Federal Energy Regulatory Commission

Office of

Energy Projects

September 2016

Tennessee Gas Pipeline Company, L.L.C. **Docket No. CP16-12-000**

Southwest Louisiana Supply Project

Environmental Assessment

Washington, DC 20426

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, DC 20246

OFFICE OF ENERGY PROJECTS

In Reply, Refer To:
OEP/DG2E/Gas 3
Tennessee Gas Pipeline Company, L.L.C.
Southwest Louisiana Supply Project
Docket No. CP16-12-000

TO THE PARTY ADDRESSED:

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared this environmental assessment (EA) for the Southwest Louisiana Supply Project (Project) proposed by Tennessee Gas Pipeline Company, L.L.C. (Tennessee) in the above-referenced docket. Tennessee requests authorization to construct, operate, and maintain certain interstate natural gas transmission facilities located in the state of Louisiana to provide 295,000 dekatherms per day of natural gas and firm transportation services on Tennessee's 800 Line system. The purpose of the Project is to meet contractual obligations with Mitsubishi Corporation and MMGS, Inc.

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

Tennessee proposes to construct a 2.4-mile-long, 30-inch-diameter pipeline lateral in Madison Parish, Louisiana; a 1.4-mile-long, 30-inch-diameter pipeline lateral in Richland and Franklin Parishes, Louisiana; five meter stations; one new compressor station in Franklin Parish, Louisiana; and replace a gas turbine engine at an existing compressor station in Rapides Parish, Louisiana.

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

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

Any person wishing to comment on the EA may do so. Your comments should focus on the potential environmental effects, reasonable alternatives, and measures to avoid or lessen environmental impacts. The more specific your comments, the more useful they will be. To ensure that the Commission has the opportunity to consider your comments prior to making its decision on this Project, it is important that we receive your comments in Washington, DC on or before **October 31, 2016**.

For your convenience, there are three methods you can use to file your comments with the Commission. In all instances, please reference the Project docket number (CP16-12-000) with your submission. The Commission encourages electronic filing of comments and has expert staff available to assist you at 202-502-8258 or efiling@ferc.gov.

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

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

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

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

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

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

Additional information about the project is available from the Commission's Office of External Affairs at **(866) 208-FERC** or on the FERC website (www.ferc.gov) using the eLibrary link. Click on the eLibrary link, click on "General Search," and enter the docket numbers excluding the last three digits in the Docket Number field (i.e., CP16-12-000). Be sure you have selected an appropriate date range. For assistance, please contact FERC Online Support at FercOnlineSupport@ferc.gov or toll free at (866) 208-3676, or for TTY, contact (202) 502-8659. The eLibrary link also provides access to the texts of formal documents issued by the Commission, such as orders, notices, and rulemakings.

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

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

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ABBREVIATIONS AND ACRONYMS

AMSL	above mean sea level
ATWS	additional temporary workspace
BGEPA	Bald and Golden Eagle Protection Act
BCC	Birds of Conservation Concern
BCR	bird conservation regions
CAA	Clean Air Act of 1970
Certificate	Certificate of Public Convenience and Necessity
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
Commission	Federal Energy Regulatory Commission
dB	decibel
dBA	A-weighted decibel
EA	environmental assessment
ECMP	Environmental Compliance Management Plan
EIs	environmental inspectors
ESA	Endangered Species Act
°F	degrees Fahrenheit
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
GHG	greenhouse gas
GWP	global warming potential
HAP	hazardous air pollutants
HDD	horizontal directional drilling
hp	horsepower
kW	kilowatt
LDWF	Louisiana Department of Wildlife and Fisheries
LDNR	Louisiana Department of Natural Resources
LDEQ	Louisiana Department of Environmental Quality
L_{dn}	day-night sound level
L_{eq}	equivalent sound level
M&R	metering and regulating
MP	mile post
Memorandum	Memorandum of Understanding on Natural Gas Transportation Facilities
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards

NEPA	National Environmental Policy Act of 1969
NESHAPs	National Emissions Standards for Hazardous Air Pollutants
NGA	Natural Gas Act
NNSR	Nonattainment New Source Review
NO_2	nitrogen dioxide
NOI	*Notice of Intent to Prepare an Environmental Assessment for the Proposed Southwest Louisiana Supply Project, and Request for Comments on Environmental Issues*
NO_x	Oxides of Nitrogen
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NSA	Noise Sensitive Area
NSR	New Source Review
NWR	National Wildlife Refuges
O_2	Oxygen
OEP	Office of Energy Projects
PHMSA	Pipeline and Hazardous Materials Safety Administration
Plan	Upland Erosion Control, Revegetation, and Maintenance Plan
PM	particulate matter
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to 2.5 microns
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to 10 microns
ppm	parts per million
PEM	Palustrine Emergent marshes
PFO	Palustrine Forested wetlands
Procedures	Wetland and Waterbody Construction and Mitigation Procedures
PTE	potential-to-emit
PSD	Prevention of Significant Deterioration
PSS	Palustrine Scrub-shrub wetlands
Secretary	Secretary of the Commission
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
SPCC Plan	Spill Prevention Containment and Countermeasure Plan
tpy	tons per year
USACE	United States Army Corps of Engineers
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VOC	volatile organic compounds
WAP	Louisiana Wildlife Action Plan

SECTION A – PROPOSED ACTION

A.1 INTRODUCTION

The staff of the Federal Energy Regulatory Commission (Commission or FERC) has prepared this environmental assessment (EA) to assess the environmental effects of constructing and operating the natural gas pipeline facilities proposed by Tennessee Gas Pipeline Company, L.L.C. (Tennessee). We[2] prepared this EA in compliance with the requirements of the National Environmental Policy Act of 1969 (NEPA), Title 40 of the Code of Federal Regulations, Parts 1500-1508 [40 CFR 1500-1508]), and with the Commission's implementing regulations under 18 CFR 380.

On October 26, 2015, Tennessee filed an application with the Commission in Docket No. CP16-12-000 for the Southwest Louisiana Supply Project (Project) under section 7(c) of the Natural Gas Act (NGA) and part 157 of the Commission's regulations. Tennessee seeks to construct and operate interstate natural gas transmission facilities in Louisiana.

The EA is an important and integral part of the Commission's decision on whether to issue Tennessee 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 that could result from implementation of the proposed action;
- identify and recommend reasonable alternatives and specific mitigation measures, as necessary, to avoid or minimize project-related environmental impact; and
- facilitate public involvement in the environmental review process.

A.2 PURPOSE AND NEED

Tennessee has indicated that the purpose of the Project is to provide an additional 295,000 dekatherms per day of natural gas and firm transportation service to Tennessee's 800 Line system. This service is needed to meet its contractual obligations with Mitsubishi Corporation and MMGS, Inc.

Under Section 7 of the NGA, the Commission determines whether interstate natural gas transportation facilities are in the public convenience and necessity and, if so, grants a Certificate to construct and operate them. The Commission bases its decisions on technical competence, financing, rates, market demand, gas supply, environmental impact, long-term feasibility, and other issues concerning a proposed project.

[2] "We," "us," and "our" refers to environmental staff of the Office of Energy Projects

A.3 PROPOSED FACILITIES

The Project would involve the installation of new facilities and modification of existing facilities as described below. All project construction would take place in the State of Louisiana.

A.3.1 Pipeline Facilities

- Delhi North Lateral – 2.4-mile, 30-inch-diameter lateral pipeline in Madison Parish; and

- Delhi South Lateral – 1.4-mile, 30-inch-diameter lateral pipeline in Franklin and Richland Parishes.

A.3.2 Compression Facilities

- The proposed Delhi Compressor Station 836A (CS 836A) in Franklin Parish would consist of:
  - a bi-directional compressor station consisting of a 15,900 horse power (hp) ISO rated Mars 100 turbine-driven compressor unit;
  - an outdoor gas discharge cooler;
  - a 500-kilowat (kW) natural gas-fired emergency generator, including outdoor jacket water cooler and exhaust silencer; and
  - a water heater system, including pumps and natural gas-fired heater.
- The existing Alexandria Compressor Station 827 (CS 827) modifications in Rapides Parish would consist of:
  - replacement of a 13,400 hp ISO rated Solar Mars T-14000 turbine unit with a 15,900 hp ISO rated Solar Mars T-16000 turbine-driven compressor unit.

A.3.3 Other Facilities

In addition to the two lateral pipelines and new compression described above Tennessee proposes to:

- install a new meter station and interconnection with the Midcontinent Express Pipeline (MEP) in Madison Parish, Louisiana;
- install a new meter station and interconnection with the Gulf Crossing Pipeline in Madison Parish, Louisiana;
- install a new meter station and interconnection with Enable Midstream Partners in Richland Parish, Louisiana;

- install a new meter station and interconnection with the Gulf South Pipeline in Richland Parish, Louisiana; and

- install of two new meter stations and interconnections with the Tiger Pipeline in Richland Parish, Louisiana.

The general location of the Project's facilities is shown in figure A-1.

Tennessee plans to increase flexibility on its Line 800-1 through auxiliary and appurtenant installations and replacements, pursuant to 18 CFR §§2.55(a) and (b) of the Commission's regulations. All of the modifications, upgrades, or replacements would be located within existing authorized facilities. The modifications will include piping for bi-directional operations at three existing compressor stations: Alexandria Compressor Station CS 827 in Rapides Parish, Louisiana; Winnsboro Compressor Station 834 in Franklin Parish, Louisiana; Grenada Compressor Station 847 in Yalobusha County, Mississippi; as well as modifications for operational flexibility at the existing Kinder Compressor Station 823 in Jefferson Davis Parish, Louisiana. A list of the activities is included as appendix A. Although not itemized in the separate resource sections of this EA, we have considered them when drawing conclusions on impacts.

A.3.4 Access Roads and Staging/Contractor Yards

Tennessee would use existing public roadways and proposed temporary and permanent access roads to access construction work areas and permanent facilities. Tennessee would construct a new permanent access driveway at the proposed CS 836A facility. Tennessee would obtain all necessary property rights and approvals from landowners and government agencies prior to the use or modification of any Project access roads.

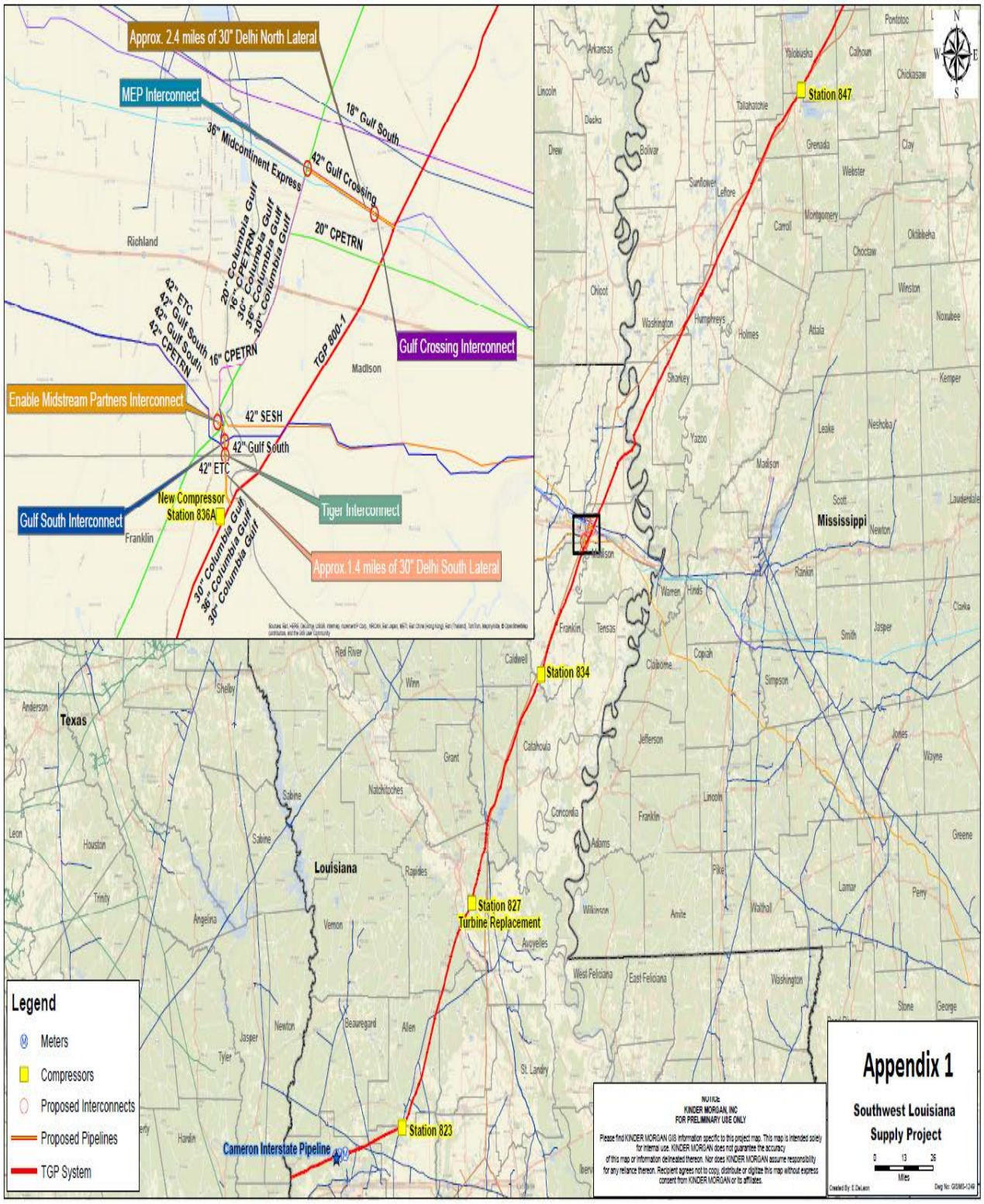

Figure A-1 – Location Map

A.4 NONJURISDICTIONAL FACILITIES

Under Section 7 of the Natural Gas Act, the Commission is required to consider, as part of its decision to approve facilities under Commission jurisdiction, all factors bearing on the public convenience and necessity. Occasionally, proposed projects have associated facilities that do not come under the jurisdiction of the Commission. These "non-jurisdictional" facilities may be integral to the need for the proposed facilities, such as a power plant at the end of a jurisdictional pipeline, or they may be minor, non-integral components of the facilities under the Commission's jurisdiction. There are no nonjurisdictional facilities associated with this Project.

A.5 PUBLIC REVIEW AND COMMENT

On December 9, 2015, the Commission issued a *Notice of Intent to Prepare an Environmental Assessment for the Proposed Southwest Louisiana Supply Project and Request for Comments on Environmental Issues* (NOI). The NOI was mailed to federal, state, and local government representatives and agencies; elected officials; Native American tribes; environmental and public interest groups; newspapers and libraries in the project area; and parties to this proceeding.

In response to the NOI, we received a letter from the State of Louisiana Department of Wildlife and Fisheries (LDWF), Office of Wildlife containing several recommendations including certain erosion/sediment control measures be implemented; recommendations for forested vegetation clearing; and recommendations to off-set impacts on fish and wildlife resources. The Choctaw Nation of Oklahoma and the Jena Band of Choctaw Indians requested maps and copies of the cultural resources report. On March 8, 2016 Tennessee provided maps and on June 3, 2016 provided the cultural resources report to the tribes that requested them.

A.6 CONSTRUCTION, OPERATION, AND COMPLIANCE

Tennessee would construct, operate, and maintain the proposed Project in compliance with all applicable federal and state permit requirements, regulations, and environmental guidelines. Specifically, Tennessee would construct the Project in compliance with 49 CFR 192 – Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards which is administered by the United States Department of Transportation (USDOT) and was developed to ensure adequate protection for the public and prevent natural gas facility accidents and failures.

Additionally, Tennessee has indicated that it would construct the Project consistent with FERC's Upland Erosion Control, Revegetation, and Maintenance Plan (Plan) and Wetland and Waterbody Construction and Mitigation Procedures

(Procedures).[3] Tennessee is not proposing any deviations from FERC's Plan and Procedures. Deviations of a more stringent nature from state National Pollutant Discharge Elimination System (NPDES) permit conditions or conditions from other permits may be implemented if required. Tennessee would implement the measures contained in its Environmental Compliance Management Plan (ECMP), in addition to federal, state, and local permit requirements. The ECMP incorporates the following:

- FERC Plan (2013);
- FERC Procedures (May 2013);
- Spill Prevention, Control, and Countermeasures Plan (SPCC); and
- Unanticipated Discovery Plan for Cultural Resources and Human Remains.

Tennessee would use two full-time environmental inspectors (EIs) that would be trained in, and responsible to ensure that construction of the Project complies with the construction procedures and mitigation measures identified in the Tennessee's applications, the FERC Certificate, other environmental permits and approvals, and environmental requirements in landowner easement agreements. Tennessee would add additional EIs if necessary. The EIs would have peer status with all other activity inspectors, and have the authority to stop activities that violate the environmental conditions of the FERC Certificate, other permits, or landowner requirements, and to order the appropriate corrective action. The EIs would also be responsible for maintaining status reports and training records. In addition, the EIs would be responsible for advising the chief construction inspector when conditions (such as wet weather) make it advisable to restrict construction activities.

Tennessee would conduct training sessions in advance of construction to ensure that all contractor and Tennessee personnel working on the Project are familiar with the environmental mitigation measures appropriate to their jobs.

Tennessee has no definitive future plans for expansion or abandonment of the Project facilities. Future expansion or abandonment activities would require new, separate applications to the FERC.

Construction is anticipated to commence during the fourth quarter of 2016 and is expected to last for approximately 16 months. Tennessee is expected to place the Project facilities in-service by February 1, 2018.

[3] The Plan and Procedures include best management practices for pipeline facility construction to minimize resource impacts. Copies of the Plan and Procedures may be accessed on our website (http://www.ferc.gov/industries/gas/enviro/guidelines.asp).

A.7 GENERAL PIPLINE CONSTRUCTION PROCEDURES

Tennessee would follow industry-standards practices and procedures along the pipeline route which typically involve the following sequential operations: clearing and grading, trenching, stringing, pipe bending, welding, joint coating, lowering-in, padding and backfilling, hydrostatic testing, and cleanup and restoration.

A.8 ABOVEGROUND FACILITY CONSTRUCTION PROCEDURES

During construction, Tennessee would clear and grade the sites for the aboveground facilities. Erosion control devices would be installed as needed to prevent erosion and offsite impacts in accordance with its ECMP and applicable state permit requirements. Access to the aboveground facilities would be provided by existing access roads. After construction, all temporary workspaces would be revegetated in accordance with its ECMP.

A.9 LAND REQUIREMENTS

Constructing the Project would temporarily affect 110 acres; of this, 76 acres would be permanently affected by operation. Table A-1 identifies the land requirements for each of the proposed facilities including access roads. Land not permanently affected would be allowed to revert to previous use.

Table A-1

Land Required to Construct and Operate the Project

Facility	County, State	Land Required for Construction (acres)	Land Required for Operation (acres)
Delhi North Lateral	Madison Parish, LA	26.0	15.0
Delhi South Lateral	Franklin and Richland Parishes, LA	21.0	9.0
Midcontinent Express Pipeline Meter Station	Madison Parish, LA	1.0	1.0
Gulf Crossing Meter Station	Madison Parish, LA	1.0	1.0
Enable Meter Station	Richland Parish, LA	1.0	1.0
Gulf South and Tiger Meter Stations	Franklin Parish, LA	3.0	3.0
CS 836A	Franklin Parish, LA	22.0	22.0
CS 827	Rapides Parish, LA	15.0	25.0
Laydown Yard	Varies Thought-out Parishes	19.0	0
Total		**110.0**	**76.0**

A.10 PERMITS, APPROVALS, AND REGULATORY CONSULTATIONS

Tennessee would obtain all necessary permits, licenses, clearances, and approvals related to construction and operation of the Project. Appendix B summarizes the major federal, state and county permits for the Project.

SECTION B – ENVIRONMENTAL ANALYSIS

Construction and operation of the Project would have temporary, short-term, long-term, and permanent impacts. As discussed throughout this EA, temporary impacts are defined as occurring only during the construction phase. Short-term impacts are defined as lasting between two and five years. Long-term impacts are defined as lasting five years or more. Permanent impacts are defined as lasting throughout the life of the Project. We use the term "Project area" to characterize the geographic scope of impacts caused by construction and operation of the proposed facilities. Direct and indirect impacts that may occur are discussed within in each resource subsection and cumulative impacts are included in section B.9.

B.1 GEOLOGY

B.1.1 Geologic Setting

All of the Project facilities would be located in the Coastal Plain Physiographic Province of Louisiana (Geology Café [undated]). The Delhi North Lateral, its associated two meter stations, and CS 827 would be located on alluvial soils deposited by the Mississippi River during the Holocene epoch consisting of sandy and gravelly channel deposits mantled by sandy to muddy natural levee deposits, with organic-rich muddy back-swamp deposits. Elevations in this area range between approximately 70 and 80 feet above mean sea level (AMSL) (Chacko 2010). The Delhi South Lateral, its associated three meter stations, and the new CS 836A would be located within Pleistocene terraced braided-stream deposits consisting of fine to coarse sand, along with some clay silt and gravel and loess (wind-blown) deposits, with elevations ranging between 60 and 90 feet AMSL.

Non-fuel minerals in Louisiana include construction sand and gravel, crushed stone, calcium, clay, gypsum, manganese, lime, salt, and sulfur (USGS 2005). There are no non-fuel mineral mines or quarries in the vicinity of any of the Project areas.

B.1.2 Geologic Hazards

We evaluated the potential for geologic hazards in the Project area, including seismic related hazards (e.g., earthquakes, surface faulting, and soil liquefaction); landslides; and ground subsidence due to karst and underground mining activities.

Earthquakes and Active Faults

No specific Quaternary faults were mapped at the project component sites, but the Class B Gulf Coast normal faults seismic zone (<1,600,000 years old) underlies the sites and the Reelfoot scarp and New Madrid seismic zone (<150 years old) is located

approximately 180 miles north of the sites (USGS 2006). Class B faults are associated with low seismicity because they may be decoupled from the underlying crust.

The Reelfoot scarp and New Madrid seismic zone are located in northeastern Arkansas, southeastern Missouri, and western Tennessee. Faults in this zone were responsible for three very large earthquakes in 1811-1812 with many large aftershocks. The extent of the area that experienced damaging earth motion, which produced Modified Mercalli (MM) Intensity greater than or equal to VII, is estimated to be approximately 230,000 square miles, with roughly a 270 mile radius. The MM scale describes the perceived shaking effects during a seismic event.

The peak ground acceleration rating at all of the Project facilities would be 5 percent for peak acceleration of gravity (% g) to approximately 7% g, which corresponds to a MM level of V, and would have potential to cause very light damage, such as breaking windows and overturning unstable objects. Therefore, the likelihood of damage to the project elements during a seismic event is considered to be minimal.

Slope Stability/Landslides

According to the *Landslide Overview Map of the Conterminous United States* (Godt 1997), all of the Project work areas are located in regions of low landslide susceptibility and low landslide incidence, with less than 1.5% of the area having landslides. Therefore, the risk to the project from potential slope instability is considered to be minimal.

Subsidence and Karst Topography

The nearest occurrence of underground carbonate rocks to any of the Project components is located at least five miles away. In addition, no underground mines have been identified in the Project areas that would contribute to localized ground subsidence. Therefore, we conclude that none of the Project components would be affected by sinkholes or other karst features.

Soil Liquefaction

Soil liquefaction is the temporary transformation of loose, water-saturated granular soil from a solid state to a liquefied state as a result of seismic activity and resulting increases in pore water pressure. Soil liquefaction results in the loss of soil strength, which often causes ground displacement or failure. Although the project components contain liquefiable soils, any potential seismic event affecting the Project areas is not expected to be of sufficient magnitude to liquefy them. Therefore, the likelihood of damage to the project components from soil liquefaction is considered to be minimal.

Conclusions

Construction and operation of the Project would not occur within areas of known geologic hazards, nor is the Project itself anticipated to cause geologic hazards.

B.2 SOILS

The soils in the Project areas generally consist of deep (to about 30 inches below the ground surface), poorly to well drained clayey to silty and loams. The Project would disturb a total of about 82.9 acres of agricultural land presently under cultivation, which represents about 76.5 percent (%) of the total of ground disturbance for the Project. Tennessee would implement its ECMP during construction of the Project to minimize impacts on soils. The characteristics and soil limitations of the soils that would be crossed by the Project are described below. Table B-1 identifies the acreages of agricultural land and prime farmland that would be affected by the Project. With the exception of lands affected by construction of compressor stations CS 827 and CS 826A, and all five meter stations, all soils affected by construction would be returned to former use.

B.2.1 Prime Farmland

The U.S. Department of Agriculture defines prime farmland soils as those that have the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and that is available for these uses. Prime farmland soils can include either actively cultivated land or land that is potentially available for cultivation. A total of 96.5 acres of prime farmland soils would be affected by the Project, representing about 89.percent of the land disturbed by the Project. Prime farmland soils that are being used as active croplands would be returned to agricultural use after completion of the Project. During construction, Tennessee would strip the topsoil from these areas and segregate it from the subsoil in accordance with its ECMP. Segregated topsoil would be returned following backfilling of the subsoil, ensuring preservation of topsoil within the construction area. With implementation of Tennessee's ECMP, long-term impacts on prime farmland soils would be minimized.

B.2.2 Droughty Soils

The majority of Project soils are considered to be moderately to well/excessively drained, posing an overall moderate risk of drought, and as having a high revegetation potential.

Successful restoration and revegetation is important for maintaining soil productivity and to protect the underlying soil from potential damage and erosion. In accordance with its ECMP, Tennessee would apply soil amendments, as necessary, to create a favorable environment for the re-establishment of vegetation. Tennessee would

also obtain written recommendations from the local soil conservation authority, land management agencies, or the landowner for right-of-way revegetation.

Table B-1
Agricultural Lands and Prime Farmlands Affected by the Project[1]

Project Element	Agricultural Lands (acres)	Prime Farmlands (acres)
CS 827	0.0	15.3
CS 826A	21.8	3.2
Delhi North Lateral	26.0	26.0
Delhi South Lateral	21.0	21.0
Enable Meter Station	0.9	1.0
Gulf Crossing Meter Station	0.3	0.7
Gulf South and Tiger Meter Stations	2.6	0.3
Midcontinent Express Pipeline Meter Station	0.1	1.0
Totals	**72.7**	**68.5**

[1] Does not include impacts of pipe storage and contractor yards, and extra workspace areas/staging areas at waterbody, wetland, and road crossings.

B.2.3 Erodibility

Erosion is a continuing natural process that can be accelerated by human disturbance. Factors that influence the degree of erosion include soil texture, structure, length and percent of slope, vegetative cover, and 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. Wind erosion processes are less affected by slope angles and more affected by grain size. Medium textured soils (e.g., very fine sandy loams, fine sandy loams, and silt loams) are most susceptible to wind erosion. Topsoil removal, clearing, grading, and equipment movement could accelerate the erosion process and, without adequate protection, result in discharge of sediment to waterbodies and wetlands. Soil loss due to erosion could also reduce soil fertility and impair revegetation.

None of the Project components would be constructed in areas containing steep slopes or where wind and water erosion potentials for the Project components are expected to be high. By following its ECMP, that the potential effects of erosion on the project component rights-of-way would not be significant.

B.2.4 Compaction

The potential for soil compaction during Project activities is derived from multiple characteristics such as soil drainage, hydrology, texture, permeability, seasonal flooding, and high water table. Because the project component's surface soils are composed of clayey and silty soils, the overall compaction potential is generally expected to be high. Tennessee would be required to minimize compaction and rutting impacts in agricultural areas. Further, Tennessee would be required to mitigate for compaction impacts through the use of deep tillage during restoration using a paraplow or similar implement as necessary. In areas where topsoil segregation occurs, Tennessee would be required to plow to alleviate subsoil compaction before replacement of the topsoil.

Tennessee would implement the measures specified in its ECMP to avoid and minimize impacts on soils. As specified in its ECMP, erosion and sediment control measures would be installed and maintained during construction. At the end of construction, Tennessee would reestablish vegetation as soon as possible. Disturbed areas would be reseeded with seed mixtures developed in consultation with the local soil conservation authority or existing landowners. Following construction, Tennessee would be required to monitor the disturbed areas, maintain erosion control structures, and repair areas that may have eroded during construction in accordance with its ECMP. Tennessee would inspect the right-of-way and maintain erosion and sediment controls as necessary until final stabilization is achieved. Once revegetation is satisfactory, temporary erosion control measures would be removed.

All soils on affected croplands, and pastures for the pipeline installation and temporary work areas would be restored to prior conditions and returned to prior use. Tennessee would undertake mitigation to reduce impacts on soils that would include topsoil segregation, replacement of soils in proper sequence after construction, re-establishment of pre-construction contours as practicable, implementation of erosion control measures, plowing to break up construction-related compaction, and re-establishment of vegetation as soon as possible in areas that are not annually cultivated cropland. If soils on drained farmland are disturbed, care should be taken to minimize disruption of tile drains, and/or repair tile drains if damaged. Cultivated and uncultivated croplands disturbed by construction activities should be restored at the direction of landowners or lessees. Therefore, we conclude that with implementation of Tennessee's ECMP, the potential for adverse impacts on soils during construction and operation of the Project would be adequately minimized, and not result in significant impacts.

B.3 WATER RESOURCES

B.3.1 Groundwater

Existing Resources

Three major aquifer systems underlie portions of the Project: the Mississippi River Valley Alluvial aquifer, the Coastal Lowlands Aquifer System, and the Mississippi Embayment Aquifer system.

The Mississippi River Valley Alluvial aquifer underlies CS 836A, the Delhi North Lateral, and the Delhi South Lateral. It consists of gravel, sand, silt and clay and is approximately 100-150 feet thick in the vicinity of the Project components. The aquifer is recharged by precipitation and from surface water bodies and flows typically towards the surface rivers within the system. Water extracted from the system is used mostly for agricultural and aquiculture purposes.

The Costal Lowlands Aquifer System underlies the existing CS 827. This aquifer consists of permeable sedimentary rocks that are poorly consolidated to unconsolidated beds of sand, silt, and clay. Specifically, the compressor station is located within the northeastern edge of the Chicot Aquifer. This is designated as a sole source aquifer that supplies approximately 15 parishes in Louisiana and produces approximately half of the groundwater discharged in the state. CS 827 is within the Chicot aquifer's primary recharge outcrop area. The new CS 836A and the new pipelines are not located on or near a United States Environmental Protection Agency (USEPA) designated sole source aquifer (USEPA 2015a, USEPA 2015b). Recharge to the Chicot aquifer occurs primarily through direct infiltration of rainfall in the interstream upland outcrop-subcrop areas within the northern portion of the aquifer (in the area of CS 827). The thickness of the freshwater interval at CS 827 is approximately 50-100 feet thick.

The Mississippi Embayment Aquifer System is the most widespread aquifer system in the region, extending over parts of 10 states and underlies the entire Project area. It is composed of poorly consolidated sedimentary rocks and underlies the Surficial Aquifer System and the Coastal Lowlands Aquifer System. It is hydraulically connected to the Surficial Aquifer System, but is separated from the Coastal Lowlands Aquifer System by a thick, confining unit of clay.

Public and Private Water Supply Wells

There are no private groundwater wells, seeps, or springs used for drinking water within 200 feet of work areas for the new pipelines or new compressor station and no community water wells within 400 feet of the work areas for the new pipelines or new compressor station. An abandoned and plugged test well is located 283 feet east of the

additional temporary work space (ATWS) at the south end of the Delhi South Lateral. One Tennessee-owned well is located at CS 827. This well is classified as active for industrial uses. No communities' wells are located at or near CS 827, and one private well is located within 400-feet from the work area at this compressor station. This well is classified as a domestic well and is located 268 feet west of the work area for CS 827.

A water well would be drilled at CS 836A for non-potable water use during permanent station operations. The withdrawal rates are anticipated to be less than 15 gallons per minute. As such the volumes of water to be withdrawn represent a negligible impact on the typical water withdrawal volumes from aquifers in the area.

To avoid and minimize impacts on groundwater, Tennessee would adhere to its Water Well Testing Program which consists of pre-construction and post-construction yield testing, water sampling, and chemical analyses. Testing would be completed on water wells located within 150 feet of the right-of-way and would be offered to landowners by Tennessee. Only those wells with landowner approval for testing will have samples collected from them. If testing indicates that a well was adversely impacted by construction activities, Tennessee would provide a temporary source of drinking water and re-test the well within 30 days. If results still show impaired yield or water quality, Tennessee would arrange for the installation of a new well or other permanent source of drinking water at its cost. Tennessee would continue to provide drinking water until the damaged well is repaired as necessary to provide a comparable domestic or livestock water supply or new water supply is established.

Contaminated Groundwater

No response from the USEPA has been received in relation to this consultation. According to the Louisiana Department of Natural Resources' (LDNR) Strategic Online Natural Resources Information System (SONRIS) database for active groundwater monitoring wells, an active groundwater monitoring well is located at Columbia Gulf Transmission's Delhi Compressor station, located within 0.5 mile to the east of the Delhi South Lateral Project area. This well was installed as part of a closure and cleanup of a wastewater pond and a groundwater assessment indicated that the concentrations of benzene, toluene, ethylene, and xylene were below the allowable concentrations for drinking water. Concentrations of polychlorinated biphenyls (PCBs) were detected above the current maximum contaminant level for PCBs in drinking water. However, it is not anticipated that the activities associated with the Project would impact this known groundwater contamination as excavation would be limited to seven feet below ground surface while the ground water table at the compressor station is located at approximately 30 feet below ground surface. In addition, according to the groundwater monitoring report the groundwater flow in the vicinity of the Delhi Compressor Station is to the east, away from the Project areas. Based on this information, contaminated groundwater from the Delhi Compressor Station is not expected to be present beneath the Project areas.

Groundwater contamination could also occur from accidental spills of fuels, solvents, and lubricants used during construction. Tennessee would reduce spill related impacts by implementing measures included in its ECMP. Tennessee would:

- train personnel on the proper handling of fuels and other hazardous materials, and appropriate spill cleanup and notification procedures;
- ensure all equipment is in good operating condition;
- inspect equipment for leaks regularly and repairing leaks promptly; and
- maintain a 400-foot setback from community and municipal wells and a 200-foot setback from private wells for hazardous materials storage, and equipment and vehicle maintenance and refueling activities.

Impacts and Mitigation

Due to the limited scope and duration of Project activities and Tennessee's efforts to minimize the potential for groundwater contamination through the implementation of measures in its ECMP, the Project is not likely to impact sole source aquifers or regional aquifer systems. The addition of a water well at the proposed CS 836A would not impact groundwater resources.

Water needed for during construction for dust control, concrete mixing, and hydrostatic testing would be obtained from a municipal or commercial source. The water would be trucked to the Project area and store onsite in tanks. No chemicals would be added to the hydrostatic test water. Upon completion of testing, water would be discharged into a well vegetated upland area. Tennessee would comply with all conditions of the Louisiana Pollutant Discharge Elimination System Water Discharge Permit for Hydrostatic Test and Vessel Testing Wastewater.

Tennessee stated that foundations and piling/pier excavations at aboveground facilities may be as deep as 15 to 20 feet below the finished grade elevation. Groundwater may infiltrate some of the deeper foundation and excavations during construction. As needed Tennessee would dewater these excavations in accordance with measures found in the ECMP and applicable state permits.

Tennessee would cross a cultural site (16FR365) on the Delhi South Lateral portion of the Project using the horizontal directional drilling (HDD) crossing method. In an event that the HDD activities result in the inadvertent release of drilling fluids, Tennessee would implement the Project's Contingency Plan specified in its HDD Drilling Fluid Control Plan.

Based on Tennessee's proposed minimization measures, acquisition of the appropriate local permits, and implementation and compliance with its ECMP Plan, we

find that the Project would not result in any significant long-term or permanent impacts on groundwater resources or users of groundwater in the Project area.

B.3.2 Surface Water

Existing Resources

Tennessee identified nine waterbody crossings associated with the Project. These waterbodies are identified in table B-2 below. Seven surface water features, all jurisdictional unnamed tributaries to Joe's Bayou, were identified within the Delhi North Lateral portion of the Project. These features include one perennial stream, one intermittent stream, and five intermittent or ephemeral agricultural ditches. Two surface water features, both unnamed tributaries to Bayou Macon, were identified within the Delhi South Lateral of the project. One is a perennial stream and one is an ephemeral agricultural ditch. Tennessee would cross all waterbodies using conventional open-cut methods. This method includes excavating the pipeline trench across the waterbody, installing a prefabricated segment of pipeline, and backfilling the trench with native material without isolating stream flows from construction activities. Dependent on the width of the crossing and how far excavating equipment can reach, the excavation and backfill of the trench would be accomplished from one or both banks of the waterbody. No waterways were identified within the work areas of the meter stations or compressor stations.

Sensitive surface waters include waters that do not meet water quality standards, are designated for water quality management or improvement, contain threatened or endangered species or critical habitat, and are crossed less than 3 miles upstream of potable water intake structures, are listed as having outstanding or exceptional quality, or are located in sensitive or protected watershed areas. Sensitive waterbodies also include those listed as federal or state-designated wild and scenic rivers, rivers in or proposed for inclusion in the Nationwide Rivers Inventory, waterbodies subject to permitting under Section 10 of the Rivers and Harbors Act and waters that are known to provide habitat for federally listed threatened and endangered species. No sensitive waterbodies are crossed by the Project or are located within the compressor station sites. In addition, according to the Louisiana Department of Environmental Quality (LDEQ) none of the Project work areas are within any Source Water Protection areas. The nearest Source Water Protection area is greater than one mile from any Project work areas. .The Louisiana Department of Wildlife and Fisheries (LDWF) stated in a July 22, 2015 letter to Tennessee that no Louisiana Scenic Streams occur in the general vicinity of the project. Indirect impacts from spills, erosion, or sedimentation to waterbodies would be reduced by implementation of applicable measures of the ECMP.

Table B-2

Waterbodies Crossed by the Project

Waterbody ID	Description	Nearest MP	Feature Type	OHWM Width (ft)	Flow Regime	Crossing Method
Delhi North Lateral						
WBA013	UT to Joe's Bayou	0.1	Stream	8	Intermittent	Conventional Open Cut
WBA005	UT to Joe's Bayou	0.4	Stream	33	Perennial	Conventional Open Cut
WBA007	UT to Joe's Bayou	0.6	Ag Ditch	5	Ephemeral	Conventional Open Cut
WBA008	UT to Joe's Bayou	0.8	Ag Ditch	5	Ephemeral	Conventional Open Cut
WBA009	UT to Joe's Bayou	1.0	Ag Ditch	5	Intermittent	Conventional Open Cut
WBA010	UT to Joe's Bayou	1.3	Ag Ditch	5	Ephemeral	Conventional Open Cut
WBA011	UT to Joe's Bayou	1.4	Ag Ditch	5	Ephemeral	Conventional Open Cut
Delhi South Lateral						
WBA004	UT to Bayou Macon	0.8	Ag Ditch	3	Ephemeral	Conventional Open Cut
WBA002	UT to Bayou Macon	1.2	Stream	5	Perennial	HDD

ID: Identification; MP: milepost; OHWM: Ordinary High Water Mark; UT: Unnamed Tributary

None of the surface water features identified within the Project work areas were listed as impaired or contaminated (USEPA 2015c). However, Joe's Bayou, located outside of the Delhi North lateral work area, and Bayou Macon, located outside of the Delhi South lateral and Delhi North later work areas, are listed as Impaired Waters on the USEPA 303(d) list. Joe's Bayou is listed as being impaired due to Carbofuran, DDT, a depletion of oxygen (O_2), fecal coliform, total suspended solids, and turbidity. The causes of the Bayou Macon impairments are listed as DDT, depletion of dissolved O_2, total suspended solids, and turbidity (USEPA 2015d). The Project would not directly impact Joe's Bayou or Bayou Macon. Indirect impacts, including increased sedimentation, could be caused by the crossing of tributaries associated with these

bayous. However, Tennessee would implement its ECMP and SPCC Plan that would mitigate these impacts to the extent practicable.

B.3.3 Hydrostatic Testing

Project components would be tested in accordance with USDOT standards to verify integrity and to ensure their ability to withstand the designed maximum operating pressures. Pipeline integrity is tested by capping the pipeline segments with test manifolds and filling the capped segments with water. Tennessee would withdraw test water from municipal or commercial supplies and pump it into the test section behind a fill pig. Then, a high-pressure pump would be used to pressurize the test section to the designed test pressure. As mentioned above test water would contact only new pipe and no additives would contaminate the test water.

Tennessee estimates that a total of approximately 750,000 gallons of water will be needed to complete the hydrostatic pressure testing. The estimated test water volumes for each of the project components are depicted in table B-3 below.

As mentioned above Tennessee would follow its ECMP and applicable state discharge permits during hydrostatic testing and discharge. After hydrostatic testing is complete, the water would be discharged into a well-vegetated upland area within or adjacent to the existing facility. Discharge waters would be dispersed by an energy-dissipating device to minimize erosion and sedimentation, and provide additional filtering. Test water would not be discharged directly into streams/rivers unless permitted to do so and permit conditions have been met.

Table B-3 Hydrostatic Test Water Volumes			
Facility	**Withdrawal Location**	**Discharge Location**	**Estimated Test Water Volume (gallons)**
New Facilities			
Delhi North Lateral	Hydrant controlled by Delhi Department of Public Works (water trucked to site)	32°27'2.38"N, 91°25'26.60"W	450,000 (includes MEP Meter Station, Gulf Crossing Meter Station)
Delhi South Lateral	Hydrant controlled by Delhi Department of Public Works (water trucked to site)	32°23'44.98"N, 91°29'7.77"W	250,000 (Includes Enable Meter Station, Gulf South Meter Station, and Tiger Meter Station)
MEP Meter Station	Hydrant controlled by Delhi Department of Public Works (water trucked to site)	32°27'24.16"N, 91°27'38.79"W	See Delhi North Lateral Above
Gulf Crossing Meter Station	Hydrant controlled by Delhi Department of Public Works (water trucked to site)	32°27'6.47"N, 91°25'48.26"W	See Delhi North Lateral Above
Enable Meter Station	Hydrant controlled by Delhi Department of Public Works (water trucked to site)	32°24'38.83"N, 91°29'37.23"W	See Delhi South Lateral Above
Gulf South and Tiger Meter Stations	Hydrant controlled by Delhi Department of Public Works (water trucked to site)	32°24'13.59"N, 91°29'16.83"W	See Delhi South Meter Station Above
CS 836A	Hydrant controlled by Delhi Department of Public Works (water trucked to site)	32°22'54.6"N 91°30'02.9"W	32,000
Existing Facilities			
CS 827	Hydrant controlled by Delhi Department of Public Works (water trucked to site)	31°11'45.8"N 92°21'12.9"W	18,000
Total			**750,000**

B.3.4 Floodplains

Portions of the Project would be located within the Federal Emergency Management Agency (FEMA) 100-year floodplain. The 100-year floodplain constitutes an area having a one percent probability of a flooding event within any given year. The proposed Project activities at the existing CS 827 facilities are not located within a FEMA-mapped floodplain. Construction of the new compressor station, CS 836A, is also not located within a FEMA-mapped floodplain (FEMA 2015).

A portion of the Delhi North Lateral west of mile post (MP) 1.7, which includes the new MEP meter station, is within the FEMA-mapped Zone AE floodplain. This

floodplain is associated with unnamed tributaries of Bayou Macon and Joe's Bayou. In addition, a small portion of the Delhi South Lateral is located within a FEMA-mapped Zone A floodplain. Pipeline facilities are not expected to impede or redirect flows within the flood plains. In addition, none of the proposed facilities would cause a discernable reduction in flood storage capacity. All aboveground structures would be constructed in accordance with applicable federal, state, and local regulations for construction within floodplains (FEMA 2015).

Impacts and Mitigation

Tennessee would implement its ECMP to avoid the movement of sediment off of Project construction sites into surrounding waterbodies and wetlands. Tennessee would also implement its SPCC Plan, included in the ECMP, to minimize impacts from inadvertent spills of fuels, lubricants, solvents, or other hazardous materials that could affect water quality.

As mentioned above, Tennessee would cross a cultural site (16FR365) using the HDD crossing method. This crossing would include one perennial minor waterbody (Unnamed Tributary to Bayou Macon) at MP 1.2 along the Delhi South pipeline segment. Using the HDD crossing method would avoid potential impacts on the waterbody unless an inadvertent release of drilling fluid occurred directly or indirectly into the waterbody. Drilling fluid consists of nontoxic materials, but an inadvertent return in the water could affect fisheries or other aquatic organisms by increasing turbidity in a waterbody, temporarily coating the waterbody bed with a layer of clay, and/or affecting fish gills. The probability of an inadvertent release is influenced by the subsurface materials but is generally greatest when the drill bit is working near the surface (i.e., near the entry and exit points). Tennessee would also implement the measures identified in its HDD Fluid Control Plan to minimize the risk and impact of a release of drilling fluid should one occur. These measures include:

- perform a geotechnical survey along the HDD path to a depth greater than the planned HDD depth;
- visually inspecting the ground surface between the HDD entry and exit location for seepage;
- monitoring of annular fluid pressures and circulation;
- if necessary, implementing measures to contain release; and
- if an inadvertent release cannot be contained or controlled, immediately suspending drilling operations until appropriate measures of containment are in place.

We reviewed the Applicants HDD Fluid Control Plan and found it acceptable. Tennessee has stated that in the event that there are construction issues with the HDD crossing method, they would abandon the drill hole and seal it with bentonite. If the

HDD in its proposed location proves unsuccessful, Tennessee would be required to identify a new location for the crossing or new methodology, and request approval for the new location or methodology with all applicable agencies.

In summary, the Applicants would implement a variety of measures to minimize impacts on surface waters. Furthermore, as discussed above, the Applicants would implement the measures in its HDD Fluid Control Plan, plan to avoid and minimize the risk of a drilling mud release. Therefore, with the implementation of these measures, we conclude that impacts on surface water would be mitigated to the extent practicable.

B.3.5 Wetlands

Existing Resources

Three wetland types were identified in the Project work areas: Palustrine Emergent wetlands (PEM), Palustrine Forested wetlands (PFO), and Palustrine Scrub-shrub wetlands (PSS). PEM wetlands in the vicinity of the Project are comprised of a hydrophytic, non-woody herbaceous layer. PFO wetlands within the vicinity of project contain mature trees and lower layers such as shrubs, herbaceous, and vine species. Lastly, the PSS wetlands are comprised of a shrub and sapling canopy along with a lower herbaceous layer.

Four wetlands are located within the footprint of the Project route. The wetlands crossed by Project Facilities are presented in table B-4 below. As shown in table B-4, the Delhi North Lateral is almost entirely within wetlands that are associated with unnamed tributaries of Joe's Bayou. All the wetlands are jurisdictional and cover the entire right-of-way west of MP 2.0. This includes the MEP Meter Station and ATWS. One PFO wetland occurs at the edge of an ATWS associated with the Gulf South and Tiger Meter Stations. Less than 0.1 acres of this wetland would be disturbed.

One 3.5-acre PFO wetland is within the proposed CS 836A facility. However, this wetland would be outside of the construction and operational footprint of the facility and would not be affected. In addition, a 0.2-acre PEM wetland occurs within the CS 827 facility boundaries but would also not be affected as a result of the modification to CS 827.

Impacts and Mitigation

Wetland crossings would be conducted in compliance with the ECMP and the U.S. Army Corps of Engineers (USACE) permit. Additionally, Tennessee has narrowed the construction right-of-way to 75 feet in wetlands. Tennessee would also limit vegetation maintenance in wetlands to a 10-foot corridor centered over the pipe. Following

construction disturbed features that would not be permanently filled or maintained would be restored in accordance with the ECMP and all applicable permits.

The 10-foot-wide corridor centered on the pipeline would be maintained in an herbaceous state along the Delhi North lateral. This would result in a permanent conversion of 1.1 acres of PSS and 1.2 acres of PFO wetlands to PEM wetlands. In addition, the construction of the MEP Meter station would result in permanent fill of approximately 1.0 acre of PFO and PEM wetlands. Tennessee would determine the appropriate mitigation for unavoidable temporary and permanent impacts in consultation with the USACE. Mitigation may include purchasing credits at an approved mitigation bank.

In addition to the direct impacts, wetland resources could be impacted by accidental spills and erosion and sedimentation from ground-disturbing activities. Tennessee would minimize these impacts by adhering to their ECMP, which includes a SPCC plan. As such, we find that wetland impacts associated with the construction and operation of the Project would be minimized and compensated for by implementing the construction, restoration, and mitigation measures proposed by Tennessee and as may be required by the USACE and state agencies.

Table B-4

Wetlands Crossed by the Project

Facility	Wetland ID	MP begin	MP End	Length of Crossing (ft)	Wetland Class[2]	Construction Impacts (acres)	Permanent Easement Impacts (acres)[3]	Permanent Conversion Impacts (acres)[4]	Permanent Loss Impacts (acres)[5]
Delhi North Lateral	WETA005	0.0	2.0	10,518	PEM	1.3	0.6	n/a	n/a
					PSS	9.6	5.8	1.1	n/a
					PFO	9.4	5.5	1.2	n/a
Delhi South Lateral	WETA003	0.7	0.7	n/a	PFO	<0.1	0	0	n/a
MEP Meter Station	WETA005	n/a	n/a	n/a	PEM	0.10	0.10	n/a	0.10
					PFO	1.0	1.0	n/a	1.0
CS 827[1]	WETA004	n/a	n/a	n/a	PEM	0	0.2	0	0
					Total Impacts:	21.4	13.2	2.3	1.1

[1] One wetland was identified within the CS827 facility boundaries and will not be impacted as a result of the construction activities.

[2] Wetland Classification (Cowardin et. A., 1979): PEM=Palustrine Emergent marsh, PFO=Palustrine Forested, PSS-Palustrine Scrub-shrub.

[3] Represents wetlands which will be within the pipeline, meter station, and compressor station permanent easements. Does not necessary represent an impact.

[4] In accordance with the FERC Procedures, in wetlands, a 10-foot-wide corridor will be maintained centered on the pipeline in an herbaceous state. PSS and PFO wetlands within this corridor will be permanently converted to PEM wetlands. The remainder of the permanent easement will be allowed to naturally revegetate.

[5] Wetlands that will be permanently filled for installation of permanent aboveground facilities.

B.4 VEGETATION, FISHERIES AND WILDLIFE

B.4.1 Vegetation

Existing Vegetation Resources

Vegetation types affected by the Project include.

- Maintained right-of-way: This consists of small grasses and herbaceous species.
- Bottomland hardwood habitat: These areas contain water oak, bald cypress, water hickory, and cedar elm.
- Mature forest: This forest consists predominantly of Loblolly pine with a mix of eastern red cedar and sweetgum.
- Mixed forest: This forest consists of a combination of hardwoods and softwoods. These areas are present between the bottomland hardwood communities and drier sites.
- Wetland vegetation: Wetland vegetation is discussed in detail in section B.3 above.
- Open pasture: Open pasture is primarily devoid of woody species and contains common species such as Bahia grass, Bermuda grass, and St. Augustine grass.
- Active agriculture: Active agriculture mainly consisting of soybean and corn that is actively farmed.

Dominant species at the CS 827 facility include maintained grass species. In addition a few pecan trees are scattered throughout the site and one emergent wetland is within the facility boundaries. The grass at the facility is regularly maintained. The impacts to each vegetation community are depicted in appendix C.

Vegetation Resources of Special Concern

No specialty crops, such as orchards, nurseries, vineyards, commercial farms, or maple tree stands are located within the Project areas. In addition, the Project areas do not contain old-growth trees and other forests, state specimen trees, or remnant prairies. A small pecan orchard is located approximately 0.1 mile south of a laydown yard associated with the Delhi North lateral.

The Delhi North lateral is within 0.25 mile of two wetland reserve program easements that are administered by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). The easements are located approximately 0.1 mile southwest of MP 1.0 and approximately 0.1 mile southeast of MP 2.4. In addition, between MP 0.8 and MP 1.9 the Delhi North Lateral crosses the

Mississippi River Trust-Held Tonore easement. This easement is 330 acres and is identified as protecting multiple conservation values. The Gulf Crossing Meter Station is also located approximately 0.1 mile east of the Tonore site. The Delhi South Lateral is located within 0.25 mile of two wetland reserve program easements administered by the NRCS. These are located approximately 0.1 mile west of MP 1.2 (USDA-NRCS).

Invasive Non-native Species

The NRCS maintains a list of state-designated legally noxious weeds and the Chinese tallow tree is the only plant designated in Louisiana as legally noxious. Other invasive plant species include cogon grass, kudzu, and purple loosestrife. The only invasive species observed during field surveys was Chinese tallow and no large monocultures were observed (NRCS 2015).

Impacts and Mitigation

Construction activities would remove surface vegetation from approved work areas. Disturbed areas that would not be permanently fenced and maintained or contain permanent aboveground infrastructure would be revegetated following construction activities. Impacts to vegetation would be minimized by implementing measures in the ECMP. These include:

- revegetating all disturbed work areas following the completion of construction, unless otherwise requested by the landowner;
- restoring contours and seeding temporary disturbance areas within six working days following final grading, weather and soil conditions permitting;
- testing for compaction in agricultural and residential areas disturbed by construction activities, and decompacting as needed;
- preparing a seedbed to a depth of three to four inches using appropriate equipment; and
- adhering to recommended seed mixes, application methods and rates, and timing windows provided by local resource agencies or as requested by the landowner.

Tennessee would also minimize impacts to vegetative communities by collocating the Delhi North Lateral and Delhi South Lateral with other utility right-of-ways. In addition Tennessee would locate aboveground facility sites in areas that have been previously cleared or disturbed.

Construction and maintenance activities have the potential to increase spread of noxious weed species, especially if native vegetation is to be cleared. Soils and mud on vehicle and equipment tires, tracks, and undercarriages have the potential to carry weed seeds and plant materials. Invasive or non-native species could also spread across access

road and Project work areas. Tennessee would implement the following measures to minimize the potential for the introduction and/or spread of non-native species:

- ensuring all construction equipment is cleaned prior to beginning work on the Project;
- requiring the construction contractor to use certified weed-free straw or hay bales for sediment barrier installations and/or mulch;
- using certified weed-free seed mixes for post-construction revegetation;
- controlling noxious weeds along the permanent pipeline ROW and fenced aboveground facility sites using mechanical or herbicide application, as necessary; and
- adhering to applicable invasive species management practices in accordance with federal, state, and local regulations.

Approximately 106 acres of vegetation would be affected by the construction of the Project. Approximately 76 acres of vegetation would be permanently impacted by the operation of the Project. Based on the types and amounts of vegetation affected by the Project and Tennessee's proposed avoidance, minimization, and mitigation measures to limit Project impacts on vegetation, we conclude that impacts on vegetation from the proposed Project would not be significant.

B.4.2 Fisheries

Existing Conditions

Only two of the streams crossed by the Project were identified as perennial. One of the streams is an unnamed tributary to Joe's Bayou and the other is an unnamed tributary to Bayou Macon. Several common species of fish are known to exist in the Project area. In addition, both Bayou Macon and Joe's Bayou contain suitable habitat to support fishery populations; however, both are located outside of the Project area. No fisheries of special concern or essential fish habitat were identified within or immediately adjacent to the Project.

Impacts and Mitigation

Waterbody crossings would affect aquatic habitat and could result in temporary impediments, changes to behavior, loss of habitat, and/or the alteration of water quality that could increase the stress rates, injury, and/or mortality experienced by fish. In addition, indirect impacts to fisheries outside of the Project area may occur due to erosion and sedimentation. However, to minimize these impacts Tennessee would implement the erosion and sediment best management practices as contained in the ECMP to insure that no sediments or activity related debris are allowed to enter any

waterbodies. Therefore, we conclude that impacts on aquatic resources from the Project would not be significant.

B.4.3 Wildlife

Existing Conditions

As mentioned above the Project would cross several distinct upland vegetation communities including maintained right-of-way, bottomland hardwood, mature forest, mixed forest, active agriculture, and open pasture. These vegetation communities (cover types) provide habitat for wildlife. Wildlife observed during field surveys are listed in appendix D of this EA.

The majority of the project area crossed by the Delhi North Lateral route and associated work areas consists of fallow agriculture fields that have been planted with threes and scrub/shrub areas. The Delhi South Lateral route and associated work areas consist mostly of flat agricultural land used for hay production or as pastureland. In addition scrub/shrub areas are located in the northern portion of the route. Both routes also contain disturbed areas including other utility rights-of-way. All of these areas provide habitats for a variety of birds, mammals, and reptiles. In addition, waterbodies and wetlands throughout the project areas provide habitat for general and aquatic wildlife species including amphibians and songbirds.

The majority of the CS 836A site consists of active agricultural land that is adjacent to an intermittent stream with a riparian buffer. This area provides habitat for various mammals, birds, and reptiles while the stream provides habitat for aquatic wildlife species. The existing CS 827 site is developed as a maintained/mowed compressor station. This site provides poor wildlife habitat. However, numerous opportunistic species including rodents, scavenger, and small mammals, may use the limited habitat within or adjacent to the site.

Impacts and Mitigation

Potential impacts on wildlife from Project construction activities include loss of vegetation and habitat, as well as temporary species displacement and disturbance of wildlife species due to noise from construction and maintenance activities. Construction could result in the mortality of less-mobile animals such as small rodents, reptiles, amphibians, and invertebrates that may be unable to escape the immediate construction area. Mobile species would leave the area and relocate in neighboring suitable habitat. However, stockpiling of cleared vegetation, topsoil, excavated spoils, and construction materials could inhibit wildlife movement by creating barriers for smaller species. In addition, some species may be unwilling to cross a cleared area without concealing vegetative cover.

Project construction would primarily take place in previously disturbed areas and areas currently used for agriculture. These existing areas are not considered high-quality wildlife habitat and wildlife density is likely to be low. In addition, Tennessee would implement the following best management practices to minimize the potential for injury or death to wildlife:

- properly disposing of trash and food debris in secured containers;
- allowing wildlife that has entered the work area to leave the area on their own;
- providing environmental awareness training to all construction personnel working on the Project;
- checking trenches, excavations, and uncapped pipe segments for wildlife;
- installing escape ramps at night;
- complying with posted speed limits; and
- installing breaks in spoil material to allow for the movement of wildlife.

Also, LDWF's comments discussed previously in this EA were considered in our review and are consistent with Tennessee's ECMP.

The construction of CS 836A would result in a permanent conversion of agricultural vegetative covers to developed areas. Following construction, security fences would be installed around the permanent operational compressor station facilities, as well as at meter stations and pig receiver sites. This would create a permanent barrier to larger terrestrial wildlife movement across the sites. These areas fenced areas would create a permanent barrier for some terrestrial species; however, there is sufficient undisturbed land adjacent to the facilities that will be fenced to allow for uninhibited wildlife movement. In addition, there is no documented migration or wildlife movement corridors traverse the Project area.

To minimize impacts from temporary and permanent habitat and vegetation removal Tennessee would minimize vegetation clearing to those areas that are needed to safely and efficiently construct the project. In addition, all work areas that would not be permanently graveled, paved, or contain buildings or aboveground infrastructure would be revegetated according to measures in its ECMP.

Based on the collocation with existing rights-of-way where practicable, the presence of similar habitats adjacent to and in the vicinity of construction activities, and the implementation of impact avoidance and minimization measures, we concluded that construction and operation of the Project would not have population-level impacts or significantly measurable negative impacts on wildlife.

B.4.4 Unique and Sensitive Wildlife Resources

Special-status species include fish, wildlife, and habitats that are protected by law or otherwise afforded special consideration by jurisdictional resource agencies as discussed in the following sections.

Wildlife resources of special concern include significant or sensitive habitats that provide breeding, rearing, nesting, and calving areas, migration routes, or overwhelming coverage or forage areas. These areas include National Wildlife Refuges (NWR), state game refuges, state conservation or management areas, wildlife management areas (WMA), wildlife sanctuaries, and other such preserves.

The Tensas NWR is located approximately 2.4 miles southeast of the eastern end of the Delhi North Lateral (USFWS 2015). In addition, the Elbow Slough WMA is located approximately 1.8 miles southeast of CS 827. No other refuges, management areas, sanctuaries, or other unique or sensitive areas were identified by Tennessee in the vicinity of the Project area.

Louisiana developed the Louisiana Wildlife Action Plan (WAP) which identifies 240 individual species of concern and strategies for conserving them. The WAP also identifies 38 terrestrial habitats, 12 aquatic basins, and 5 marine basins that are critical to the recovery of many species. The Delhi North Lateral, Delhi South Lateral, and CS 836A fall within the Mississippi River Alluvial Plan ecoregion. The existing CS 827 facility falls within the Lower West Gulf Coastal Plain ecoregion (LDWF 2015a).

Partners in Flight is a cooperative effort among federal, state, and local government agencies, philanthropic foundations, profession organizations, industry and conservation groups, academic communities, and private individuals to protect bird species. According to the Partners in Flight's North American Landbird Conservation Plan, the Project is located in the Eastern Avifaunal Biome. This area consists of 11 bird conservation regions (BCR). The Delhi North Lateral, Delhi South Lateral, and CS 836A fall within the Mississippi Alluvial Valley BCR and the CS 827 facility falls within the West Gulf Coastal Plain/Ouachitas BCR (Partners in Flight 2004).

The LDWF recommended that Tennessee conduct field surveys for nesting colonies of birds before commencing construction activities (LDWF 2015b). Tennessee stated that nesting bird surveys would be completed during the required time period. If nesting bird colonies are discovered Tennessee will refrain from construction activities within 400 meters of any actively nesting bird colony.

Given the large regional footprints of the conservation areas mentioned above, impacts related to vegetation removal and wildlife as part of the Project would be minimal. As such, the long-term planning, conservation, or management activities of the WAP or BCRs are not expected to be altered.

B.4.5 Protected Species

Migratory Birds and Bald and the Golden Eagle Protection Act (EGEPA)

Migratory birds are species that nest in the United States and Canada during the summer, and make short or long-distance migrations for the non-breeding season. Neotropical birds migrate to and from the tropical regions of Mexico, Central and South America, and the Caribbean. Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) (16 U.S. Code 703-711), and Bald and Golden Eagles are additionally protected under the Bald and Golden Eagle Protection Act (16 U.S. Code 668-668d). The MBTA, as amended, prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, or nests unless authorized under a US Fish and Wildlife Service (USFWS) permit. Executive Order 13186 directs federal agencies to identify where unintentional take is likely to have a measurable negative effect on migratory bird populations and avoid or minimize adverse impacts on migratory birds through enhanced collaboration with the USFWS, and emphasizes species of concern, priority habitats, and key risk factors, and that particular focus should be given to population-level impacts.

On March 30, 2011, the USFWS and the Commission entered into a Memorandum of Understanding (MOU) that focuses on avoiding or minimizing adverse effects on migratory birds and strengthening migratory bird conservation through enhanced collaboration between the Commission and the USFWS by identifying areas of cooperation. This voluntary MOU does not waive legal requirements under the MBTA, the Endangered Species Act (ESA), the NGA, or any other statutes and does not authorize the take of migratory birds.

A variety of migratory bird species, including songbirds, raptors, and waterfowl utilize the habitat found within the Project area. The USFWS has established Birds of Conservation Concern (BCC) lists for various regions in the country. A list of BCC species that may occur in the project area is provided in table B-5 below.

Table B-5 Birds of Conservation Concern	
Least Bittern	Wood Thrush
Little Blue Heron	Sprague's Pipit
Swallow-tailed Kite	Prairie Warbler
Bald Eagle	Cerulean Warbler
American Kestrel (Paulus spp.)	Prothonotary Warbler
Solitary Sandpiper	Swainson's Warbler
Hudsonian Godwit	Louisiana Waterthrush
Buff-breasted Sandpiper	Kentucky Warbler
Chick-will's-widow	Bachman's Sparrow
Red-headed Woodpecker	Henslow's Sparrow
Loggerhead Shrike	Smith's Longspur
Brown-headed Nuthatch	Painted Bunting
Bewick's Wren (bewickii spp.)	Orchard Oriole

Twenty five bird species were observed during field surveys. All of the birds observed, excluding the European starling, are protected under the MBTA.

The bald eagle is a large bird of prey whose range covers virtually all of North America. Although no longer federally listed under the ESA, the bald eagle is protected under the Bald and Golden Eagle Protection Act (BGEPA) and MBTA. The BGEPA and MBTA prohibit killing, selling, or harming eagles or their nests, and the BGEPA also protect eagles from disturbances that may injure them, decrease productivity, or cause nest abandonment.

According to a LDWF letter dated July 22, 2015, a bald eagle nesting site is located within the project area. However, no eagle nests were identified during field surveys. In addition, no breeding, foraging, or wintering habitat for bald or golden eagles is present in the vicinity of the Project.

Impacts and Mitigation

The potential impacts of the Project on migratory birds would include the temporary and permanent loss of habitat associated with the removal of existing vegetation. The greatest potential to impact migratory birds would occur if Project construction activities such as grading, tree clearing, and construction noise take place during the nesting season. This could result in the destruction of nests and mortality of eggs and young birds that have not yet fledged. Construction would also reduce the amount of habitat available for resources such as foraging and predator protection for migratory birds and would temporarily displace birds into adjacent habitats, which could increase the competition for food and other resources. This in turn could increase stress, susceptibility to predation, and negatively impact reproductive success. The temporary loss of upland forest habitat would present a long-term impact for migratory birds that depend on forest cover types. Noise and other construction activities could affect

courtship and breeding activities including nesting and the rearing of young. Clearing and grading would also temporarily remove nesting and foraging habitat and could destroy occupied nests resulting in the mortality of eggs and young, unfledged birds, if these activities are done during the nesting season.

Migratory birds, including BCC-listed birds, could also be affected during Project operation, which would permanently convert up to 1.2 acres of upland forest land to an herbaceous state. The reduction in available forest habitat could result in increased competition, a potential increase in parasitic bird species, edge effects, and ongoing disturbances associated with periodic mowing and other facility maintenance activities.

Restoration would be conducted in accordance with the ECMP. Where possible, Tennessee would not clear any herbaceous or scrub-shrub vegetation during the migratory bird breeding season (April 15 to August 1). In addition, prior to initiating construction activities Tennessee would conduct nest surveys. Nest surveys would not be completed if all vegetation clearing has occurred prior to the nesting season. If a nest is discovered and activities that may disturb migratory birds are unavoidable during the nesting season, any active migratory bird nest would be reported to the USFWS and appropriate site-specific protection measures would be determined in consultation with the USFWS or the applicable state agency. In addition a biologist would be retained to monitor the nest and the birds' behavior. A buffer zone would also be established around the nest and construction would be halted within this buffer until the young have fledged or specific instructions are given by the USFWS or applicable state agency.

Based on the mitigation measures presented above, we conclude that the loss of forest habitat would not result in population-level impacts on migratory birds in the region, that impacts on migratory birds (including BCC-listed species) would be minimal, and that effects on their habitat would be minimized.

Special Status Species

Special status species are those species for which state or federal agencies provide an additional level of protection by law, regulation, or policy. Included in this category are federally listed and federally proposed species that are protected under the ESA, or are considered as candidates for such listing by the USFWS, and those species that are state-listed as threatened or endangered.

Tennessee, acting as the FERC's non-federal representative for the purpose of complying with Section 7(a)(2) of the ESA, initiated informal consultation with the USFWS regarding federally listed threatened and endangered species potentially affected by the Project and identified 6 federally listed species that could potentially occur in the Project area. Tennessee also contacted the LDWF regarding state-listed threatened and endangered species in the Project area and two state-listed species, the Louisiana black

bear and the bald eagle (addressed above), were identified. In addition several impaired and/or critically impaired species were also identified. Information on species identified as having potential to occur within the Project area is presented in appendix E of this EA.

Federal Listed Species

Of the six federally listed species with the potential to occur at the Project site, Tennessee determined and we concur that no suitable habitat is present for the Louisiana Pearlshell, Pallid Sturgeon, Interior Least Tern, Red-Cockaded Woodpecker, and the Fat Pocketbook. As such, we have determined that the Project would have no effect on these species or their habitat.

In a consultation letter dated July 22, 2015 the LDWF stated that there is a potential the federally listed American chaffseed (Schwalbea Americana) may exist within the project area. Tennessee contacted the USFWS in reference to the American chaffseed and in an email dated August 13, 2015 the USFWS responded that there is no threat to American chaffseed due to the Project.

In consultation with the USFWS and LDWF, it was determined that the Project would be located in the general vicinity of known Louisiana black bear habitat and sightings. The Louisiana black bear is both federally and state listed. The Louisiana black bear inhabits bottomland hardwoods and large tracts of inaccessible forested areas. Tennessee reported that Louisiana black bears were sited near the southern side of the MEP meter and regulation (M&R) Station and Tiger M&R Station which would be paralleled by the Project. In addition, during field surveys signs of the Louisiana black bear were observed within the Delhi North Lateral, Delhi South Lateral, and CS 836A Project areas.

In correspondence between the USACE and USFWS, it was stated that Tennessee would conduct all clearing activities outside the Louisiana black bear denning season. This is December 1 through April 30. In addition it was stated that the Project would not result in the destruction or adverse modification of critical habitat within the Tensas River Basin and that the implementation of the project would impact less than 0.04 percent of all designated Louisiana black bear critical habitat. Tennessee would also minimize impacts on Louisiana Black Bear and its habitat by implementing USFWS recommended measures as listed below:

- Controlling all potential bear attractants generated during construction to avoid potential habituation of bears to human-associated food sources by using "bear-proof" waste disposal containers or removing food and garbage from the work area daily.
- Providing a worker education program that notifies construction personnel that:

    - They are working in an area inhabited by bears.
    - It is illegal to harm or harass a bear.
    - They should not attempt to approach or make physical contact with a bear.
- Avoiding or minimizing impacts to critical habitat by reducing the construction footprint to the maximum extent feasible.
- Avoiding vegetative clearing during the denning season (i.e., December 1 through April 30), or contacting the USFWS if vegetative clearing during the denning season cannot be avoided.
- Avoiding damage or removal of any tree measuring 36 inches or more in diameter at breast height, regardless of species, to the extent possible.

Based on the mitigation measures listed above, we have determined that the Project would not likely affect the Louisiana black bear or designated critical habitat. The Louisiana Field Office of the USFWS concurred with this determination on November 30, 2015.

B.5 CULTURAL RESOURCES

Tennessee conducted a cultural resources survey within a 300-foot-wide survey corridor for the Delhi North Lateral (2.4 miles of pipeline and 2 meter stations), the Delhi South Lateral (1.4 miles of pipeline and 3 meter stations), the new compressor station CS 836A, and modifications to existing compressor station CS 827. The survey also included 4 access roads. The survey identified 2 archaeological sites: one a historic scatter, recommended not eligible for listing in the National Register of Historic Places (NRHP), and one historic site 16FR365, which the Louisiana State Historic Preservation Officer (SHPO) recommended be avoided. Twelve compressor station structures dating to the post World War II expansion of the natural gas pipeline infrastructure were also identified as part of the survey. Tennessee recommends the structures are not eligible for listing in the NRHP. Tennessee has provided an avoidance plan for site 16FR365 which includes the use of HDD. We and the SHPO concur with the avoidance plan.

On June 12, 2015 Tennessee wrote to the Alabama Coushatta Tribe of Texas, the Caddo Nation of Oklahoma, the Chickasaw nation, the Choctaw Nation, the Coushatta Tribe of Louisiana, the Jena Band of Choctaw, the Mississippi Band of Choctaw Indians, the Quapaw Tribe of Oklahoma and the Tunica Biloxi Indian Tribe to request their comments on the project. On January 19, 2016 we wrote to the same tribes to provide them an opportunity to comment on the project. The Alabama Coushatta Tribe responded that there were no known impacts to the cultural assets of the Alabama Coushatta, but they requested to be notified in the event of an inadvertent discovery. The Choctaw Nation of Oklahoma and the Jena Band of Choctaw Indians requested maps and copies of the cultural resources report. On March 8, 2016 Tennessee provided maps and

on June 3, 2016 provided the cultural resources report to the tribes that requested them. We received no other comments from Indian Tribes.

Tennessee has prepared a plan in the event any unanticipated discoveries or human remains are encountered during construction. The plan provides for the notification of interested parties, including Indian Tribes, in the event of a discovery. We requested revisions to the plan and Tennessee made the requested revisions. We find the revised plan to be acceptable.

Therefore, we have determined in consultation with the SHPO and interested tribes, that with the implementation of the avoidance plan for site 16FR365, the Project as proposed would have no effect on any properties listed in, or eligible for listing in, the National Register of Historic Places.

B.6 LAND USE, RECREATION, AND AESTHETICS

B.6.1 Land Use

Land uses in the Project areas consist of agriculture, forested land, commerce/industrial, and open space. Agriculture is the dominate land use surrounding the Project facilities. In total, about 110 acres of land would be disturbed during construction and about 76 acres for operations. The proposed Project would not cross or impact coastal zone management areas. Table B-6 summarizes the land use requirements associated with construction and operation of the Project.

The Project would not affect any federally-designated or recognized natural, recreational, or scenic areas, wildlife refuges, National Parks, state parks, golf courses, public or private hunting areas, Indian reservations, wild and scenic rivers, trails, wilderness areas, or natural landmarks or other public lands.

Land use would be temporarily affected by construction activities. However, with the exception of the new CS, land use would return to its previous use.

B.6.2 Visual Resources

The Project would not be located within any federal, state, or locally designated scenic areas, such as National Wild and Scenic Rivers and scenic highways. The Project could alter existing visual resources in three ways: (1) construction activity and equipment may temporarily alter the viewshed; (2) clearing along the right-of-way during construction would alter existing vegetation patterns; and (3) aboveground facilities would create permanent alterations to the viewshed. However, the majority of visual impacts associated with the Project would be limited to the period of active construction, resulting from the presence of construction equipment and personnel at Project sites, with

minimal permanent impacts. We conclude that the Project would not have a significant impact on visual resources.

Conclusion

Based on the proximity of existing industrial infrastructure and the limited scope of activity, we do not anticipate that the Project would have a significant impact on land use, recreational activities, visual resources, or coastal zone management areas.

Table B-6

Land Use Affected By Construction and Operation of the Proposed Project

Facility	County, State	Land Use Affected By Construction				Land Use Affected By Operations			
		Open	Agricultural	Forest/ Woodland	Commerce/ Industrial	Open	Agricultural	Forest/ Woodland	Commerce/ Industrial
Delhi North Lateral	Madison Parish, LA	4.5	20.3	1.3	0	2.2	11.7	0.8	0
Delhi South Lateral	Franklin and Richland Parishes, LA	0.8	17.5	2.3	0.8	0.3	6.9	1.4	0
MEP Meter Station	Madison Parish, LA	1	0.1	0.5	0	1	0.1	0	0
Gulf Crossing Meter Station	Madison Parish, LA	0.4	0.3	0	0	0.4	0.3	0	0
Enable Meter Station	Richland Parish, LA	0.1	0.7	0	0	0.1	0.7	0	0
Gulf South and Tiger Meter Stations	Franklin Parish, LA	0.4	2.6	0	0	0.4	2.6	0	0
CS 836A	Franklin Parish, LA	0.4	21.8	0	0	0.4	21.8	0	0
CS 827	Rapides Parish, LA	0.0	14.5	0	0.6	0.8	23.4	0	1.1
Laydown Yards	Varies	4.2	12.4	2.0	0.1	0.0	0.0		0.0
Total		**11.8**	**90.2**	**6.1**	**1.5**	**5.5**	**67.5**	**2.2**	**1.1**

B.7 AIR QUALITY AND NOISE

B.7.1 Air Quality

Air quality in the Project area would be affected by construction and operation of the Project. During construction of the Project, short-term emissions would be generated by operation of equipment, land disturbance, and increased traffic from construction workers and delivery vehicles. Operation of the new compressor station, the modified compressor station, and new M&R Stations would result in air emission increases.

Ambient air quality is protected by federal and state regulations. Under the Clean Air Act of 1970 (CAA) and its amendments, the USEPA has established National Ambient Air Quality Standards (NAAQS) for carbon monoxide (CO), lead, nitrogen dioxide (NO_2), ozone, particulate matter less than 10 microns (PM_{10}), particulate matter less than 2.5 microns ($PM_{2.5}$), and sulfur dioxide (SO_2). These standards incorporate short-term (hourly to daily) levels and long-term (3-month to annual) levels to address acute and chronic exposures to the pollutants, as appropriate. 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. Louisiana has adopted all of the NAAQS. The NAAQS are summarized in the following link https://www.epa.gov/criteria-air-pollutants/naaqs-table. If measured ambient air pollutant concentrations for a subject area remain below the NAAQS criteria, the area is considered to be in attainment with the NAAQS. The Project areas are in attainment for all NAAQS.

The provisions of the CAA that are potentially relevant to the Project are discussed below.

- New Source Review (NSR);
- Prevention of Significant Deterioration (PSD);
- Title V permitting;
- National Emissions Standards for Hazardous Air Pollutants (NESHAP);
- New Source Performance Standards (NSPS);
- Greenhouse Gas Reporting Rule; and
- General Conformity of Federal Actions

As shown in the tables below, the post-project potential-to-emit (PTE) for CS 836A and CS 827 are below major source thresholds; therefore, these stations would remain minor sources under NSR/PSD and would not be subject to PSD review, or Title V permitting.

A General Conformity Determination must be completed by the lead federal agency if a federal action is likely to result in direct and indirect emissions (construction and operation) that would exceed the General Conformity applicability threshold levels of the pollutant(s) for which an air basin is in nonattainment or maintenance. The Project is not located in an air basin that is either nonattainment or maintenance status; therefore, a General Conformity Determination is not required.

The potential impact on protected Class I areas must also be considered in the PSD review process; however, no facilities under the Project are subject to PSD. Therefore, Class I area impact analyses are not required. In addition, the closest Class I area to the Project facilities are more than 100 kilometers away.

New Source Performance Standards

The NSPS codified in 40 CFR 60, require new, modified, or reconstructed sources to control emissions as specified in the applicable source category provisions:

Subpart JJJJ (*Standards of Performance for Stationary Spark Ignition Internal Combustion Engines*) would apply to the natural gas fired proposed emergency generator located at CS 836A. Subpart JJJJ would limit the engines to 100 hours per year to allow for maintenance, readiness, and non-emergency activities and emission limits (2.0 gram/brake horsepower-hour [g/bhp-hr] for NO_x, 4.0 g/bhp-hr for CO, and 1.0 g/bhp-hr for VOC) as well as record keeping and reporting requirements. Tennessee would meet these emission limits by either (1) purchasing a certified engine or (2) purchasing a non-certified engine and performing routine compliance testing.

Subpart KKKK (*Standards of Performance for Stationary Combustion Turbines*) applies to the natural gas-fired turbines at Compressor Station 836A and Compressor Station 827. These turbines would be subject to an NO_x emissions limit of 25 parts per million (ppm) at 15% oxygen (ppm at 15% O_2) or 150 nanograms per joule of useful output (1.2 pounds per megawatt-hour) with the turbine operating at or greater than 75% of peak load. Each of the new gas turbines would be a Solar Turbine equipped with "SoLoNO_x" lean pre-mix combustor with an emission guarantee of 15 ppm NO_x at 15%t O_2. Subpart KKKK also requires a fuel emission standard or a fuel sulfur standard equivalent to potential SO_2 emissions of 0.060 pound per million British thermal units. The natural gas fuel used at each station meets this requirement. The turbines would also be subject to record keeping and reporting requirements of this subpart.

National Emission Standards for Hazardous Air Pollutants

The NESHAPs codified in 40 CFR 61 and 63; regulate the emissions of hazardous air pollutants (HAPs) from existing and new sources. The emission sources included in the Project would not emit pollutants regulated under 40 CFR 61; therefore, these NESHAP regulations would not apply. The 1990 CAA Amendments established a list of 189 HAPs, resulting in the promulgation of 40 CFR 63 NESHAP (Part 63). Part 63 regulates HAP emissions specific source types. This Project would not have PTE total HAPs emissions in excess of 25 tons per year (tpy), or the PTE any single HAP emissions in excess of 10 tpy. However, potentially applicable regulations are discussed below.

Subpart M (*Asbestos Demolition and Renovation*) applies if during construction of the Project if conducting demolition and/or renovation activities asbestos containing material are found.

Subpart ZZZZ (*Stationary Reciprocating Internal Combustion Engines*) applies to area and major sources of HAPs that are new, existing, or reconstructed depending on the power rating of the reciprocating internal combustion engine.

State Regulations

In addition to federal regulations the State of Louisiana's LDEQ has their own regulations, Louisiana Administrative Code, Title 33 (LAC 33), that Tennessee would need to comply with during construction and operation of the Project.

Air pollution control regulations are promulgated under LAC 33 Part III. The Louisiana facilities and construction activities would be subject to state regulations, including but not limited to, the following:

- LAC 33:III.535 and 537 – Part 70 General Conditions and Louisiana Air Emission Permit General Conditions;
- LAC 33:III.905 – Control Facilities to be Installed when Feasible;
- LAC 33:III.919 – Emission Inventory;
- LAC 33:III.927 – Notification of Unauthorized Discharge;
- LAC 33:III.1103 and 1109 – Control of Emissions of Smoke;
- LAC33:III.1305.A and 1311.C – Emission Standards for Particulate Matter;
- LAC33:III.2103 – Storage of Volatile Organic Compounds (VOCs);
- LAC33:III.2111 – Pumps and Compressors;
- LAC33:III.2113 – Housekeeping;
- LAC33:III.5151.F – Emission Standard for Asbestos; and
- LAC33:III.5611 – Standby Plans to be Submitted When Requested by the Administrative Authority.

Construction Impacts and Mitigation

Construction of the Project would result in short-term increases in emissions of some pollutants from the use of fossil fuel-fired equipment and the generation of fugitive dust due to earthmoving activities. Some temporary indirect emissions, attributable to construction workers commuting to and from work sites during construction and from on-road and off-road construction vehicle traffic could also occur. Large earth-moving equipment and other mobile equipment are sources of combustion-related emissions, including criteria pollutants (i.e., NO_x, CO, VOCs, SO_2, PM_{10}, and $PM_{2.5}$) and greenhouse gases (GHGs). The Project construction emissions are presented in table B-7.

Table B-7

Project Construction Emissions

Project Area	Emissions (tpy)						
	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Delhi North Lateral	53.7	7.0	30.2	0.1	3.7	2.4	7,619.6
Delhi South Lateral	30.0	2.63	11.5	0.03	1.6	0.1	2,865.7
All Metering Stations	11.7	1.77	7.1	0.02	1.4	0.7	1,786.5
Compressor Station 836A	2.1	1.38	4.3	0.01	0.7	0.2	1,017.4
Compressor Station 827	2.3	0.53	3.0	0.01	0.6	0.1	748.3
Project Total	**89.7**	**13.3**	**56.0**	**0.2**	**8.0**	**4.2**	**14,037.4**

These emissions represent the combined emissions of construction equipment combustion, on-road vehicle travel, off-road vehicle travel, and earthmoving fugitive dust. Construction related emission estimates were based on a typical construction equipment list, hours of operation, and vehicle miles traveled by the construction equipment and supporting vehicles for each area of the Project. Emission factors for construction emission were obtained from USEPA's AP-42, composite off-road emission factors from California Air Resource Board's Off-road Model, and California's South Air Quality Management District's model emission factors.

Construction of the Project would occur over approximately a 14-month period beginning in the fourth quarter of 2016 with and expected in service date of February 1, 2018. Project construction emissions would be small and would result in short-term impacts at the location of the construction activity. Construction would be subject to state regulations for minimizing dust. Once construction activities in an area are completed, fugitive dust and construction equipment emissions would subside. Conditions after completion of construction would transition to operational-phase

emissions after commissioning and initial startup of the Project. Open burning is not planned for project construction but is governed by state regulations to reduce impacts on nearby areas.

Operational Impacts and Mitigation

The proposed CS 836A would consist of a 15,900 hp Mars 100 turbine. All proposed emissions would be below the major source thresholds for criteria pollutants. PTE emissions from operations are shown table B-8 below.

Table B-8

CS 836A Total Potential-to-Emit (tons/year)

Source	CO	NO_X	$PM_{2.5}$	PM_{10}	SO_2	VOC
Proposed CS 836A	72.2	57.3	9.5	9.4	2.1	7.4

Modifications to CS 827 would consist of retirement of a 13,400 hp rated solar Mars turbine; and installation of a new 15,900 hp turbine which would result in additional operational air emissions. However, total emissions would be below the major source thresholds for criteria pollutants. PTE emissions from all operations are shown in table B-9 below.

Table B-9

CS 827 Total Potential-to-Emit (tons/year)

Source	CO	NO_X	$PM_{2.5}$	PM_{10}	SO_2	VOC
CS 827	70.4	56.5	9.3	9.3	2.1	2.4

These emissions are not expected to have a significant impact on ambient air quality. The compressor station modifications at CS 827 and the proposed CS 836A would result in notable operational emissions. As a result, air dispersion modeling was performed to determine the ambient air quality impacts from these emissions. Tables B-10 and B-11 summarizes the impacts of these operational emissions.

Table B-10

Air Quality Impact Analysis at Proposed Compressor Station 836A

Pollutant	Averaging Period	Maximum Modeled Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Impact (Modeled + Background) ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
CO	8-hour	72.3	1,946	2,018	10,000
	1-hour	128.7	2,393	2,522	40,000
NO_2	Annual	0.5	3.8	4.3	100
	1-hour	7.2	24.4	31.6	188
PM_{10}	24-hour	0.3	23.5	23.8	150
$PM_{2.5}$	Annual	0.1	8.3	8.4	12.0
	24-hour	0.3	23.5	23.8	35
SO_2	3-hour	5.2	43	48	1,300
	1-hour	5.4	31	36	195

Table B-11

Air Quality Impact Analysis at Existing Compressor Station 827

Pollutant	Averaging Period	Maximum Modeled Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Impact (Modeled + Background) ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
CO	8-hour	29.2	2,939	2,968	10,000
	1-hour	36.2	3,553	3,589	40,000
NO_2	Annual	0.1	17.9	18.0	100
	1-hour	2.2	78.1	80.3	188
PM_{10}	24-hour	0.1	21.1	21.2	150
$PM_{2.5}$	Annual	0.02	10.1	10.1	12
	24-hour	0.1	21.1	21.2	35
SO_2	3-hour	2.0	28.0	30.0	1,300
	1-hour	1.9	23.0	24.9	195

As shown, the proposed compressor station and the modifications to the existing compressor station would not cause or significantly contribute to an exceedance of an ambient air quality standard.

Greenhouse Gas Emissions

Greenhouse gases occur in the atmosphere both naturally and as a result of human activities, such as the burning of fossil fuels. GHGs are gases that absorb infrared radiation in the atmosphere, and have been determined by the USEPA to endanger public health and welfare by contributing to human induced global climate change. The most common GHGs emitted during fossil fuel combustion and natural gas transportation are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Emissions of GHGs are typically expressed in terms of CO_2 equivalents (CO_{2e}), where the potential of each gas to increase heating in the atmosphere is expressed as a multiple of the heating potential of

CO_2 over a specific timeframe, or its global warming potential (GWP). The 100-year GWP of CO_2 is 1, CH_4 is 25 and N_20 is 298. During construction and operation of the Project, these GHGs would be emitted from non-electrical construction and operational equipment, as well as from fugitive methane leaks from the pipeline and aboveground facilities. GHG emissions are typically used as a proxy to evaluate impacts on climate change.

The GHG footprint of the Project is small and does not trigger PSD. Changes in GHG emissions rates would result from blowdown vents; isolation valves vents, and pneumatics valves. An estimated 149,116 metric tons per year of CO_{2e} would be attributable to the proposed Southwest Louisiana Supply Project. The total operational CO_{2e} emissions increase is relatively small on the scale of GHG emissions. By comparison, the EPA greenhouse gas tailoring rule threshold for permitting is 75,000 metric tonnes of CO_{2e} per year from a single stationary facility. Total operating GHG emissions from the Project are shown as CO_{2e} in table B-12 below.

Table B-12

Project Greenhouse Gas Emissions

Direct or Indirect	Facility/Source	CO_2e (tpy)
Direct	Compressor Station 827	72,461[1]
Direct	Compressor Station 836A	72,413[1]
Direct	Delhi North Lateral[2]	2,129
Direct	Delhi South Lateral[2]	2,163
Direct	**Total Direct**	**149,166**

[1] These emissions represent the operation emissions due to the Project.
[2] Fugitive emissions.
CO_2e = carbon dioxide equivalent

Conclusion

The results demonstrate that emissions from the Project are below the NAAQS and would not result in significant impacts on air quality. Thus, through implementation of construction work practices, the short duration of the construction activity, a review of the estimated emission from construction and operation, and an analysis of the modeled air quality impacts from operations, we find there would be no regionally significant impacts on air quality.

B.7.2 Noise

Construction and operation of the Project would affect the local noise environment in the Project areas. The ambient sound level of a region, which is defined by the total noise generated within the specific environment, is usually comprised of sounds emanating from both natural and artificial sources. At any location both the magnitude

and frequency of environmental noise may vary considerably over the course of the day and throughout the week, in part due to changing weather conditions and the impacts of seasonal vegetative 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 p.m. to 7:00 a.m.) noise exposures are penalized +10 decibels (dB), to account for people's greater sensitivity to sound during the nighttime hours. The A-weighted scale (dBA) 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 and controls the environmental sound level, the L_{dn} is approximately 6.4 dB above the measured L_{eq}.

In 1974, USEPA 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. USEPA has indicated that an L_{dn} of 55 dBA protects the public from indoor and outdoor activity interference. We have adopted this criterion and use it to evaluate the potential noise impacts from the proposed 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 perception for 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 9 dBA change is perceived as twice as loud.

Some state and local jurisdictions have quantitative noise limits. However, there are no state, parish or local regulations in Louisiana that apply to any of the Project facilities. As shown in table B-13 below all above ground facilities would be below FERC's 55 dBA requirement, except at two NSAs. However, those NSAs that currently have ambient noise levels above 55 dBA, the facility's noise increase at those NSAs would not contribute any perceptible noise increase to the current environment.

Table B-13 Sound Levels for the Project				
Property Type	**NSA Description**	**Distance and Direction of Closest NSA**	**Measured Ambient L_{dn} (dBA)**	**Measured Facility Plus Ambient L_{dn} (dBA)**
Existing Compressor Station 827	Residence	850 ft. (NW)	45.4	52.9
	Residence	950 ft. (NE)	45.4	52
	Residence	1,000 ft. (SE)	49.1	52.8
	Residence	1,250 ft. (SW)	41.1	50.6
Proposed Compressor Station 836A	Residence	1,150 ft. (NW)	43.9	49.1
	Residence	1,250 ft. (NE)	42.3	48
Proposed MEP Meter Station	Residence	1,520 ft (SE)	53.8	54.0
Proposed Enable Meter Station	Residence	420 ft (N)	63.4	63.6
	Residence	900 ft. (S)	57.7	57.7
Proposed Gulf South and Tiger Meter Station	Residence	1,530 ft. (NW)	57.8	57.8
	Residence	1,960 ft. (SW)	48.2	48.2

In addition to noise requirements, the Commission, under 18 CFR Part 380.12(k)(v)(B), requires that operation of compressor stations not result in any perceptible increase in vibration. State and local regulations may also prohibit perceptible vibration at the receiving property.

Construction Noise Impacts and Mitigation

Construction of the facilities would involve operation of general construction equipment and noise would be generated during the installation of the Project components. Measures to mitigate construction noise would include compliance with federal regulations limiting noise from trucks, proper maintenance of equipment, and ensuring that sound muffling devices provided by the manufacturer are kept in good working condition. Noise levels would increase in the immediate vicinity of the construction activities; however, the noise would be localized and short term. Construction is anticipated to commence during the fourth quarter of 2016 and is expected to place Project facilities in-service by February 1, 2018. The Project would last approximately 16 months. Nighttime noise levels are not expected to increase during construction because construction activities would be limited to daylight hours.

An exception to the typical daytime construction hours would be certain HDD activities, which would continue into nighttime hours and would operate 24 hours per day for several days (excluding days for mobilization and demobilization of construction equipment). Because of the nighttime activity and the fact that the equipment used for the HDDs would be stationary for an extended period of time, there is a greater potential for a prolonged noise impact. Tennessee may use the HDD method at waterbody WBA002 located near MP 1.2 on the Delhi South Lateral.

Tennessee did not conduct a noise assessment to estimate the noise levels attributable to potential HDD activity and the total noise level at possible NSAs. To ensure that the noise would be below our criterion on 55 dBA L_{dn}, **we recommend**:

- **Prior to construction of the Delhi South Lateral, Tennessee should file with the Secretary a horizontal directional drill (HDD) noise analysis identifying the existing and projected noise levels at each noise-sensitive area (NSA) within 0.5 mile of the HDD entry and exit site. If noise attributable to the HDD is projected to exceed a day-night sound level (L_{dn}) of 55 decibels on the A-weighted scale (dBA) at any NSA, Tennessee should file with the noise analysis a mitigation plan to reduce the projected noise levels for the review and written approval by the Director of OEP. During drilling operations, Tennessee should implement the approved plan, monitor noise levels, and make all reasonable efforts to restrict the noise attributable to the drilling operations to no more than an L_{dn} of 55 dBA at the NSAs.**

Operational Noise Impacts and Mitigation

Noise would generally be produced on a continuous basis at the compressor stations by the compressor units and associated equipment at that the M&R stations. Noise analyses were completed for all aboveground facilities. The results of the noise analyses are summarized in table B-13 above. The noise analyses accounts for noise control measures, including insulation of an acoustically treated compressor building, mufflers, equipment specific maximum noise levels, and noise blankets. To ensure that the actual noise levels resulting from operation of the above ground facilities meet our noise criteria, **we recommend:**

- **Tennessee should file noise surveys with the Secretary no later than 60 days after placing the expanded Compressor Station 827 and the new Compressor Station 836A in service. If a full load condition noise survey is not possible, Tennessee should provide an interim survey at the maximum possible horsepower load and provide the full load survey within 6 months. If the noise attributable to the operation of all of the**

equipment at the compressor station, under interim or full horsepower load conditions, exceeds an L_{dn} of 55 dBA at any nearby NSAs, Tennessee 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. Tennessee should confirm compliance with the above requirement by filing a second noise survey with the Secretary no later than 60 days after it installs the additional noise controls.

Based on our analysis and Tennessee's compliance with our recommendations, the Project operational noise levels would not result in significant impacts on the existing environment.

B.8 RELIABILITY AND SAFETY

The pressurization of natural gas at a compressor station 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 leak or rupture at the facility. Methane, the primary component of natural gas, is colorless, odorless, and tasteless. It is not toxic, but is classified as a simple asphyxiant, possessing an inhalation hazard. If breathed in high concentration, O_2 deficiency can result in serious injury or death.

As described previously, CS 836A and the modifications to the existing CS 827, appurtenant facilities, and the M&R Stations must be designed, constructed, operated, and maintained in accordance with USDOT Minimum Federal Safety Standards under 49 CFR Part 192. The regulations describe safety requirements for pipeline facilities and the transport of natural gas, and are intended to ensure adequate protection for the public and to prevent facility accidents and failures, including emergency shutdowns and safety equipment. USDOT's Pipeline and Hazardous Materials Safety Administration (PHMSA) establishes national policy, sets and enforces standards, provides education, and conducts research to ensure that people and the environment are protected from the risk of pipeline incidents. This work is shared with state agency partners and others at the federal, state, and local level.

Title 49 CFR Parts 192.163 through 192.173 specifically addresses design criteria for compressor stations, 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 an emergency. The transportation of natural gas by pipeline involves some incremental risk to the public due to the potential for an accidental release of natural gas. The greatest hazard is a fire or explosion following a major pipeline rupture. Methane has an auto-ignition temperature of 1,000 degrees Fahrenheit and is flammable at concentrations between 5.0% and 15.0% in air. An unconfined mixture of methane and air is not explosive; however, it may ignite if there is an ignition source. A flammable concentration within an enclosed space in the presence

of an ignition source can explode. It is buoyant at atmospheric temperatures and disperses rapidly in air.

Safety Standards

USDOT is mandated to provide pipeline safety under Title 49 USC Chapter 601. PHMSA administers the national regulatory program to ensure the safe transportation of natural gas and other hazardous materials by pipeline. It develops safety regulations and other approaches to risk management that ensure safety in the design, construction, testing, operation, maintenance, and emergency response of pipeline facilities. Many of the regulations are written as performance standards that set the level of safety to be attained and allow the pipeline operator to use various technologies to achieve safety. PHMSA ensures that people and the environment are protected from the risk of pipeline incidents. This work is shared with state agency partners and others at the federal, state, and local level. USDOT provides for a state agency to assume all aspects of the safety program for intrastate facilities by adopting and enforcing the federal standards. A state may also act as USDOT's agent to inspect interstate facilities within its boundaries; however, USDOT is responsible for enforcement actions. USDOT pipeline standards are published in Title 49 CFR Parts 190-199. Part 192 specifically addresses natural gas pipeline safety issues.

Under a *Memorandum of Understanding on Natural Gas Transportation Facilities* (Memorandum) dated January 15, 1993, between USDOT and FERC, USDOT has the exclusive authority to promulgate federal safety standards used in the transportation of natural gas. Section 157.14(a)(9)(vi) of FERC's regulations require that an applicant certify that it would design, install, inspect, test, construct, operate, replace, and maintain the facility for which a Certificate is requested in accordance with federal safety standards and plans for maintenance and inspection. Alternatively, an applicant must certify that it has been granted a waiver of the requirements of the safety standards by USDOT in accordance with Section 3(e) of the Natural Gas Pipeline Safety Act. FERC accepts this certification and does not impose additional safety standards other than USDOT standards. If the Commission becomes aware of an existing or potential safety problem, there is a provision in the Memorandum to promptly alert USDOT. The Memorandum also provides for referring complaints and inquiries made by state and local governments and the general public involving safety matters related to pipelines under the Commission's jurisdiction.

Tennessee's construction and operation of the compressor stations and M&R stations would represent a minimum increase in risk to the public. Tennessee would comply with all requirements of USDOT, OSHA, and other applicable regulations, standards, and guidelines for safety. This would include compliance with applicable design standards and codes, construction provisions as mandated, and operation procedures and standards.

B.9 CUMULATIVE IMPACTS

In accordance with NEPA, we identified other actions located in the vicinity of the Project facilities and evaluated the potential for a cumulative impact on the environment. As defined by the Council on Environmental Quality (CEQ), a cumulative effect is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. CEQ guidance states that an adequate cumulative effects analysis may be conducted by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions. In this analysis, we consider the impacts of past projects as part of the affected environment (environmental baseline) which was described and evaluated in the preceding environmental analysis. However, present effects of past actions that are relevant and useful are considered. Actions located outside the geographic scope are generally not evaluated because their potential to contribute to a cumulative impact diminishes with increasing distance from the Project.

As described in the environmental analysis section of this is EA, constructing and operating the Project would temporarily and permanently impact the environment. The Project would impact geology, soils, water resources, vegetation, wetlands, wildlife, cultural resources, visual resources, air quality, noise, and some land uses. However, we conclude that these impacts would not be significant.

Based on the impacts of the Project as identified and described in this EA and consistent with CEQ guidance, we have determined the following resource-specific geographic scopes appropriate to assess cumulative impacts.

- Impacts on wetlands, geology, soils, vegetation, and wildlife would be largely contained within or adjacent to proposed Project workspaces. Therefore, for these resources we evaluated other projects/actions within the HUC 12[4] sub-watersheds of the Project facilities.
- Impacts on cultural resources would also be largely contained within or adjacent to proposed Project workspaces. Therefore, we evaluated other projects/actions that overlapped with known cultural features potentially affected by the Project.
- Temporary impacts on air quality, including fugitive dust, would be largely limited to areas immediately around active construction about 0.5 mile. Long-term impacts on air quality would be largely contained within about a 50-kilometer radius. We evaluated other projects/actions that overlap in time and location with construction activities and those with potentially significant

[4] Drainage basins in the United States are divided and sub-divided at four different levels and each assigned a unique hydrologic unit code (HUC) consisting of eight digits based on these four levels.

long-term stationary emission sources within a 50-kilometer radius of the Project. A table of the projects/actions analyzed can be found on FERC's website in eLibrary under docket #: CP16-12-000, accession #: 20160208-5191.

- Long-term impacts on NSAs were evaluated by identifying other stationary source projects with the potential to result in significant noise that would affect the same NSAs within 1 mile of the Project compressor stations. None were identified near the Project compressor station modifications; therefore, we did not consider long-term cumulative noise impacts further in this analysis.
- Short-term impacts on NSAs during construction would be temporary and short-term in nature, and limited to 10 hour days, six days per week; however, specialized construction techniques, and/or weather-related events may require 24-hour construction on a limited basis. Due to the limited scope of the short-term cumulative noise impacts to NSAs we did not consider this any further in this analysis.
- Land use and aesthetics impacts are highly localized. Therefore, we evaluated projects/actions that are within 0.5 mile of the Project.

Appendix F identifies the present and reasonably foreseeable projects or actions that occur within the geographic scope. These projects were identified by a review of publicly available information; aerial and satellite imagery; and information provided by Tennessee. Most of the projects were natural gas pipeline and highway projects.

In addition to the geographic relationship between the Project and other projects in the area, we also consider the temporal relationship between the Project and other projects in the area.

We have determined, based on the scope of the Project that the impacts of the Project on geology, soils, groundwater, wetlands, vegetation and wildlife, and cultural resources when added to the impacts of other present and reasonably foreseeable future actions would not result in a meaningful cumulative impact on these resources.

Cumulative impacts on land use and aesthetics; air quality; noise; and climate change could occur and are discussed further.

B.9.1 Land Use and Aesthetics

The past, present and reasonably foreseeable future actions identified in Appendix F would result in temporary disturbances/losses of use and permanent conversions of land uses. As described previously, about 110 acres of land would be disturbed during construction of the Project, of which about 32 acres is previously disturbed. About 77 acres of land would be maintained for permanent operation of the Project. Potentially

affected land use would include primarily agricultural lands. These actions could also temporarily and permanently impact visual resources. These impacts include changes to the viewshed resulting from the placement of permanent buildings/structures. Based on when added to the impacts of the Project could potentially result in a cumulative impact. However, we have determined, based on the impacts of the proposed Project (as described in this EA), that the impacts of the Project on land use and visual resources when added to the impacts of other past, present and reasonably foreseeable future actions would not result in a significant cumulative impact.

B.9.2 Air Quality, Noise, and Climate Change

A discernable increase in operational emissions resulting from the Project would only occur at the proposed CS 836A facility. All other facilities within this Project would only be conducting minor modifications which would not significantly increase their operational emissions.

The AERMOD dispersion model was utilized to evaluate the cumulative air impacts of the proposed compressor station CS 836A. The model calculated impacts of the station in combination with ambient monitoring data, which was used to account for other nearby sources referenced in appendix F and compared to EPA's NAAQS. The model demonstrates that the compressor station would not cause or contribute to violations of the NAAQS.

With the exception of the GHG emissions, air impacts would be localized and confined primarily to the airshed in which the Project occurs. Furthermore, although the Project is expected to increase GHG emissions, the Project would not have a discernible influence on regional climate change. The combined effect of multiple construction projects occurring in the same airshed and timeframe could temporarily add to the ongoing air quality effects of existing activities. No major projects have been identified in the vicinity of CS 836A within Franklin Parish. Typically, smaller local projects have varying construction schedules and would take place over a relatively large geographic area. We conclude after review of the past, present, and reasonably foreseeable future projects/actions occurring within a 50 km radius of both compressor station including the proposed CS 836A facility that the Project would not have a significant long-term adverse impact on air quality and would not add significantly to the long term cumulative impact of the area.

The Project could contribute to cumulative noise impacts. However, the impact of noise is highly localized and attenuates quickly as the distance from the noise source increases. Therefore, cumulative impacts are unlikely unless one or more of the local projects is constructed at the same time in the same location. Therefore, we conclude that cumulative noise impacts would not be significant.

SECTION C – ALTERNATIVES

In accordance with NEPA, we evaluated alternatives to Tennessee's proposed action to determine whether they would be preferable to constructing the Project as proposed. Our evaluation criteria for selecting potentially preferable alternatives are:

- technically and economically feasible and practical;
- provides a significant environmental advantage over the proposed action; and
- ability to meet the objectives of the proposed action (i.e., providing additional capacity to transport 295,000 dekatherms per day of natural gas to meet contractual obligations with Mitsubishi Corporation and MMGS, Inc.

Our evaluation of alternatives is based on project-specific information provided by the applicant; concerned parties; publicly available information; our consultations with federal and state resource agencies; and our expertise and experience regarding the siting, construction, and operation of natural gas transmission facilities and their potential impact on the environment.

Evaluation Process

Through environmental comparison and application of our professional judgement, each alternative is considered to a point where it becomes clear if the alternative could or could not meet the three evaluation criteria. To ensure a consistent environmental comparison and to normalize the comparison factors, we generally use desktop sources of information (e.g., publicly available data, GIS data, aerial imagery) and assume the same right-of-way widths and general workspace requirements. Where appropriate, we also use site-specific information (e.g., field surveys or detailed designs). Our environmental analysis and this evaluation consider quantitative data (e.g., acreage or mileage) and uses common comparative factors such as total length, amount of collocation, and land requirements.

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. In comparing the impact between resources, we also considered the degree of impact anticipated on each resource. Ultimately, an alternative that results in equal or minor advantages in terms of environmental impact would not compel us to shift the impacts from the current set of landowners to a new set of landowners.

In section B, we evaluated each environmental resource potentially affected by the Project and concluded that constructing and operating the Project would not significantly

impact these resources. Consistent with our conclusions, the value gained by further reducing the (not significant) impacts of the Project when considered against the cost of relocating the route/facility to a new set of landowners was also factored into our evaluation. Also, note that during the scoping period no compressor station alternatives or pipeline route alternatives were requested by stakeholders.

C.1 NO-ACTION ALTERNATIVE

Under the no-action alternative, modifications to existing compression or appurtenant facilities would not be constructed and the Project objectives to provide additional natural gas supplies and firm transportation services would not be met. The facilities would continue to operate under current conditions and the environmental impacts identified in this EA would not occur. If the Project is not built, Tennessee's customers would likely seek alternatives to meet increasing demand of natural gas supplies, which could include the construction and operation of other facilities. Because of the limited footprint of the proposed action, we conclude that it is likely that the other facilities that would need to be constructed to replace the Project would have equal or greater impacts. Therefore, the no-action alternative would not offer a significant environmental advantage over the proposed Project.

C.2 SYSTEM ALTERNATIVES

The purpose of identifying and evaluating system alternatives is to determine whether the environmental impacts associated with the construction and operation of the proposed Project could be avoided or reduced by using existing, modified, or other proposed facilities rather than constructing new facilities. A viable system alternative must be technically and economically feasible and practicable, and must satisfy interconnect requirements and the anticipated in-service date (i.e., February 2018) to meet the Project customers' needs.

One of the Project's needs is to have specific receipt points that were designated by the Project shippers. As a result, no other system alternative was identified that would meet the requirements of the Project shippers without having equal or greater environmental impacts as the proposed Project.

C.3 COMPRESSOR STATION ALTERNATIVES

The capacity of a pipeline is primarily a function of the diameter of the pipeline. Once the capacity of the pipeline is reached, the pipeline needs to be expanded in order to transport additional gas. This expansion can come in several forms such as adding compression at existing facilities, building a new compressor station, or adding a new pipeline parallel to the existing pipeline (i.e., looping). We evaluated all three approaches.

Delhi Compressor Station 836A Alternatives

The first modification of Tennessee's System that we considered as an alternative to Tennessee's proposed Compressor Station 836A was an expansion of existing Winnsboro Compressor Station 834. Additional compression at the existing Winnsboro Compressor Station 834 located approximately 35 miles downstream of the proposed CS 836A site, would require about 20,500 hp of capacity in order to serve the purpose and need of the Project. The proposed CS 836 facility would have a horsepower of 15,900. Consequently, the added horsepower at the Winnsboro Compressor Station 834 would not provide a significant environmental advantage over the proposed facilities. In addition, we also evaluated pipeline looping to increase capacity to eliminate the need for Compressor Station 836A. The looping alternative would impact approximately 810 acres of land as opposed to the new compressor station which would impact 24.2 acres. Consequently, it would not provide a significant environmental advantage over the proposed facilities.

Alexandria Compressor Station 827 Alternatives

The proposed Project would replace the existing Mars T-14000 SoLoNO$_X$ turbine (13,400 hp) with a new Mars 100 SoLoNO$_X$ turbine (15,900 hp). This would result in an additional capacity resulting from the additional 2,500 hp. However, building a new compressor station at a new location would not provide a significant environmental advantage over the proposed facilities. As an alternative to expanding the existing CS 827, we also evaluated pipeline looping to increase capacity. The looping alternative would impact approximately 170 acres of land as opposed to the new compressor which would impact 15 acres. Consequently, looping would not provide a significant environmental advantage over the proposed facilities.

C.4 PIPELINE ROUTE ALTERNATIVES

Delhi North Lateral Alternatives

The location of Delhi North Lateral pipeline is primarily defined by the location of the Midcontinent Express Pipeline (MEP) Meter Station. There were only two viable locations for the MEP Meter Station based on the shipper's requirements. The proposed facility location would have minimal environmental impact on wetlands. Consequently, we did not identify any route alternatives that would provide a significant environmental advantage over the proposed Project. Further, during the scoping period no route alternatives were requested by stakeholders. Therefore, we identified no alternatives to the proposed Delhi North Lateral pipeline that could satisfy the evaluation criteria.

Delhi South Lateral Alternatives

The location of the Delhi South Lateral pipeline is primary defined by the location of the Enable Midstream Partners, Gulf South and Tiger Meter Stations. The proposed route would have minimal environmental impact on resources, including streams and forested areas between the meter stations and Tennessee's Line 800-1. Consequently, we did not identify any route alternative that would provide a significant environmental advantage over the proposed Project. Further, during the scoping period no route alternatives were requested by stakeholders. Therefore, we identified no alternatives to the proposed Delhi South Lateral pipeline that could satisfy the evaluation criteria.

SECTION D – STAFF CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis in this EA, we have determined that if Tennessee constructs and operates the proposed facilities in accordance with its application and supplements, and the staff's recommended mitigation measures listed 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 include the measures listed below as conditions in any authorization the Commission may issue to Tennessee.

1. Tennessee Gas Pipeline Company, L.L.C. (Tennessee) 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. Tennessee must:

    a. request any modification to these procedures, measures, or conditions in a filing with the Secretary of the Commission (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 Office of Energy Projects (OEP) **before using that modification**.

2. The Director of OEP has delegated authority to take whatever steps are necessary to ensure the protection of all environmental resources during the construction and operation activities of the project. This authority shall allow:

    a. the modification of conditions of the Order; and

    b. the design and implementation of any additional measures deemed necessary (including stop-work authority) to assure continued compliance with the intent of the environmental conditions as well as the avoidance or mitigation of adverse environmental impact resulting from project construction and operation.

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

4. The authorized facility locations shall be as described in the EA, as supplemented by filed maps and/or alignment sheets. **As soon as they are available, and before the start of construction**, Tennessee 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 work sites 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.

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

5. Tennessee shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying any revisions of facility removal sites, staging areas, storage/equipment 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 FERC's Plan and/or minor field realignments per landowner needs and requirements that do not affect other landowners or sensitive environmental areas such as wetlands.

   Examples of alterations requiring approval include all workspace 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 this authorization and before construction begins,** Tennessee shall file an Implementation Plan with the Secretary for review and written approval by the Director of the OEP. Tennessee must file revisions to the plan as schedules change. The plan shall identify:

   a. how Tennessee would implement the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests), identified in the EA, and required by the Order;

   b. how Tennessee would incorporate these requirements into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at each site is clear to onsite construction and inspection personnel;

   c. the number of EIs assigned per spread, and how the company would ensure that sufficient personnel are available to implement the environmental mitigation;

   d. company personnel, including EIs and contractors, who would receive copies of the appropriate material;

   e. the location and dates of the environmental compliance training and instruction Tennessee would give to all personnel involved with construction and restoration (initial and refresher training as the project progresses and personnel change);

   f. the company personnel (if known) and specific portion of Tennessee's organization having responsibility for compliance;

   g. the procedures (including use of contract penalties) Tennessee would follow if noncompliance occurs; and

   h. for each discrete facility, a Gantt or PERT chart (or similar project scheduling diagram), and dates for:

      i. the completion of all required surveys and reports;

      ii. the environmental compliance training of onsite personnel;

      iii. the start of construction; and

      iv. the start and completion of restoration.

7. Beginning with the filing of its Implementation Plan, Tennessee 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 Tennessee's efforts to obtain the necessary federal authorizations;

   b. the construction status of the project, work planned for the following reporting period, and any schedule changes for stream crossings or work in other environmentally sensitive areas;

   c. a listing of all problems encountered and each instance of noncompliance observed by the EI during the reporting period both for the conditions imposed by the Commission and any environmental conditions/permit requirements imposed by other federal, state, or local agencies;

   d. a description of the corrective actions implemented in response to all instances of noncompliance, and their cost;

   e. the effectiveness of all corrective actions implemented;

   f. a description of any landowner/resident complaints that 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 Tennessee from other federal, state, or local permitting agencies concerning instances of noncompliance, and Tennessee's response.

8. **Prior to receiving written authorization from the Director of the OEP to commence construction of any project facilities,** Tennessee shall file with the Secretary documentation that it has received all applicable authorizations required under federal law (or evidence of waiver thereof).

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

10. **Within 30 days of placing the authorized facilities in service**, Tennessee 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 would be consistent with all applicable conditions; or

b. identifying which of the Certificate conditions Tennessee 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.

11. Prior to construction of the Delhi South Lateral, Tennessee should file with the Secretary a horizontal directional drill (HDD) noise analysis identifying the existing and projected noise levels at each noise-sensitive area (NSA) within 0.5 mile of the HDD entry and exit site. If noise attributable to the HDD is projected to exceed a day-night sound level (L_{dn}) of 55 decibels on the A-weighted scale (dBA) at any NSA, Tennessee should file with the noise analysis a mitigation plan to reduce the projected noise levels for the review and written approval by the Director of OEP. During drilling operations, Tennessee should implement the approved plan, monitor noise levels, and make all reasonable efforts to restrict the noise attributable to the drilling operations to **no more than an L_{dn} of 55 dBA at the NSAs**.

12. Tennessee shall file noise surveys with the Secretary **no later than 60 days** after placing the expanded Compressor Station 827 and the new Compressor Station 836A in service. If a full load condition noise survey is not possible, Tennessee shall provide an interim survey at the maximum possible horsepower load and provide the full load survey **within 6 months**. If the noise attributable to the operation of all of the equipment at the compressor station, under interim or full horsepower load conditions, exceeds an L_{dn} of 55 dBA at any nearby NSAs, Tennessee shall file a report on what changes are needed and shall install the additional noise controls to meet the level **within 1 year** of the in-service date. Tennessee shall confirm compliance with the above requirement by filing a second noise survey with the Secretary **no later than 60 days after it installs the additional noise controls**.

SECTION E – REFERENCES

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Appendix A

Proposed Facilities Under Section 18 CFR §2.55(a) and (b)

Proposed Facilities Under Section 18 CFR §2.55(a) and (b)

The Project would involve activities related to the auxiliary/appurtenant installation, modification, and replacement of facilities located within existing authorized sites or within the certified permanent right-of-way.

Compressor Station 832 located in Jefferson Davis Parish, Louisiana

- installation of new piping and associated valves;
- modifications to an existing pig launcher on Line 800-1 to function as a launcher or receiver; and
- installation of cathodic protection equipment.

Compressor Station 827 located in Rapides Parish, Louisiana

- installation of high-pressure gas coolers;
- installation of new piping and associated valves;
- modifications to existing pig receivers on Line 800-1 to function as a launcher or receiver;
- installation of emergency shutdown and unit blow down silencer; and
- installation of cathodic protection equipment.

Compressor Station 834 located in Franklin Parish, Louisiana

- replacement of five gas scrubbers with three high capacity filter/separators;
- installation of a 3,760-gallon double wall pipeline liquid storage tank;
- installation of new piping and associated valves;
- modification to existing pig receivers on Line 800-1 to function as a launcher or receiver;
- installation of emergency shutdown and unit blow down silencer; and
- installation of engine emission controls.

Compressor Station 847 located in Yalobusha County, Mississippi

- installation of high-pressure gas coolers;
- installation of new piping and associated valves;
- replacement of existing gas scrubber with two filter separators;
- installation of a 3,760-gallon double wall pipeline liquid storage tank;
- modification to existing pig receivers on Line 800-1 to function as a launcher or receiver;
- installation of emergency shutdown and unit blow down silencer; and
- installation of cathodic protection equipment.

Appendix B

Environmental Permits, Approvals, and Consultations Required for the Project

Appendix B					
AGENCY	PERMIT/APPROVAL/ CONSULTATION	ANTICIPATED/ACTUAL DATE[1]		APPLICABLE FACILITIES	COMMENTS
		SUBMITTAL	STATUS[1]		
Federal Energy Regulatory Commission	Natural Gas Act, Section 7(c) – Certificate of Public Convenience and Necessity	10/2015	Anticipated *11/2016*	All facilities	Subject of this application
United States Army Corps of Engineers ("USACE")	Clean Water Act ("CWA"), Section 404	Not applicable	Not applicable	Not applicable	No USACE jurisdictional features will be impacted at CS 827
		10/20/2015	*10/2016*	All facilities	Individual Permit ("IP")
	Rivers and Harbors Act, Section 10	Not applicable	Not applicable	Not applicable	No Section 10 waterways will be crossed
United States Fish and Wildlife Service	Endangered Species Act, Section 7 Consultation Migratory Bird Treaty Act Consultation	10/20/2015	11/30/2015	All facilities	
Louisiana Department of Environmental Quality	CWA, Section 401 Water Quality Certification	10/20/2015	*10/2016*	All facilities	Conditional 401 WQC issued with USACE IP
Louisiana Department of Environmental Quality	Louisiana Pollutant Discharge Elimination System ("LPDES") General Construction Stormwater Permit	Not applicable	Not applicable	Not applicable	Oil and gas exemption applies
Louisiana Department of Environmental Quality	LPDES Water Discharge Permit: General Permit for Hydrostatic Test and Vessel Testing Wastewater	Prior to construction	Prior to construction	All facilities	

Appendix B					
AGENCY	PERMIT/APPROVAL/ CONSULTATION	ANTICIPATED/ACTUAL DATE[1]		APPLICABLE FACILITIES	COMMENTS
		SUBMITTAL	STATUS[1]		
Louisiana Department of Environmental Quality	Clean Air Act Permits	10/2015	12/21/2015	CS 836A	Clean Air Act Permits
Louisiana Department of Environmental Quality	Clean Air Act Permits	9/30/2015	2/22/2016	CS 827	Clean Air Act Permits
Louisiana Department of Natural Resources, Office of Coastal Management	Coastal Zone Management Act, Coastal Use Permit	Not applicable	Not applicable	Not applicable	No work will occur in or near coastal zone areas
Louisiana Department of Transportation	Road Crossing Permit	Prior to construction	Prior to construction	LA Hwy 17	
Louisiana Office of Cultural Development, Division of Historic Preservation Division of Archaeology	National Historic Preservation Act ("NHPA"), Section 106 Consultation	10/20/2015	4/20/2016	All facilities	
Louisiana Department of Wildlife and Fisheries	Review and consultation regarding sensitive species or natural communities.	6/2015	*11/2016*	All facilities	
Franklin Parish, Police Jury	Building Permit/Zoning Review	Prior to construction	Prior to construction	CS 836A Gulf South and Tiger Meter Stations	
	Floodplain Permit	Not applicable	Not applicable	Not applicable	No aboveground facility construction will occur within a floodplain
	Road Crossing Permit	Prior to construction	Prior to construction	Parish Line Road and Frankie Loftin Road	

Appendix B					
AGENCY	PERMIT/APPROVAL/ CONSULTATION	ANTICIPATED/ACTUAL DATE[1]		APPLICABLE FACILITIES	COMMENTS
		SUBMITTAL	STATUS[1]		
Madison Parish, Police Jury	Building Permit/Zoning Review	Prior to construction	Prior to construction	MEP Meter Station Gulf Crossing Meter Station	
Madison Parish, Police Jury	Elevation Certificate (for work in floodplains)	Prior to construction	Prior to construction	MEP Meter Station	
	Road Crossing Permit	Prior to construction	Prior to construction	Phew Road	
Rapides Parish, Police Jury	Building Permit/Zoning Review	To be determined	To be determined	CS 827	A building plan meeting must be conducted to determine which permits are required
	Floodplain Permit	To be determined	To be determined	CS 827	
	Grading Permits/Fugitive Dust Control	To be determined	To be determined	CS 827	
Richland Parish, Police Jury	None	Not applicable	Not applicable	Not applicable	No permits are required for the proposed Enable Meter Station
Native American Tribes	NHPA, Section 106 consultation	6/2015	To be determined	All facilities	See Resource Report 4 – *Cultural Resources* for contacts

[1] Italicized status means not yet completed.

Appendix C
Vegetation Community Impacts

Appendix C

Vegetation Community Impacts

	Developed[1]		Disturbed[2]		Maintained Right-of-way		Bottom-land/Hard-wood Forest		Mature Forest		Mixed Forest		Active Ag		Open Pasture		Wetland[3]		Total	
	Temp[1]	Perm[2]	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm
New Facilities																				
Delhi North Lateral	0.1	<0.1	0.2	<0.1	0	0	0	0	0.2	0.1	0	0	5.2	2.6	0	0	20.4	12	26	14.7
Delhi South Lateral	0.6	<0.1	<0.1	<0.1	0.7	0.3	0.7	0.7	0	0	0	0	2.1	1.2	14.9	6.2	<0.1	0	19.1	8.5
MEP Meter Station	0	0	0	0	0	0	0	0	0	0	<0.1	<0.1	0	0	0	0	1	1	1.1	1.1
Gulf Crossing Meter Station	<0.1	<0.1	0	0	0	0	0	0	0	0	0	0	0.8	0.8	0	0	0	0	0.8	0.8
Enable Meter Station	0.5	0.5	0	0	0.1	0.1	0	0	0	0	0	0	0	0	0.3	0.3	0	0	0.9	0.9
Gulf South and Tiger Meter Stations	0.7	0.7	0	0	0	0	0	0	0	0	0	0	0	0	2.2	2.2	0	0	2.9	2.9
CS 836A	0	0	<0.1	<0.1	0	0	0.1	0.1	0	0	0	0	22.1	22.1	0	0	0	0	22.2	22.2
Existing Facility																				
CS 827[4]	15	25.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15.0[4]	25.3[4]
Construction Support Areas																				
ATWS[5]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Temporary Access Roads[6]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Appendix C

Vegetation Community Impacts

Laydown Yards	0.3	0	0.0	0	0	0	0	0	0	0	0	0	4.0	0	13.9	0	0	0	18.1	0
TOTAL	17.2	26.5	0.2	0.1	0.8	0.4	0.8	0.8	0.2	0.1	<0.1	<0.1	34.2	26.6	31.3	8.8	21.4	13.2	106.1	76.3

[1]Includes existing roadways and industrial areas

[2]Includes residential and otherwise disturbed areas

[3]Includes all delineated wetlands

[4]Approximately 10.2 acres (due to rounding) of the existing compressor station site has been designated as an exclusion area and will not be used during construction.

[5]Impacts to vegetation communities associated with ATWS areas are accounted for with the pipeline lateral for which they are associated.

[6]Impacts to vegetation communities associated with temporary access roads are accounted for with the laydown yards.

AG = Agriculture

ATWS = additional temporary work space

PERM = permanent/operational impact

TEMP = temporary/construction impact

Appendix D

Wildlife Identified in Project Area During Field Studies

Appendix D Wildlife Identified in Project Area During Field Studies					
COMMON NAME	**SCIENTIFIC NAME**	**DELHI NORTH LATERAL**	**DELHI SOUTH LATERAL**	**CS 836A**	**CS 827**
Amphibians					
American bullfrog	*Rana catesbiana*	●	●		
Leopard frog	*Lithobates sphenocephalus*	●	●		●
Birds[1]					
Blue jay	*Cyanocitta cristata*	●	●	●	
Cattle egret	*Bubulcus ibis*	●	●	●	●
Carolina chickadee	*Poecile carolinensis*	●	●	●	●
Cerulean warbler	*Setophaga cerulea*	●	●	●	
Common grackle	*Quiscalus quiscula*	●	●	●	
Downy woodpecker	*Picoides pubescens*	●	●	●	
Eastern bluebird	*Sialia sialis*				●
European starling	*Sturnus vulgaris*	●	●	●	
Fish crow	*Corvus ossifragus*	●	●	●	
Gray catbird	*Dumetella carolinensis*	●	●	●	
Killdeer	*Charadrius vociferus*	●	●	●	●
Mourning dove	*Zenaida macroura*	●	●	●	●
Northern bobwhite	*Colinus virginianus*			●	
Northern cardinal	*Cardinalis cardinalis*	●	●	●	●

Appendix D Wildlife Identified in Project Area During Field Studies					
Northern mockingbird	*Mimus polyglottos*	•	•	•	•
Pileated woodpecker	*Dryocopus pileatus*	•	•	•	
Pine warbler	*Setophaga pinus*				
Red-bellied woodpecker	*Melanerpes carolinus*	•	•	•	•
Red-tailed hawk	*Buteo jamaicensis*	•	•		•
Red-winged blackbird	*Agelaius phoeniceus*	•	•	•	
Sparrow sp.	*Passer sp.*	•	•	•	•
Turkey vulture	*Cathartes aura*	•	•	•	•
White-eyed vireo	*Vireo griseus*	•	•	•	•
Yellow-billed cuckoo	*Coccyzus americanus*	•	•	•	•
Yellow-breasted chat	*Icteria virens*	•	•	•	•
Mammals					
Eastern cottontail	*Sylvilagus floridanus*	•	•		
Eastern fox squirrel	*Sciurus niger*		•	•	
Northern raccoon	*Procyon lotor*	•	•	•	
White-tailed deer	*Odocoileus virginianus*			•	
Reptiles					
Banded watersnake	*Nerodia fasciata*	•	•	•	
Red-eared slider	*Trachemys scripta elegans*	•			

[1] All of the bird species identified are protected under the Migratory Bird Treaty Act with the exception of the European Starling (*Sturnus vulgaris*).

Appendix E

Federally and State Listed Species with the Potential to Occur in the Project Area

Appendix E Federally and State Listed Species with the Potential to Occur in the Project Area						
Class	**Common Name**	**Scientific Name**	**Listing Status**		**Habitat Description**	**Suitable Habitat Observed**
			Federal[a]	**State[b]**		
New Facilities						
Delhi North Lateral						
Mammals	Louisiana Black Bear	*Ursus americanus luteolus*	LT	T	Bottomland hardwood forested communities; brackish and freshwater marshes.	Yes, but species will typically avoid areas that experience a significant amount of human activity unless attracted by a food source (e.g., refuse).
Birds	Interior Least Tern	*Sternula antillarum athalassos*	LE	E	Summer resident along major river systems and coastal areas; found on beaches and sandbars.	No, suitable habitat is not present.
Fish	Pallid Sturgeon	*Scaphirhynchus albus*	LE	E	Bottom-dwellers found in the Mississippi River drainages; requires river systems with depth and velocity	No, suitable habitat is not present.
Molluscs	Fat Pocketbook	*Potamilus capax*	LE	n/a	Small to large rivers with moderate current and gravel or sand substrate (LDWF 2015c)	No, suitable habitat is not present.

Appendix E Federally and State Listed Species with the Potential to Occur in the Project Area						
Class	**Common Name**	**Scientific Name**	**Listing Status**		**Habitat Description**	**Suitable Habitat Observed**
			Federal[a]	**State[b]**		
Delhi South Lateral						
Mammals	Louisiana Black Bear	*Ursus americanus luteolus*	LT	T	Bottomland hardwood forested communities; brackish and freshwater marshes.	Yes, but species will typically avoid areas that experience a significant amount of human activity unless attracted by a food source (e.g., refuse).
Birds	Bald Eagle	*Haliaeetus leucocephalus*	DL	E	Found primarily near large bodies of water. Nests in tall trees or cliffs near water	No, suitable habitat is not present.
CS 836A						
Mammals	Louisiana Black Bear	*Ursus americanus luteolus*	LT	T	Bottomland hardwood forested communities; brackish and freshwater marshes.	Yes, but species will typically avoid areas that experience a significant amount of human activity unless attracted by a food source (e.g., refuse).
Birds	Bald Eagle	*Haliaeetus leucocephalus*	DL	E	Found primarily near large bodies of water. Nests in tall trees or cliffs near water	No, suitable habitat is not present.

Appendix E Federally and State Listed Species with the Potential to Occur in the Project Area						
Class	**Common Name**	**Scientific Name**	**Listing Status**		**Habitat Description**	**Suitable Habitat Observed**
			Federal[a]	**State[b]**		
Existing Facility						
CS 827						
Birds	Bald Eagle	*Haliaeetus leucocephalus*	DL	E	Found primarily near large bodies of water. Nests in tall trees or cliffs near water.	No, suitable habitat is not present.
Birds	Red-cockaded Woodpecker	*Picoides borealis*	LE	E	Pine forests with trees greater than 60 years old for nesting and 30 years old for foraging (Cornell 2015a).	No, suitable habitat is not present.
Birds	Sprague's Pipit	*Anthus spragueii*	C	n/a	Open grasslands with little to no shrubs or trees (Cornell 2015b).	No, suitable habitat is not present.
Birds	Interior Least Tern	*Sternula antillarum athalassos*	LE	E	Summer resident along major river systems and coastal areas; found on beaches and sandbars.	No, suitable habitat is not present.
Fish	Pallid Sturgeon	*Scaphirhynchus albus*	LE	E	Bottom-dwellers found in the Mississippi River drainages; requires river systems with depth and velocity.	No, suitable habitat is not present.

Appendix E

Federally and State Listed Species with the Potential to Occur in the Project Area

Class	Common Name	Scientific Name	Listing Status		Habitat Description	Suitable Habitat Observed
			Federal[a]	State[b]		
Mollusks	Louisiana Pearlshell	*Margaritifera hembeli*	LT	E	Small sandy streams in mixed pine hardwood forests (LDWF 2015c).	No, suitable habitat is not present.

[a] Federal Status codes:
LE=Listed Endangered; LT=Listed Threatened; C=Candidate; D=Delisted taxon
[b] State status codes:
E=Endangered; T= Threatened
n/a= not applicable

Appendix F

Projects within the Cumulative Impact Geographic Scope

Appendix F

Projects within the Cumulative Impact Geographic Scope

Project Name	Status	Description	Anticipated Project Construction Timeline	Resources Potentially Impacted
Rapides Parish				
Alexandria ITS	Completed	Department of transportation Project 9-mile Highway span across I-49	Completed	All
Overton Lock and Dam	Completed	Modification to the existing USACE John H. Overton Lock and Dam	Completed	Air, Soil, and Water
Pavement Rehabilitation	Completed	Concrete pavement rehabilitation over a 34.21-mile span	Summer 2015	Air and Soil
Franklin Parish				
Pipe Replacement 834-I	Under Construction	Pipeline replacement activities	February 2018	Air and Soil
Gulf Crossing South Interconnecting Pipeline	Planning	Installation of a new 620-foot-long interconnection pipeline	October 2017	Air and Soil
Tiger Interconnecting Pipeline	Under Construction	Install a new 250-foot-long interconnecting pipeline	September 2017	Air and Soil
Madison Parish				
Gulf Crossing Interconnecting Pipeline	Planning	Installation of a new 200-foot-long interconnection pipeline	September 2017	Air and Soil
Slope Repair on I-20 Overpass	Completed	Slope/embankment repairs at highway overpass	Completed	All

Appendix F Projects within the Cumulative Impact Geographic Scope				
Project Name	**Status**	**Description**	**Anticipated Project Construction Timeline**	**Resources Potentially Impacted**
MEP Interconnecting Pipeline	Planning	Installation of a new 1,426-foot-long interconnecting pipeline	July 2017	Soil
Richland Parish				
I-20 District 05 Median Cable Barrier	Completed	Installation of a 32.88 mile median cable barrier along I-20	Completed	All
Enable Midstream Partners Interconnecting Pipeline	Planning	Installation of a 75-foot-long interconnecting pipeline	September 2017	Soil

1

Appendix G

List of Preparers

LIST OF PREPARERS

Federal Energy Regulatory Commission

Jeudy, Harry – Environmental Project Manager – Proposed Action; Land Use, Recreation and Aesthetics; Air Quality and Noise; Reliability and Safety; Alternatives; Polychlorinated Biphenyls; and Cumulative Impacts
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