles would directly produce some of the criteria pollutants, namely SO₂, NO₂, and CO. These processes would also result in fine particulate matter, PM_{2.5}, primarily as a result of complex reactions in the atmosphere of the other combustion pollutants just mentioned. Larger particulate matter would generally be minimal from combustion processes; however, because PM₁₀ includes by definition all smaller particulates, the amount of PM₁₀ and PM_{2.5} reported as emissions from the operation of compression facilities and construction vehicles will be exactly the same. During construction, PM₁₀ would also result from fugitive dust produced from moving vehicles and ground disturbance. No measurable amounts of Pb would be emitted by the project during construction or operation.

In addition to SO₂, NO₂, CO, and PM_{2.5}, the proposed facilities would emit other pollutants called volatile organic compounds (VOC) and hazardous air pollutants (HAP), which are also regulated by the EPA. VOCs refer to certain compounds of carbon that react in the atmosphere to create ground-level ozone. HAPs are pollutants designated by the EPA as being known or suspected to cause cancer or other serious health effects. VOCs and HAPs both result from combustion processes.

Some of the pollutants already mentioned are also designated as green-house gases (GHG). These are gases that trap heat in the atmosphere either directly or as a result of chemical reactions in the atmosphere, resulting in warming of the earth. Methane is itself a GHG and the leakage of methane during the operation of the facility would be classified as a GHG emission. Because there are a variety of GHGs, GHG emissions are usually reported as relative to the warming potential of carbon dioxide, in units called carbon dioxide equivalents or CO_{2e}.

8.1.2 Existing Air Quality

The EPA measures and regulates air quality by promulgating National Ambient Air Quality Standards (NAAQS), which establish acceptable concentrations in the air of the aforementioned seven criteria pollutants. The NAAQS include primary standards, which are designed to protect human health, including the health of sensitive subpopulations such as children and those with chronic respiratory problems. The NAAQS also include secondary standards designed to protect public welfare, including

economic interests, visibility, vegetation, animal species, and other concerns not related to human health. The current NAAQS for these criteria pollutants are summarized in table 14 below.

Table 14. NAAQS for Criteria Pollutants Emitted by the Project

Pollutant [Final Rule Citation]	Primary or Secondary	Averaging Time	Level	Form
Carbon monoxide	Primary	8-hour	9 ppm	Not to be exceeded more than once per year
		1-hour	35 ppm	
Nitrogen Dioxide	Primary	1-hour	100 ppb	98th percentile, averaged over 3 years
	Primary and Secondary	Annual	53 ppb	Annual Mean
PM _{2.5} Particle Pollution	Primary	Annual	12 µg/m ³	Annual mean, averaged over 3 years
	Secondary	Annual	15 µg/m ³	Annual mean, averaged over 3 years
	Primary and Secondary	24-hour	35 µg/m ³	98 th percentile, averaged over 3 years
PM ₁₀ Particle Pollution	Primary and Secondary	24-hour	150 µg/m ³	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide	Primary	1-hour	75ppb	99 th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year
See https://www.epa.gov/criteria-air-pollutants/naaqs-table (accessed March 2020).				

The NAAQS are codified in 40 CFR 50. Areas of the country are designated based on compliance with the NAAQS. Designations fall under three main categories, as follows: “attainment” (areas in compliance with the NAAQS); “nonattainment” (areas not in compliance with the NAAQS); or “unclassifiable.” Unclassifiable areas are treated as attainment areas for the purpose of permitting a stationary source of pollution. Areas that have been designated nonattainment but still demonstrated compliance with the ambient air quality standard(s) are designated maintenance for that pollutant. Maintenance areas may be subject to more stringent regulatory requirements to ensure continued attainment of the NAAQS.

All Project parishes are classified as in attainment with the NAAQS.

8.1.3 Regulatory Requirements for Air Quality

The Project equipment would be subject to various federal and state air quality regulations. The CAA, as amended in 1977 and 1990, and 40 CFR Parts 50 through 99 are the basic federal statutes and regulations governing air pollution in the United States. These CAA regulations ensure acceptable air quality and minimize impacts on human health. They regulate the criteria pollutants, HAPs, and VOCs, as well as provide for mechanisms to monitor GHGs.

The following federal requirements have been reviewed for applicability to operation of the Project.

- New Source Review (NSR) / Prevention of Significant Deterioration (PSD);
- Title V Operating Permits;
- New Source Performance Standards (NSPS);
- National Emission Standards for Hazardous Air Pollutants; and
- Greenhouse Gas Reporting.

Because the CAA was designed to ensure air quality on an area-wide or regional level, our evaluation of the proposed Project also addresses impacts on local air quality in the immediate vicinity of the proposed Project, as discussed below.

For project construction, we have evaluated applicability of another federal air quality program, referred to as General Conformity.

New Source Review/Prevention of Significant Deterioration

The CAA establishes a pre-construction permitting program called New Source Review (NSR) which is administered by each state. There are three types of NSR permitting requirements, which depend on the scale of the new source - major or minor - and the status of the existing air quality - attainment or nonattainment. The three types are:

- Prevention of Significant Deterioration (PSD) permits, which are required for new major sources or an existing source making a major modification in an attainment area;
- Nonattainment NSR permits, which are required for new major sources or an existing source making a major modification in a nonattainment area; and
- Minor NSR permits.

The definition of a PSD new major source of air pollutants as applicable to the Project (compressor station source types) is any stationary source which emits, or has the potential to emit, 250 tons per year (tpy) or more of a PSD-regulated pollutant. The potential-to-emit for the proposed Project is shown in table 15 and 16 below. None of the facilities associated with the Project would trigger any requirements under PSD.

Title V Operating Permits

Title V of the CAA requires states to establish an air quality operating permit program. The requirements of Title V are outlined in the federal regulations in 40 CFR 70. The operating permits required by these regulations are often referred to Title V permits.

Major sources are required to obtain a Title V operating permit. Title V major source threshold levels are 100 tpy for CO, SO₂, PM₁₀, or PM_{2.5}, 10 tpy for an individual HAP, or 25 tpy for any combination of HAPs. The recent Title V GHG Tailoring Rule also requires facilities that have the potential to emit GHGs at a threshold level of 100,000 tpy CO_{2e} be subject to Title V permitting requirements.

As shown in table 16 below, emissions of CO would exceed the 100 tpy criteria pollutant threshold at the proposed Mermentau Compressor Station. Therefore, the Mermentau Compressor Station would be required to obtain a federally-enforceable Title V permit from the LDEQ. The existing Eunice Compressor Station operates under an existing Title V permit, because emissions of nitrogen oxides (NO_x) and CO exceed 100 tpy. The installation of the proposed turbine compressor would require an update to the existing Title V permit for the Eunice Compressor Station.

New Source Performance Standards (NSPS)

NSPS regulations (40 CFR 60) establish pollutant emission limits and monitoring, reporting, and recordkeeping requirements for various emission sources based on source type and size. These regulations apply to new, modified, or reconstructed sources. The following NSPS requirements were identified as applicable.

Subpart KKKK of 40 CFR 60, *Standards of Performance for Stationary Combustion Turbines*, applies to stationary combustion turbines that are modified, constructed, or reconstructed after February 18, 2005 and have maximum heat input rates greater than 10 million British thermal units per hour. Subpart KKKK would apply to the proposed new project turbines. Based on the size of the turbines, NO_x emissions must be limited to 25 ppm by volume at 15 percent oxygen (O₂) or 1.2 pound per megawatt-hour. To demonstrate compliance with Subpart KKKK, ANR must perform an initial NO_x performance test and continuously monitor the turbines to document any operating periods during which the SoLoNO_x system is not in service (e.g., during startup, shutdown, low-load, or a system malfunction). Records of turbine startup, shutdown, SoLoNO_x malfunction, and/or SoLoNO_x monitoring system malfunction would be recorded per Subpart KKKK and NSPS General Provisions in 40 CFR 60.7(b)&(c).

Subpart JJJJ of 40 CFR 60, *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines*, applies to spark ignition engines with a maximum engine power greater than 25 hp for which construction commenced by July 12, 2006 and was manufactured after January 1, 2009. The applicable emission limits for engines greater than 130 hp rated capacity are as follows: for NO_x, the limit is 2.0 g/hp-hr or 160 ppmvd at 15 percent O₂; for CO, the limit is 4.0 g/hp-hr or 540 ppmvd at 15 percent O₂; and for VOC, the limit is 1.0 g/hp-hr or 86 ppmvd at 15 percent O₂. The proposed

emergency generator at the Mermentau Compressor Station would be subject to Subpart JJJJ emission limits.

Subpart OOOOa, *Standards of Performance for Crude Oil and Natural Gas Facilities*, details requirements for fugitive emissions from components at compressor stations, including: monitoring all fugitive emission components; repairing sources of fugitive emissions; and developing an emissions monitoring plan.

National Emission Standards for Hazardous Air Pollutants

The National Emission Standards for Hazardous Air Pollutants codified in 40 CFR Parts 61 and 63 regulate HAP emissions. Part 61 was promulgated prior to the 1990 Clean Air Act Amendments and regulates specific HAPs, such as asbestos, benzene, beryllium, coke oven emissions, inorganic arsenic, mercury, radionuclides, and vinyl chloride.

The 1990 Clean Air Act Amendments established a list of 189 HAPs, while directing EPA to publish categories of major sources and “area sources” of these HAPs. It also established emission standards known as the Maximum Achievable Control Technology standards.

A major source of HAPs is any source that has a potential-to-emit (PTE) of 10 tpy for any single HAP or 25 tpy for all HAPs in aggregate. Area sources are stationary sources that do not exceed the thresholds for major source designation.

40 CFR 63 Subpart ZZZZ establishes national emission limitations and operating limitations for HAPs emitted from stationary reciprocating internal combustion engines at major and area (minor) sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations. Subpart ZZZZ would apply to the new emergency generator proposed at the Mermentau Compressor Station, which would be an area source of HAPs. The engine would comply with the requirements of Subpart ZZZZ by meeting the requirements of NSPS Subpart JJJJ.

Greenhouse Gas Reporting (GHG)

Subpart W under 40 CFR 98, the Mandatory GHG Reporting Rule, requires petroleum and natural gas systems that emit 25,000 metric tons or more of CO_{2e} per year to report annual operating emissions of GHG to the EPA.

Emissions of GHGs associated with the construction and operation of the proposed Project, including all emission sources, were calculated and are shown in table 15, 16, and 17 below. GHG emissions were converted to total CO_{2e} emissions. The reporting rule does not apply to construction emissions. If actual GHG emissions exceed 25,000 metric tons of CO_{2e} per year at any compressor station associated with the Project, ANR would be required to report the GHG emissions to EPA per 40 CFR 98.

General Conformity

The EPA promulgated the General Conformity Rule to require that the federal government not engage, support, or provide financial assistance for licensing or permitting, or approve any activity not conforming to an approved CAA implementation plan. The only project activities that are not potentially subject to a CAA permitting program are construction activities and as such fall under the General Conformity Rule.

The General Conformity Rule is codified in Title 40 CFR Part 51, Subpart W and Part 93, Subpart B, *Determining Conformity of General Federal Actions to State or Federal Implementation Plans*. A conformity determination must be conducted by the lead federal agency if a federal action's construction and operational activities is likely to result in generating direct and indirect emissions that would exceed the conformity threshold (*de minimis*) levels of the pollutant(s) for which an air basin is in nonattainment or maintenance.

Section 176(c)(1) states that a federal agency cannot approve or support any activity that does not conform to an approved State Implementation Plan (SIP). Conforming activities or actions should not, through additional air pollutant emissions:

- cause or contribute to new violations of the NAAQS in any area;
- increase the frequency or severity of any existing violation of any NAAQS;
- or
- delay timely attainment of any NAAQS or interim emission reductions.

As noted above, the Project is proposed in areas which are all currently designated as attainment areas; therefore, the General Conformity requirements would not be applicable.

8.1.4 Construction Impacts and Mitigation

Construction of the projects would result in temporary increases in emissions of some pollutants due to the use of construction equipment powered by diesel or gasoline engines. Construction activities would also result in particulates in the air, mostly larger PM₁₀ particulates, in the form of fugitive dust from land clearing, grading, excavation, concrete work, and vehicle traffic on paved and unpaved roads. The amount of dust generated would be a function of construction activities, soil type, moisture content, wind speed, frequency of precipitation, vehicle traffic, vehicle types, and roadway characteristics. Emissions would typically be greater during dry periods and in areas of fine-textured soils subject to surface activity.

ANR developed a *Fugitive Dust Control Plan* which specifies the following dust control techniques to be implemented as needed during construction:

- use of water for control of dust during construction operations, road grading, or land clearing;

- maintenance of roadways;
- street cleaning to remove soil or other material from paved streets onto which it has been transported by trucking or earth moving equipment, erosion by water, or other means;
- proper maintenance of equipment;
- covering open-bodied trucks while transporting materials; and
- minimizing soil disturbance.

A summary of the estimated construction emissions for the proposed projects are presented in table 15.

Once construction activities in the area are completed, fugitive dust and construction equipment emissions would subside and the Project's related impact on air quality would terminate. Because of the implementation of the mitigation measures described by ANR and the intermittent and temporary nature of construction emissions, we conclude that the emissions from construction-related activities for the Project are not expected to cause or significantly contribute to a violation of any applicable ambient air quality standard or significantly affect local or regional air quality.

Table 15. Total Construction-Related Emissions for the Project								
Construction Activity	Emissions (tpy)							
	CO	NOX	VOC	PM10	PM2.5	SO2	HAP	CO2e
Acadia Parish, Louisiana 2021 Emissions								
Diesel non-road equipment	2.64	4.21	0.53	0.68	0.68	0.32	0.08	2,171.64
Diesel and gas on-road equipment	17.42	6.25	1.05	0.24	0.24	0.03	0.28	2,813.23
Construction activity fugitive dust	N/A	N/A	N/A	3.19	0.48	N/A	N/A	N/A
Roadway fugitive dust	N/A	N/A	N/A	0	0	N/A	N/A	N/A
Subtotal	20.05	10.46	1.57	4.11	1.40	0.35	0.36	4,984.87
Jefferson Davis Parish, Louisiana 2021 Emissions								
Diesel non-road equipment	3.36	5.45	0.68	0.87	0.87	0.41	0.10	2,793.60
Diesel and gas on-road equipment	14.90	5.35	0.89	0.21	0.21	0.03	0.24	2,406.87
Construction activity fugitive dust	N/A	N/A	N/A	6.76	1.01	N/A	N/A	N/A
Roadway fugitive dust	N/A	N/A	N/A	0.52	0.26	N/A	N/A	N/A
Subtotal	18.26	10.79	1.57	8.35	2.34	0.44	0.34	5,200.48
Cameron Parish, Louisiana 2022 Emissions								
Diesel non-road equipment	1.16	1.58	0.19	0.25	0.25	0.11	0.03	770.01
Diesel and gas on-road equipment	12.41	4.45	0.74	0.17	0.17	0.02	0.20	2,003.94
Construction activity fugitive dust	N/A	N/A	N/A	0.69	0.10	N/A	N/A	N/A
Roadway fugitive dust	N/A	N/A	N/A	0	0	N/A	N/A	N/A

Subtotal	13.56	6.03	0.93	1.11	0.52	0.13	0.23	2,773.96
Total Construction Emissions	51.87	27.28	4.07	13.57	4.26	0.92	0.93	12,959.31

8.1.5 Operational Impacts: Regional Emissions

As discussed above, air emissions from the Project would comply with applicable federal and state air quality regulations that would ensure acceptable air quality in the region. The total emissions from each facility are presented in tables 16 and 17.

Table 16. Mermentau Compressor Station Operational Emissions								
Emission Unit	NO_x (tpy)	CO (tpy)	VOC (tpy)	PM₁₀/ PM_{2.5} (tpy)	SO₂ (tpy)	CO₂e (tpy)	Largest Single HAP (tpy)	Total HAPs (tpy)
Solar Titan 130E Turbine	42.39	130.06	6.65	5.07	0.55	89,882	0.54	0.79
Waukesha Emergency Generator	0.97	1.94	0.49	0.02	0.001	200	0.09	0.13
Fuel Gas Heater	0.49	0.41	0.03	0.04	0.004	580	0.0004	0.01
Pipeline Liquids Tank	N/A	N/A	0.04	N/A	N/A	N/A	N/A	N/A
Wastewater Tank	N/A	N/A	0.03	N/A	N/A	N/A	N/A	N/A
Equipment Leaks	N/A	N/A	84.22	N/A	N/A	58,233	N/A	N/A
Venting/blowdowns	N/A	N/A	10.83	N/A	N/A	7,492	N/A	N/A
TOTAL PTE	43.85	132.41	18.07	5.13	0.55	98,154	0.64	0.93
<i>Title V Threshold</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>N/A</i>	<i>10</i>	<i>25</i>
<i>PSD Major Source Threshold</i>	<i>250</i>	<i>250</i>	<i>250</i>	<i>250</i>	<i>250</i>	<i>100,000</i>	<i>N/A</i>	<i>N/A</i>

Table 17. Eunice Compressor Station Facility-Wide Operational Emissions								
Emission Unit	NO_x (tpy)	CO (tpy)	VOC (tpy)	PM₁₀/PM_{2.5} (tpy)	SO₂ (tpy)	CO₂e (tpy)	Largest Single HAP (tpy)	Total HAPs (tpy)
Solar Mars 100 Turbine	30.73	74.96	6.17	3.73	0.40	66,188	0.40	0.58
Solar Titan 130E Turbine	41.82	85.97	5.71	5.06	0.55	89,791	0.54	0.79
Waukesha Emergency Generator	1.30	2.59	0.65	0.02	0.002	266	0.12	0.17
Fuel Gas Heater	0.52	0.43	0.03	0.04	0.004	615	0.0004	0.01
Wastewater Tank	N/A	N/A	0.03	N/A	N/A	N/A	N/A	N/A
Reciprocating Compressor Engine 1	0	0	0	0	0	0	0	0
Reciprocating Compressor Engine 2	150.64	76.48	10.66	4.29	0.05	11,456	4.90	7.06
Waukesha Emergency Generator	0.88	0.57	0.12	0.01	0.0008	183	0.13	0.17

Table 17. Eunice Compressor Station Facility-Wide Operational Emissions								
Emission Unit	NO_x (tpy)	CO (tpy)	VOC (tpy)	PM₁₀/PM_{2.5} (tpy)	SO₂ (tpy)	CO₂e (tpy)	Largest Single HAP (tpy)	Total HAPs (tpy)
Condensate Storage Tank	N/A	N/A	5.71	N/A	N/A	N/A	N/A	0.27
Truck Loading	N/A	N/A	4.63	N/A	N/A	N/A	N/A	N/A
Oil Storage Tank	N/A	N/A	0.00003	N/A	N/A	N/A	N/A	N/A
Fuel Gas Heater	0.21	0.18	0.01	0.02	0.002	256	0.0002	0.004
Equipment Leaks	N/A	N/A	37.97	N/A	N/A	21,657	N/A	N/A
Venting and Blowdowns	N/A	N/A	2.05	N/A	N/A	1,117	N/A	N/A
TOTAL PTE	226.10	241.18	34.57	13.18	1.01	168,756	6.10	9.06
<i>Title V Threshold</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>N/A</i>	<i>10</i>	<i>25</i>
<i>PSD Major Source Threshold</i>	<i>250</i>	<i>250</i>	<i>250</i>	<i>250</i>	<i>250</i>	<i>100,000</i>	<i>N/A</i>	<i>N/A</i>

8.1.6 Operational Impacts: Local Impacts

Air dispersion modeling was performed for the project using AERMOD, the Gaussian plume model sanctioned by the EPA. The air dispersion modeling results are summarized in the tables below. As shown, all total concentrations would be below the NAAQS in the local vicinity of the proposed Project (tables 18 and 19).

Table 18. Mermentau Compressor Station AERMOD Results and NAAQS Compliance Summary						
Pollutant	Averaging Period	Project Impact (µg/m³)	Background (µg/m³)	Total (µg/m³)	NAAQS (µg/m³)	Percent of NAAQS
NO ₂	1-hour	11.06	69.18	80.24	188	42.68
	Annual	0.6	11.74	12.34	100	12.34
CO	1-hour	29.74	3306.00	3335.74	40,000	8.34
	8-hour	12.74	1436.40	1449.14	10,000	14.49
PM ₁₀	24-hour	0.21	72.20	72.41	150	48.27
PM _{2.5}	24-hour	0.19	17.20	17.39	35	49.67
	Annual	0.04	7.84	7.88	12	65.69
SO ₂	1-hour	10.00	26.20	36.20	196	18.47
	3-hour	23.32	32.07	55.39	1300	4.26

Table 19. Eunice Compressor Station AERMOD Results and NAAQS Compliance Summary						
Pollutant	Averaging Period	Project Impact ($\mu\text{g}/\text{m}^3$)	Background ($\mu\text{g}/\text{m}^3$)	Total ($\mu\text{g}/\text{m}^3$)	NAAQS ($\mu\text{g}/\text{m}^3$)	Percent of NAAQS
NO ₂	1-hour	13.45	69.18	82.63	188	43.95
	Annual	0.46	11.74	12.20	100	12.20
CO	1-hour	20.32	3306.00	3326.32	40,000	8.35
	8-hour	9.91	1436.40	1446.31	10,000	14.46
PM ₁₀	24-hour	0.39	72.20	72.59	150	48.39
PM _{2.5}	24-hour	0.21	17.20	17.41	35	49.74
	Annual	0.03	7.84	7.87	12	65.58
SO ₂	1-hour	9.71	26.20	35.91	196	18.32
	3-hour	13.83	32.07	45.89	1300	3.53

8.1.7 Conclusion

We conclude that there would not be any significant impacts from construction of the facilities proposed in this Project because the existing air quality is in conformity with the NAAQS and the temporary nature of construction activity would not be expected to lead to any significant deterioration of air quality.

There would also not be any significant impacts on air quality from operation of the Project facilities. The equipment at these facilities would conform with CAA regulations that are designed to ensure acceptable regional air quality. Further, we conclude on the basis of our air modeling analysis that there would be no significant local air quality impacts.

8.2 Noise

Construction and operation of the proposed Project may affect local noise levels. The ambient sound level of a region is defined by the total noise generated within the specific environment, and usually comprises sounds emanating from natural and artificial sources. At any location, both the magnitude and frequency of environmental noise may vary considerably over the course of a day and through the week. This variation is caused in part by changing weather conditions and the effect of seasonal vegetation cover.

Two measurements used by some federal agencies to relate the time-varying quality of environmental noise to its known effects on people are the equivalent sound level (L_{eq}) and the day-night sound level (L_{dn}). The L_{eq} is an A-weighted sound level containing the same sound 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, in the calculation of the L_{dn} , late night to early morning (10:00 pm to 7:00

am) noise exposures are penalized +10 decibels (dB), to account for people's greater sensitivity to sound during the nighttime hours. The A-weighted scale is used because human hearing is less sensitive to low and high frequencies than mid-range frequencies. For an essentially steady sound source that operates continuously over a 24-hour period, the L_{dn} is approximately 6.4 dB above the measured L_{eq} .

In 1974, the EPA published its *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. 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 decibels on the A-weighted scale (dBA) protects the public from indoor and outdoor activity interference. FERC staff has adopted this criterion and use it to evaluate the potential noise impacts from the proposed projects at noise sensitive areas (NSAs), such as residences, schools, or hospitals. Due to the 10 dBA nighttime penalty added prior to calculation of the L_{dn} , for a facility to meet the L_{dn} 55 dBA 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. Also, in general, a person's threshold of a perceivable change in loudness on the A-weighted sound level is about 3 dBA, whereas a 6 dBA change is clearly noticeable, and a 10 dBA change is perceived as either twice or half the loud.

8.2.1 Construction Noise

Noise could affect the surrounding area during construction of the proposed Project components. The construction activities would be performed with standard heavy equipment, such as track-excavators, backhoes, bulldozers, dump trucks, and cement trucks. The most prevalent sound source during construction of the proposed facilities would be the internal combustion engines used to power construction equipment. Drilled pier and auger cast-in-place pile foundation installations would be made at each of the Project compressor stations. However, pile driving may also be required for construction at the compressor stations, and the Mermentau River GCX Meter Station. The sound level impact at NSAs from construction activities is dependent on the type of construction equipment used, the duration of use for each piece of construction equipment, the amount of construction equipment used simultaneously, and the distance between the construction equipment and the NSAs.

ANR indicates that the majority of construction activities would be conducted between the hours of 7 AM and 7 PM, but that weather and site conditions, specialized construction techniques, emergencies, or other atypical circumstances may necessitate extended work on Sundays and holidays. ANR also stated in its application that limited nighttime construction activities related to commissioning may occur such as x-ray testing, hydrostatic testing, and indoor electrical work.

Tables 20 through 22 show the noise levels expected from construction of the proposed project. Noise levels would remain below 55 dBA except during pile driving, which would be short-term and only conducted during daytime hours.

Noise associated with construction activities would be intermittent and occur mostly during daylight hours. The limited nighttime construction activities proposed by ANR would not result in significant noise. Pile driving activities would also be short-term and during daylight hours. Based on these factors, we conclude that impacts due to construction noise activities would not be significant.

Table 20. Peak Construction Noise Levels for the Mermentau Compressor Station			
NSAs	Distance to Compressor Station	Construction Noise	
		Maximum L_{dn} (dBA)	Normal L_{dn} (dBA)
Residence (NSA #1)	1,900 ft. E	41.8	31.8

Table 21. Peak Construction Noise Levels for the Eunice Compressor Station				
NSAs	Distance to Compressor Station	Construction Noise		Construction Noise (during Pile Driving)
		Maximum L_{dn} (dBA)	Normal L_{dn} (dBA)	Maximum L_{dn} (dBA)
Residence (NSA #1)	1,175 ft. SE	51.2	41.2	62.1

Table 22. Construction Noise Levels for the Grand Chenier Compressor Station and Mermentau River GCX Meter Station				
NSAs	Distance to Compressor Station	Construction Noise		Construction Noise (during Pile Driving)
		Maximum L_{dn} (dBA)	Normal L_{dn} (dBA)	Maximum L_{dn} (dBA)
Residence (NSA #1)	2,250 ft. S-SW	45.3	35.3	57.1

8.2.2 Operational Noise

ANR conducted a noise analysis for each Project compressor station site to measure existing sound levels, predict sound levels from the proposed sources, predict total sound levels, and determine noise increases. Noise levels of compressor station equipment are based on equipment specifications. The estimated sound levels are presented in the tables 23, 24, and 25 below.

Table 23. Noise Quality Analysis for the Mermentau Compressor Station					
NSAs	Distance to Proposed Compressor Unit	Calculated Ambient L_{dn}^a (dBA)	Estimated L_{dn} of Station at Full Load (dBA)	Station L_{dn} + Ambient L_{dn} (dBA)	Potential Increase Above Ambient (dB)
NSA #1 (Residence)	2,050 ft. N-NE	45.5	41.6	47.0	1.5
NSA #2 (Residences)	1,900 ft. E	45.0	42.5	47.0	2.0

Table 24. Noise Quality Analysis for the Eunice Compressor Station						
NSA	Distance and Direction of NSA to the Proposed Unit 4 (feet)	Existing Compressor Station	Modified Compressor Station			Potential Decrease Below Existing Station Sound Level
		L_{dn} of Station (Unit 101B + Unit 3) at Full Load Operation	L_{dn} of Existing Unit 3 after Update at Full Load	L_{dn} of Proposed Unit 4 at Full Load Operation	Total L_{dn} of Modified Station (Upated Unit 3 + Unit 4) at Full Load Operation	
NSA #1 (Residence)	1,175 ft. SE	62.5	48.1	48.7	51.4	-11.1
NSA #2 (Residences)	1,750 ft. W	57.7	42.8	42.3	45.6	-12.1
NSA #3 (Residences)	2,375 ft. NW	53.8	38.8	37.8	41.3	-12.5
NSA #4 (Residence)	2,100 ft. NE	55.2	40.2	39.3	42.8	-12.4

Table 25. Noise Quality Analysis for the Grand Chenier Compressor Station and Mermentau River GCX Meter Station						
NSA	Distance and Direction of NSA to Compressor Station and Meter Station (feet)	Existing Compressor and Meter Station	Modified Compressor and Meter Station			Potential Increase in Sound Level Above Existing Stations (dB)
		L _{dn} of Existing Compressor and Meter Station at Full Load Operation	Estimated L _{dn} of Compressor Station	Estimated L _{dn} of Meter Station	Total L _{dn} of Compressor Station (after Restage)	
NSA #1 (Residence)	2,250 ft. S-SW	46.1	47.3	40.1	48.0	1.9
NSA #2 (Residences)	4,050 ft. E	39.1	40.0	32.5	40.7	1.6

As shown in the tables 23-25, the predicted L_{dn} sound levels from operation of the compressor stations are below 55 dBA at all of the NSAs. Noise increases from the Grand Chenier Compressor Station, Mermentau River GCX Meter Station, and Mermentau Compressor Station would not be perceptible to human beings. The noise from the Eunice Compressor Station would *decrease* substantially.

To ensure that the actual noise levels resulting from operation of the Mermentau Compressor Station and the Grand Chenier Compressor Station would not be significant, we recommend that:

- ANR should file a noise survey with the Secretary **no later than 60 days** after placing the Mermentau Compressor Station and the modified Grand Chenier Compressor Station into service. If a full power load condition noise survey is not possible, ANR should file an interim survey at the maximum possible power load **within 60 days** of placing the facilities in service and file the full load survey **within 6 months**. If the noise attributable to the operation of the facilities at full or interim power load conditions exceeds 55 dBA L_{dn} at any nearby NSAs, ANR should file a report on what changes are needed and should install the additional noise controls to meet the level **within 1 year** of the in-service date. ANR should confirm compliance with the above requirement by filing a second full power noise survey with the Secretary **no later than 60 days** after it installs the additional noise controls.

Based on the results of the noise modeling and compliance with our recommendation, we conclude that there would be no significant noise impacts from the proposed Project during operation.

9.0 RELIABILITY AND SAFETY

The transportation of natural gas by pipeline involves some risk to the public in the event of an accident and subsequent release of 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.

The aboveground facilities associated with the 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 pipeline standards are published in 49 CFR Parts 190-199. For example, 49 CFR 192 specifically addresses natural gas pipeline safety issues, prescribes the minimum standards for operating and maintaining pipeline facilities, and incorporates compressor station design, including emergency shutdowns and safety equipment. Part 192 also requires a pipeline operator to establish a written emergency plan that includes procedures to minimize the hazards in a natural gas pipeline emergency.

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. ANR would provide the appropriate training to local emergency service personnel before the facilities are placed in service.

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

10.0 CUMULATIVE IMPACTS

Cumulative impacts may result when the environmental effects associated with a project are superimposed on, or added to, either temporary (construction-related) or permanent (operation-related) impacts associated with past, present, or reasonably foreseeable projects or activities. Although the individual impacts of each project might not be significant, the cumulative impacts of multiple projects could be significant. In accordance with NEPA, the cumulative impacts of the Project along with other projects were considered. The Project's direct and indirect impacts are described in the preceding sections of this EA.

Inclusion of other actions is based on identifying commonalities of impacts from other actions along with those of the Project. An action must meet the following criteria:

- impact a resource potentially affected by the proposed action;
- cause the impact within all, or part of, the Project geographic scope; and
- cause the impact within all, or part of, the time span of the Project.

Existing or reasonably foreseeable actions that would affect similar resources during similar periods as the Project were considered. To evaluate potential cumulative impacts, we considered recently completed (one year prior to construction of the Project), current, and reasonably foreseeable future projects within the vicinity of the Project. We attempted to identify major projects, which include infrastructure construction, FERC jurisdictional and non-jurisdictional pipeline projects, commercial and residential developments, and large industrial facilities construction and operation.

For the purpose of this analysis, we are including the following resources:

- geological resources;
- soils;
- water resources and wetlands;
- fish, wildlife, and vegetation;
- special status species;
- land use, recreation, and special interest areas;
- visual resources;
- socioeconomics;
- cultural resources; and
- air quality and noise.

The geographic scope for each resource is unique and is generally more localized for somewhat stationary resources (geologic resources and soils) and more expansive for resources with a large geographic area (air quality). Table 26 below summarizes the resource-specific geographic boundaries considered in this cumulative impact analysis and the justification for each. Actions occurring outside these boundaries were generally not evaluated because their potential to contribute to a cumulative impact diminishes with increasing distance from the Project.

Table 26. Geographic Scope for Cumulative Impacts		
Environmental Resources	Geographic Scope	Rationale
Soils and Geology	Construction workspaces	<p>Soil and geologic resources occur within site-specific locations and are usually not affected by activities occurring outside the designated areas.</p> <p>Geologic impacts resulting from project activities are generally limited to impacts related to current and future mineral and non-mineral mining activities rather than geologic hazards or formations.</p>

Table 26. Geographic Scope for Cumulative Impacts

Environmental Resources	Geographic Scope	Rationale
Groundwater, Surface Water, and Wetlands; Fisheries, Vegetation, and Wildlife	Hydrologic Unit Code 12 Watershed	Watersheds are natural, well-defined boundaries for surface water flow, and commonly contribute to the recharge of groundwater resources. Vegetation and wildlife possess an interconnected relationship to surface water resources; therefore, these resources are also considered during the watershed evaluation process.
Cultural Resources	Overlapping impacts within the Area of Potential Effects	As defined by the Advisory Council in Historic Preservation, in consultation with SHPO guidance, the area of potential effects encompasses both direct and indirect impacts on cultural resources. No historic properties were identified within Project area of potential effects for direct and indirect effects; therefore, the Project will not contribute to cumulative impacts on cultural resources.
Land Use	1-mile radius	Land use, recreation, and aesthetics are generally impacted within and adjacent to project areas.
Visual Resources	1 mile from aboveground facilities	Surrounding terrain, vegetation, and existing development are common factors that impact visual resources.
Socioeconomics	Acadia, Cameron, and Jefferson Davis parishes	The Project is located within Acadia, Cameron, and Jefferson Davis, parishes, where the planned Project and other projects in the region could have the cumulative effect on socioeconomic conditions of the parishes.
Noise – Construction	0.25 mile from aboveground facilities	Construction noise is limited and is commonly associated with the utilization of large equipment.
Noise – Operations	1 mile from permanent, noise-emitting aboveground resources	FERC guidance requires that noise impacts from aboveground facilities be evaluated at all noise sensitive areas within 1-mile.
Air Quality – Construction	0.25 mile from aboveground facilities	Due to the limited amount of emissions generated by construction equipment, the geographic scope used to assess potential cumulative impacts on air from construction activities was set at 0.25 mile.
Air Quality – Operations	50 kilometers (approximately 31 miles)	The EPA's 10-hour NO ₂ modeling guidance suggests a distance of 10 kilometers from the project location as a reasonable distance to examine the likelihood of overlapping impacts. In addition, the Screening Threshold method, indicates that a 10-kilometer distance is reasonable for the Project.

Appendix B summarizes the projects identified within proximity of the proposed Project having the potential to contribute to cumulative impacts. Project information provided in appendix B includes project name and proponent, distance from the Project, scope, construction schedule, whether or not the project was considered in the cumulative impacts analysis (if not, a brief explanation as to why it is not included), and the resources that would be cumulatively impacted (the geographic scopes defined in table 26). A total of 15 projects were evaluated in this cumulative impact analysis including:

- 12 natural gas infrastructure projects (including the planned modifications of the Mermentau River GCX Meter Station that would be conducted under ANR's blanket certificate (CP82-480-000);
- one electric transmission project; and
- two road projects.

Geology and Soils

Geology

The geographic scope for cumulative impacts associated with geologic resources affected by construction and operation of the Project is limited to the Project workspace. Direct effects on geology are highly localized and limited primarily to the period of construction. As such, cumulative impacts to geologic resources and conditions would only occur if other projects are constructed at the same time and in the same geographic footprint as the proposed Project. As identified in appendix B, the following projects occur within the geographic scope for geologic resources:

- Grand Chenier Bi-Directional Launcher/Receiver Project (ANR);
- Mermentau River GCX Point of Delivery Project (ANR);⁷
- Grand Chenier Compression Overhaul Project (ANR);
- Grand Cheniere Horsepower Increase Project (ANR);
- Eunice Compressor Replacement Project (ANR); and
- Mermentau Compressor Station Overhead Power Line Project (Jefferson Davis Co-Op Inc.)

The workspace for ANR's other projects listed above overlap with the proposed Project at the Eunice and Grand Chenier Compressor Stations, and all activities associated with these other projects would be limited to the existing paved/graveled facilities and associated access driveways. In addition, workspace associated with the Mermentau Compressor Station Overhead Power Line Project would overlap with the

⁷ Installation of a new point of delivery meter station, designated as the Mermentau River GCX Meter Station, at ANR's Grand Chenier CS. Modifications of the Mermentau River GCX Meter Station would be conducted under ANR's blanket certificate (CP82-480-000)

proposed Project, as the associated substation would be installed within the proposed Mermentau Compressor Station fence line.

Construction of the associated aboveground facilities or structures for the ANR projects identified within the geographic scope would not permanently alter the surficial topography because no new additional impacts would occur to geologic resources. Neither the proposed Project nor the identified projects are anticipated to impact mineral resources or paleontological resources.

Construction of the Mermentau Compressor Station Overhead Power Line Project would also overlap with the proposed Project. However, overlapping construction activities associated with this project would be limited to the installation of a new substation within the Mermentau Compressor Station fence line, which is not anticipated to result in adverse impacts on geologic conditions. As such, cumulative impacts on geologic resources would be minor.

Soils

The geographic scope for cumulative impacts on soils affected by construction and operation of the Project is limited to the Project workspace. As identified in appendix B, the following projects occur within the geographic scope for soil resources:

- Grand Chenier Bi-Directional Launcher/Receiver Project (ANR);
- Mermentau River GCX Point of Delivery Project (ANR);
- Grand Chenier Compression Overhaul Project (ANR);
- Grand Cheniere Horsepower Increase Project (ANR);
- Eunice Compressor Replacement Project (ANR); and
- Mermentau Compressor Station Overhead Power Line Project (Jefferson Davis Co-Op Inc.).

ANR's Eunice Compressor Replacement Project would occur within the Eunice Compressor Station fence line and associated facility access driveways but would be mostly completed prior to construction of the proposed Project. Because all work associated with the Eunice Compressor Replacement Project would occur within areas which are mostly paved and graveled at the existing facility, no soil impacts are anticipated to occur.

In addition, workspace associated with the Mermentau Compressor Station's FERC nonjurisdictional Overhead Power Line Project would overlap with the proposed Project construction, as the associated substation would be installed within the proposed Mermentau Compressor Station fence line and concurrent with the proposed Project construction activities. To minimize impacts on soils, ANR would implement best management practices outlined in its ECS regarding erosion control measures, revegetation, and soil stabilization. ANR would utilize timber mats in saturated areas, as applicable, to reduce the potential of compaction and rutting during construction of the proposed facilities. Jefferson Davis Co-Op Inc. would also be required to implement

similar best management practices during construction of the Mermentau Compressor Station Overhead Power Line Project. Upon completion of the projects, all areas not converted to impermeable surfaces would be revegetated and maintained in an herbaceous state. By implementing these measures, the potential cumulative impact on soils as a result of construction of the proposed Project and the Mermentau Compressor Station Overhead Power Line Project would be minor and temporary.

Water Resources and Wetlands

The geographic scope associated with groundwater, surface water, and wetland resources affected by construction and operation of the Project includes the HUC 12 watersheds impacted by the Project (i.e., HUC 080802020301 [Mermentau Compressor Station], HUC 080802010304 and HUC 080802010306 [Eunice Compressor Station], and HUC 080802021105 [Grand Chenier Compressor Station]). As identified in appendix B, the following other projects occur within the geographic scope for groundwater, surface water, and wetland resources and were considered in the cumulative impact analysis:

- Acadiana Project (Kinder Morgan Louisiana Pipeline LLC);
- Eunice Compressor Replacement Project (ANR);
- Driftwood Pipeline Project (Driftwood Pipeline, LLC);
- Mermentau Compressor Station Overhead Power Line Project (Jefferson Davis Co-Op Inc.); and
- Dugas Road Improvement (Jefferson Davis Parish).

Groundwater

Project activities at the existing Eunice and Grand Chenier Compressor Stations would not result in new permanent infiltration impacts. All new permanent aboveground structures would be installed within previously paved and graveled facilities. Permanent infiltration impacts would result from the placement of impervious and semi-permeable ground cover during the construction and operation of the new Mermentau Compressor Station. Project activities at all three compressor stations would also require the installation of deep piles and/or piers, which would breach the water table. However, installation of the piles/piers would not introduce contaminants because the pile would not intersect or breach a confining unit. As such, associated impacts on groundwater quality are anticipated to be minor and short-term. Therefore, the proposed Project is not anticipated to adversely impact groundwater quality or supply, and cumulative impacts on groundwater are anticipated to be minor.

Surface Water

Potential impacts on surface water resources during construction and operation of the Project would be associated with in-water activities, stormwater runoff, hydrostatic testing, and potential spills of hazardous materials. In-water activities, such as the

installation of a temporary culvert, has the greatest potential for impacts on surface water resources. These impacts include increased turbidity and sedimentation in the vicinity of the crossing and immediately downstream. The impacts could contribute to a cumulative impact if conducted concurrently with in-water activities of other projects considered. However, impacts associated with in-water activities would be short-term with water quality quickly returning to ambient conditions following the completion of the temporary culvert installation and removal. Other activities associated with the construction of the proposed Project, including hydrostatic test discharges, stormwater runoff, and potential spills could also affect surface water resources. However, impacts from these activities are also anticipated to be short-term and localized.

Before any in-water activities could occur for the proposed Project or other projects in the geographic scope, ANR and the other project proponents are required to obtain authorization under Section 404 of the Clean Water Act from the U.S. Army Corps of Engineers and corresponding Section 401 Water Quality Certification from the state. These authorizations are contingent on the use of BMPs, as described in this EA, to minimize impacts on water quality and ensure that water quality standards are maintained.

Concurrent construction of projects involving clearing, grading, or other earthwork may also increase the potential for cumulative impacts on water quality from increased stormwater runoff. All project proponents regulated by LDEQ would be required to adhere to LDEQ regulations regarding hydrostatic test water, construction, and industrial stormwater and wastewater discharges. Compliance with these regulations by ANR and the other project proponents; implementation of BMPs; and other project erosion and sediment control plans would minimize potential cumulative impacts on surface water resources as a result of stormwater runoff.

Increased construction and industrial operation activities in and around surface waterbodies could result in an increased potential for spills of hazardous materials. Similar to the proposed Project, other projects would also be required to adhere to regulations associated with the use and storage of hazardous materials and are anticipated to implement SPCCP or other BMPs to minimize the potential for spills of hazardous materials to reach surface waters. Therefore, the potential for cumulative impacts as a result of spills of hazardous materials is considered to be negligible, as spills are not anticipated and would have to occur within the same general timeframe and within the same general area to result in a cumulative impact.

While surface water impacts associated with the Project could contribute to a cumulative effect when combined with other projects within the geographic scope, this cumulative effect is not anticipated to be significant. Overall, cumulative impacts on surface water resources are anticipated to be minor.

Wetlands

Given that the requirements outlined in this section VI.A.1 of our Procedures do not apply to wetlands in actively cultivated or rotated cropland, we conclude that

construction and operation of the proposed Project would not result in temporary or permanent impacts on wetland resources, and would not contribute to cumulative impacts on wetland resources.

Vegetation and Wildlife

Cumulative impacts on vegetation and wildlife resources (primarily due to increased turbidity or contamination due to spills), could extend outside of the project workspaces, but would likely be contained to a relatively small area (the HUC 12 sub-watersheds). Therefore, projects considered for cumulative impacts to vegetation and wildlife are the same as identified above for groundwater, surface water, and wetland resources.

Most cumulative impacts on vegetation and wildlife would result from the temporary and permanent conversion of vegetation (which is also wildlife habitat) associated with the construction and operation of the proposed Project and the other projects identified in appendix B. Project impacts on wildlife habitat would be greatest at the new Mermentau Compressor Station, as the impacts would result in the permanent conversion of existing upland habitat to industrial use. However, the Project area at the Mermentau Compressor Station would be on previously disturbed agricultural land (fallow fields), which limits the area's vegetative value as wildlife habitat. Additionally, the Dugas Road Improvement Project and the Mermentau Compressor Station Overhead Power Line Project are the only other projects within the vicinity of the Mermentau Compressor Station and in the geographic scope (HUC-12 watersheds). Construction of the proposed Project is scheduled to be completed prior to initiation of the Dugas Road Improvement Project. Because the scope of the Dugas Road Improvement Project involves improvements to an existing road, the associated impacts are expected to be limited to construction activities. Construction of the Mermentau Compressor Station Overhead Power Line Project would be concurrent with the proposed Project; however, all construction activities associated with the Dugas Road Improvement Project would be limited to open land and previously disturbed areas adjacent to existing public roads. Therefore, we conclude that cumulative impacts on vegetation and wildlife in the vicinity of the Mermentau Compressor Station would be negligible.

The workspace for the Eunice Compressor Replacement Project overlaps with the Project's existing Eunice Compressor Station, the Driftwood Pipeline Project is directly adjacent to the Eunice Compressor Station, and modifications of the Acadiana Project occur within 0.5 mile of the Eunice Compressor Station. All projects will require ground disturbance; however, only the Driftwood Pipeline and Acadiana Projects would require vegetation clearing, as ANR's Eunice Compressor Replacement Project would be limited to the existing Eunice Compressor Station paved/graveled facility and associated access roads. The construction for these other four projects is anticipated to overlap with the proposed Project. Where construction schedules overlap, increased noise, lighting, and human activity could disturb wildlife in the area. However, the projects would be conducted within and/or directly adjacent to existing compressor station facilities, and

most wildlife in the area is anticipated to be acclimated to human activity. Wildlife may temporarily displace to nearby suitable habitat but are anticipated to return to those areas temporarily impacted following the completion of construction activities. Therefore, cumulative impacts on wildlife as a result of increased noise, light, and human activity are anticipated to be of short duration and minor.

As discussed, the proposed Project would have no effect on federally listed threatened and endangered species; therefore, no cumulative impact on threatened and endangered species would occur as a result of the proposed Project. Further, the other projects identified in appendix B, in addition to the proposed Project, are subject to the requirements under the ESA and must consult with the USFWS if impacts on threatened and/or endangered species are anticipated. For this reason, we conclude the Project would not contribute to cumulative impacts on federally listed species.

Cultural Resources

For the purposes of evaluating cumulative impacts on cultural resources, the geographic scope is defined as the APE for the proposed Project. The APE for direct effects was determined to be limited to the area of potential ground disturbance; whereas, the APE for indirect effects includes a 0.5-mile buffer from the new Project aboveground facilities. However, the proposed Project would not directly or indirectly affect any historic properties. Therefore, the proposed Project would not contribute to cumulative impacts on cultural resources.

Land Use and Visual Resources

Construction and operation of the new Mermentau Compressor Station associated with the Project would result in the conversion of existing land uses to industrial/developed land, while Project activities at the existing Eunice and Grand Chenier Compressor Stations would not result in the permanent conversion of land use. Therefore, the proposed modifications at these existing facilities are not anticipated to contribute to cumulative impacts on land use. Due to the abundance of land use types similar to those impacted by the proposed Project and other projects within the geographic scope and the minimal amount of land use conversion resulting from operation of the Project and the other projects, cumulative impacts on land use are anticipated to be minor.

The proposed Project impacts on visual resources would result from construction activities as well as operation of the new Mermentau Compressor Station. Although the Dugas Road Improvement Project and the Mermentau Compressor Station Overhead Power Line Project would occur within and/or directly adjacent to the Mermentau Compressor Station, the associated construction schedule for the Dugas Road Improvement Project is not anticipated to overlap with the proposed Project. In addition, the Dugas Road Improvement Project involves modifications to an existing public road. Installation of the overhead power line Mermentau Compressor Station Project would occur concurrently with the proposed Project; however, the new substation would be

installed within the proposed Mermentau Compressor Station fenceline, and the new power line poles would be directly adjacent to existing public roads and in the vicinity of existing overhead power lines.

Operation of the modified Eunice and Grand Chenier Compressor Stations following Project completion would not significantly contribute to cumulative impacts on visual resources, as no permanent aboveground structures are proposed for installation outside of the existing facilities. Visual impacts associated with construction of the proposed Project, Acadiana Project, and Driftwood Pipeline Project would be temporary and limited to the overlapping construction schedules. Further, these activities would occur within the vicinity of existing industrial infrastructure (i.e., compressor stations). Therefore, we conclude that the overall cumulative impact on visual resources associated with construction of the projects would be minor.

Socioeconomics

A total of eight identified projects are located within Acadia, Cameron, and Jefferson Davis parishes and were considered in the cumulative impact analysis. These projects range from large-scale industrial developments to small road improvement projects and include the following:

- Acadiana Project (Kinder Morgan Louisiana Pipeline LLC);
- PGAP Project (Permian Global Access Pipeline LLC);
- Line 0-502 Receiver Project (ANR);
- Eunice Compressor Replacement Project (ANR);
- Driftwood Pipeline Project (Driftwood Pipeline, LLC);
- Mermentau Compressor Station Overhead Power Line Project (Jefferson Davis Co-Op Inc.);
- LA 383: Jefferson Davis P/L – Lakeview Loop (Louisiana Department of Transportation and Development); and
- Dugas Road Improvement (Jefferson Davis Parish).

The potential for adverse impacts on socioeconomic resources is greatest when construction personnel from multiple projects are utilizing the same resources (i.e. housing), which would primarily occur during concurrent construction. As such, other projects that are located within the geographic scope for cumulative impacts (Acadia, Cameron, and Jefferson Davis parishes) were not considered if the construction schedule would not overlap with the proposed Project schedule (i.e. PGAP, LA 383: Jefferson Davis P/L – Lakeview Loop, and Dugas Road Improvement projects, see Appendix B), and as such not discussed in the cumulative impact analysis for socioeconomics.

Employment

Projects which are expected to overlap temporarily with the Project could create some challenges in recruiting local workers. However, the number of workers required to construct the planned Project would mostly be local workers that specialize in

compressor station construction. Project schedules overlapping with the planned Project (ANR's Line 0-502 Receiver, Eunice Compressor Replacement, Acadiana and Driftwood Pipeline projects) are anticipated to be fully staffed at the time of construction of the proposed Project. In addition, construction of the Mermentau Compressor Station Overhead Power Line Project is anticipated to overlap with the planned Project; however, the scope of this power line extension project is minor, and the number of construction workers required is anticipated to be insignificant. Therefore, it is anticipated that there would be an adequate labor force available to complete both the planned Project and those other projects that may be constructed concurrently.

Housing

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. 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, as discussed in section B.6.1, it is expected that the majority of contractor labor would be local workers, not requiring temporary relocation to the Project area, and would reside in existing permanent housing. Therefore, it is anticipated that there would be adequate housing for workers that relocate to the area during the construction of the Project, and that the Project will not contribute to a long-term adverse cumulative impact on the local housing market.

Public Service

As shown on Table 10, there is a well-established network of medical, fire, and police services readily available in the Project area with the capacity to manage the temporary influx of Project personnel with negligible impacts on public services. Therefore, cumulative impacts on public services from construction of the planned Project along with other projects constructed during the same time frame are not anticipated.

Traffic and Transportation

Road traffic in the area would increase during construction phase of the planned 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 traffic congestion and increased traffic safety risks. However, it can be assumed that the majority of equipment and material deliveries for construction of the Acadiana Project and Driftwood Pipeline Project would occur soon after construction of each project is scheduled to begin in August 2020 and the second quarter of 2020, respectively. Therefore, these larger deliveries and associated traffic and transportation impacts would occur prior to construction of the proposed Project. In addition, construction activities associated with ANR's Line 0-502 Receiver and the Eunice Compressor Replacement projects would be nearing completion when construction of the planned Project is scheduled to begin. The Mermentau Compressor Station Overhead Power Line Project

would be constructed concurrent with and directly adjacent to the Project at the Mermentau Compressor Station; however, only minor equipment and material deliveries are anticipated to be required for this project. Therefore, overlapping construction of these projects is anticipated to result only result in short-term cumulative impacts on traffic.

Traffic from other projects that are constructed in the immediate vicinity of and during the same timeframe as the proposed Project are not expected to result in significant cumulative impacts on traffic congestion and traffic safety. 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 as only two new permanent employees would be necessary for the Project. Therefore, cumulative impacts on traffic congestion are expected to be minor and temporary.

Environmental Justice

As discussed in section B.6.1, the Project would not have a disproportionately high or adverse human health, socioeconomic, or other environmental effect on minority or low-income communities. As such, the Project would not have a cumulative impact contribution on minority or low-income communities impact from other projects within Acadia, Cameron, and Jefferson Davis parishes.

Air and Noise Quality

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.8.1. ANR plans to commence construction of the Project in January 2021. As identified in appendix B, the following projects occur within the geographic scope for air quality during construction:

- the Grand Chenier Bi-Directional Launcher/Receiver Project;
- the Mermentau River GCX Point of Delivery Project;
- the Grand Chenier Compression Overhaul Project;
- the Grand Chenier Horsepower Increase Project;
- the Eunice Compressor Replacement Project;
- the Driftwood Pipeline Project; and
- the Mermentau Compressor Station Overhead Power Line Project.

ANR plans to commence construction of the Project in January 2021. These projects, and the proposed Project, may result in cumulative impacts on air quality during construction of the proposed Project. Construction these projects 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, ANR and Driftwood Pipeline LLC would implement dust control measures such as watering access roads and construction areas. Moreover, because watering access roads and construction areas is a common construction best management practice, the other projects listed may also implement similar dust control measures to minimize fugitive dust generation. Based on these mitigation measures and the temporary and localized impacts of construction, the proposed Project would not result in significant cumulative impacts on air quality during construction.

Appendix B includes a list of all proposed new emissions sources within the geographic scope (i.e., 50 kilometers [km]) of the proposed Project. Most of these proposed projects are sufficiently far away (from 26 to 50 km) from the proposed Project such that air quality impacts are not anticipated to overlap, especially given that the emissions from the proposed Project modifications would be well within the NAAQS in the local vicinity (within 50 percent of the NAAQS for all pollutants except for annual $PM_{2.5}$ which is within 66 percent). The Acadiana Project, Eunice Compressor Replacement Project, and the Basile Compressor Station of the Driftwood Pipeline Project are all within 2 km of the Eunice CS. These projects would have a cumulative impact during operation of the proposed Project. Our analysis of these projects showed that the NAAQS would not be exceeded in the local vicinity of any of these projects. Because of this fact and because the proposed Project would be well within the NAAQS locally, we conclude the proposed Project would not result in significant cumulative impacts on air quality during operation.

Noise

Construction of the proposed Project could overlap with the following projects within 0.25 of the proposed project: the Grand Chenier Bi- Directional Launcher/Receiver Project, Mermentau River GCX Point of Delivery Project, Grand Chenier Compression Overhaul Project, Grand Chenier Horsepower Increase Project, Eunice Compressor Replacement Project, Driftwood Pipeline Project, and Mermentau Compressor Station Overhead Power Line Project. 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 Project operation would result in impacts on existing noise levels in the vicinity of the Mermentau Compressor Station, the Grand Chenier Compressor Station and the Mermentau River GCX Meter Station, these impacts are not anticipated to result in perceptible noise level increases at the nearby NSAs. Therefore, operation of the Project would contribute negligibly to any cumulative impacts on noise levels.

C: ALTERNATIVES

In preparing this EA, we considered several alternatives to the proposed action to determine whether they would be environmentally preferable over the Project. These alternatives include the no-action alternative, system alternatives, and aboveground facility location alternatives. In evaluating alternatives, the following criteria are used to determine whether an alternative would be environmentally preferable:

- ability to meet the Project's stated objective;
- technical and economic feasibility and practicality; and
- whether the alternative provides a 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. Alternatives that do not meet the Project's objective or are not feasible are 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. 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.

1.1 No Action Alternative

Under the No Action Alternative, ANR would not construct the proposed Project. If the proposed facilities were not constructed, the environmental impacts identified in this EA would be avoided and the beneficial impacts of implementing the Project would not occur. However, under the No-Action Alternative, ANR would not be able to meet the objectives of the Project, which are intended to meet Venture Global Calcasieu Pass, LLC's (Venture Global's) need by providing 400 million cubic feet per day of long-term firm transportation service of natural gas to the Calcasieu Pass Terminal. ANR's existing system does not have adequate horsepower to increase feed delivery gas pressures, and ANR would be unable to meet its contractual obligations for the additional 400 million cubic feet per day without the Project facilities. If the proposed Project is not built, it is likely that another pipeline and/or compression project would be built by a third-party to meet Venture Global's expressed need, which would likely have equal or greater environmental impacts than the proposed Project. Therefore, we do not recommend the no action alternative.

1.2 System Alternatives

System alternatives would make use of existing, modified, or planned pipeline

systems or projects to meet the objectives of the proposed Project. Use of a system alternative would make it unnecessary to construct all or part of the proposed Project, though some modifications or additions to the existing or planned systems may be required. These modifications or additions could result in environmental impacts that are less than, similar to, or greater than those associated with construction and operation of the Project.

To be a viable system alternative to the Project, potential system alternatives must meet the following criteria:

- capable of providing up to 400 million cubic feet per day of new natural gas firm transportation service to Venture Global's Calcasieu Pass Terminal;
- capable of providing additional peak-day capability and additional unit flexibility during non-peak periods in the critical market region for the ANR pipeline system;
- capable of being constructed within the same schedule as the Project; and
- able to meet the criteria above while providing a significant environmental advantage when compared to the Project.

ANR considered two system alternatives (looping and compression alternative and compression only alternative) to the proposed Project facilities, including one that would involve expansion of ANR's existing Line 502 pipeline system via installation of a pipeline loop and modifications to the existing Grand Chenier Compressor Station, as well as one system alternative that would involve significant modifications and horsepower increases at the existing Eunice and Grand Chenier Compressor Stations.

This system alternative would require installation of approximately 20 miles of 36-inch-diameter natural gas pipeline adjacent to ANR's existing 502 Lines as well as additional compression at the Grand Chenier Compressor Station. The pipeline loop would begin at the Eunice Compressor Station and extend southeast adjacent to the existing 502 Lines for approximately 20 miles before terminating at ANR's existing Lowry Junction, which is near Line 0-502 milepost 1. In addition, this system alternative would require the installation of a Solar Mars 100 Turbine compressor unit at the existing Grand Chenier Compressor Station in order to provide approximately 15,900 hp of additional compression to increase the supply pressure for further transportation to the Calcasieu Pass Terminal via the TransCameron Pipeline. In total, this system alternative would require 220 acres of additional land impacts than the proposed Project, including 15 acres and 49 acres of greater wetland and forest impacts, respectively. Further, the pipeline loop required for this system alternative would cross 29 waterbodies, whereas the proposed Project would only require temporary impacts on 1 minor roadside ditch at the Eunice Compressor Station and no impacts on wetlands. In addition, installation of the 20-mile pipeline loop associated with the system alternative would require construction activities across several residential properties, with 9 residences within 100 feet of the pipeline centerline, resulting in greater land disturbance and aesthetic impacts than the proposed Project. There are no residences within 1,000 feet of the proposed

Project. Looping of ANR's existing 502 Lines would also require significantly greater time to complete as compared to the proposed Project. Therefore, we have removed this looping and compression alternative from further consideration due to the increased land disturbance, wetland and waterbody impacts, residential impacts, and construction duration associated with construction of a 20-mile pipeline loop.

ANR also considered a system alternative that would avoid greenfield facilities and require only the installation of additional compression at existing facilities upstream and downstream of the proposed Mermentau Compressor Station. This compression only alternative would involve the installation of approximately 62,840 hp and 44,000 hp of additional compression at the existing Eunice and Grand Chenier Compressor Stations, respectively. Although this system alternative would avoid the construction of a greenfield midpoint compressor station, the additional horsepower necessary for installation at these existing facilities to meet Venture Global's stated need of 400 million cubic feet per day of natural gas capacity would exceed the maximum allowable operating pressure of the existing 502 Lines and other design parameters at both the Eunice and Grand Chenier Compressor Stations. Therefore, ANR's existing compressor stations could not feasibly or safely accommodate the additional compression that would be required in order to meet the Project purpose and need and as this would not meet our second criteria for alternatives (technical and economic feasibility) we removed the compression only alternative from further consideration.

As such, we have not identified any system alternatives that could meet the Project purpose.

1.3 Site Alternative

The proposed modifications at the Eunice and Grand Chenier Compressor Stations would mostly be within existing facility sites. Additionally, the impacts associated with construction of the Mermentau Compressor Station would not be significant. Furthermore, no comments from the public or agencies have been received that raised issues with this proposal and we did not find any environmental concerns that justified further evaluation of any site alternatives.

1.4 Conclusion

We reviewed alternatives to ANR's proposal based on our independent analysis. No system or site alternatives were identified that would provide a significant environmental advantage of the Project design. Therefore, we conclude that the proposed Project, as modified by our recommendations, is the preferred alternative to meet the Project objectives.

D: STAFF'S CONCLUSIONS AND RECOMMENDATIONS

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

1. ANR 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. ANR 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 measure; 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 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 activities.
3. **Prior to any construction**, ANR shall file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel, Environmental Inspectors (EI), 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 alignment sheets. **As soon as they are available, and before the start of construction**, ANR 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.

ANR'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. ANR's right of eminent domain granted under NGA section 7(h) does not authorize it to increase the size of its natural gas pipeline to accommodate future needs or to acquire a right-of-way for a pipeline to transport a commodity other than natural gas.

5. ANR 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 workspace 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 resources mitigation measures;
- b. implementation of endangered, threatened, or special concern species mitigation measures;
- c. recommendations by state regulatory authorities; and
- d. agreements with individual landowners that affect other landowners or could affect sensitive environmental areas.

6. **Within 60 days of the acceptance of the Certificate and before construction** begins, ANR shall file an Implementation Plan with the Secretary for review and written approval by the Director of OEP. ANR must file revisions to the plan as schedules change. The plan shall identify:
- a. how ANR will 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 ANR will 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 spread), and how the company will ensure that sufficient personnel are available to implement the environmental mitigation;
 - d. company personnel, including EIs and contractors, who will receive copies of the appropriate material;
 - e. the location and dates of the environmental compliance training and instructions ANR will give to all personnel involved with construction and restoration;
 - f. the company personnel (if known) and specific portion of ANR's organization having responsibility for compliance;
 - g. the procedures (including use of contract penalties) ANR will follow if noncompliance occurs; and
 - h. for each discrete facility, a Gantt or PERT chart (or similar project scheduling diagram), and dates for:
 - (1) the completion of all required surveys and reports;
 - (2) the environmental compliance training of onsite personnel;
 - (3) the start of construction; and
 - (4) the start and completion of restoration.
7. ANR shall employ at least one EI for the Project. The EI 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. 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
 - e. responsible for maintaining status reports.
8. Beginning with the filing of its Implementation Plan, ANR 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 will also be provided to other federal and state agencies with permitting responsibilities. Status reports shall include:
- a. an update on ANR'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(s) 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;
 - 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 ANR from other federal, state, or local permitting agencies concerning instances of noncompliance, and ANR's response.
9. ANR must receive written authorization from the Director of OEP **before commencing construction of any Project facilities**. To obtain such authorization, ANR must file with the Secretary documentation that it has received all applicable authorizations required under federal law (or evidence of waiver thereof).
10. ANR must receive written authorization from the Director of OEP **before placing the Project into service**. Such authorization will only be granted following a determination that rehabilitation and restoration of the right-of-way and other areas affected by the Project are proceeding satisfactorily.
11. **Within 30 days of placing the authorized facilities in service**, ANR 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 ANR 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.
12. ANR shall **not begin** construction of the Project **until** it files with the Secretary a copy of the determination of consistency with the Coastal Zone Management Plan issued by LDNR.
13. ANR shall file a noise survey with the Secretary **no later than 60 days** after placing the Mermentau Compressor Station and the modified Grand Chenier Compressor Station into service. If a full power load condition noise survey is not possible, ANR shall file an interim survey at the maximum possible power load **within 60 days** of placing the facilities in service and file the full load survey **within 6 months**. If the noise attributable to the operation of the facilities at full or interim power load conditions exceeds 55 dBA L_{dn} at any nearby NSAs, ANR shall file a report on what changes are needed and should install the additional noise controls to meet the level **within 1 year** of the in-service date. ANR shall confirm compliance with the above requirement by filing a second full power noise survey with the Secretary **no later than 60 days** after it installs the additional noise controls.
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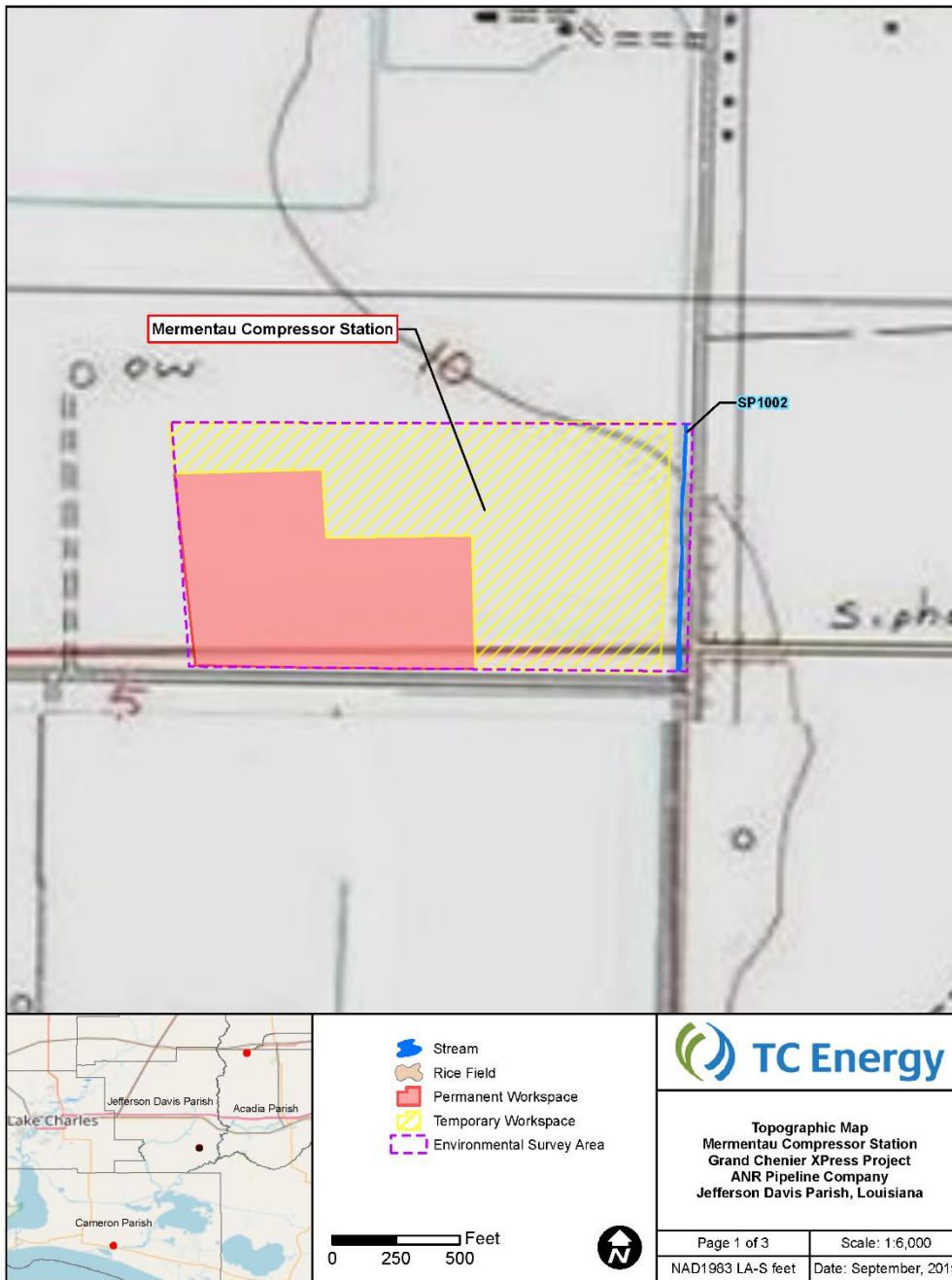
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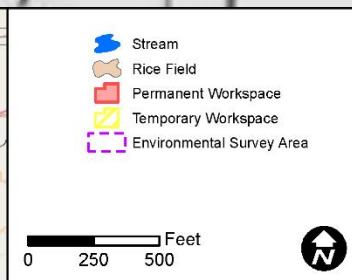
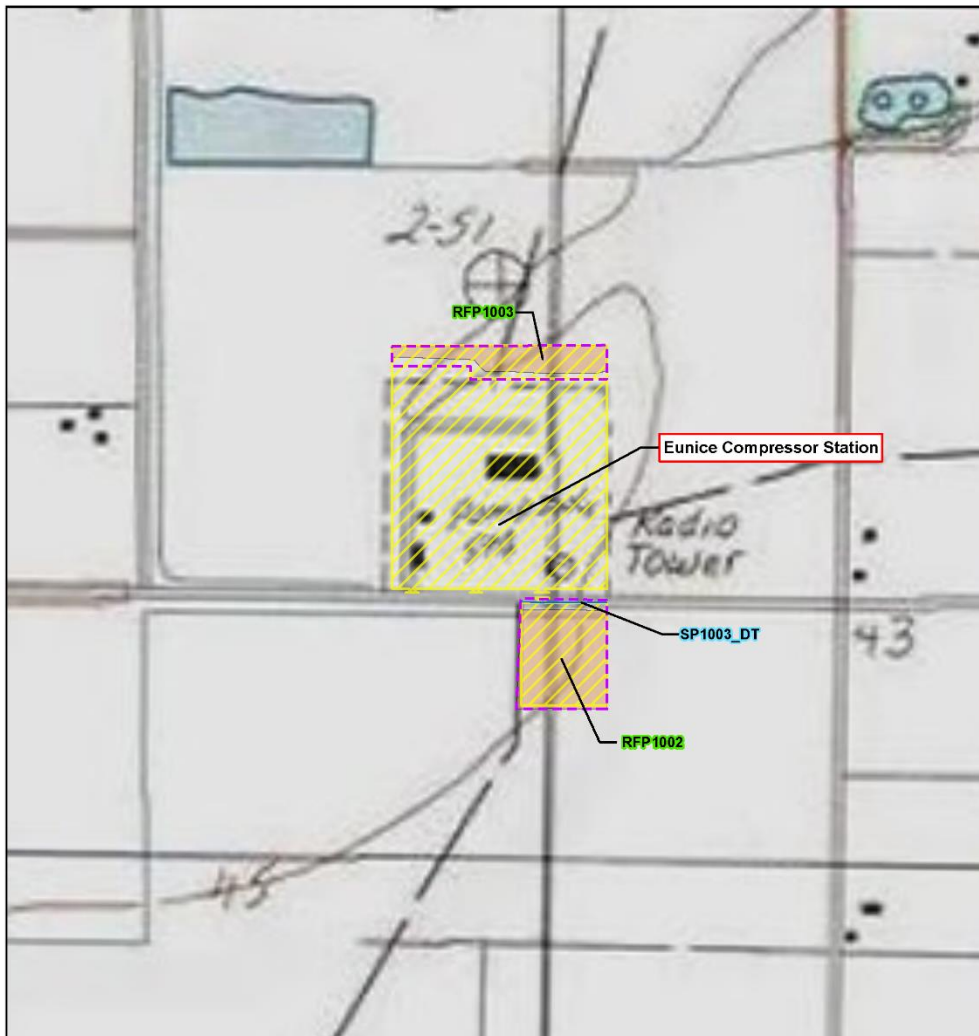
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APPENDIX A

Topographic Maps



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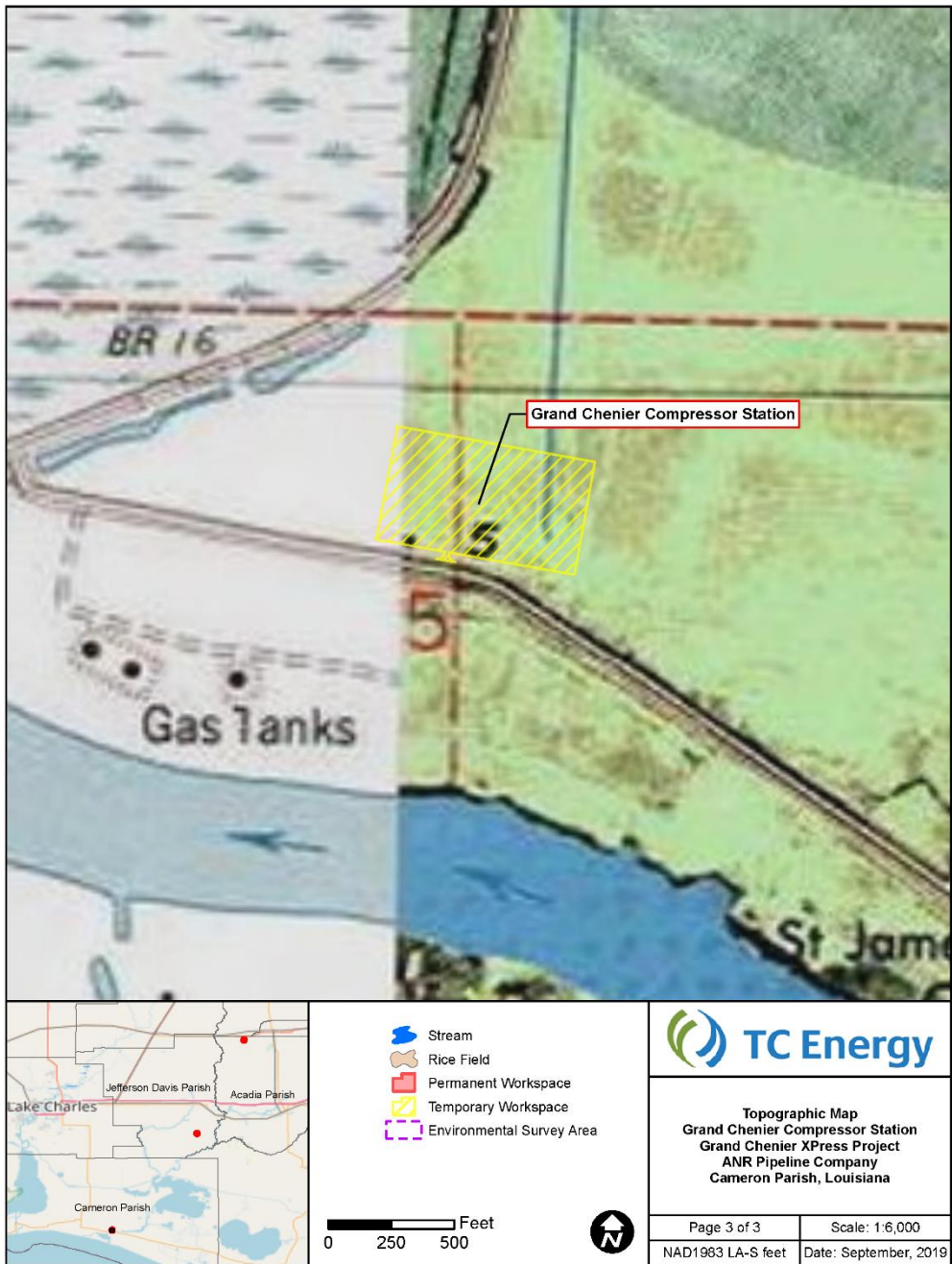


TC Energy

Topographic Map
Eunice Compressor Station
Grand Chenier Xpress Project
ANR Pipeline Company
Acadia Parish, Louisiana

Page 2 of 3	Scale: 1:6,000
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APPENDIX B

Past, Present, and Reasonably Foreseeable Projects Considered in the Cumulative Impacts Analysis for the Grand Chenier XPress Project

Table B-1 Past, Present, and Reasonably Foreseeable Projects Considered in the Cumulative Impacts Analysis for the Grand Chenier XPress Project							
Project (Project Proponent) (No. on Map)	Project Description	Parish(es) ^a	Estimated Construction Timeframe	Project Size ^b	Closest Distance from Project ^c	Included in Cumulative Impact Analysis	Resources Potentially Affected within the proposed Project's Geographic Scope ^{d, e}
Natural Gas Facilities Projects							
Acadiana Project (Kinder Morgan Louisiana Pipeline LLC) (1)	Installation of three compressor units and miscellaneous auxiliary facilities at an existing compressor station in Acadia Parish, and piping modifications and new control valves at an existing meter station in Evangeline Parish.	Acadia	Construction: August 2020 Operation: February 2022	88.52 acres	0.38 mile S of Eunice CS	Yes	Water Quality; Fish, Wildlife, and Vegetation; Land Use; Visual Resources; Noise (Operation); Air Quality (Operation); Socioeconomics
PGAP Project (Permian Global Access Pipeline LLC) (2)	Installation of 625 miles of 42-inch diameter natural gas pipeline extending from the Waha Hub in West Texas to Lake Charles, Louisiana; compressor stations; and related facilities.	Jefferson Davis ^f	Construction: Mid-2022 Operation: 2023-2024	625 acres	27.78 miles NW of Mermentau CS	Yes	Socioeconomics
Grand Chenier Bi-Directional Launcher/Receiver Project (ANR Pipeline Company) (3)	Replace the existing pig trap at ANR's Grand Chenier CS to make it bi-directional. Work to be performed under Section 2.55(a).	Cameron	Construction: February 2020 Operation: January 2021	8.39 acres	Overlaps with Project area at Grand Chenier CS	Yes	Geology; Noise (Construction); Air Quality (Construction)
Line 0-502 Receiver Project (ANR Pipeline Company) (4)	Modify the existing receiver at ANR's IC Junction site to make it bi-directional. Work to be performed under Section 2.55(a).	Jefferson Davis	Construction: February 2020 Operation: January 2021	0.75 acre	6.11 miles NE of Mermentau CS	Yes	Socioeconomics
Mermentau River GCX Point of Delivery Project (ANR Pipeline Company) (5)	Install a new point of delivery meter station, designated as the Mermentau River GCX Meter Station, at ANR's Grand Chenier CS.	Cameron	Construction: June 2020 Operation: April 2021	8.39 acres	Overlaps with Project area at Grand Chenier CS	Yes	Geology; Noise (Construction & Operation); Air Quality (Construction)
Grand Chenier Compression Overhaul Project (ANR Pipeline Company) (6)	Inspect and refurbish existing equipment at the Grand Chenier CS to restore a temporarily abandoned unit at the station to its original capacity.	Cameron	Construction: February 2020 Operation: January 2021	8.39 acres	Overlaps with Project area at Grand Chenier CS	Yes	Geology; Noise (Construction); Air Quality (Construction)
Grand Chenier Horsepower Increase Project (ANR Pipeline Company) (7)	Replace the existing Taurus 70 Turbine compressor unit at the Grand Chenier CS and increase the station horsepower from 9,700 to 10,800. Work to be performed under Section 157.210 with submittal of a Prior Notice to FERC.	Cameron	Construction: May 2020 Operation: January 2021	8.39 acres	Overlaps with Project area at Grand Chenier CS	Yes	Geology; Noise (Construction & Operation); Air Quality (Construction)

Table B-1 Past, Present, and Reasonably Foreseeable Projects Considered in the Cumulative Impacts Analysis for the Grand Chenier XPress Project							
Project (Project Proponent) (No. on Map)	Project Description	Parish(es) ^a	Estimated Construction Timeframe	Project Size ^b	Closest Distance from Project ^c	Included in Cumulative Impact Analysis	Resources Potentially Affected within the proposed Project's Geographic Scope ^{d, e}
Eunice Compressor Replacement Project (ANR Pipeline Company) (8)	Place an existing reciprocating Clark TCVC compressor unit (Unit 101A) on standby and install a new de-rated Solar Mars 100 Turbine and C65 compressor package at the Eunice CS. Work to be performed under Section 2.55(b)(1).	Acadia	Construction: July 2020 Operation: January 2021	15.36 acres	Overlaps with Project area at Eunice CS	Yes	Water Use and Quality; Fish, Wildlife, and Vegetation; Socioeconomics; Geology; Soils; Land Use; Visual Resources; Noise (Construction & Operation); Air Quality (Construction & Operation)
Driftwood Pipeline Project (Driftwood Pipeline, LLC) (9)	Construction and operation of approximately 96 miles of new pipeline, three new compressor stations, and 15 new meter stations in Calcasieu, Jefferson Davis, Acadia, and Evangeline parishes.	Acadia and Jefferson Davis ^f	Construction: 2 nd Quarter 2020 Operation: 3 rd Quarter 2021 ^f	1,875.2 acres ^g	Directly adjacent to Eunice CS. Gillis CS is located 44 km NW of Mermentau CS and 52 km W of Eunice CS; Basile CS is located 38 km NE of Mermentau CS and 2 km SW of Eunice CS; Mamou CS is located 56 km NE of Mermentau CS and 15 km NE of Eunice CS.	Yes	Water Use and Quality; Fish, Wildlife, and Vegetation; Socioeconomics; Land Use; Visual Resources; Noise (Construction & Operation); Air Quality (Construction & Operation)
Cameron Extension Project (Texas Eastern Transmission, L.P.) (10)	Construction of a new natural gas compressor station and three new meter and regulator stations as well as modifications to existing facilities.	Calcasieu	Construction: December 2020 Operation: November 2021	n/a (only impacts air quality)	36 km NW of Mermentau CS	Yes	Air Quality (Operation)
Louisiana XPress Project (Columbia Gulf Transmission, LLC) (11)	Construction of three new natural gas compressor stations, modifications at one existing compressor station, and construction of related facilities.	Evangeline	Construction: September 2020 Operation: February 2022	n/a (only impacts air quality)	50 km NE of Eunice CS	Yes	Air Quality (Operation)
Louisiana Connector Project (Port Arthur Pipeline, LLC) (12)	Construction of approximately 130.8 miles of new 42-inch-diameter natural gas pipeline, one compressor station, nine meter stations, nine MLVs, and four pig launchers/receivers.	Cameron, Calcasieu, Allen, Evangeline and St. Landry	Construction: Q2 2021 Operation: Q1 2023	n/a (only impacts air quality)	New CS is 32 km NW of Eunice CS and 43 km NW of Mermentau CS	Yes	Air Quality (Operation)
Electric Transmission Projects							
Mermentau Compressor Station Overhead Power Line Project (Jefferson Davis Co-Op Inc.) (13)	Construction of 0.16 mile of new electrical power line, which will interconnect to an existing 12.47-kilovolt (kV) overhead line, and construction of a new substation at the Mermentau Compressor Station.	Jefferson Davis	Construction: 1 st Quarter 2019 Operation: April 2022	0.16 mile	Overlaps with Project area at Mermentau CS	Yes	Water Use and Quality; Fish, Wildlife, and Vegetation; Socioeconomics; Geology; Soils; Land Use; Visual Resources; Noise (Construction); Air Quality (Construction)

Table B-1 Past, Present, and Reasonably Foreseeable Projects Considered in the Cumulative Impacts Analysis for the Grand Chenier XPress Project

Project (Project Proponent) (No. on Map)	Project Description	Parish(es) ^a	Estimated Construction Timeframe	Project Size ^b	Closest Distance from Project ^c	Included in Cumulative Impact Analysis	Resources Potentially Affected within the proposed Project's Geographic Scope ^{d, e}
Road Projects							
LA 383: Jefferson Davis P/L – Lakeview Loop (Louisiana Department of Transportation & Development) (14)	Asphalt overlay of road pavement.	Jefferson Davis	Construction: 3 rd Quarter 2019 Operation: 2020	5.98 miles	27.92 miles NW of Mermentau CS	Yes	Socioeconomics
Dugas Road Improvement (Jefferson Davis Parish) (15)	Improvements, including paving, along approximately 0.4 mile of Dugas Road.	Jefferson Davis	Construction: Late 2022 Operation: Early 2023	0.4 mile	Directly adjacent to Mermentau CS	Yes	Water Use and Quality; Fish, Wildlife, and Vegetation; Land Use; Visual Resources; Noise (Construction); Socioeconomics

IU – information unavailable

^a Only parishes in which a cumulative impact may occur are listed

^b Project size (acres) is based on publicly available information, including reported acreages or review of mapping exhibits.

^c Distance is measured from nearest portion of the proposed Project workspace to the identified project's location in miles.

^d Only resources in which a cumulative impact may occur are identified.

^e Project activities at the existing Grand Chenier Compressor Station will be limited to the existing graveled/paved facility and associated access driveway.

Therefore, the only resources considered in the cumulative impact analysis for the Grand Chenier Compressor Station were geology and soils as well as air quality and noise impacts associated with construction, since the Project activities at this station will not contribute to any other resource impacts.

¹ Parishes, construction and operation dates, and/or project size are specific to those project facilities located within the geographic scope considered for cumulative impacts.

⁹ Project size presented represents total acreage impacted by project; however, the project facilities located within Acadia and Jefferson Davis parishes include 36 miles of new pipeline, two new compressor stations, and seven new meter stations (aboveground facility operation acreages: approximately 70 acres).

Note:

Although components of the TransCameron Pipeline Project (FERC Docket No. CP15 551-000) occur within the vicinity of the Grand Chenier Compressor Station, this project was excluded from the cumulative impact analysis since all activities are schedule for completion prior to construction of the proposed Project. In addition, the proposed Project activities at the Grand Chenier Compressor Station will be temporary and strictly limited to the construction timeframe.